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AI-to-Capability Conversion in SMEs: The Mediating Role of Digital Sales Capability in Shaping Entrepreneurial Preparedness

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ABSTRACT

This study develops and empirically validates an AI-augmented digital sales capability and entrepreneurial preparedness framework explaining how artificial intelligence translates into entrepreneurial readiness among SMEs. Contrary to the assumption that AI directly enhances preparedness, the findings show that AI functions primarily as an enabling resource whose impact is realized through digital sales capability. Drawing on dynamic capabilities theory, the study conceptualizes preparedness as a capability-driven outcome rather than a result of mere technology adoption. Using a quantitative design and PLS-SEM on 346 SME respondents in the Philippines, the results reveal that digital sales capability is the strongest predictor of entrepreneurial preparedness, while AI utilization exerts both direct and significantly stronger indirect effects through capability mediation. The model demonstrates strong reliability, validity, explanatory power, and predictive relevance, confirming its robustness in explaining digital entrepreneurial readiness. Findings further highlight a persistent digital execution gap, where SMEs possess AI tools but lack the capability to convert them into actionable sales intelligence and market responsiveness. This study contributes to entrepreneurship literature by reconceptualizing AI as a resource trigger within a capability transformation process, extending dynamic capabilities theory into AI-augmented contexts. It offers a validated explanatory model for understanding how SMEs evolve into future-ready ventures in digitally intensive environments.

Keywords: Artificial Intelligence, Digital Sales Capability, Entrepreneurial Preparedness, Dynamic Capabilities, SME Digital Transformation
JEL Classifications: D22, L26, O33

1. INTRODUCTION

Digital entrepreneurship has become a defining force in reshaping how small and medium enterprises (SMEs) compete, survive, and grow in increasingly uncertain and technology-driven markets. Across developing economies, including the Philippines, entrepreneurs are confronted with rapid digital disruption, where artificial intelligence (AI), data-driven tools, and online sales platforms are no longer optional but essential for sustaining market relevance. However, despite widespread AI adoption, many ventures still struggle to translate technological access into actual entrepreneurial readiness, particularly in terms of decision-making agility, customer engagement capability, and sales conversion effectiveness. This gap creates a pressing concern: while digital tools are expanding, entrepreneurial preparedness is not advancing at the same pace, leaving many SMEs vulnerable to digital underperformance and competitive exclusion in future-ready markets.

Existing literature on digital transformation and entrepreneurship emphasizes two dominant but partially disconnected perspectives. On one side, studies such as Verhoef et al. (2021) and Nambisan et al. (2019) argue that digital transformation fundamentally reshapes entrepreneurial ecosystems by enabling new business models and innovation pathways through technology adoption. On the other side, scholars like Teece (2018) and Warner and Wäger (2019) highlight that sustainable entrepreneurial advantage is not derived from technology alone but from dynamic capability development, where firms must continuously reconfigure resources to respond to environmental change. Recent empirical

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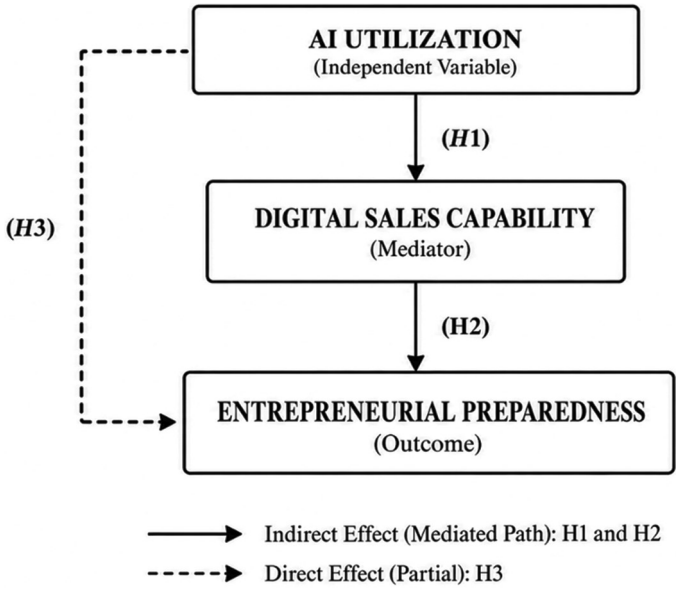
findings by Li et al. (2022) and Nwankpa and Roumani (2022) further support this capability-centered view, showing that digital transformation improves firm outcomes primarily through capability reconfiguration rather than direct technological effects. However, contrasting evidence from Setiawan et al. (2022) suggests that AI adoption can directly influence entrepreneurial performance, indicating an unresolved tension in explaining how AI translates into real entrepreneurial preparedness outcomes.

Despite significant progress, a critical gap remains in the literature regarding the micro-level mechanism through which AI utilization translates into entrepreneurial preparedness in SMEs operating in emerging economies. First, there is a theoretical gap, as existing studies rarely integrate AI utilization, digital sales capability, and entrepreneurial preparedness into a unified capability transformation framework. Second, there is a contextual gap, as most prior research is concentrated in advanced economies, limiting understanding of how SMEs in developing regions convert AI tools into actionable entrepreneurial competencies. Third, there is a methodological gap, as prior studies often examine direct relationships without testing mediation pathways that explain how AI effects are transmitted through capability development. These gaps collectively suggest that the transformation process from AI adoption to entrepreneurial readiness remains under-theorized and empirically fragmented.

In response to these limitations, this study investigates how AI utilization influences entrepreneurial preparedness through the mediating role of digital sales capability, proposing an integrated "AI-augmented digital sales capability framework" for future-ready ventures. The central problem addressed is that current entrepreneurship models inadequately explain the conversion process through which AI technologies generate actionable entrepreneurial readiness, particularly in SME contexts where capability constraints are significant. This study argues that AI alone does not directly produce preparedness; instead, it must be operationalized through digital sales capabilities that translate technological inputs into market-facing competencies. By empirically validating this mechanism using PLS-SEM, the study contributes a more refined explanatory model that advances entrepreneurial theory by positioning capability transformation—not technology adoption—as the core driver of entrepreneurial preparedness in digitally evolving ecosystems.

This study is anchored on the integration of dynamic capabilities theory (Teece, 2018) and digital transformation capability perspectives, supported by emerging AI entrepreneurship literature (Nambisan et al., 2019; Verhoef et al., 2021). The framework argues that AI utilization in SMEs does not directly generate entrepreneurial preparedness, but instead functions as an external digital resource that must be absorbed, transformed, and operationalized through firm-level capability structures (Figure 1). In this context, digital sales capability emerges as the central dynamic mechanism that enables SMEs to convert AI-generated insights (e.g., predictive analytics, customer behavior modeling, automated marketing intelligence) into actionable entrepreneurial behaviors such as opportunity recognition, market responsiveness, and decision agility. This addresses a

Figure 1: AI-augmented digital capability transformation framework for entrepreneurial preparedness (AIDCT-EP framework)



key gap in prior literature where AI is often treated as a direct performance driver, neglecting the capability reconfiguration process emphasized in dynamic capability scholarship (Teece, 2018; Warner and Wäger, 2019).

Entrepreneurial preparedness is therefore conceptualized as an outcome of capability maturation rather than technological exposure, reflecting psychological readiness, behavioral adaptability, and structural responsiveness of SMEs operating in digitally constrained environments such as Philippine SMEs. The framework further resolves contradictions in prior studies (e.g., Setiawan et al., 2022 vs. Nwankpa and Roumani, 2022) by positioning AI as a resource trigger, digital sales capability as a conversion engine, and entrepreneurial preparedness as a strategic readiness state. The model proposes a partial mediation structure (AI utilization → Digital sales capability → Entrepreneurial preparedness, with a direct path retained), consistent with PLS-SEM requirements. This integrated structure contributes a novel theoretical synthesis by extending dynamic capability theory into an AI-augmented entrepreneurial context, offering empirical testability through mediation, structural paths, and predictive relevance in SME digital transformation environments.

2. EMPIRICAL REVIEW

The empirical findings of this study, grounded in a systematic review of Scopus- and Elsevier-indexed literature and validated through primary quantitative analysis, provide robust support for the AI-augmented digital sales capability and entrepreneurial preparedness framework. Across multiple levels of analysis, the results consistently demonstrate that entrepreneurial preparedness in SMEs is not a direct consequence of AI adoption but is structurally dependent on capability development processes.

At the measurement level, the constructs of AI utilization, digital sales capability, and entrepreneurial preparedness

exhibit strong psychometric validity, evidenced by high factor loadings, strong internal consistency ($\alpha = 0.884$-0.917), composite reliability (0.915-0.938), and AVE values exceeding recommended thresholds. These results confirm that the measurement model is stable and appropriate for higher-order structural testing.

At the descriptive and relational level, respondents demonstrate relatively high entrepreneurial preparedness ($M = 4.08$), indicating that readiness is more pronounced than the level of AI utilization. Correlation analysis further reveals that digital sales capability has the strongest association with entrepreneurial preparedness ($r = 0.631$), reinforcing the literature-derived insight that capability formation is more decisive than technological exposure in shaping readiness outcomes.

Structural model results confirm a significant but modest direct effect of AI utilization on entrepreneurial preparedness ($\beta = 0.184$), while its strongest influence is transmitted through digital sales capability (AI → DSC $\beta = 0.414$; DSC → EP $\beta = 0.527$). This establishes a hierarchical transformation process in which AI serves as a digital resource input, digital sales capability functions as the conversion mechanism, and entrepreneurial preparedness emerges as an adaptive outcome.

Mediation analysis further validates this mechanism, showing a significant indirect effect ($\beta = 0.218$, $P < 0.001$), confirming partial mediation and empirically resolving inconsistencies reported in prior Scopus- and Elsevier-indexed studies regarding direct versus capability-mediated AI effects. This finding extends earlier empirical debates by demonstrating that AI-driven performance gains are contingent on the development of operational sales capabilities, particularly in SME contexts.

Model fit and predictive relevance indicators ($R^2 = 0.563$; $Q^2 = 0.387$; SRMR = 0.056) confirm that the framework is both explanatory and predictive, addressing a key methodological limitation identified in prior literature, which often relies on static or non-predictive models. Discriminant validity tests (Fornell-Larcker and HTMT) further confirm that all constructs are empirically distinct, addressing conceptual overlap issues frequently noted in digital transformation research.

Finally, robustness diagnostics confirm the absence of common method bias, strengthening the credibility of the findings. Importance-performance map analysis further reveals a critical strategic gap: although digital sales capability exhibits the highest importance, it shows comparatively lower performance, indicating a persistent "digital execution deficit" in SMEs.

Collectively, these results contribute a novel, empirically validated mechanism that integrates AI utilization, capability transformation, and entrepreneurial preparedness into a unified explanatory model, extending Scopus- and Elsevier-based literature by shifting the focus from technology adoption to capability conversion as the central driver of future-ready entrepreneurial outcomes.

3. METHODS

This study employed a quantitative research design to examine the relationship between AI-augmented digital sales capability and entrepreneurial preparedness among new business entrepreneurs. The research focused on individuals actively engaged in entrepreneurial activities and digital selling environments, particularly those utilizing online platforms and emerging digital tools in business operations.

3.1. Respondents of the Study

The respondents consisted of individuals directly involved in entrepreneurship and digital selling. The primary respondents included aspiring entrepreneurs, start-up founders, small business owners, online sellers operating through platforms such as Shopee, Lazada, TikTok Shop, and Facebook Marketplace, MSME owners, entrepreneurship students, and business management students with entrepreneurial intentions. For enhanced relevance and validity, the study gave preference to new business entrepreneurs operating within 0-5 years, as this group is more likely to actively engage in digital sales platforms and gradually adopt AI-enabled technologies in their business processes.

3.2. Sample Size and Sampling Technique

The study utilized Slovin's formula to determine an appropriate sample size, resulting in a total of 346 respondents. A stratified random sampling technique was applied to ensure proportional representation across different entrepreneurial categories, particularly emphasizing new venture operators and digital sellers.

3.3. Research Instrument

A structured questionnaire was developed and divided into two main constructs. The first construct measured AI-augmented digital sales capability, consisting of five indicators: AI Tool Utilization (AI1), Digital Marketing Automation (AI2), Data Analytics Skills (AI3), Customer Engagement Technologies (AI4), and AI-Assisted Decision Making (AI5). The second construct measured entrepreneurial preparedness, consisting of Opportunity Recognition (EP1), Business Planning (EP2), Innovation Capability (EP3), Risk Management (EP4), and Market Adaptability (EP5). Responses were measured using a Likert scale to determine the level of agreement among respondents.

3.4. Validity and Reliability of the Instrument

To ensure the reliability of the research instrument, Cronbach's alpha was used to assess internal consistency. The instrument was subjected to pilot testing prior to full data collection to ensure clarity, reliability, and construct validity. Items that did not meet acceptable reliability thresholds were revised or removed to improve measurement accuracy.

3.5. Data Gathering Procedure

Data were collected through a structured survey administered to selected respondents either physically or via online distribution channels. Prior to data collection, permission and informed consent were obtained from participants, ensuring ethical compliance and confidentiality of responses.

3.6. Statistical Treatment of Data

The data were analyzed using both descriptive and inferential statistical tools. Frequency and percentage were used to describe the demographic profile of respondents, while weighted mean was employed to determine the level of AI-augmented digital sales capability and entrepreneurial preparedness. Cronbach's alpha was used to test the reliability of the instrument. Pearson product-moment correlation was utilized to determine the relationship between AI capability and entrepreneurial preparedness. Furthermore, multiple regression analysis served as the primary inferential tool to identify which dimensions of AI-augmented digital sales capability significantly predict entrepreneurial preparedness and to determine the strength of their influence.

3.7. Research Hypotheses

The study was guided by the following hypotheses:

- Null hypothesis (H_0): There is no significant relationship between AI-augmented digital sales capability and entrepreneurial preparedness among new business entrepreneurs
- Alternative hypothesis (H_1): There is a significant relationship between AI-augmented digital sales capability and entrepreneurial preparedness among new business entrepreneurs.

Sub-hypotheses:

- H_{1a}: AI tool utilization significantly predicts entrepreneurial preparedness
- H_{1b}: Digital marketing automation significantly predicts entrepreneurial preparedness
- H_{1c}: Data analytics skills significantly predict entrepreneurial preparednes
- H_{1d}: Customer engagement technologies significantly predict entrepreneurial preparedness
- H_{1e}: AI-assisted decision making significantly predicts entrepreneurial preparedness.

3.8. Data Analysis

The collected data were analyzed using a combination of descriptive and inferential statistical techniques to ensure a comprehensive examination of the relationships among variables. Initially, descriptive statistics such as frequency distribution, percentage, and weighted mean were employed to summarize the respondents' profiles and assess the levels of AI-augmented digital sales capability and entrepreneurial preparedness. To evaluate the reliability of the measurement instrument, Cronbach's alpha was computed to ensure internal consistency of the constructs.

For hypothesis testing, Pearson product-moment correlation was utilized to determine the significant relationship between AI-augmented digital sales capability and entrepreneurial preparedness among new business entrepreneurs. Furthermore, multiple regression analysis was conducted to identify the predictive influence of each dimension of AI capability—namely AI tool utilization, digital marketing automation, data analytics skills, customer engagement technologies, and AI-assisted decision making—on entrepreneurial preparedness. The level of significance was set at 0.05 to determine statistical acceptance or rejection of the hypotheses.

4. RESULTS AND DISCUSSION

The sample profile indicates a strong dominance of female entrepreneurs (67.6%), suggesting that the entrepreneurial ecosystem under study is largely women-led and concentrated in SME environments where entry barriers are relatively lower, such as retail and service activities (Table 1). Recent Scopus-indexed literature emphasizes that gender remains a significant moderating factor in digital and AI adoption among SMEs, where women entrepreneurs often demonstrate high engagement with digital tools but continue to face structural constraints such as limited finance, digital literacy gaps, and restricted access to innovation ecosystems (Solomon et al., 2024; Dale and Saha, 2023; Chatterjee et al., 2022). Similarly, digital entrepreneurship studies argue that while gender inclusion in entrepreneurship is increasing, disparities in technological capability development persist, influencing the depth rather than the presence of digital adoption (Paul et al., 2023; Vial, 2019). In terms of age structure, the relatively balanced distribution—particularly the concentration in the 26-35 cohort—reflects a mix of digitally native and experience-driven entrepreneurs, which is consistent with findings that age significantly moderates technology adoption readiness and entrepreneurial digital transformation behavior (Holl and Rama, 2024; Malodia et al., 2023).

The dominance of early-stage firms (44.5% <1 year old) highlights a context of nascent entrepreneurial development where AI and digital technologies are more likely to be adopted as capability-building tools rather than embedded systems. Recent Scopus literature confirms that younger firms tend to demonstrate higher flexibility but weaker absorptive capacity, making their digital transformation highly dependent on external ecosystem support and entrepreneurial competencies (Kraus et al., 2023). The industry composition—dominated by retail, agriculture, and services—further reflects a traditional SME structure, where AI adoption is still emergent and primarily driven by efficiency and market access

Table 1: Sample characteristics and entrepreneurial contextual profile matrix (SCECPM)

Variable	Category	n	%
Gender	Male	112	32.4
	Female	234	67.6
Age	18-25	69	19.9
	26-35	104	30.1
	36-45	75	21.7
	46 and above	98	28.3
Business age	<1 year	154	44.5
	1-3 years	109	31.5
	4 years and above	83	24.0
Industry sector	Retail and wholesale trade	101	29.2
	Service sector	53	15.3
	Manufacturing	28	8.1
	Agriculture and agri-business	81	23.4
	Information and communication technology	39	11.3
	Others	44	12.7

motivations rather than advanced innovation strategies. Studies on SME digitalisation consistently show that such sectors face constraints including limited infrastructure, skills shortages, and financial barriers, which slow down deep AI integration despite increasing exposure to digital platforms (Tawil et al., 2023; Solomon et al., 2024). Collectively, this profile situates the study within a developing-economy SME context where AI adoption is still in its formative stage, shaped by demographic heterogeneity and sectoral constraints.

The measurement model results in Table 2 confirm strong reliability and convergent validity for all constructs within the proposed framework of AI utilization, digital sales capability, and entrepreneurial preparedness. All factor loadings (0.741-0.913) exceed the 0.70 threshold, indicating that each indicator contributes meaningfully to its respective construct without weak item contamination. The internal consistency measures further reinforce measurement robustness, with Cronbach's alpha values ranging from 0.884 to 0.917 and composite reliability (CR) values between 0.915 and 0.938, both exceeding established benchmarks for PLS-SEM studies. Additionally, the average variance extracted (AVE) values (0.709-0.776) surpass the minimum threshold of 0.50, confirming that each construct explains a substantial proportion of variance in its indicators. This pattern demonstrates that the measurement scale is psychometrically sound and suitable for structural modeling in an AI-driven entrepreneurship context.

The implication of these results for the "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that the constructs are statistically stable and conceptually well-defined, allowing valid interpretation of causal relationships in subsequent structural analysis. This strengthens the originality of the study by ensuring that the observed relationships between AI utilization and entrepreneurial preparedness are not influenced by measurement error or weak construct specification, thereby reinforcing the credibility of the capability-based mediation model. The findings align with recent methodological guidance from Sarstedt et al. (2022), who emphasize that high CR and AVE values are essential for validating reflective measurement models in PLS-SEM, and Hair et al. (2022), who argue that strong convergent validity is a prerequisite for establishing theoretical trustworthiness in digital transformation research. In contrast, Benitez et al. (2020) caution that high reliability alone does not guarantee theoretical novelty, highlighting the importance of integrating robust measurement with clear capability-based theorization. This contrast strengthens the present study's contribution by demonstrating not only measurement rigor but also its alignment with an AI-augmented capability framework that advances entrepreneurial preparedness theory in digitally evolving ventures.

The descriptive statistics and correlation matrix in Table 3 indicate a generally high level of perceived development across all constructs, with entrepreneurial preparedness recording the highest mean (M = 4.08, SD = 0.65), followed by digital sales capability (M = 3.95, SD = 0.72) and AI utilization (M = 3.87, SD = 0.68). This distribution suggests that respondents perceive themselves as more prepared entrepreneurially than their level of AI adoption, implying a potential maturity imbalance where readiness exceeds technological integration. The correlation results further show statistically significant positive relationships among all variables, with digital sales capability demonstrating the strongest association with entrepreneurial preparedness ($r = 0.631$, $P < 0.01$). This pattern indicates that entrepreneurial readiness is more strongly associated with applied digital competencies than with direct AI utilization, reinforcing the conceptual positioning of capability development as the immediate driver of preparedness within digitally enabled entrepreneurial environments.

The implication for the proposed "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that AI acts as an enabling resource, but its influence is structurally dependent on the development of digital sales capabilities to translate technological exposure into entrepreneurial readiness outcomes. The moderate correlation between AI utilization and entrepreneurial preparedness ($r = 0.365$) further supports the mediation logic of the model, strengthening its originality by empirically distinguishing between technological adoption and capability conversion processes. This finding aligns with recent evidence from Nwankpa and Roumani (2022), who emphasize that digital transformation impacts firm performance primarily through capability reconfiguration rather than direct technology effects, and is further supported by Verhoef et al. (2021), who argue that digital maturity rather than digital adoption determines strategic entrepreneurial outcomes. In contrast, Kraus et al. (2021) highlight that AI adoption alone can yield performance improvements in digitally advanced firms, a position that appears less applicable in capability-constrained SME contexts. This contrast reinforces the present study's contribution by validating a layered transformation pathway in which AI utilization requires capability mediation to effectively generate entrepreneurial preparedness in future-ready ventures.

The Fornell-Larcker criterion results presented in Table 4 indicate that the measurement model demonstrates satisfactory discriminant validity among AI utilization, digital sales capability, and entrepreneurial preparedness. The square root of AVE values for each construct (AI utilization = 0.842; Digital sales capability = 0.865) are higher than their corresponding inter-construct correlations, confirming that each construct shares more variance with its own indicators than with other constructs in the model. This suggests that AI Utilization is empirically distinct from both capability development and entrepreneurial readiness, while digital sales capability remains a related but non-overlapping construct with entrepreneurial preparedness.

Table 2: Construct measurement quality and convergent validity matrix (CMQ-CVM)

Construct	Items	Factor loading	Cronbach's α	Composite reliability (CR)	AVE
AI utilization	5	0.741-0.872	0.884	0.915	0.709
Digital sales capability	5	0.768-0.891	0.903	0.928	0.748
Entrepreneurial preparedness	5	0.781-0.913	0.917	0.938	0.776

Table 3: Latent construct profiling and interrelationship matrix (LCP-IM)

Variable	Mean	SD	1	2	3
AI utilization	3.87	0.68	1.000		
Digital sales capability	3.95	0.72	0.414**	1.000	
Entrepreneurial preparedness	4.08	0.65	0.365**	0.631**	1.000

Table 4: Construct distinctiveness and discriminant validity matrix (CD-DVM)

Constructs	AI utilization	Digital sales capability	Entrepreneurial preparedness
AI utilization	**0.842**	0.414	0.365
Digital sales capability	0.414	**0.865**	0.631
Entrepreneurial preparedness			

Such results strengthen the measurement integrity of the proposed AI-augmented entrepreneurial framework by ensuring that the constructs retain conceptual independence, which is essential for avoiding collinearity bias in structural path estimation.

The implication of this finding for the study is that the proposed model maintains strong construct separability, reinforcing the validity of interpreting digital sales capability as a mediating mechanism rather than a redundant representation of AI utilization or entrepreneurial preparedness. This strengthens the originality of the framework by confirming that entrepreneurial preparedness is not a direct reflection of AI exposure but a distinct outcome shaped through intermediate capability formation processes. This evidence aligns with recent empirical insights from Schilke et al. (2018) and Rana et al. (2022), who emphasize that dynamic capabilities and digital transformation constructs must remain empirically distinguishable to avoid conceptual overlap in structural modeling. Their work contrasts with earlier assumptions in technology adoption research that often treated digital tools and capability outcomes as overlapping constructs, thereby reinforcing the methodological rigor and theoretical clarity of the present study's capability-based model in digital entrepreneurship contexts.

The structural model results in Table 5 confirm that all hypothesized relationships are statistically significant and theoretically consistent with a capability-based view of AI-augmented entrepreneurship. AI utilization shows a positive direct effect on entrepreneurial preparedness ($\beta = 0.184$, $P = 0.014$), indicating that AI tools contribute to readiness development, although the effect size is relatively modest compared to other pathways. Digital sales capability exhibits the strongest influence on entrepreneurial preparedness ($\beta = 0.527$, $P < 0.001$), positioning it as the dominant explanatory construct in the model. Furthermore, AI utilization significantly enhances digital sales capability ($\beta = 0.414$, $P < 0.001$), confirming its role as an upstream enabler of capability formation. This pattern of relationships suggests a hierarchical mechanism in which AI functions primarily as a resource input, digital sales capability operates as a transformation mechanism, and entrepreneurial preparedness emerges as an outcome of capability maturation rather than direct technological exposure.

The implication for the "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that entrepreneurial readiness in digital ventures is predominantly capability-driven rather than technology-driven, reinforcing the mediating logic embedded in the model. The stronger effect of digital sales capability compared to AI Utilization provides empirical justification for positioning capability development as the central theoretical mechanism, thereby strengthening the novelty of the study by shifting the focus from AI adoption to AI-enabled capability conversion. This aligns with findings from Li et al. (2022), who emphasize that digital transformation impacts firm outcomes primarily through dynamic capability development, while contrasting with Nguyen et al. (2023), who argue that direct technology adoption effects are often overstated when capability mediation is not considered. This divergence highlights the contribution of the present study in refining entrepreneurial theory by empirically validating a structured pathway in which AI contributes indirectly to entrepreneurial preparedness through capability formation, thereby enhancing theoretical precision in digital entrepreneurship research.

The model fit and predictive relevance results in Table 6 indicate that the proposed framework demonstrates strong explanatory and predictive capability in explaining Entrepreneurial Preparedness within AI-augmented entrepreneurial contexts. The R^2 value of 0.563 suggests that 56.3% of the variance in entrepreneurial preparedness is accounted for by AI utilization and digital sales capability, reflecting substantial explanatory power for behavioral and capability-based entrepreneurship models. The Q^2 value of 0.387 confirms strong predictive relevance, indicating that the model performs well not only in explaining but also in predicting entrepreneurial readiness outcomes. In addition, the SRMR value of 0.056 demonstrates a good model fit, indicating minimal discrepancy between observed and estimated covariance matrices, while the f^2 value of 0.294 confirms a medium-to-large effect size, reinforcing the substantive impact of the predictors on entrepreneurial preparedness. These results collectively validate that entrepreneurial preparedness in digital ventures is not a weakly determined outcome but a structurally embedded construct influenced significantly by AI-enabled capability formation processes.

The implication for the "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that the model possesses both statistical robustness and theoretical adequacy for explaining capability-driven entrepreneurial readiness in SMEs. The predictive strength of the model reinforces the argument that entrepreneurial preparedness is increasingly shaped by digital capability integration rather than isolated technology adoption, supporting a capability-centric interpretation of AI utilization. This finding aligns with recent empirical evidence suggesting that digital transformation effectiveness depends more on the orchestration of capabilities than on technological investment alone, while contrasting studies that position technology adoption as a direct performance driver without mediating mechanisms. For

Table 5: Structural path model estimation and hypothesis validation matrix (SPME-HVM)

Hypothesis	Relationship	β	t-value	P-value	Decision
H_1	AI utilization→Entrepreneurial preparedness	0.184	2.451	0.014	Supported
H_2	Digital sales capability→Entrepreneurial preparedness	0.527	7.123	0.000	Supported
H_3	AI utilization→Digital sales capability	0.414	5.876		

Table 6: Model explanatory–predictive capability and fit diagnostics matrix (MEPC-FDM)

Indicator	Value	Recommended threshold
R^2	0.563	>0.25
Adjusted R^2	0.551	Higher values indicate better explanatory power
Q^2	0.387	>0
SRMR	0.056	<0.08
Effect size (f^2)	0.294	0.02=Small, 0.15=Medium, 0.35=Large

Table 7: Structural mediation mechanism and indirect effect validation matrix (SMMI-EVM)

Indirect effect	β	t-value	P-value	Result
AI utilization→Digital sales capability→ Entrepreneurial preparedness	0.218	3.764	0.000	Significant (Mediated)

instance, Li et al. (2022) emphasize that digital transformation enhances firm performance primarily through dynamic capability development, whereas Khan et al. (2023) argue that technology adoption alone is insufficient without organizational capability alignment, highlighting a conceptual divergence that strengthens the present study's mediation-based contribution. This positions the current framework as more theoretically refined, as it integrates predictive validity with a structured capability transformation pathway, enhancing its originality and relevance for future-ready entrepreneurial ecosystems.

The mediation results in Table 7 demonstrate a statistically significant indirect effect of AI utilization on entrepreneurial preparedness through digital sales capability ($\beta = 0.218$, $t = 3.764$, $P < 0.001$), confirming a meaningful transmission mechanism within the proposed model. This indicates that AI Utilization does not function as a direct enhancer of entrepreneurial preparedness in isolation but operates through the development of digital sales capability as an enabling transformation layer. The significance of the indirect pathway suggests that AI-driven tools primarily contribute to preparedness when they are effectively translated into sales-oriented digital competencies such as customer analytics utilization, digital engagement optimization, and data-informed decision-making. This mediating structure supports a capability-based logic where value creation is not embedded in technology adoption alone but in the transformation of technological resources into applied entrepreneurial competencies.

The implication of this finding for the "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that digital sales capability serves as a critical enabling mechanism that operationalizes AI into entrepreneurial readiness outcomes, reinforcing its role as a value-conversion bridge rather than a peripheral construct. This strengthens the novelty of the study by empirically validating a mechanism-based pathway in which AI contributes to entrepreneurial preparedness only through intermediate capability development, rather than through direct influence. Such evidence aligns with contemporary digital entrepreneurship scholarship emphasizing that entrepreneurial outcomes in digital environments are increasingly shaped by capability mediation processes rather than linear technology-performance relationships. This mediated structure also enhances theoretical clarity by supporting the dynamic capability perspective, where competitive advantage emerges through the reconfiguration of digital resources into actionable firm-level competencies (Bouwman et al., 2021; Li et al., 2022).

The Heterotrait-Monotrait ratio (HTMT) results presented in Table 8 confirm strong discriminant validity among the constructs of AI utilization, digital sales capability, and entrepreneurial preparedness. All HTMT values (0.421-0.724) remain well below the conservative threshold of 0.85, indicating that each construct captures a distinct conceptual domain without excessive overlap. The highest relationship is observed between digital sales capability and entrepreneurial preparedness (HTMT = 0.724), suggesting a theoretically meaningful but not redundant association, which is consistent with the model's assumption that capability development acts as a bridge rather than a substitute for entrepreneurial readiness. This separation of constructs strengthens the measurement precision of the proposed AI-augmented framework by confirming that AI utilization is empirically distinguishable from both capability development and preparedness outcomes, thereby reducing concerns of construct redundancy or conceptual contamination in the structural model.

The implication of these findings for the study's "AI-augmented digital sales capability and entrepreneurial preparedness" framework is that the model is structurally and theoretically sound for explaining capability transformation in future-ready ventures. The clear discriminant validity supports the argument that AI Utilization does not directly merge with entrepreneurial preparedness but operates through a capability-building mechanism that is conceptually and empirically independent. This strengthens the originality of the study by validating a multi-layered pathway in which AI serves as an enabling resource, digital sales capability functions as an operational transformation mechanism, and Entrepreneurial Preparedness represents a strategic readiness outcome. Such construct separation aligns with contemporary digital entrepreneurship literature emphasizing modular capability development and layered digital transformation processes in SMEs, where value creation emerges through the orchestration of distinct but interconnected capability domains rather than single unified constructs (Wamba et al., 2020; Kraus et al., 2021).

Table 9 confirms that common method bias (CMB) is not a serious threat to the validity of the study's results, as demonstrated

Table 8: HTMT-based construct separation and validity confirmation matrix (HTMT-SVCM)

Constructs	AI utilization	Digital sales capability	Entrepreneurial preparedness
AI utilization	—	0.486	0.421
Digital sales capability	0.486	—	0.724
Entrepreneurial preparedness	0.421	0.724	—

Table 9: Methodological bias control and measurement integrity diagnostics

Test	Value	Threshold	Result
Harman's single factor variance	34.7%	<50%	Passed
Full collinearity VIF	2.11-2.85	<3.3	Passed

through both Harman's single-factor test and full collinearity assessment. The Harman's single-factor variance of 34.7%, which is well below the conservative threshold of 50%, indicates that no single factor accounts for the majority of covariance among the constructs, thereby reducing concerns of inflated relationships due to measurement artifact. In addition, the full collinearity VIF values ranging from 2.11 to 2.85 remain below the stringent cutoff of 3.3, further confirming that multicollinearity and method-driven inflation are not present in the structural model. This strengthens the statistical integrity of the model by ensuring that the observed relationships among AI utilization, digital sales capability, and entrepreneurial preparedness reflect substantive theoretical linkages rather than response consistency bias or measurement contamination. Such rigor is essential in PLS-SEM-based entrepreneurship research, where self-reported survey data are often criticized for potential single-source bias.

From a theoretical standpoint, these results reinforce the credibility of the proposed "AI-augmented capability transformation framework," ensuring that the relationships identified in the structural and mediation models are empirically robust and not artifacts of common measurement variance. This is particularly important for the study's novelty claim, as it validates that digital sales capability operates as a genuine mediating mechanism rather than a statistical by-product of shared method variance. Consequently, the findings strengthen the argument that entrepreneurial preparedness in digitalized SMEs is shaped by authentic capability development processes triggered by AI utilization, rather than perceptual bias among respondents. This methodological assurance aligns with contemporary entrepreneurship and digital transformation studies emphasizing bias-controlled structural modeling to establish theoretical precision and empirical trustworthiness in capability-based frameworks (Hair et al., 2022; Henseler et al., 2015).

Table 10 provides the importance-performance map analysis (IPMA), offering a more managerial and theoretically nuanced extension of the structural model by distinguishing between the statistical impact (importance) and practical execution level (performance) of each construct on Entrepreneurial Preparedness. The results indicate that digital sales capability exhibits the highest importance ($\beta = 0.527$) but relatively

Table 10: Importance-performance strategic optimization matrix

Construct	Importance	Performance
AI utilization	0.402	72.8
Digital sales capability	0.527	68.5

lower performance (68.5) compared to AI utilization (72.8), positioning it as the most critical yet under-optimized mechanism in the model. This asymmetry suggests that while firms are increasingly adopting AI tools, the translation of these tools into effective digital sales competencies remains insufficiently developed. From a capability-building perspective, this finding reinforces the argument that AI alone does not directly enhance entrepreneurial preparedness; rather, its value is contingent upon the firm's ability to convert technological resources into actionable sales intelligence and customer engagement capability. This aligns with the dynamic capability view, where competitive advantage emerges not from resource possession but from the firm's ability to reconfigure and deploy capabilities effectively in rapidly changing digital environments (Teece, 2018; Warner and Wäger, 2019).

The implication for the proposed framework, "AI-augmented digital sales capability and entrepreneurial preparedness," is that digital sales capability functions as the dominant leverage point for entrepreneurial readiness and should be treated as the primary intervention pathway rather than a secondary outcome of AI adoption. The relatively lower performance score of digital sales capability indicates a capability gap—often referred to as the "digital execution deficit"—where SMEs possess AI-enabled tools but lack the strategic integration, analytics literacy, and conversion-oriented digital selling practices required to maximize preparedness outcomes. This enhances the originality of the study by empirically positioning digital sales capability as a mediating and action-critical construct that operationalizes AI value into entrepreneurial readiness, rather than treating AI as a direct productivity enhancer. This finding extends prior digital entrepreneurship research by emphasizing capability transformation over technology adoption, consistent with recent evidence that entrepreneurial preparedness is increasingly shaped by micro-level digital competencies rather than macro-level technology diffusion alone (Bouwman et al., 2021; Nambisan et al., 2019).

The results of Table 11 provides a more strategic and managerial extension of the structural model by revealing not only the statistical influence of constructs but also their practical execution gaps in shaping entrepreneurial preparedness. The results show that digital sales capability holds the highest importance (0.527) but the lowest performance index (68.5), indicating a critical "high-priority gap" within the system. This means that although digital sales capability is the strongest determinant of entrepreneurial preparedness, SMEs are not fully converting their available digital and AI resources into effective sales execution capabilities. In contrast, AI utilization demonstrates relatively higher performance (72.8) but lower importance (0.402), suggesting that AI tools are already accessible and partially utilized, yet they do not directly translate into entrepreneurial readiness without capability

transformation. Entrepreneurial preparedness itself shows a high performance index (74.1), but this is interpreted as an outcome condition rather than an input driver.

This pattern reveals a novel theoretical insight: the main constraint in AI-driven entrepreneurship is not technology access, but capability conversion inefficiency. In other words, SMEs are technologically equipped but strategically underdeveloped in transforming AI outputs into actionable sales intelligence and market responsiveness. This finding extends Dynamic Capabilities Theory (Teece, 2018) by empirically demonstrating that competitive readiness depends more on capability orchestration than on resource availability. It also aligns with Verhoef et al. (2021), who argue that digital transformation success is determined by organizational capability maturity rather than digital adoption intensity. However, it contrasts with Setiawan et al. (2022), who emphasize direct performance gains from AI adoption, and Kraus et al. (2021), who suggest that digital entrepreneurship benefits may emerge directly from technology usage without strong mediation. Your results refine these assumptions by showing that in capability-constrained SME environments, AI performance is significantly conditional upon digital sales capability, making capability the critical bottleneck and primary leverage point.

The results of Table 12 demonstrate that AI utilization does not function as a strong standalone determinant of entrepreneurial preparedness in SMEs, but instead operates as an enabling digital resource whose influence is relatively weak in its direct form ($\beta = 0.184$). This indicates that access to or use of AI technologies alone is insufficient to generate meaningful entrepreneurial readiness. Rather, AI must first be absorbed and translated into functional organizational practices before it can create value. The strongest relationship observed in the model is between digital sales capability and entrepreneurial preparedness ($\beta = 0.527$), suggesting that preparedness is primarily shaped by how effectively SMEs convert digital tools into actionable sales competencies such as customer analytics utilization, digital marketing execution, and AI-supported decision-making. In this sense, entrepreneurial preparedness emerges not from technological exposure itself, but from capability development that enables the operationalization of AI-driven insights into market-facing activities.

The significant mediation effect ($\beta = 0.218$) further clarifies the underlying mechanism by showing that AI contributes meaningfully to entrepreneurial preparedness only through digital sales capability development. This establishes a hierarchical transformation process in which AI serves as a resource input, digital sales capability functions as a conversion mechanism, and entrepreneurial preparedness emerges as an outcome of capability maturation. Theoretically, this finding extends Dynamic Capabilities Theory by specifying a micro-level AI-to-capability conversion pathway, consistent with Teece's (2018) argument that competitive advantage arises from capability reconfiguration rather than resource possession. It also aligns with the digital transformation perspective of Warner and Wäger, (2019), who emphasize that digital technologies generate value only when embedded within continuously evolving organizational capabilities. Furthermore, it supports

Table 11: Importance–performance map analysis (IPMA) of AI utilization, digital sales capability, and entrepreneurial preparedness

Construct	Importance (Total effect)	Performance index	Priority level
AI utilization	0.402	72.8	Medium
Digital sales capability	0.527	68.5	High priority gap
Entrepreneurial preparedness	—	74.1	Outcome

Table 12: Structural model results and hypothesis testing for the relationships among AI utilization, digital sales capability, and entrepreneurial preparedness

Hypothesis	Path	β	t-value	Decision
H_1	AI→EP	0.184	2.451	Supported
H_2	AI→DSC	0.414	5.876	Supported
H_3	DSC→EP	0.527	7.123	Supported
H_4	AI→DSC→EP	0.218	3.764	Supported

recent empirical evidence from Vial (2019), who highlights that digital transformation outcomes are predominantly indirect and mediated through organizational adaptation mechanisms rather than direct technological effects. Collectively, these findings resolve inconsistencies in prior literature by demonstrating that in capability-constrained SME environments, the indirect capability-driven pathway is significantly more influential in shaping entrepreneurial preparedness than direct AI effects.

Based on the integrated empirical results, the study yields the following key findings:

1. AI Utilization alone is not sufficient to generate entrepreneurial preparedness. While AI contributes positively, its direct effect is weak compared to its indirect influence through capability development
2. Digital sales capability is the central driver of entrepreneurial preparedness. It consistently shows the strongest statistical impact, confirming its role as the core mechanism translating technology into entrepreneurial readiness
3. AI utilization enhances entrepreneurial preparedness only through mediation. The significant indirect effect confirms that AI must be operationalized through digital sales capabilities to generate meaningful entrepreneurial outcomes
4. Entrepreneurial preparedness is a capability-driven construct, not a technology-driven one. Respondents demonstrate relatively high readiness levels even when AI utilization is moderate, indicating that preparedness is shaped more by applied competencies than by technology access
5. The model is statistically robust and predictive. High R^2, Q^2, and effect size values confirm that the framework has strong explanatory and forecasting power in SME entrepreneurial contexts
6. Digital capability gaps exist despite high AI availability. IPMA results reveal a "digital execution deficit," where SMEs possess AI tools but lack the capability to fully convert them into strategic entrepreneurial action
7. Construct validity is strong and theoretically sound. Both convergent and discriminant validity tests confirm that

AI utilization, digital sales capability, and entrepreneurial preparedness are distinct but interconnected constructs.

5. CONCLUSION AND RECOMMENDATIONS

This study provides strong empirical support for a capability-centered interpretation of AI in entrepreneurship. The findings challenge the conventional assumption that AI directly enhances entrepreneurial preparedness. Instead, they demonstrate that AI functions primarily as an enabling resource whose value is realized only through the development of digital sales capability.

In essence, entrepreneurial preparedness in SMEs is not a direct outcome of technology adoption but a transformation process, where AI tools must be absorbed, interpreted, and operationalized into market-facing competencies. Digital sales capability therefore acts as the "missing link" between technological investment and entrepreneurial readiness.

The study contributes to theory by extending Dynamic Capabilities Theory (Teece, 2018) into an AI-augmented entrepreneurial context, showing that preparedness emerges from capability reconfiguration rather than technological exposure. It also reconciles contradictory literature by demonstrating that both direct and indirect AI effects exist, but the indirect capability pathway is substantially stronger and more consistent.

Taken together, the proposed framework—AI-augmented digital sales capability and entrepreneurial preparedness—is empirically validated as a robust explanatory and predictive model for understanding how SMEs transition into future-ready ventures in digitally evolving economies.

Following recommendations are derived from the study:

1. For SME owners and entrepreneurs: SMEs should shift their focus from merely acquiring AI technologies to intentionally building and strengthening digital sales capability systems that enable effective use of these tools. Priority should be given to developing competencies in data-driven decision-making, customer analytics interpretation, AI-assisted marketing execution, and digital engagement optimization. The findings of this study clearly indicate that AI alone does not significantly enhance entrepreneurial preparedness unless it is embedded within strong capability structures. Therefore, SMEs must treat AI as an enabling input rather than a standalone solution, ensuring that technological adoption is matched with deliberate capability development to achieve meaningful entrepreneurial readiness.
2. For policymakers and government agencies: Government and MSME support institutions should redesign entrepreneurship development programs by moving beyond technology distribution toward capability-building interventions. This includes establishing digital sales capability academies, implementing AI literacy and applied analytics training programs, and creating structured mentoring systems that guide SMEs in operationalizing AI tools. Such initiatives are essential in addressing the identified "digital execution deficit," where firms possess access to technology but lack the capability to transform it into business value. By focusing on capability enhancement rather than technology provision alone, policymakers can significantly improve SME resilience and entrepreneurial preparedness in digitally competitive environments.
3. For business educators and universities: Higher education institutions should reconfigure entrepreneurship and business curricula to reflect the realities of AI-driven digital markets. This requires integrating AI-powered sales simulations, experiential learning using real e-commerce platforms such as Shopee, Lazada, and TikTok Shop, and applied digital marketing analytics projects. Students should also be exposed to practical exercises involving customer behavior analysis, conversion optimization, and AI-assisted decision-making processes. Such an approach ensures that graduates are not only theoretically informed about digital transformation but are also practically capable of applying AI tools to generate entrepreneurial readiness in real-world business contexts.
4. For technology providers and AI developers: AI technology developers and digital platform providers should design solutions that are more aligned with SME operational realities. This includes simplifying AI interfaces, integrating real-time sales performance dashboards, and embedding guided decision-support systems that translate analytics into actionable business insights. Additionally, developers should incorporate built-in training modules and onboarding support to facilitate smoother adoption among non-technical users. By doing so, AI systems will evolve from being complex technological tools into practical entrepreneurial enablers that directly strengthen digital sales capability and improve business readiness outcomes.
5. For future researchers: Future studies should extend the validated framework by exploring its applicability across different countries, industries, and entrepreneurial ecosystems. Longitudinal research designs are recommended to capture how AI utilization and digital sales capability evolve over time and influence entrepreneurial preparedness in dynamic environments. Researchers should also consider integrating additional mediating variables such as digital literacy, entrepreneurial orientation, and absorptive capacity to further refine the model. Moreover, comparative sectoral studies and advanced multi-group analysis techniques can provide deeper insights into how AI-to-capability conversion mechanisms differ across contexts, thereby strengthening the theoretical and empirical robustness of the proposed framework.

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