

Regulatory Factors Marketing Innovation Fintech Adoption and Responsible Entrepreneurship among Micro Small and Medium Enterprises in Ghana

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Abstract

Purpose

This study examines the influence of regulatory factors on responsible entrepreneurship among micro, small and medium enterprises (MSMEs) in Ghana, with marketing innovation as a mediator and fintech adoption as a moderator.

Design/methodology/approach

A cross-sectional survey of 220 MSME owners and managers in the New Juaben South Municipality was analysed using partial least squares structural equation modelling (PLS-SEM) with 5,000 bootstrap resamples.

Findings

Regulatory factors positively influenced marketing innovation ($\beta = .342, p = .001$), while marketing innovation positively affected responsible entrepreneurship ($\beta = .409, p < .001$). Marketing innovation also mediated the relationship between regulatory factors and responsible entrepreneurship ($\beta = .140, p = .015$). Although the direct regulatory effect was positive but modest ($\beta = .162, p = .044$, one-tailed), fintech adoption weakened the positive relationship between marketing innovation and responsible entrepreneurship ($\beta = -.169, p = .003$). Given the model's relatively poor fit (SRMR = .183; NFI = .770), the findings should be interpreted cautiously.

Originality/value

The study shows that regulatory support can promote responsible entrepreneurship through marketing innovation. It further demonstrates that fintech adoption does not necessarily strengthen this relationship and may reduce its positive effect when technological capabilities and strategic alignment are inadequate.

1.0 Introduction

Entrepreneurship is increasingly evaluated not only by the wealth it creates, but also by the way it treats employees, customers, communities and the natural environment. This broader expectation has strengthened interest in responsible entrepreneurship, which combines commercial initiative with ethical conduct, stakeholder welfare and environmental stewardship. Responsible entrepreneurship therefore moves beyond a narrow concern with short-term profit and asks how entrepreneurial activity can create economic and societal value without transferring unacceptable costs to other stakeholders (Adomako & Nguyen, 2024; Amoako et al., 2026; Muñoz & Cohen, 2018).

The issue is especially important for MSMEs. These enterprises create employment, supply essential products and services and provide livelihoods in settings where formal employment opportunities may

be limited. Yet their small size often exposes them to financial constraints, weak infrastructure, information gaps and uncertain policy implementation. In Ghana, the business population is also highly diverse and includes fixed-location, open-space and mobile enterprises, which complicates formal registration and the delivery of business support (Ghana Statistical Service, 2025). Responsible practice must consequently be understood within the conditions under which MSMEs obtain licences, access public support, compete for procurement opportunities and recover from business failure.

Regulatory factors are central to these conditions. Government policies, legal requirements, procurement arrangements and support programmes can reduce uncertainty and make resources available to small firms. When regulations are clear and public agencies are accessible, entrepreneurs can devote more attention to customer needs, innovation and long-term stakeholder relationships. When procedures are burdensome, fragmented or unpredictable, the same entrepreneurs may prioritise short-term survival. Institutional Theory explains this influence by treating rules and public support arrangements as external structures that shape legitimate organisational behaviour (North, 1990; Scott, 2014). Research has linked institutional conditions to entrepreneurship and innovation, but the evidence also indicates that external support does not produce uniform outcomes across firms or contexts (Aparicio et al., 2016; Bruton et al., 2010; Urbano et al., 2019).

One reason is that firms require an internal mechanism through which regulatory opportunities can be converted into action. This study proposes marketing innovation as that mechanism. Marketing innovation involves meaningful changes in promotion, distribution, pricing, product presentation and marketing management (Gunday et al., 2011; OECD, 2018). It can help an MSME communicate honestly, reach underserved customers, design more accessible offers and build stakeholder relationships. Evidence from Ghana shows that firms operating under resource constraints can use external knowledge, mentorship and collaboration to strengthen innovation, although the benefits depend on their capacity to absorb and apply what they receive (Bawa et al., 2026; Fu et al., 2024). From a Resource-Based View (RBV), marketing innovation is therefore an organisational capability through which external regulatory support can be recombined into distinctive and responsible value creation (Barney, 1991).

Fintech adoption adds a further layer to this relationship. Mobile money, digital banking, electronic payment platforms and related applications can improve transaction speed, record keeping, financial access and customer convenience. Ghana's payment ecosystem has expanded rapidly, and public policy increasingly treats digital finance as part of financial inclusion and enterprise development (Bank of Ghana, 2024; OECD, 2024). Recent research identifies fintech as an important route to financial inclusion in emerging markets, while also calling for closer attention to local institutions and underserved users (Del Sarto & Ozili, 2025). Studies have also linked fintech use to financial literacy, access to finance and corporate sustainability (Alqirem & Al-Smadi, 2025; Siddik et al., 2023). These benefits suggest that fintech may help firms translate marketing innovation into responsible outcomes.

However, adoption alone is not equivalent to effective integration. Digital tools can increase fees, cybersecurity exposure, data-management demands and operational complexity. Small firms may adopt

several platforms without aligning them with strategy, employee capability or customer needs. Research on digital transformation accordingly identifies paradoxes in which technologies that promise efficiency can create resource strain and implementation tension when adoption outruns organisational readiness (Appio et al., 2024). Wang and Prajogo (2024) likewise show that the combination of digitalisation, agility and innovation capability can produce unfavourable performance outcomes when the elements do not work together effectively. Fintech may therefore strengthen or weaken the contribution of marketing innovation, making its role an empirical question rather than an assumed benefit.

The study addresses three gaps. First, it focuses explicitly on regulatory factors rather than making claims about the institutional environment as a whole. This boundary is important because only the five regulatory indicators were included in the empirical model. Second, it explains the mechanism through which regulatory support may influence responsible entrepreneurship by testing marketing innovation as a mediator. Third, it treats fintech adoption as a potentially enabling or constraining boundary condition and tests whether it changes the marketing innovation–responsible entrepreneurship relationship.

The study contributes by integrating Institutional Theory, the RBV and Stakeholder Theory in a parsimonious model suited to resource-constrained MSMEs. Empirically, it provides evidence from Ghana while maintaining appropriate caution about sample representativeness and model fit. Practically, it shows policymakers and managers that regulatory reform, innovation support and digital adoption must be aligned; progress in one area cannot be assumed to compensate for weaknesses in another.

2.0 Theoretical Foundation and Hypothesis Development

2.1 Institutional Theory and regulatory factors

Institutional Theory explains how organisations respond to external rules, incentives and expectations in order to obtain legitimacy and resources (North, 1990; Scott, 2014). The present study deliberately concentrates on the regulatory component of the institutional environment. Regulatory factors refer here to government assistance for business start-up and development, procurement opportunities for small firms, dedicated support programmes and assistance to entrepreneurs who seek to restart after failure. The construct is therefore narrower and more precise than the general label “institutional factors”.

Regulatory support can foster marketing innovation in several ways. Business-development agencies may provide training, market information and advisory services. Public procurement can expose small firms to new quality and delivery requirements, while transparent registration and licensing can reduce uncertainty and encourage investment. Such support may help entrepreneurs experiment with promotion, distribution, packaging, pricing and customer engagement. The country institutional profile developed by Busenitz et al. (2000) provides the basis for measuring this perceived regulatory environment.

The relationship is unlikely to be automatic. Public support may be unevenly implemented, and entrepreneurs differ in their ability to use it. Nonetheless, clear rules and accessible support reduce

external barriers and enlarge the resource set available for innovation. Research on entrepreneurship has consistently shown that institutional conditions shape opportunity exploitation and firm-level outcomes, while recent evidence from Ghana highlights the value of external collaboration for innovation under constraint (Aparicio et al., 2016; Fu et al., 2024; Urbano et al., 2019). The study therefore proposes:

H1: Regulatory factors have a positive effect on marketing innovation.

2.2 Marketing innovation and responsible entrepreneurship

Marketing innovation is more than creative promotion. It includes new or significantly improved approaches to product presentation, distribution, pricing, promotion and marketing management (Gunday et al., 2011; OECD, 2018). These activities shape the way a firm identifies customer needs, communicates value and distributes benefits among stakeholders. Marketing innovation can consequently support responsible entrepreneurship when it improves access, strengthens product information, enables fairer value propositions or builds enduring relationships with customers and communities.

The RBV explains why the same regulatory opportunity may produce different results across firms. External support becomes strategically useful only when an enterprise can combine it with internal knowledge and routines. Marketing innovation represents such a capability because it turns market information, technology and institutional support into new ways of creating and delivering value (Barney, 1991; Varadarajan, 2020). Stakeholder Theory adds the ethical direction: value should be created for customers, employees, suppliers, communities and owners rather than appropriated by one group at the expense of others (Freeman, 1984). Recent responsible entrepreneurship studies similarly show that innovation can transmit the effect of responsible orientations to wider performance and societal outcomes (Adomako & Nguyen, 2024; Amoako et al., 2026).

Marketing innovation can also create harm when it is manipulative, exclusionary or wasteful. The positive relationship proposed here therefore assumes that innovation is applied within the ethical and stakeholder-oriented practices captured by the responsible entrepreneurship scale. On this basis:

H2: Marketing innovation has a positive effect on responsible entrepreneurship.

2.3 Regulatory factors and responsible entrepreneurship

Regulatory arrangements can influence responsible entrepreneurship directly by defining minimum standards, rewarding compliant behaviour and supporting firms that pursue long-term development. Clear regulations can reduce ambiguity surrounding employee welfare, consumer protection and environmental practice. Government assistance can also relieve resource constraints that otherwise force MSMEs to prioritise immediate survival over longer-term responsibilities.

Yet the direct effect may be modest. Formal support creates an enabling condition, but it does not ensure that firms possess the capabilities or commitment needed to use it responsibly. Regulatory

factors are therefore expected to influence responsible entrepreneurship both directly and through internal organisational action. The direct proposition is:

H3: Regulatory factors have a positive effect on responsible entrepreneurship.

2.4 Mediating role of marketing innovation

Institutional Theory explains why external rules and support matter, whereas the RBV explains how firms convert those conditions into organisational capability. Combining the two perspectives suggests a process: regulatory factors provide access, legitimacy, information and incentives; marketing innovation converts these inputs into improved ways of reaching and serving stakeholders; and those practices support responsible entrepreneurship.

This mediation argument avoids treating regulation as sufficient in itself. A support programme may provide training, for example, but responsible outcomes arise only when the firm uses that knowledge to improve pricing, communication, distribution or customer service. Likewise, procurement access may stimulate innovation in packaging or delivery, which can then improve quality and stakeholder value. Accordingly:

H4: Marketing innovation mediates the positive relationship between regulatory factors and responsible entrepreneurship.

2.5 Moderating role of fintech adoption

Fintech adoption can change the extent to which marketing innovation produces responsible entrepreneurial outcomes. Digital payments and mobile financial services can increase convenience, transaction traceability and access to finance. These features may complement new distribution channels, customer-engagement systems and pricing approaches (Alqirem & Al-Smadi, 2025; Gomber et al., 2018; Lee & Shin, 2018). Fintech may also enable firms to reach customers who are poorly served by conventional banking and support more timely payments to suppliers and employees.

The competing possibility is that adoption creates a capability burden. Multiple platforms, service charges, cybersecurity risks, unreliable connectivity and weak integration with existing routines can absorb managerial attention. Appio et al. (2024) show that SME digital transformation can generate paradoxes when new technologies exceed available skills, resources or strategic alignment. Evidence from digitalised supply chains similarly shows that combining digitalisation and innovation capabilities can have unfavourable consequences when complementary capabilities are not well configured (Wang & Prajogo, 2024). Under such conditions, fintech may distract from the stakeholder value that marketing innovation is intended to create.

Because these enabling and constraining mechanisms point in opposite directions, the moderation hypothesis is deliberately non-directional:

H5: Fintech adoption significantly moderates the relationship between marketing innovation and responsible entrepreneurship.

Note

H4 represents the indirect effect of regulatory factors on responsible entrepreneurship through marketing innovation. H5 represents the moderating effect of fintech adoption on the marketing innovation–responsible entrepreneurship path.

3.0 Research Methodology

3.1 Research design and setting

The study used a quantitative, cross-sectional survey design. This design was appropriate for estimating associations among regulatory factors, marketing innovation, fintech adoption and responsible entrepreneurship at a defined point in time. The setting was the New Juaben South Municipality in Ghana's Eastern Region, an urban commercial area that contains micro, small and medium enterprises in service, manufacturing and agriculture.

The cross-sectional design supports theory-guided association testing but does not establish temporal order or causality. This limitation is retained in the interpretation of the findings. The study's unit of analysis was the enterprise, while an owner or manager who was knowledgeable about the enterprise provided the responses.

3.2 Population, sampling and respondent selection

The target population comprised MSMEs operating in the municipality. A complete and current municipal sampling frame was unavailable because many enterprises operate informally, from changing locations or without consistent administrative records. Purposive sampling was therefore used to identify respondents who could provide informed answers on the focal constructs.

To participate, a respondent had to be an owner or manager of an MSME located in the municipality, and the enterprise had to have operated for at least one year. The one-year threshold was intended to ensure that respondents had sufficient experience of regulatory support, marketing practices, fintech use and stakeholder-related decisions. Enterprises were classified by permanent employment: micro enterprises employed 1–5 people, small enterprises 6–30 people and medium enterprises 31–100 people.

In total, 220 usable questionnaires were obtained. The sample was sufficient to estimate the specified PLS path model, which contained two endogenous constructs and a single interaction term. Nevertheless, because selection was non-probabilistic, statistical adequacy should not be interpreted as population representativeness.

3.3 Instrument and measures

Data were collected with a structured questionnaire containing demographic questions and measures of the four constructs. All substantive items used a five-point Likert response format ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Responsible entrepreneurship was measured with five items adapted from Amoako et al. (2026). The items covered long-term owner returns, employee conditions, customer welfare, community involvement and environmental protection. This broad stakeholder content is consistent with contemporary responsible entrepreneurship scholarship and scale-development work (Adomako & Nguyen, 2024; Gallardo-Vázquez et al., 2024).

Regulatory factors were measured with five items drawn from the regulatory component of the country institutional profile developed by Busenitz et al. (2000). The items assessed government assistance for business formation and development, small-business procurement opportunities, support programmes and assistance following business failure. Only these five regulatory indicators were included in the measurement and structural models. The construct is therefore labelled **regulatory factors (REG)** throughout the manuscript.

Marketing innovation was measured with five items adapted from Gunday et al. (2011). They captured changes in promotion, distribution channels, pricing techniques, product appearance or packaging and general marketing management. Fintech adoption was measured with four items adapted from Alqirem and Al-Smadi (2025), covering frequency of use, convenience, recommendation and continuance intention. The full instrument is reproduced in Appendix A.

3.4 Pilot study and data collection

The questionnaire was piloted with MSME owners and managers who were not included in the final sample. The pilot assessed clarity, sequencing and the contextual suitability of the wording. Minor revisions were made to improve readability without changing the substantive meaning of the source measures.

Participants received information about the study and gave informed consent. Participation was voluntary, no personally identifying data were reported and responses were used only for research purposes. Ethical approval was obtained from the University of Cape Coast before the main data collection.

3.5 Data analysis

The model was estimated in SmartPLS using PLS-SEM. The measurement model was examined before the structural paths. Indicator reliability was assessed from outer loadings. Internal consistency was evaluated with Cronbach's alpha and composite reliability, while convergent validity was assessed with average variance extracted (AVE). Discriminant validity was evaluated with the Fornell–Larcker criterion, the heterotrait–monotrait ratio (HTMT) and cross-loadings (Fornell & Larcker, 1981; Hair et al., 2022; Henseler et al., 2015).

The structural paths, indirect effect and interaction effect were tested using non-parametric bootstrapping with 5,000 resamples. H1–H4 specified positive effects before analysis and were therefore assessed with one-tailed tests at $\alpha = .05$ (critical $t = 1.645$). H5 specified moderation without a directional sign and was assessed with a two-tailed test at $\alpha = .05$ (critical $t = 1.96$). This distinction is material for H3: its t -value of 1.711 meets the one-tailed criterion but not the conventional two-tailed criterion.

Because the study tests explanatory relationships, approximate model fit was treated as a substantive diagnostic rather than ignored. Both the saturated and estimated model values are reported. In line with Benitez et al. (2020) and Schuberth et al. (2023), the estimated model is given particular attention because it incorporates the restrictions imposed by the proposed structural relationships.

Procedural remedies were used to reduce common-method bias: respondents were assured of anonymity, the wording was kept clear and construct items were separated within the questionnaire. Harman's single-factor assessment did not indicate that one factor accounted for most of the covariance. However, the limitations of this test are acknowledged; future studies should use temporally separated or multi-source data and more demanding diagnostics (Kock, 2015).

4.0 Results

4.1 Respondent and enterprise profile

Table 1
Respondent and enterprise profile (N = 220)

Variable	Category	n	%
Gender	Male	127	57.7
	Female	93	42.3
Age (years)	18–25	86	39.1
	26–35	67	30.5
	36–45	30	13.6
	46 and above	37	16.8
Education	Basic	3	1.4
	Secondary	28	12.7
	Bachelor's degree	156	70.9
	Master's degree	29	13.2
	Doctorate	4	1.8
Employees	1–5	140	63.6
	6–30	67	30.5
	31–100	13	5.9
Industry	Service	135	61.4
	Manufacturing	54	24.5
	Agriculture	31	14.1
Years in operation	1–5	131	59.5
	6–10	47	21.4
	11–15	12	5.5
	More than 15	30	13.6
<i>Note. Percentages may differ from 100 because of rounding within variable groups.</i>			

Source: Field survey (2026).

Men represented 57.7% of respondents and women 42.3%. Most respondents were younger than 36 years (69.6%), suggesting that the sample was weighted towards younger owners and managers. The education profile was unusually high: 84.1% held either a bachelor's or master's degree, and a further 1.8% held a doctorate. This concentration is important because education may increase the ability to

understand business support programmes, adopt fintech and implement marketing innovation. It also limits the extent to which the results represent Ghana's wider, predominantly informal MSME population.

Most enterprises were micro businesses employing one to five people (63.6%), followed by small enterprises (30.5%). Service firms constituted 61.4% of the sample, and 59.5% of enterprises had operated for between one and five years. The findings therefore reflect mainly young, service-oriented micro and small enterprises rather than the full diversity of Ghanaian MSMEs.

4.2 Measurement model

Table 2
Reliability and convergent validity

Construct	Cronbach's α	Composite reliability	AVE
Fintech adoption	.916	.928	.799
Regulatory factors	.859	.885	.639
Marketing innovation	.881	.885	.680
Responsible entrepreneurship	.886	.896	.688
<i>Note. AVE = average variance extracted. Source: Field survey (2026).</i>			

All four constructs demonstrated satisfactory internal consistency. Cronbach's alpha ranged from .859 to .916, while composite reliability ranged from .885 to .928. Each value exceeded .70 and remained below .95, suggesting that the indicators were consistent without being excessively redundant (Hair et al., 2022). AVE values ranged from .639 to .799, exceeding the .50 threshold and supporting convergent validity.

Table 3
Fornell–Larcker discriminant-validity matrix

Construct	1	2	3	4
1. Fintech adoption	.894			
2. Regulatory factors	.148	.799		
3. Marketing innovation	.671	.342	.825	
4. Responsible entrepreneurship	.561	.348	.668	.829
<i>Note. Bold diagonal entries are the square roots of AVE; off-diagonal entries are construct correlations. Source: Field survey (2026).</i>				

For each construct, the square root of AVE exceeded its correlations with the other constructs. The Fornell–Larcker criterion was therefore met. The relatively high correlations linking marketing innovation with fintech adoption (.671) and responsible entrepreneurship (.668) warranted the additional HTMT assessment.

Table 4
Heterotrait–monotrait ratios

Construct	1	2	3
1. Fintech adoption			
2. Regulatory factors	.165		
3. Marketing innovation	.738	.382	
4. Responsible entrepreneurship	.603	.391	.743
<i>Note. All HTMT ratios are below .85. Source: Field survey (2026).</i>			

HTMT ratios ranged from .165 to .743, below the strict .85 threshold. This result supports discriminant validity. Cross-loadings, reported in Table 5, provide a further indicator-level check.

Table 5
Indicator cross-loadings

Indicator	Fintech adoption	Marketing innovation	Responsible entrepreneurship	Regulatory factors
FIN1	.855	.639	.539	.109
FIN2	.900	.514	.369	.044
FIN3	.909	.605	.545	.217
FIN4	.910	.613	.509	.131
MI1	.550	.751	.582	.269
MI2	.496	.821	.499	.267
MI3	.539	.848	.569	.346
MI4	.579	.800	.505	.221
MI5	.600	.897	.584	.296
RE1	.535	.608	.838	.191
RE2	.455	.565	.864	.325
RE3	.516	.577	.861	.229
RE4	.340	.382	.734	.325
RE5	.457	.600	.843	.388
REG1	.223	.319	.228	.825
REG2	.088	.182	.285	.792
REG3	.041	.280	.267	.813
REG4	.150	.331	.384	.855
REG5	.069	.225	.182	.702
<i>Note. Bold values are the loadings on the intended construct. Source: Field survey (2026).</i>				

Every indicator loaded more strongly on its intended construct than on any alternative construct. Standardised outer loadings ranged from .702 to .910. The row previously labelled “M13” has been corrected to “MI3”, consistent with the questionnaire and the five-item marketing innovation scale.

4.3 Approximate model fit

Table 6
Approximate model-fit diagnostics

Fit index	Saturated model	Estimated model
SRMR	.074	.183
d_ULS	1.043	6.333
d_G	.477	.660
Chi-square	267.211	317.746
NFI	.807	.770
<i>Note. Lower SRMR values and higher NFI values indicate better approximate fit. Source: Field survey (2026).</i>		

The saturated-model SRMR of .074 is below the conventional .08 reference point, which suggests that the freely correlated construct representation reproduces the observed correlations reasonably well. That result does not establish acceptable fit for the proposed structural model. Once the hypothesised structural restrictions were imposed, the estimated-model SRMR increased to .183. This value indicates substantial discrepancy between the observed and model-implied correlation matrices. The NFI values of .807 for the saturated model and .770 for the estimated model are also below the commonly cited .90 benchmark.

These diagnostics signal material model misspecification. They reduce confidence that the proposed structure captures all important relationships in the data and therefore limit strong causal or theory-confirming claims. The path coefficients remain informative as sample-based estimates, but they should be interpreted cautiously and replicated in a better-fitting model. Potential omitted mechanisms include digital capability, strategic alignment, leadership and resource availability. The fit results are revisited in the limitations and future-research sections.

4.4 Structural model and hypotheses

Table 7
Structural paths, mediation and moderation

Hypothesis	Effect	β	t	p	Decision
H1	Regulatory factors → Marketing innovation	.342	3.013	.001 ^a	Supported
H2	Marketing innovation → Responsible entrepreneurship	.409	3.469	< .001 ^a	Supported
H3	Regulatory factors → Responsible entrepreneurship	.162	1.711	.044 ^a	Supported under one-tailed test
H4	Regulatory factors → Marketing innovation → Responsible entrepreneurship	.140	2.173	.015 ^a	Supported; positive indirect effect
H5	Fintech adoption × Marketing innovation → Responsible entrepreneurship	-.169	2.979	.003 ^b	Supported; negative moderation
<i>Note.</i> β = standardised coefficient. ^a One-tailed test for a positive, pre-specified directional hypothesis. ^b Two-tailed test for a non-directional moderation hypothesis. With a two-tailed test, the H3 path would not be significant at .05 (approximately $p = .087$). Source: Field survey (2026).					

Regulatory factors explained 11.7% of the variance in marketing innovation ($R^2 = .117$). Regulatory factors, marketing innovation, fintech adoption and the interaction term jointly explained 53.5% of the variance in responsible entrepreneurship ($R^2 = .535$). H1 was supported: regulatory factors had a positive effect on marketing innovation ($\beta = .342$, $t = 3.013$, one-tailed $p = .001$). H2 was also supported, with marketing innovation showing a positive effect on responsible entrepreneurship ($\beta = .409$, $t = 3.469$, one-tailed $p < .001$).

The H3 direct effect was smaller ($\beta = .162$). Its t -value of 1.711 corresponds to a one-tailed p -value of .044, so it meets the pre-specified directional criterion. It does not meet the two-tailed 5% criterion. The finding should therefore be described as modest and test-convention-sensitive rather than as unqualified strong evidence.

The indirect effect of regulatory factors on responsible entrepreneurship through marketing innovation was positive ($\beta = .140$, $t = 2.173$, one-tailed $p = .015$), supporting H4. Under the pre-specified one-tailed decision rule, the direct and indirect effects are both positive and significant, which is consistent with complementary partial mediation. Because the direct path is not significant under a two-tailed test, the precise mediation label is sensitive to the chosen test convention; the more robust substantive conclusion is that a positive indirect pathway operates through marketing innovation.

H5 was supported, but the interaction was negative ($\beta = -.169$, $t = 2.979$, two-tailed $p = .003$). Higher fintech adoption weakened the positive relationship between marketing innovation and responsible

entrepreneurship. Figure 2 reports standardised path coefficients and outer loadings rather than *p*-values.

Table 8
Conditional indirect effect at different levels of fintech adoption

Level of fintech adoption	Indirect effect (β)	<i>t</i>	<i>p</i>
Low (– 1 SD)	.198	2.597	.005
Mean	.140	2.173	.015
High (+ 1 SD)	.082	1.306	.096
<i>Note. The indirect pathway is Regulatory factors → Marketing innovation → Responsible entrepreneurship. The reported conditional p-values follow the original bootstrap output. Source: Field survey (2026).</i>			

The conditional results clarify the negative interaction. At low fintech adoption, the indirect effect was .198 and statistically significant. At the mean, it declined to .140 and remained significant. At high fintech adoption, it fell to .082 and was no longer significant. Fintech adoption therefore attenuated both the marketing innovation–responsible entrepreneurship relationship and the indirect regulatory pathway transmitted through marketing innovation.

5.0 Discussion

5.1 Regulatory factors and marketing innovation

The positive H1 result indicates that perceived government support, procurement access and enterprise-development programmes are associated with greater marketing innovation. This finding accords with Institutional Theory: external rules and resource arrangements affect the actions organisations regard as feasible and legitimate (Scott, 2014). In a setting where MSMEs frequently face resource and information constraints, accessible regulatory support can reduce uncertainty and provide knowledge that firms use to revise promotion, distribution, pricing and product presentation.

The finding also complements evidence that Ghanaian firms use external connections and knowledge to innovate under constraint (Fu et al., 2024). Its practical meaning is not that regulation substitutes for managerial initiative. Regulatory factors explained 11.7% of marketing innovation, leaving most of its variance to other capabilities and market conditions. Policy can open a door, but entrepreneurs still require market knowledge, skills and resources to walk through it.

5.2 Marketing innovation and responsible entrepreneurship

H2 produced the largest positive direct coefficient in the model. Marketing innovation appears to be an important capability through which MSMEs improve value delivery to stakeholders. New distribution methods can widen access; improved product presentation can make information clearer; pricing

innovation can respond to affordability; and better promotion can communicate social and environmental value. These practices are consistent with the RBV because they depend on the firm's ability to recombine knowledge and resources in ways that are useful in its market (Barney, 1991).

The result also supports a stakeholder interpretation of responsible entrepreneurship. Marketing innovation is valuable when it improves relationships and distributes benefits across customers, employees, communities and owners rather than merely increasing sales. Recent studies similarly position innovation as a mechanism through which responsible entrepreneurial activity generates performance and societal value (Adomako & Nguyen, 2024; Amoako et al., 2026). The present result extends this logic to the marketing domain among Ghanaian MSMEs.

5.3 Direct and indirect regulatory effects

The H3 direct effect was positive but modest and rests on a one-tailed decision rule. This nuance matters. A favourable regulatory environment may encourage responsible practice, yet support programmes and formal rules do not determine how a firm treats stakeholders. Owner values, leadership, resource pressure and market incentives may exert stronger immediate influence. The finding should therefore be interpreted as limited directional evidence, not as proof of a large or universal regulatory effect.

The positive H4 indirect effect provides the more informative explanation. Regulatory factors were associated with responsible entrepreneurship partly because they supported marketing innovation. This result connects Institutional Theory and the RBV: external support provides opportunities and resources, while firm-level innovation converts them into stakeholder outcomes. It also explains why regulatory reform alone may yield disappointing results. Unless MSMEs can translate support into improved market practices, the responsible benefits remain limited.

The mediation classification requires care. Under the stated one-tailed procedure, the positive direct and indirect effects indicate complementary partial mediation. Under a two-tailed procedure, the direct effect would not meet the .05 threshold, and an indirect-only description would be more defensible. The manuscript therefore gives priority to the stable conclusion—a positive indirect effect—rather than overstating the taxonomy.

5.4 Negative moderation by fintech adoption

The negative H5 interaction is the study's most unexpected finding. Fintech adoption did not reinforce the responsible value of marketing innovation; it weakened it. The conditional indirect effect was strongest at low fintech adoption and became non-significant at high adoption. This pattern contradicts a simple "more technology is better" assumption.

One explanation is a capability–adoption gap. MSMEs may adopt mobile money, payment applications or digital banking because customers expect them, but adoption may outpace integration. Platform fees, cybersecurity concerns, fragmented records, reconciliation demands and weak connectivity can

consume scarce managerial attention. If employees lack digital skills or if fintech tools are poorly aligned with customer and sustainability objectives, technology may distract from the relationship-building and responsible value creation that marketing innovation is intended to support.

This explanation is consistent with research showing that digital transformation generates tensions when the acquisition of technology is not matched by organisational resources, skills and strategic alignment (Appio et al., 2024; Wang & Prajogo, 2024). Ghanaian evidence also emphasises that digital innovation depends on knowledge management, firm support and human capability rather than technology alone (Bawa et al., 2026). The result therefore qualifies positive evidence linking fintech to financial access and sustainability (Alqirem & Al-Smadi, 2025; Del Sarto & Ozili, 2025; Siddik et al., 2023). The issue may not be fintech itself, but the difference between using a tool frequently and embedding it effectively within a responsible business model.

The negative moderation also has a measurement implication. The fintech items emphasise usage, convenience, recommendation and continuance. They do not directly capture integration quality, cybersecurity capability, cost management or strategic fit. High scores may therefore represent intensive use without corresponding digital capability. Future research should distinguish adoption breadth and frequency from effective assimilation.

5.5 Model fit and the strength of inference

The estimated-model SRMR of .183 and NFI of .770 indicate that the proposed structure does not reproduce the observed relationships adequately. In explanatory PLS modelling, this is a serious limitation because the model is intended to represent a theoretical mechanism (Schuberth et al., 2023). The poor fit may reflect omitted paths, omitted constructs, measurement imperfections or the assumption that the same linear relationships apply across a heterogeneous sample.

The reliability, AVE and discriminant-validity results show that the construct measures perform reasonably as separate blocks, but these results cannot compensate for poor structural fit. Consequently, the significant paths should be regarded as provisional associations. The findings are useful for theory development and replication, but they do not constitute final validation of the model. A stronger follow-up study should compare theoretically plausible models, examine residuals, test unobserved heterogeneity and evaluate out-of-sample prediction.

6.0 Conclusions and Implications

6.1 Conclusion

This study examined whether regulatory factors contribute to responsible entrepreneurship directly and indirectly through marketing innovation, and whether fintech adoption changes the marketing innovation–responsible entrepreneurship relationship. The findings show that regulatory factors are positively associated with marketing innovation and that marketing innovation is positively associated

with responsible entrepreneurship. A positive indirect pathway also operates through marketing innovation. The direct regulatory effect is modest and significant only under a pre-specified one-tailed test.

Fintech adoption produced a significant negative interaction. At higher adoption levels, the contribution of marketing innovation to responsible entrepreneurship became weaker, and the conditional indirect regulatory effect ceased to be significant. The result suggests that adoption without sufficient capability, integration or strategic alignment may impose costs that reduce the responsible value of marketing innovation.

These conclusions are bounded by poor estimated-model fit, non-probability sampling and the unusually high educational profile of the respondents. The study should therefore be read as evidence that refines a theoretical explanation and identifies an important digital paradox, not as conclusive proof that the relationships apply across all Ghanaian MSMEs.

6.2 Theoretical implications

The study makes three theoretical contributions. First, it improves construct precision by isolating regulatory factors. The evidence supports claims about perceived government rules and support arrangements; it does not justify a broad claim about the whole institutional environment. This narrower specification strengthens the link between theory, measurement and analysis.

Second, the study integrates Institutional Theory with the RBV by identifying marketing innovation as a conversion mechanism. Regulatory support appears to matter partly because it enables firms to develop market-facing capabilities. The study therefore shifts attention from whether regulation affects responsible entrepreneurship to how that effect may occur.

Third, the negative interaction challenges a purely enabling view of fintech. It suggests that digital adoption can create a capability burden and that the value of technology depends on assimilation and alignment. This insight extends stakeholder reasoning because digital tools should be evaluated by the value they help create for stakeholders, not merely by whether they have been adopted.

6.3 Managerial implications

MSME owners and managers should treat fintech as an organisational capability project rather than a collection of applications. Before adding new platforms, they should assess transaction costs, cybersecurity, data reconciliation, employee competence and compatibility with customer needs. A smaller number of well-integrated tools may support responsible value creation more effectively than intensive but fragmented adoption.

Managers should also connect marketing innovation explicitly to stakeholder outcomes. Changes in promotion should improve transparency; distribution innovation should widen responsible access; pricing changes should balance affordability with business viability; and product presentation should

communicate quality and environmental information accurately. These links make marketing innovation more than a sales technique.

Finally, firms should document how public training, procurement access or enterprise support changes their marketing practices. This documentation can help managers evaluate which programmes produce useful capability and provide regulators with feedback on programme effectiveness.

6.4 Policy implications

Regulators and enterprise-support agencies should combine procedural reform with capability development. Clearer registration, licensing and procurement systems can reduce uncertainty, but the results suggest that responsible outcomes are more likely when support also builds marketing and digital capability. Training should therefore connect regulatory compliance, customer value, digital finance and responsible business practice.

Digital-finance policy should move beyond adoption counts. Agencies and fintech providers should monitor whether MSMEs can integrate tools securely and cost-effectively. Practical support should cover cybersecurity, fee comparison, transaction reconciliation, data protection and the strategic selection of platforms. Regulatory sandboxes and MSME-oriented product testing may also help providers identify unintended burdens before large-scale deployment.

Given the diversity of MSMEs, support should be tailored by sector, firm size and digital maturity. A young service microenterprise will not face the same regulatory and fintech integration challenges as an established manufacturing or agricultural business.

7.0 Limitations and Future Research

The cross-sectional design prevents causal inference. Although the hypotheses establish a theoretical order, all variables were measured at one point in time. Longitudinal or time-lagged designs should test whether regulatory support precedes marketing innovation and whether responsible outcomes persist.

The purposive sample was drawn from one municipality. The sample's educational profile is particularly restrictive: 84.1% of respondents held a bachelor's or master's degree. This is unlikely to represent the broader Ghanaian MSME population, which includes many informal operators with lower levels of formal education. More highly educated respondents may understand support programmes more easily, adopt fintech more quickly and report more marketing innovation. The resulting coefficients may therefore overstate relationships that would be observed in a more representative population. Future studies should use stratified or multi-stage sampling across regions and deliberately include informal and lower-education groups.

The study relied on self-reported data from one owner or manager per enterprise. Social desirability and common-method variance may inflate some associations. Future research should combine owner

responses with employee, customer or administrative data and separate predictor and outcome measurement in time.

The poor estimated-model fit is a major limitation. Future work should inspect residual correlations, test alternative theoretically justified paths and assess heterogeneity across sectors, firm sizes, education groups and digital-maturity levels. Confirmatory composite analysis and out-of-sample prediction should be reported alongside the structural coefficients.

The negative moderation requires direct investigation. A useful extension would test digital capability, fintech assimilation quality or strategic alignment as a third-order moderator of the interaction between fintech adoption and marketing innovation. Researchers could compare firms with high adoption/high capability against those with high adoption/low capability. Qualitative process studies could also examine how transaction fees, platform fragmentation, cybersecurity incidents and reconciliation demand change the way marketing innovation is implemented. Experimental or longitudinal designs would help determine whether training and system integration reverse the negative effect.

Finally, the fintech measure captured use and continuance rather than integration quality. Future scales should distinguish adoption, routinisation, effective use and business-process integration. This distinction may explain why high adoption did not produce the expected responsible outcomes.

Declarations

Disclosure Statement

The authors report no conflict of interest.

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Data Availability Statement

The data supporting the findings are available from the corresponding author on reasonable request. They are not publicly available because of confidentiality commitments made to participants.

Clinical trial number: Not applicable

Consent to Participate

Informed consent was obtained from all participants prior to their participation in the study. Participants were provided with information about the purpose of the study, the voluntary nature of their participation, confidentiality, and their right to withdraw from the study at any time without penalty.

Consent to Publish

Not applicable. The manuscript does not contain any identifiable personal information, images, or other materials requiring consent for publication

Ethics Approval

Ethical review and approval were obtained from the Ethics Committee of University of Cape Coast (Approval Ref No: UCCIRB/CHLS/2023/60). The study was conducted in accordance with the Declaration of Helsinki

Author Contributions

All authors contributed to the conceptualization and design of the study. Isaac Tornyí was responsible for writing the original draft, conceptualization, and study design. Frank Frimpong Opuni led the methodology, project administration, and data collection. Rhoda Saan performed the formal data analysis, visualization, and validation. Hilla Limann contributed to the investigation, data curation, and writing – review & editing. All authors read and approved the final manuscript

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Figures

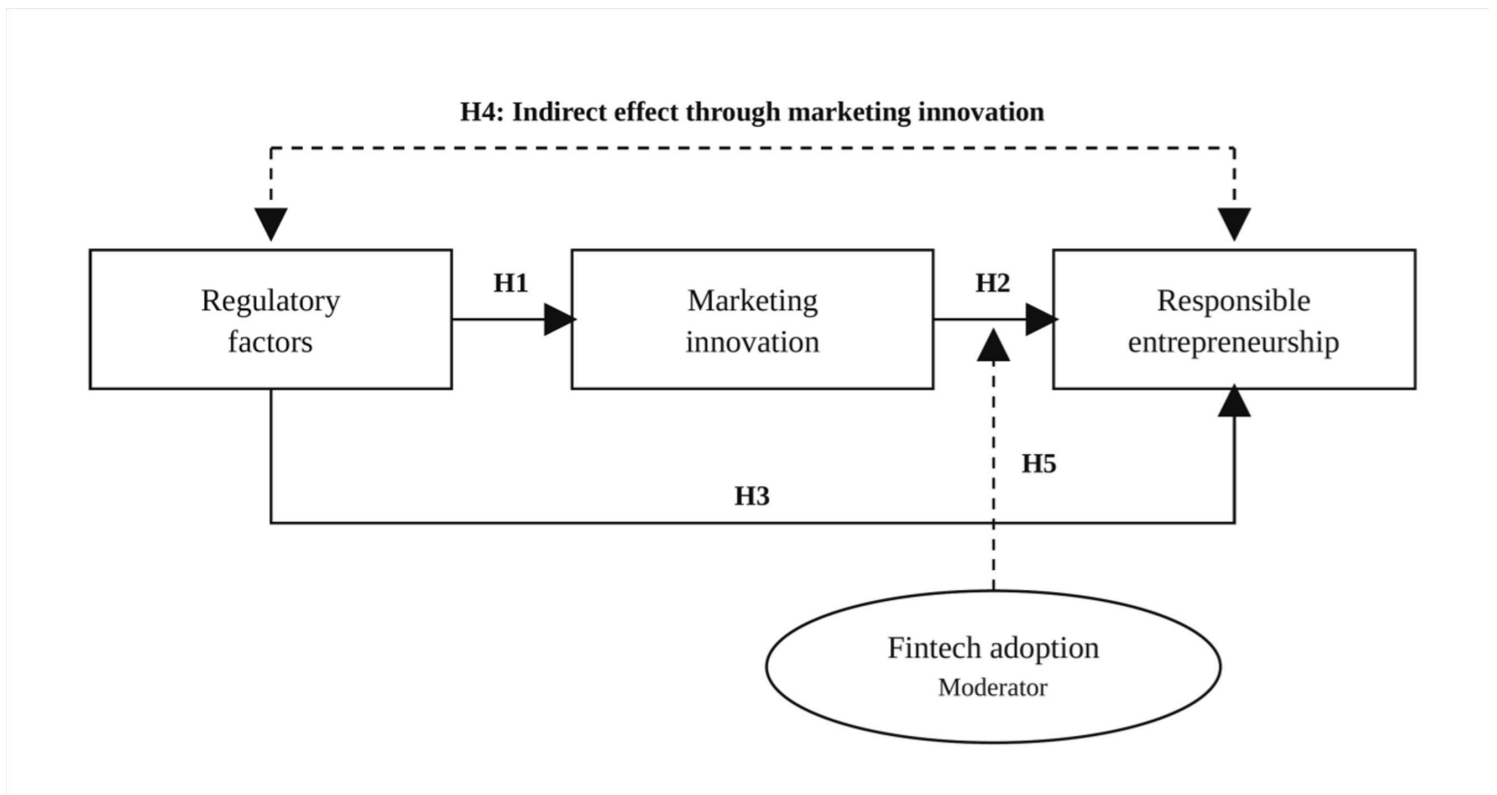
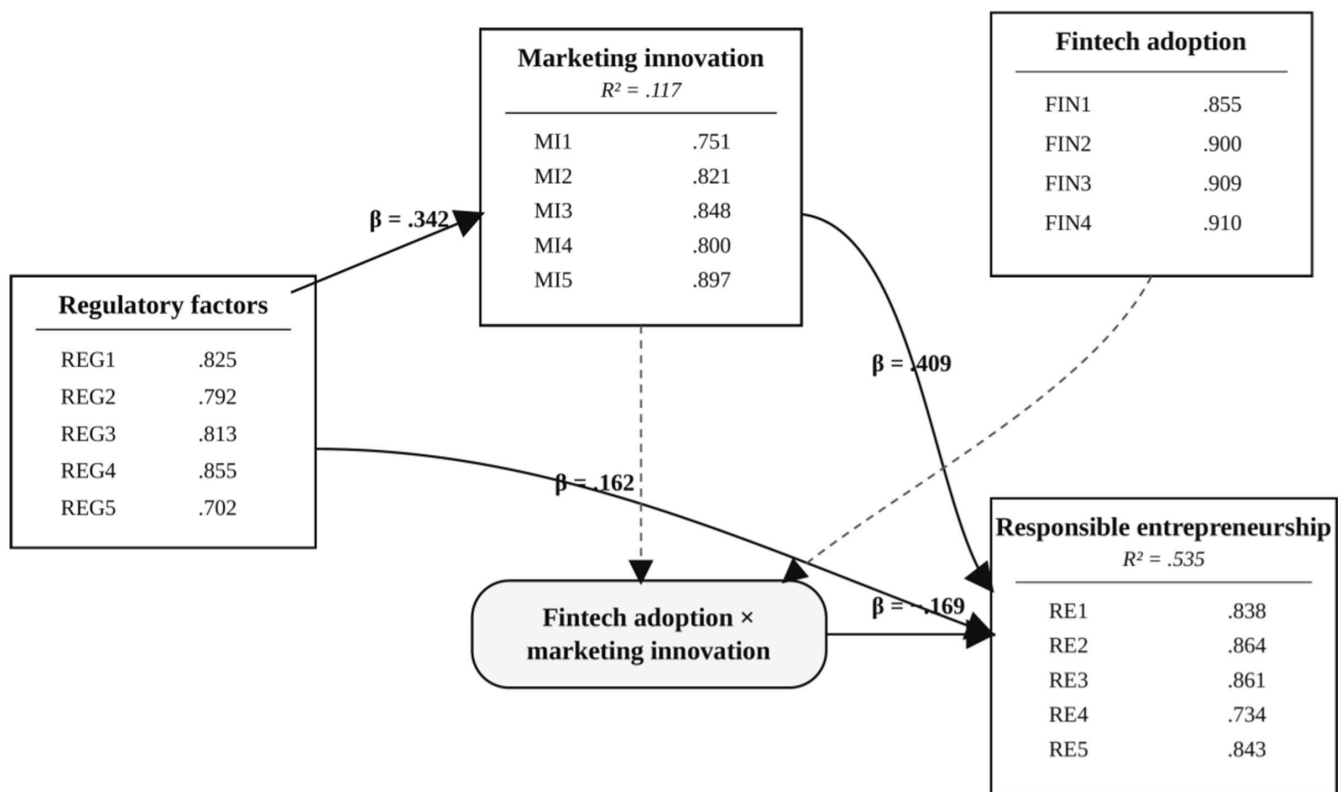


Figure 1

Conceptual framework.

Note. H4 represents the indirect effect of regulatory factors on responsible entrepreneurship through marketing innovation. H5 represents the moderating effect of fintech adoption on the marketing innovation–responsible entrepreneurship path.



Note. Values listed within the construct boxes are standardised outer loadings; structural arrows show standardised path coefficients.

Figure 2

Structural model with standardised path coefficients and outer loadings.

Supplementary Files

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- [AppendixA.docx](#)