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## Digital Competencies and Entrepreneurial Readiness in Technical Higher Education: Evidence from Polytechnic Students in South-West Nigeria

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### ABSTRACT

*Polytechnics are expected to combine technical education with capabilities that support self-employment, yet evidence remains limited on which forms of digital competence are most closely associated with students' entrepreneurial preparedness. This study differentiates four digital competency domains—general digital skills, digital marketing competence, participation in digital training, and social media management capability—and examines their relationships with entrepreneurial readiness among final-year polytechnic students in South-West Nigeria. A cross-sectional survey was conducted with 600 National Diploma and Higher National Diploma students from six polytechnics, one in each state of the South-West geopolitical zone. A researcher-developed Likert-type questionnaire was subjected to expert review and pilot testing; reported Cronbach's alpha coefficients ranged from .78 to .86. The data were analysed using optimal scaling regression with 1,000 bootstrap samples. The model was statistically significant,  $F(9, 590) = 52.607$ ,  $p < .001$ , and explained 44.5% of the variance in entrepreneurial readiness (adjusted  $R^2 = .437$ ). Social media management capability showed the strongest positive association with readiness ( $\beta = .592$ ,  $p < .001$ ), followed by participation in digital training ( $\beta = .154$ ,  $p < .001$ ). General digital skills ( $\beta = .059$ ,  $p = .166$ ) and digital marketing competence ( $\beta = .061$ ,  $p = .297$ ) were not statistically significant. The findings indicate that digital competencies are not interchangeable: applied platform-management capability and structured training appear more closely connected to perceived entrepreneurial preparedness than generic digital literacy or theoretical marketing knowledge. Because the design is cross-sectional and based on self-report, the results should be interpreted as associations rather than causal effects.*

*The study contributes multi-institution evidence from technical higher education and supports greater emphasis on experiential, market-facing digital learning in polytechnic entrepreneurship curricula.*

**Keywords:** digital competencies; entrepreneurial readiness; digital training; social media management; polytechnic education; Nigeria

### I. INTRODUCTION

Digital technologies have altered how entrepreneurial opportunities are recognised, tested, financed, communicated and scaled. Platforms for social networking, online commerce, digital payments and content creation have reduced some barriers to market entry while simultaneously increasing the skills required to compete in technology-mediated markets. Digital entrepreneurship research therefore treats digital technologies not merely as supporting tools but as elements that can reshape entrepreneurial processes, organisational boundaries and opportunity structures (Nambisan, 2017; Steininger, 2019; Sussan & Acs, 2017). For students approaching the transition from education to work, competence in using these technologies may influence whether entrepreneurship is perceived as feasible and manageable.

This question is especially important for technical higher education. Nigerian polytechnics have a formal mandate to provide practically oriented education and to prepare graduates for employment and self-employment. That mandate is increasingly connected to the country's digital-economy agenda, which emphasises digital literacy, innovation and the development of a workforce capable of participating in technology-enabled economic activity (Federal Ministry of Communications and Digital Economy, 2020). Yet persistent difficulties in the school-to-work transition remain evident in

national labour-force reporting (National Bureau of Statistics, 2024) and raise a practical concern: exposure to digital tools or entrepreneurship courses does not necessarily translate into readiness to identify customers, communicate value, manage online relationships or organise a viable venture.

A further difficulty is conceptual. Digital competence is multidimensional. Contemporary frameworks describe it as a combination of knowledge, skills and attitudes needed to use digital technologies effectively, critically and responsibly across learning, work and participation in society (Cosgrove & Cachia, 2025; van Laar et al., 2017). In an entrepreneurial setting, basic operational literacy, digital marketing knowledge, participation in structured training and the ability to manage social media may provide different forms of value. Treating them as a single undifferentiated construct can therefore conceal which competencies are most relevant to perceived preparedness for enterprise creation.

Existing research generally supports a relationship between digital competence and entrepreneurial intention, but it also suggests that the relationship may depend on mechanisms such as entrepreneurial self-efficacy, individual entrepreneurial orientation and opportunities for applied learning (Bachmann et al., 2024). Studies of digital entrepreneurship education similarly show that social media use and experiential exposure can connect educational inputs to entrepreneurial cognition and intention (Wibowo et al., 2023). These findings imply that possession of general digital knowledge may be insufficient unless students can convert that knowledge into market-facing action.

Evidence from Nigerian technical and vocational education remains comparatively limited and often relies on single-institution samples. An earlier study at Osun State Polytechnic reported that social media management and digital training were more strongly associated with entrepreneurial intention than digital marketing competence (Adekunle & Adegbite, 2025). The present study extends the geographical scope to six polytechnics, one in each South-West state, and focuses on entrepreneurial readiness—defined here as students' self-reported preparedness to engage in entrepreneurial activity. Readiness is related to, but not identical with, entrepreneurial intention or actual venture creation. It reflects perceived capability and preparedness at the point of transition from education to work.

The study addresses the following question: how are different dimensions of digital competence associated with entrepreneurial readiness among final-year polytechnic students in South-West Nigeria? It makes three contributions. First, it separates four competency domains rather than treating digital competence as a single score. Second, it provides multi-institution evidence from a technical higher-education context that is underrepresented in the international literature. Third, it identifies a capability-conversion pattern in which applied platform management and structured digital training show stronger relationships with readiness than general digital skills or digital marketing knowledge. This distinction has implications for the design of entrepreneurship curricula, digital-skills interventions and industry–polytechnic collaboration.

## II. THEORETICAL BACKGROUND AND HYPOTHESES

### Digital competence and entrepreneurial readiness

Digital competence encompasses more than the ability to operate a computer or access information. It includes the capacity to communicate, collaborate, create content, solve problems and use digital technologies appropriately in changing contexts. The distinction is important because entrepreneurial activity requires coordinated application of these capabilities: an aspiring entrepreneur may need to identify market information, communicate with prospective customers, create digital content, evaluate platform feedback and adapt a value proposition.

Entrepreneurial readiness is treated in this study as perceived preparedness to undertake entrepreneurial activity. The concept overlaps with entrepreneurial self-efficacy and perceived behavioural control, but it is broader than confidence in a single task and narrower than actual entrepreneurial behaviour. Research based on the theory of planned behaviour shows that perceived behavioural control and attitudes shape entrepreneurial intention (Ajzen, 1991; Liñán & Chen, 2009; Schlaegel & Koenig, 2014), while social cognitive research emphasises that efficacy beliefs develop through mastery experiences, observation, feedback and social persuasion (Bandura, 1986; Zhao et al., 2005). These perspectives provide a basis for expecting applied digital competencies to be associated with readiness.

Human capital theory offers a complementary explanation. Education and skills constitute productive resources that can improve an individual's capacity to perform economically valuable tasks (Becker, 1964). In digital entrepreneurship, however, the value of human capital depends on its relevance and convertibility. General knowledge may broaden awareness, whereas applied capabilities may more directly reduce uncertainty surrounding customer acquisition, communication and venture management. Accordingly, the four digital domains are expected to differ in the strength of their relationships with entrepreneurial readiness.

### General digital skills

General digital skills provide the foundation for accessing information, communicating online, producing basic digital content and solving routine technology-related problems. Such capabilities can lower the cognitive and operational costs of exploring entrepreneurial opportunities. They may also increase students' perceived capacity to learn new tools and participate in digitally enabled markets. Nevertheless, because general skills are not necessarily commercial or action-oriented, their association with entrepreneurial readiness may be weaker than that of specialised competencies.

### H1. General digital skills are positively associated with entrepreneurial readiness.

### Digital marketing competence

Digital marketing competence concerns the ability to use digital channels to understand markets, communicate value, reach customers and assess campaign performance. These tasks are central to early-stage venture development because new firms usually operate with limited resources and must establish visibility quickly. Competence in digital marketing should therefore enhance perceptions that an entrepreneurial idea can be positioned and communicated effectively. However, classroom

knowledge that is not connected to real campaigns, customer feedback or performance metrics may not translate into readiness.

## H2. Digital marketing competence is positively associated with entrepreneurial readiness.

### Participation in digital training

Structured digital training can provide guided practice, feedback and repeated exposure to tools that students may later use in enterprise development. From a social cognitive perspective, these experiences can strengthen efficacy beliefs by allowing learners to complete tasks and observe tangible improvement. From a human capital perspective, training increases task-relevant capability. Its contribution should be strongest where instruction is practical, current and connected to entrepreneurial applications rather than limited to abstract awareness.

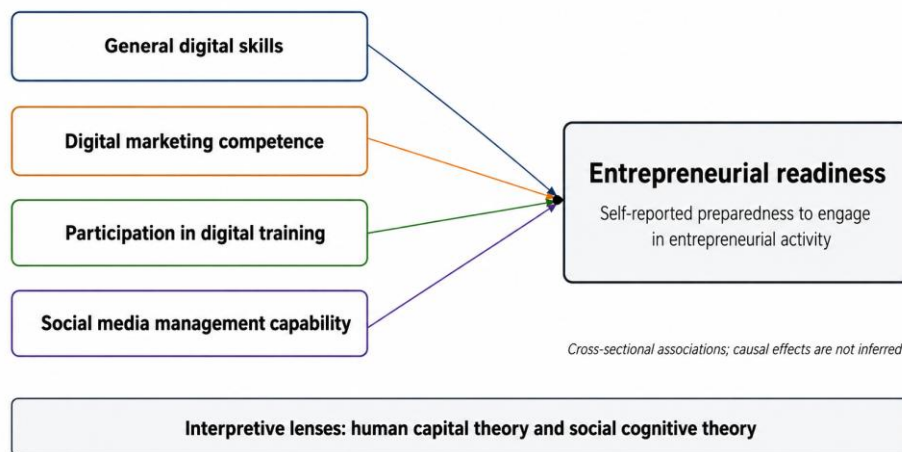
## H3. Participation in digital training is positively associated with entrepreneurial readiness.

### Social media management capability

Social media management is an applied platform capability involving content planning, audience engagement, community interaction, feedback monitoring and the maintenance of a visible digital presence. These activities connect directly to opportunity communication and customer development. Social platforms can also support low-cost experimentation, allowing students to test messages, observe responses and develop confidence in interacting with a potential market. Prior work links social media use to digital entrepreneurial intention and suggests that it can transmit the effects of entrepreneurship education into entrepreneurial cognition (Wibowo et al., 2023).

Because social media management combines communication, content creation and market interaction, it is expected to have a particularly direct association with perceived entrepreneurial preparedness.

## H4. Social media management capability is positively associated with entrepreneurial readiness.



**Figure 1. Conceptual model of digital competencies and entrepreneurial readiness. The model represents hypothesised cross-sectional associations; it does not imply causal effects.**

## III. METHOD

### Research design and setting

The study used a quantitative cross-sectional survey design to examine relationships between digital competency domains and entrepreneurial readiness. Data were collected from final-year National Diploma (ND) and Higher National Diploma (HND) students in six polytechnics located across Nigeria's South-West geopolitical zone. Final-year students were selected because they were approaching the transition from formal study to employment, further education or self-employment.

One institution was purposively selected from each of the six South-West states: The Polytechnic, Ibadan (Oyo State); Osun State Polytechnic, Iree (Osun State); Moshood Abiola Polytechnic, Abeokuta (Ogun State); Federal Polytechnic, Ado-Ekiti (Ekiti State); Yaba College of Technology, Lagos (Lagos State); and Federal Polytechnic, Ile-Oluji (Ondo State). The inclusion of both federal and state institutions and multiple disciplinary faculties was intended to broaden the contextual

coverage of the study. Because institutions were purposively selected, statistical generalisation beyond the participating institutions should remain cautious.

### Sample and sampling procedure

The analysed sample comprised 600 students, with 100 respondents from each institution. Within each polytechnic, students were stratified by faculty, after which proportional allocation was used to reflect the distribution of final-year ND and HND enrolments across faculties. Respondents were then selected within the strata. Equal allocation across institutions ensured that no single site dominated the pooled analysis, although it did not reproduce the relative population size of the six institutions.

Completed questionnaires were retrieved at the point of administration. The analysed dataset comprised 600 complete responses. Table 1 summarises the institutional distribution used in the analysis.

### Table 1. Institutional distribution of the analysed sample

| State | Institution                          | n   | Share (%) |
|-------|--------------------------------------|-----|-----------|
| Oyo   | The Polytechnic, Ibadan              | 100 | 16.7      |
| Osun  | Osun State Polytechnic, Iree         | 100 | 16.7      |
| Ogun  | Moshood Abiola Polytechnic, Abeokuta | 100 | 16.7      |
| Ekiti | Federal Polytechnic, Ado-Ekiti       | 100 | 16.7      |
| Lagos | Yaba College of Technology           | 100 | 16.7      |
| Ondo  | Federal Polytechnic, Ile-Oluji       | 100 | 16.7      |
| Total | —                                    | 600 | 100.0     |

*Note.* The sample was equally allocated across the six participating institutions.

### Instrument and construct operationalisation

Data were collected using a researcher-developed Likert-type questionnaire. The instrument covered general digital skills, digital marketing competence, participation in digital training, social media management capability and entrepreneurial readiness. The instrument operationalised entrepreneurial readiness as students' perceived skills, confidence and preparedness to engage in entrepreneurial activity. As a researcher-developed measure, it is not assumed to be equivalent to established entrepreneurial-intention or self-efficacy scales.

The questionnaire was reviewed for face and content validity by specialists in business education and entrepreneurship from the participating institutions. A pilot test was conducted with 40 final-year students who were not included in the main sample. Reported Cronbach's alpha coefficients ranged from .78 to .86 across the study scales, exceeding the conventional .70 threshold for exploratory research. These coefficients support internal consistency but do not, by themselves, establish factorial or discriminant validity. In particular, digital marketing and social media management are conceptually related; future studies should test their measurement distinctiveness using confirmatory factor analysis.

### Analytical strategy

The analysis was performed in IBM SPSS Statistics version 23 using optimal scaling regression (categorical regression; CATREG). CATREG estimates numerical quantifications for variables according to their specified measurement levels and then fits a regression model to the transformed variables. The procedure was used because the questionnaire produced ordered responses and allowed nonlinear or categorical transformations at the variable level. The dependent variable was entrepreneurial readiness; the predictors were general digital skills, digital marketing competence, participation in digital training and social media management capability.

Model adequacy was assessed using the multiple correlation,  $R^2$ , adjusted  $R^2$  and the omnibus F test. Variable-level contributions were evaluated using transformed standardised coefficients, bootstrap standard errors based on 1,000 resamples, degrees of freedom, F statistics and p values. Tolerance values before and after transformation were examined for evidence of problematic multicollinearity. Statistical significance was evaluated at  $\alpha = .05$ . The results are interpreted at the construct

level; the transformed coefficients should not be read as linear unit changes in the original Likert scores.

The study is observational and cross-sectional. Regression terminology such as 'predictor' refers to statistical prediction within the fitted model and does not establish temporal or causal influence.

### Ethical considerations

Ethical approval was obtained before data collection, and all participants provided informed consent.

## IV. RESULTS

### Model fit

The optimal scaling regression model was statistically significant,  $F(9, 590) = 52.607$ ,  $p < .001$ . The multiple correlation was .667 and the model explained 44.5% of the variance in entrepreneurial readiness ( $R^2 = .445$ ). After adjustment for model complexity, the explained variance was 43.7% (adjusted  $R^2 = .437$ ). The apparent prediction error reported by the CATREG procedure was .555. These statistics indicate substantial in-sample explanatory capacity, although predictive performance outside the analysed sample was not assessed.

**Table 2. Optimal scaling regression model summary and omnibus test**

| Statistic                 | Value           |
|---------------------------|-----------------|
| Multiple R                | .667            |
| $R^2$                     | .445            |
| Adjusted $R^2$            | .437            |
| Apparent prediction error | .555            |
| Regression sum of squares | 267.124         |
| Residual sum of squares   | 332.876         |
| $F(df_1, df_2)$           | 52.607 (9, 590) |
| p value                   | < .001          |

*Note.* Dependent variable: entrepreneurial readiness. Total sum of squares = 600.000.

### Relationships between digital competencies and entrepreneurial readiness

The four digital competency domains differed markedly in their relationships with entrepreneurial readiness (Table 3). Social media management capability had the largest positive standardised coefficient ( $\beta = .592$ , bootstrap SE = .028) and was statistically significant,  $F(4) = 449.879$ ,  $p < .001$ . H4 was therefore supported. Participation in digital training also showed a positive significant relationship ( $\beta = .154$ , bootstrap SE = .032),  $F(2) = 23.207$ ,  $p < .001$ , supporting H3.

General digital skills had a small positive coefficient but did not reach statistical significance ( $\beta = .059$ , bootstrap SE = .044),  $F(2) = 1.803$ ,  $p = .166$ ; H1 was not supported. Digital marketing competence was likewise non-significant ( $\beta = .061$ , bootstrap SE = .059),  $F(1) = 1.089$ ,  $p = .297$ ; H2 was not supported. The results therefore do not justify a general claim that every form of digital competence is associated with readiness to the same extent.

**Table 3. Optimal scaling regression coefficients and hypothesis decisions**

| Predictor                          | $\beta$ | Bootstrap SE | df | F       | p      | Decision         |
|------------------------------------|---------|--------------|----|---------|--------|------------------|
| General digital skills             | .059    | .044         | 2  | 1.803   | .166   | H1 not supported |
| Digital marketing competence       | .061    | .059         | 1  | 1.089   | .297   | H2 not supported |
| Participation in digital training  | .154    | .032         | 2  | 23.207  | < .001 | H3 supported     |
| Social media management capability | .592    | .028         | 4  | 449.879 | < .001 | H4 supported     |

*Note.*  $\beta$  values are standardised coefficients after optimal-scaling transformation. Bootstrap standard errors are based on 1,000 resamples.

#### Relative importance and multicollinearity diagnostics

The CATREG importance statistics reinforced the coefficient pattern. Social media management accounted for .852 of the model's total relative importance, followed by digital training (.097), general digital skills (.029) and digital marketing (.022). These values describe the relative allocation of explained importance within the fitted model and should not be interpreted as causal shares.

Tolerance values after transformation ranged from .923 to .967, while values before transformation ranged from .893 to .922. These levels are well above commonly used warning thresholds, indicating that the reported non-significant results were unlikely to be caused by severe multicollinearity among the four predictor domains.

**Table 4. Correlations, relative importance and tolerance diagnostics**

| Predictor                          | Zero-order r | Partial r | Part r | Importance | Tolerance after | Tolerance before |
|------------------------------------|--------------|-----------|--------|------------|-----------------|------------------|
| General digital skills             | .220         | .075      | .056   | .029       | .923            | .893             |
| Digital marketing competence       | .157         | .081      | .060   | .022       | .967            | .902             |
| Participation in digital training  | .281         | .197      | .149   | .097       | .943            | .922             |
| Social media management capability | .641         | .607      | .569   | .852       | .924            | .918             |

*Note.* Importance values sum to 1.000, apart from rounding.

## V. DISCUSSION

This study examined whether four digital competency domains were associated with entrepreneurial readiness among final-year students in six South-West Nigerian polytechnics. The model explained a meaningful proportion of variance, but the principal finding is not simply that 'digital skills matter'. Rather, the results show pronounced heterogeneity: social media management capability and participation in digital training were positively associated with readiness, whereas general digital skills and digital marketing competence were not statistically significant after the four domains were considered together.

The dominant relationship for social media management is theoretically plausible because this capability is close to entrepreneurial action. Managing a social platform requires content production, communication, audience monitoring and repeated interaction with feedback. These activities can expose students to market signals and provide low-cost opportunities to experiment with visibility, messaging and customer engagement. In social cognitive terms, such repeated performance may generate mastery experiences and strengthen perceived capability. In digital entrepreneurship terms, it represents active use of a platform's affordances rather than passive knowledge that a platform exists. The finding is consistent with research showing that social media can connect digital entrepreneurship education

to entrepreneurial intention (Wibowo et al., 2023), although the present study did not test mediation or intention directly.

Participation in digital training also showed a positive relationship with readiness. Structured training can reduce uncertainty by organising learning tasks, providing feedback and exposing students to tools beyond their ordinary classroom routines. This result aligns with the broader entrepreneurship-education literature, which finds that educational interventions are more effective when they build relevant competencies and self-efficacy rather than merely transmitting information (Bae et al., 2014; Newman et al., 2019). The comparatively smaller coefficient for training suggests, however, that participation alone is not equivalent to applied capability. Training quality, recency, duration and opportunity for practice are likely to determine how much value students derive from it.

The non-significant result for general digital skills should not be interpreted as evidence that foundational competence is unimportant. General skills may be necessary but insufficient: once students possess a basic level of digital literacy, additional variation may not distinguish readiness unless those skills are linked to market-facing tasks. Bachmann et al. (2024) similarly found that digital competencies may operate through entrepreneurial orientation and self-efficacy rather than as a simple direct route to intention. The present data did not include those mechanisms, but the pattern supports a distinction between

possession of digital knowledge and its entrepreneurial conversion.

Digital marketing competence was also non-significant. One explanation is a theory–practice gap: students may recognise marketing concepts without having designed campaigns, interpreted analytics or engaged real customers. A second possibility is measurement overlap. Social media management is one channel through which digital marketing is enacted, and the two constructs may not have been fully separated by the researcher-developed questionnaire. The acceptable tolerance statistics reduce concern about severe multicollinearity at the composite level, but they do not establish discriminant validity. Future research should use validated multi-item measures and confirmatory factor analysis to distinguish strategic marketing knowledge from platform-management execution.

The findings also provide an important boundary to policy claims. Entrepreneurial readiness is a perceived state, not evidence that students created sustainable firms, generated income or reduced unemployment. Applied digital capabilities may make enterprise creation appear more feasible, but external conditions—finance, infrastructure, regulation, mentoring and market access—will influence whether readiness becomes behaviour. The results therefore support curriculum and training reform without implying that digital-skills programmes alone can solve graduate unemployment.

### **Theoretical contributions**

The study contributes to research on digital entrepreneurship and technical higher education in three ways. First, it demonstrates the value of disaggregating digital competence. The weak relationships for general digital skills and digital marketing, alongside the strong relationship for social media management, show that broad composite measures can obscure meaningful differences among capability domains.

Second, the results support a capability-conversion interpretation. Human capital has greater entrepreneurial relevance when it can be enacted in tasks that reduce uncertainty or connect the learner to a market. Social cognitive theory further suggests why practice-oriented capability may be associated with readiness: repeated task completion and feedback can strengthen beliefs about what one can perform. The study does not test these mechanisms directly, but it identifies a pattern that future mediation research can examine.

Third, the study broadens the geographical and institutional base of evidence from Nigerian polytechnics. Much entrepreneurship research is centred on universities, although polytechnics have a distinctive mandate to integrate technical, vocational and enterprise-oriented learning. The six-institution design provides a stronger contextual foundation than a single-site study, while still requiring caution because institutions were purposively selected and observations were pooled without modelling institutional clustering.

### **Practical and policy implications**

Polytechnic curriculum reform should move beyond generic digital-literacy modules towards sequenced, practice-based digital entrepreneurship. Students should complete tasks such as developing a customer profile, creating platform-specific content, managing a campaign calendar, responding to customer enquiries, interpreting basic engagement metrics and testing an online value

proposition. Assessment should be based on demonstrable outputs and reflection, not only written examinations.

Digital training should also be connected to the disciplinary identity of each faculty. A single generic intervention may have limited relevance to students in engineering, environmental studies, management or creative programmes. Faculty-specific projects can show how digital tools support the commercialisation of technical knowledge, for example, product visualisation, online service delivery, customer education or business-to-business communication.

Institutions should strengthen partnerships with technology firms, small-business support agencies, alumni entrepreneurs and local enterprises. Short bootcamps are most useful when they are embedded within mentoring, access to tools and opportunities to work on real business problems. Digital entrepreneurship and innovation hubs can provide such continuity, but their effectiveness should be assessed through participation quality, capability gains and follow-up outcomes rather than the number of workshops delivered.

At policy level, the findings are consistent with Nigeria's emphasis on digital skills and entrepreneurship but suggest that programme evaluation should differentiate skill categories. Indicators should capture what learners can do with digital platforms, not merely whether they attended training or completed a computer course. Longitudinal tracking is required to establish whether readiness is followed by venture creation, employment, income generation or further capability development.

### **Limitations and future research**

Several limitations define the scope of the conclusions. First, the cross-sectional design does not establish temporal order or causality. Students who already feel entrepreneurially ready may be more likely to seek digital training or manage social media actively. Longitudinal and quasi-experimental studies are needed to examine change over time.

Second, the study relies on self-reported competencies and readiness. Responses may be affected by common-method variance, social desirability or inaccurate self-assessment. Future work should combine surveys with performance tasks, digital portfolios, observed platform activity or assessments by instructors and mentors.

Third, the questionnaire was researcher-developed and the study provides internal-consistency evidence but not a full measurement model. Confirmatory factor analysis, composite reliability, average variance extracted and discriminant-validity tests should be used in subsequent research. The complete questionnaire and scoring protocol should also be archived with future publications.

Fourth, one hundred students were sampled from each institution, but institutions were purposively selected and the pooled regression did not account for possible clustering by institution or faculty. Future studies should use probability-based institutional sampling where feasible, include institutional controls, and apply multilevel or cluster-robust methods with an adequate number of sites.

Fifth, the analysis did not include potentially important covariates such as age, gender, programme, prior business experience, family entrepreneurial background, access to devices,

connectivity, institutional support or entrepreneurship education exposure. Their omission limits interpretation of the coefficients. Finally, entrepreneurial readiness should be linked prospectively to actual entrepreneurial behaviour and venture outcomes to determine its practical predictive validity.

## VI. CONCLUSION

This study provides multi-institution evidence on the relationship between digital competencies and entrepreneurial readiness among final-year polytechnic students in South-West Nigeria. The findings show that digital competencies are not interchangeable. Social media management capability had the strongest positive association with readiness, while participation in digital training also contributed significantly. General digital skills and digital marketing competence did not show significant independent relationships in the fitted model.

The defensible conclusion is therefore not that digital exposure automatically produces entrepreneurs, but that applied, platform-facing capability and structured practice are more closely connected to students' perceived preparedness for entrepreneurial activity. Polytechnics can respond by embedding authentic digital-market tasks, feedback and industry engagement within entrepreneurship education. Stronger measurement, longitudinal designs and behavioural follow-up are required before causal or employment-related claims can be made.

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