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Digital Performance Anxiety among Young Agripreneurs: Examining the Role of AI Literacy and Entrepreneurial Communication

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ABSTRACT

The rapid digital transformation of agribusiness has created new opportunities for young entrepreneurs to access markets, communicate with customers, promote agricultural products, and adopt artificial intelligence (AI)-enabled tools. The increasing expectation to perform effectively in digital environments may also generate psychological challenges, particularly among young agripreneurs who are required to communicate, present, market, and make business decisions through digital platforms. While existing research has examined technology adoption and digital entrepreneurship, limited attention has been given to the psychological dimension of digital performance, particularly Digital Performance Anxiety (DPA). This study examines the nature and determinants of DPA among young agripreneurs, with particular emphasis on AI literacy, digital self-efficacy, and entrepreneurial communication. DPA is conceptualised as anxiety experienced when individuals are required to perform, communicate, present, or be evaluated in digitally mediated entrepreneurial contexts. A quantitative, cross-sectional research design is employed among young agripreneurs engaged in digitally enabled agricultural and allied enterprises in India. The study contributes to the emerging literature on the human and psychological dimensions of digital transformation in agribusiness, examining whether AI literacy and digital self-efficacy function as protective factors against DPA, and whether entrepreneurial communication competence is associated with greater confidence in digitally mediated business environments. Findings are expected to inform inclusive digital entrepreneurship and capacity-building strategies for young agripreneurs, contributing to more inclusive, resilient, and sustainable agribusiness ecosystems.

Keywords: Digital Performance Anxiety; Young Agripreneurs; Digital Self-Efficacy; Entrepreneurial Communication; Digital Transformation; Sustainable Agribusiness

1. Introduction

Digital transformation has fundamentally reshaped how agricultural enterprises are conceived, marketed, and managed. Young agripreneurs increasingly rely on digital platforms as e-commerce marketplaces, social media, mobile applications, and AI-enabled decision-support tools to access markets, engage customers, and

manage business operations. Government-led digital agriculture initiatives in India, along with the proliferation of smartphone-based Agri-tech platforms, have accelerated the expectation that young entrepreneurs must be digitally visible, responsive, and competent. The requirement constantly performs through live-streamed sales, video-based marketing, digital pitching to investors

or buyers, and public-facing social media engagement which may generate a distinct form of anxiety that has received limited empirical attention in agribusiness research. Drawing on the broader psychological literature on performance anxiety, communication apprehension, and technology anxiety, this study introduces and examines the construct of Digital Performance Anxiety (DPA) among young agripreneurs.

While prior research has extensively documented drivers and barriers of digital technology adoption in agriculture, and a growing body of work addresses entrepreneurial well-being more broadly, the specific psychological experience of being evaluated, watched, or required to perform digitally in an entrepreneurial agricultural context remains under-theorised. This gap is particularly significant given that young agripreneurs often lack formal training in digital communication and AI tools, are frequently first-generation entrepreneurs, and operate in rural or semi-urban contexts where digital infrastructure and literacy support are uneven. This study addresses three inter-related questions: (1) What is the nature and prevalence of DPA among young agripreneurs engaged in digitally enabled enterprises? (2) Do AI literacy and digital self-efficacy act as protective factors that reduce DPA? (3) Does entrepreneurial communication competence explain or mediate the relationship between digital capability and DPA?

2. Objectives of the Study

1. To conceptualise and empirically examine Digital Performance Anxiety (DPA) as a distinct construct among young agripreneurs.
2. To examine the relationship between AI literacy and DPA.
3. To examine the relationship between digital self-efficacy and DPA.

The study contributes theoretically by proposing and operationalising a new construct i.e. DPA which is situated at the intersection of entrepreneurship, psychology, and digital transformation literature. It offers evidence to inform training institutions, agricultural extension services, incubators, and policymakers seeking to design digital and AI capacity-building programmes that address not only skill deficits but also the psychological barriers that may inhibit young agripreneurs from fully engaging with digital markets.

3. Literature Review

Digital transformation in agriculture has been characterised by the growth of e-commerce, mobile-based advisory services, social media marketing, digital

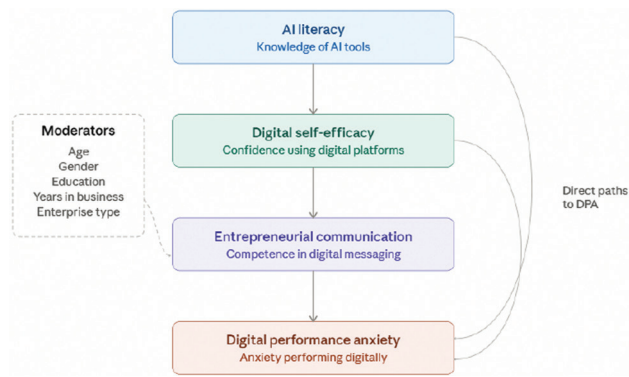
payment systems, and increasingly, AI-enabled tools for crop advisory, pricing, and customer engagement (Trendov et al., 2019). Young entrepreneurs are positioned as key adopters of these technologies given their relatively higher digital exposure, yet studies also note substantial heterogeneity in digital readiness across rural youth populations (FAO, 2022). The psychological literature distinguishes several related constructs: performance anxiety (apprehension associated with being evaluated during a task), communication apprehension (fear or anxiety associated with real or anticipated communication with others), and computer/technology anxiety (discomfort or fear associated with using digital technologies) (McCroskey, 1984). DPA draws on and extends both constructs to the entrepreneurial context, denoting anxiety specifically triggered by the requirement to perform, present, market, or be evaluated through digitally mediated entrepreneurial channels such as live commerce, video-based marketing, digital pitching, or AI-assisted decision-making visible to stakeholders. AI literacy, defined by Long and Magerko (2020) as the set of competencies that enable individuals to critically evaluate AI technologies and use them effectively across every day and work contexts, has been linked in emerging research to greater user confidence and self-management when interacting with AI systems (Carolus et al., 2023), though empirical work connecting AI literacy specially to anxiety outcomes among entrepreneurs remains limited. Digital self-efficacy builds on Bandura's (1997) social cognitive theory, in which self-efficacy refers to an individual's belief in their capacity to organise and execute the courses of action required to produce a given attainment; applied to computing context, computer self-efficacy has been shown to shape user's affective reactions, anxiety, and persistence in technology use (Compeau & Higgins, 1995).

4. Research Gap

Despite growing attention to digital entrepreneurship and technology adoption in agriculture, the psychological dimension of digital performance, specifically anxiety arising from the requirement to perform and be evaluated digitally which has not been systematically conceptualised or measured among young agripreneurs. This study addresses this gap by introducing DPA as a distinct construct and empirically situating it within a nomological network of AI literacy, digital self-efficacy, and entrepreneurial communication competence.

5. Conceptual Framework and Hypotheses

Drawing on social cognitive theory, communication apprehension theory, this study proposes a conceptual model in which AI literacy and digital self-efficacy act as



Solid arrows: hypothesised direct and sequential effects (H1-H3). Dashed arrow: moderation (H6)

Figure 1. Conceptual Framework

Table 1. Hypotheses

Hypothesis	Statement
H1	AI literacy is negatively associated with Digital Performance Anxiety (DPA) among young agripreneurs.
H2	Digital self-efficacy is negatively associated with DPA among young agripreneurs.
H3	Entrepreneurial communication competence is negatively associated with DPA among young agripreneurs.
H4	Digital self-efficacy mediates the relationship between AI literacy and DPA.
H5	Entrepreneurial communication competence mediates the relationship between AI literacy and DPA.
H6	Socio-demographic factors (age, gender, education, years in business, type of enterprise) moderate the relationship between AI literacy/digital self-efficacy and DPA.

protective (anxiety-reducing) factors, entrepreneurial communication competence acts as both a direct protective factor and a mediating mechanism, and DPA is the focal outcome variable. Socio-demographic and enterprise characteristics are modelled as moderating factors.

6. Methodology

Research Design

This study adopts a quantitative, cross-sectional survey design, appropriate for examining associations among psychological and behavioural constructs across a defined population at a single point in time.

Population and Sample

The target population comprises young agripreneurs (typically aged 18–35 years) engaged in digitally enabled agricultural and allied enterprises (e.g., agri-produce marketing, agri-input retail, farm-based value addition,

Table 2. Sample profile (n = 40)

Characteristic	Category	% (n = 40)
Gender	Male	57.5% (23)
	Female	42.5% (17)
Education	Undergraduate	62.5% (25)
	Postgraduate	22.5% (9)
	Diploma/Certificate	15.0% (6)
Location	Semi-urban	37.5% (15)
	Urban	32.5% (13)
	Rural	30.0% (12)
Enterprise type	Agri-input retail	27.5% (11)
	Farm-based value addition	22.5% (9)
	Agri-produce marketing	15.0% (6)
	Dairy/Poultry allied enterprise	15.0% (6)
	Organic farming	12.5% (5)
	Agri-tech start-up	7.5% (3)
Age (years)	M = 26.33, SD = 4.94 (range 18–35)	
Years in business	M = 3.55, SD = 2.14 (range 1–7)	

agri-tech start-ups) in India. A purposive-cum-snowball sampling strategy is proposed, supplemented by outreach through agricultural incubators, Krishi Vigyan Kendras (KVKs), start-up cells, and farmer producer organisations (FPOs), given the absence of a single comprehensive sampling frame for this population.

Instrumentation

A structured questionnaire was used comprising: (i) socio-demographic and enterprise profile; (ii) a 5-item Digital Performance Anxiety scale; (iii) a 5-item AI Literacy scale; (iv) a 5-item Digital Self-Efficacy scale; and (v) a 5-item Entrepreneurial Communication Competence scale, each measured on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Ethical Considerations

The study sought to follow standard ethical protocols: voluntary participation, informed consent, anonymity, and secure data storage. For the full study, institutional ethics approval should be obtained prior to data collection.

7. Results

The pilot sample (n = 40) had a mean age of 26.33 years (SD = 4.94) and average business experience of 3.55 years (SD = 2.14). The sample was 57.5% male and 42.5% female, predominantly undergraduate-educated (62.5%), and fairly evenly spread across semi-urban, urban, and rural locations. Agri-input retail (27.5%) and farm-based value addition (22.5%) were the most represented enterprise types. Table 3 presents descriptive statistics

Table 3. Descriptive statistics for study variables

Variable	M	SD	Min	Max
Digital Performance Anxiety	2.91	0.61	1.20	3.80
AI Literacy	3.39	0.56	1.80	4.40
Digital Self-Efficacy	3.26	0.62	1.80	4.80
Entrepreneurial Communication Competence	3.24	0.58	2.20	4.60

Table 4. Correlation matrix

Variable	1	2	3	4
1. DPA	—			
2. AI Literacy	-0.250	—		
3. Digital Self-Efficacy	-0.553**	0.277	—	
4. Entrepreneurial Communication	-0.403*	0.273	0.332*	—

* $p < .05$, ** $p < .01$

Hypothesis Testing — Direct Effects (H1–H3)

for the four study variables. Mean DPA was 2.91 (SD = 0.61) on the 5-point scale, indicating a moderate overall level of digital performance anxiety in the sample; 75% of respondents fell in the “Moderate” DPA category, 17.5% “Low”, and 7.5% “High”. Mean AI literacy (M = 3.39), digital self-efficacy (M = 3.26), and entrepreneurial communication competence (M = 3.24) were all slightly above the scale midpoint.

Table 4 presents Pearson correlations among the study variables. DPA was significantly and negatively correlated with digital self-efficacy ($r = -0.553$, $p < 0.01$) and entrepreneurial communication competence ($r = -0.403$, $p < 0.05$), but not significantly correlated with AI literacy ($r = -0.250$, $p = 0.119$). AI literacy was positively, though not significantly, associated with both digital self-efficacy ($r = 0.277$, $p = 0.083$) and entrepreneurial communication competence ($r = 0.273$, $p = 0.088$). Digital self-efficacy and entrepreneurial communication competence were significantly positively correlated ($r = 0.332$, $p < 0.05$).

Simple linear regressions were conducted to test H1–H3 (Table 5). Digital self-efficacy significantly and negatively predicted DPA ($\beta = -0.550$, $p < 0.001$), explaining 30.6% of variance, supporting H2. Entrepreneurial communication competence also significantly and negatively predicted DPA ($\beta = -0.422$, $p = 0.010$), explaining 16.2% of variance, supporting H3. AI literacy showed a negative but non-significant association with DPA ($\beta = -0.275$, $p = 0.119$), and H1 was therefore not supported in this sample.

A multiple regression with all three predictors entered simultaneously (Table 7) explained 36.3% of the variance in DPA ($R^2 = 0.363$, $F(3,36) = 6.83$, $p = 0.001$). Digital self-efficacy remained a significant unique predictor ($B =$

Table 5. Simple regression results (H1–H3)

Predictor → DPA	β (unstd.)	t	p	R^2
AI Literacy (H1)	-0.275	-1.58	0.119	0.063
Digital Self-Efficacy (H2)	-0.550*	-4.03	<0.001	0.306
Entrepreneurial Communication (H3)	-0.422*	-2.68	0.010	0.162

Table 6. Multiple regression results (simultaneous entry)

Predictor	B	SE	t	p
(Constant)	5.413	0.640	8.45	<0.001
AI Literacy	-0.065	0.155	-0.42	0.677
Digital Self-Efficacy	-0.456	0.143	-3.18	0.003
Entrepreneurial Communication	-0.245	0.151	-1.63	0.113

Table 7. Bootstrapped mediation analysis

Path	a	b	a×b (indirect)	95% Bootstrap CI (5,000 resamples)
H4: AI Literacy → Digital Self-Efficacy → DPA	0.307*	-0.521*	-0.160	[-0.314, -0.030] — significant
H5: AI Literacy → Entrepreneurial Comm. → DPA	0.286	-0.379*	-0.108	[-0.272, 0.015] — not significant

-0.456, $p = 0.003$), while AI literacy ($B = -0.065$, $p = 0.677$) and entrepreneurial communication competence ($B = -0.245$, $p = 0.113$) did not retain significance once shared variance was accounted for consistent with digital self-efficacy acting as a more proximal driver of reduced DPA.

Bootstrapped mediation analysis tested whether digital self-efficacy and entrepreneurial communication competence mediate the relationship between AI literacy and DPA (Table 7). The indirect effect of AI literacy on DPA through digital self-efficacy was significant ($ab = -0.160$, 95% CI [-0.314, -0.030], excluding zero), supporting H4: AI literacy appears to reduce DPA primarily by strengthening digital self-efficacy, rather than through a direct effect. The indirect effect through entrepreneurial communication competence was not significant ($ab = -0.108$, 95% CI [-0.272, 0.015], including zero), so H5 was not supported.

Interaction terms and subgroup comparisons were used to test whether socio-demographic and enterprise-related variables moderate the predictor–DPA relationships (Table 8). None of the tested interactions (gender, age, years in business) or subgroup differences (education, enterprise type, gender) reached statistical significance in this pilot sample. H6 was therefore not supported, though this may reflect limited statistical

Table 8. Moderation and subgroup analyses

Interaction term	B (interaction)	p	Result
Digital Self-Efficacy × Gender	0.288	0.312	Not significant
AI Literacy × Age	-0.049	0.110	Not significant
Digital Self-Efficacy × Years in Business	-0.092	0.195	Not significant
DPA by Education (ANOVA)	F = 1.28	0.290	Not significant
DPA by Enterprise Type (ANOVA)	F = 0.85	0.523	Not significant
DPA by Gender (t-test)	t = -0.38	0.708	Not significant

power given the small sample size ($n = 40$) rather than the absence of true moderation effects.

8. Discussion

The pilot findings suggest that Digital Performance Anxiety among young agripreneurs is more strongly rooted in a lack of confidence in one's own ability to act digitally (digital self-efficacy) and in weaker communication competence, than in a lack of technical knowledge about AI tools. AI literacy's effect on DPA appears to operate indirectly through building digital self-efficacy, rather than directly, as shown by the significant mediation result for H4 and the non-significant direct effect for H1. This pattern is consistent with social cognitive theory's emphasis on self-efficacy, rather than raw knowledge, as the proximal driver of behaviour and affect in performance contexts. The non-significant mediation via entrepreneurial communication competence (H5) suggests that communication skill may operate somewhat independently of AI literacy, as a parallel rather than sequential protective factor consistent with its significant direct effect on DPA (H3) even though it was not driven by AI-related knowledge in this sample. The absence of significant moderation effects (H6) should be interpreted cautiously. With a sample of 40, statistical power to detect moderate interaction effects is limited; larger, more diverse samples particularly with greater representation of older, less-educated, or newer entrepreneurs may be needed to properly test whether socio-demographic and enterprise characteristics condition these relationships.

9. Conclusion

This study introduced Digital Performance Anxiety (DPA) as a construct relevant to young agripreneurs navigating increasingly digital and AI-enabled business environments, and examined its relationship with AI literacy, digital self-efficacy, and entrepreneurial communication competence. Pilot findings indicate that

digital self-efficacy and entrepreneurial communication competence are significant protective factors against DPA, while AI literacy's protective role appears to operate indirectly, through digital self-efficacy, rather than as a direct effect. Socio-demographic and enterprise characteristics did not significantly moderate these relationships in this small sample. Subject to replication with a larger, genuinely collected dataset, these findings suggest that inclusive digital capacity-building strategies for young agripreneurs should emphasise confidence-building, hands-on digital practice and communication skills training, not instead of technical AI literacy instruction, in order to support more resilient and psychologically sustainable digital entrepreneurship in agribusiness.

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Declaration of Conflicting Interests

The authors declare no conflict of interest.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this manuscript, the authors have not used generative AI or AI-assisted technologies. The authors independently developed the conceptual framework and scholarly arguments and remain fully responsible for the accuracy, originality, and integrity of the manuscript.

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English (Hons). Apart from his teaching responsibilities, Dr. Rath has an extensive publication record, with articles in reputable journals and a book chapter on Entrepreneurial Communication Skills. He has participated in numerous seminars and conferences, presenting papers on topics ranging from language acquisition to innovative teaching methodologies. He has published books on Business Writings in English and Communication Skills. Driven by a passion for continuous learning, Dr. Rath has attended various workshops and training programs, including those conducted by BPUT, British Council, Infosys, and IIT Kharagpur. He remains actively engaged in research and recently attended a webinar on the National Education Policy (NEP) 2021. In addition to his academic pursuits, Dr. Rath has organized and conducted several webinars, workshops, and training programs on topics such as management, innovation, and career advancement. His dedication to social services and creativity reflects in his hobbies.

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