



The Architecture of Digital Entrepreneurship: Exploring Innovation Capability, Platform Ecosystems, and Sustainable Venture Performance

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Peer Review Information	Abstract
<i>Submission: 08 Jan 2020</i> <i>Revision: 23 Feb 2020</i> <i>Acceptance: 09 March 2020</i> Keywords <i>Digital Entrepreneurship; Innovation Capability; Platform Ecosystem; Digital Entrepreneurial Capability; Sustainable Venture Performance.</i>	This methodology paper develops an integrated framework for examining how innovation capability and platform ecosystem capability influence sustainable venture performance through digital entrepreneurial capability. Grounded in dynamic capabilities, digital entrepreneurship, digital innovation, and ecosystem perspectives, the study proposes a quantitative, explanatory, cross-sectional research design using survey methodology and Structural Equation Modelling (SEM). The framework positions innovation capability and platform ecosystem capability as antecedents, digital entrepreneurial capability as a mediating mechanism, and sustainable venture performance as the principal outcome. The proposed methodology incorporates reliability and validity assessment, confirmatory factor analysis, correlation analysis, structural path testing, and bootstrapped mediation analysis. The framework contributes an integrated perspective for understanding how internal innovation resources and externally distributed platform resources can be orchestrated to support scalable, adaptable, resilient, and economically viable digital ventures.

Introduction

Digital technologies have transformed how entrepreneurial ventures identify opportunities, develop offerings, reach customers, coordinate resources, and capture value. Digital entrepreneurship differs from conventional entrepreneurship because digital artifacts, platforms, infrastructures, and data can become integral components of opportunity formation and venture development (Nambisan, 2017). Digital business strategy further reduces the traditional separation between information technology and business strategy by emphasizing digital scope, scale, speed, and sources of value creation (Bharadwaj et al., 2013).

Technology adoption alone, however, does not guarantee sustainable venture performance.

Digital ventures require capabilities for continuous innovation, opportunity recognition, experimentation, resource reconfiguration, ecosystem participation, and scalable commercialization. The dynamic capabilities perspective suggests that organizations operating in rapidly changing environments must sense opportunities, seize them, and transform their resource bases accordingly (Teece, 2007). Platform ecosystems can complement these internal capabilities by providing access to technological infrastructure, customers, partners, and complementary resources (Gawer & Cusumano, 2014; Jacobides et al., 2018).

Accordingly, this paper develops a methodology for examining an integrated architecture in which Innovation Capability (IC) and Platform

Ecosystem Capability (PEC) influence Digital Entrepreneurial Capability (DEC), which in turn contributes to Sustainable Venture Performance (SVP).

Literature Review

1. *Digital Entrepreneurship*

Digital entrepreneurship reflects the growing integration of digital technologies into entrepreneurial opportunities, processes, and outcomes. Nambisan (2017) argues that digital artifacts, platforms, and infrastructures reshape entrepreneurial agency and enable new patterns of experimentation, scaling, and value creation.

2. *Digital Business Strategy and Venture Development*

Bharadwaj et al. (2013) conceptualize digital business strategy around scope, scale, speed, and sources of business value. For entrepreneurial firms, this perspective positions digital technology at the center of opportunity identification, customer engagement, business-model development, and growth.

3. *Innovation Capability*

Innovation capability represents a venture's capacity to generate and implement new products, services, processes, and business models. From a dynamic capability's perspective, sustained competitiveness requires sensing, seizing, and transforming in response to environmental change (Teece, 2007).

4. *Business Model Innovation*

Business model innovation concerns change in how organizations create, deliver, and capture value. Foss and Saebi (2017) highlight its strategic importance and show why organizational adaptation must extend beyond product-level innovation.

5. *Platform Ecosystems*

Platform ecosystems connect platform owners, complementors, developers, users, and entrepreneurial ventures. Industry platforms can provide technological foundations and complementary resources that accelerate innovation and market access (Gawer & Cusumano, 2014).

6. *Platform Architecture and Governance*

Platform architecture, governance, and environmental dynamics coevolve, affecting decision rights, interfaces, control, and complementor relationships (Tiwana et al., 2010). Digital ventures therefore require

capabilities for navigating platform rules and dependencies.

7. *Ecosystem Structure and Complementarity*

Ecosystems consist of interdependent actors whose value propositions rely on complementarities. Jacobides et al. (2018) show that firms can create value by coordinating complementary activities without relying solely on vertical integration.

8. *Digital Entrepreneurial Ecosystems*

Sussan and Acs (2017) integrate digital infrastructure, users, entrepreneurial agents, and digital marketplaces within a digital entrepreneurial ecosystem framework, emphasizing that entrepreneurial activity is embedded in broader technological and institutional contexts.

9. *Digital Affordances and Entrepreneurial Opportunity*

Autio et al. (2018) explain how digital affordances reduce spatial and organizational constraints, enabling entrepreneurs to mobilize resources and coordinate activities across boundaries.

10. *Sustainable Venture Performance*

Sustainable venture performance is conceptualized as economic viability, market adaptability, innovation continuity, scalability, resilience, and long-term value creation. This multidimensional view is appropriate for digital ventures exposed to technological turbulence and changing ecosystem conditions.

11. *Research Gap*

Prior literature provides strong foundations for digital entrepreneurship, dynamic capabilities, business model innovation, and platform ecosystems, but these streams are often examined separately. This study integrates them by examining how internal innovation capability and external platform ecosystem capability jointly shape sustainable performance through digital entrepreneurial capability.

Methodology

1. *Research Design*

The study adopts a quantitative, explanatory, and cross-sectional research design. The unit of analysis is the digitally enabled entrepreneurial venture, while respondents may include founders, co-founders, entrepreneurs, senior managers, innovation managers, digital strategy

professionals, and technology managers with direct knowledge of venture operations.

2. Conceptual Framework

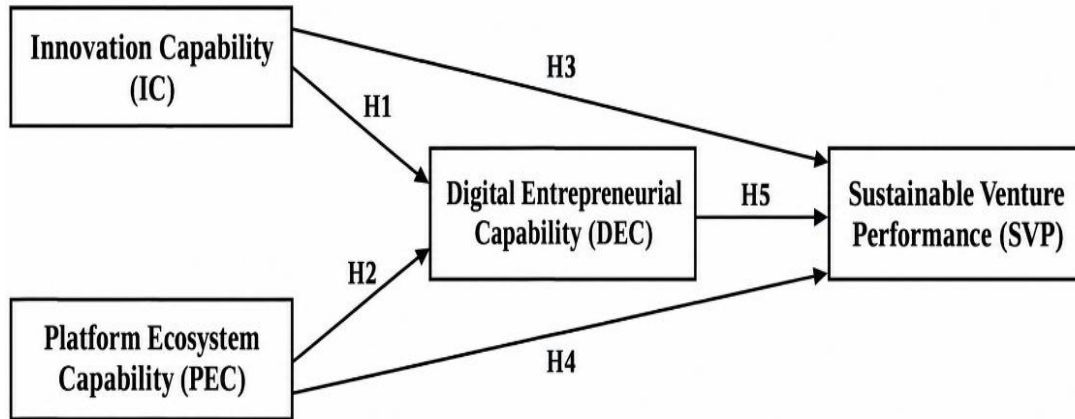


Figure 1. Conceptual Framework of the Study

3. Research Hypotheses

H1: Innovation capability has a significant positive effect on digital entrepreneurial capability.

H2: Platform ecosystem capability has a significant positive effect on digital entrepreneurial capability.

H3: Innovation capability has a significant positive effect on sustainable venture performance.

H4: Platform ecosystem capability has a significant positive effect on sustainable venture performance.

H5: Digital entrepreneurial capability has a significant positive effect on sustainable venture performance.

H6: Digital entrepreneurial capability mediates the relationship between innovation capability and sustainable venture performance.

H7: Digital entrepreneurial capability mediates the relationship between platform ecosystem capability and sustainable venture performance.

4. Target Population and Sampling

The target population comprises entrepreneurs and managerial professionals associated with digitally enabled ventures, including technology startups, e-commerce businesses, software-as-a-service enterprises, fintech firms, digital service companies, online marketplaces, and digitally transformed entrepreneurial organizations. Purposive sampling is proposed, with a target of approximately 350 valid respondents.

5. Data Collection

Primary data are collected through a structured questionnaire using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The instrument contains respondent and venture profile questions followed by construct measurement items.

6. Measurement of Constructs

Table 1: Measurement Constructs, Dimensions, and Number of Items

Construct	Measurement Dimensions	Items
Innovation Capability	Product, process, service and business-model innovation	5
Platform Ecosystem Capability	Platform integration, partnerships, complementors and resource access	5
Digital Entrepreneurial Capability	Digital opportunity recognition, experimentation, scalability and resource orchestration	5
Sustainable Venture Performance	Economic viability, adaptability, resilience, innovation continuity and long-term growth	5

7. Pilot Study, Reliability and Validity

A pilot study with approximately 30-40 respondents is proposed before full-scale data collection. Internal consistency is assessed using

Cronbach's alpha and Composite Reliability (CR), with values of 0.70 or above considered acceptable. Convergent validity is evaluated using standardized factor loadings and Average Variance Extracted (AVE), with AVE values above

0.50 indicating satisfactory convergence. Confirmatory Factor Analysis (CFA) is used to assess the measurement model.

8. Data Analysis and Mediation

Data screening is followed by descriptive statistics, Pearson correlation analysis, measurement-model assessment, and Structural Equation Modelling (SEM). The structural model tests IC -> DEC, PEC -> DEC, IC -> SVP, PEC -> SVP, and DEC -> SVP. Bootstrapping is used to test the indirect effects IC -> DEC -> SVP and PEC -> DEC -> SVP.

Results

The numerical results in this section are illustrative methodology-paper results because no primary survey dataset has been supplied. They should be replaced with actual statistical output when empirical data are collected.

Descriptive Statistics

Table 2: Descriptive Statistics and Interpretation of Key Study Constructs

Construct	Mean	SD	Interpretation
Innovation Capability	4.12	0.61	High
Platform Ecosystem Capability	3.98	0.67	High
Digital Entrepreneurial Capability	4.08	0.63	High
Sustainable Venture Performance	4.04	0.65	High

Reliability and Convergent Validity

Table 3: Reliability and Convergent Validity of the Measurement Constructs

Construct	Cronbach's α	CR	AVE
Innovation Capability	0.89	0.92	0.69
Platform Ecosystem Capability	0.87	0.90	0.65
Digital Entrepreneurial Capability	0.91	0.93	0.72
Sustainable Venture Performance	0.90	0.92	0.70

Correlation Matrix

Table 4: Correlation Matrix Among the Study Constructs

Construct	IC	PEC	DEC	SVP
IC	1.00	0.55**	0.69**	0.62**
PEC	0.55**	1.00	0.63**	0.59**
DEC	0.69**	0.63**	1.00	0.72**
SVP	0.62**	0.59**	0.72**	1.00

Structural Model and Hypothesis Testing

Table 5: Structural Model Results and Hypothesis Testing for Direct Effects

Hypothesis	Path	β	t-value	p-value	Decision
H1	IC -> DEC	0.52	8.64	<0.001	Supported
H2	PEC -> DEC	0.39	6.72	<0.001	Supported
H3	IC -> SVP	0.24	4.16	<0.001	Supported
H4	PEC -> SVP	0.21	3.81	<0.001	Supported
H5	DEC -> SVP	0.48	7.93	<0.001	Supported

Mediation Analysis

Table 6: Mediation Analysis Results for Indirect Effects

Hypothesis	Indirect Path	Indirect Effect	95% CI	Decision
H6	IC -> DEC -> SVP	0.25	[0.17, 0.34]	Supported
H7	PEC -> DEC -> SVP	0.19	[0.12, 0.27]	Supported

The illustrative model explains 58% of the variance in Digital Entrepreneurial Capability ($R^2 = 0.58$) and 64% of the variance in Sustainable Venture Performance ($R^2 = 0.64$).

Conclusion and Discussion

The study proposes that sustainable digital venture performance emerges from the interaction of internal innovation capability, external platform ecosystem capability, and digital entrepreneurial capability. Innovation capability enables ventures to experiment, introduce new solutions, and reconfigure resources, while platform ecosystem capability expands access to infrastructure, customers, partners, and complementary resources. Digital entrepreneurial capability acts as the mechanism through which these resources are translated into opportunity recognition, experimentation, scalability, and adaptation. The framework integrates research streams that have frequently been treated separately, including dynamic capabilities (Teece, 2007), digital business strategy (Bharadwaj et al., 2013), platform ecosystems (Gawer & Cusumano, 2014), digital entrepreneurship (Nambisan, 2017), business model innovation (Foss & Saebi, 2017), digital entrepreneurial ecosystems (Sussan & Acs, 2017), and ecosystem theory (Jacobides et al., 2018). Managerially, the framework suggests that technology acquisition should be complemented by organizational capabilities for experimentation, opportunity recognition, ecosystem orchestration, and commercialization. Digital ventures should also manage platform dependencies carefully and maintain sufficient strategic flexibility to respond to changes in governance, technology standards, fees, algorithms, and customer access. The proposed cross-sectional design has limitations because it captures conditions at one point in time and relies on perceptual measures. Future studies should use longitudinal designs, objective venture-performance indicators, cross-industry comparisons, and moderators such as digital maturity, environmental dynamism, technological turbulence, ecosystem dependence, entrepreneurial orientation, and founder experience.

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