# Entrepreneuring in a Digital World: A Research Agenda

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Seminar on Digital Entrepreneurship @ Hong Kong Shue Yan University

22 September 2020

#### **Digitization & Platformization**

Digitization: Infusion of digital technologies into products/services, processes and business models and the accompanying changes in the ways actors (individuals / organizations) behave/perform (e.g., Nambisan, 2017; Nambisan, Lyytinen, Yoo, 2020; Nambisan, Wright, Feldman, 2019)

Platformization: A shift from individual products/services to platforms as intermediaries for transactions/interactions and for organizing value creation, delivery and value appropriation (e.g., Gawer, 2014; Cusumano et al., 2019; Haigu & Altman, 2017; Parker, Van Alstyne, & Choudhary, 2016)



#### Digital Technologies, Platforms and Entrepreneurship



#### Digital Technologies

<u>Digital artifacts</u>: Digital components, applications, or media content part of a new product/service or platform; Key characteristics - open, reprogrammable, expandable, recombinable (Ekbia, 2009; Kallinikos et al., 2013; Porter & Heppelmann, 2014)

<u>Digital platforms (and ecosystems)</u>: Shared, common set of services and architecture that serve to host complementary offerings, including digital artifacts (Parker et al., 2016; Tiwana et al., 2010)

<u>Digital infrastructure</u>: Digital technology tools and systems (e.g., cloud computing, social media, AI/analytics, 3D printing, IoT, etc.) that offer communication, collaboration, and/or computing capabilities for innovation and entrepreneurship

#### Toward a Digital Technology Perspective of Entrepreneurship

Emergent entrepreneurship perspectives (opportunity creation, narrative, effectuation, etc.)  $\rightarrow$  fluid boundaries associated with entrepreneurial processes and outcomes .... however, lack of focus on concepts/constructs that underlie digital entrepreneurship limit their potential

A fine-grained focus on <u>foundational characteristics of digital</u> <u>technologies</u> and incorporation of relevant digital technology related <u>theoretical concepts/perspectives</u> ... offer a promising path toward developing more accurate explanations of <u>entrepreneurship</u> <u>in an increasingly digital world</u>

## Research Implications of Digitization on Entrepreneurship

- Nature of Uncertainty
- Nature and degree of Participation & Contribution
- Nature of Dependencies
- Distribution of Risks and Rewards
- International new venturing

## Nature of Entrepreneurial Uncertainty

<u>Less bounded entrepreneurial processes & outcomes</u> — A shift from discrete, impermeable & stable boundaries to more porous & fluid boundaries (Nambisan, 2017)

- Embedding <u>digital components</u> in physical products (e.g., Nike 'smart shoes', Eight mattress) separate function from form and content from medium (Kallinikos et al, 2013; Yoo et al., 2010), making outcomes 'intentionally incomplete'
- <u>Digital platforms</u> (e.g., Nest Connected Home, Volvo Connected Car) allow for 'generative' emergence of outcomes (recombination of components; assembly/extension/redistribution of functionality) (Zittrain, 2006, 2008), dynamically and continually redefining product/service boundaries
- <u>Digital infrastructures</u> (e.g. 3D printing, cloud computing) allow for rapid enactment/re-enactment of innovation opportunities and afford extreme scalability (Tilson et al 2010), creating high temporal and processual variability

# Nature of Entrepreneurial Uncertainty

<u>Distributed and less predefined entrepreneurial agency</u> – A shift from a predefined, focal agent to dynamic collection of agents with diverse motives & capabilities (Nambisan, 2017)

 New types of digital infrastructures—such as crowdsourcing/funding systems, digital makerspaces (e.g., Instructables), work execution forums (e.g., GitHub), and dedicated social media (e.g., Open Stack) enable collective ways of pursuing innovation wherein actors opt in and out and their involvement and contributions cannot often be predicted



Q: How do more fluid entrepreneurial boundaries and distributed (less predefined) entrepreneurial agency change the **nature and degree of entrepreneurial uncertainty**, and in turn, shape the trajectory of opportunity formation and enactment?

## From Risk to Uncertainty

<u>Measurable Risk</u> (decision makers know possible outcomes and their probabilities; 'known uncertainty') and <u>unmeasurable Uncertainty</u> (decision makers know neither the possible outcomes nor their probabilities; 'unknown uncertainty') are different (Ellsberg, 1961; Knight, 1921)

- Innovation and entrepreneurship literature has largely focused on 'known uncertainty' or risk management
- However, DTs imbue uncertainty (not just risk) in innovation/entrepreneurship and imply the limits of risk-based decision frameworks founded on probabilistic analysis (Teece & Leihm, 2016)

Hence, the need to embrace a broader Knightian conception of uncertainty to understand innovation/entrepreneurship in the digital age

# Digital Openness & Entrepreneurship

Digital technologies and Platforms promote *openness* in innovation and entrepreneurship — in terms of who can participate (actors), what they can contribute (inputs), how they can contribute (process), and to what ends (outcomes) (Nambisan, Wright, Feldman, 2019)

- But, who 'gets to play' in innovation/entrepreneurial initiatives on digital platforms and ecosystems? What new theories and concepts may inform on the relationship among the nature of the opportunity, the underlying digital technologies and the distribution of innovation /entrepreneurial agency associated with it?
- How can digitization facilitate collaboration and co-creation among actors at different levels to resolve complex societal level challenges? How do openness related policies at the ecosystem/industry/ government levels (e.g., architecture, data, IP, privacy) shape the effectiveness of such initiatives? (Nambisan, Siegel, Kenney, 2018)

### Digital Affordances & Entrepreneurship

**Digital Affordance** - *action possibilities (i.e. opportunities for action)* that exists at the intersection of what a digital technology offers (e.g., technology feature) and what an actor's intentions and capabilities are (Hutchby, 2001; Norman, 1988)

Example of digital affordances: APIs and other boundary resources of digital platforms

- How and why do the "same" digital infrastructure (for example, crowdfunding system) have different entrepreneurial outcomes in different contexts?
- How and when do spatial affordances and digital affordances of 'entrepreneurial ecosystems' interact to enhance local/regional entrepreneurship success?

### Digital Generativity & Entrepreneurship

Digital Generativity - the ability of a technology platform or ecosystem to create, generate or produce new output, structure or behavior without input from the originator of the system (Zittrain, 2006); generativity is due to the ability to recombine digital technologies (components) to create new value paths



### Nature of Participation & Contribution

Does digitization (and platformization) <u>privilege</u> certain actors/entities over others in pursuing entrepreneurial opportunities? (Nambisan, Siegel, Kenney, 2018)

- Has digitization and platformization actually leveled the entrepreneurial opportunity landscape for everyone ("democratizing" entrepreneurship, Aldrich, 2014) or further marginalized certain parts of the society (for example, women/minorities, those with limited digital capabilities, limited access to digital infrastructures) in innovation/entrepreneurial initiatives (e.g., Berger & Kuckertz, 2016; Dy et al., 2017)?
- What can we draw from theoretical perspectives in sociology, political science, urban economics, etc. to understand the implications of digitization/platformization—at the community/societal levels—on participation in entrepreneurship?

### **Nature of Dependencies**

Digitization and platformization create new forms of dependencies in innovation and entrepreneurship with implications at the individual/firm/societal levels

- Entrepreneurs/new ventures participating on digital platforms (as complementors) play dual roles—as ecosystem follower and independent venture leader—that may conflict with one another with implications on entrepreneurs' personal well-being and venture performance (Nambisan & Baron, 2013, 2019)
- Digital platforms such as the sharing economy platforms redefine 'who is an entrepreneur' as well as the nature of dependencies associated with that role, in effect forging a new form of 'dependent entrepreneurship' (Cutolo & Kenney, 2020). What theories and perspectives would inform on the implications of such dependent entrepreneurship at different levels?

#### **Distribution of Risks & Rewards**

Digitization and platformization has allowed for new forms of distribution of risks and rewards in innovation and entrepreneurship ... and in the process raised several complex moral and ethical issues.

- Digital platforms have reduced the cost of entry for innovators/entrepreneurs but also created new forms of risks (e.g., platform-specific investments, IP leakage, contagion risks, etc.)
- Digital platforms have led to novel forms of value appropriation for innovators/entrepreneurs (e.g., Google Adsense) enabling them to capture value effectively/efficiently

#### **Distribution of Risks & Rewards**

However, has digitization/platformization led to equitable distribution of risks and rewards ...

- The almost monopolistic power that many large digital platforms (e.g., Facebook, Amazon) enjoy in their respective markets have raised important questions related to fairness and equity and the ensuing implications for regulators (Khan, 2016; Cutolo, Kenney, and Zysman, 2019)
- More broadly, the extent to which the fruits of entrepreneurial endeavors (e.g., in the sharing economy) have diffused into different parts of our society is debatable and raises moral, ethical, and justice issues
- What are the theories/perspectives that might inform on the distribution of risks and rewards on digital platforms and their implications for innovation/entrepreneurship?

#### Digital Technologies & International Entrepreneurship

- Digital platforms/ecosystems embody 'shared resources' the ensuing ecosystem specific advantages (ESAs) may help explain how new ventures overcome liabilities of newness and foreignness in global markets (Nambisan, Zahra & Luo, 2019)
- Digital platforms/ecosystem offer new forms of 'global connectivity' – help explain the formation of 'Born Globals' and 'accelerated internationalization'
- Digital platforms offer new forms of 'flexibility' rapidly create variants of the focal value proposition; multihoming; rapidly mobilize partners; scaling of venture scope and size; etc. that may help explain how international ventures manage strategic risks in foreign markets

## How DPEs Extend/Enrich IB Theories\*

	How DPEs extend dynamic capability theory (DCT)	How DPEs extend global integration-local responsiveness	How DPEs extend international entrepreneurship (IE) perspective	How DPEs extend global alliance perspective (GAP)
New Ways of Internationalization	<ul> <li>Resource orchestration as a new element of dynamic capability (a DPE itself is an open, evolving system; if managed properly, it can adapt/integrate/reconfigure member firms' resources to match changing needs of the market and ecosystem members)</li> <li>A loosely coupled DPE engenders more options and new ways for MNEs to invest in revitalizing their platform</li> </ul>	<ul> <li>View (I-K)</li> <li>DPEs extend I-R balance view from pure focus on parent-subsidiary lin to a new context that extends broadly to a firm's global ecosysten</li> <li>A DPE takes up some I-R functions for member firms. Vertical links in DPE integrate more primary value- chain functions while horizontal links integrate more support activities</li> <li>Greater adaptation or responsivene is viable by relying on ecosystem specific advantages and resources</li> </ul>	<ul> <li>a DPEs offer novel contexts to study "accelerated internationalization"</li> <li>DPE based advantages (e.g., context specific advantage) help new ventures overcome liabilities of newness and foreignness in global markets</li> <li>DPE based infrastructures reduce costs of conducting business lowering the perceived risks of international expansion decisions</li> </ul>	DPEs share the logic of global alliance and network perspective, yet bring a focus on the platform that underlie those alliances DPEs can serve as a critical source of inter-organizational competitive advantage through resource sharing and co-creation
New Ways of Building Knowledge and Relationships	<ul> <li>DPEs involve multi-level and complex social processes through which knowledge is sourced, diffused and integrated within and across member MNEs and between MNEs and global customers</li> <li>MNEs' capability to continuously configure and reconfigure inter- member coupling will shape the nature and extent of knowledge sharing and co-creation</li> </ul>	<ul> <li>Many MNEs participate in platform that involve standardization and scale, yet combine that with own customization—this, in turn, retain I-R balance</li> <li>DPEs allow participating firms to share and reduce costs and risks in bolstering local responsiveness</li> <li>Both leading and following membe in a DPE will benefit from system- level global coordination</li> <li>Not all players in the same DPE wil equally require I-R mandates, thus R specifics hinge more on firm need</li> </ul>	<ul> <li>DPEs offer new forms of global connectivity that help spur startups to more readily become</li> <li>"born globals"</li> <li>DPE-based collective power exercised by MNEs benefit new ventures to internationalize their offerings; however, lacking</li> <li>bargaining and controlling power in DPEs, they will also need to build strong co-opetition skills when dealing with powerful ecosystem partners</li> </ul>	<ul> <li>Niche players constitute the majority of a DPE; their specialization helps them differentiate from other ecosystem members and at the same time expand the realms of the platform</li> <li>DPEs involve lower structuralized embeddedness and provide greater flexibility for ecosystem members to source, share and co-create knowledge</li> </ul>
New Ways of Creating and Delivering Value to Global Customers	<ul> <li>DPEs emphasize the significance of "demand-based" capabilities, i.e. honed to understand diverse global users and customers.</li> <li>DPEs offer operational and structural flexibility and underline collective power in dealing with market turbulences</li> <li>DPEs imply the significance of entrepreneurial practices that allow MNEs to rapidly sense and respond to opportunities</li> </ul>	<ul> <li>Flexibility afforded by digital technologies allow for more responsiveness to local needs without forsaking the benefits from integration</li> <li>DPEs are often boundary crossing (technologies, industries, markets) helping MNEs to reach and serve diverse global customers</li> </ul>	<ul> <li>Flexibility offered by DPEs implies novel forms of opportunity recognition in global markets; while opportunities may be collectively constructed in ecosystems, individual players may pursue them differently</li> <li>Flexibility offered by DPEs allows new ventures to simultaneously participate on multiple platforms (multi-homing), thereby reducing their strategic risks</li> </ul>	<ul> <li>While DPEs offer different forms of flexibility, MNEs' ecosystem strategy (how it approaches the alignment of partners and secures its role in the competitive ecosystem) will decide how well it realizes such potential flexibility</li> <li>DPEs incorporate both coupling and looseness, propelling ambi- structuration of organizing international activities</li> </ul>

\* Nambisan, Zahra, Luo, 2019

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# Some Conclusions ...

- Digitization offers a rich set of issues for future research in entrepreneurship; however, these issues/implications are not only at different levels of analysis (individual, organization, ecosystem/community, regional/societal), but importantly, <u>across levels</u> too — an aspect that has arguably received limited attention (Nambisan, Wright, Feldman, 2019)
- Digital technologies (and platforms) are not only the context for entrepreneurship, they can also serve as the <u>operant</u> <u>resource</u> - making it imperative that studies incorporate characteristics innate to digital technologies as key explanatory factors in theorizing on the nature and process of entrepreneurship (Nambisan, Wright, Feldman, 2019)

**Thank You!** 

#### Some of my publications in this area

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