

The (Global) Digital Entrepreneurial Ecosystem

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The Digital Economy in a Multi-Polar World



Introduction

- A significant gap exists in our understanding of the digital economy in a multi-polar world.
- We introduce a conceptual framework for understanding entrepreneurship and innovation in the digital age by integrating two literatures: the digital ecosystem and the entrepreneurial ecosystem.
- The Digital Entrepreneurial Ecosystem framework consists of four building blocks: **digital infrastructure governance, digital user citizenship, digital technology entrepreneurship, and digital multisided platforms**.
- **Nambisan, Wright and Feldman (2017) *Research Policy***.

Studying Startups

- The entrepreneurship literature focuses on thousands of small startups and often these small startups fail due to the lack of customer base.
- In the digital economy it is precisely the opposite—we have much fewer startups and each startup has millions of users.
- In some sense entrepreneurship research has ignored both the role that *digital technologies* play in entrepreneurship and the role that *users* play in digital multi-sided platforms as organizational form.
- [Hobjin and Jovanovic \(2001\) *American Economic Review*](#).

Why Systems

- National Systems of Innovation, Nelson 1991.
- Regional Systems of Innovation, Cooke 1998.
- Clusters and Competitive Advantage, Porter 1990.
- National Systems of Entrepreneurship, Acs et al. 2014.

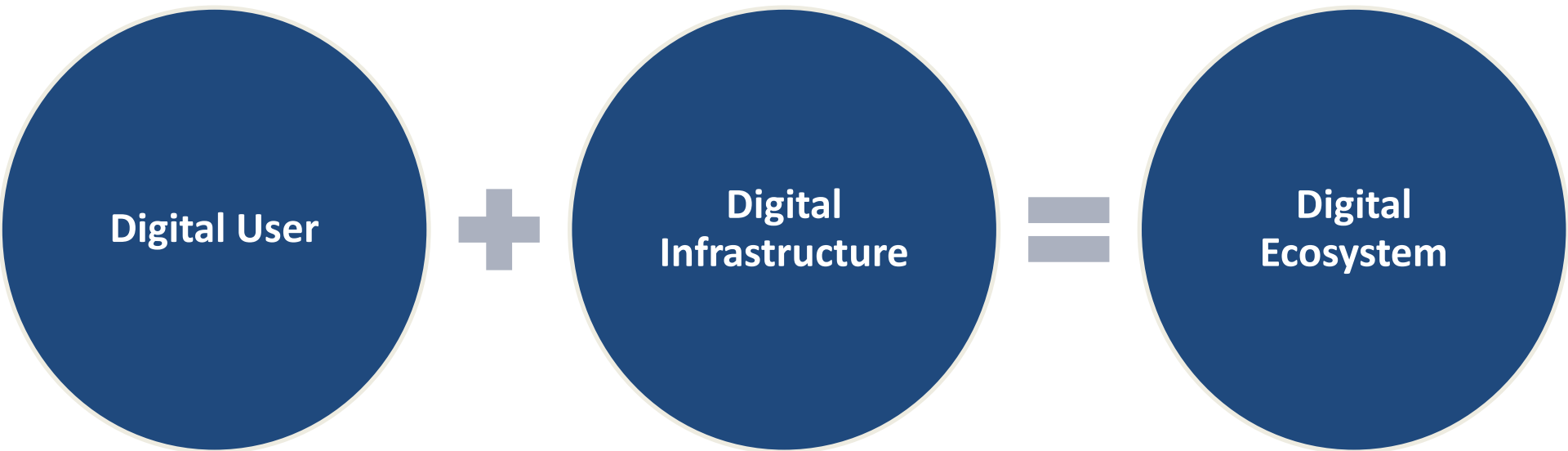
Studying Digital Entrepreneurship

- ... entrepreneurship research has yet to contextualize within the digital economy in terms of how institutions and agency will be changed as a result of digitization
- *And information technology has not fully understood entrepreneurship and innovation.*
- *Sussan and Acs (2017) Song (2019) Small Business Economics.*

Ecosystem Interdependencies



The Digital Ecosystem



Definition of a Digital Ecosystem

- *“...a self-organizing, scalable and sustainable system composed of heterogeneous digital entities and their interrelations focusing on interactions among entities to increase system utility, gain benefits, and promote information sharing, inner and inter cooperation and system innovation.”*
- Korpela, K et al (2016) , *IEEE*.

The Entrepreneurial Ecosystem



Definition of Entrepreneurial Ecosystem

- *“...dynamic institutionally embedded interaction between entrepreneurial attitudes, abilities and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures.”*
- *Acs, Szerb, Autio (2014) Research Policy*

The Merging of Two Ecosystems

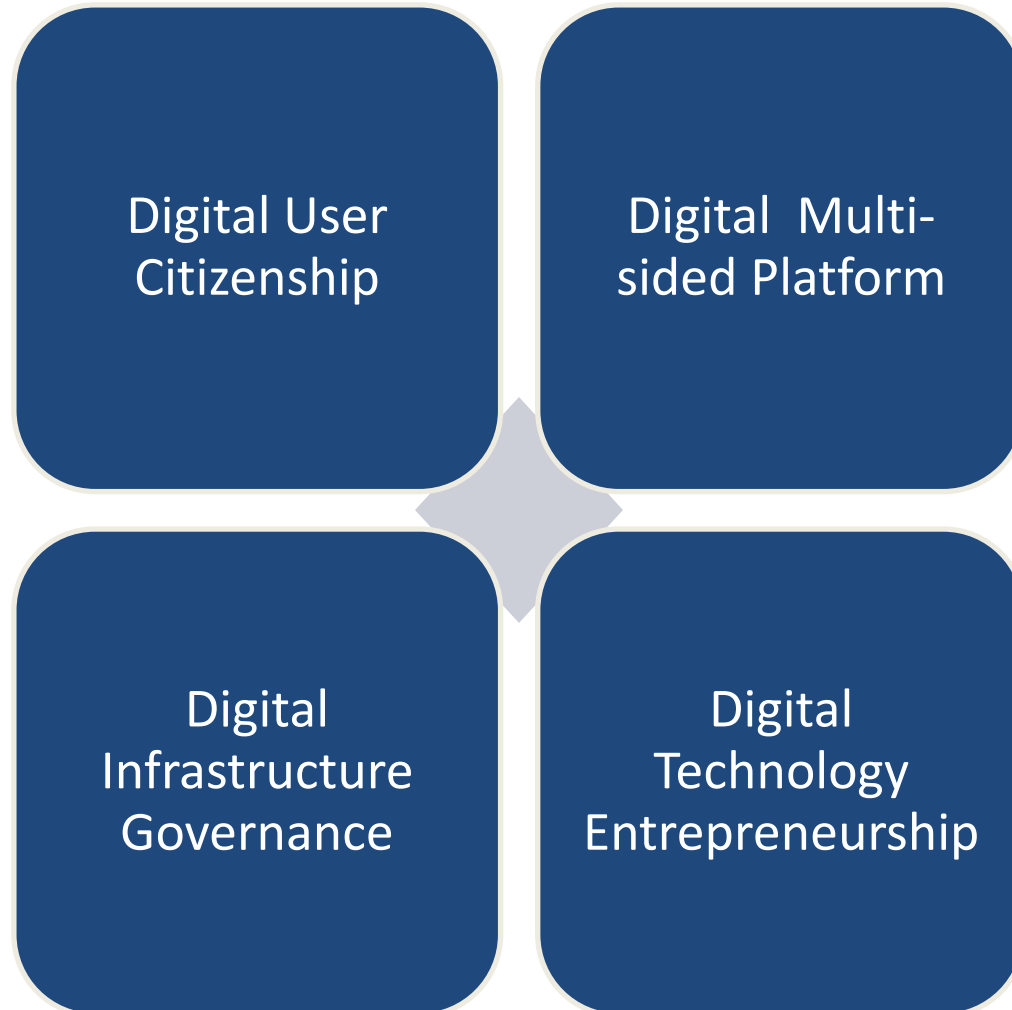


**Digital
Ecosystem**

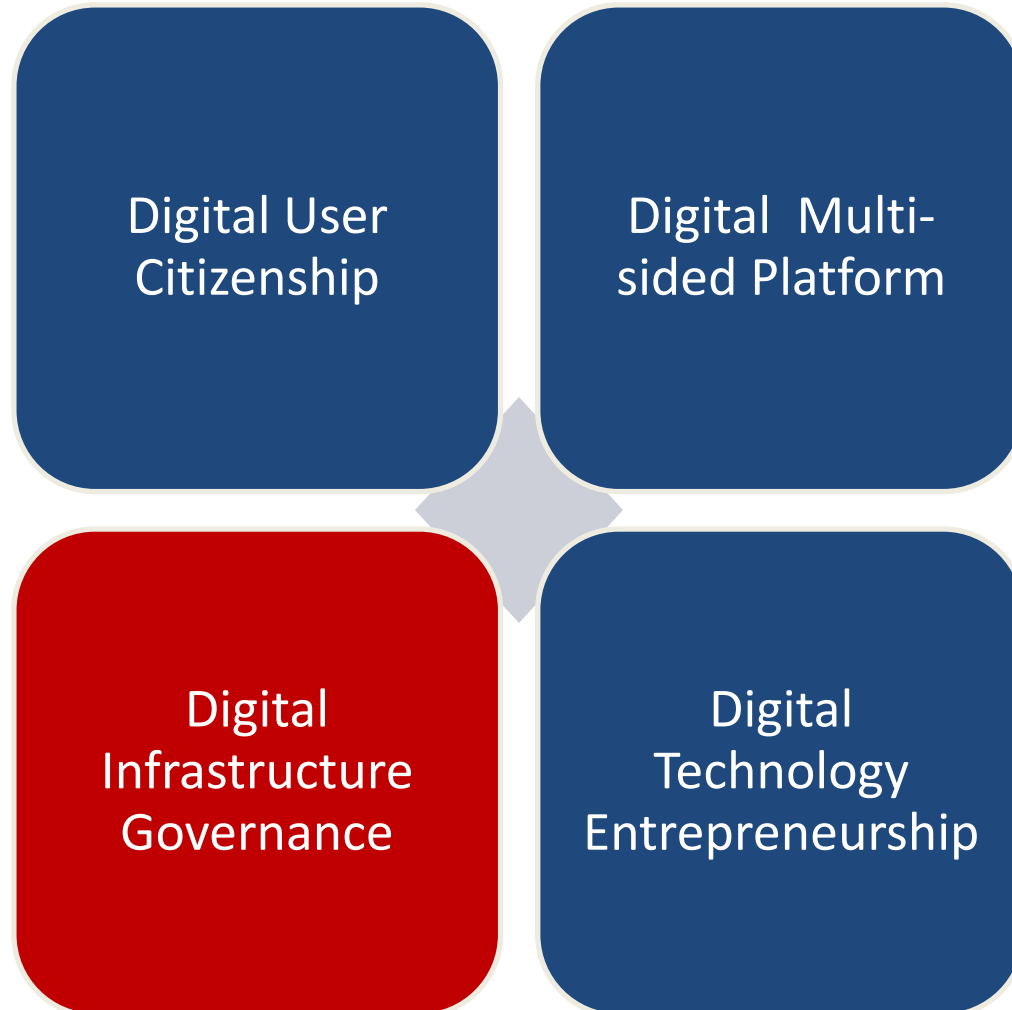
**Entrepreneurial
Ecosystem**

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Digital Entrepreneurship Ecosystem



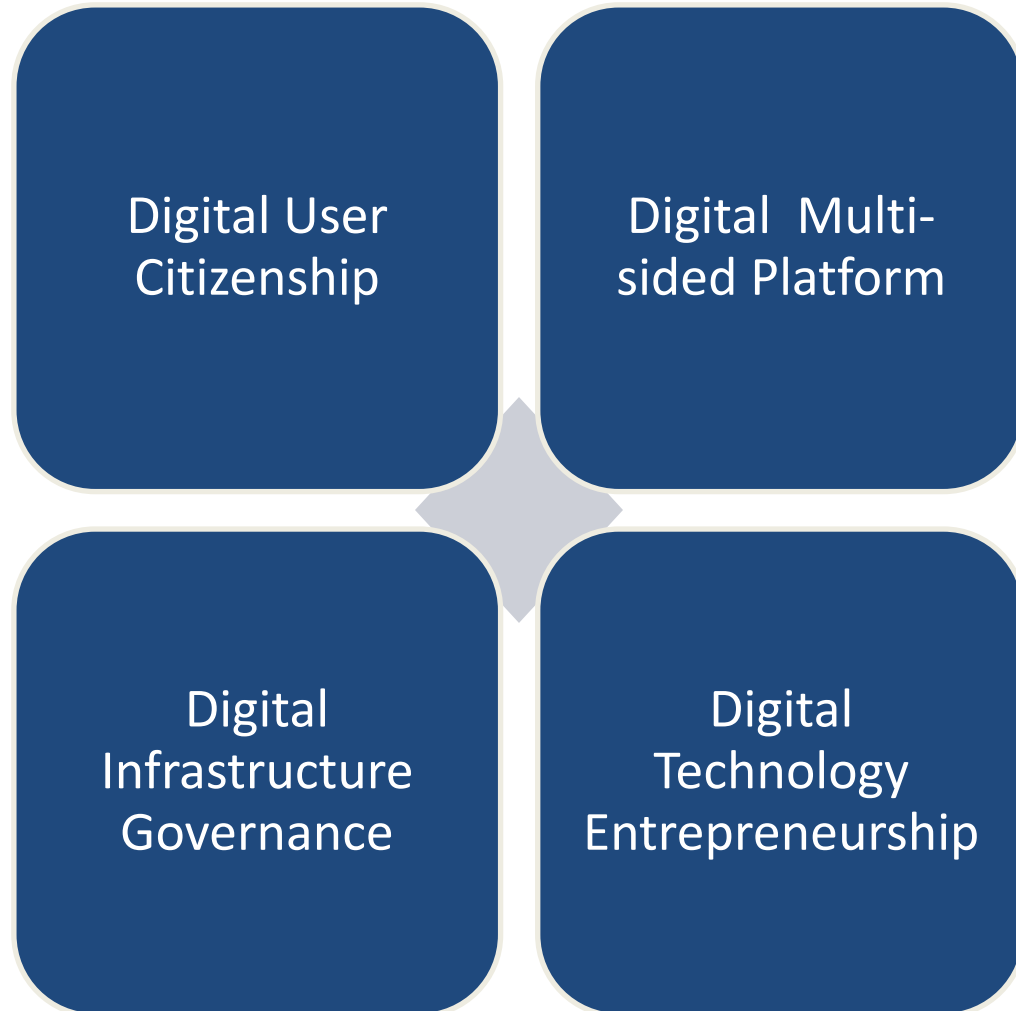
Digital Entrepreneurship Ecosystem



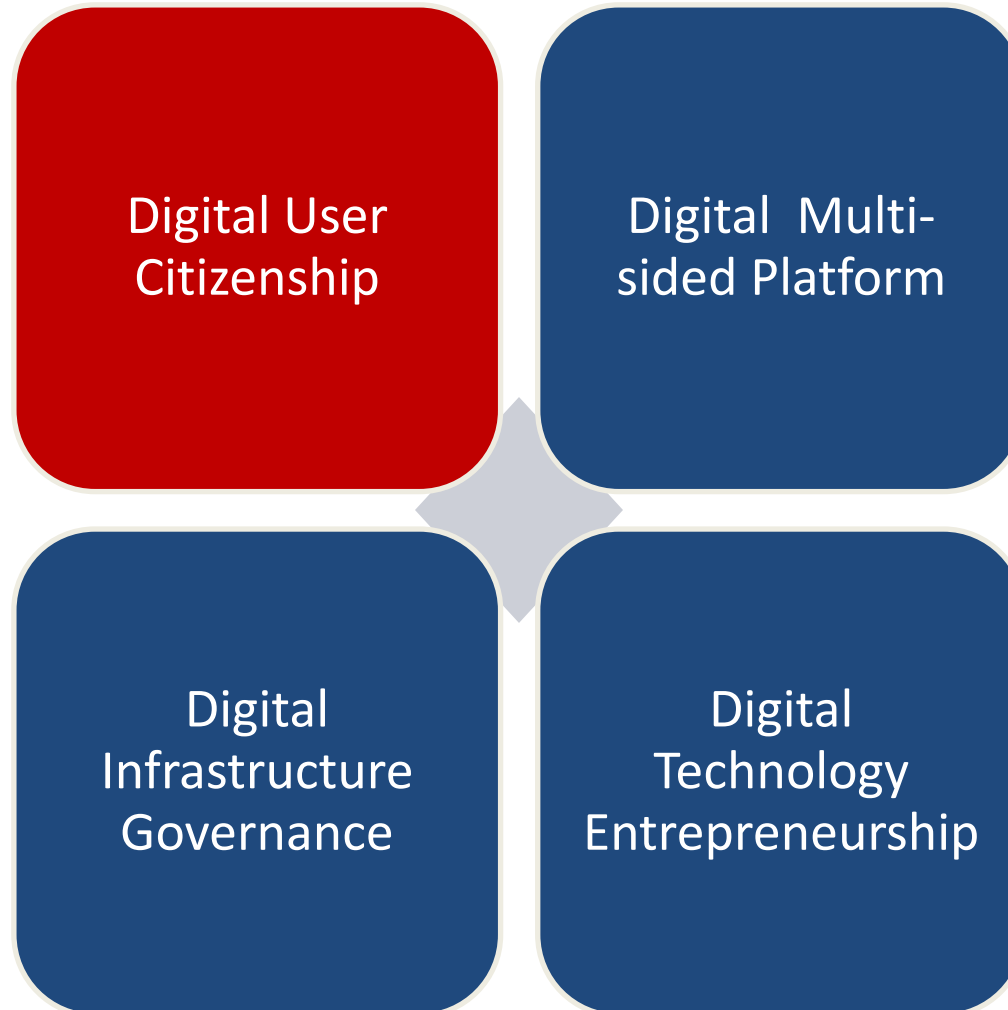
Digital Infrastructure Governance

- *Digital infrastructure governance pertain to all government policy and regulations that govern social and economic activities of users agents and platforms at the local national and international levels in the digital age.*
- Digital infrastructure is decentralized and tends to be subject to bottoms-up discourse in the setting up of standards, digital governance that is socially-embedded, open without dominant players, and rely more on informal than formal process.
- [Tilson, Lytinen, and Sørensen \(2010\) *Information Systems Research*.](#)

Digital Entrepreneurship Ecosystem



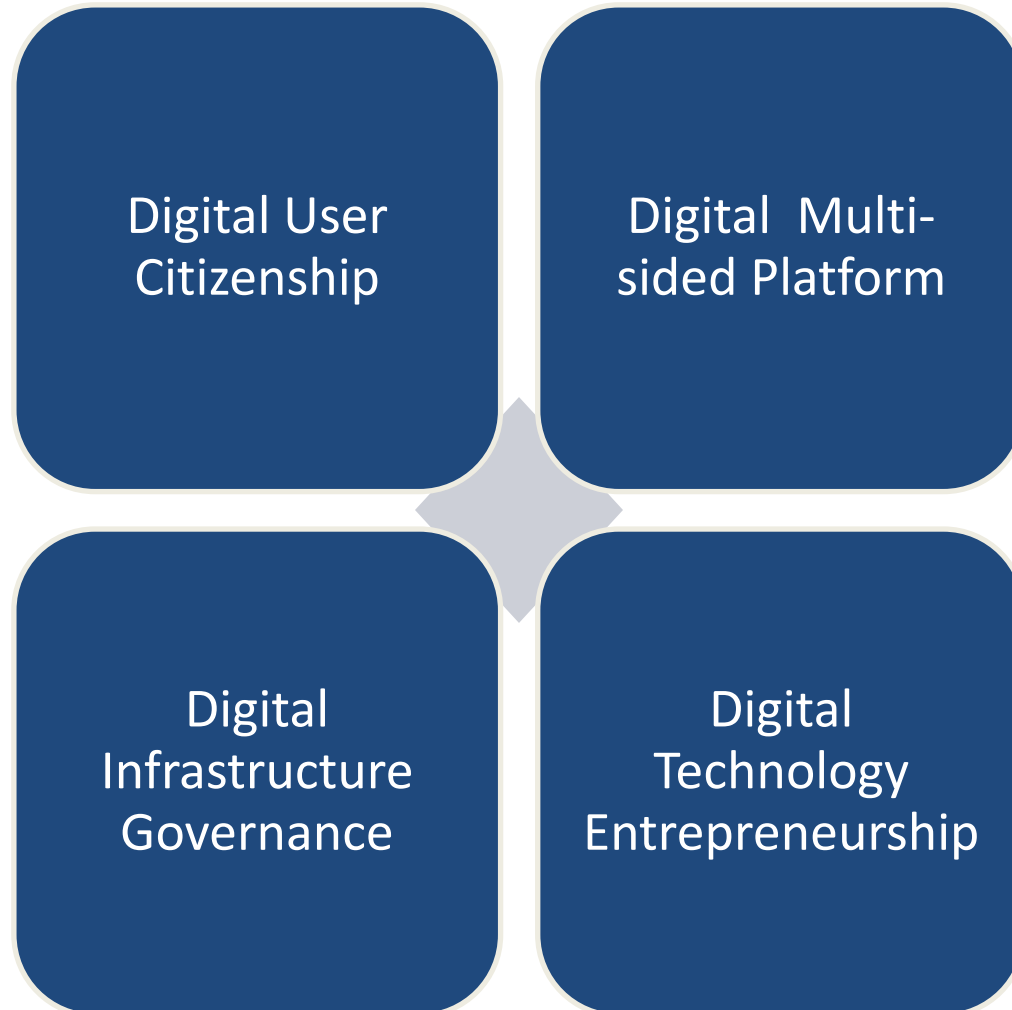
Digital Entrepreneurship Ecosystem



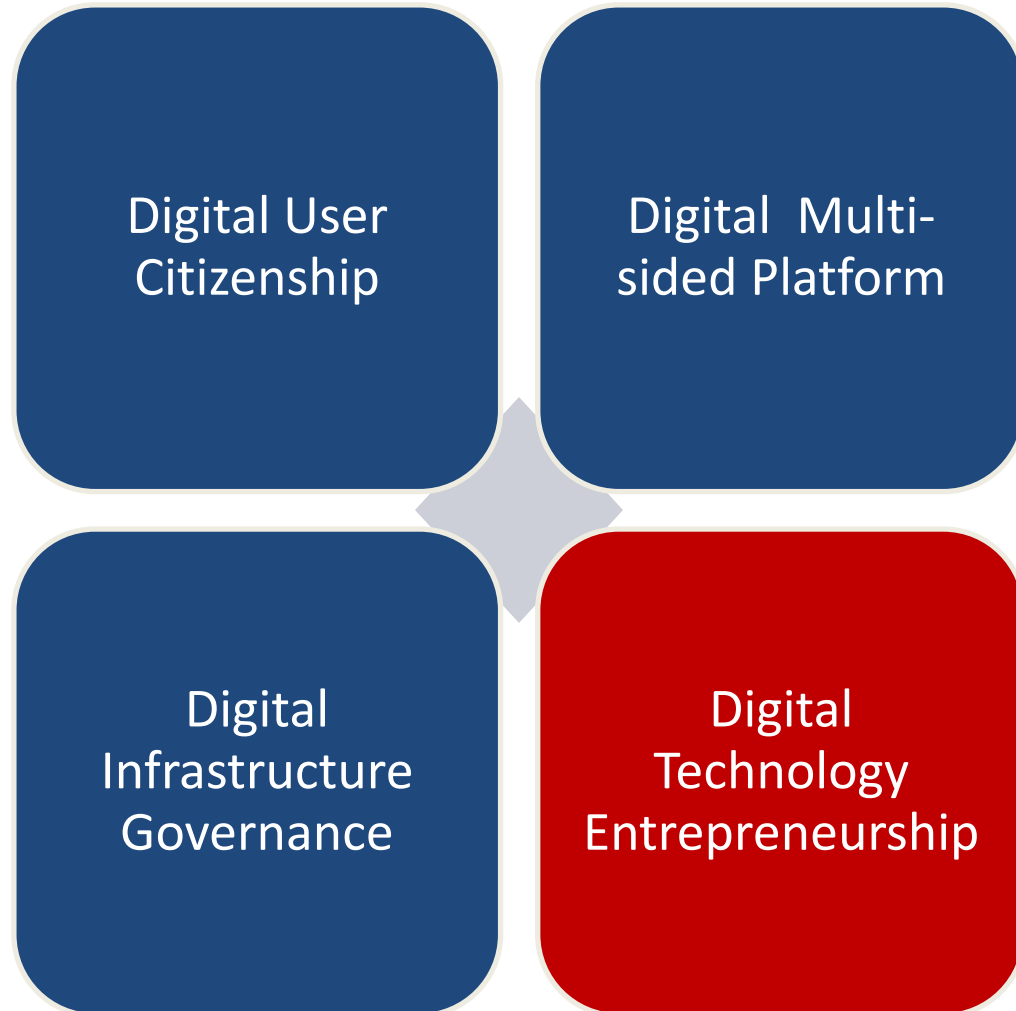
Digital Users Citizenship

- *Digital users consists of consumers (Demand) and producers (supply) that are proficient in platform usage (open table, uber, airbnb)*
- Digital users connect to each other through the internet and mobile devices on various platforms.
- Users are voluntarily engaging in discourse with other users online in a wide range of issues and behaviours, a highly participatory and empowered digital citizenship that is self-governed, self-monitored, and self-controlled.
- [Eisenmann et al \(2009\) in *Platforms, Markets and Innovation*.](#)

Digital Entrepreneurship Ecosystem



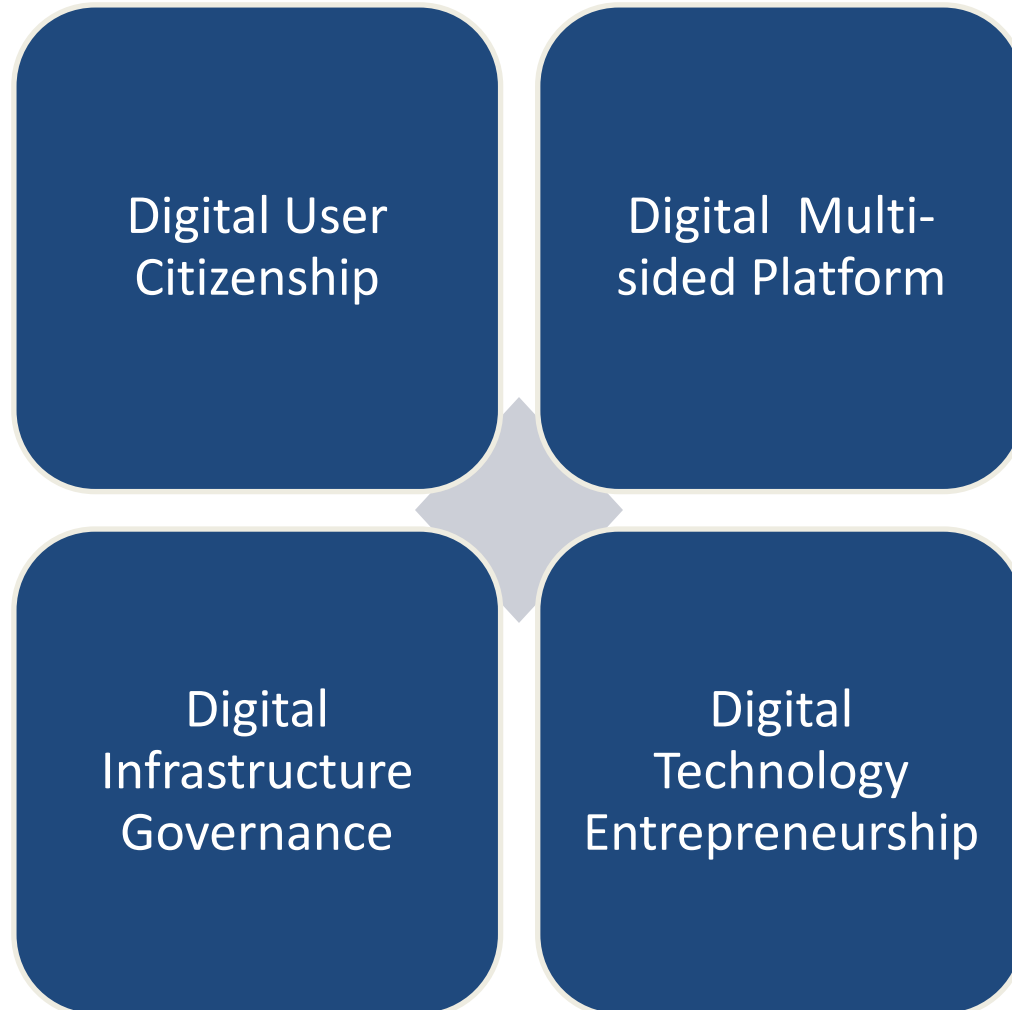
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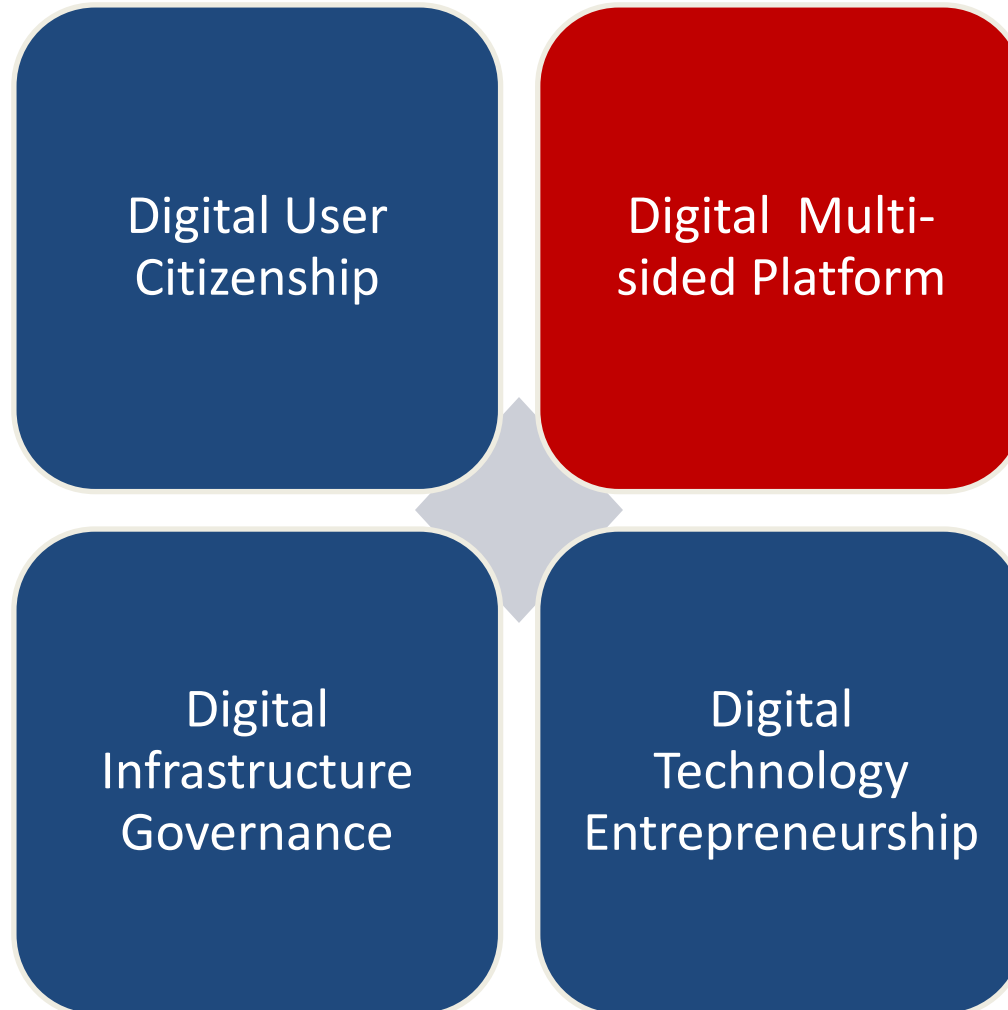
Digital Technology Entrepreneurship

- *Digital technology entrepreneurship refers broadly to all agents that contribute to experimentation, entrepreneurial innovation and value creation on platforms.*
- *The success of digital platforms depends on independent complementors (app developers).*
- [Giones and Brem \(2017\) Technology Innovation Management Review.](#)
- [Saadatmand et al \(2019\) Research Policy.](#)

Digital Entrepreneurship Ecosystem



Digital Entrepreneurship Ecosystem



Digital Multi-sided Platforms

- Digital Multi-sided platforms are demand side driven intermediaries enabled by digital technology that orchestrate social and economic activities among various users and agents.
- *The core value proposition of digital platforms is in reducing transaction costs and organizing the value creation process among its users and agents.*
- [Evans and Schmalensee \(2016\) Matchmakers.](#)
- [Jean Tirole won the Noble Prize for his work on multisided platforms](#)

Ecosystem deepening

Digital User Citizenship

- Digital literacy
- Digital access
- Digital rights

Digital Multi-sided Platform

- Networking
- Matchmaking
- Financial facilitation

Digital Infrastructure Governance

- Digital openness
- Digital freedom
- Digital protection

Digital Technology Entrepreneurship

- Technology absorption
- Digital adoption
- Technology transfer

Key Propositions

Digital User Citizenship

For a sustainable DEE, terms to user privacy should be clearly laid out and upheld through a social contract since public trust is a prerequisite to user participation in the digital economy.

Digital Multi-sided Platform

For a sustainable DEE, digital platforms should be kept in check from partaking in monopolistic behavior that stifles market competition, innovation, and entrepreneurial activities.

Digital Infrastructure Governance

For a sustainable DEE, governments are responsible for enacting and enforcing rules and regulations that discourage destructive activities that undermine data security and encourage productive activities.

Digital Technology Entrepreneurship

For a sustainable DEE, third-party agents engage in entrepreneurial innovation and knowledge exchange that close the gap between supply opportunity and demand need within platforms that increase platform efficiency.

Key Propositions

Digital User Citizenship

“Privacy”

Digital Multi-sided Platform

“Competition”

Digital Infrastructure Governance

“Security”

Digital Technology Entrepreneurship

“Efficiency”

Key Propositions

Digital User Citizenship



Digital Multi-sided Platform



Digital Infrastructure Governance



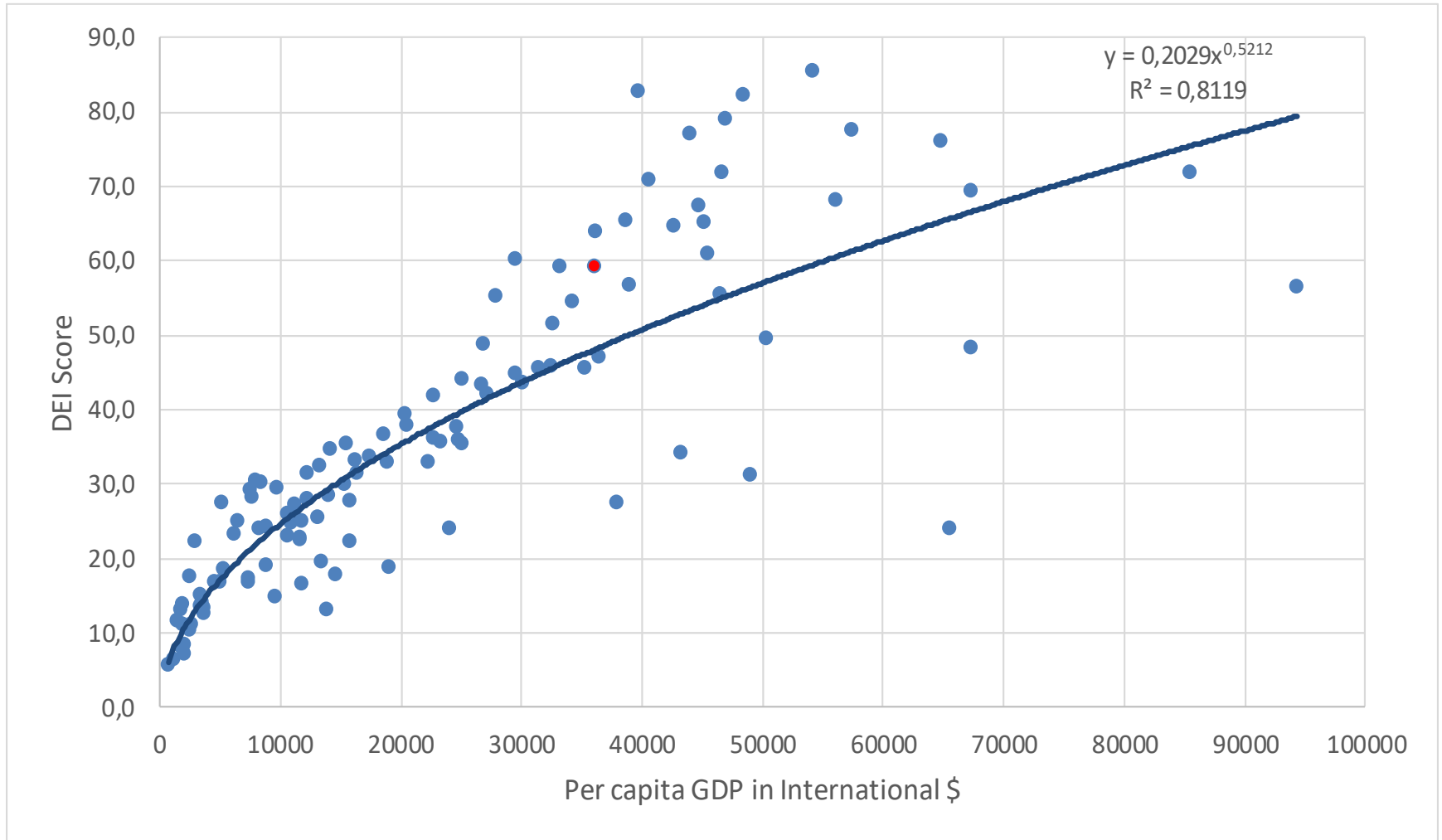
Digital Technology Entrepreneurship



The structure of the (Global) Digital Entrepreneurship Index

DIGITAL ENTREPRENEURSHIP ECOSYSTEM	Sub-indexes	Pillars	Variables (entrepreneurship/digital)	
	Digital Infrastructure Governance	Digital openness	Digital Openness	<i>Digital Openness</i>
			Institutions	<i>Institutions</i>
		Digital freedom	Digital openness	<i>Digital openness</i>
			Digital Infrastructure	<i>Digital Infrastructure</i>
			Digital Freedom	<i>Digital Freedom</i>
			Institutions	<i>Institutions</i>
	Digital protection	Digital Freedom	<i>Digital Freedom</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	
	Digital User Citizenship	Digital literacy	Digital protection	<i>Digital protection</i>
Institutions			<i>Institutions</i>	
Digital access		Digital protection	<i>Digital protection</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	
Digital rights		Digital literacy	<i>Digital literacy</i>	
		Users	<i>Users</i>	
Digital Multi-sided Platform	Networking	Digital access	<i>Digital access</i>	
		Institutions	<i>Institutions</i>	
	Matchmaking	Digital rights	<i>Digital rights</i>	
		Institutions	<i>Institutions</i>	
	Financial facilitation	Digital rights	<i>Digital rights</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	
Digital Technology Entrepreneurship	Digital adaptation	Networking	<i>Networking</i>	
		Agents	<i>Agents</i>	
	Technology absorption	Networking	<i>Networking</i>	
		Users	<i>Users</i>	
	Technology transfer	Matchmaking	<i>Matchmaking</i>	
		Agents	<i>Agents</i>	
		Matchmaking	<i>Matchmaking</i>	
		Users	<i>Users</i>	
		Financial facilitation	<i>Financial facilitation</i>	
		Agents	<i>Agents</i>	
		Financial facilitation	<i>Financial facilitation</i>	
		Users	<i>Users</i>	
		Digital adoption	<i>Digital adoption</i>	
		Agents	<i>Agents</i>	
		Digital adoption	<i>Digital adoption</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	
		Technology absorption	<i>Technology absorption</i>	
		Agents	<i>Agents</i>	
		Technology absorption	<i>Technology absorption</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	
		Technology transfer	<i>Technology transfer</i>	
		Agents	<i>Agents</i>	
		Technology transfer	<i>Technology transfer</i>	
		Digital Infrastructure	<i>Digital Infrastructure</i>	

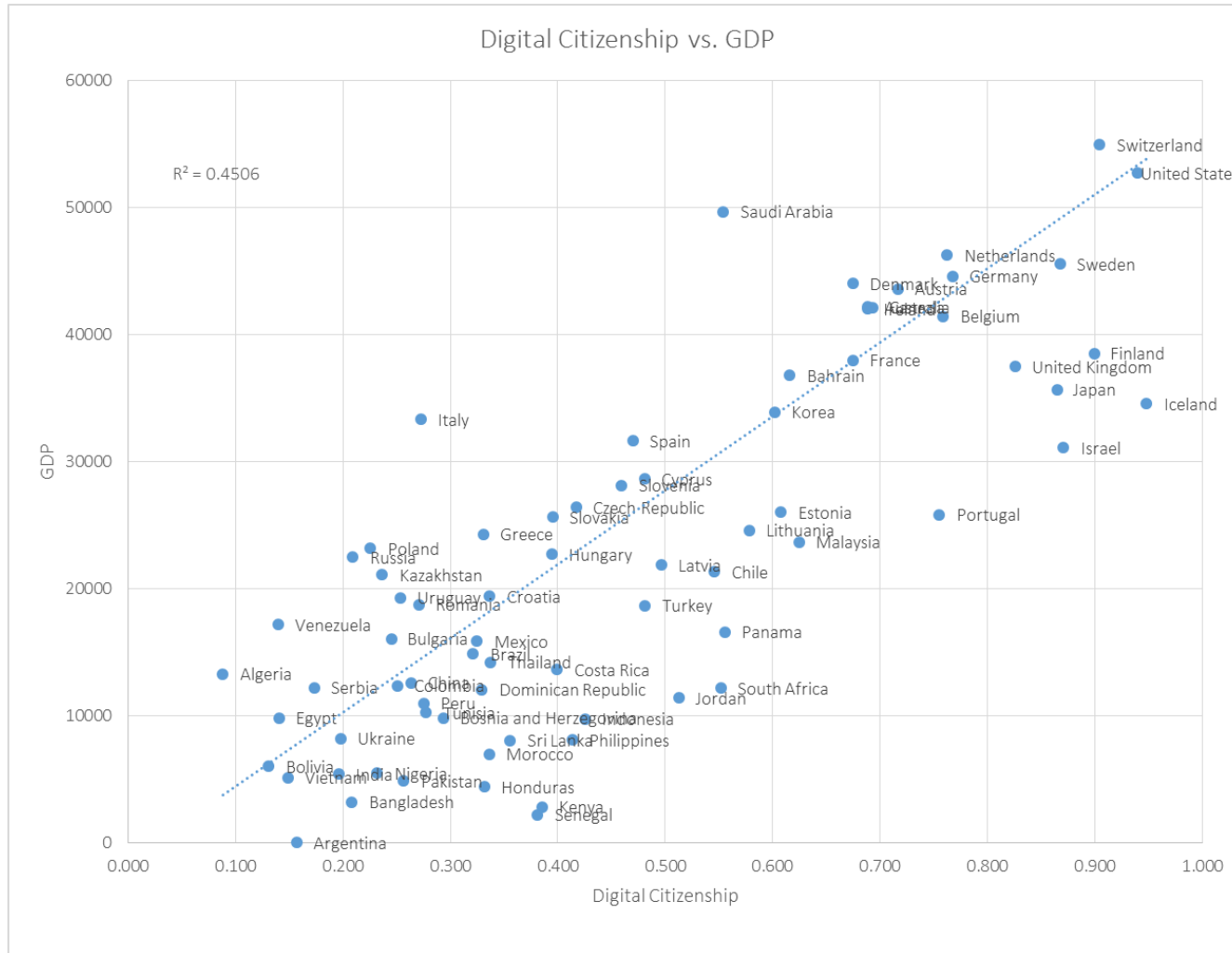
The connection between the DEI scores and per capita GDP



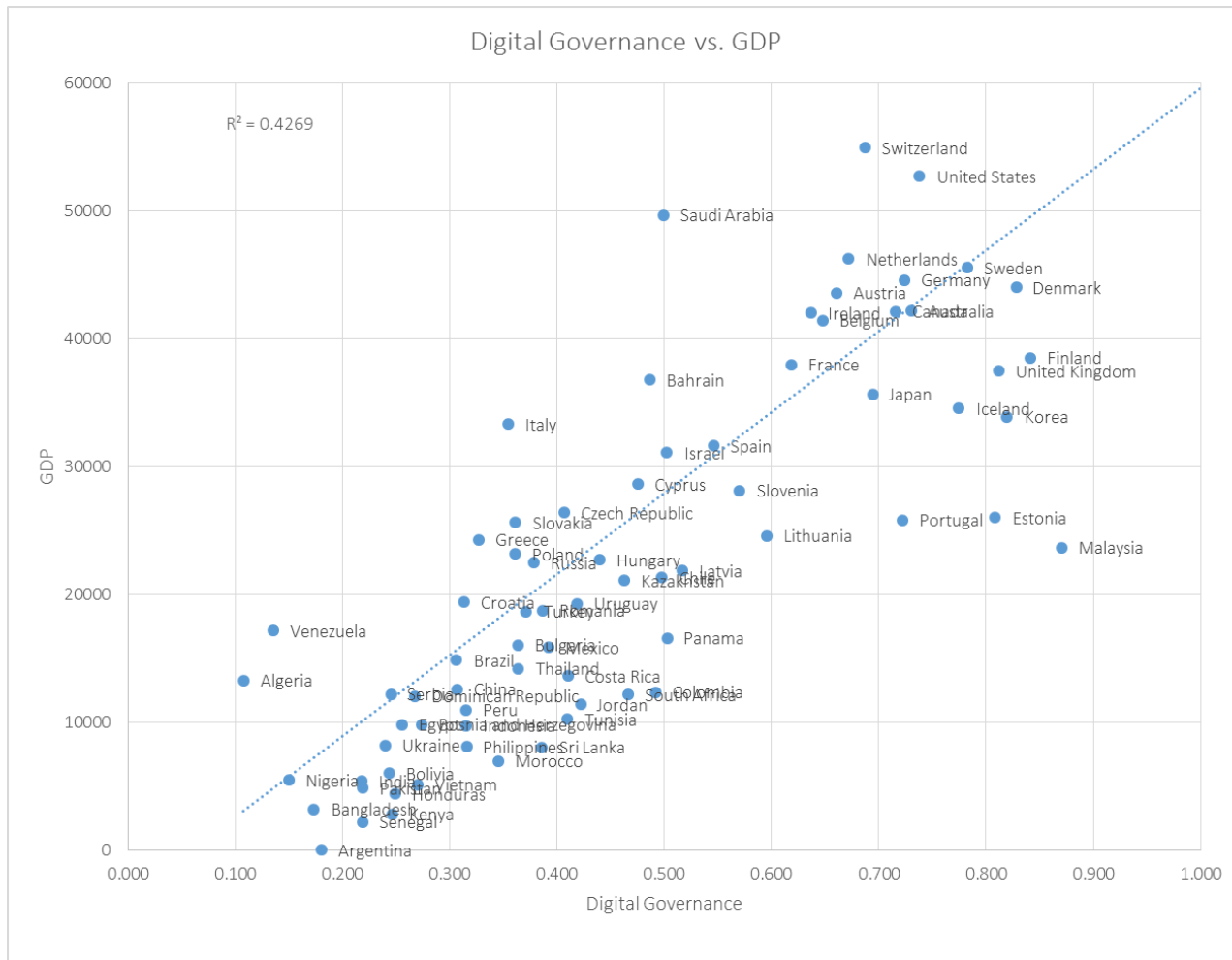
The correlation between the four pillars the DEI scores and the per capita GDP

	Correlations	1	2	3	4	5	6
1	DEI score	1	,610**	,898**	,921**	,927**	,910**
2	GDP per capita international \$		1	,648**	,619**	,622**	,432**
3	Digital technology absorption			1	,879**	,739**	,706**
4	Digital freedom				1	,804**	,732**
5	E-education					1	,852**
6	Digital business						1

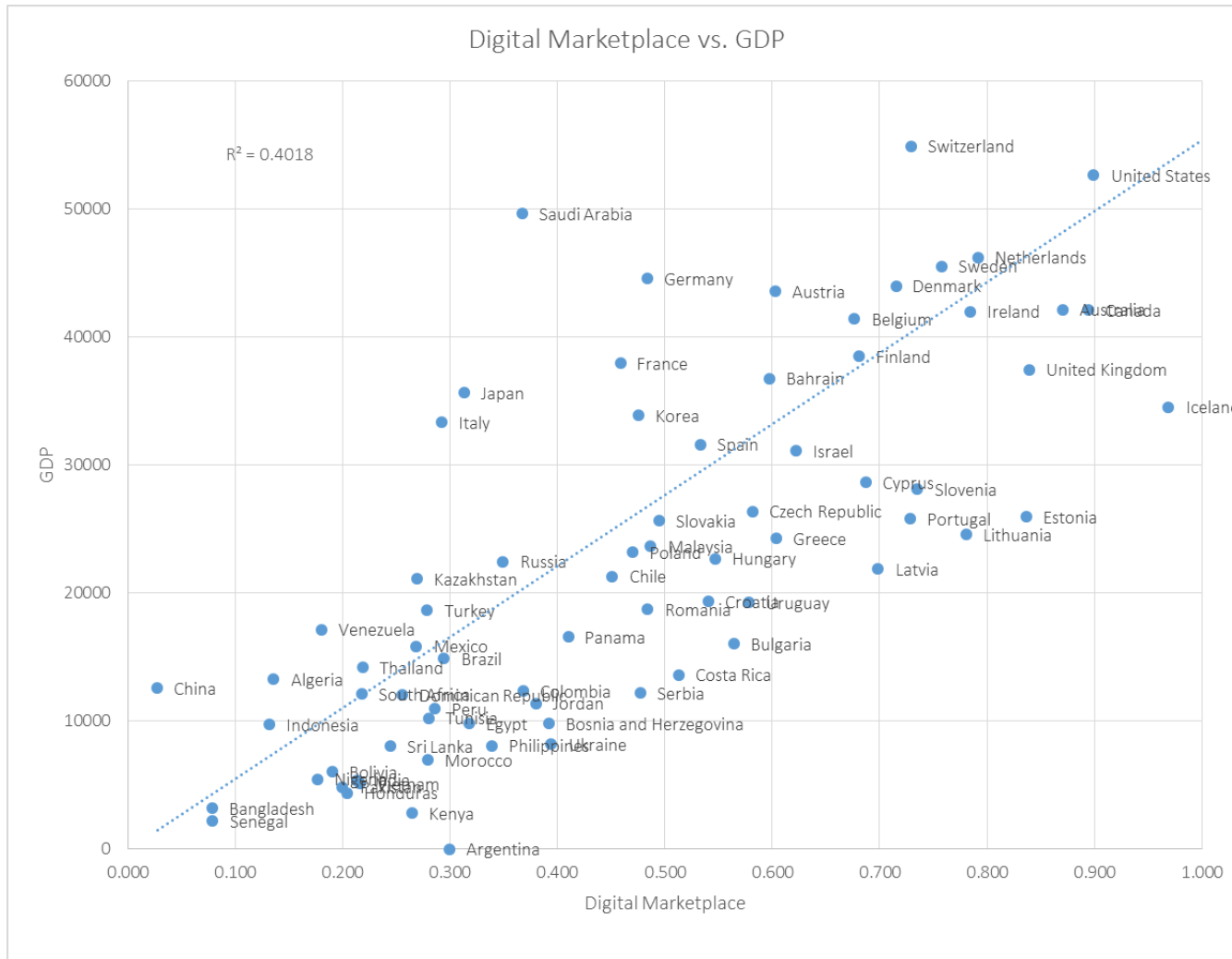
Digital User Citizenship vs GDP



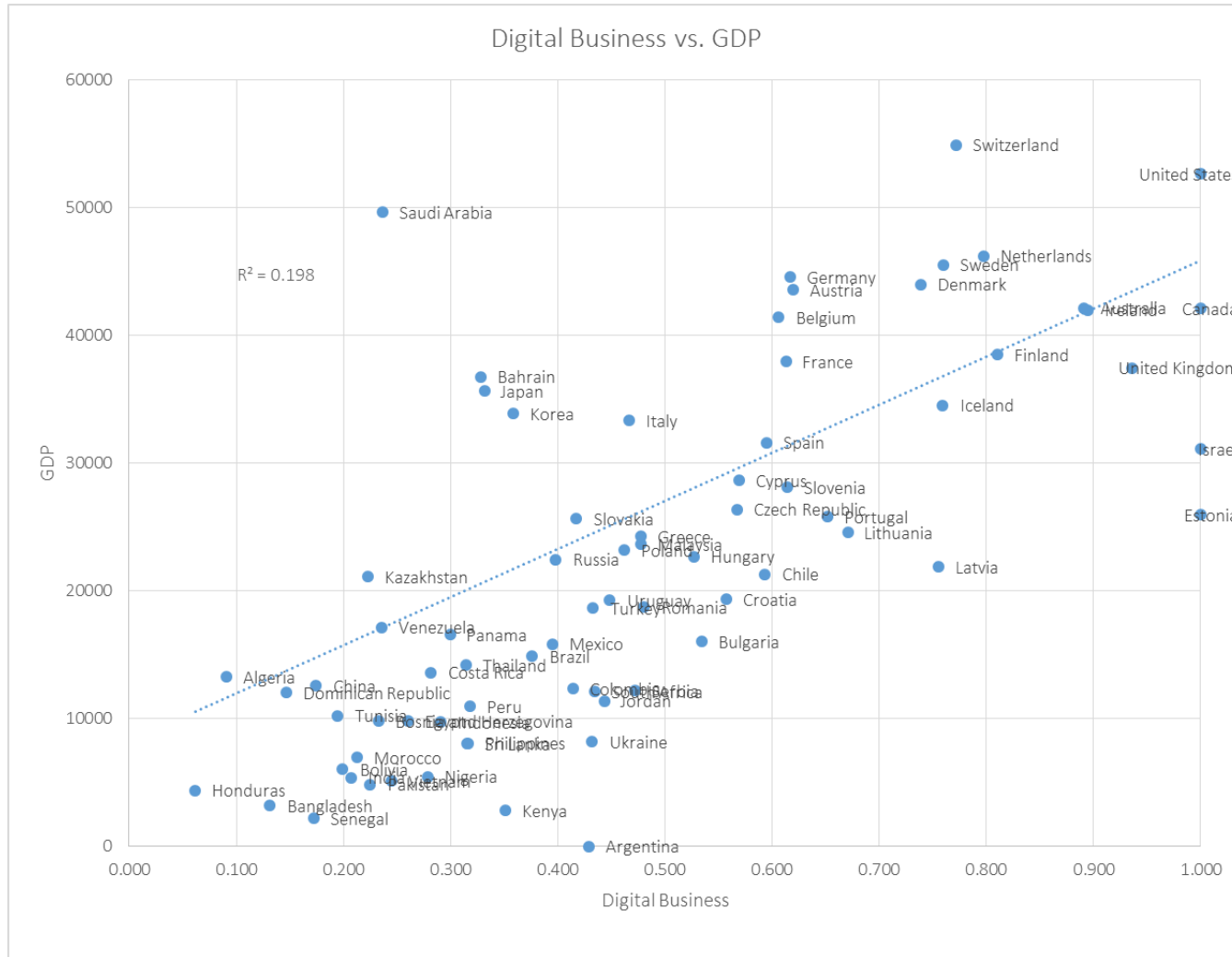
Digital Infrastructure Governance vs GDP



Digital Multi-sided Platforms vs GDP



Digital Technology Entrepreneurship vs GDP



Rankings

DEI RANKING	Country	DEI Score	GDPPC (2017)
1	United States	85.3	\$ 54,225
2	United Kingdom	82.7	\$ 39,753
3	Netherlands	82.2	\$ 48,473
4	Sweden	78.9	\$ 46,949
5	Switzerland	77.4	\$ 57,410
6	Canada	77.0	\$ 44,018
7	Norway	76.0	\$ 64,800
8	Singapore	71.8	\$ 85,535
9	Denmark	71.8	\$ 46,683
10	Finland	70.9	\$ 40,586
11	Ireland	69.2	\$ 67,335
12	Hong Kong	68.1	\$ 56,055
13	Australia	67.2	\$ 44,649
14	France	65.2	\$ 38,606
15	Germany	65.0	\$ 45,229
16	Belgium	64.6	\$ 42,659
17	New Zealand	63.9	\$ 36,086
18	Austria	60.8	\$ 45,437
19	Estonia	60.2	\$ 29,481
20	Korea	59.3	\$ 35,938
21	Israel	59.0	\$ 33,132
22	Japan	56.6	\$ 39,002
23	Luxembourg	56.3	\$ 94,278
24	Iceland	55.5	\$ 46,483
25	Portugal	55.1	\$ 27,937

Thank You

- Questions and discussion

