ENTREPRENEURIAL ENGAGEMENT AND COMMERCIALIZATION OF APPLICATIONS ON A TECHNOLOGY PLATFORM

WORK-IN-PROGRESS

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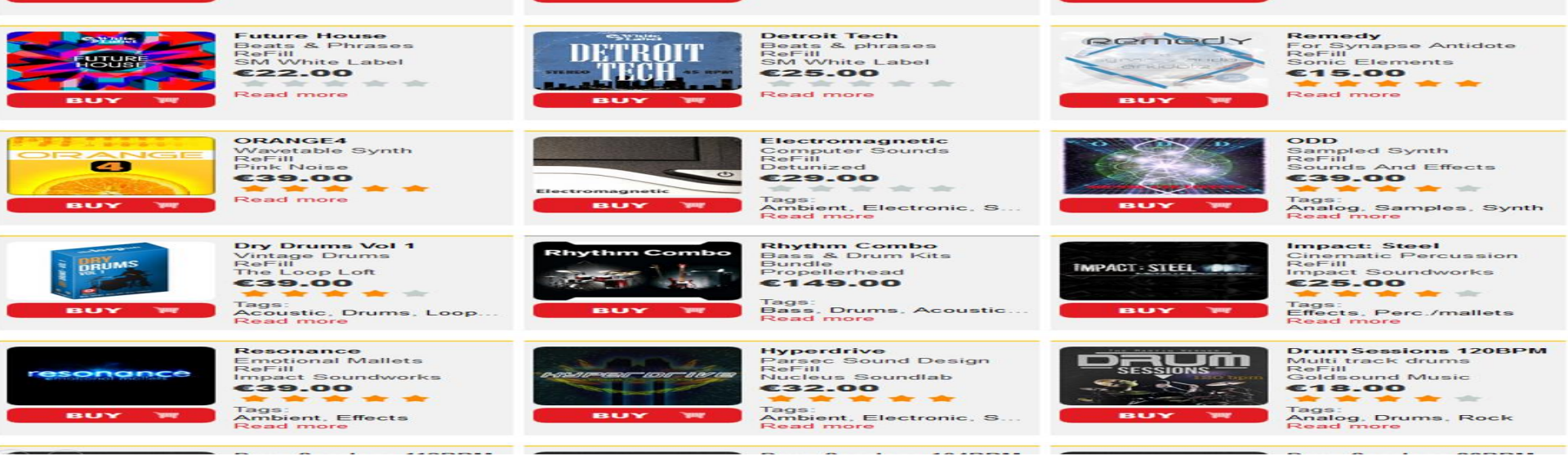
Looking under the hood of ongoing research

RESEARCH AIM

- To better understand new ‘digital’ ways of organizing innovation for firms

- Discover original explanations for why individuals engage and succeed in entrepreneurship



Do we really know how platform models for innovation work?

How to grow two-sided markets...

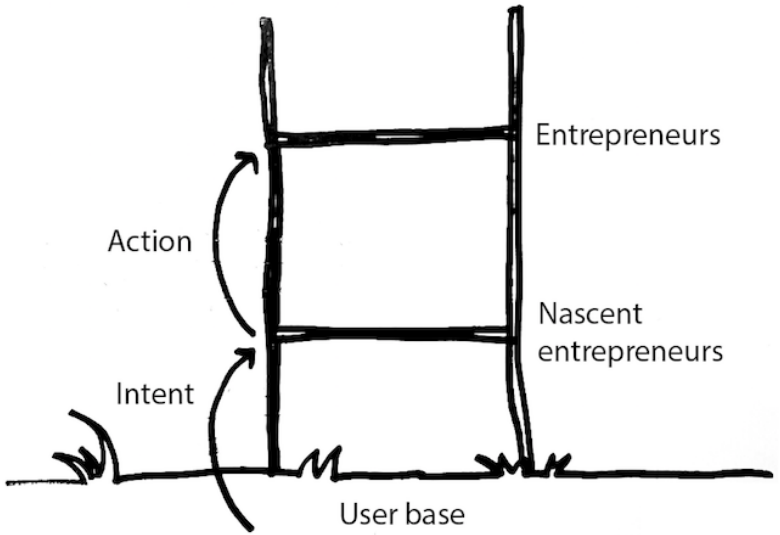
RESEARCH QUESTIONS

To what degree can we predict which individuals are likely to help grow the supply side of a technology platform?

To what degree can we predict "app entrepreneurship" based on individuals' communication, social networks, and consumption of apps?

ENTREPRENEURSHIP AS A STAGE PROCESS

- **Engagement** / intent
- **Commercialization** / action



EXPLANATIONS...

Communication

- Community posts
- Threads started
- Community tenure
- Community contacts
- Encouragement

Demographics

- US resident
- Technical ability (proxy)

Bulk consumption characteristics

- Product registrations
- Products owned
- Product tenure
- Number of apps purchased
- Value of apps purchased (USD)
- Downloads of free apps

Social network

- Input from developers
- Degree centrality
- Prestige
- Burt's constraint
- Social contagion

Text content

- Avg. length of posts
- Lix number
- Supervised text rules
- Unsupervised text clustering
- Sentiment coding

Early adopter characteristics

- Avg. time from app launches to purchases
- Time to first re-purchase
- Fraction of apps from third-party sellers

RESEARCH SETTING:

propellerhead Discover Products Support Blog Shop

The Rack Extension platform

"Rack Extensions take all the good things about plugins and then marries it to all the good things about Reason."
Ernst Nathorst-Böös, CEO

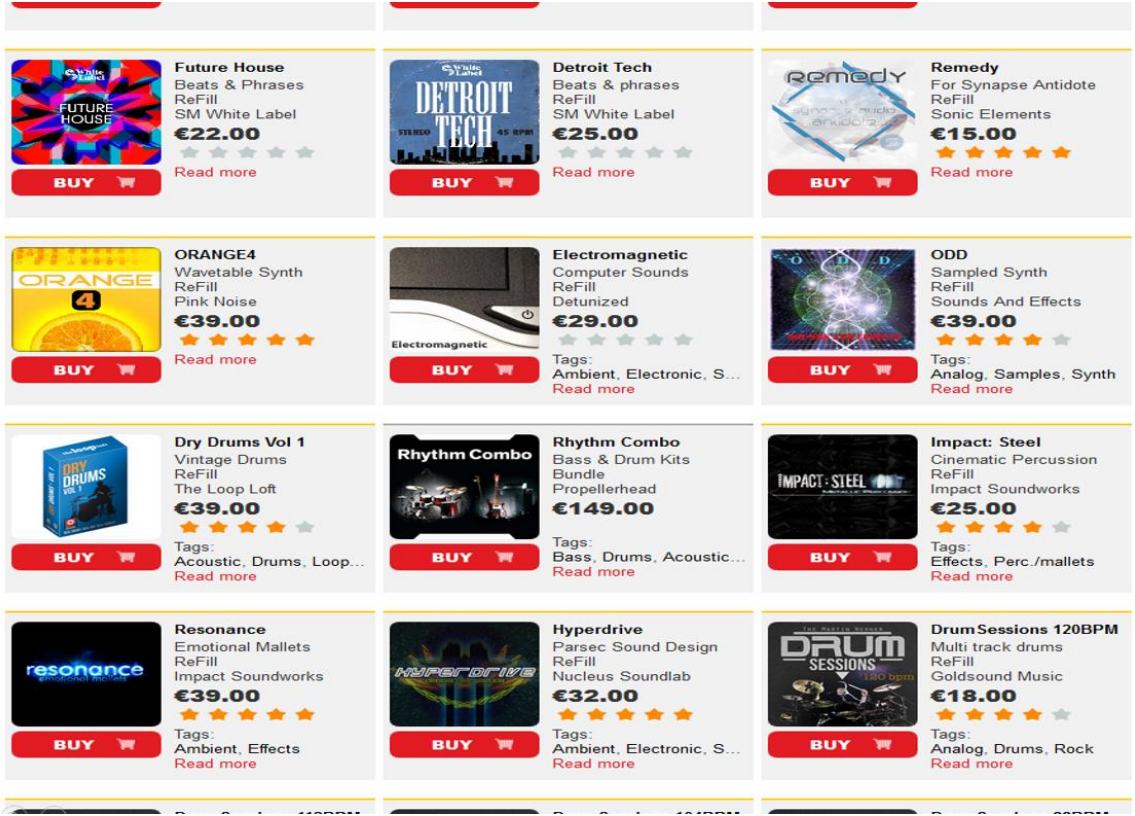
Design it, code it, test it, ship it. With Propellerhead's Rack Extension platform, developers can move faster from initial idea to finished product than ever before. Regardless of whether your skills lie in hardcore DSP coding or in creating beautiful samples, the Rack Extension platform has all the tools you'll need to develop stunning instruments and effects and bring them to market with minimum effort and maximum support.

The recently updated developer toolkit adds features and tools for developers to create even more advanced and great-looking instruments and effects. With the Instrument Development Toolkit, it's easier than ever to build advanced instrument Rack Extensions, even without prior coding experience.

Rack Extensions are full citizens of the Reason Rack, cross-platform compatible, copy-protected, future-proof, and easy to sell direct to Reason users in the Propellerhead Shop.

"We've already transformed a few of our current products to Rack Extensions. The back

APP MARKET


Future House
Beats & Phrases
ReFill
SM White Label
€22.00
Read more
BUY
Detroit Tech
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Electromagnetic
Computer Sounds
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Detunized
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Ambient, Electronic, S...
Read more
BUY
ODD
Sampled Synth
ReFill
Sounds And Effects
€39.00
Tags:
Analog, Samples, Synth
Read more
BUY
Dry Drums Vol 1
Vintage Drums
ReFill
The Loop Loft
€39.00
Tags:
Acoustic, Drums, Loop...
Read more
BUY
Rhythm Combo
Bass & Drum Kits
Bundle
Propellerhead
€149.00
Tags:
Bass, Drums, Acoustic...
Read more
BUY
Impact: Steel
Cinematic Percussion
ReFill
Impact Soundworks
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Effects, Perc./mallets
Read more
BUY
Resonance
Emotional Mallets
ReFill
Impact Soundworks
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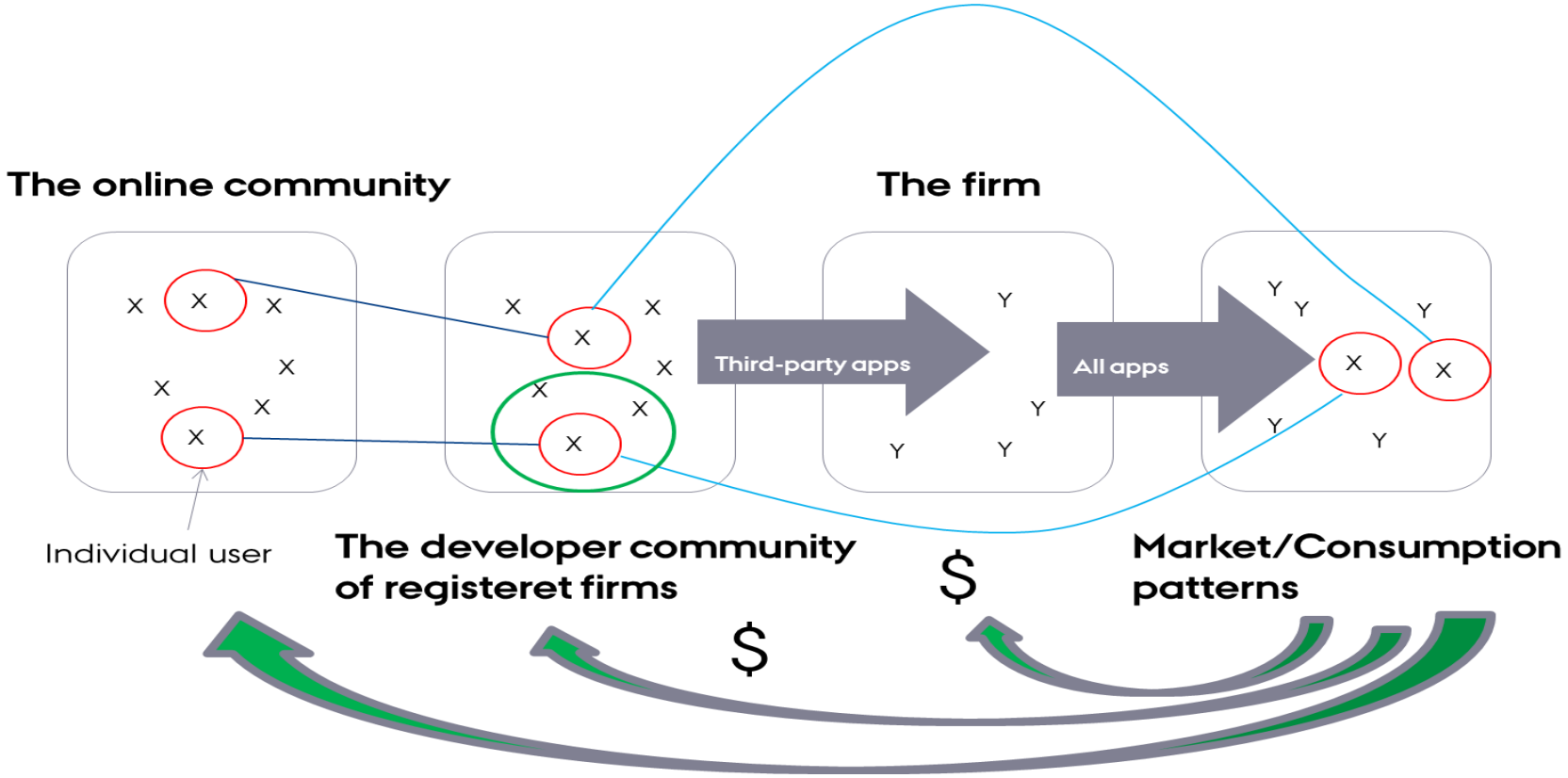
Tags:
Ambient, Effects
Read more
BUY
Hyperdrive
Parsec Sound Design
ReFill
Nucleus Soundlab
€32.00
Tags:
Ambient, Electronic, S...
Read more
BUY
DrumSessions 120BPM
Multi track drums
ReFill
Goldsound Music
€18.00
Tags:
Analog, Drums, Rock
Read more
BUY


The online community
The firm
Third-party apps
All apps
Individual user
The developer community of registeret firms
$
Market/Consumption patterns
$

USERS, APPS, AND ENTREPRENEURS

Users and forum:

+500,000 unique user ID's exist in data tables from the company ERP system

- In 2012-2013, 4.321 individuals wrote at least two text posts in the forum. We focus on these individuals

Apps sales transactions:

60,000 purchases of 600 different apps by 14,000 individuals from market launch (mid-2012) through 2013

Entrepreneurs:

109 new nascent entrepreneurs between 2013 and 2014 (events for RQ1 – out of *4,058* 'debating' users)

10 entrepreneurs between 2013 and 2014 (events for RQ2 – out of *219* nascent entrepreneurs) [4,058+219+44 (entrepreneurs) =4,321]

→ Entrepreneurship is a rare event! (Åstebro & Dahlin, 2005)

DEPENDENT VARIABLES

1. Revealed *entrepreneurial engagement* (register as a developer)

2. *Commercialization* – launch an app for sale on the platform (entrepreneurial action)

EXPLANATORY VARIABLES

Communication

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- Threads started
- Community tenure
- Community contacts
- Encouragement

Demographics

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- Technical ability (proxy)

Bulk consumption characteristics

- Product registrations
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Social network

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AS AN EXAMPLE...

Encouragement from other persons in the community may exercise an effect on subsequent behavior (intent/commercialization):

* *"Thank you for the really quick response. I look forward to your upcoming [APP]. They are always excellent."*
* *"Great, get [APP] to the Shop already! Cant wait to see this in the shop! :)"*
* *"Just wanted to chime in here and say that this is an incredible deal. (...) for $50 is absolutely astounding"*
* *" These sound great, nice work! (...) I just picked this up yesterday, great bargain for the price"*
* *"Nicely done ! This goes to show that [APP] is a superb RE on its own but it is also one of the devices that can bring a lot to other devices and be used in many different ways."*

Table 2: Logistic regression on entrepreneurial intent

Predictor variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
COMMUNICATION										
Demographics										
US residence (dummy)	-0,2268	-0,2268	-0,2039	-0,212	-0,2181	-0,2385	-0,168	-0,1706	-0,1588	-0,1773
	(0,2051)	(0,2046)	(0,2057)	(0,205)	(0,2055)	(0,2048)	(0,2058)	(0,2055)	(0,2071)	(0,207)
Technical ability proxy	1,2448***	1,2599***	1,2131***	1,2225***	1,194***	1,2253***	1,2729***	1,1844***	0,4159	0,394
	(0,2723)	(0,27)	(0,2787)	(0,275)	(0,2734)	(0,2703)	(0,3074)	(0,288)	(0,4736)	(0,4668)
Communication metrics										
Log (No. of posts)	0,5012***	0,4923***	0,0387							
	(0,1271)	(0,0832)	(0,4278)							
Log (No. of threads started + 1)	-0,2224	-0,2515'	-0,1379							
	(0,1394)	(0,1381)	(0,1624)							
Average length of posts	-0,00006									
	(0,000702)									
Extrovert conversation partners	0,00039									
	(0,000422)									
Sentiment coding (positive tone)	-0,5517									
	(0,5794)									
Encouragement (inbound sentiment coding)	0,7211									
	(0,6591)									
Attentiveness proxy	0,1659'									
	(0,0991)									
Social network metrics										
Forum tenure			0,00228							
			(0,00253)							
Log (No. of unique contacts + 1)			0,1057	0,1631'	0,1342					
			(0,1264)	(0,094)	(0,0885)					
No. of fora frequented			0,0554							
			(0,0943)							
Log (Degree centrality)			0,2772	0,3384***	0,203*	0,244**	0,1203			
			(0,4647)	(0,0698)	(0,0945)	(0,0894)	(0,0927)			
Prestige			-0,1928							
			(0,7376)							
Burt's measure of constraint			-0,4041							
			(0,8034)							
Contagion										
Log (In-degree from nascent entrepreneurs +1)					0,1973*	0,2131*	0,2296*	0,3308***	0,2935***	0,3028***
					(0,089)	(0,088)	(0,0893)	(0,0592)	(0,0607)	(0,0603)
CONSUMPTION										
Early adoption metrics										
Product tenure (base product)							0,00723			
							(0,00605)			
Avg. time to purchase of apps							0,000867			
							(0,0013)			
Time to first repurchase of apps							-0,00156			
							(0,00112)			
Pct. apps from third-party developers							0,7673	1,1316***	0,5729	
							(0,5594)	(0,2431)	(0,3498)	
Bulk consumption metrics										
No. of base product purchased									0,2908**	0,291**
									(0,1063)	(0,1047)
Old app-type consumption (dummy)									-0,3099	
									(0,2159)	
Log (No. of app purchases + 1)									0,2715*	0,371***
									(0,1213)	(0,0826)
Intercept	-6,6583***	-5,3774***	-4,9975***	-5,2474***	-5,1454***	-5,1413***	-5,2477***	-5,1076***	-5,1365***	-5,1018***
	(71,0371)	(0,2737)	(0,6832)	(0,2866)	(0,2998)	(0,2994)	(0,6883)	(0,2828)	(0,3042)	(0,2816)
R^2 (max scaled)	0,0956	0,0902	0,0963	0,0926	0,0981	0,0961	0,12	0,1143	0,1305	0,1256
Area under the ROC curve	0,726	0,718	0,72	0,713	0,713	0,71	0,752	0,745	0,764	0,762
AIC	937,637	932,599	939,017	930,437	927,441	927,244	913,455	910,657	901,813	902,33
SC	1000,722	964,141	1008,41	961,98	965,292	958,787	970,231	942,199	952,281	940,18
-2 Log L	917,637	922,599	917,017	920,437	915,441	917,244	895,455	900,657	885,813	890,33
N	4058	4058	4058	4058	4058	4058	4058	4058	4058	4058
Events	109	109	109	109	109	109	109	109	109	109

***p<0.001; **p<0.01; *p<0.05; 'p<0.10.

Table 3: Logistic regression on entrepreneurial action

Predictor variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
COMMUNICATION										
Demographics										
US residence (dummy)	0,7175	0,4704	0,7895	0,4979	0,5656	0,4979	0,0237	0,3904	0,647	0,647
	(0,7473)	(0,7052)	(0,7885)	(0,7239)	(0,7396)	(0,7239)	(0,8067)	(0,7401)	(0,8012)	(0,8012)
Technical ability proxy	0,6297	0,226	1,3489	0,7788	0,8669	0,7788	0,8576	0,1282	-4,1396'	-4,1396'
	(1,1809)	(1,2266)	(1,3754)	(1,3349)	(1,3453)	(1,3349)	(1,4074)	(1,1601)	(2,5063)	(2,5063)
Communication metrics										
Log (No. of posts)	-0,9881'									
	(0,5887)									
Log (No. of threads started + 1)	0,663									
	(0,5906)									
Average length of posts	0,000193									
	(0,00234)									
Extrovert conversation partners	-0,00097									
	(0,00152)									
Sentiment coding (positive tone)	0,0672									
	(2,1196)									
Encouragement (inbound sentiment coding)	8,342**	5,269**	8,7261**	5,8017**	6,2358**	5,8017**	8,0833***	6,6119***	7,7384**	7,7384**
	(2,7119)	(1,7964)	(2,7525)	(1,8608)	(2,0785)	(1,8608)	(2,3457)	(1,9803)	(2,384)	(2,384)
Attentiveness proxy	-0,00289									
	(0,8029)									
Social network metrics										
Forum tenure			-0,0164	-0,0183'	-0,0173	-0,0183'	-0,0184			
			(0,0115)	(0,0111)	(0,0109)	(0,0111)	(0,0122)			
Log (No. of unique contacts + 1)			-0,00168							
			(0,3376)							
No. of fora frequented			-0,4097							
			(0,2849)							
Log (Degree centrality)			0,3214							
			(0,5068)							
Prestige			-0,2415							
			(2,9561)							
Burt's measure of constraint			3,1405							
			(2,2196)							
Contagion										
Log (In-degree from entrepreneurs +1)					-0,1403					
					(0,2926)					
CONSUMPTION										
Early adopter metrics										
Product tenure (base product)							0,1012			
							(0,1821)			
Avg. time to purchase of apps							0,00288			
							(0,00531)			
Time to first repurchase of apps							0,00859	0,00411**	0,0172*	0,0172*
							[illegible]	[illegible]	[illegible]	[illegible]
Pct. apps from third-party developers							3,6871			
							[illegible]			
Bulk consumption metrics										
No. of base product purchased									1,0385*	1,0385*
									(0,5012)	(0,5012)
Old app-type consumption (dummy)									-2,144*	-2,144*
									(1,0796)	(1,0796)
Log (No. of app purchases + 1)									2,4559*	2,4559*
									[illegible]	[illegible]
Intercept	-3,4057	-4,8198***	-6,2778*	-4,5258***	-4,627***	-4,5258***	-9,0392*	-6,1775***	-12,8572**	-12,8572**
	(2,2013)	(1,0597)	(2,5544)	(1,1237)	(1,1549)	(1,1237)	(3,7081)	(1,2371)	(3,9113)	(3,9113)
R^2 (max scaled)	0,2496	0,1783	0,2895	0,2247	0,228	0,2247	0,3489	0,2845	0,4168	0,4168
Area under the ROC curve	0,898	0,822	0,906	0,871	0,87	0,871	0,901	0,863	0,899	0,899
AIC	83,625	76,816	80,671	75,45	77,212	75,45	74,195	71,044	66,967	66,967
SC	117,516	90,372	114,562	92,396	97,547	92,396	104,697	87,989	94,08	94,08
-2 Log L	63,625	68,816	60,671	65,45	65,212	65,45	56,195	61,044	50,967	50,967
N	219	219	219	219	219	219	219	219	219	219
Events	10	10	10	10	10	10	10	10	10	10

***p<0.001; **p<0.01; *p<0.05; 'p<0.10.

RESULTS SO FAR...

- Contagion predicts entrepreneurial engagement
- Number of app purchased, and number of base products registered likewise predicts entrepreneurial engagement

- Encouragement predicts movement into commercialization
- All bulk consumption measures likewise predicts entrepreneurial commercialization

WHAT DOES IT MEAN...

Firms that base part of their innovation activities on platforms can make sound predictions early on about who will move into entrepreneurship and be successful on the supply-side

Thank you!

All comments and questions are appreciated!

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