

Interactions with Clients and the Use of ICTs as Drivers of Innovation in Knowledge-intensive Business Services (KIBS)

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Introduction

- The role of specialized services in the knowledge economy
 - Complexity (Balland and Rigby, 2017)
 - Outsourcing, scaling, productivity
- Service firms as innovators
- How do these firms innovate? Is the process more relational?

Introduction

- What do we know about innovation in services? Researchers and practitioners have told us that what leads service firms to innovate is their level of internal research and development, the presence of knowledge workers, the acquisition of new technologies (software, computers), and their interaction with other organizations (Doloreux and Shearmur, 2012; Rodriguez et al. 2017).
- As we have observed through our survey, many of those activities are widely pursued by firms (e.g. ~ 70% of firms have 50% or more of knowledge workers).
- What allows firms to gain competitive advantage? More of the same, or another recipe?

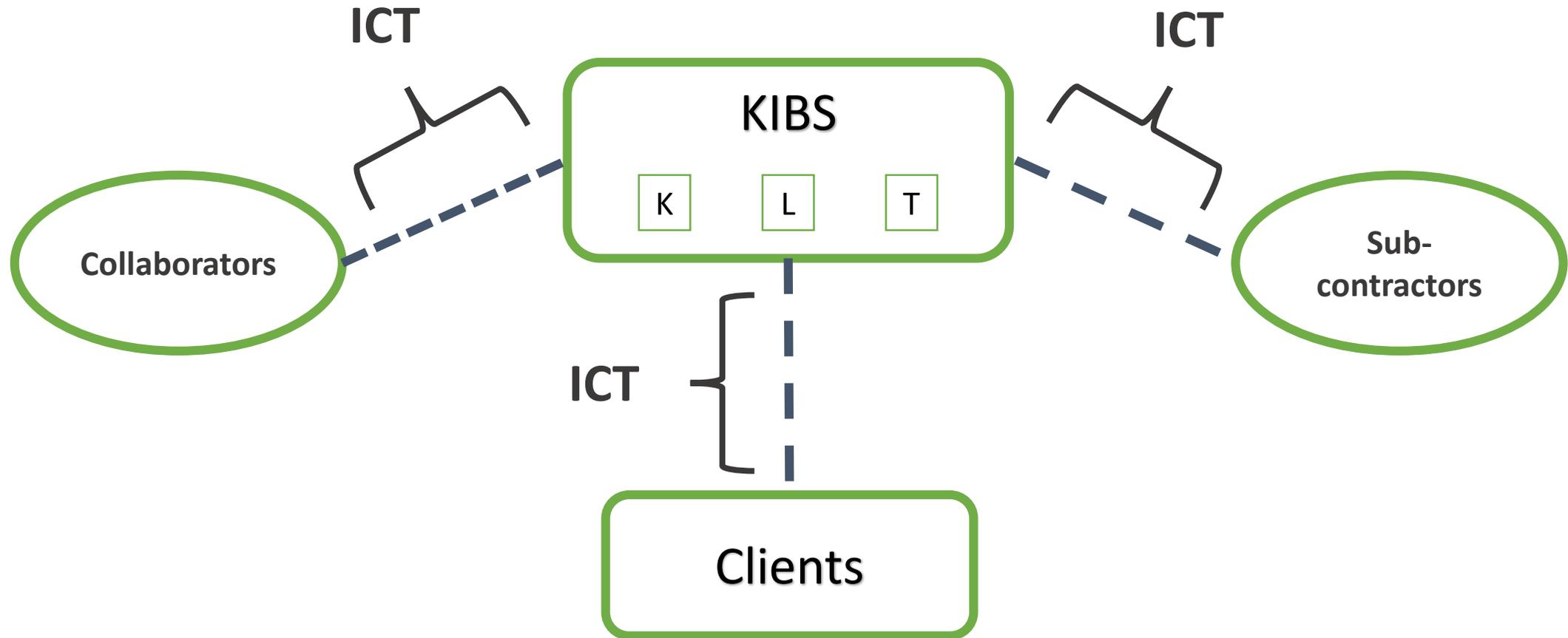
Research Question

- What type of activities allows specialized service firms to introduce new products on the market and beat the competition?
- Are innovative firms more oriented towards external partnerships and knowledge sourcing (relational innovation)?
- Does technology play a role in these processes?

The Study

- Empirical investigation of a subset of the service industry: Knowledge-intensive business services (KIBS)
- What are KIBS:
 - Provide knowledge-intensive inputs to the business processes of other organizations (Muller and Doloreux, 2009)
 - Develop new services that are customized and specialized (Miles, 2016)
 - Legal Services (NAICS 5411), Management Consulting Services (SCIAN 5415) and Computer System Designs and Related Services (NAICS 5416)

Theoretical model



Data

- Survey of 392 KIBS establishments in Ontario conducted in 2015-16 (subset of 265 firms)
- Debate on how to measure innovation in services: self-assessment on whether a product new to the market was introduced (OECD, 2005)
 - About 60 percent of our sample
 - Captures succesful (and multidimensional) forms of innovation

Variables

Variables	Categories	Observations (Percentage)	Min.	Max.	Mean	S.D.
Dependent variable						
New-to-market innovation	No	108 (40.7)				
	Yes	157 (59.2)				
Explanatory variables						
Frequency of contacts with clients						
	No clients	0				
	At least once a day	79 (29.8)				
	At least one a week	110 (41.5)				
	At least once every two weeks	12 (4.5)				
	At least once a month	43 (16.2)				
	Less than once a month	21 (7.9)				
Percentage of F2F contacts with clients			0	100	22.76	24.96
	0%	28 (10.5)				
	1-10%	51 (19.2)				
	10-25%	78 (29.4)				
	25-50%	67 (25.2)				
	50-100%	41 (15.4)				
Frequency of contacts with principal collaborator						
	No Collaborator	110 (41.5)				
	At least once a day	35 (13.2)				
	At least once a week	58 (21.9)				
	At least once every two weeks	13 (4.9)				
	At least once a month	23 (8.7)				
	Less than once a month	26 (9.8)				

Variables

Variables	Categories	Observations (Percentage)	Min.	Max.	Mean	S.D.
Percentage of F2F contacts with principal collaborator			0	100	15.94	26.70
	0%	150 (56.6)				
	1-10%	16 (6.0)				
	10-25%	26 (9.8)				
	25-50%	38 (14.3)				
	50-100%	35 (13.2)				
Frequency of contacts with principal subcontractor						
	No subcontractor	96 (36.2)				
	At least once a day	29 (10.9)				
	At least once a week	50 (18.9)				
	At least once every two weeks	23 (8.7)				
	At least once a month	45 (16.9)				
	Less than once a month	22 (8.3)				
Percentage of F2F contacts with principal subcontractor			0	100	18.44	27.30
	0%	126 (47.6)				
	1-10%	23 (8.6)				
	10-25%	39 (14.7)				
	25-50%	27 (10.1)				
	50-100%	50 (18.8)				

Variables

Variables	Categories	Observations (Percentage)	Min.	Max.	Mean	S.D.
Usage of ICTs						
Total use of ICTs		265	0	6		
Internet	Yes	216 (81.5)				
Computer network	Yes	163 (61.5)				
Industry-specific software	Yes	118 (44.5)				
Customer relationship	Yes	134 (50.5)				
Ent. resource planning soft.	Yes	33 (12.4)				
Video-conferencing	Yes	122 (46.0)				
Control variables						
Employees		265	5	180		
Percentage of employees with a university degree		265	10	100		
Internal R&D	No	96 (36.3)				
	Yes	169 (63.7)				
Type of region	Metropolitan	130 (49.0)				
	Central Urban	118 (44.5)				
	Peripheral	17 (6.4)				
KIBS industries	Legal Service	102 (38.4)				
	Management Service	72 (27.1)				
	Computer Services	91 (34.3)				

Descriptive Statistics

	New-to-firm N=108	New-to-market N=157	All innovations N=265	t-test (p-value)
Frequency of meetings with clients	2.28	2.33	2.31	0.05 (0.74)
Percentage F2F with clients	19.35	25.10	22.75	5.75 (0.05)
Frequency of meetings with collaborator	1.51	1.59	1.55	0.076 (0.72)
Percentage F2F with collaborator	13.33	17.73	15.94	4.40 (0.18)
Frequency of meetings with subcontractor	1.57	2.03	1.84	0.45 (0.03)
Percentage F2F with subcontractor	16.83	19.55	18.44	2.72 (0.42)

Descriptive Statistics

	New-to-firm N=108	New-to- market N=157	All innovations N=265	t-test (p-value)
Internet-enabled mobile device	77.7	84.0	81.5	0.63 (0.21)
Company-wide computer network	61.1	61.7	61.5	0.007 (0.91)
Industry-specific software	49.0	41.4	44.5	-0.075 (0.22)
Customer/supplier relationship	54.6	47.7	50.5	-0.067 (0.27)
Enterprise resource planning software	13.8	11.4	12.4	-0.54 (0.57)
Video-conferencing	37.9	51.5	46.0	0.59 (0.028)

Multinomial Regression

- $$\text{Logit} \{P(Y = 1|X_0, X_i, \dots X_n)\} = \beta_0 + \beta_1 \text{freq}c_i + \beta_2 f2fc_i + \beta_3 \text{freq}co_i + \beta_4 f2fco_i + \beta_5 \text{freq}s_i + \beta_6 f2fs_i + A_i + Z_i$$

where Y=Introduction of a service that is new to the market (0=new to the firm)

freq = frequency of meetings with the 3 categories of partners

f2f= percentage of interactions that are face-to-face

A is a vector of binary variables for the 6 categories of technology

Z is a vector of control variables

Main Findings

	Model 2		Model 3		Model 4	
	Coeff (B)	Std Err	Coeff (B)	Std Err	Coeff (B)	Std Err
Knowledge exchange						
Percentage F2F with clients			0.015**	0.008	0.017**	0.008
Frequency of meetings with clients			0.027	0.103	0.056	0.107
Frequency of meetings with collaborator			-0.003	0.085	-0.026	0.089
Percentage F2F with collaborator			0.009	0.008	0.009	0.008
Freq. of meetings with subcontractor			0.176**	0.082	0.156*	0.085
Percentage F2F with subcontractor			-0.001	0.007	-0.001	0.008
Use of ICTs						
Internet-enabled mobile device	0.429	0.335			0.465	0.349
Company-wide computer network	-0.189	0.277			-0.274	0.289
Industry-specific software	-0.179	0.271			-0.248	0.282
Customer/supplier relationship	-0.275	0.269			-0.306	0.280
Enterprise resource planning software	-0.453	0.404			-0.446	0.422
Video-conferencing	0.610**	0.269			0.543**	0.277
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs	265		265		265	
R2	0.05		0.055		0.08	

Discussion and Future Research

- Interactions increase the probability of introducing a service that is new to the market
- Clients can provide useful feedback, valuable information about market trends, as well as transferring more tacit competences
- Subcontractors provide a particular expertise used by KIBS to develop new products: modular innovation
- Use of technologies to increase the efficiency of communication

What's next?

- Bigger sample and other data
- Causal relationship

Thank you

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