

**The Adoption of Information and
Communication Technologies in the
Design
Sector and their impact on Firm
Performance:
*Evidence from the Dutch Design Sector***

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Schema

- Key points of the paper
- ICT capabilities
- Why choosing the design sector?
- Hypotheses formulation
- Results
- Conclusions and managerial implications

Key Points of the Paper

- Key Research Question:
 - What are the basic roles of ICTs and how do they translate into IT-enabled learning mechanisms.
 - how do the IT-enabled learning mechanisms create value in the creative sector.
- Theory Used:
 - Organizational learning (OL)
- Dataset:
 - 189 companies from Web, Graphic and Industrial design in the Netherlands

The Basic ICT Capabilities/Roles

1- Information Processing Technologies

- ICTs used to process information and assimilate data, generate richer information and new knowledge at the operational level.

2- Communication Technologies

- ICTs used to provide a two-way information exchange and facilitating collaboration across stakeholders.

Why Choosing the Design Sector?

- Our Aim: studying the ICT-enabled mechanisms in context of Organizational Learning
- Design sector:
 - Falls under “Creative Industries” regime; a hub for individual creativity and innovation
 - Extensively uses ICT for supporting the processes and product designing
 - Is regarded as “Knowledge Broker” which exploits knowledge from multiple sectors to obtain novel solutions
- Hence design sector forms an ideal case to studying ICT-enabled learning mechanisms

IT-enabled Learning Mechanisms

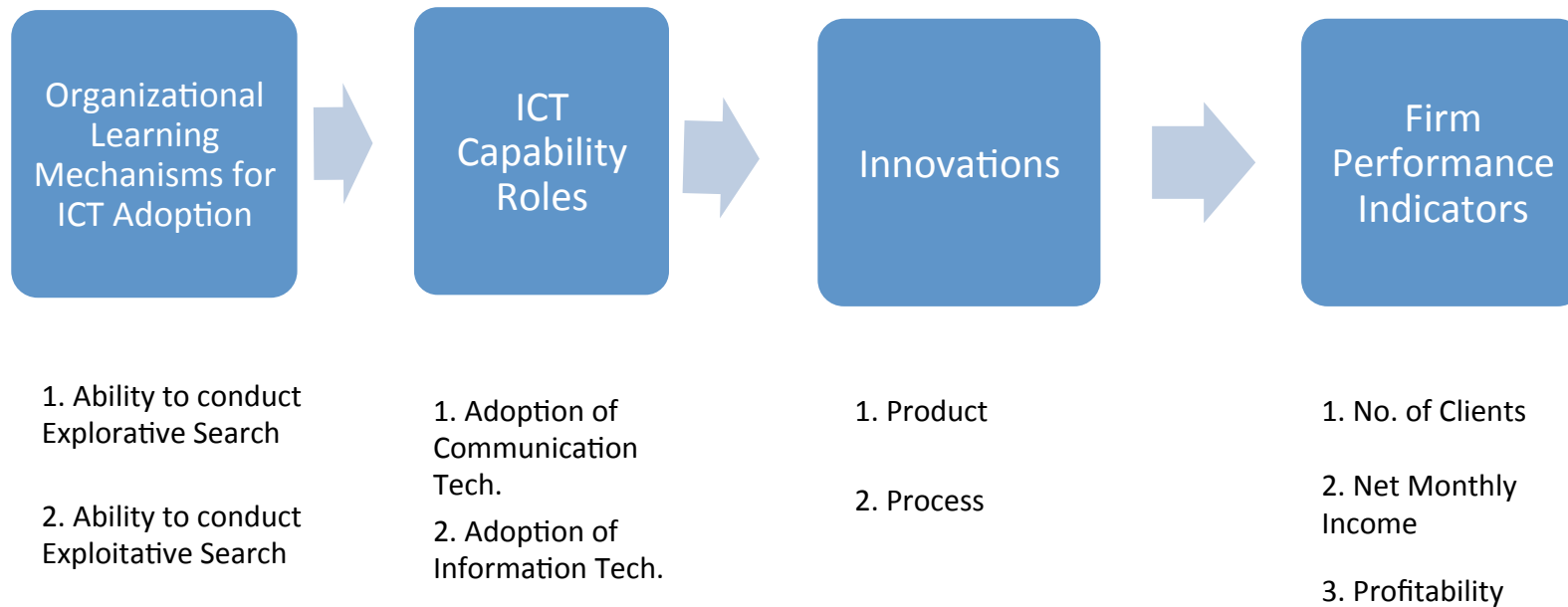
- Ability of IT to facilitate Organizational Learning Activities
- Two key Organizational Learning activities have been identified by March (1991):
 - Exploration
 - Exploitation

Hypotheses Formulation

Our hypotheses comprise of three parts:

1. Testing whether *Organizational learning* is an important antecedent to IT capability building.
2. Testing the relationship between between ICT and organizational innovation
3. Testing the relationship between ICT, organizational innovation and firm performance

ICT Adoption, Innovation and Firm Performance



Dependent Variables

Variables	Variable Type
No. of Information Processing Technologies	Count
No. of Communication Technologies	Count
Product Innovation	Binary
Process Innovation	Binary
No. of Clients Increased/ Decreased or Stayed the same	Categorical
Profitability	Binary
Net Monthly Income	Categorical

Results-1: Poisson GLM estimates of ICT adoption

	No. of Information Processing Technologies	No. of Communication Technologies
Imp. of ICT for Exploration	0.0272 (0.0474)	0.1322** (0.0561)
Imp. of ICT for Exploitation	0.1468* (0.0776)	0.1299 (0.0939)
Log (No. of employees)	0.1117 (0.705)	0.1421 (0.0913)
Company Age	-0.0002 (0.0059)	-0.0298*** (0.0086)
Previous Experience CEO	-0.1880 (0.1457)	-0.3498* (0.1856)
Gender CEO	0.0960 (0.1190)	-0.0204 (0.1402)
Higher Education CEO	0.0499 (0.1276)	0.0470 (0.1589)

Results-2: Logit estimates for the link between ICT and Innovation

	Product Innovation	Process Innovation
No. of Information Processing Technologies	0.1659 (0.1774)	0.6248*** (0.2191)
No. of Communication Technologies	0.2739* (0.1644)	-0.0017 (0.1777)
Log (No. of employees)	0.0917 (0.2400)	-0.0361 (0.2701)
Company Age	-0.0023 (0.0189)	-0.0463* (0.0237)
Previous Experience CEO	0.3456 (0.4333)	-0.3066 (0.5154)
Gender CEO	0.6651* (0.3817)	1.0716** (0.4531)
Higher Education CEO	-0.3858 (0.4009)	-0.0293 (0.4376)

Results-3.1.: Ordered Logit and Logit estimates for the link between ICT and Firm Performance

	No. of Clients	Profitability	Net Monthly Income
No. of Information Processing Technologies	0.2885* (0.1653)	0.2769 (0.2216)	0.3599** (0.1789)
No. of Communication Technologies	-0.0577 (0.1478)	-0.1134 (0.1928)	0.0885 (0.1571)
Keeping Up-to-date financials	0.6909** (0.3099)	1.0119*** (0.3776)	0.9548*** (0.3583)
HR Practices	-0.1005 (0.1860)	-0.2221 (0.2642)	0.2362 (0.2130)
Log (No. of employees)	0.3017 (0.3478)	0.7198 (0.5595)	-0.1392 (0.4126)
Company Age	-0.0524*** (0.0175)	-0.0050 (0.0241)	0.0662*** (0.0212)
All other controls			
N	183	176	140

Results-4: Ordered Logit and Logit estimates for the link between ICT, Innovation and Firm Performance

	No. of Clients	Profitability	Net Monthly Income
Product Innovation	0.5328* (0.3127)	0.2779 (0.4250)	0.2020 (0.3386)
Process Innovation	-0.1170 (0.3482)	0.1746 (0.4703)	-0.1603 (0.3655)
No. of Information Processing Technologies	0.2785* (0.1676)	0.2446 (0.2271)	0.3709** (0.1848)
No. of Communication Technologies	-0.0731 (0.1486)	-0.1179 (0.1927)	0.0714 (0.1587)
Keeping Up-to-date financials	0.6909** (0.3099)	1.0119*** (0.3776)	0.9548*** (0.3583)
HR Practices	-0.1005 (0.1860)	-0.2221 (0.2642)	0.2362 (0.2130)
Log (No. of employees)	0.2373 (0.3546)	0.7342 (0.5631)	-0.1998 (0.4191)
Company Age	-0.0516*** (0.0175)	-0.0030 (0.0243)	0.0649*** (0.0215)
All other controls			
N	183	176	140

Conclusions from the Results

- Two basic roles of ICTs are identified which are Information Processing role and communication role
- Information Processing role supports “Exploitation” while Communication role supports “Exploration”.
- Information Processing ICTs enable “Process Innovation” while Communication ICTs support “Product Innovation”.
- Information Processing ICTs and Product Innovation are important determinants of superior firm performance

Contributions

- How IT-enabled learning mechanisms are created and how do they have impact on firm performance
- How each IT-enabled learning mechanism facilitates certain innovation type.
- IT-enabled learning mechanisms influence firm performance with or without innovation.

Thank you very much for your time & attention

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