

e-Business and ICT Impact on Firm Performance

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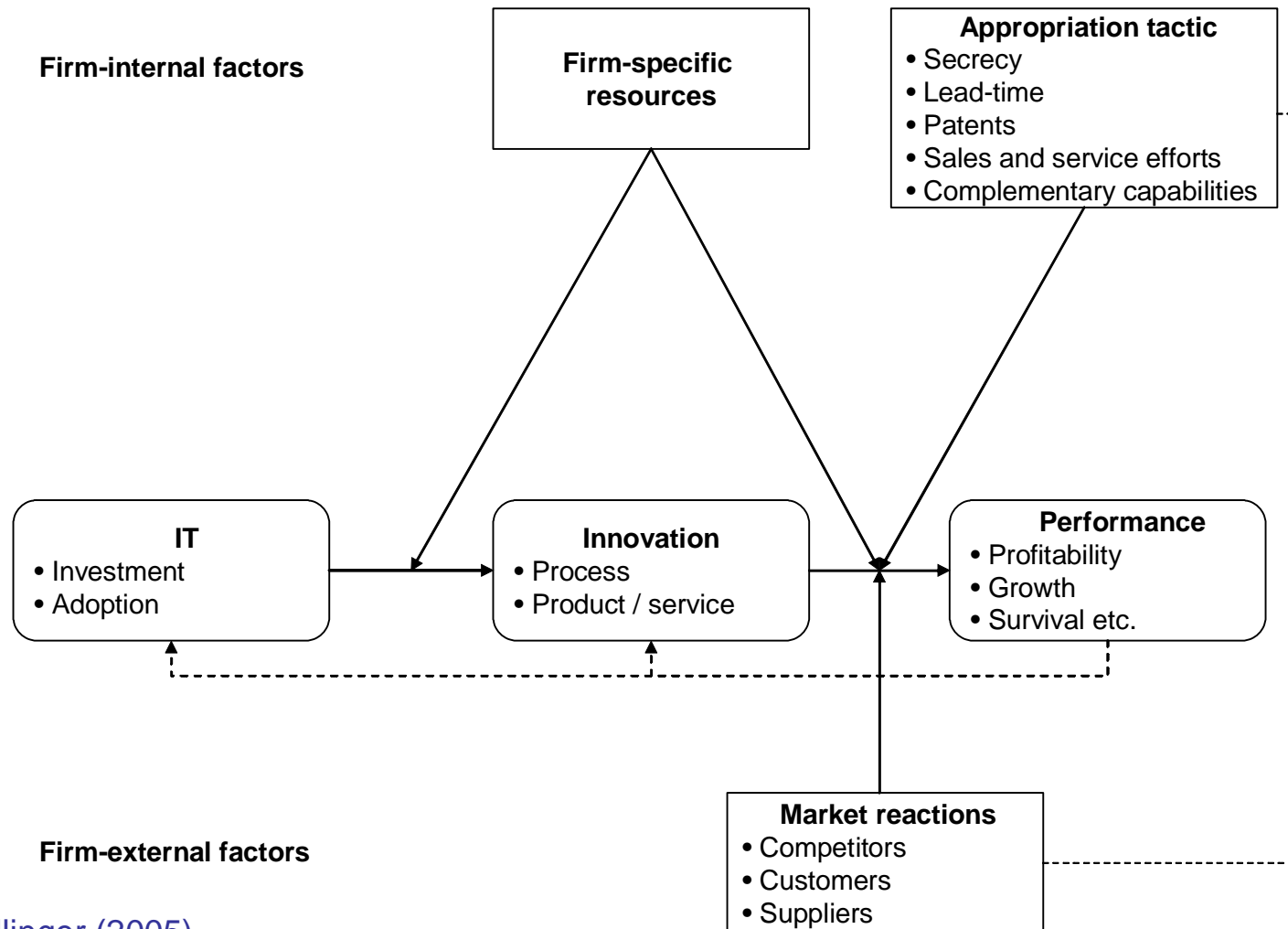
Overview

- Special Report 1 *e-Business W@tch 2006*
 - New empirical evidence based on 2006 data
 - Firm-level analysis
 - Relationship between ICT-usage and
 - Turnover growth
 - Productivity
 - Employment dynamics
 - Conceptual framework: ICT (and e-business) as enabler of innovation
 - Economic (market-oriented) perspective
 - Four main hypotheses, some preliminary empirical support for all of them
 - Some policy conclusions

ICT and innovation

- E-business technologies are a subset of modern ICT
- ICT may be viewed as:
 - A *product innovation* or a new market from the perspective of the suppliers, if their technological invention is successfully introduced to the market.
 - An *enabler of process innovation* from the perspective of the adopter, if the implementation succeeds, the routines are changed, and the new system is actually utilized.
 - An *enabler of product or service innovation* from the perspective of the adopter, if the IT is successfully used to offer a new service or to deliver products to customers in a way that is new to the enterprise.

Conceptual framework



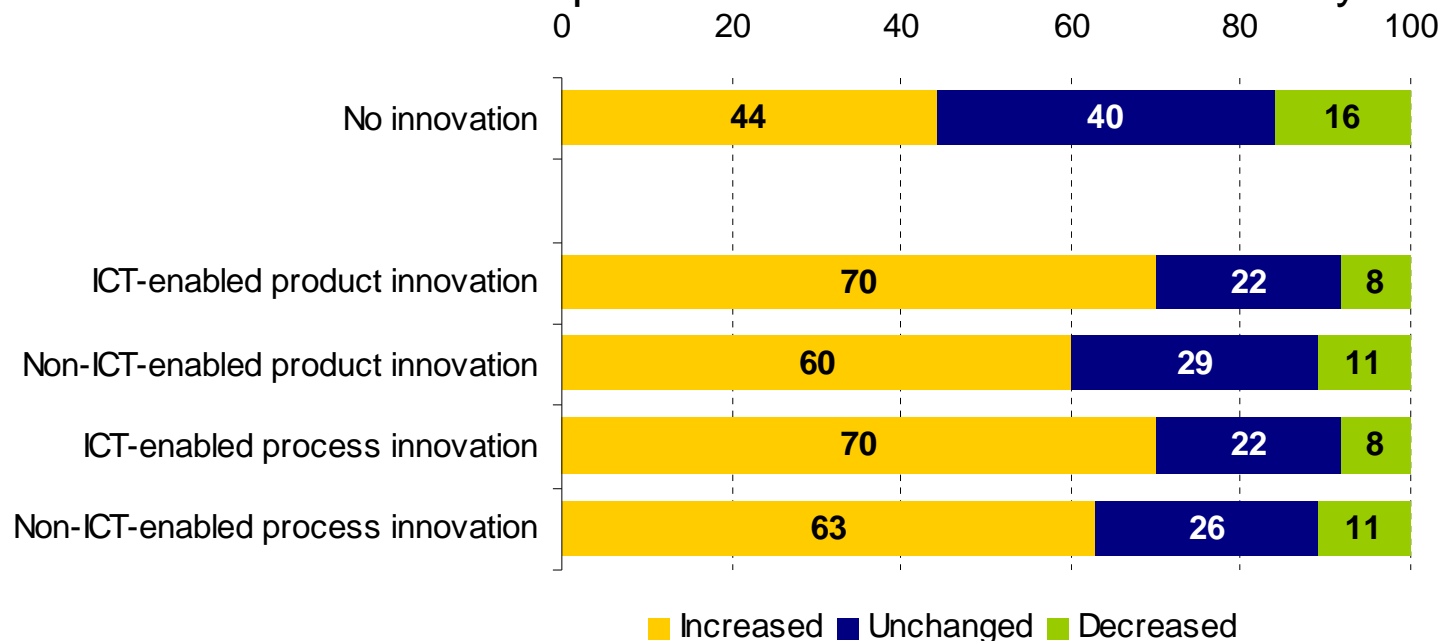
e-Business Survey 2006

- Methodology
 - CATI (computer-assisted telephone interviews)
 - Average interview length: 18 min.
 - No cut-off by firm size (quota for 4 size-bands)
 - Population: companies using computers from 10 sectors
 - Field-work in March/April 2006, conducted locally in 29 countries
- Scope
 - 14,065 interviews (in 29 countries)
 - full coverage of all 10 sectors in 10 EU countries ("EU-10")

Turnover growth

- Hypothesis 1:
 - Firms that conduct innovations, whether they are ICT-related or non-ICT-related, are more likely to exhibit increasing turnover

Exhibit 1: Turnover development of firms and innovative activity



Base (100%): All companies. N = from 12,721 to 12,799 depending on missing values

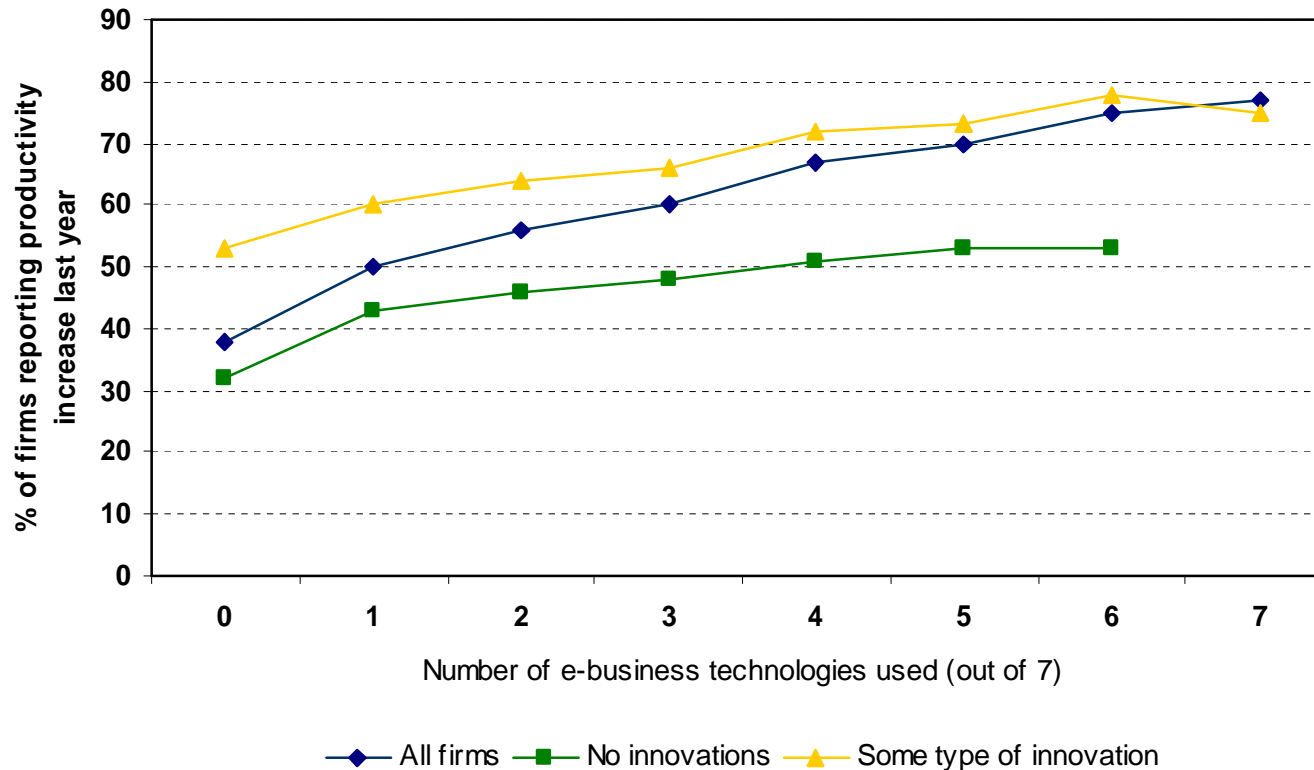
Source: e-Business W@tch 2006

Productivity

- Hypothesis 2:
 - Positive effects of ICT on productivity are more likely to occur in firms that conduct innovations
 - Due to complementary investments into process re-engineering, training, organizational change, and “absorptive capacity”
- Hypothesis 3:
 - Positive effects of ICT on productivity are more likely to occur in firms that are advanced users of ICT
 - Some firms and sectors are more advanced users of ICT than others, this could reflect different technological opportunities and higher ROI in more advanced firms
 - Full benefits of ICT only occur with significant time lag, more advanced firms usually started earlier with their ICT investments

Productivity

Exhibit 2: Productivity increases, ICT usage, and innovative activity



Base (100%): All companies. N = 10,392

Technologies counted are: E-Learning, ERP, SCM, Knowledge Management, CRM, Online Sales and Online Purchasing

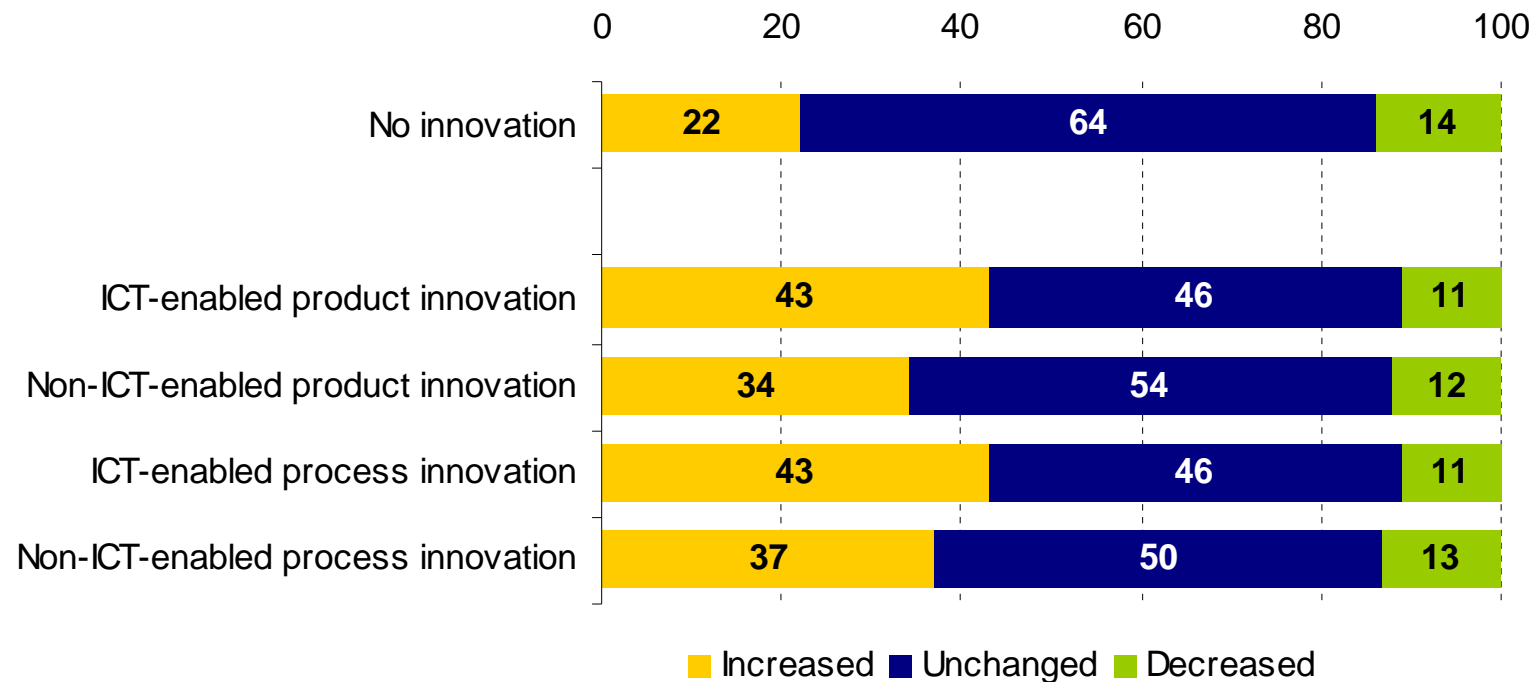
Source: e-Business W@tch 2006

Employment dynamics

- Does technological change, and an increasing use of ICT in particular, create or destroy jobs?
- Answer depends on...
 - the level of analysis (firm-, sector-, macro-level)
 - the type of technology
 - the type of innovation most commonly associated with the use of the new technology
 - Product innovation
 - Process innovation (either technological or organizational)
- Hypothesis 4:
 - Firms that conduct *product* innovations, whether they are ICT-related or non-ICT-related, are more likely to increase employment.

Employment dynamics

Exhibit 3: Employment development of firms and innovative activity



Base (100%): companies. N = from 13,516 to 13,610 depending on missing values

Source: e-Business W@tch 2006

Conclusions

- ICT and e-business continue to trigger important structural changes in the economy
 - Competitiveness of individual enterprises
 - Growth of turnover, productivity and employment
 - Structure and performance of national economies
- Limitations
 - Effects of ICT vary significantly among firms, sectors, and countries
 - Causalities complex, no direct link between ICT and performance (more ICT does not automatically imply superior performance)
 - More rigorous analysis (econometrics, more precise measurements) are needed to back-up the positive results

Policy implications

- No direct link between ICT and performance
 - Indirect effects via innovation
 - “lagging behind” is not necessarily a disadvantage due to continuous technological improvements and falling prices of ICT
 - Optimal degree and speed of diffusion is practically impossible to determine (trying to hit an “invisible target”)
 - Not all ICT are necessarily beneficial to all companies
 - Public leverage to speeding up diffusion is limited
 - Thus, instead of promoting ICT in general or specific ICT solutions, policy should focus on improving framework conditions for innovation
 - Education, R&D and market (de)regulation
 - Further monitoring of recent technological developments