Effects of Institutionalization & Resource Dependence on IT Assimilation

Ping Wang

Research Questions

- Do factors outside organizations matter to the assimilation of new IT?
- If so, what factors matter and when do they matter?
Information Technology Innovation

- IT Innovation: IT new to the adopting unit
- Diffusion: Innovation spread across and within adopting organizations
- Innovation journey (Swanson & Ramiller 2004)
  - Comprehension
  - Adoption
  - Implementation
  - Assimilation
  - Rejection/abandonment

Assimilating IT Innovation

- Assimilation
  - Outcome: extent to which new IT is used and becomes routinized in the activities of projects or processes (Purvis et al. 2001)
  - Process
- Assimilation as choice
  - Assimilation gap (Fichman 1999)
Factors Affecting IT Assimilation

Characteristics of

- **Innovation**
  - maturity, complexity, transferability, divisibility...

- **Innovation context**
  - Internal: size, absorptive capacity, top mgmt. beliefs and support, training, infrastructure...
  - External: institutional pressures (Liang et al. 2007)

- **Innovation x innovation context**
  - Compatibility of innovation with organization

External Pressures for Assimilation

- **Institutional Theory (??)**
  - Pressures from institutional environment
    - Mimetic: uncertainty drives imitation
    - Coercive: regulation and power
    - Normative: profession and culture

- **Resource dependence theory (RDT)**
  - Pressures from exchange partners

- **Theoretical confounding**
Hypotheses

- **H1:**
  - Institutional pressures $\rightarrow$ assimilation

- **H2:**
  - Effect of mimetic pressures *declines*
  - Effect of coercive pressures increases
  - Effect of normative pressures increases

- **H3:**
  - Exchange partner pressure $\rightarrow$ assimilation

Methods

- IDC surveys of *Fortune 1000's ERP assimilation* (1996-2006)
- **DV:** # functions + % of biz processes
- **IVs:**
  - Institutional pressures:
    - Competition, industry standard & association, law
  - Exchange partner pressures:
    - Investors, suppliers, customers
- **CVs:**
  - Info integration, coordination, op. efficiency, top mgmt. support, size, ERP investment, time
### Regression on ERP Assimilation (1)

<table>
<thead>
<tr>
<th></th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry std.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry asstn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law &amp; regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Regression on ERP Assimilation (2)

<table>
<thead>
<tr>
<th></th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info. integration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Op. efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top mgt. suppt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative $</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#FTE n IT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yrs since adopt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Implications

Theoretical
- Conventional wisdom applies to assimilation
- Institutional pressures in organizations
- Exchange partner pressures depend on time – level of institutionalization

Methodological
- Consider both internal & external
- Differentiate factors longitudinally

Revisiting Research Questions

Do factors outside organizations matter to the assimilation of new IT?
- Yes. Assimilation is not internal process.

If so, what factors matter and when do they matter?
- Institutional pressure or resource dependence is necessary but insufficient
- Theories don’t converge; they complement each other.