Knowledge sharing in knowledge-intensive manufacturing firms

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Agenda

• Introduction
• Theoretical background
• Hypotheses
• Research Model
• Findings
• Discussion
• Limits
• Future research
The issue of how organizations can value and exploit their employees’ critical knowledge is not new to knowledge management scholars. Many of them have long been concerned about the way managers could lead organizational members to voluntarily share what they know within the company (Knowledge Sharing – KS).
Introduction (2/4)

Our aim is to investigate the role played by individual enablers, organizational variables, and reward system in shaping employees’ orientations in sharing knowledge with others in the firm.
Individual factors

- **Enjoyment** in helping others enhances KS as it provides the intrinsic motivation (Lin, 2007)
- Importance of **self-efficacy** to increase the willingness to contribute to organizational performance by acquiring and sending knowledge (Wasko & Faraj, 2005)
- Individuals’ **openness** to share experience (Cabrera & Cabrera, 2003; Cabrera, Collins & Salgado, 2006)
- Level of **education** (Constant, Kiesler & Sproull, 1994)
Organizational factors

- **Centralized organizational structures** are likely to impede the exchange of information within the firm, by discouraging the interaction and communication among employees (Kim & Lee, 2006)

- An **organizational climate** that emphasizes competitive rather than cooperative behaviours strongly hampers the creation of a work environment based on mutual trust, an essential condition for implementing KS (Willem & Scarbrough, 2006; Håkonsson et al., 2012).
Reward systems

Seldom rewards and recognition can stimulate employees to actively participate in KS processes (Bock et al., 2005; O’Dell & Grayson, 1998), whereas the effect of extrinsic rewards on spontaneous mechanisms (e.g. creativity, sharing) is even more ambiguous.
The theoretical background (1/4)

- The resource-based view and the knowledge-based perspective widely state that the development, exploitation, and management of knowledge assets are crucial to the survival and prosperity in modern organizations (Barney, 1991; Huber, 2001; Grant, 1996; Van Baalen, Bloemhor-Ruwaard & Van Heck, 2005; Alawi et al., 2009).

- Definition of knowledge: knowledge cannot be conceived as simple information, because while information is just “a flow of messages”, knowledge is rather justified by one’s belief (Polanyi, 1958; Nonaka, 1991). This means that not only it includes information, but also know-how and experience (Kogut & Zander, 1992).

*RQ1: how can managers intervene in order to stimulate and knowledge sharing within the company’s boundaries?*
Theoretical background (2/4)

• KS process can be conceived of as involving both the supply and the demand for new knowledge (Van de Hoof & Van Weenen, 2004) or, similarly, both a knowledge seller and a knowledge buyer (Reid, 2003).

• KS consists of two dimensions (Lin, 2007):
  a) **Knowledge Donating** (KD), meant as the employees’ willingness to communicate with others and voluntarily transfer their (pieces of) intellectual capital, and
  b) **Knowledge Collecting** (KC), which is the process of asking colleagues for information and help, by consulting with them in order to learn from their knowledge

*R.Q.2: What are the individual enablers to KS?*

*R.Q.3: What are the organizational enablers to KS?*
Hypotheses: Individual enablers

• **Individual innovative behaviour** can be defined as the employees’ ability to intentionally introduce and apply within a job new ideas, new products or processes that can satisfy market needs and respond to technological change more quickly than competitors (West & Farr, 1989)

• **Intrinsic motivation** has the power to lead individuals to act proactively (Deci & Ryan, 2000), promoting their creativity and learning activity (Vallerrand & Bissonnette, 1992; Festré & Giustiniano, 2011). Intrinsic motivation is associated with a higher employees’ tendency to create a positive mood, enhancing their learning activities as well as their tendency to participate in KS (Foss et al, 2009; Osterloch & Frey, 2000; Festré & Giustiniano, 2011; Cavaliere & Lombardi, 2013)

• The **enjoyment** originating from helping others derives from the concept of altruism (Organ, 1988) and is defined as the perception of pleasure obtained from helping others through knowledge contribution

*Hp1a: Individual enablers are positively related to knowledge donating behaviours within the organization*

*Hp1b: Individual enablers are positively related to knowledge collecting behaviours within the organization*
Hypotheses: Organic org. enablers

• The ‘organic management systems’ (Burns and Stalker, 1961) - Lean Thinking approach (Womack, Jones & Ross, 1990) - foster the firm’s capacity to value teams of multi-skilled workers as well as to implement knowledge management practices and a culture of continuous improvement (Staats, Brunner & Hapton, 2011)
• Fit between structural features and performance (Burton, Lauridsen & Obel, 2002; Håkonsson et al., 2012)
• In exploring the organic organization KS enablers we focus on organizational structure, integrating mechanisms (e.g. coordination tools) and autonomy on the job

Hp 2a: Organic organization enablers are positively related to knowledge donating behaviours within the organization

Hp 2b: Organic organization enablers are positively related to knowledge collecting behaviours within the organization
Hypotheses: Rewards

- **Extrinsic rewards inhibit** the attitude toward KS by deteriorating employees’ intrinsic motivation to interact and communicate with colleagues (Bock et al 2005; Wasko & Faraj, 2005)
- The cognitive evaluation theorists (Deci & Ryan, 1985) argue that this kind of incentives make employees **perceive the locus of causality** of KS behaviour as external, hindering their orientation to effectively participate in KS (Bartol & Srivastava, 2002; Kreps, 1997)
- The explanation of such phenomena lies in the idea of ‘perceived locus of causality’ (PLOC, deCharms 1968) or ‘locus of control’ (Rotter, 1966) existing between the perceived motivation and the individual actions

*Hp 3a: Extrinsic rewards are negatively related to knowledge donating behaviours within the organization*

*Hp 3b: Extrinsic rewards are negatively related to knowledge collecting behaviours within the organization*
Research model

Control variables
- Age
- Gender
- Education level
- Seniority

Individual enablers
- Enjoyment in helping others
- Individual innovative behavior
- Intrinsic motivation

Lean organization enablers
- Organizational structure
- Coordination mechanisms
- Autonomy on the job

HR management practices
- Extrinsic rewards

Knowledge sharing process
- Knowledge donating
- Knowledge collecting

Hypotheses:
- Hp1a +
- Hp1b +
- Hp2a +
- Hp2b +
- Hp3a
- Hp3b -
Sample

• A draft questionnaire was pilot tested with 53 middle managers of three different companies
• Web-survey data (Van de Hoff & Huysman, 2009) from 14 (23) highly-innovative, knowledge-intensive (Alvesson, 1993) manufacturing firms located in Tuscany, and operating in international markets
• Meeting with each of the 14 (23) Human Resource Directors: explanation of the project and definition of the sample of employees to be involved in the research (‘nodes’ of critical knowledge, as central in the strategic information flows; ‘gatekeepers’)
• Year 2013: 45.3% companies response rate - Average internal response rate: 69% (27.58% the minimum; 100% the maximum)
• Year 2014: 50.1% companies response rate - Average internal response rate: 74.3% (27.6% the minimum; 100% the maximum)
Measures

• **Self-reported measures** for operationalizing all variables (Spector, 1994).
  - **Dependent variables**: knowledge donating (KD, three-item scale) and knowledge collecting (KC, four-item scale) (Van den Hooff & Van Weenen, 2004)

• **Independent variables**:
  - Individual innovative behavior - nine-item scale (Janssen’s, 2000)
  - Intrinsic motivation - three-item variable derived from the Motivation at Work Scale (Gagné et al., 2010)
  - Employees’ enjoyment in helping others - four items derived from Wasko and Faraj (2000)
  - Organizational structure - six-item scale slightly adapted from the one used by Gold, Malhotra & Segars (2001)
  - Integrating mechanisms – enriched version of the one from Galbraith (1973)
  - Work autonomy - Hackman and Oldham’s Job Descriptive Index (1974)
  - Extrinsic rewards – four items derived from Hargadon (1998) and Davenport and Prusak (1998)

• **Control variables**: Age, gender, education level and seniority
### Findings (1/3)

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<th>4</th>
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<td>5. Job autonomy</td>
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<td>6. Organizational structure</td>
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*Chronbach’s alpha is shown on diagonal.*
### Table 2a. Final tested models on knowledge donating

**Knowledge donating as dependent variable**

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<tr>
<td>Individual innovative behavior</td>
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<td>**</td>
<td>0.07</td>
<td>0.07</td>
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<tr>
<td>Intrinsic motivation</td>
<td>0.25</td>
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<td>0.10</td>
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<td>Coordination mechanisms</td>
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<tr>
<td>Job autonomy</td>
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<td>Extrinsic rewards</td>
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<td>-0.41</td>
</tr>
</tbody>
</table>

| Adj $R^2$                         | -0.001 | 0.18   | 0.43   | 0.43   |
| $F$                               | 0.87   | 9.36   | 23.64  | 21.77  |

* $p<0.05$; ** $p<0.01$; *** $p<0.001$; † $p<0.10$
### Table 2b. Final tested models on knowledge collecting

**Knowledge collecting as dependent variable**

<table>
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<tr>
<td><strong>Individual innovative behavior</strong></td>
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<tr>
<td><strong>Intrinsic motivation</strong></td>
<td>0.09</td>
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<tr>
<td><strong>Coordination mechanisms</strong></td>
<td>0.06</td>
<td>†</td>
<td>0.06</td>
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<tr>
<td><strong>Job autonomy</strong></td>
<td>0.15</td>
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<td>0.16</td>
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<tr>
<td><strong>Organizational structure</strong></td>
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<tr>
<td>Adj $R^2$</td>
<td>0.01</td>
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<tr>
<td>$F$</td>
<td>2.11</td>
<td>15.81</td>
<td>16.67</td>
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</table>

*p<0.05; **p<0.01; ***p<0.001; †<0.10
Discussion (1/2)

• Strong value of organic or lean organizational features to support KS behaviors among employees, enabling teamwork and open communication channels, that stimulates employees to experiment their ideas and that enhances the daily internal interaction.

• The positive effect of coordination mechanisms on both knowledge donating and collecting regarding the use of integrating roles such as project managers, task forces or multi-functional teams is consistent with the organic view of the KS-based firm as well as with the positive impact resulting about autonomy.

• The development and improvement of KS activities among employees requires them to build flatter organizations that focus on group leadership and team work, facilitating the interaction and learning processes among individuals in order to support the continuous creation of new knowledge (organizational design, office layout, etc.)
As for the influence of extrinsic rewards on KS, we found that while organizational extrinsic incentives negatively impact on knowledge collecting, they do not have any significant effect on knowledge donating. We interpret this result as follows: Since knowledge collecting requires individuals to expressly ask for information to colleagues, we believe that in case of KS rewards, the knowledge-sender would be less willing to donate its knowledge in order to impede colleagues to receive that recompense. Such a case is consistent with the view of opportunistic human behavior, which leads individuals to selfish actions and to be reluctant in contributing to the organization’s learning.

We did not find empirical evidence about the direct effect of extrinsic rewards on our dependent variable ↔ Equity theory.

Finally, even though the literature on KS emphasizes the importance of individual factors in fostering knowledge and information exchange, our results show that they play a less relevant role when compared with organization-level enablers. This evidence even more shows that managers can play a relevant role in driving and affecting the way in which KS occurs within their firms. In other words, they have the opportunity to act upon organizational mechanisms to encourage their workers to participate in KS activities and thus to contribute to the firm’s performance and innovativeness.
Limits

• Sample (size, location)
• The paper did not consider all the (available) enablers that are critical for KS (e.g. job characteristics, firms culture, leadership style)
• The research did not detect other demographic (i.e. career stage) or physical (i.e. barriers) determinants to KS
• Further investigations on moderating effects
Future research

• Structural holes theory?
• Face-to-face interviews?
• Multi-level approach (Hackman, 2003) with the identification of a macro-level (company: strategy, organizational form), micro-level (organizational unit: coordination mechanisms), micro-level (individuals)?
• The relationship between KS and its predictors offers an extremely viable and interesting opportunity to those who would like to deepen their understanding about this research field.
THANK YOU!