Abstract

**Purpose** – The purpose of this paper is to conduct an investigation into knowledge-sharing mechanisms by empirically testing the role that context plays in the transfer of actionable knowledge, and, in turn, for innovation.

**Design/methodology/approach** – A multiple-respondents survey was performed in 72 business units of companies belonging to the ICT, pharmaceutical and food industries in Greece. In total, 295 useful questionnaires were collected using a multiple respondent strategy. All constructs were measured with multi-item scales and validated using exploratory factor analyses. A total of seven hypotheses were generated following a literature review on the key determinants of context for effective knowledge sharing. The hypotheses were tested using ordinary least squares regression.

**Findings** – The research shows that when units pursue knowledge transfer between their different actors, contextual factors such as trust, motivation to transfer knowledge, management support and learning orientation are crucial for fostering knowledge transfer and innovation. This contribution is important since the need for developing an organizational context where knowledge transfer and innovation flourish is constantly put forth in the business press, while the empirical and research based evidence for its importance has been scarce.

**Research limitations/implications** – There is a research need in knowledge sharing theory to define and identify an integrated model concerning the contextual factors that enable the knowledge sharing process. Having established a firm relationship between organizational context and innovation, the research also sets a foundation for further exploring the organization-environment link in terms of leveraging organizational knowledge dynamics.

**Originality/value** – The research is a first attempt to show that the construct “perceived usefulness of knowledge” is a critical proxy of knowledge transfer effectiveness, as well as to find support for its positive relation to innovation.

**Keywords** Knowledge transfer, Knowledge management, Organizational culture, Innovation, Greece

**Paper type** Research paper

Introduction

A primary aim of knowledge management and knowledge-based social development is to enable and encourage knowledge transfer among and between organizational entities such as individuals, communities and units (Newell et al., 2002). Building on earlier ground-breaking work on knowledge transfer and sharing (Kogut and Zander, 1995; Szulanski, 1996), Argote and Ingram (2000, p. 151) argue that “the creation and transfer of knowledge in organizations provide a basis for competitive advantage in firms”. In a wider social perspective, this knowledge-driven competitiveness is crucial for ensuring sustained performance and growth in regions and industries alike (e.g. Feldman and Martin, 2005). So far, the majority of empirical research has been concentrated on the types of knowledge that enable or hinder knowledge transfer (Szulanski, 1996; Argote and Ingram, 2000; Reagans and McEvily, 2003; Haas and Hansen, 2005), on the kind of organizational components that support knowledge sharing – such as dyads (Szulanski, 1996; Levin and Cross, 2004), ego-networks and inter-unit relationships (Hansen, 1999; Dyer and Nobeoka, 2000; Tsai,
The context where knowledge transfer takes place is an important factor that needs further empirical development, as to what exactly is meant by context and what variables can be conceived as proxies for context when it comes to knowledge sharing. Actually, contextual parameters are important both at the organizational level, which is the focus of this paper, and at the level of the wider social context where organizations operate. In addition, few researchers have attempted to analyze, in depth, knowledge transfer effectiveness (Reagans and McEvily, 2003), that is, the extent to which knowledge transfer actually leads to positive innovation outcomes and other performance effects (Tsai, 2001; Smith et al., 2005).

Building on the knowledge transfer, organizational context and new product innovation literature, the authors position the study in business units (marketing divisions), use the term perceived usefulness of knowledge to operationalize knowledge transfer effectiveness, and argue that an organizational context characterized by a combination of trust, motivation, learning orientation, social interaction, and top management support facilitates knowledge usefulness within business units. Further, the authors conceptualize that knowledge usefulness mediates the relationship between these contextual factors and product innovation. The conceptual framework is depicted in Figure 1. To test this model, 295 questionnaires were used and 72 marketing directors were interviewed from 65 medium- to large-sized multinational enterprises located in Greece. Multiple regression analyses were performed.

The remaining of this paper is organized as follows: First, the knowledge transfer and related innovation literature is reviewed and the research hypotheses are formulated. Second, the methodology with variables, measures and validation procedures is presented. In section three the results are presented, and last implications, limitations and proposals for future research directions are discussed.

Theory development and hypotheses

Making knowledge available is not equal to knowledge transfer. Knowledge also needs to be used by the receiving part. Knowledge transfer actually occurs when received knowledge is used by recipients and this use results in changing their behavior; in other words when experience of one individual or unit influences another unit through changes in behavior (Nelson and Winter, 1982; Argote and Ingram, 2000). Von Krogh (2003, p. 374) adds further precision to the knowledge transfer/sharing processes, arguing that tacit knowledge sharing is a “sequenced collective action and change, involving alteration and transformation in cognition and action both of the sender and the receiver, whereas Argote and Ingram (2000) point out that knowledge transfer can be measured through changes in knowledge or changes in performance.

This specification of “true” knowledge transfer presents strong similarities to learning theory where learning at the individual level occurs when an individual, as a result of learning, modifies his or her mental models – which are representations of an individual's explicit and implicit understandings of the world (Senge, 1990). The learning literature supports the view
that organizations convert their past experience into promises for future action (Hargadon and Fanelli, 2002). By following such a rationale, the authors adopt the view that knowledge transfer can be seen as a building block of organizational learning (Argote, 1999), and, consequently, knowledge is effectively transferred among actors when it is perceived as useful by those actors.

The notion of perceived knowledge usefulness as a proxy of knowledge transfer effectiveness is not new in knowledge theory. Menon and Varadarajan (1992), for instance, define usefulness as a judgment made about knowledge from a particular source in a particular context. More recently, Levin and Cross (2004) develop the construct receipt of useful knowledge as an outcome variable to denote the concept of effective knowledge transfer. Building on Hansen (1999), Hansen and Haas (2001) and Szulanski (1996) they combine eight items to formulate this construct, indicating the extent to which received knowledge hindered or promoted different aspects of project and business unit outcomes. Four items related to project efficiency in terms of budget and time, and four items related to business unit effectiveness – in terms of value, performance and quality – were measured in these studies.

To sum up, perceived usefulness of knowledge is dependent on the extent to which the concerned actors perceive knowledge as:

- Meaningful – knowledge should make sense to the users.
- Accurate – knowledge should be related to the tasks and problems facing the users and to the processes and routines through which work gets done.
- Valid – knowledge should be action-oriented and proven applicable.
- Innovative – the use of knowledge should lead to something new (i.e. ideas, products, deeper knowledge, etc).

Based on the above, the authors suggest that perceived usefulness of knowledge, which prompts organizational actions, changes in behavior, and innovation outcomes, is an adequate proxy of knowledge transfer effectiveness. Following Levin and Cross (2004), the authors define and measure a unit’s perceived usefulness of knowledge as the extent to which the knowledge which is shared, is perceived as meaningful, relevant, action-oriented, and innovative.

Having analyzed and specified the notion of knowledge transfer, the particular context where knowledge transfer actually occurs and in which knowledge is manifested as useful needs to be examined. The knowledge transfer literature suggests that trust (Levin and Cross, 2004), motivation (Osterloh and Frey, 2000), learning orientation (Baker and Sinkula, 1999), social interaction (Hansen, 1999) and management support (Vera and Crossan, 2004) are cornerstones of an organizational context that enables effective knowledge sharing (Gibson and Birkinshaw, 2004). This context, which essentially is built up from variables of social inter-personal nature, will affect the level of perceived usefulness of knowledge, which, in turn, will affect new product and service introduction impacting also the wider social context where the organization is located.

Organizational context, knowledge transfer effectiveness, and performance

Davenport and Prusak (1998) argue that when knowledge transfer is the objective, the method must always suit the organizational culture and social processes, while De Long and Fahey (2000) advance that different contextual dimensions shape the individuals’ mindsets, behavior and their corresponding relationships. Therefore, the organizational context determines the way that knowledge is created, legitimated and diffused throughout the organization. The authors position the research recognizing that the notions of organizational context, culture and social climate represent overlapping perspectives on the same phenomenon (Ashkanasy et al., 2000; Smith et al., 2005).

The factors that have been identified as influencing and characterizing the context for knowledge transfer include social interaction (Hansen, 1999; 2002; Reagans and McEvily, 2003), trust (De Long and Fahey, 2000; Argote et al., 2003; Becerra and Gupta, 2003),
management support (Vera and Crossan, 2004), motivation (Gupta and Govindarajan, 1986; 2000; Osterloh and Frey, 2000; Argote et al., 2003) and learning orientation (Tsai and Ghoshal, 1998; Baker and Sinkula, 1999, Crossan et al., 1999).

A key enabler for knowledge transfer is social interaction among organizational members (e.g. participants in problem-solving teams) who rely on knowledge transfer for supporting innovation and for driving performance (Ghoshal et al., 1994; Tsai, 2001; Reagans and McEvily, 2003). Hansen (1999, p. 83) defines such relations as “regularly occurring contacts between groups of people”. Social interaction strengthens inter and intra-organizational relationships by integrating actors’ activities in knowledge sharing processes and routines. Key determinants of effective social interaction are closeness and communication frequency (Ghosal et al., 1994; Tsai and Ghoshal, 1998; Tsai, 2001; Becerra and Gupta, 2003).

Social-related activities play an important role in the creation, development and cultivation of a space where knowledge sharing takes place. Hansen (1999), in his study of 120 new-product development projects undertaken by 41 divisions within a large multinational firm, shows that weak ties (i.e. distant and infrequent relationships) among business units help project teams search for simple and useful codified knowledge in other business units, whereas, in contrast, strong ties promote complex knowledge transfer. Additionally, Tsai and Ghoshal (1998) emphasize the important role of social ties as channels of knowledge sharing and resource flows, which influence positively the creation and diffusion of innovations.

Thus, social interaction among individuals in organizational settings could improve productivity (Reagans and Zuckerman, 2001), increase performance (Tsai, 2001), foster innovation (Tsai, 2001), and stimulate knowledge transfer (Reagans and McEvily, 2003).

Taking the above into consideration, the following hypothesis related to social interaction was formulated:

\[ H1. \] Social interaction, as measured by closeness and communication frequency, will have a positive impact on a business unit's level of perceived knowledge usefulness.

Although trust has been consistently theorized as an important aspect of organizational context, its role in relation to knowledge transfer is rather ambiguous and underexplored. Some studies, for example, argue that high levels of trust may inhibit monitoring and thereby minimize collective action (Webb, 1996) whereas others argue that trust among participants facilitates knowledge transfer (Argote et al., 2003) and emphasize the mediating role of trust in perceived usefulness of knowledge (Levin and Cross, 2004). Harris et al. (1999) delineate that developing relationships built upon trust is a vital aspect of knowledge transfer effectiveness, although they recognize the difficulty of creating and maintaining high levels of trust with associated implications for management. Thus, even though strong evidence have been found for the supporting role of trust in effective knowledge transfer, the concept still necessitates further specification especially when integrated in a broader explanatory research model.

Giddens (1990, p. 34) identifies trust as being a property of both individuals and social contexts. Effective knowledge transfer is characterized by a simultaneous high level of mutual trust and trustworthiness among individuals in all processes and activities (Tsai and Ghoshal, 1998; Von Krogh et al., 2000; Newell et al., 2002). The literature on trust comprises
strong evidence that trustful relationships are a key prerequisite for knowledge transfer within and among business units (Dirks and Ferrin, 2001; Levin and Cross, 2004).

Taking the above into consideration, the following hypothesis related to trust was formulated:

\[ H2 \] Trust will have a positive impact on a business unit's level of perceived knowledge usefulness.

Motivation to transfer knowledge constitutes another key determinant for knowledge transfer effectiveness. The motivation to learn is a powerful force driving participation in organizational contexts (Argote et al., 2003). Motivated organizational members can deal easier and more effectively with ill-structured situations and transfer knowledge faster. Osterloh and Frey (2000) distinguish two forms of motivation: extrinsic motivation (pay, incentives, awards and recognition) and intrinsic motivation (work-related factors and work environment), which can motivate participants to share their knowledge. Extrinsic rewards are those that are provided to participants by someone else, while intrinsic rewards are those that individuals generate themselves as a result of accomplishing a task. Intrinsic motivation refers to an undertaken activity for one's need satisfaction. The ideal incentive system is in the work content itself, which needs to be acceptable, satisfactory and fulfilling for employees (Osterloh and Frey, 2000; Ferrin and Dirks, 2003).

Extrinsic motivation contributes to knowledge transfer, maneuvering actors to exploit existing knowledge and explore new one. The behavioral theory of the firm emphasizes intrinsic motivation in the form of identification with organizational strategy and shared purposes. Intrinsic motivation is needed for tasks that require creativity in their execution, and triggers the transfer of knowledge under conditions where extrinsic motivation fails (Osterloh and Frey, 2000). Thus, members of a unit are more likely to transfer knowledge if they are rewarded for utilizing internal knowledge (Argote et al., 2003; Menon and Pfeffer, 2003).

Taking the above into consideration, the following hypothesis related to motivation was formulated:

\[ H3 \] Motivation will have a positive impact on a business unit's level of perceived knowledge usefulness.

Learning orientation is an organizational characteristic, which affects a firm's propensity to use, create and share all kinds of knowledge (Baker and Sinkula, 1999). Organization-level learning represents the translation of shared understandings and collective action into new products, procedures, systems, and strategies (Crossan et al., 1999). Organizational context influences knowledge transfer and learning through commitment to learning, open mindedness, and shared vision that collectively make up the learning orientation construct (Vera and Crossan, 2004; Baker and Sinkula, 1999).

Firms that are committed to learning, recognize the need to understand the cause and effect of their actions, which, in turn, is necessary for firms to regularly detect and correct errors in their theories in use (Crossan et al., 1999). The learning orientation comprises a set of knowledge questioning values through which organizations proactively question long-held routines, taken-for-granted assumptions and beliefs, resulting in processes of unlearning. Hence, unlearning is at the heart of organization change and, in turn, open mindedness is an organization value that is necessary for unlearning efforts to take place (Baker and Sinkula, 1999). The trading of know-how requires the existence of shared codes and vision within firms (Dyer and Nobeoka, 2000; Tsai and Ghoshal, 1998).

Thus, a learning orientation in the business unit prevents participants from hiding and not transferring valuable knowledge and, in parallel, protects from undesired situations (Tsai and Ghoshal, 1998). The authors view a learning orientation as a bonding mechanism that helps different parts of a business unit to integrate or to combine knowledge.

Taking the above into consideration, the following hypothesis related to learning orientation was formulated:
H4. Learning orientation, namely commitment to learning, open-mindedness and shared vision, will have a positive impact on a business unit’s level of perceived knowledge usefulness.

Management literature has emphasized the importance of top management style in implementing and supporting an environment that fosters effective knowledge sharing and innovation within business units (Van de Ven, 1986; Pan and Scarbrough, 1998; Vera and Crossan, 2004). Top management involvement in knowledge sharing is fundamental, since managers need to emphasize the importance of knowledge sharing by frequently urging employees to share their knowledge with their colleagues and by developing, supporting and sustaining the required organizational context.

Strategic leadership theorists (e.g. Hambrick and Mason, 1984) stipulate that decision making at the top management level is critical to organization outcomes; ‘‘ultimately, it accounts for what happens to organizations and business units’’ (Hambrick, 1989, p. 5). In addition, strategic leadership is a key driving force for organizational learning (Vera and Crossan, 2004) and for knowledge management (Nonaka et al., 2000). Nonaka et al. (2000) asserts that leaders promote and develop knowledge sharing, create and energize ‘‘ba’’ – the space in which knowledge is created – and trigger knowledge creation and use. The way in which knowledge management practices are designed and implemented is a reflection of corporate and business unit culture, which in turn, is a reflection of the leadership (Pan and Scarbrough, 1998; Figallo and Rhine, 2002).

Taking the above into consideration, the following hypothesis related to management support was formulated:

H5. Management support will impact on a business unit’s level of perceived knowledge usefulness.

The introduction of new products and services is an important precursor of organization performance (Damanpour, 1991) and new value creation (Tsai and Ghoshal, 1998). The rate of new product introduction can mirror a firm’s capacity of managing, sharing, creating and combining new and existing knowledge (Smith et al., 2005).

The innovation literature explains the processes through which firms create differentiated added value through novelty in products, services and procedures. Innovation can be defined as the generation and development of new products, services or processes (Damanpour, 1991), as ‘‘the creation and exploitation of new ideas’’ (Kanter, 1988, p. 170), or as ‘‘the development and implementation of new ideas’’ (Van de Ven, 1986, p. 590). From an innovation perspective, knowledge provides firms with the raw material for innovation, and knowledge sharing enables a potential of combining shared, but previously disparate ideas, insights and information conductive to the creation of new products, services, and processes (Cohen and Levinthal, 1990; Kogut and Zander, 1992).

The knowledge transfer theory is concerned with analyzing, predicting and prescribing the ability and means of an organizational entity to effectively transfer knowledge across its constituting members. Business units need to provide paths and flows where knowledge is deliberately distributed. Moreover, they need to make full use of their knowledge (Levin and Cross, 2004) so as to support innovative activities (Tsai, 2001).
Taking the above into consideration, the following hypothesis related to new product and services introduction was formulated:

**H6.** The level of perceived knowledge usefulness of a business unit is associated with the number of new products and services it introduces.

Overall, the authors have argued that a context characterized by a combination of trust, motivation, learning orientation, social interaction, and top management support fosters the perceived usefulness of knowledge within business units and that perceived usefulness of knowledge will, in turn, positively affect the level of new products and services introduction as well as the creation of wealth from a wider social perspective. Accordingly, the authors expect perceived usefulness of knowledge to be an important prerequisite to the innovation process.

Taking this into consideration, the following hypothesis was formulated:

**H7.** The level of perceived knowledge usefulness of a business unit mediates the relationship between the business unit's context and number of new products and services.

**Method**

The majority of past studies on knowledge sharing and its consequences has either adopted a case study method or has relied on a single informant to answer questions on behalf of an entire organization. Both these approaches have certain limitations. In this paper, the authors use multiple respondents’ methodology to evaluate business units on context, perceived usefulness of knowledge, and innovation output. They then aggregate the multiple responses to create unit-level measures. This was done in 72 marketing divisions in business units of 65 Greek Firms, each of which had distinct context and market orientation.

**Procedures and sample**

Data were collected in two ways, through:

1. two detailed questionnaires, one distributed to the senior management of each marketing division and the other to selected knowledge workers; and
2. a structured interview with the marketing director or senior deputy of each unit was conducted to obtain a more complete picture of the organizational context variables.

The authors contacted all 194 medium to large enterprises, which employed more than 100 people, from the Greek ICT, pharmaceutical and food industries. These firms constitute the research population. Of the 194 firms contacted, 112 firms agreed to participate in the study (representing a 57.7 percent participation rate). In this paper, preliminary findings of 72 marketing divisions (business units) from 65 of those firms are presented. The total number of survey respondents was 312 including senior, middle and line management. Because of missing data on some measures, 295 questionnaires were used for analyses. In order to mitigate the problem of common method variance or same-source bias (Podsakoff and Organ, 1986), different levels of respondents for the independent variables and the dependent variables were used (Gibson and Birkinshaw, 2004). That is, for the independent variables (i.e. social interaction, trust, motivation, learning orientation, and management support) responses only from those who identified themselves as line management and middle management were aggregated. By contrast, for the dependent variables (i.e. knowledge sharing effectiveness and business unit performance) the authors aggregated only those respondents who identified themselves as senior management.

Driven from multilevel theory (Klein and Koslowski, 2000), it is critical to aggregate variables to statistically demonstrate within-unit agreement and between-units differences. Several analyses to ensure this were conducted. First, the “interrater agreement score” $r_{wgl}(j)$ (James et al., 1993) was calculated for each variable. This measure ranges from 0 (“no agreement”) to 1 (“total agreement”). Glick (1985) suggested 0.60 as the cutoff for acceptable interrater agreement values. Mean (median) interrater agreement was above
0.70 for all variables. The intraclass correlation coefficients – ICC(1) and ICC(2) – were also calculated, using one-way analysis of variance (ANOVA) on the individual level data. Indication of convergence within units is an ICC(1) greater than zero and that $F$ was significant (Kenny and La Voie, 1985). In all cases ICC(1) was greater than zero and $F$ was significant. The ICC(2) values, namely the indication of the reliability of the unit mean were, also, strong and above 0.65 (described below).

**Measures**

All constructs were measured with multi-item scales. Scores on these measures were mean-computed across items. Survey items from published scales were used when possible, while in some cases, original items to capture Greek firms peculiarities were developed. These scales were validated with an expert panel of academics and senior managers and a pretest on a sample of ten business units was conducted as well. Subsequently, exploratory factor analyses with principle component method was employed to further validate measures (described below).

**Social interaction.** The authors measured social interaction, in terms of closeness and communication frequency, with six items in a seven-point Likert scale. The first item – closeness of the working relationship – was adapted from Hansen (1999). Respondents, in the first item were asked to assess their closeness (1 = “very distant” to 7 = “very close”) within their division. Items of communication frequency were adapted by Gupta and Govindarajan (2000), Hansen (1999), Becerra and Gupta (2003). Respondents were asked to assess their communication frequency (1 = “once every three months” to 7 = “once a day”) within their division. All items loaded on a single factor having eigenvalue of 2.56 and accounting for 42.8 percent of the variance. Internal reliability was ($\alpha = 0.72$) and supported aggregation (ICC(1) = 0.21, ICC(2) = 0.65).

**Trust.** From the many different existing scales of trust-based concepts, the authors adapted four items from Levin and Cross (2004). Two dimensions of trust were measured (benevolence and competence trust). Respondents were asked to assess their perceived trustworthiness (1 = “strongly disagree” to 7 = “strongly agree”) within their division. All items loaded on a single factor having eigenvalue of 2.76 and accounting for 69.1 percent of the variance. Internal reliability was high ($\alpha = 0.84$) and supported aggregation (ICC(1) = 0.57, ICC(2) = 0.84).

**Motivation.** Motivation for knowledge transfer was measured with five items of which two were adapted from Bock et al. (2005). The remaining three were developed by the authors[1]. Respondents were asked to assess their agreement (1 = “strongly disagree” to 7 = “strongly agree”) concerning their motivation to transfer knowledge within their unit. Items were emphasizing intrinsic motivation, without, however, overlooking extrinsic motivation. All items loaded on a single factor having eigenvalue of 2.81 and accounting for 65.2 percent of the variance. Internal reliability was high ($\alpha = 0.83$) and supported aggregation (ICC(1) = 0.39, ICC(2) = 0.76).

**Learning orientation.** The authors measured learning orientation with items based on Baker and Sinkula (1999). Ten items were used for the three dimensions of learning orientation – commitment to learning, open-mindedness, shared vision. Ten further items were aggregated to generate the learning orientation variable. Following Baker and Sinkula (1999), high correlations among the three dimensions suggest that they can be included in a
common construct. Internal reliability was high ($\alpha = 0.92$) and supported aggregation ($ICC(1) = 0.51, ICC(2) = 0.91$).

Management support. The authors measured management support with five items adapted by Vera and Crossan (2004). Respondents were asked to assess their agreement (1 = “strongly disagree” to 7 = “strongly agree”) concerning the extent to which leadership facilitates knowledge transfer within their division. All items loaded on a single factor having eigenvalue of 3.5 and accounting for 71.5 percent of the variance. Internal reliability was high ($\alpha = 0.89$) and supported aggregation ($ICC(1) = 0.62, ICC(2) = 0.89$).

Perceived usefulness of knowledge. The authors combined six items, from Levin and Cross (2004), Hansen (1999), Szulanski (1996) to create the scale for perceived usefulness of knowledge. Respondents were asked to evaluate (1 = “strongly disagree” to 7 = “strongly agree”) the extent to which knowledge transfer within the business unit was useful for business unit's operation. Principle component analysis demonstrated that all items loaded on a single factor having eigenvalue of 2.59 and accounting for 64.9 percent of the variance. Factor loadings were above 0.7. Internal reliability was high ($\alpha = 0.81$) and supported aggregation at the unit-level of analysis ($ICC(1) = 0.45, ICC(2) = 0.77$).

New product and services. This was measured as the number of new products that the marketing division had introduced during the last year (Smith et al., 2005). This measure was significantly correlated with the number of unit personnel ($r = 0.50, p < 0.01$).

Control variables. Business unit size, market share, market growth and competition intensity were used as control variables. Size was measured using the natural logarithmic transformation of a unit’s number of full-time employees. Each of the rest variables were adopted and measured with one item in a seven-point Likert scale.

Results

Means, standard deviation and correlations among the variables are reported in Table I. The hypotheses were tested using ordinary least squares (OLS) regression. Table II reports the results of regression analyses, where perceived usefulness of knowledge and new products and services are the corresponding dependent variables. Four models, illustrated in Table II, were produced. Model 1 presents the relationship between the dependent (new products and services) and the mediator (perceived usefulness of knowledge). Model 2 tests the effect of the independent variables (business unit context characteristics) to the mediator (perceived usefulness of knowledge). Model 3 relates the independent variables (business unit context characteristics) to the dependent variable (new products and services) and in Model 4 the effect of independent variables and the mediator to the independent variable is tested.

Regarding the impact of business unit context to perceived usefulness of knowledge, (Model 2; H1-H5), social interaction was unrelated to perceived usefulness of knowledge, while trust has positive and significant influence to perceived usefulness of knowledge.

<table>
<thead>
<tr>
<th>Table I</th>
<th>Descriptive statistics and correlations$^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable$^b$</td>
<td>Mean</td>
</tr>
<tr>
<td>1. Trust</td>
<td>5.87</td>
</tr>
<tr>
<td>2. Motivation</td>
<td>5.35</td>
</tr>
<tr>
<td>3. Shared vision</td>
<td>5.81</td>
</tr>
<tr>
<td>4. Open-mindedness</td>
<td>5.64</td>
</tr>
<tr>
<td>5. Commitment to learning</td>
<td>5.63</td>
</tr>
<tr>
<td>6. Management support</td>
<td>5.54</td>
</tr>
<tr>
<td>7. Social interaction</td>
<td>6.06</td>
</tr>
<tr>
<td>8. Perceived usefulness of knowledge</td>
<td>6.14</td>
</tr>
<tr>
<td>9. New products and services</td>
<td>3.61</td>
</tr>
</tbody>
</table>

Notes: $^a n = 72$ (business units); $^b$learning orientation includes shared vision, open-mindedness and commitment to learning; $^* p < 0.05$; $^** p < 0.01$
Thus supporting $H_2$. Motivation was also found positively related to perceived usefulness of knowledge ($\beta = 0.22$, $p < 0.05$), supporting $H_3$ and learning orientation – namely shared vision, open-mindedness, commitment to learning – was marginally positively to perceived usefulness of knowledge ($\beta = 0.26$, $p < 0.05$), hence confirming $H_4$. Management support has strong and significant relation with perceived usefulness of knowledge ($\beta = 2.03$, $p < 0.001$), thus providing support for $H_5$.

Consistent with $H_6$, a unit’s level of perceived usefulness of knowledge was significantly associated to its number of new products and services ($\beta = -0.11$, $p < 0.05$). In addition, unit size ($\beta = 0.50$, $p < 0.01$), competition intensity ($\beta = 0.16$, $p < 0.01$), and market share ($\beta = 0.04$, $p < 0.10$) were directly related to innovation as expected, whereas market growth was unrelated.

It was also expected that perceived usefulness of knowledge would mediate the relationships between the independent variables (trust, motivation, management support, social interaction and learning orientation) and the number of new products and services. Following Baron and Kenny (1986) the mediation analysis includes three steps. The first step is to ensure and examine the existence of a relationship between independent variables (here trust, motivation, management support, social interaction and learning orientation) and the mediator (here perceived usefulness of knowledge). As shown in model 2 (see Table II), with the exception of social interaction, all of the variables were significantly related with the mediator. The second step is to analyze whether a significant relationship between the independent variables and the dependent variable (here new products and services) exists. In model 3 (Table II) this is found for the management support variable. As a final third step, the previously significant relationships between dependent variable (here new products and services) and independent variables (here management support) from model 4 were no longer significant when a business unit’s level perceived usefulness of knowledge was entered in the equation.

**Discussion**

This study is a first attempt to show that the construct “perceived usefulness of knowledge” is a critical proxy of knowledge transfer effectiveness, as well as to find support for its positive relationship with innovation. The research attempted to answer two basic questions: first, how do factors of a business unit context affect the level of perceived usefulness of knowledge; and second, how does the unit’s level of perceived knowledge usefulness influence innovation-related outputs?

---

**Table II** Results of regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1: dependent variable, new products and services</th>
<th>Model 2: dependent variable, perceived usefulness of knowledge</th>
<th>Model 3: dependent variable, new products and services</th>
<th>Model 4: dependent variable, new products and services</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of employees</td>
<td>$\beta = 0.40$, $t = 2.48^*$</td>
<td>$\beta = 0.51$, $t = 1.70^*$</td>
<td>$\beta = 0.43$, $t = 2.48^*$</td>
<td>$\beta = 0.50$, $t = 2.93^*$</td>
</tr>
<tr>
<td>Competition</td>
<td>$\beta = 0.14$, $t = 3.15^*$</td>
<td>$\beta = 0.12$, $t = 1.47$</td>
<td>$\beta = 0.14$, $t = 3.01^*$</td>
<td>$\beta = 0.16$, $t = 3.43^*$</td>
</tr>
<tr>
<td>Market growth</td>
<td>$\beta = 0.01$, $t = 0.50$</td>
<td>$\beta = 0.02$, $t = 0.43$</td>
<td>$\beta = 0.02$, $t = 0.80$</td>
<td>$\beta = 0.03$, $t = 0.94$</td>
</tr>
<tr>
<td>Market share</td>
<td>$\beta = 0.06$, $t = 2.63^*$</td>
<td>$\beta = 0.03$, $t = 0.70$</td>
<td>$\beta = 0.05$, $t = 1.81^*$</td>
<td>$\beta = 0.04$, $t = 1.67^*$</td>
</tr>
<tr>
<td>Trust</td>
<td>$\beta = 0.31$, $t = 2.32^*$</td>
<td>$\beta = 0.05$, $t = 0.60$</td>
<td>$\beta = 0.09$, $t = 1.81^*$</td>
<td>$\beta = 0.09$, $t = 1.19$</td>
</tr>
<tr>
<td>Motivation</td>
<td>$\beta = 0.22$, $t = 2.60^*$</td>
<td>$\beta = 0.09$, $t = 0.91$</td>
<td>$\beta = -0.05$, $t = 1.11$</td>
<td>$\beta = -0.05$, $t = -1.11$</td>
</tr>
<tr>
<td>Management support</td>
<td>$\beta = 0.22$, $t = 3.40^*$</td>
<td>$\beta = 0.02$, $t = 0.32$</td>
<td>$\beta = -0.03$, $t = 0.53$</td>
<td>$\beta = -0.03$, $t = 0.53$</td>
</tr>
<tr>
<td>Social interaction</td>
<td>$\beta = 0.26$, $t = 2.06^*$</td>
<td>$\beta = 0.02$, $t = 0.44$</td>
<td>$\beta = 0.02$, $t = 0.80$</td>
<td>$\beta = 0.02$, $t = 0.94$</td>
</tr>
<tr>
<td>Learning orientation</td>
<td>$\beta = 0.26$, $t = 2.06^*$</td>
<td>$\beta = 0.02$, $t = 0.44$</td>
<td>$\beta = 0.02$, $t = 0.80$</td>
<td>$\beta = 0.02$, $t = 0.94$</td>
</tr>
<tr>
<td>Perceived usefulness of knowledge</td>
<td>$\beta = -0.11$, $t = -2.02^*$</td>
<td>$\beta = 0.11$, $t = 0.15$</td>
<td>$\beta = -0.03$, $t = 0.38$</td>
<td>$\beta = -0.03$, $t = 0.38$</td>
</tr>
<tr>
<td>$R^2$</td>
<td>$0.33$</td>
<td>$0.48$</td>
<td>$0.33$</td>
<td>$0.48$</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>$0.28$</td>
<td>$0.40$</td>
<td>$0.23$</td>
<td>$0.40$</td>
</tr>
<tr>
<td>$F$</td>
<td>$6.525^{***}$</td>
<td>$6.320^{***}$</td>
<td>$3.425^{**}$</td>
<td>$3.697^{***}$</td>
</tr>
</tbody>
</table>

**Notes:** $^a n = 72$ business units; $^b p < 0.10$; $^* p < 0.05$; $^{**} p < 0.01$; $^{***} p < 0.001$
The research shows that when units pursue knowledge transfer between their different actors, contextual factors such as trust, motivation to transfer knowledge, management support and learning orientation are crucial for fostering knowledge transfer and innovation. This contribution is important since the need for developing an organizational context where knowledge transfer and innovation flourish is constantly put forth in the business press, while the empirical and research based evidence for its importance has been scarce. The analysis further reveals that perceived usefulness of knowledge leads to innovation, measured by new product introduction. In turn, the authors showed that perceived usefulness of knowledge fully mediates the relationship between management support and the number of new products and services, which is a contribution to innovation theory and its relation to knowledge.

These results can also have a wider implication at the spatial level. Over the last three years, the Attica region in Greece has scored very high in terms of innovation in the IT services sector (European Commission, 2006), one of the sectors analyzed in this research. It is clear that the emergence of such a knowledge intensive industry in a country that traditionally has been characterized as an innovation follower depends on the extent to which individual organizations can leverage knowledge dynamics. This knowledge exploitation must be rooted in the deeper social processes with the organization. Having established a firm relationship between organizational context and innovation, this research sets a foundation for further exploring the organization-environment link in terms of leveraging organizational knowledge dynamics to create and maintain regional competitiveness and knowledge clusters.

The study has limitations that should be acknowledged. In the research it was assumed that knowledge transfer has occurred within business units if the unit’s outcomes are reported to have improved as a result of perceived usefulness of knowledge. Hence it is assumed beforehand that some process of knowledge transfer occurs within the organizational unit. Moreover, the study required respondents to report on their perceptions within business units. To overcome this problem and minimize perception bias, besides using a multiple-respondent research design, the authors prompted respondents to answer questions beginning with “to the best of your knowledge, regardless of whether or not you had a prior relationship with this person …”.

Note

1. The steps followed to develop these three items were: extensive literature review; in-depth interviews with both academics and business experts (face and content validity); pretest of the survey for clarity and appropriateness; and exploratory factor analysis.

References


Further reading


About the authors

Dimitris Brachos is a research fellow at the Management Science Laboratory (MSL) in Athens University of Economics and Business (AUEB). He holds a PhD from Athens University of Economics and Business, Greece. His research concentrates on knowledge management, knowledge sharing and innovation. He is the corresponding author and can be contacted at: dbrachos@aueb.gr (www.msl.aueb.gr)

Konstantinos Kostopoulos is a research fellow at MSL, AUEB from where he also holds his PhD in Innovation Management. His research concentrates on innovation and learning, and knowledge management.

Klas Eric Söderquist is an Assistant Professor and head of the MSL’s Innovation and Knowledge Management Unit at (AUEB). He holds and MSc from the Royal Institute of Technology in Stockholm, Sweden and a DBA from Brunel University. He is also a Visiting Professor at the Grenoble Ecole de Management, France. His research concentrates on knowledge management, R&D and innovation management, and he has published in the Journal of Product Innovation Management, Long Range Planning, R&D Management and Omega, among others.

Gregory Prastacos is a Professor and Director of the Management Science Laboratory at the Athens University of Economics and Business. He holds a PhD from Columbia University, USA. His research concentrates on management science, information technology, and their use for business transformation in the information society. He has published in Management Science, Operations Research, Long Range Planning, Journal of Knowledge Management, Journal of Innovation Management, among others.

To purchase reprints of this article please e-mail: reprints@emeraldinsight.com
Or visit our web site for further details: www.emeraldinsight.com/reprints