Exploring the best HRM practices-performance relationship: an empirical approach

George N. Theriou and Prodromos D. Chatzoglou

Production and Management Engineering Department,
Democritus University of Thrace, Kimmeria, Greece

Abstract

Purpose – This paper aims to empirically examine the linkages between best human resource (HRM) practices, knowledge management, organisational learning, organisational capabilities and organisational performance. The proposed framework and findings intend to add to the understanding of the specific processes that mediate between best HRM practices and organisational performance.

Design/methodology/approach – To carry out this research a survey research strategy was followed. The sample frame for this study consisted of Greek firms that belong to the tertiary (services and commerce) sector, employing at least 50 employees. The final research sample consisted of 242 questionnaires. Descriptive statistics as well as structural equation modelling (SEM) techniques were used to analyse the data.

Findings – This paper proposes an answer to "how" best HRM practices can influence performance. Results indicate that service and commercial firms pursuing best HRM practices achieve better performance through the interaction of these practices with knowledge management and organisational learning capability and the creation of organisational capabilities.

Research limitations/implications – Possible limitations of the study include the relatively small sample size, the use of subjective performance indicators and the measurement of organisational capabilities.

Practical implications – The paper can help human resource practitioners and/or managers to understand better the importance of organisational learning and knowledge management processes and the way best HRM practices, through the integration of these two processes, lead to superior and sustainable performance.

Originality/value – This paper attempts to shed some light on the processes through which human resource management practices influence performance. Moreover, the value of the human factor in knowledge management and organisational learning initiatives, as well as on organisational capabilities, is explored. While this has already been underlined in the past, there is still no complete model simultaneously describing and testing all those relationships.

Keywords Human resource management, Workplace training, Knowledge management, Organizational performance, Greece

Paper type Research paper

Introduction

Over the past several years, an increasing amount of attention has been paid to the role of human resource management (HRM) in present-day organisations. Justifying its

value to the firm has been the primary concern of most academics and practitioners. The emergence of numerous empirical studies, examining the impact of different HRM practices on organisational performance, supports this claim. However, despite the quantity and variety of these studies, little attention has focused on the concept or understanding of the mechanisms through which HRM practices influence performance.

A review of the research on HRM practices demonstrates that the approaches adopted by various academics appear to be descriptive and confined within the limits of directly linking HRM practices with performance (at various levels of the company). There appears to be only a limited amount of research attempting to explore how HRM practices essentially work and, hence, to pinpoint the processes through which these practices can lead to competitive advantage.

The purpose of this paper is to examine the mediating processes between the existence and application of HRM practices and enhanced organisational performance. A new composite model, which explores the relationship between best HRM practices, knowledge management (KM), organisational learning (OL), organisational capabilities (OC) and organisational performance, is empirically tested in the Greek tertiary sector (service and commercial firms).

HRM and performance
A significant body of research has suggested specific HRM practices which are expected to promote inimitable attributes in human resources that can help an organisation to obtain a competitive advantage and enhance its performance (e.g. Huselid, 1995; Frits and MacDuffie, 1996; Guest, 1997; Michie and Sheehan, 2001; Ahmad and Schroeder, 2003; Guest *et al.*, 2003).

All the practices that lead to superior performance have variously been termed: "best HRM practices" (Pfeffer, 1994), "high performance work systems or practices" (Appelbaum and Batt, 1994), "high-investment practices" (Lawler, 1986), "high commitment practices" (Wood, 1996) and, finally, "higher productivity and product quality practices" (Ichniowski *et al.*, 1997). All these terms highlight the increased improvement in employee decision making and the improvement in employee motivation and commitment (Boxall and Purcell, 2003). It is worth noting that irrespective of the definition given to these HR practices, a positive relation with competitive advantage is reported in most cases (Guest *et al.*, 2003). Within this paper, the term "best HRM practices" will be used to refer to all those HRM practices and policies that have been identified as effective in improving performance.

The basic notion around best HRM practices is that a particular set of those practices has the potential to bring about improved organisational performance for all organisations (Marchinton and Wilkinson, 2003), and, therefore, all firms should identify and implement best practice HRM in their effort to improve their performance.

However, as Delaney and Huselid (1996) argue, researchers still do not know how HRM practices affect organisational outcomes. Similarly, many authors (Becker and Gerhart, 1996; Wright and Sherman, 1999; McMahan *et al.*, 1999; Delery and Shaw, 2001) have pointed out that there is a lack of understanding about the process (how and why) through which HRM creates organisational value and increases performance.

Therefore, the identification of the specific mechanisms that mediate between best HRM practices and organisational performance should be considered as a central issue in this line of research.

The following section presents a brief theoretical background[1] in which the authors attempt to acknowledge some of those mechanisms and integrate them into a broad conceptual framework. Subsequent sections present the research model adopted, followed by the research methodology and findings. The paper concludes with a discussion of the results, implications and research limitations.

Theoretical background and hypotheses
HRM and KM
Many researchers (e.g. Yahya and Goh, 2002; Thite, 2004; Gloet, 2006) have highlighted the importance of HR in implementing KM and the fact that people issues need to shift to centre stage in thinking about knowledge. Best HRM practices are also considered by some authors (e.g. Scarbrough and Carter, 2000; Robertson and Hammersley, 2000) to constitute the basic factors of KM success.

For Sveiby and Simons (2002, p. 4) "the trouble is that knowledge is not a discrete object and that the most valuable knowledge-knowledge-is embedded in people and so difficult to transfer outside the immediate context that it becomes a major competitive advantage". Flood *et al.* (2001) argue that the most important element here includes the personal nature of tacit knowledge, which requires the willingness, on the part of those workers who possess it, to share and communicate it. Therefore an important point in this case is the idea that the success of any KM initiative is likely to be critically dependent on having suitably motivated and highly committed people taking an active role in the process (Robertson and Hammersley, 2000; Storey and Quintas, 2001).

Soliman and Spooner (2000) argued that HRM practices play an important role in facilitating employees' absorption, transfer, sharing and creation of knowledge. Similarly, Scarbrough (2003, p. 502) identified that HRM practices, as selection methods, compensation strategies and career systems, seem to "have an influence on the flows of knowledge which KM is seeking to maximize". According to Oltra (2005), individual human beings are the ultimate knowledge creators and bearers. Thus, the main purpose should be to increase their capability as organisational knowledge enhancers and, as a result, the rigorous and strategic management of people must act as a trigger towards effective knowledge-leveraging processes.

Paradoxically, however, while the importance of these issues has been widely articulated, human factors have yet to be fully examined and the KM literature has made only partial and limited use of HRM concepts and frameworks (Soliman and Spooner, 2000; Hislop, 2003).

HRM and OL capability
The relationship between OL and HRM has also been emphasised by many academics (e.g. Bennett, 1998; Marchinton and Wilkinson, 2003; Jaw and Liu, 2003; Khandekar and Sharma, 2005).

Summarising the definitions adopted by different academics (Senge, 1990; Mills and Friesen, 1992), the learning organisation (LO) is one that adopts specific strategies, mechanisms and practices that encourage its members to learn continuously so that they can adapt to the changing business environment. Goh (1998) defined these

strategies, mechanisms and practices as the "learning capability" of the organisation. Ulrich *et al.* (1993) also used the term "learning capability" to refer to "building and diffusing learning capability", while DiBella *et al.* (1996) refer to them as "developing organizational learning capability".

Although the LO literature is vast and takes various forms, as Argyris (1999) points out, the central idea behind the LO is broadly shared. The idea includes the notions of adaptability, flexibility, avoidance of stability traps, experimentation, rethinking means and ends, realisation of human potential to learn in the service of business purposes and creation of human development. These same central ideas are adopted by this study. The LO is conceptualised as the creation of the necessary infrastructure to accommodate the acquisition and use of knowledge, while the processes towards this end are described as OL capability (OLC). This knowledge may be the prerequisite for the creation of sustainable competitive (and hence, corporate) advantage.

According to Sinkoula *et al.* (1997), OLC is dependent on invisible assets as knowledge. Given the fact that those assets are embodied in people, HRM practices play a unique role in OL (Jaw and Liu, 2003). The LO attracts and retains the best talent by entering into a psychological contract with its employees that motivates them to generate knowledge in return for nurturing and nourishing their professional skills (Thite, 2004). For Dertouzos *et al.* (1989) and Pettigrew and Whipp (1991), competitive advantage will ensue for an organisation that develops HR policies that promote continuous learning, teamwork, participation and flexibility; attributes that clearly exist within the best HRM practice spectrum. As Khandekar and Sharma (2005) note, the more specific HRM practices exist in an organisation, the stronger the learning capability of that organisation.

As is briefly demonstrated, the HRM practices that an organisation uses have the potential to influence people's attitudes towards learning. Therefore, OLC can be strongly shaped or manipulated by those HRM practices that are usually described as "best HRM practices". Based on the literature, the following two hypotheses are proposed:

H1. Best HRM practices have a positive influence on KM processes.

H2. Best HRM practices have a positive influence on OLC processes.

OLC and KM

Firestone and McElroy (2004) argued that the relationship of OL and KM is close enough to be termed intimate. According to Dimitriades (2005), effective learning requires the development of a strategic learning capability by linking OL and KM both in and among organisations. Cavaleri (2004) proposed that those two approaches are complementary and may be integrated into a larger framework that can offer managers a potentially better way to leverage human intellectual capital for performance. Bierly *et al.* (2000) commented that, in addition to learning capability, organisations need to develop and implement effective knowledge strategies.

Thus, the need to combine these two processes, OL and KM, becomes important, as they are both considered critical to organisational success. A clear understanding of the relationship between them is, therefore, necessary. Most of the authors involved in this debate (e.g. Hong and Kuo, 1999; Pemberton and Stonehouse, 2000; Rowly, 2000; Loermans, 2002) have argued that an LO generates new knowledge which helps

sustain its competitive advantage. However, the creation of knowledge alone does not mean that knowledge is being efficiently and effectively used or managed. KM takes the output from the LO (new created knowledge), manages it and ensures that an appropriate environment to perpetuate the generation and management of knowledge capital is being properly maintained.

Our view is that, indeed, successful LOs must create an organisational environment that combines OL with KM. As Loermans (2002, p. 292) characteristically points out:

> [...] the LO and KM disciplines must become mutually self-supporting; one concept simply cannot operate without the other.

OLC constitutes the infrastructure of the organisational knowledge system, while KM deals with all those practices that are required for its development and maintenance. In other words, an LO develops a culture that emphasises the importance of learning (knowledge creation), constantly promotes it as a central idea or value within the organisation and creates the right conditions for such ideas to prosper. On the other side, KM, within an LO environment, primarily focuses on the accumulation, sharing, utilisation and use of knowledge assets throughout the organisation. Following the previous discussion, the following hypothesis is proposed:

H3. OLC processes have a positive influence on KM processes.

KM, OLC and OC
OC are commonly defined as a firm's capacity to deploy its assets, tangible or intangible, in order to perform a task or activity and improve performance (Grant, 1991; Teece *et al.*, 1997).

A review of the literature demonstrates that OC appear to be closely related to KM initiatives. Based on the knowledge-based view of the firm (KBV), competitive success is governed by the capability of organisations to develop new knowledge-based assets (Sveiby, 1997) that create core competencies or OC (Pemberton and Stonehouse, 2000; Narasimha, 2000; Miller, 2002). Nonaka and Takeuchi (1995) extend this view further in their examination of the role of employees' interactions in the development of new capabilities, which emerge from the development (creation) of new knowledge through the processes of OL. Moreover, Pemberton and Stonehouse (2000) argue that the creation of knowledge through learning processes is seen to be critical to the development of capabilities.

The impact of OLC on the development of OC is also evident throughout the literature. As Chaston *et al.* (1999) have noted, OL functions as an antecedent of OC. It brings employees and other resources together; firms develop the processes on which capabilities are built, and employees continuously apply their knowledge and skills to operational or strategic problems, hence a deeper knowledge base is developed, which will also enhance capabilities. Wang and Lo (2003) added to this view by reporting that competence building and upgrading can only be achieved by OL. The following hypotheses are, therefore, proposed:

H4. KM processes have a positive influence on OC.

H5. OLC processes have a positive influence on OC.

OC and performance
The relationship between OC and performance is well established in the literature and
has been researched from various perspectives. These include the RBV, OL theory,
knowledge-based view (KBV) and the dynamic capabilities approach (e.g. Shrivastava,
1983; Wernerfelt, 1984; Rumelt, 1987; Barney, 1991; Nonaka and Takeuchi, 1995; Teece
et al., 1997; Raft and Lord, 2002; De Carolis, 2003; Lopez, 2005).

The RBV suggests that firm-specific resources and capabilities, which are rare,
valuable, inimitable and cannot be substituted, can provide a source of sustainable
competitive advantages and, therefore, performance (Barney, 1991). Based on the KBV,
firms that possess stocks of organisational knowledge, characterised as uncommon or
idiosyncratic, stand a good chance of generating and sustaining high returns (Raft and
Lord, 2002). In OL theory, these stocks of knowledge develop dynamic learning
processes. These learning processes are capabilities that are described as OL
(Shrivastava, 1983; Lopez, 2005). Finally, under the dynamic capabilities perspective,
dynamic capabilities are the drivers behind creation, evolution and the recombining of
other resources into new sources of competitive advantage and performance (Teece
et al., 1997). Consequently, the following hypothesis is proposed:

H6. OC have a positive influence on organisational performance.

Proposed research model
Following the previous discussion and the proposed hypotheses, the research model
(presented in Figure 1) perceives performance primarily as a product of firm-specific
capabilities emerging from the best HRM practices, exercised at both strategic and
operational levels of any company (with one or multiple businesses). The main value
provided by this framework lies in the reflection of factors and their relationships that
appear to play their own unique role, as mediating processes, in the HRM
practices-performance relationship.

Best HRM practices are expected to enhance organisational performance (Huselid,
1995; Delery and Doty, 1996; Pfeffer, 1998; Guest *et al.*, 2003) by promoting inimitable
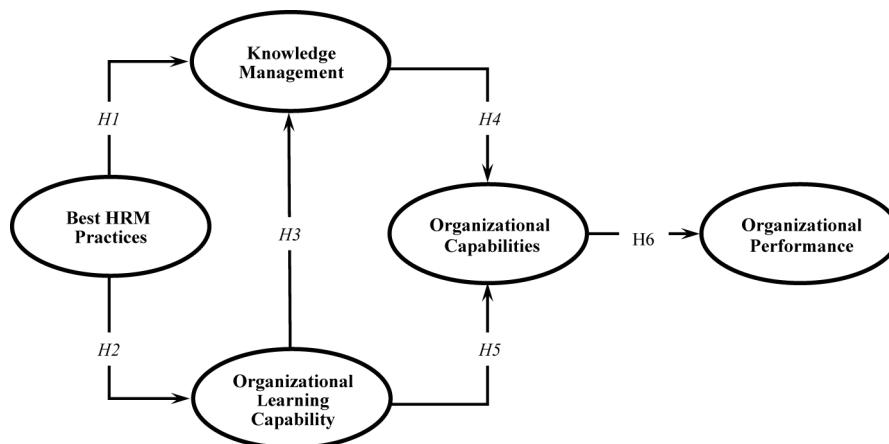attributes in HR (Barney, 1991; Pfeffer, 1998; Redman and Wilkinson, 2001).

Figure 1.
Proposed "best HR
practices" system

Those inimitable attributes are mainly the end products (outcomes) of the KM and OL processes (Hislop, 2003; Jaw and Liu, 2003; Khandekar and Sharma, 2005) and are mutually self-supporting (Pemberton and Stonehouse, 2000; Loermans, 2002; Gorelick and Tantawy-Monsou, 2005). Our view is that OL constitutes the infrastructure of the organisational knowledge base creation, while KM is concerned with all the necessary strategies to maintain and leverage it (Loermans, 2002).

These two processes lead to the production (creation) of knowledge-based assets, which, in turn, develop OC (Nonaka and Takeuchi, 1995; Wang and Lo, 2003; Real *et al.*, 2006; Nielsen, 2006) that could drive a company to superior and sustainable performance (Caloghirou *et al.*, 2004; Regan and Ghobadian, 2004).

Methodology
Sample and data selection
A survey was undertaken to gather all the appropriate data by use of a structured questionnaire. In order to achieve sufficient sample size and generalisability of the result the sample frame for this study consisted of all 1,774 Greek companies belonging to the tertiary sector (services and commerce) that employed at least 50 people. The population was drawn from a database compiled by ICAP, which is a well-known and reliable source of data for Greek companies. The size limitation was introduced for the reason that small-scale companies usually do not employ a large range of formal HRM practices (Miner and Crane, 1995), which is in line with other similar HR studies (e.g. Guest *et al.*, 2003).

A pre-test was performed to establish content validity (Zikmund, 2003). The instrument was pre-tested through in-depth discussions with academics and professionals. Two HRM managers and one CEO from three service firms, two HRM managers from two commercial firms, along with six academics, participated in the pre-testing process. The final questionnaire included 147 items. To ensure that the HR managers of the sample firms were willing to complete the questionnaire and to maximise response rate, two research assistants spent two weeks telephoning all 1,774 firms[2]. It should be mentioned that due to time constraints or company privacy concerns many HR managers declined to participate. The questionnaire was sent only to the 378 HR managers who agreed to participate in the survey (mailed or e-mailed, depending on their preference). A cover letter explaining the study objectives was attached and a stamped return envelope was enclosed. Follow-up letters were sent approximately three weeks after the initial mailing.

A total of 244 questionnaires were returned. Of these, two questionnaires were discarded because they were not appropriately completed. The overall response rate was 14 per cent. Assuming that, researchers normally work to a 95 per cent of certainty, and considering that the total population of this study consists of 1,774 firms, then the minimum sample size should be around 300 firms instead of 242 firms (Saunders *et al.*, 2000, p. 156). Although the smaller size could be considered as one of the limitations of this research, we could still accept it as valid on the grounds stated by the famous scholar, Shelby Hunt:

> No manuscript should be rejected on the basis of potential nonresponse bias – no matter what the response rate is – unless there is good reason to believe that the respondents do in fact differ from the nonrespondents on the substantive issues in question and that these differences would make the results of the study unreliable (Hunt, 1990, p. 174).

To test whether our respondents were different from the non-respondents, we examined if there are any differences in the mean of all variables used in this study between early and late respondents. The rationale behind such an analysis is that late respondents (i.e. sample firms in the second mailing) are more similar to the population from which they were drawn, than the early respondents (Armstrong and Overton, 1977). No statistically significant differences were found, thus suggesting that non-response bias is not a serious issue in the study.

Moreover, it could be stressed the fact that the sample size plays an important role in the estimation and interpretation of structural equation modelling (SEM) results, the major multivariate method used for the analysis of our data. According to Hair *et al.*, (1998, pp. 604-05):

> Although there is no correct sample size, recommendations are for a size ranging between 100 and 200 observations. As the sample size becomes larger, the method becomes "too sensitive" and almost any difference is detected, making all goodness-of-fit measures indicate poor fit.

Table I summarises the demographic information of the respondents.

Measures
Best HRM practices. The list of effective HR practices associated with performance varies according to different research. Taking into consideration previous empirical findings (Jones and Wright, 1992; Arthur, 1994; Pfeffer, 1994; Jackson and Schuler, 1995; MacDuffie, 1995; Marchinton, 1995; Milgrom and Roberts, 1995; Delery and Doty, 1996; Becker and Huselid, 1998; Pfeffer, 1998; Bowers and Ahklaghi, 1999; Wiesner and

	Percentage	Frequency
Gender		
Men	60.3	146
Women	36.4	88
Information missing	3.3	8
Age		
24-29	10.33	25
30-39	38.02	92
40-49	25.21	61
50-59	15.70	38
> 60	2.48	6
Information missing	8.26	20
Education		
Primary school	0.5	1
High school	13.3	32
Undergraduate degree	52.5	127
Postgraduate degree	26	68
PhD	1.7	4
Information missing	6.2	15
Professional experience		
1-5	30.58	74
6-10	26.03	63
11-20	21.90	53
> 21	10.33	25
Information missing	11.16	27

Table I.
Demographic details

McDonald, 2001; Bowen *et al.*, 2002; Guest *et al.*, 2003; Michie and Sheehan, 2005; De Kok *et al.*, 2006; Sels *et al.*, 2006), it was decided to test the proposed framework integrating the following practices:

- employment security;
- selective hiring;
- high levels of teamwork and decentralisation;
- compensation and incentives contingent on performance;
- extensive training;
- employee involvement and internal communication arrangements;
- internal career opportunities;
- broadly defined job descriptions; and
- harmonisation.

In addition, responding to Rodwell *et al.*'s (2000) suggestion, "health and safety" policies were incorporated into the list as a tenth practice. According to these authors (Rodwell *et al.*, 2000, p. 357):

> [. . .] by trying to think outside the square a set of practices may be found that could stimulate creative, new thinking about best practices. For example, the extent to which organizations are aware of their occupational health and safety practices and whether or not these practices are seen as important has been the focus of specific HRM research (e.g. Nelson, 1994) and safety management (Fuller, 1999), but is often excluded from studies of best practice.

Table II summarises the variables used, the methods employed to measure the best HRM practices and the related literature. Some of these HRM constructs are measured as a two-dimensional construct, as determined by the scope of the HRM practice. Each item is measured using a seven-point scale from strongly agree (7) to strongly disagree (1).

OLC and KM. Four constructs based on previous, well-known empirical findings (Galer and Heijden, 1992; Goh and Richards, 1997; Sinkoula *et al.*, 1997; Hult and Ferrell, 1997; Calantone *et al.*, 2002; Hult *et al.*, 2003; Tippins and Sohi, 2003; Gomez *et al.*, 2005) were used to measure OLC. They were:

(1) commitment to learning and empowerment;
(2) systems perspective and clarity of purpose and mission;
(3) openness and experimentation; and
(4) organisational memory.

Organisational memory was measured as a two-dimensional construct, as determined by the scope of this concept.

Three constructs adapted from a combination of other studies (Wiseman, 1988; Weber *et al.*, 1990; Blanning and David, 1995; Sviokla, 1996; Ruggles, 1998; Leary, 1998; Zack, 1999; Chang Lee *et al.*, 2005; Shih and Chiang, 2005) were used to measure KM. They were:

(1) knowledge accumulation;
(2) knowledge sharing; and
(3) knowledge utilisation.

Best HRM practices (construct)	Dimension	Description of measurement	References
1. Employment security	Employment security	Four items are used to reflect the organisation's view that workers should be treated not as a variable cost but as a critical asset in the long term viability and success of the organisation	Delery and Doty (1996); Pfeffer (1998); Ahmad and Schroeder (2003); Guest et al. (2003); Michie and Sheehan (2005)
2. Selective hiring	Selective hiring	Seven items are used to measure the degree to which the organisation uses sophisticated hiring procedures and the importance given towards specific characteristics of the prospective employee's attitude and behaviour	Huselid (1995); Becker and Huselid (1998); Pfeffer (1998); Wiesner and McDonald (2001); Bowen et al. (2002); Guest et al. (2003); Ahmad and Schroeder, 2003); Michie and Sheehan (2005); De Kok et al. (2006)
3. Use of teams and decentralisation	a) Team activities b) Interaction facilitation	a) Five items are used to assess the effective use of teams on the shop floor b) Five items are used to assess the extent to which supervisors encourage and facilitate workers to work as a team	Pfeffer (1998); Bowers and Ahklaghi (1999); Ahmad and Schroeder (2003)
4. Compensation and incentives contingent on performance	a) Incentives to meet objectives b) Recognition and rewards contingent on performance	a) Four items are used to measure whether the organisation's reward system is consistent with its objectives and goals b) Five items are used to measure the recognition of employee performance and its connection with proper rewards	Huselid (1995); Delery and Doty (1996); Becker and Huselid (1998); Pfeffer (1998); Bowers and Ahklaghi (1999); Wiesner and McDonald (2001); Bowen et al. (2002); Guest et al. (2003); Ahmad and Schroeder, 2003); Michie and Sheehan (2005); De Kok et al. (2006); Sels et al (2006)
5. Extensive training	a) Training on job skills b) Training in multiple functions	a) Five items are used to measure if employees' job skills and knowledge are being upgraded in order to maintain a work force with up-to-date skills b) Five items are used to measure the extent to which employees receive cross training, to be able to perform multiple tasks	Huselid (1995); Delery and Doty, 1996); Becker and Huselid (1998); Pfeffer (1998); Bowers and Ahklaghi (1999); Wiesner and McDonald (2001); Bowen et al. (2002); Guest et al. (2003); Ahmad and Schroeder, 2003); Michie and Sheehan (2005); De Kok et al. (2006); Sels et al (2006)

(*continued*)

Table II.
Summary of the "best HRM practices" measures

Best HRM practices (construct)	Dimension	Description of measurement	References
6. Employee involvement and internal communication arrangements	a) Employee involvement and communication of strategy b) Feedback on performance	a) Six items are used to measure the existence of employees voice in the organisation and efforts made by management to communicate the organisation's strategy to all employees b) Five items are used to measure the extent to which management provides shop floor employees with information regarding their own performance and total organisational performance	Huselid (1995); Delery and Doty, 1996); Becker and Huselid (1998); Pfeffer (1998); Bowers and Ahklaghi (1999); Guest *et al.* (2003); Ahmad and Schroeder, 2003); Michie and Sheehan (2005); Sels *et al.* (2006)
7. Internal career opportunities	Internal career opportunities	Three items are used to assess the extent to which an organisation has an internal career path or internal career opportunities	Delery and Doty (1996); Michie and Sheehan (2005); Sels *et al.* (2006)
8. Job descriptions	Job descriptions	Four items are used to assess the extent to which jobs are broadly defined and designed to make full use of employees' skills	Guest *et al.* (2003); Michie and Sheehan (2005)
9. Harmonisation	Harmonisation	Three items are used to assess the efforts of the organisation to reduce the differences between employees at all levels in terms of holiday and sick leave entitlements and pension schemes	Pfeffer (1998); Ahmad and Schroeder (2003); Guest *et al.* (2003)
10. Employee health and safety	Employee health and safety	Seven items are used to assess the extent to which an organisation places emphasis on health and safety policies and practices	Rodwell *et al.* (2000); Law *et al.* (2006); Walters and Nichols (2006)

Table II.

The construct of "knowledge creation" was not included in the measurement of KM (as is common in many KM studies) because, according to the above discussion, it is considered as an outcome of OLC. Tables III and IV summarise the variables used and the methods employed to measure OLC and KM and the related literature. Each item is measured using a seven-point scale from strongly agree (7) to strongly disagree (1).

OC. Every research attempt on OC seems to adapt a different approach. As Miller and Shamsie (1996) point out, empirical research on resources and capabilities has not yet reached maturity. In this study, OC was measured using a scale adapted from King and Zeithaml (2001). They recognised specific groups of capabilities in the hospital and textile industries. Based on theoretical contributions, as well as on in-depth discussions with academics and professionals, these scales have been adapted for the tertiary sector (with some modifications). The final scale included seven groups of service-commercial capabilities. Table V summarises the variables used and the methods employed to measure OC. Again, each item is measured using a seven-point scale from strongly agree (7) to strongly disagree (1).

Organisational performance. Organisational performance is divided into two sets of measures: non-financial and financial. According to Banerjee and Kane (1996), it is necessary to integrate financial and non-financial measures for organisational performance measurement.

Financial performance is operationalised as a two-dimensional construct, which includes corporate profitability and market performance (Venkatraman and Ramanujam, 1986), similarly to Spanos and Lioukas' (2001) study. Corporate profitability is measured with three perceptual items, reflecting return on equity, profit margin and net profits, while market performance is measured with four perceptual items that reflect market share, absolute sales volume, increase in market share and sales.

For all these items, HRM managers were asked to indicate their firm's performance compared to the competition. Apart from the fact that subjective performance measures are extremely common in similar studies (e.g. Guest *et al.*, 2003; Ahmad and Schroeder, 2003), it was anticipated that it would be difficult to extract adequate and reliable financial information as the sample includes mostly small to medium-sized enterprises (SMEs). Moreover, financial data for SMEs have been criticised for being unreliable and subject to varying accounting conventions (Dess and Robinson, 1984; Powell and Dent-Micallef, 1997).

The non-financial measure of organisational commitment was also used. The construct was based on Mowday and Steers' (1979) instrument and was measured with eight items. It is defined as "the relative strength of an individual's identification with and involvement in a particular organization" (Mowday and Steers, 1979, p. 226).

An employee with strong organisational commitment will be highly motivated to expend energy on organisational tasks (Anderson *et al.*, 1994). Organisational commitment is an indicator that confirms whether the HRM practices employed in an organisation are able to foster psychological links between organisational and employee goals (Ahmad and Schroeder, 2003).

Data analysis and results
Exploratory factor analysis. All theoretical concepts used in the present research were taken from prior studies that provided a theoretical rationale for the existence of these

OLC construct	Dimension	Description of measurement	References
Commitment to learning and empowerment	Commitment to learning and empowerment	Five items are used to measure the role of management with regard to helping employees learn and elicit behaviours that are consistent with an experimenting and changing culture	Galer and Heijden, 1992; Goh and Richards (1997); Hult and Ferrell (1997); Jerez-Gomez et al. (2005); Calantone et al. (2002); Hult et al. (2003)
Systems perspective and clarity of purpose and mission	Systems perspective and clarity of purpose and mission	Five items are used to measure the degree to which employees have a clear vision/mission of the organisation and the existence of a common understanding that enables the firm to be seen as a system made up of different parts, each of which has its own function but acts in a coordinated way to obtain a satisfactory result	Goh and Richards (1997); Sinkoula et al. (1997); Hult and Ferrell (1997); Jerez-Gomez et al. (2005); Calantone et al. (2002); Hult et al. (2003)
Openness and experimentation	Openness and experimentation	Five items are used to measure the degree of independence employees enjoy in the pursuit of new ways of getting the job done and freedom to take risks	Goh and Richards (1997); Hult and Ferrell (1997); Jerez-Gomez et al. (2005); Calantone et al. (2002)
Organisational memory	a) Declarative memory b) Procedural memory	Organisational memory refers to the amount of stored information or experience an organisation has about a particular phenomenon a) Four items are used to measure the knowledge of facts and events b) Four items are used to measure the knowledge about routines, processes and procedures	Hult (1998); Tippins and Sohi (2003); Hult et al. (2003)

Table III.
Summary of OLC measures

KM construct	Description of measurement	References
Knowledge accumulation	Five items are used to measure employees' access to databases to obtain the relevant knowledge to help in their work and decision making	Leary (1998); Chang Lee *et al.* (2005); Shih and Chiang (2005)
Knowledge sharing	Five items are used to measure the extent to which diffusion of knowledge is promoted	Sviokla (1996); Ruggles (1998); Chang Lee *et al.* (2005); Shih and Chiang (2005)
Knowledge utilisation	Four items are used to measure the degree to which employees retrieve information, process and apply it	Wiseman (1988); Weber *et al.* (1990); Blanning and David (1995); Chang Lee *et al.* (2005)

Table IV.
Summary of KM
measures

Types of tertiary sector capabilities	Description of measurement
HR capabilities	Eight items are used to measure the capability to manage human resources
Knowledge about critical factors for success	Three items are used to measure essential competencies to a firm's current and future success
Capabilities of external constituencies	Three items are used, reflecting the capability to understand the needs and cost structures of customers and suppliers
Marketing capabilities	Three items are used to measure the capability to acquire marketing skills
Technical/ information systems capabilities	Five items are used to measure the ability to manage essential technology and information systems
Internal integration capabilities	Two items are used to measure the ability to manage the organisational structure to integrate knowledge throughout the organisation
Innovativeness	Three items are used to measure the ability to innovate

Table V.
Summary of
measurements of OC

concepts and also the items measuring these concepts. However, due to the fact that for the measurement of each construct, except that of OC, we used items from many researchers (see Tables II-V) and we were obliged to modify some of the items of the construct of OC to suit the tertiary sector, we used exploratory factor analysis (EFA) to redefine the theoretical constructs according to the new established factors. Thus, principal component analysis was conducted on the scaled responses to aggregate managers' perceptions of each separate theoretical construct (HR practices, KM, OLC, OC and OP) into categories or factors (dimensions). Bartlett's test of sphericity for each construct/dimension displayed levels of correlations indicating that a factor model was appropriate ($p < 0.001$) (Norusis, 1994, p. 50). In addition, each construct/dimension exceeded the acceptable level (0.6) on the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy, except very few cases where the KMO was just below the cut-off point of 0.6. Varimax rotation was used to identify a set of factors that were uncorrelated with each other. The survey revealed categories (dimensions) for each theoretical concept that were logical and fit with past categorisations (see Table VI). The software used was *SPSS v. 15*.

It can also be noted that the loadings for all individual items, incorporated into each of the constructs examined, are high. Selective hiring was divided into two factors:

(1) importance for employee attitude and behaviour; and

(2) emphasis on hiring procedures.

One item was dropped from "interaction facilitation" (IF5) and another from "incentives to meet objectives" (ITMO4) due to low loadings. Another item was also dropped from "training on job skills" (TOJS1) dimension.

Confirmatory factor analysis. In this study, confirmatory factor analysis (CFA) was employed to test the construct validity of the measures used, using both SPSS and AMOS. Table VI (last column) presents the model fit results for all (33) constructs or dimensions. As shown, four fit measures were used to evaluate the model fit in AMOS: chi-square/degree of freedom (χ^2/df), goodness-of-fit index (GFI), comparative fit index

Construct	Dimension	Items	Mean	SD	Loadings	KMO	Bartlett's sig.	TVA	Cronbach's α	CMIN/DF	GFI	CFI	RMR
Employment security	Employment	ES1	5.93	1.289	0.637	0.644	0.000	47.514	0.599	6.987	0.972	0.893	0.099
		ES2	6.60	0.819	0.772								
		ES3	5.38	1.536	0.692								
		ES4	6.13	1.138	0.648								
Selective hiring[a]	Importance on employee attitude and behaviour	IEAB1	5.74	1.183	0.798	0.682	0.000	95.313	0.731	5.578	0.970	0.902	0.062
		IEAB2	5.38	1.328	0.796								
		IEAB3	5.90	1.141	0.830								
	Emphasis on hiring procedures	EHP1	3.46	2.050	0.621	0.703	0.000	62.423	0.779	2.837	0.994	0.995	0.051
		EHP2	4.77	2.071	0.830								
		EHP3	5.35	1.496	0.807								
		EHP4	5.33	1.601	0.878								
Use of teams and decentralisation[b]	Team activities	TA1	4.76	1.851	0.878	0.831	0.000	70.452	0.894	4.505	0.971	0.982	0.085
		TA2	4.56	1.823	0.886								
		TA3	5.02	1.733	0.897								
		TA4	5.25	1.677	0.750								
		TA5	4.93	1.522	0.775								
	Interaction facilitation	IF1	5.75	1.46	0.846	0.716	0.000	64.983	0.808	2.400	0.995	0.996	0.034
		IF2	5.58	1.464	0.882								
		IF3	5.20	1.477	0.811								
		IF4	4.39	1.762	0.670								
Compensation and incentives contingent on performance[c]	Incentives to meet s objective	ITMO1	5.47	1.55	0.940	0.769	0.000	64.983	0.808	5.682	0.912	0.895	0.061
		ITMO2	5.35	1.532	0.954								
		ITMO3	5.39	1.534	0.953								
	Recognition and rewards contingent on performance	RWCP1	5.45	1.323	0.753	0.804	0.000	58.329	0.817	4.949	0.961	0.951	0.105
		RWCP2	4.95	1.519	0.822								
		RWCP3	5.22	1.475	0.816								
		RWCP4	4.57	1.663	0.737								
		RWCP5	4.83	1.594	0.682								
Extensive training[d]	Training on job skills	TOJS2	5.07	1.582	0.812	0.755	0.000	68.014	0.835	3.830	0.992	0.993	0.026
		TOJS3	5.84	1.275	0.858								
		TOJS4	5.25	1.077	0.794								
		TOJS5	5.10	1.511	0.834								

(*continued*)

Table VI.
Means, SDs, EFA statistics (loadings, KMO, Bartlett's sig. and TVA), Cronbach's alpha, and CFA fit indices

Table VI.

Construct	Dimension	Items	Mean	SD	Loadings	KMO	Bartlett's sig.	TVA	Cronbach's α	CMIN/ DF	GFI	CFI	RMR
	Training in multiple functions	TIMF1	4.81	1.856	0.805	0.797	0.00	68.000	0.879	1.762	0.989	0.996	0.046
		TIMF2	5.30	1.656	0.899								
		TIMF3	5.39	1.569	0.886								
		TIMF4	4.89	1.613	0.840								
		TIMF5	5.40	1.485	0.673								
Employee involvement and internal communication arrangements[e]	Employee involvement and communication of strategy	EICS1	5.47	1.546	0.562	0.862	0.000	62.916	0.872	4.575	0.947	0.963	0.078
		EICS2	6.41	.925	0.590								
		EICS3	5.50	1.425	0.890								
		EICS4	5.69	1.319	0.908								
		EICS5	5.60	1.350	0.850								
		EICS6	5.36	1.479	0.879								
	Feedback on performance	FOP1	5.23	1.641	0.800	0.794	0.000	68.860	0.884	2.247	0.993	0.996	0.034
		FOP2	4.98	1.678	0.851								
		FOP3	5.22	1.457	0.873								
		FOP4	5.33	1.381	0.814								
		FOP5	5.46	1.341	0.809								
Internal career opportunities	Internal career opportunities	ICO1	5.21	1.291	0.906	0.711	0.000	77.00	0.842	6.172	0.923	0.903	0.055
		ICO2	5.22	1.363	0.884								
		ICO3	4.31	1.614	0.841								
Job descriptions	Job descriptions	JD1	4.95	1.507	0.879	0.773	0.000	67.092	0.835	3.945	0.985	0.985	0.050
		JD2	5.01	1.387	0.856								
		JD3	5.26	1.247	0.794								
		JD4	4.75	1.335	0.741								
Harmonisation	Harmonisation	HAR1	3.96	2.312	0.801	0.660	0.000	61.789	0.687	7.102	0.889	0.875	0.072
		HAR2	5.85	1.850	0.743								
		HAR3	4.50	2.522	0.813								
Employee health and safety	Employee health and safety	EHAS1	5.80	1.697	0.820	0.914	0.000	72.601	0.935	5.689	0.910	0.952	0.109
		EHAS2	5.56	1.594	0.896								
		EHAS3	4.99	1.965	0.810								
		EHAS4	5.63	1.757	0.885								
		EHAS5	5.65	1.747	0.793								
		EHAS6	5.79	1.625	0.875								

(*continued*)

Construct	Dimension	Items	Mean	SD	Loadings	KMO	Bartlett's sig.	TVA	Cronbach's α	CMIN/DF	GFI	CFI	RMR
Commitment to learning and empowerment	Commitment to learning and empowerment	EHAS7	5.71	1.679	0.879	0.776	0.000	56.362	0.766	2.407	0.981	0.985	0.067
		CTLE1	3.87	1.663	0.565								
		CTLE2	5.52	1.354	0.848								
		CTLE3	5.47	1.269	0.893								
		CTLE4	5.43	1.241	0.856								
		CTLE5	5.35	1.597	0.500								
Systems perspective and clarity of purpose and mission	Systems perspective and clarity of purpose and mission	SPCPM1	5.48	1.262	0.809	0.855	0.000	71.245	0.898	2.399	0.981	0.991	0.029
		SPCPM2	5.52	1.245	0.906								
		SPCPM3	5.53	1.222	0.930								
		SPCPM4	5.68	1.255	0.850								
		SPCPM5	6.19	1.010	0.706								
Openness and experimentation	Openness and experimentation	OPEXP1	5.51	1.535	0.807	0.833	0.000	62.162	0.847	3.771	0.972	0.970	0.082
		OPEXP2	5.38	1.417	0.723								
		OPEXP3	4.64	1.698	0.800								
		OPEXP4	4.73	1.670	0.799								
		OPEXP5	5.18	1.541	0.810								
Organisational memory[f]	Declarative memory	DEME1	4.35	1.651	0.808	0.791	0.000	71.746	0.866	0.514	0.988	1	0.017
		DEME2	4.75	1.640	0.919								
		DEME3	4.94	1.549	0.899								
		DEME4	5.01	1.540	0.752								
	Procedural memory	PRME1	5.67	1.330	0.808	0.727	0.000	64.555	0.806	6.292	0.977	0.971	0.074
		PRME2	5.51	1.360	0.887								
		PRME3	5.30	1.430	0.827								
		PRME4	5.10	1.604	0.676								
Knowledge accumulation	Knowledge accumulation	KNAC1	4.61	1.635	0.801	0.738	0.000	59.700	0.819	2.606	0.987	0.991	0.089
		KNAC2	4.72	1.480	0.881								
		KNAC3	5.00	1.448	0.842								
		KNAC4	4.28	1.668	0.617								
		KNAC5	4.81	1.792	0.690								
Knowledge sharing	Knowledge sharing	KNSHAR1	5.56	1.174	0.896	0.758	0.000	65.174	0.853	1.147	0.994	0.999	0.14
		KNSHAR2	5.67	1.198	0.898								
		KNSHAR3	5.71	1.308	0.816								

(*continued*)

Table VI.

Table VI.

Construct	Dimension	Items	Mean	SD	Loadings	KMO	Bartlett's sig.	TVA	Cronbach's α	CMIN/DF	GFI	CFI	RMR
Knowledge utilisation	Knowledge utilisation	KNSHAR4	5.82	1.336	0.562								
		KNSHAR5	5.86	1.110	0.818								
		KNUT1	4.63	1.821	0.789	0.719	0.000	57.596	0.745	0.321	0.999	1	0.022
		KNUT2	5.22	1.395	0.870								
		KNUT3	5.79	1.254	0.631								
		KNUT4	5.06	1.447	0.725								
HR capabilities	HR capabilities	HRC1	5.37	1.170	0.571	0.857	0.000	52.878	0.869	4.772	0.991	0.911	0.056
		HRC2	5.98	1.095	0.742								
		HRC3	5.74	1.280	0.651								
		HRC4	5.91	1.188	0.768								
		HRC5	5.46	1.394	0.801								
		HRC6	5.33	1.420	0.762								
		HRC7	5.90	1.079	0.747								
		HRC8	5.80	1.236	0.749								
Knowledge about critical factors for success	Knowledge about critical factors for success	KCFS1	5.98	1.052	0.740	0.655	0.000	62.959	0.702	5.566	0.936	0.914	0.073
		KCFS2	5.90	1.058	0.803								
		KCFS3	5.96	1.168	0.835								
Capabilities of external constituencies	Capabilities of external constituencies	CEXTC1	5.94	1.070	0.532	0.558	0.000	59.897	0.648	8.008	0.862	0.823	0.106
		CEXTC2	5.47	1.214	0.880								
		CEXTC3	5.49	1.650	0.860								
Marketing capabilities	Marketing capabilities	MARKC1	4.62	1.819	0.876	0.723	0.000	82.671	0.895	5.313	0.940	0.905	0.048
		MARKC2	5.83	1.076	0.936								
		MARKC3	5.41	1.402	0.914								
Technical/ information systems capabilities	Technical/ information systems capabilities	TISC1	5.83	1.118	0.759	0.856	0.000	65.475	0.867	2.328	0.981	0.988	0.033
		TISC2	5.75	1.141	0.796								
		TISC3	5.80	1.144	0.873								
		TISC4	5.93	1.184	0.833								
		TISC5	5.60	1.249	0.780								
Internal integration capabilities	Internal integration capabilities	ININTC1	5.69	1.325	0.845	0.500	0.000	71.424	0.598	–	–	–	–
		ININTC2	5.67	1.201	0.845								

(continued)

Construct	Dimension	Items	Mean	SD	Loadings	KMO	Bartlett's sig.	TVA	Cronbach's α	CMIN/DF	GFI	CFI	RMR
Innovativeness	Innovativeness	I1	5.83	1.076	0.826	0.583	0.000	56.321	0.580	7.242	0.870	0.845	0.102
		I2	5.41	1.402	0.584								
		I3	5.76	1.146	0.816								
Market performance	Market performance	MARKPER1	5.55	1.170	0.895	0.752	0.000	83.492	0.933	4.128	0.962	0.923	0.025
		MARKPER2	5.70	1.192	0.917								
		MARKPER3	5.62	1.318	0.923								
		MARKPER4	5.65	1.189	0.920								
Corporate profitability	Corporate profitability	PROF1	5.31	1.209	0.954	0.762	0.000	90.756	0.946	3.147	0.971	0.957	0.022
		PROF2	5.23	1.261	0.964								
		PROF3	5.23	1.406	0.940								
Organisational commitment	Organisational commitment	ORGCOM1	5.67	1.206	0.713	0.923	0.000	70.913	0.935	4.697	0.919	0.957	0.059
		ORGCOM2	5.80	1.152	0.850								
		ORGCOM3	5.24	1.469	0.703								
		ORGCOM4	5.53	1.341	0.842								
		ORGCOM5	5.90	1.128	00.919								
		ORGCOM6	5.80	1.121	0.926								
		ORGCOM7	5.82	1.090	0.904								
		ORGCOM8	6.01	1.102	0.849								

Notes: [a] KMO: 0.615 Cronbach α: 0.701; [b] KMO: 0.701 Cronbach α: 0.785; [c] KMO: 0.732 Cronbach α: 0.787; [d] KMO: 0.697 Cronbach α: 0.787; [e] KMO: 0.754 Cronbach α: 0.802; [f] KMO: 0.685 Cronbach α: 0.722

Table VI.

(CFI) and root mean square residual (RMR). Some important SPSS measures (KMO, Bartlett's test significance and TVA) are also presented in this table.

Overall, the results demonstrate that the validation measures for all constructs measured are at acceptable levels. Almost all CMIN/DF scores are below the accepted threshold score 5 (Harrison and Rainer, 1996), while GFI and CFI are above the 0.9 threshold (Bollen and Long, 1993) and RMR scores are close to the accepted threshold score 0.1 (Hair *et al.*, 1992).

Structural model. SEM (AMOS) was used to test empirically the proposed model. An initial step included the calculation of the mean value of all composite measures, best HRM practices, OLC, KM, OC and organisational performance, by summing up the individual item scores in each dimension, and then dividing it by the number of items.

Subsequently, each of these composite measures was tested independently for model fit (second-order confirmatory factor analysis). Of a total 14 dimensions that compose best HRM practices, six were dropped due to inappropriate CMIN/DF fit values. The final best HRM practices construct included the following dimensions:

- team activities;
- interaction facilitation;
- incentives to meet objectives;
- recognition and rewards contingent on performance;
- training on job skills;
- employee involvement and communication of strategy;
- feedback on performance;
- internal career opportunities; and
- job descriptions.

The fit values of all other composite measures (OLC, KM, OC and organisational performance) were within the acceptable levels.

The overall metric model was then appraised. As is shown in Table VII, all extracted fit values are within acceptable levels.

Figure 2 demonstrates the structural model with the extracted path coefficients and the adjusted R^2 scores, while Table VIII presents the overall findings with regard to the hypotheses tested.

H1 and *H2* are both supported because a significant positive relationship is shown between best HRM practices and KM and OLC processes. Since these relationships were tested simultaneously using AMOS, both impacts (best HRM practices – OLC

Model-fit index	Scores
Minimum sample discrepancy divided by degrees of freedom (CMIN/DF)	3.254
Goodness-of-fit index (GFI)	0.989
Comparative fit index (CFI)	0.993
Root mean square residual (RMR)	0.015
Normed fit index (NFI)	0.990
Tucker-Lewis coefficient (TLI)	0.964

Table VII.
Overall fit of the model
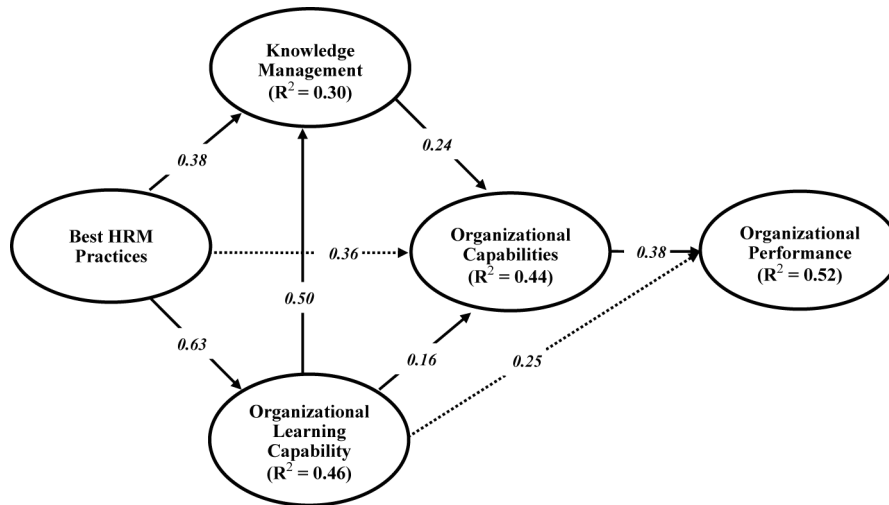
Figure 2.
Structural model for the
Greek tertiary sector

Hypothesis	Path	Path coefficient	Remarks
H1	Best HRM practices → KM processes	0.38**	Accepted
H2	Best HRM practices → OLC processes	0.63**	Accepted
H3	OLC processes → KM processes	0.50**	Accepted
H4	KM processes → OC	0.24**	Accepted
H5	OLC → OC	0.16*	Accepted
H6	OC → organisational performance	0.38**	Accepted
Proposed correlational relationships			
	Best HRM practices → OC	0.36**	Accepted
	OLC processes → organisational performance	0.25**	Accepted

Notes: * $p < 0.05$ level; ** $p < 0.01$ level

Table VIII.
Hypotheses testing
results

and best HRM practices – KM) are significant. Firms in the tertiary sector that invest in certain kinds of best human resource practices achieve higher levels of knowledge and learning, while their KM and learning initiatives are more likely to succeed, than firms that do not invest in these HRM practices. More specifically, the HR practices that seem positively to influence the KM and OLC processes in a service or commercial firm include the use of teams and decentralisation, compensation and incentives contingent on performance, extensive training, employee investment and internal communication arrangements, internal career opportunities and, finally, flexible job descriptions.

Earlier empirical evidence supports these results. However, there have been no previous studies focusing on the tertiary sector that have simultaneously tested the relationship of HRM with OLC and KM. For example, Yahya and Goh (2002) examined the association between four practices of HRM with five areas of KM in different types of

organisations. Their results identify the importance of HRM in creating a knowledge organisation and suggest a positive relationship between KM dimensions and training, performance appraisal and compensation and reward practices. Furthermore, Khandekar and Sharma (2005) investigated the role of OL and strategic HRM in obtaining a sustainable competitive advantage. Their study revealed a positive relation between OL and specific HRM practices such as HRM planning, recruitment and selection processes, performance appraisal, compensation and rewards and organisational exit.

H3 is also supported since a positive relationship between OLC and KM is demonstrated. Service and commercial firms that adopt organisational characteristics which facilitate learning create an organisational base where new knowledge can be created and KM initiatives are more likely to be fostered. In the literature there is very little empirical research examining this relationship, probably because of the ambiguity that surrounds those concepts. Earlier research seems to concentrate either on KM or OLC or on their relationship to other organisational factors, such as innovation, strategy and performance.

H4 and *H5* are acceptable as both KM and OLC are positively related to OC. Those organisations in the tertiary sector investing in KM and OL initiatives create knowledge-based assets through which they develop service- and commercial-specific capabilities. There is a limited number of empirical studies that test the relationship between KM and OC in the tertiary sector. However, this relationship is confirmed in studies that have concentrated on all economic sectors. For example, Sher and Lee's (2004) empirical findings in major Taiwanese firms suggest that the use of KM significantly enhances dynamic capabilities. The OLC-OC relationship is also supported by previous empirical evidence in a variety of research contexts. Moingeon *et al.* (1998) highlighted the importance of OLC in the creation of OC in their case study of Salomon, a sports equipment manufacturer. Furthermore, Chaston *et al.* (1999) identified a positive relationship between OL and "organizational competence" in their qualitative study of small- and medium-sized British firms. As those authors characteristically concluded (Chaston *et al.*, 1999: p. 201):

> [. . .] it may be the case that greater emphasis should be given to the concept of organizational learning in the context of enhancing organizational competence.

Finally, *H6* is supported as well, since a significant positive relationship is demonstrated between OC and organisational performance. Firms in the service and commercial sectors that build specific capabilities, which are uncommon and costly for competitors to imitate, gain competitive advantage and increased performance results. Similar results can be found in previous studies, a notable one being that of Spanos and Lioukas (2001), who propose a composite model that combines the Porter framework of competitive advantage and the RBV of the firm. Their findings indicate the existence of firm-specific effects (capabilities) on performance.

Moreover, modification indexes indicated two more relationships (illustrated in Figure 2 by dotted lines), a strong positive relationship between best HRM practices and OC and a second positive relationship between OLC and organisational performance.

A simple explanation that could be given about the first relationship is the fact that the so called "HR capabilities", which constitute the first of the seven dimensions (factors) determining the theoretical construct of OC-OC, consists of items, which are quite similar with some questions used, among many others, for measuring three of the

ten HR practices (see Tables I and IV). However, there should be a clarification of the difference between the concept of "best HR practices", some processes that companies should adopt (for example, extensive training practices), and the outcome of these processes which are some distinct capabilities, produced either directly by these HR processes (well-trained employees) or indirectly through other processes (KM and learning processes) as for example, marketing and/or technical capabilities.

Additionally, another important issue could be raised. Those HRM practices can also develop certain OC that are not influenced by knowledge-based assets. Examples of such capabilities include the "internal integration capability" of maintaining a corporate-wide "sense of urgency" or the "HR capability" of maintaining an organisational culture of personal dependability, reliability and integrity. Those capabilities are more likely to be bonded into the social fabric of an organisational environment and could be characterised as employee-based resources. Thus, they are more directly influenced by HRM practices. Similarly, Collins and Clark (2003) argued that HRM practices lead to higher firm performance through developing and reinforcing employee-based resources that are valuable in a particular competitive environment. Their results indicate that a set of network-building HR practices can lead to higher firm performance through the practices' effect on the external and internal social networks of top management teams.

Concerning the second positive relationship between OLC and organisational performance it could be argued that firms in the tertiary sector, which invest in management practices and characteristics that are the keys for OL, are more likely to increase their performance indicators. According to the structural model, those characteristics that facilitate learning are more likely to flourish in a firm that uses specific best HRM practices. The results in previous studies are diverse. Goh and Ryan (2002) identified no positive relationship between learning capability and financial performance. However, learning capability was positively related with a non-financial performance measure, job satisfaction. Furthermore, Pham and Swierczek's (2006) findings show that two organisational characteristics of learning, leadership commitment and incentives, were significantly related to performance.

Discussion and conclusions

This paper contributes to the better understanding of the way HRM practices influence organisational performance. The tested "best HRM practices" system combines five concepts that in conjunction have previously been little examined. The system can help organisations in the tertiary sector to become aware of the relationship between these concepts and understand the necessity to integrate their HRM initiatives in OL and KM, in order to create OC and, finally, achieve increased performance.

The main contributions of this study include:

· The empirical testing of a new composite model that identifies critical enabling factors of the best HRM practices-performance relationship.

· The exploration of the value of the human factor in KM and OL initiatives as well as on OC. While this has already been underlined in the past, there is still no complete model that describes and tests all these relationships.

· A proposed HR system that portrays important concepts that can influence HR practitioners' ways of thinking about HR practices. The results demonstrate the

need for HR practitioners to focus more extensively on managing relationships, learning, knowledge and capabilities (Coates, 2001; Lengnick-Hall and Lengnick-Hall, 2006).

The results of the structural equation modelling approach provide some empirical evidence supporting all six hypotheses in the Greek tertiary sector. Inimitable resources, mainly invisible assets, are not directly produced by human resource practices. Those practices form a highly skilled, committed and motivated workforce that exhibits productive behaviour and is willing to create, share or explore those invisible assets. This kind of workforce can foster knowledge base creation through a culture of continuous learning provided by OLC. Of course, an organisational knowledge base cannot survive or progress effectively on its own. It is powered and maintained through KM by means of accumulating, sharing and utilising those knowledge assets throughout the organisation. Those complementary effects of KM and OLC processes effectively generate valuable, rare and inimitable OC. Those capabilities that can usually help to perform a task or activity in an integrated manner are the sources for achieving a sustainable competitive advantage and enhanced performance.

What also seems interesting is the comparison of this study with a parallel study, in which the authors (Theriou and Chatzoglou, 2009) tested the same research model for the Greek manufacturing sector. First, the results share many similarities, effectively empowering the generalisability and applicability of the proposed model. The main difference between the two sectors (secondary-manufacturing and tertiary services and commerce) appears to be the relationship between the processes of OLC and KM and the creation of OC. In the manufacturing sector the relationship between OLC and "manufacturing specific" OC was found to be statistically insignificant. As has been suggested, OLC has an indirect effect on "manufacturing specific" OC through KM. This is not the case for the tertiary sector where OLC directly influences "tertiary specific" OC. This deviation in the results may be clarified if certain basic characteristics of each sector are considered. In the tertiary sector, many employees are university graduates and can, therefore, be regarded to be knowledge workers. The manufacturing sector is usually characterised by a smaller percentage of knowledge workers, thus KM processes play a crucial role in maintaining and enlarging the firm's limited knowledge base. Therefore, OL initiatives in the manufacturing sector do not exert a strong influence on the creation of "manufacturing specific" capabilities. However, their end product (an infrastructure for continuous learning and a culture of learning) is, instead, used by KM processes to create valuable inimitable attributes and therefore "manufacturing specific" OC.

The findings of this study are subject to a number of limitations. A main limitation of this study, as already noted in the methodology section, is the small sample size. Another limitation involves the measurement of OC. A review of previous empirical studies on OC reveals that most follow different measurement approaches. This phenomenon may be justified by the ambiguous nature of OC, hence its difficulty to be defined or measured (Williamson, 1999). A different OC measurement, for example measuring "generic" OC (e.g. Regan and Ghobadian, 2004) instead of "tertiary" specific, might have provided different results. A third important limitation includes the use of subjective performance indicators. The respondent's perceptions regarding their company's performance might not necessarily coincide exactly with objective reality.

According to Spanos and Lioukas (2001) this could result in potential biases as respondents may tend to rationalise their firms' competitive behaviour based on received wisdom about what constitutes effective management praxis. Finally, while this study represents an attempt to highlight some of the factors that play their own unique role as intermediaries between HRM practices and organisational performance, it is quite logical that it cannot be adequate in providing a holistic picture. Future research may also benefit from integrating other critical enabling factors in the development of a new HRM model.

Notes

1. For a more detailed discussion one can refer to Theriou and Chatzoglou (2008)

2. A large percentage of the sample firms did not have an HR manager due to their small size. In such cases, a representative top manager, most familiar with HR issues, was contacted.

References

Ahmad, S. and Schroeder, R.G. (2003), "The impact of human resource management practices on operational performance: recognizing country and industry differences", *Journal of Operations Management*, Vol. 21 No. 1, pp. 19-43.

Anderson, J.C., Rungtusanatham, M. and Schroeder, R.G. (1994), "A theory of quality management underlying the deming management method", *Academy of Management Review*, Vol. 19 No. 3, pp. 472-509.

Appelbaum, E. and Batt, R. (1994), *The New American Workplace*, ILR Press, New York, NY.

Argyris, C. (1999), *On Organizational Learning*, 2nd ed., Blackwell, Oxford.

Armstrong, J.S. and Overton, T. (1977), "Estimating nonresponce bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.

Arthur, J.B. (1994), "Effects of human resource systems on manufacturing performance and turnover", *Academy of Management Journal*, Vol. 37 No. 3, pp. 670-87.

Banerjee, J. and Kane, W. (1996), "Informing the accountant", *Management Accounting*, Vol. 74 No. 9, pp. 30-2.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Becker, B. and Gerhart, B. (1996), "The impact of human resource management on organizational performance: progress and prospects", *Academy of Management Journal*, Vol. 39 No. 4, pp. 779-801.

Becker, B. and Huselid, M. (1998), "High performance work systems and firm performance: a synthesis of research and managerial implications", *Research in Personnel and Human Resources Management*, Vol. 16 No. 1, pp. 53-101.

Bennett, R. (1998), "Charities, organizational learning and market orientation", *Journal of Marketing Practice: Applied Marketing Science*, Vol. 4 No. 1, pp. 5-25.

Bierly, P.E., Kessler, E.H. and Christensen, E.W. (2000), "Organizational learning, knowledge and wisdom", *Journal of Organizational Change*, Vol. 13 No. 6, pp. 595-618.

Blanning, R.W. and David, K. (1995), *Organizations Intelligence*, Computer Society Press, Washington, DC.

Bollen, K.A. and Long, J.S. (1993), *Testing Structural Equation Models*, Sage, Newbury Park, CA.

Bowen, D.E., Galang, C. and Pillai, R. (2002), "The role of human resource management: an exploratory study of cross-country variance", *Human Resource Management*, Vol. 41 No. 1, pp. 103-22.

Bowers, D. and Ahklaghi, F. (1999), "Integration of modern HRM practices across contractor boundaries in FM", *Facilities*, Vol. 17 Nos 7-8, pp. 253-63.

Boxall, P. and Purcell, J. (2003), *Strategy and Human Resource Management*, Palgrave Macmillan, New York, NY.

Calantone, R.J., Cavusgil, T.S. and Zhao, Y. (2002), "Learning orientation, firm innovation capability, and firm performance", *Industrial Marketing Management*, Vol. 31 No. 6, pp. 515-24.

Caloghirou, Y., Protogerou, A., Spas, Y. and Papagiannakis, L. (2004), "Industry-versus firm-specific effects on performance: contrasting SMEs and large-sized firms", *European Management Journal*, Vol. 22 No. 2, pp. 231-43.

Cavaleri, S.A. (2004), "Leveraging organizational learning for knowledge and performance", *The Learning Organization*, Vol. 11 No. 2, pp. 159-76.

Chang Lee, K., Lee, S. and Kang, I.W. (2005), "KMPI: measuring knowledge management performance", *Information and Management*, Vol. 42 No. 3, pp. 469-82.

Chaston, I., Badger, B. and Smith, S.E. (1999), "Organizational learning: research issues and application in SME sector firms", *International Journal of Entrepreneurial Behavior and Research*, Vol. 5 No. 4, pp. 191-203.

Coates, J. (2001), "The HR implications of emerging business models", *Employment Relations Today*, Winter, pp. 1-7.

Collins, C.J. and Clark, K.D. (2003), "Strategic human resources practices, top management team social networks, and firm performance: the role of human resource practices in creating organizational competitive advantage", *Academy of Management Journal*, Vol. 46 No. 6, pp. 740-53.

De Carolis, D.M. (2003), "Competencies and imitability in the pharmaceutical industry: an analysis of their relationship with performance", *Journal of Management*, Vol. 29 No. 1, pp. 27-50.

De Kok, J.M.P., Uhlaner, L.M. and Thurik, R.A. (2006), "Professional HRM practices in family owned-managed enterprises", *Journal of Small Business Management*, Vol. 44 No. 3, pp. 441-60.

Delaney, J.T. and Huselid, M.A. (1996), "The impact of human resource management practices on perceptions of organizational performance", *Academy of Management Journal*, Vol. 39 No. 4, pp. 949-69.

Delery, J.E. and Doty, D.H. (1996), "Modes of theorizing in strategic human resource management: tests of universalistic, contingency and configurational performance predictions", *Academy of Management Journal*, Vol. 39 No. 4, pp. 802-35.

Delery, J.E. and Shaw, J.D. (2001), "The strategic management of people in work organizations: review, synthesis, and extension", in Ferris, G.R. Series Ed., Wright, P.M., Dyer, L.D., Boudreau, J.W. and Milkovich, G.T. Sup. Eds (Eds), *Research in Personnel and Human Resources Management: Supplement 4. Strategic Human Resource Management in the 21st Century*, JAI Press, Stamford, CT.

Dertouzos, M., Lester, R. and Solow, R. (1989), *Made in America: Regaining the Competitive Edge*, MIT Press, Cambridge, MA.

Dess, G. and Robinson, R. (1984), "Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit", *Strategic Management Journal*, Vol. 5 No. 3, pp. 265-73.

DiBella, A.J., Nevis, E.C. and Gould, J.M. (1996), "Understanding organizational capability", *Journal of Management Studies*, Vol. 33 No. 3, pp. 361-79.

Dimitriades, Z.S. (2005), "Creating strategic capabilities, organizational learning and knowledge management in the new economy", *European Business Review*, Vol. 17 No. 4, pp. 314-24.

Firestone, J.M. and McElroy, M.W. (2004), "Organizational learning and knowledge management: the relationship", *The Learning Organization*, Vol. 11 No. 2, pp. 177-84.

Flood, P., Turner, T., Ramammorthy, N. and Pearson, J. (2001), "Causes and consequences of psychological contracts among knowledge workers in the high technology and financial services industry", *International Journal of Human Resource Management*, Vol. 12 No. 7, pp. 1152-61.

Frits, K. and MacDuffie, P. (1996), "The adoption of high-investment work practices", *Industrial Relations*, Vol. 35 No. 3, pp. 423-55.

Fuller, C. (1999), "Benchmarking health and safety performance through company safety competitions", *Benchmarking: An International Journal*, Vol. 6 No. 4, pp. 325-37.

Galer, G. and Heijden, K. (1992), "How planners create organisational learning", *Marketing Intelligence & Planning*, Vol. 10 No. 6, pp. 5-12.

Gloet, M. (2006), "Knowledge management and the links to HRM", *Management Research News*, Vol. 29 No. 7, pp. 402-13.

Goh, S.C. (1998), "Towards a learning organization: the strategic building blocks", *Advanced Management Journal*, Vol. 63 No. 2, pp. 15-20.

Goh, S.C. and Richards, G. (1997), "Benchmarking the learning capability of organizations", *European Management Journal*, Vol. 115 No. 2, pp. 575-88.

Goh, S. and Ryan, P. (2002), "Learning capability, organization factors and firm performance", paper presented at the Third European Conference on Organizational Knowledge, Learning and Capabilities, Athens, 5-6 April.

Gomez, J.P., Lorente, C.J. and Cabrera, V.R. (2005), "Organizational learning and compensation strategies: evidence from the Spanish chemical industry", *Human Resource Management*, Vol. 44 No. 3, pp. 279-99.

Gorelick, C. and Tantawy-Monsou, B. (2005), "For performance through learning, knowledge management is the critical practice", *The Learning Organization*, Vol. 12 No. 2, pp. 125-39.

Grant, R.M. (1991), "The resource-based theory of competitive advantage: implications for strategy formulation", *California Management Review*, Vol. 33 No. 3, pp. 114-35.

Guest, D.E. (1997), "Human resource management and performance: a review and research agenda", *International Journal of Human Resource Management*, Vol. 8 No. 3, pp. 263-76.

Guest, D.E., Michie, J., Conway, N. and Sheeman, M. (2003), "Human resource management and corporate performance in UK", *British Journal of Industrial Relations*, Vol. 41 No. 2, pp. 291-314.

Hair, F., Anderson, R. and Tatham, R. (1992), *Multivariate Data Analysis*, Macmillan Publishing, New York, NY.

Hair, J.F., Anderson, R.E. and Tatham, R.L. (1998), *Multivariate Data Analysis*, 5th ed., Macmillan Publishing, New York, NY.

Harrison, A.W. and Rainer, R.K. (1996), "A general measure of user computing satisfaction", *Computers in Human Behavior*, Vol. 12 No. 1, pp. 79-92.

Hislop, D. (2003), "Linking human resource management and knowledge management via commitment: a review and research agenda", *Employee Relations*, Vol. 25 No. 2, pp. 182-202.

Hong, J.C. and Kuo, C.L. (1999), "Knowledge management in the learning organization", *Leadership & Organization Development Journal*, Vol. 20 No. 4, pp. 207-15.

Hult, G.T. (1998), "Managing the international strategic sourcing function as a market-driven organizational learning system", *Decision Sciences*, Vol. 29 No. 1, pp. 193-216.

Hult, G.T. and Ferrell, O.C. (1997), "Global organizational learning capacity in purchasing: construct and measurement", *Journal of Business Research*, Vol. 40 No. 2, pp. 97-111.

Hult, G.T., Ketchen, D.J. and Nichols, E.L. Jr (2003), "Organizational learning as a strategic resource in supply management", *Journal of Operations Management*, Vol. 21 No. 5, pp. 541-56.

Hunt, S. (1990), "Commentary on an empirical investigation of a general theory of marketing ethics", *Journal of the Academy of Marketing Science*, Vol. 18 No. 2, pp. 173-7.

Huselid, M.A. (1995), "The impact of human resource management practices on turnover, productivity, and corporate financial performance", *Academy of Management Journal*, Vol. 38 No. 3, pp. 635-72.

Ichniowski, C., Shaw, K. and Prennushi, G. (1997), "The effects of human resource management practices on productivity: a study of steel finishing lines", *American Economic Review*, Vol. 87 No. 3, pp. 291-313.

Jackson, S.E. and Schuler, R.S. (1995), "Understanding human resource management in the context of organizations and their environment", *Annual Review of Psychology*, Vol. 46 No. 1, pp. 237-64.

Jaw, B.S. and Liu, W. (2003), "Promoting organizational learning and self-renewal in Taiwanese companies: the role of HRM", *Human Resources Management*, Vol. 42 No. 3, pp. 223-41.

Jones, G.R. and Wright, P.M. (1992), "An economic approach to conceptualizing the utility of human resource management practices", in Rowland, K.R. and Ferris, G.R. (Eds), *Research in Personnel and Human Resource Management*, JAI Press, Greenwich, CT, pp. 271-99.

Khandekar, A. and Sharma, A. (2005), "Organizational learning in Indian organizations: a strategic HRM perspective", *Journal of Small Business and Enterprise Development*, Vol. 12 No. 2, pp. 211-26.

King, A.W. and Zeithaml, C.P. (2001), "Competencies and firm performance: examining the causal ambiguity paradox", *Strategic Management Journal*, Vol. 22 No. 1, pp. 75-99.

Law, W.K., Chan, A.H.S. and Pum, K.F. (2006), "Prioritizing the safety management elements: a hierarchical analysis for manufacturing enterprises", *Industrial Management & Data Systems*, Vol. 106 No. 6, pp. 778-92.

Lawler, E.E. (1986), *High Involvement Management*, Jossey-Bass, San Francisco, CA.

Leary, D.E. (1998), "Enterprise knowledge management", *IEEE Computer*, Vol. 31 No. 3, pp. 54-62.

Lengnick-Hall, C. and Lengnick-Hall, M. (2006), "HR, ERP, and knowledge for competitive advantage", *Human Resource Management*, Vol. 45 No. 2, pp. 179-94.

Loermans, J. (2002), "Synergizing the learning organization and knowledge management", *Journal of Knowledge Management*, Vol. 6 No. 3, pp. 285-94.

Lopez, S.V. (2005), "Competitive advantage and strategy formulation: the key role of dynamic capabilities", *Management Decision*, Vol. 43 No. 5, pp. 661-9.

MacDuffie, J.P. (1995), "Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry", *Industrial and Labor Relations Review*, Vol. 48 No. 2, pp. 197-221.

McMahan, G.C., Virick, M. and Wright, P.M. (1999), "Alternative theoretical perspectives for strategic human resource management revisited: progress, problems, and prospects", in

Wright, P.M., Dyer, L.D., Boudreau, J.W. and Milkovich, G.T. (Eds), *Strategic Human Resource Management in the Twenty-first Century*, JAI Press, London.

Marchinton, M. (1995), "Fairy tales and magic wands: new employment practices in perspective", *Employee Relations*, Vol. 17 No. 1, pp. 51-67.

Marchinton, M. and Wilkinson, A. (2003), *People Management and Development: Human Resource Management at Work*, 2nd ed., CIPD, London.

Michie, J. and Sheehan, M. (2001), "Labour market flexibility, human resource management and corporate performance", *British Journal of Management*, Vol. 12 No. 4, pp. 287-306.

Michie, J. and Sheehan, M. (2005), "Business strategy, human resources, labour market flexibility, and competitive advantage", *International Journal of HRM*, Vol. 16 No. 3, pp. 445-64.

Milgrom, P. and Roberts, J. (1995), "Complementarities and fit: strategy, structure, and organizational change in manufacturing", *Journal of Accounting and Economics*, Vol. 19 Nos 2-3, pp. 179-208.

Miller, D. (2002), "Knowledge inventories and managerial myopia", *Strategic Management Journal*, Vol. 23 No. 8, pp. 689-706.

Miller, D. and Shamsie, J. (1996), "The resource-based view of the firm in two environments: the Hollywood film studios from 1936 to 1965", *Academy of Management Journal*, Vol. 39 No. 3, pp. 519-43.

Mills, D.C. and Friesen, B. (1992), "The learning organization", *European Management Journal*, Vol. 10 No. 2, pp. 146-56.

Miner, J. and Crane, D. (1995), *Human Resource Management: The Strategic Perspective*, HarperCollins College Publishers, New York, NY.

Moingeon, B., Ramanantsoa, B., Métais, E. and Orton, J.D. (1998), "Another look at strategy-structure relationships: the resource-based view", *European Management Journal*, Vol. 16 No. 3, pp. 298-304.

Mowday, R.T. and Steers, R.M. (1979), "The measurement of organizational commitment", *Journal of Vocational Behaviour*, Vol. 14 No. 2, pp. 224-47.

Narasimha, S. (2000), "Organizational knowledge, human resource management and sustained competitive advantage: toward a framework", *Competitiveness Review*, Vol. 10 No. 1, pp. 123-35.

Nelson, L. (1994), "Managing managers in occupational health and safety", *Asia Pacific Journal of Human Resources*, Vol. 32 No. 1, pp. 13-28.

Nielsen, A.A. (2006), "Understanding dynamic capabilities through knowledge management", *Journal of Knowledge Management*, Vol. 10 No. 4, pp. 59-71.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-creating Company. How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY.

Norusis, M.J. (1994), *SPSS Professional Statistics 6/1*, SPSS, Chicago, IL.

Oltra, V. (2005), "Knowledge management effectiveness factors: the role of HRM", *Journal of Knowledge Management*, Vol. 9 No. 4, pp. 70-86.

Pemberton, J.D. and Stonehouse, G.H. (2000), "Organizational learning and knowledge assets – an essential partnership", *The Learning Organization*, Vol. 7 No. 4, pp. 184-94.

Pettigrew, A. and Whipp, R. (1991), *Managing Change for Competitive Success*, Blackwell, Cambridge, MA.

Pfeffer, J. (1994), *Competitive Advantage through People*, Harvard University Press, Boston, MA.

Pfeffer, J. (1998), "Seven practices of successful organizations", *California Management Review*, Vol. 40 No. 2, pp. 96-124.

Pham, T.N. and Swierczek, F.W. (2006), "Facilitators of organizational learning in design", *The Learning Organization*, Vol. 13 No. 2, pp. 186-201.

Powell, T.C. and Dent-Micallef, A. (1997), "Information technology as competitive advantage: the role of human, business, and technology resources", *Strategic Management Journal*, Vol. 18 No. 5, pp. 375-405.

Raft, A. and Lord, M. (2002), "Acquiring new technologies and capabilities: a grounded model of acquisition implementation", *Organization Science*, Vol. 13 No. 4, pp. 420-41.

Real, J.C., Leal, A. and Roldán, J.L. (2006), "Information technology as a determinant of organizational learning and technological distinctive competencies", *Industrial Marketing Management*, Vol. 35 No. 4, pp. 505-21.

Redman, T. and Wilkinson, A. (2001), *Contemporary Human Resource Management*, Financial Times, Prentice-Hall, London.

Regan, N.O. and Ghobadian, A. (2004), "The importance of capabilities for strategic direction and performance", *Management Decision*, Vol. 42 No. 2, pp. 292-313.

Robertson, M. and Hammersley, G.M. (2000), "Knowledge management practices within a knowledge-intensive firm: the significance of the people management dimension", *Journal of European Industrial Training*, Vol. 24 No. 2, pp. 241-53.

Rodwell, J.J., Lam, J. and Fastenau, M. (2000), "Benchmarking HRM and the benchmarking of benchmarking: best practices from outside the square in the Australian finance industry", *Employee Relations*, Vol. 22 No. 4, pp. 356-74.

Rowly, J. (2000), "From learning organization to knowledge entrepreneur", *Journal of Knowledge Management*, Vol. 4 No. 1, pp. 7-15.

Ruggles, R. (1998), "The state of the notion: knowledge management in practice", *California Management Review*, Vol. 40 No. 3, pp. 80-9.

Rumelt, R.P. (1987), *The Competitive Challenge*, Ballinger, Cambridge.

Saunders, M., Lewis, P. and Thornhill, A. (2000), *Research Methods for Business Students*, Financial Times/Prentice-Hall, London.

Scarbrough, H. (2003), "Knowledge management, HRM and the innovation process", *International Journal of Manpower*, Vol. 24 No. 5, pp. 501-16.

Scarbrough, H. and Carter, C. (2000), *Investigating Knowledge Management*, CIPD, London.

Sels, L., De Winne, S., Maes, J., Delmotte, J., Faems, D. and Forrier, A. (2006), "Unravelling the HRM-performance link: value-creating and cost-increasing effects of small business HRM", *Journal of Management Studies*, Vol. 43 No. 2, pp. 319-42.

Senge, P. (1990), *The Fifth Discipline*, Random House, London.

Sher, P.J. and Lee, V.C. (2004), "Information technology as a facilitator for enhancing dynamic capabilities through knowledge management", *Information and Management*, Vol. 41 No. 8, pp. 933-45.

Shih, H.A. and Chiang, Y.H. (2005), "Strategy alignment between HRM, KM, and corporate development", *Information Journal of Manpower*, Vol. 26 No. 6, pp. 582-603.

Shrivastava, P. (1983), "A typology of organizational learning systems", *Journal of Management Studies*, Vol. 20 No. 1, pp. 7-28.

Sinkoula, J.M., Baker, W.E. and ordewier, T. (1997), "A framework for market-based organizational learning: linking values, knowledge, and behaviour", *Journal of the Academy of Marketing Science*, Vol. 25 No. 4, pp. 305-18.

Soliman, F. and Spooner, K. (2000), "Strategies for implementing knowledge management: role of human resources management", *Journal of Knowledge Management*, Vol. 4 No. 4, pp. 337-45.

Spanos, Y.E. and Lioukas, S. (2001), "An examination into the causal logic of rent generation: contrasting Porter's competitive strategy framework and the resource-based perspective", *Strategic Management Journal*, Vol. 22 No. 10, pp. 907-34.

Storey, J. and Quintas, P. (2001), "Knowledge management and HRM", in Storey, J. (Ed.), *Human Resource Management: A Critical Text*, Thomson Learning, London.

Sveiby, K.-E. (1997), *The New Organizational Wealth: Managing and Measuring Knowledge Based Assets*, Berret Koehler, San Francisco, CA.

Sveiby, K.-E. and Simons, R. (2002), "Collaborative climate and effectiveness of knowledge work-an empirical study", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 3-22.

Sviokla, J.J. (1996), "Knowledge workers and radically new technology", *Sloan Management Review*, Vol. 37 No. 2, pp. 25-40.

Teece, D.J., Pisa, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-33.

Theriou, G.N. and Chatzoglou, P.D. (2008), "Enhancing performance through best HRM practices, organizational learning and knowledge management. A conceptual framework", *European Business Review*, Vol. 20 No. 3, pp. 185-207.

Theriou, G.N. and Chatzoglou, P.D. (2009), "The impact of the best HRM practices on performance – identifying enabling factors", unpublished.

Thite, M. (2004), "Strategic positioning of HRM in knowledge-based organizations", *The Learning Organization*, Vol. 11 No. 1, pp. 28-44.

Tippins, M.J. and Sohi, R.S. (2003), "IT competency and firm performance: is organizational learning a missing link?", *Strategic Management Journal*, Vol. 24 No. 8, pp. 745-63.

Ulrich, D., Jick, T. and Von Gilow, M.A. (1993), "High-impact learning: building and diffusing learning capability", *Organizational Dynamics*, Vol. 23 No. 2, pp. 52-66.

Venkatraman, N. and Ramanujam, V. (1986), "Measurement of business performance in strategy research: a comparison of approaches", *Academy of Management Review*, Vol. 11 No. 4, pp. 801-14.

Walters, D. and Nichols, T. (2006), "Representation and consultation on health and safety in chemicals: an exploration of limits to the preferred model", *Employee Relations*, Vol. 28 No. 3, pp. 230-54.

Wang, Y. and Lo, H.P. (2003), "Customer-focused performance and the dynamic model for competence building and leveraging: a resource- based view", *Journal of Management Development*, Vol. 22 No. 6, pp. 483-526.

Weber, E.S., Liou, Y.I., Chen, M. and Nunamaker, J.F. (1990), "Toward more intelligent organizations", *23rd Hawaii International Conference on Systems Science*, Vol. 4, pp. 290-9.

Wernerfelt, B. (1984), "A resource based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, pp. 171-80.

Wiesner, R. and McDonald, J. (2001), "Bleak house or bright prospect? Human resource management in Australian SMEs", *Asia Pacific Journal of Human Resources*, Vol. 39 No. 2, pp. 28-50.

Wiseman, C. (1988), *Strategic Information Systems*, Irwin, Homewood, IL.

Wood, S. (1996), "High commitment management and payment systems", *Journal of Management Studies*, Vol. 33 No. 1, pp. 53-77.

Wright, P. and Sherman, S. (1999), "Failing to find fit in strategic HRM: theoretical and empirical problems", in Wright, P., Dyer, L., Boudreau, L. and Milkovich, G. (Eds), *Research in Personnel and Human Resource Management*, JAI Press, Greenwich, CT.

Yahya, S. and Goh, W. (2002), "Managing human resources toward achieving knowledge management", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 457-68.

Zack, M.H. (1999), "Developing a knowledge strategy", *California Management Review*, Vol. 41 No. 3, pp. 125-45.

Zikmund, W.G. (2003), *Business Research Methods*, 7th ed., Thomson, South-Western, Mason, OH.

Further reading

Barney, J.B. (1986), "Strategic factor markets: expectations, luck and business strategy", *Management Science*, Vol. 32 No. 10, pp. 1231-41.

Drucker, P.F. (1993), *Postcapitalist Society*, Butterworth Heinemann, Oxford.

Gomez, C. (2004), "The influence of environmental, organizational and HRM factors on employee behaviours in subsidiaries: a Mexican case study of organizational learning", *Journal of World Business*, Vol. 39 No. 1, pp. 1-11.

Lado, A.A. and Wilson, M.C. (1994), "Human resource systems and sustained competitive advantage: a competency-based perspective", *Academy of Management Review*, Vol. 19 No. 4, pp. 699-727.

Learned, E.P., Christensen, C., Andrews, K. and Guth, W. (1969), *Business Policy: Text and Cases*, Irwin, Homewood, IL.

Lenn, A. and Wollin, A. (2001), "Learning organizations: empirically investigating metaphors", *Journal of Intellectual Capital*, Vol. 2 No. 4, pp. 410-22.

Pearn, M., Roderick, C. and Mulrooney, C. (1995), *Learning Organizations in Practice*, McGraw-Hill, London.

Reylds, R. and Ablett, A. (1998), "Transforming the rhetoric of organizational learning to the reality of the learning organization", *The Learning Organization*, Vol. 5 No. 1, pp. 24-35.

About the authors

George N. Theriou is a Tutor in HRM in the Department of Business and Economics, in the Technological Education Institute of Kavala, Greece and a PhD Candidate in the Department of Production and Management Engineering, in the Democritus University of Thrace, Xanthi, Greece. He received a BA in Business Studies and an MA in Human Resource Management from University of Derby, UK. His research interests include human resource management, strategic management, knowledge management and business performance.

Prodromos D. Chatzoglou is an Associate Professor of MIS in the Department of Production and Management Engineering, in the Democritus University of Thrace, Xanthi, Greece. He received a BA in Economics from Graduate Industrial School of Thessaloniki, Greece; an MSc. in Management Sciences and a PhD in Information Engineering both from UMIST, Manchester, UK. His research interests include IS project management, knowledge management, e-business, IS economics, strategic management and business performance. His work has been published in *Information Systems Journal*, *Decision Sciences*, *International Journal of Medical Informatics*, *European Journal of Information Systems*, *International Journal of Project Management*, *Information and Software Technology Journal*, etc. He serves as a reviewer and member of the scientific committee of many international journals. Prodromos D. Chatzoglou is the corresponding author and can be contacted at: pchatzog@pme.duth.gr

www.manaraa.com