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ABSTRACT

This symposium on knowledge management and human capital consists of three presentations. "Analyzing and Solving Difficulties Experienced in Knowledge Management: The Case of a Knowledge Intensive Organization" (Simone J. van Zolingen, Jan N. Streumer, Maaike Stooker) distinguishes five phases of the knowledge management process and reports that in the case study most knowledge management problems occurred in the first three phases: knowledge acquisition, codification, and dissemination. "Using a Human Capital Framework to Inform Human Capital Investment Decisions" (Joanne Provo) analyzes organizational capabilities strategy from the human capital perspective. "Human Capital, Human Resource Development (HRD), and the Knowledge Organization" (Oscar A. Aliaga) uses an economic approach to explain the foundations of HRD and proposes a framework to understand the knowledge organization. It suggests economics as the primary theoretical influence of HRD. The theory of human capital and the theory of the firm are first reviewed in their relationship with training. A discussion follows of the knowledge organization and the implications for organization development. All three papers include substantial bibliographies. (YLB)

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Analyzing and Solving Difficulties Experienced in Knowledge Management: The Case of a Knowledge Intensive Organization

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Knowledge management has become an important tool in staying ahead in the competition between companies. In this paper five different phases of the knowledge management process are distinguished. The occurrence of knowledge management problems has been studied in a case study in a knowledge intensive company. Most of the problems in this case occur in the first three phases of the knowledge management process: knowledge acquisition, knowledge codification and knowledge dissemination.

Key words: Knowledge Management, Knowledge Acquisition, Knowledge Codification, Knowledge Dissemination

In our time we live in a "knowledge society" in which knowledge is the most important means of production and not capital, raw materials or labour (Drucker, 1993). Growth of the service sector, automation, the development of new (information)technology, changes in structures and work processes of companies and globalisation and as a consequence growing competition are a few causes for this development (Castells, 1996; Rifkin, 1995, 2000; Zolingen, 1995). In a society based on knowledge, says Drucker, the knowledge worker is the single greatest asset. But survival and innovation of companies is nowadays not only dependent on the knowledge they have but on the creativity with which they apply knowledge upon knowledge (Weggeman, 1997, 2000). Knowledge can provide a sustainable advantage. According to Davenport & Prusak (1998): "Eventually competitors can almost always match the quality and price of a market leaders' current product or service. By the time that happens though, the knowledge rich, knowledge-managing company will have moved on to a new level of quality, creativity, or efficiency. The knowledge advantage is sustainable because it generates increasing returns and continuing advantages. Unlike material assets, which decrease as they are used, knowledge assets increase with use: ideas breed new ideas and shared knowledge stays with the giver while it enriches the receiver. The potential of new ideas arising from the stock of knowledge in any firm is practically limitless - particularly if the people in the firm are given opportunities to think, to learn, and to talk with another" (p 17). This is why knowledge management has become very important for companies. Further the growing interest in knowledge management is closely related to companies' efforts to become learning organizations, in which managers strive to create a culture and a system for creating new knowledge and for capturing knowledge and getting it to the right place at the right time (Senge, 1990; Watkins & Marsick, 1993; Marsick & Watkins, 1999). Knowledge management aims to make knowledge explicit, codifies knowledge and experiences and develops knowledge that is essential for the realisation of the core competencies of a company (Davenport & Prusak, 1998). In this paper we pay attention to questions such as: what is knowledge, who uses it, where is it, how do you create it, how do organizations store it, what is knowledge management and what problems do organizations have with knowledge management?

Theoretical Background

Data, Information, Knowledge and Knowledge Management. When one talks about knowledge, the question arises how the difference between knowledge, information and data can be interpreted. Davenport & Prusak (1998) say: "data is a set of discrete, objective facts about events" (p. 2) and Peter Drucker (in Davenport & Prusak, 1998) once said that information is "data endowed with relevance and purpose". Information comes into being when somebody attributes meaning to data. When that person communicates that meaning, from his point of view information is being transmitted. Davenport & Prusak (1998) say, "data becomes information when its creator adds meaning" (p 4). One talks about knowledge when information has acquired a place in the reference framework of the user and the user connects this with his own actions. Davenport & Prusak (1998) say about knowledge: "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the mind of those who know. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms" (p 5). Davenport & Prusak describe knowledge as a socially constructed reality, influenced by personal beliefs and values, forged in the rhythms of daily work, and visible in a company's products and services. Knowledge is complex because it is personalised. This makes it hard to standardise and to share effectively with others.

Knowledge management is about knowledge creation. Marsick & Watkins (1999) say "Its focus is releasing creativity and invention in people, who in turn can use what they know to develop the capacity of people, improve practices and processes, and develop better products to serve the customer (p. 82).

In this paper knowledge management is being described as: *listing the knowledge needs by examining what knowledge does an organization need and what knowledge is available among its employees. Knowledge management aims at systematically reducing the discrepancy between desired and available knowledge by acquiring, codifying, disseminating, developing and applying knowledge according to policy and plan on behalf of the strategic objectives of an organization.*

Knowledge Management as Process. Sprenger (1995), Diepstraten (1996) Van der Spek and Spijkervet (1996),Weggemans (1997) all distinguish several phases of knowledge mangement process. Van der Spek and Spijkervet for example mention four phases in the knowledge management process: 1) New knowledge is being developed; 2) Knowledge is being distributed to those who need this knowledge in order to be able to execute their tasks well; 3) Knowledge is being made accessible for future use, also for the collective; 4) Knowledge fields are being combined.

From the foregoing it appears that various possibilities exist to describe the phases within the knowledge management process. In this research knowledge management is being characterised as a cyclical process consisting of five phases: Acquiring knowledge; codifying knowledge; dissemination of knowledge; developing knowledge and applying knowledge. Acquiring knowledge means incorporating new knowledge in the organization. For this only the strategic knowledge is important because it contributes to the execution of core activities and the development of the core competencies of the organization. Codifying knowledge means making knowledge explicit and making it accessible so that, if desired, other persons can acquire this knowledge at an arbitrary moment at an arbitrary place. The third phase of the knowledge management process is made up of the dissemination of knowledge to those for whom it is important for the execution of their tasks. In the fourth phase knowledge is being developed by means of existing knowledge. By combining elements of existing knowledge, new insights can be formed and thus new knowledge can be developed. The fifth phase of the knowledge-management process is the application of (newly developed) knowledge. This means that knowledge is being used on behalf of the organization.

Organizational Factors Influencing the Knowledge Management Process. Organization characteristics such as structure, culture, and strategy, and next to that knowledge systems, influence the progress of the knowledge management process. There exists a diversity of opinions about the ideal organization structure for the promotion of the process of knowledge management. Nonaka, & Takeuchi (1995) take the view that the hypertext organization has the ideal structure to promote knowledge creation. The hypertext organization is made up of three interconnected layers or contexts: the business system, the project team and the knowledge base. According to Nonaka, & Takeuchi (1995) "the central layer is the business-system layer in which normal, routine operations are carried out. Since a bureaucratic structure is suitable for conducting routine work efficiently, this layer is shaped like a hierarchical pyramid. The top layer is the project-team layer where multiple project-teams engage in knowledge creating activities such as new product development. The team members are brought together from a number of different units across the business system, and are assigned exclusively to a project team until the project is completed. At the bottom is the knowledge-base layer where organizational knowledge generated in the above two layers is recategorised and recontextualised. This layer does not exist as an actual organizational entity, but is embedded in corporate vision, organizational culture, or technology. Corporate vision provides the direction in which the company should develop technology or products, and clarifies the 'field' in which it wants to play. Organizational culture orients the mindset and action of every employee. While corporate vision and organizational culture provide the knowledge base to tap tacit knowledge, technology taps the explicit knowledge generated in the two other layers (p. 167). And 'The key characteristic of the hypertext organization is the ability of its members to shift contexts. They can move among three contexts in order to accommodate the changing requirements of situations both inside and outside the organization" (169). This ability offers the organization great flexibility. In the hypertext organization the efficiency and stability of the bureaucracy is combined with the effectiveness and dynamism of the task force.

Several authors (Bertrams (1999; Marsick & Watkins, 1999; Ostroff, 1999; Watkins & Marsick, 1993) take the view that in order to create good conditions for the process of knowledge management it is best for an organization to switch from the widespread hierarchical task-oriented structure consisting of many layers to the much flatter horizontal or network structure. This process of decentralisation can extend over a group of businesses. Bertrams characterises the network organization as follows: "A network organization is a group of businesses usually supplying the same market or specific target group, and by means of working together they try to use each other's strong points. With this it is important that various businesses actively work together in the exchange of clients and the offering of overall solutions" (p. 126,127). According to Bertrams (1999), within the structure of an organization communication along short communication lines, employing language comprehensible for everybody in the organization, good communication between the various departments because there is no competition and correct and easily accessible information about professionals and departments are essential requirements for the good progress of the process of knowledge management. Watkins & Marsick (1993) mention the importance of "a culture that is learning oriented, with beliefs, values, and policies that support learning; for example, tolerance for mistakes as opportunities for learning and problem solving; and policies that reward knowledge and the sharing of knowledge as well as rewards for performance"(p. 166). Davenport & Prusak (1998) say that these policies underline the value attached to sharing knowledge in the organization and that this motivates employees to share knowledge. The trust employees have in their organization is also essential for knowledge sharing (Watkins & Marsick, 1993). Davenport & Prusak (1998) say that trust must be visible (see people get credit for knowledge sharing) and trustworthiness must start at the top (if the top managers are trustworthy, trust will seep through and come to characterise the whole firm). These authors also point out the importance of providing time for learning and reflection. Factors from the culture of the organization strongly influencing the motivation for learning and giving feedback are, according to Bertrams (1999): feedback (what happens with my knowledge), the diversity of skills (do I get the chance to use that which I am learning), the recognisability of the task (does that which I am learning supply an added value to my ambition), the importance of the task (do I help the organization with my behaviour) and autonomy (do I get enough freedom to learn). Next to that it is important that an organization rewards the correct behaviour. Not the amount of the knowledge a professional gives feedback upon must be a criterion, but the extent to which his feedback knowledge is being used.

Bertrams (1999) distinguishes two types of organizational cultures that can facilitate knowledge management: the enterprising culture and the group culture. Bertram says "An enterprising culture characterises organizations taking a great extent of risk, dealing with a dynamic and complex environment, highly valueing creativity. Innovation, individual initiative and independence make up the standard. This is also the culture with which many businesses will identify themselves. Recruitment ads of almost all businesses will characterise their own organization with the described terms and will ask for professionals meeting those characteristics: enterprising, creative and full of initiative. Professionals in this organization want to score quickly and to climb at a high speed, their goal is to be able to start leading quickly, to get responsibility and finally to join the top of the organization. A group culture is characterised by tradition, loyalty, socialisation, lots of teamwork and social control. People enter into a long-lasting association with each other and they feel socially strongly connected. Although the organization aims at a good turnover, working together with each other in interesting fields gets priority. Communication, coordination and integration take place on the basis of shared goals. Innovation is possible in this organization but strongly depends on the standards in the organization. Because on the whole they are more aiming at the inside than at the outside not much external knowledge is brought inside" (Bertrams, p. 142). Bertrams (1999) takes the view that knowledge management stands the best chance in a mixture of an enterprising culture and a group culture.

Next to a certain structure and culture a strategy aimed at knowledge with a clear and detailed knowledge policy (Bertrams, 1999) aimed at innovation and learning (Watkins & Marsick, 1993) is essential for organization for their survival. Customer-orientation, product leadership or cost leadership, all three require a well running knowledge management process. Versatile and actual knowledge about the customer and his needs, good service and training when the products have been delivered and lasting contacts with the customer require that an organization must become a part of its environment. That environment must be mainly seen as the customers and suppliers of the organization. Knowledge coming from the environment must be easily picked up within the organization to be incorporated in the products and the services. Bertrams (1999) terms this a transition from internal to external orientation of organizations. Furthermore, the accessibility, the content and the feedback possibilities of the (electronic) knowledge systems of an organization influence the process of knowledge management (Stewart, 1997).

Research Question

At the moment the process of knowledge management receives much attention, but there has hardly been research into it. This is important because organizations, despite much good will, do not really know what they must do with knowledge management in real terms. Therefore, in this paper the following research theme is being explored: Knowledge intensive organizations experience difficulties in handling knowledge management. With which problems in the field of knowledge management are these organization being confronted? How do these organization handle these problems? And what recommendations can be made to prevent and solve problems in the field of knowledge management?

Methodology

Selection Case/Respondents/Functions. We have chosen to perform the research in knowledge intensive organizations employing professionals, because the acquiring, codifying, dissemination, development and application of knowledge is especially for these organizations of vital importance. For these organizations handling knowledge management well is essentially important for their survival. At the same time, professionals are the ones who find it hardest to share their knowledge. For they derive their value from the knowledge they 'possess'.

Three organizations from a list of customers of a commercial consultancy for organization changes and management development were approached. All three organizations participated in the research project. The three participating organizations can be typified as customer oriented knowledge intensive organizations, also labeled as 'heavy knowledge intensive organizations'. With these organizations the dominant influence on the functioning of the organizations is being exerted by the employees and the - direct - output is in the form of software, reports, drawings, formulas, programs and the like (Weggeman, 1997). In this paper only the research results of the organization with a prominent position in the field of automation are included because this organization is in a stable phase and has reasonable experience in the field of knowledge management. At the second company the process of knowledge management was being disturbed because this company was merging with another company and the third company was still in a starting up phase and consequently did not pay structured attention to knowledge management. In the case study applied in this study four respondents were involved, with the following jobs: the executive manager, the service line manager consultant (a specialist in the field of documentation); the knowledge manager and a (female) employee of the communication department. This organization will be referred to in this paper as ICT Ltd.

Procedure and Instruments. The data collection was being executed with a questionnaire followed by half structured interviews, going deeper into the subjects most relevant for this organization. The aim of the questionnaire was to get a quick image of that what is taking place in the organization in the field of knowledge management. Next to that the questionnaire served as preparation for the interviews. The questionnaire was filled in by four persons with diverse functions. The questionnaire contained 59 items. The literature was directive in the realization of the items. Each item represented a bottleneck in the field of knowledge management distinguished in the literature The items were formulated in the form of propositions and were measured on a scale of six points with answer categories ranging from complete agreement to complete disagreement. The items were classified on the basis of the phases of the knowledge management process: acquiring knowledge, recording knowledge, dissemination of knowledge, development of knowledge and applying knowledge. Next to that questions were asked about the structure, the culture, the strategy and the knowledge systems of the organization. Next to the written questionnaire half structured interviews were being used. The aim of these interviews was to further examine the most relevant bottlenecks organizations experience in the field of knowledge management. At the same time it was examined which activities are being arranged in organizations to optimalise the process of knowledge management. The subjects in the half-structured interview had been formulated beforehand in a topic-list.

Results

A Large Automation Company. The company is a part of ICT International, one of the biggest automation companies in the Netherlands. It is a combination of ten subsidiaries with their own expertise in their own domains and markets. ICT Ltd. is one of the subsidiaries of ICT International and an information and comunication technology service provider from the very beginning. With its six hundred employees it extends service to the government. Public government is its field of activity. Its orders mostly deal with income processing, benefits, pensions, subsidies, finances, and document management. In the beginning of this year ICT Ltd. has started the project 'Knowledge management ICT Ltd.', because they realized that knowledge is the most important value in the organization.

The Knowledge Management Process at ICT Ltd. In this paragraph the results are structured on the basis of the various phases of the process of knowledge management: acquiring knowledge, codifying knowledge, dissemination of knowledge, development of knowledge and applying knowledge, and subsequently on the basis of the factors of the organization influencing the process of knowledge management: structure, culture, strategy and knowledge systems.

The Different Phases of the Process of Knowledge Management

Acquiring Knowledge. All four respondents experience it as a problem that ICT Ltd. has not or hardly not established which specific knowledge and skills its employees have at their disposal. Because of this it is not clear which knowledge is available within ICT Ltd. At the moment much time is being lost with the searching of the right people with the right qualities. *"You really have to know people to find somebody"*, according to one of the respondents. The fact that ICT Ltd. is a big organization with different branches does not make it any easier. The head of the department covering knowledge management does not think that this is such a determining factor. He said: *"if each department has established in its own way who has which knowledge and skills, then others can also retrieve this quickly with a phone call or an e mail"*. All respondents see a solution for this problem in the form of Purple Pages, which are being organized at holding level. Each respondent takes the view that ICT Ltd. is actively gathering knowledge about the wishes and needs of its clients. According to the managing director this is being done in the form of so-called 'fire place sessions'. During these rather informal meetings different subjects come up, but the outcomes of these meetings are not adequeately being taken up by the organization. Within ICT ltd. BV the account managers only spend one day per week with their (possible) clients. The remaining four days they occupy themselves with internal worries. The respondents see this as a problem because account managers are contracted for the acquisition of new clients and next to that to find out about the wishes and needs of the existing clients and not to solve internal problems. ICT Ltd. offers its employees enough possibilities to learn. However, the management does not stimulate the following of trainings and seminars. Employees themselves have to indicate that they want to follow a certain course or want to attend a seminar. One of the respondents says about this: *"The management never tells you that it might be good to follow a training in this or that field. You really have to explain what purpose it serves for ICT Ltd."*. Thus the following of trainings and seminars takes place on one's own initiative and usually ad hoc. One service line has been given time to assemble the whole department for one day per month. During this meeting experiences are being shared. Sometimes another service line or another subsidiary is being invited to tell about their activities.

Codifying Knowledge. All respondents except one do not know how they can get access to knowledge about activities in the past. Anyway the accessibility of information isn't taken serious, not only the accessibility of knowledge from the past, but also the accessibility of current knowledge. The infrastructure of the Intranet is hampered by the dialectics of progress; it was very modern in the past, now it is outdated and not at all well-tended. The focus is very strongly externally. The internal organization of ICT Ltd., consequently the Intranet also, does not get enough attention. The employee of the department covering knowledge management expresses it as follows: *"It's the same as the house of the painter that is badly in need of paint"*. The Intranet is a possible solution but also informal contacts – acquaintance management – are very important. Employees do not get enough time for this. There is too much a striving for maximum declarations. All respondents are of the opinion that the know-how knowledge, in other words the procedural knowledge, and the know-what knowledge, also called factual knowledge, has been reasonably well or well recorded. However with the procedural knowledge the comment is made that maybe too much is being casted in procedures. *"The advantage of it is that everybody talks the same language, but the disadvantage is that suddenly everything has to be done in procedures. People handle this rather rigidly while the procedures are meant to be flexible"*, according to a respondent. Which know-what knowledge is being recorded differs per service line. Some service lines lay down explicit knowledge about clients and markets, other service lines mainly record knowledge concerning content of projects. This knowledge is only accessible for the employees of the service line in question. The respondents are all of the opinion that within ICT Ltd. much information is already laid down in the form of e mails, letters, faxes, documents and the like. But this information is left lying around the whole organization. *"When this information is being stored and opened up in a structured way, this would be a considerable headway for ICT Ltd. in easily retrieving important information"*, according to the head of the department covering knowledge management. About the stimulation of the management the respondents have different opinions. Two respondents are of the opinion that the management supports them sufficiently to record their knowledge. The other two respondents, one of them the head, say that the management ought to stimulate them more to record subject content knowledge. They are of the opinion that recording knowledge and skills must be extorted by means of a procedure or rule, because some people do not take that responsibility themselves. It is even being suggested to make the recording of knowledge and skills part of the assessment. There is no difference of opinion about the fact that colleagues hardly pay attention whether it is being set out according to which method one works. This is in particular because of the culture of ICT Ltd. There is a very friendly atmosphere, this makes it very difficult to tell each other what could have been done better. The respondents regret this because at the moment ICT Ltd. has a high staff turnover and as a result much knowledge disappears from the organization. One of the respondents also experiences having own storage methods which are inaccessible for others and a lack of a convention about formats, as bottlenecks in the field of the recording of knowledge. There are no rules for assigning a name to a file. *"Most of the time information is being put on one's own laptop computer. There are hardly any common directories. When there are common directories these are only accessible in the office and not when you are at a client's house or at home"*, according to the employee of the department covering knowledge management.

Dissemination of Knowledge. With regards to the dissemination of knowledge the respondents experience only few bottlenecks Much knowledge is being spread by means of the informal circuit. This is being experienced as pleasant, but the corridors also cause much 'noise on the line'. The employee of the department covering knowledge management said about this: *"If there is no communication, people will fill in the dots themselves. If they do no longer know it, they start pointing and usually the general manager is the fall guy"*. The head denominates the informal circuit 'the place where you can do business quickly'. *"It's like 'I am working on this, do you know someone who knows more about it?'"*. According to the respondents the informal circuit has advantages over the formal circuit. It is accessible, 'safe', easy and quick. A disadvantage is that it is more difficult to supervise, to control and to survey than the formal circuit. One respondent is of the opinion that maybe the informal circuit has become so big because of the lack of a good formal circuit. When it is being recorded in a user-friendly accessible system who works on what and who has which knowledge and skills, the informal circuit becomes less vital.

Nearly all respondents experience the fact that within ICT Ltd. much knowledge is inside the heads of the employees as a problem. One respondents does not consider it to be a problem that much knowledge is inside the heads of the employees, but the fact that this knowledge is not recorded is a problem. The head of the department covering knowledge management is of the opinion that *"this implicit knowledge is a fortune, but it would be worth something if ICT Ltd. would be a little less dependent on the physical presence and effort of employees with a lot of implicit knowledge"*. Much personal knowledge is being lost when an employee leaves the organization. It is also difficult to lay down this implicit knowledge in systems. There are different ways to solve this bottleneck. Good facilitation of knowledge management increases the chance that good employees do stay. Because of this the search for relevant information takes less time and projects pass off more efficiently. A good knowledge management system also enlarges the pleasure in one's work. In any case it expels a number of frustrations. A second solution is to link a senior with a junior. But within ICT Ltd. they do not have the nerve to give a senior each week a day off for this. With the issues of the day the external clients take precedence. Too much attention is being paid to the short-term results. The fact that ICT Ltd. is quoted on the stock exchange is being used as an excuse for this. According to the director the implicit knowledge and the experience of the employee who leaves the organization is also being reflected in advice reports and products. According to him there is in this *"an implicit knowledge transfer in the way in which the work has been done. Others can learn from this. "*.

Three of the four respondents take the view that sharing knowledge with colleagues strengthens the position in the organization. *"For when you share your own knowledge, you are more likely to get knowledge back from others"*, according to these respondents. Respondent number four states that many employees of ICT Ltd. find the sharing of knowledge with colleagues threatening. He says about this: *"People are afraid to lose prestige when they yield up their knowledge"*.

The fact that employees never change functions is being considered as a bottleneck in the field of the dissemination of knowledge. The respondents agree that function changes do not or hardly ever occur within the company. Function changes are also rather difficult because the roles and tasks of the different employees diverge too much. According to the director: *"It is hardly possible for a programmer to carry out the tasks of an advisor during a month and vice versa"*. However, there are many different projects demanding various skills of the employees. Apart from the exchanges in the projects, within ICT Ltd. one works almost always with interdisciplinary team compositions. The respondents find this very worthwhile, because in this way much knowledge is being disseminated. Next to that because of this new knowledge is being developed since you learn from each other.

Only the director takes the view that the employees of ICT Ltd. provide each other with too little information about work experiences, courses they have taken and/or projects. Good methods within a project are not explicitly registered and disseminated. Sometimes this knowledge is being disseminated in an informal way, for instance in the corridors. One is reasonably open about problems and mistakes. The employee of the department covering knowledge management refutes this. There is more talk about others than with others. More is said about this under the heading 'culture of the organization'.

Development of Knowledge. The head of the department covering knowledge management and also an employee of that department take the view that it happens within the company that the same knowledge is being developed at two different places in the organization. They say that this is caused by lack of information about the activities of colleagues. Both respondents experience this as a problem. It costs time and therefore money. The director of the organization also indicates that indeed it happens once in a while that the same knowledge is being developed at two different places in the organization but he does not consider this to be a problem. About this he says: *"it's better that the same knowledge is being developed at two places in the organization than that this knowledge is not being developed at all. Indeed it's a pity about the time, but in any case the employees have learned"*.

ICT Ltd. has reasonable to good contacts with research institutions. Students frequently do a work placement or their subject for final project at ICT Ltd. Both parties profit from this. In this way both the student and Automatisering BV acquire and develop knowledge.

The respondents all take the view that ICT Ltd. offers them enough room to experiment with, for instance, new working methods. The development of new knowledge is even one of the items of the evaluation. The employee of the department covering knowledge management is of the opinion that within the company the work is primarily done by routine. But according to him this working by routine does not hinder the knowledge management process. *"Certain activities have to be executed by means of certain fixed steps"*, according to this respondent.

Application of Knowledge. According to the respondents new knowledge and/or methods are well applied. Knowledge is being applied with the working for clients, the writing of articles and with internal consultation. For the execution of assignments knowledge acquired earlier is always being used to arrive at new understandings. The respondents do not experience any difficulty with the application of knowledge of colleagues. There is no fear that knowledge of colleagues is of insufficient quality. Everybody takes the view that the application of new knowledge is important. The director says about this: *"there is no culture 'I have always done it this way, it always worked, so why should I change"*. Furthermore, according to the respondents, the employees for whom new developed methods are intended are sufficiently involved in this development.

Organizational Factors Influencing the Knowledge Management Process

Structure of the Organization. The opinions about the length of the communication lines of ICT Ltd. differ. Only the head of the department covering knowledge management says that the communication lines are short. *"A culture of calling very quickly and walking into each other's room when you have a question is prevalent"* according to the respondent. The communication lines to the management and the board could be shorter. The other three respondents share this view and experience it as a problem. Because of this the knowledge feedback is slower. In general employees find it difficult to walk into the room of the director. On the other hand the director is of the opinion that: *"if I get an e-mail message or a phone call from an employee, I answer it the same day. Sometimes I do not succeed in answering it the same day, but then I always inform the person in question about this"*. The director also gives the following example that aptly expresses the situation with regards to this: *"I heard from a colleague that person X wanted to ask me a question about a certain subject. He did not dare to call me, so my colleague advised him to send me an e-mail. It took a week before he had summoned up his courage to send me a mail message. I replied the same day, and he was so amazed that he went to my colleague to tell this remarkable news"*.

The same respondent who takes the view that the communication lines of ICT Ltd. are short, also says that the staff turnover within the company is relatively small, anyway when you compare it with the holding. The other three respondents take an opposite view. All three experience the big staff turnover as a problem. It happens regularly that employees with unique knowledge and experience, which in most cases has not been recorded, leave the company. According to the employee of the department covering knowledge management, the most important cause of this is the fact that employees are being hindered in executing their work properly. Too many internal matters have to be solved by the employees themselves.

Discussions of progress are regular agenda items according to the respondents. The employee of the department covering knowledge management takes the view that during meetings too much time is being spent on discussions of progress. He says about this: *"let's stop that nattering and get to work!"*.

Culture of the Organization. According to the respondents the emphasis is mainly on the short-term results. This is so because ICT Ltd. is an organization quoted on the stock exchange. *"Now and then you have to show quick wins, because otherwise you will not get any room to go on"*, according to a respondent. This short-term thinking adversely interferes with the process of knowledge management. Because of this one handles knowledge pragmatically. The result of knowledge management only becomes visible in the long-term, because of this it is difficult to indicate how much benefit one derives from an investment, for instance a database.

Three respondents take the view that within ICT Ltd. one can openly talk about mistakes and insecurities. Only the employee of the department covering knowledge management disagrees. They look at your mistakes when you are being squared up. In case of a mistake it is like 'what a failure' instead of 'I learned something from that'. One of the causes of this can be the fact that the company from way back stems from a government culture. The respondent is of the opinion that this bottleneck enormously obstructs the knowledge management process. *"When there is no willingness to learn from one's own mistakes, possible other points of improvement are also not being passed on to others. Next to that within ICT Ltd. knowledge is still often considered to be power, because of this employees are often not willing to openly share knowledge at tactical and strategical level"*, according to this respondent.

About the question whether the management of ICT Ltd. gives the good example with regards to knowledge management, the opinions are divided. The director and the head of the department covering knowledge management take the view that the management not only promotes knowledge management but that it also applies knowledge management reasonably well. The other two respondents are of the opinion that more stimulation from the management is necessary.

Strategy of the Organization. All respondents agree, indeed to a greater or lesser degree, that knowledge management is a part of the strategic policy of the company. The respondents experience this as being important. In this way employees get the feeling that knowledge management takes priority. This can also be realized by incorporating knowledge management in the objectives of ICT Ltd. Because of this, employees are more inclined to acquire knowledge, to record, to disseminate, develop and apply it. Having a knowledge policy, describing how the phases of the management process can be interpreted, is considered to be less important.

The employee of the department covering knowledge management indicates that strategy is something very nice but it has to be converted into decisiveness. It not infrequently happens that ICT Ltd. is lacking in decisiveness. There is much talk, much is being written down, all kinds of plans are being made, but subsequently nothing is done with it. Employees themselves do no longer expect that the plans will be put into action. The decision-making is very slow as a result of the reigning hierarchy. Almost all decisions are being made by the general manager. As project manager you hardly have any elbow room.

Knowledge Systems of the Organization. Different service lines have their own knowledge system, mainly in the form of an Intranet, but the cohesion and the integral accessibility leave something to be desired. In most cases only employees of the different service lines have access to the knowledge system of their own service line. Next to that ICT Ltd. has an intranet exceeding the organization. Two of the four respondents, one of them the employee of the department covering knowledge management, take the view that this Intranet is not up-to-date and access is difficult. Next to that feedback of information takes a lot of time, because of this it often does not take place. One of the respondents describes the state of the Intranet as follows: *"nothing at all happens on that Intranet, nobody looks at it, and if you do take the trouble to have a look at it you find dead links and references to people who no longer work for us, and in a few cases to someone who has already died"*. An outdated version of Microsoft Office is being used. This makes the exchange of data difficult: not only with customers but also with sister companies, because the sister companies do not use the same standards.

Too often one thinks that a knowledge system is the solution for many problems. So for each problem a new system is being bought. One often forgets that knowledge management is more than an Intranet. The human factor, for example in the form of a knowledge broker is often forgotten. The head of the department covering knowledge management says about this: *"when I have a problem in the issues of the day, my first thought is 'who can help me with this' and then I make one or two phone calls. Only when I do not succeed I'll start looking in systems."*

Within ICT Ltd. mail facilities are being used a lot. In that Internet certainly has a value.

Conclusion and Discussion

About the phase of knowledge acquisition three employees say that they have not enough time for knowledge acquisition and sharing. The management team of ICT Ltd. does not make time for the evaluation of projects, for knowledge exchange meetings, for writing short reports or giving short presentations about an attended course. Yet the director takes the view that he does stimulate his employees with regards to these points. It seems advisable to create more time for above mentioned activities.

There is no good insight into where knowledge is located in ICT Ltd.. Nothing has been recorded about which specific knowledge and skills the different professionals have at their disposal. Because of this, it takes a lot of time to find the right employee with the right qualities. Both Bertrams (1999) and Davenport & Prusak (1998) mention this problem. According to Davenport & Prusak (1998) knowledge mapping can be helpful to improve the matching of knowledge with people. The respondents mention this solution themselves. They consider Purple Pages to be a solution for this. In these it is being recorded which competencies each employee has at its disposal, in which projects he or she has participated and at which projects he or she is working now. ICT Ltd. does register what the market asks.

All the time and in different ways (formally and informally) knowledge about the needs of the clients is actively being gathered. It is remarkable that the respondents take the view that no active knowledge policy based on these data is being pursued.

The respondents are of the opinion that the management does not provide enough stimulation for attending courses or a seminar. They do remark that during projects much is being learned. It seems that these professionals do not know what they must learn. This problem is being mentioned by Bertrams (1999) and he takes the view that there is a danger that because of this, the motivation to learn decreases. Bertrams (1999) comes out with a solution: goal-oriented career planning and learning based on a good picture of the knowledge an employee ought to have at his disposal according to ICT Ltd. in order to be able to rise to a desired position and an intended competence level.

There is also dissatisfaction about the phase of codification. Three employees say that they have not enough time to codify knowledge. Moreover, access to knowledge and information is difficult at ICT Ltd. and to the extent knowledge is being recorded, it is not being kept up-to-date. Furthermore, employees are not being stimulated to lay down knowledge. It seems advisable that ICT Ltd. in the near future critically revises its use of information technology systems and decides which systems such as internet, EDI, intranet, MID, DSS, ERP and mechanisms such as data warehousing, data mining, knowledge mapping, electronic libraries, are most usefull for the exchange of knowledge in ICT Ltd. and which persons will be responsible for keeping them up-to-date and running (Sprague, & Watson, 1996).

There is also dissatisfaction about knowledge dissemination. Because explicit and tacit knowledge has not been adequately codified in a knowledge system, the informal circuit plays an important role in the dissemination of knowledge. The respondents say about the informal circuit that it is easily accessible, flexible, easy and quick. The importance of the informal circuit for the dissemination of knowledge is being endorsed by several authors (Nonaka & Takeuchi, 1995;Davenport, & Prusak, 1998) in particular for the exchange of tacit knowledge for which face-to-face contacts are essential. However, the respondents complain about poor knowledge exchange with regards to work experience. Much knowledge is inside the heads of the employees and because this is not being recorded this disappears as a result of a frequent considerable staff turnover out of the organization. Nonaka & Takeuchi (1995) and Davenport & Prusak (1998) mention approaches such as apprenticeships and mentoring and a method like videotaping as solution to make this tacit knowledge explicit. Bertrams (1999) recommends passing on new knowledge already during the development of knowledge. Other methods to learn from experiences in projects are the creation of learning histories (Kleiner & Roth, 1997) and creating a favorable culture to stimulate communities of practice in which these experiences can be exchanged in a more informal way on a day-to-day basis (Wenger, 1999).

There is also dissatisfaction about knowledge development/creation. Within ICT Ltd. it happens that the same knowledge is being developed at two places. The employees especially experience the loss of time because of this as a problem. In the literature this problem has already been mentioned by Nonaka & Takeuchi (1995). A knowledge system with a good overview of where and with whom knowledge can be found within the organization and what each employee is doing at this moment could offer a way out. Although all respondents take the view that there is enough room to experiment and that the development of knowledge is even a part of the assessment at ICT Ltd., the knowledge manager says that there is relatively too little attention for the development of new knowledge. This problem has already been mentioned by Bertrams (1999).

The employees of ICT Ltd. experience no problems with the application of new knowledge. Barriers for the use of new knowledge mentioned by Bertrams, such as aversion to risk, fear for problems with colleagues who want to go on using older knowledge and insufficient support are not being mentioned by the respondents of ICT Ltd.

Structure. According to several authors (Bertrams, 1999; Nonaka & Takeuchi, 1995) long communication lines, a high staff turnover, not having regular discussions of progress and not working in a project based way are bottlenecks negatively influencing the knowledge management process. The first two bottlenecks are being mentioned by the respondents. They experience communication lines to colleagues as short and communication lines to the management as long. The staff turnover at ICT Ltd. is high. As already has been noted, because of this, unique personal knowledge disappears out of the organization. The last two bottlenecks do not occur. There is regular discussion of progress and they work in a project based way in ICT Ltd. The company already has a characteristic of the hypertext organization mentioned by Nonaka & Takeuchi (1995): the project-team layer, the working in projects for which the right persons are being deployed per project. However, ICT Ltd. lacks a knowledge based layer where new generated organizational knowledge is recategorised and recontextualised. Newly acquired knowledge remains for a large part in the heads of employees. Next to that ICT Ltd. has the characteristics of a flatter network structure which certainly has a positive influence on knowledge dissemination within the organization.

Culture. Of the culture mentioned by Watkins & Marsick (1993) that is learning oriented, with beliefs, values, and policies that support learning; for example, tolerance for mistakes as opportunities for learning and problem solving, and policies that reward knowledge and the sharing of knowledge as well as rewards for performance only a few traces can be found at ICT Ltd. Although much is being learned during the working in projects, no efforts are being undertaken to systematically lay down this knowledge or to share it with others, and there is no aspiration to systematically gear the competencies of the individual employees to the (future) strategy of the company by means of courses or otherwise. Furthermore, the respondents have different opinions about being able to talk openly about mistakes and doubts. And ICT Ltd. does not have policies that reward knowledge and the sharing of knowledge and offers as well rewards for performance. The respondents also differ in opinion about the question whether the management sets a good example with regards to knowledge management. Trust is not visible in this organization. Of the essential variables from the organizational culture mentioned by Bertrams (1999), such as: feedback (what happens with my knowledge), the variety of skills (do I get the chance to use that which I am learning), the recognisibility of the task (does that which I am learning add a surplus value to my ambition), the significance of the task (do I help the organization with my behaviour) and autonomy (do I get enough freedom to learn), the respondents only mention variety and autonomy. Furthermore, ICT Ltd. does exhibit the characteristics of an enterprising culture, in which innovation independent work and initiative is being expected from the employees and one works in a dynamic risky environment, but with the exception of working in teams, ICT Ltd. hardly displays characteristics of a group culture.

Strategy. ICT Ltd. has included knowledge management in its strategic policy, but the strategy is insufficiently converted into decisiveness, according to a respondent. Within ICT Ltd. there is no aspiration to systematically gear the competencies of the individual employees to the (future) strategy of the company by means of courses or otherwise.

Knowledge systems. It is important that the knowledge systems are up-to-date, well accessible and user friendly (Bertrams, 1999 and Davenport & Prusak, 1998). The knowledge systems of ICT Ltd. are not being maintained properly, are not up-to-date and the information is incomplete. It is remarkable that the director is satisfied with the current knowledge systems. The fact that the different sister companies work with different standards is considered to be a big bottleneck within ICT Ltd. The respondents take the view that the value of electronic knowledge systems must not be overrated. Especially in small organizations a knowledge system on paper can also function excellently. In larger organizations and in organizations with several branches an electronic knowledge system is indispensable, according to the respondents. In these kinds of organizations it is impossible to know who has which knowledge and skills, who has executed which projects and who is currently working on which project. Davenport & Prusak (1998) are endorsing this view. Yet as already mentioned it seems advisable that ICT Ltd. in the near future critically revises its use of information technology systems and decides which systems such as internet, EDI, intranet, MID, DSS, ERP and mechanisms such as data warehousing, data mining, knowledge mapping, electronic libraries, are most usefull for the exchange of knowledge in ICT Ltd. and which persons will be responsible for keeping them up-to-date and running (Sprague, & Watson, 1996).

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Using a Human Capital Framework to Inform Human Capital Investment Decisions

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This study analyzes organizational capabilities strategy from the human capital perspective. It includes the development and application of a methodology for utilizing a human capital framework to develop an organizational capabilities strategy, and an investigation into the resulting human capital implications.

Key Words: HR Strategy, Human Capital Investment, Organizational Capabilities

There has been an increased focus on human capital and the strategic management of an organization's talent pool in the past several years as organizations struggle to attract, develop, and retain the best and the brightest employees (Gubman, 1998). Unfortunately, strategies to analyze the capabilities needed to thrive in a knowledge economy and the accompanying organizational support systems are lacking. This study was intended to provide a vehicle that human resource professionals can use to increase their involvement in the development of organizational strategy. In addition human resource strategies and initiatives can be more appropriately aligned around those capabilities that have the greatest impact on the success of the firm.

Theoretical Framework

Human resource professionals have been challenged to gain legitimacy in the strategic planning and thinking of their organizations and have been encouraged to do so through an understanding of the business implications of effective human resource practices (Ulrich, 1997). Other than training in business strategy and encouragement to view the firm through the eyes of the line managers they serve, there has not been a pragmatic way for human resource professionals to engage in strategy development for their firm (Torraco & Swanson, 1995). Human resource leaders do not often participate as full partners in strategy development, but instead are engaged in the deployment of a strategy developed by others in the hierarchy (Jarrell, 1993).

A number of economic, demographic, and technological factors are converging to increase the competitive advantage of including a human resource perspective in the strategy process. The last several years have produced a period of low unemployment throughout the United States (Branch, 1998; Fenn, 1997; Rifkin, 1995). The increasing demand for labor is coupled with a demographic phenomenon of an aging population and a shortage of new entrants to the workforce (Greco, 1998; Gubman, 1998; *Working in America: A Chart Book,* 1988). In addition to those factors, employers are seeing the application of technology and the need for knowledge workers reach an unprecedented peak (Bassi, Benson, & Cheney, 1996; Report on the American Workforce, 1994; Salamon, 1991).

The convergence of these trends provides an opportunity for human resource professionals to demonstrate the criticality of their role in the development and validation of organizational strategy. To engage the organization they will need to demonstrate value through the perspective of the asset they oversee, human capital. This role requires an understanding of how human capital contributes to the value of the firm and how that value can be measured and leveraged to gain competitive advantage in the marketplace.

There is an emerging approach to organizational strategy focused on an organization's capabilities as a source of competitive advantage. Capabilities involve the integration or linking of activities in the value chain, they represent the skills, resources, processes and technologies of a firm (Duncan, Ginter & Swayne, 1998). The key is in focusing a strategy around these "uniquely developed set of core intellectual and service capabilities important to customers" (Quinn, 1992, p. 50).

As human capital is increasingly being recognized as the most critical source of organizational capabilities (Stewart, 1997), it is imperative that this asset be leveraged to provide optimal value for the firm. Analyzing the value of human capital requires an examination of an organization's competitive positioning, and a fundamental understanding of how capabilities contribute to the value of the firm. Understanding the value of human capital requires a new and different analysis approach, one that can surface the sources of competitive advantage, propose a strategy for leveraging that advantage, and implement appropriate measurement system.

This study introduces an organizational capabilities strategy process that allows human resources professionals to develop and align human resource practices in a way that increases human capabilities. The framework and methodology engages senior human resource professionals and key line managers to examine their value chain, identify external and internal opportunities, and recognize constraints for the purpose of developing a capabilities strategy for an organization. This process will investigate how capabilities create value for the firm and examine the human resource implications that result from this strategic approach. The framework will be used to analyze the impact and effectiveness of investments in human capital and allows the organization to view strategic advantage through a human capital lens.

Research Questions

The fundamental question driving this study was: How does an organization develop an organizational capabilities strategy from the human capital perspective and what are the resulting human resource management and development implications? The research being reported in this paper focused on two sub-questions:

1. Can a human capital framework be used to develop a sound organizational capabilities strategy from the human capital perspective?
2. What human capital decisions emerge throughout the organization as a result of using the human capital protocol?

Research Methodology

The research followed the general guidelines for case study research put forward by Yin in his book, *Case Study Research: Design and Methods 2nd Edition* (1994). The subject of the case study was Select Comfort®, a rapidly growing company that went through an initial public offering in December of 1998. The company is a leader in sleep solutions focusing primarily on using air technology for beds and sofa sleepers. They currently manufacture and sell their products through retail channels and direct mail. The organization was selected because they have realized rapid growth in the few years since their inception, and with the recent IPO find themselves is a situation where their constraints are capabilities, not access to capital or customers. The organization presents a unique opportunity to investigate the applications and outcomes of a capabilities based strategy process.

Capabilities Strategy Protocol

The research questions were analyzed by probing into the human capital implications of the organizational capabilities strategy. These implications were examined through a series of working sessions in which the researcher worked with the organizational leaders and HR Team to facilitate a the development of a human capital strategy using the People SCOPE™ framework. The PeopleSCOPE™ framework is introduced more fully below. The protocol used to guide the study is summarized in Table 1.

The research incorporated organizational data gathered through the fieldwork, interviews, and training experiences to examine the results of leveraging HR investments that support the organizational strategy. The research was not longitudinal and was not intended to examine the financial results of the implementation of a capabilities strategy. Instead the research was intended to look at how HR investments are positioned, what decisions can be made as a result of using a human capital framework, and to demonstrate how human capital investments can provide value for the firm. The research centered on how the HR leaders can present HR investments that contribute to the achievement of strategic organizational objectives.

Human Capital Framework

The framework used for this study has been proposed as a way to analyze the human capital implications of a firm's strategy, or to build an organizational strategy that leverages human capital. The framework first appeared in the literature as the *PeopleVantage Model of Strategic Human Resource Management* (Boudreau, 1998). The model was further developed and positioned primarily as a way to convey the synergy between organizational strategy and human capital investment (Boudreau & Ramstad, 1999a). The resulting framework, the PeopleSCOPE™ Human Capital Framework (Boudreau & Ramstad, 1999b) can be seen in Figure 1.

Table 1. Proposed Capabilities Strategy Protocol

Step	Process	Outcome
1	Planning Develop plan/Timeline Identify key participants	• Key milestones developed, briefing package for the organizations • Overview of the PeopleSCOPE™ framework
2	Field work in the organization Interviews Systems & models Financial & Strategic data review	• Gather data on 1st two levels of the framework • Mental models (beliefs) identified • Value chain defined • Strategic view of the organization
3	Identify trio by value chain element Line Manager Information Specialist Senior HR Leader	• Triad members identified, date set for team event • Includes participants who can validate the business process constraints and who understand the human capital implications of these constraints.
4	Training for HR Team	• HR leaders briefed on the PeopleSCOPE™ framework and the tools to discover HR implications throughout strategy process and understand their role from a human capabilities perspective
5	Team event Value Chain Analysis Identify Constraints	• In-depth understanding of where capabilities add value and the human capital implications • Focus on the strategy analysis gathered on the 1st two levels of the framework and the implications for the pivotal roles • Co-facilitated by the HR Team
6	HR Debriefing Session	• Organizational models and capabilities analyzed: Pivotal Roles, Aligned Action, Human Capacity • Resulting HR strategy
7	Develop HR Strategy	• Analyze the HR practices that impact the Pivotal roles and propose and HR Strategy to address the gaps
8	Brief Results	• Engage Leadership Team in Ownership of HR Strategy • Present Measurement Models

The framework presents a process whereby an organization can analyze the effective deployment of capital by looking at how investments in HR activities contribute to increased capabilities, opportunity or motivation

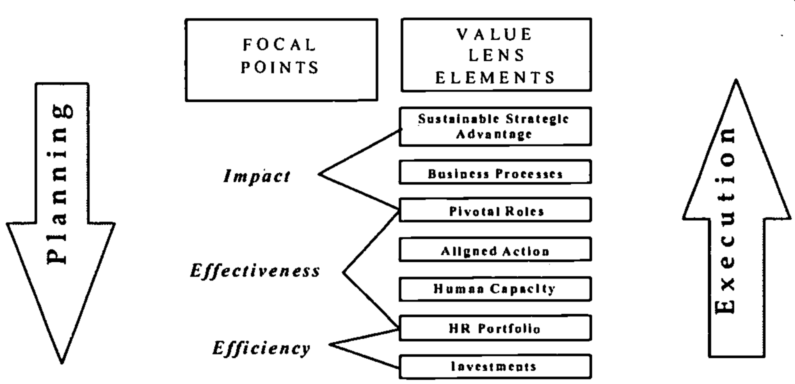

Figure 1. The PeopleSCOPE™ Human Capital Framework

necessary for aligned action in pivotal roles. The investment is only truly strategic, if in addition to efficiency and effectiveness, the interventions are focused on improving the business processes that have an impact on sustainable strategic advantage.

To provide further insight into the potential applications of the PeopleSCOPE™ Human Capital Framework it is helpful to understand the intended use and also the process that a researcher or practitioner would undertake to uncover the key human capital implications. The framework is intended to build line of sight from an organization's people to the specific elements of competitive advantage. The framework builds on business strategy, value creation, financial analysis and strategic human resource management to analyze economic value through the human capital lens (Boudreau & Ramstad, 1999b).

Questions are asked of the organization at each level of the framework that are intended to uncover the human capital implications of the strategic positioning. The key capability questions asked at each level of the framework are presented in Table 2.

Table 2. Capability Questions Asked for Each Value Lens Element of the PeopleSCOPE™ Human Capital Framework

Value Lens Element	Primary Capability Question	Secondary Capability Questions
Sustainable Strategic Advantage	How do we compete?	What unique value do we create within this industry? What value chain elements are critical to success? How do we generate returns from the value created?
Business Processes	What must we execute well?	How do our processes link to the value chain? How does our network of processes create: sustainability, synergy, and advantage?
Pivotal Roles	Which talent pools make or break key business processes?	Affect the critical constraints. Build and protect the strategic resource. Variance in performance has the greatest strategic effect.
Aligned Action	What employee behaviors make the biggest difference?	What are the moments of truth? Which behaviors most affect business processes? Which behaviors most affect key constituents?
Human Capacity	What people elements must exist? (COM)	Capability-Can they do it? Opportunity-Do they get the chance? Motivation-Do they want to?
HR Bundles	What work practices support high performance?	Staffing, Development, Compensation, Communication, Organization Design, Succession Planning
Investments	How do we allocate scare resources?	Money, HR Staff, Employee time, HR Influence, Leadership Attention

These questions were developed to facilitate a discovery process that could be led by the Human Resource function or initiated at various levels within the organization where human capital constraints affect strategy execution. The first two elements are primarily focused on the organization strategy while the following five begin to delve into the human capital implications of the organizational strategy and key business processes.

This framework allows for an examination of the impact that capabilities can have on the accomplishment of strategic objectives. There is also an opportunity for HR leaders to analyze the human capital implications of a given organizational strategy. The framework can be used to move the HR focus from one of efficiency and effectiveness to a concentrated effort looking at HR investments that have a financial and strategic impact on the organization. The application of this framework to identify and analyze human capital issues that are affecting key business processes is fundamental to the ability of the organization to sustain strategic advantage. This perspective changes the approach that HR professionals use in proposing HR investments.

Results and Findings

The HR team, which included the Directors and VP, worked with the researcher to examine the human capital implications that emerged as a result of the data gathered for the first three steps of the human capital framework. The outcome was to develop a plan to leverage HR investments to create value for the firm. Examples of how human capital decisions can create value for the organization will be presented in the discussion below.

Organizational Capabilities Strategies from the Human Capital Perspective

An illustration provided by the researcher summarized the nature of the decisions that surfaced during the analysis. There was considerable interest in the financial and strategic impact of the current recruiting initiatives. The following example provides a baseline that the HR leaders could use for evaluating alternative human capital strategies and also provides the process steps around which all of the HR areas can be aligned to ensure organizational impact of HR investments.

The organization's strategy mandated a concentrated focus on the retail distribution channel as a source of competitive advantage. The constraints that challenged the retail value chain were sales professional dependent. For every retail employee hired:

- 20 Resumes/Applications are screened
- 10 Candidates are phone screened
- 4 Candidates are interviewed in person
- 1 Person is eventually hired
- The current turnover rate is 100%

Given this data, filling 2000 positions for the upcoming year will require 40,000 resumes/applications to be screened, 20,000 phone interviews, and 8,000 in person interviews. The issue is not only the magnitude, but the cost as well. The HR VP commented "We're spending thousands of dollars in recruitment fees. For the dollars we have spent alone in recruitment fees in a year, you could hire six people."

Once the magnitude was understood, the HR Team was in a position to start brainstorming how they might align their efforts, including adding regional recruiting centers, employee referral bonus programs and massive advertising campaigns. While these ideas had merit, the recruiting effort needed funding. This issue was addressed by reviewing the data gathered via the human capital framework and introducing the threshold ROI approach. The goal was to have the team understand the strategic and financial implications of their recommendations and also to understand how to present their human capital initiatives to the managers of the business units they support.

Using data gathered early in the protocol, it was determined that the district sales managers are spending at least 40% of their time recruiting and hiring. It was also stated that the median price for a bed was $1,200. Successful sales professionals sell three to four beds a week for an average of about twelve beds per store per week. With 332 stores currently open and the figure expected to rise to 345 stores by year end the impact of one more bed per store per year is 345 x $1,200 for a total of $414,000. The $414,000 is the amount available to be invested in recruiting and hiring if management believes that having their district sales managers in the stores two more days a week (40%) will help them sell one more bed per store per year. The threshold ROI approach incorporates financial data already known about the business and proposes the intervention in a way that allows the senior managers to make an informed investment decision. In this case, management had identified having the district sales manager visible and involved in the stores as a key success factor. Positioning the decision in a more compelling way makes the HR investment an easier sell. Such as "'What is it worth to you to have your district sales managers in the stores two more days a week?" "Could you sell one more bed per store per year if the district sales manager were available to be in the stores two more days per week?" This discussion demonstrates the strategic perspective of human capital and lays the groundwork for investment in capabilities. In this particular case when the Director of Retail Human Resources presented this example to the Senior VP of Retail his response was "now you're thinking".

Analyzing the appropriate investment of resources in particular HR initiatives or bundles, the HR professionals are in a much better position to align their efforts. In this case there may be retention strategies, which include training, that ensures that the sales professional is more successful and thus stays longer with the organization. There may be an opportunity to provide bonuses based on tenure or to managers who are better able to retain their successful sales professionals. This analysis can also be used to determine the amount of investment in recruiting, and even to determine the financial impact of a change in the compensation structure.

The point for the HR Team and for others within the organization is that starting the analysis with an understanding of the sustainable strategic advantage and key business processes provides a "line of sight" to pivotal roles within the organization. Once the pivotal roles are understood from a strategic perspective, HR professionals are in a much better position to analyze the behaviors that most impact the business and determine whether the constraint is one of capability, opportunity, or motivation. This understanding provides the strategic context for recommending HR investments to build capabilities that will have the greatest impact on the organization. Using the sales professionals as a pivotal role, the following section will illustrate how this organization is using a strategic approach to building capabilities within their sales function and how these investments can create value for the organization.

Human Capital Decisions that Create Value for the Firm

The study resulted in the development of a five-year HR strategic plan. Of the initiatives outlined in the plan, the area that has received the greatest amount of management support and interest was in the attraction, motivation, and retention of sales professionals. The business strategy is dependent on a successful approach to recruiting and hiring these employees, and the senior management of the retail sales channel has acknowledged the importance of placing and keeping key people in these roles. Management has also shown a willingness to partner with the HR staff to develop solutions that are not only efficient, but that have the biggest impact on achieving the organization's strategic and financial goals.

The sales professional role is critical for a number of reasons that need to be illustrated here. There are very few sales professionals in any one store. In fact stores with $1,000,000 in annual sales revenue operate with a sales force of three to four people. It should also be noted that there are large variances in performance between the high performers and the average performers, and a strong correlation between tenure and sales performance. There is great benefit to having a high performer in the store as evidenced from the sales figures, and those higher performers tend to have a longer tenure. While differences in performance for high and average performers can be illustrated, it is not known how much poor performers hurt potential sales and brand image beyond the fact that the sale was not made. In other words, there is a potential revenue loss that is not captured when poor to average performers are allowed to continue to work in the store. It is also important for the accomplishment of the organization's growth strategy that potential district and regional sales managers be identified. While their performance may be evidenced in their sales figures there have been instances where a Sales Professional who was only rated as average in sales performance went on to become a highly effective District Sales Manager, managing high performing stores and sales professionals.

The question then posed to the HR leaders was how to develop strategies that allow them to attract and retain these key employees. They also needed to analyze and recommend practices that support high performance. In order to accomplish these objectives there has to be a focus on where to invest money, HR staff time and influence, employee time, and leadership attention. This determination needs to be based on a "line of sight" to the business drivers and how the role of the sales professionals contributes to organizational goal attainment. The questions that need to be answered start with what attracts potential candidates to this position, what they are looking for, and what motivates them to stay and perform well. There also needs to be a way to assess their potential and performance over time. Finally, there needs to be an understanding of the obstacles to their success and an examination of those work practices that inhibit their ability to achieve sales quotas.

In the examination of the sales professionals in this study, a number of HR strategies have been suggested. The hiring requirements present a significant challenge for HR given that they currently are managing the entire Retail side of the business with one director, two recruiters, and two generalists. The answer however, is not simply hiring more recruiters, but analyzing alternatives to managing the entire staffing process. The initiatives that have started as a result of this study include:

- Developing a competency model to include behavioral anchors and standards for all Store Managers and Sales Professionals.
- Creating a custom interview guide to help Sales Managers select Sales Professionals based on the competency model.
- Establishing a performance management system that rewards behaviors determined to be desirable.
- Establishing a measurement system that compares actual performance to predicted performance of Sales Professionals to validate the accuracy of the interview guide in predicting behavior.
- Comparing the predictor data for each Sales Manager to assess which managers are better at identifying successful Sales Professionals.

One of the first processes being initiated is an examination of the behavioral competencies needed to be successful in the sales professional role. While there is currently an interview guide available to the store managers, it is not being used consistently and in fact may not be providing insight into what makes a successful sales professional in this organization. The Sr. VP of Retail stated that in the past they have tended to hire high energy, gregarious people. "We were practically looking for the stand-up comedian." In retrospect, customers may feel uncomfortable making an intimate purchase from a person hired for these characteristics. In addition these gregarious sales people need a great deal of interaction to be effective and there is not always enough traffic in the store to keep them motivated. The sales professionals spend a great deal of their time on the phone following-up on leads. This type of selling may not be all that appealing to the gregarious, high-energy sales people they have hired in the past. So, in order to enhance their ability to create value the organization needs to look at the competencies demonstrated to be correlated with success for this company. The Retail HR Director made it clear that they can not use a standard competency model for sales professionals since this type of selling is unlike traditional home furnishing selling. The store model is different with the single product and the amount of product knowledge that must be conveyed to the customer.

As a result of the strategic process initiated in this study the organization is now developing a competency based interviewing process that will allow them to maintain consistency in their hiring as well as allow them to increase their likelihood of selecting for success. The process involves understanding the correlation between sales performance and other variables, such as tenure, management influence, promotional activity, and location. Results of the interview guide can be compared at a later time to determine how that person performs against expectations. The data can also be used to evaluate the performance of the hiring manager. If for example, it is shown that a particular manager has no ability to predict future performance during an interview, they may need additional training or be removed from the hiring process. Conversely, if there are people who are particularly insightful they may be used to train other managers in what to look for and how to conduct the interview, or they may take a larger role in the hiring process beyond their region. Each of these alternatives creates value for the organization by increasing the likelihood of hiring candidates who have a high propensity to be successful in the organization.

The proposed competency model needs to be a component of a comprehensive staffing strategy built around the following initiatives:

- attract a larger pool of qualified candidates,
- provide an efficient method for screening out candidates who do not meet the criteria,
- land a high percentage of candidates to whom they have made offers,
- retain a high percentage of the best sales professionals,
- effectively identify sales professionals with the potential to be effective district and regional managers.

One of the underlying pressures is to accomplish all of these objectives while freeing up the managers from spending 40% of their time in the recruiting and hiring process.

Also under way are a number of discussions around the capability, opportunity, and motivation of the sales professionals. While there has been an effort underway to provide additional and better training for these employees, there has been limited analysis on whether the sales professionals have the opportunity to be successful. In other words, do they get the chance to be as successful as they can be? HR creates value for the organization by ensuring that organizational impediments to success are resolved. These impediments can be related to the system, the product, the management, and even the compensation system. HR's involvement in the resolution of any of these barriers creates value for the organization.

It is important that HR professionals analyze the motivational aspects of the job and the talent pool. What practices are in place to ensure that individuals can be successful? What stands in the way? The standard answer to this question usually includes compensation and benefits when motivational studies (Pritchard, 1995), point out that there are a number of factors which contribute to the valuation of rewards, including control systems, productivity, measurement and feedback, and contingent rewards. It is important to understand how the employee's behavior, results of that behavior, and performance contribute to the motivating value of intrinsic and extrinsic rewards.

Conclusions and Recommendations

The study focused on the central question of how an organization can develop a capabilities strategy and the resulting HRD implications. The question was divided into two sub-questions. The first focused on the human capital framework and analysis protocol that was used to provide insight into how the HR group could deploy an organizational capabilites strategy and be more proactive in initiating activities that contribute to organizational success. The HR team elevated their level of strategic understanding and positioning by evaluating HR investments in a strategic context. Looking at how human capital decisions create value for the firm this HR organization used the human capital framework to align their investments with the strategic direction of the business units. Human capital challenges are being addressed at every level and the HR professionals are better equipped to address these challenges and provide solutions that create value.

The second sub-question focused on the human capital decisions that emerged through the process. The first steps outlined in the PeopleSCOPE™ framework require an understanding of how sustainable strategic advantage and business process constraints provide direction for HR alignment. The findings raised questions about the focus on additional distribution sites, requiring additional sales professionals. The sales professional role was considered pivotal for a number of reasons, not the least of which was the sheer volume of sales people needed. Currently there are 1,200 sales professionals staffing 350 distribution sites. If distribution sites grow to 1,200 in five years there would need to be over 4,800 sales professionals by the end of 2004. The prospect of attracting and hiring an additional 3,600 sales professionals would be challenging enough, exacerbating the situation is the organization's 100% turnover rate. Thus the number of people to be hired in the next five years would be closer to 10,000. Articulating these issues and providing a sound framework for evaluating alternatives was a key outcome.

Contribution to New Knowledge in HRD

HRD professionals are being challenged by their organizations to become more strategic in the alignment and deployment of HR investments. The human capital framework presented in this case study provides a vehicle for engaging in discussions centered on sustainable strategic advantage and key business processes. Evaluating HR investments with a line of sight to the impact these investments have on the strategic success of the organization increases the likelihood that these initiatives will be funded. Approaching investment decisions from the capabilities perspective provides HRD professionals with a position of leverage and increases the likelihood that HRD will be included in the development of organizational strategies, not simply their execution.

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Human Capital, HRD and the Knowledge Organization

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Using an economic approach this paper both explains the foundations of HRD and proposes a framework to understand the knowledge organization. The paper proposes economics as the primary theoretical influence of HRD. The theory of human capital and the theory of the firm are first reviewed in their relationship with training. From there it follows a discussion of the knowledge organization and the implications for organization development.

Keywords: Human Capital, Knowledge Organization, HRD Definitions

In recent years there has been a continuous debate about the theoretical foundations of HRD. The current drive originated with McLagan's (1989) and Gradous' (1989) works and was shaped with Swanson's (1995), who proposed systems theory, psychology and economic theory as the foundations of the discipline of HRD. Others, like McLean (1998), have argued if only those or any other theories are needed as foundations of HRD. The discussion has extended to other areas, as Hatcher (2000) recently explored how those foundations have impacted the research and practice of HRD professionals.

Since Gradous (1989) and McLagan (1989), recent literature addresses mostly systems theory (Ruona, 1998; Swanson, 1995, 1998), and less frequently the psychological foundation (e.g., Holton, 1998) or the economic foundation (e.g. Torraco, 1998). Other theories have been added afterwards, but always around the ones included in this debate, like the theory of performance (Weinberger, 1998), or ethics (Swanson, 1997). Notoriously, economics, and specially those economic theories reviewed in this paper, have only been obliquely examined as theoretical foundations of HRD. The few publications on economics as theoretical foundation of HRD either fail to give a comprehensive explanation about the relationship between these two disciplines, or invoke generic approaches to economics.

What we propose here is economics to be the primary or leading theoretical foundation of HRD. If systems theory explains the relationships within the organizations that are to be addressed by HRD, and if psychology provides an understanding of how interventions are to be made and the impact they will have, economic theory explains why investment decisions in developing human resources are made.

Problem Statement and Purpose

Economics has been proposed as one of the theoretical foundations of HRD, and there seems to be a general agreement around it. However, literature has not fully developed an explanation about the relationship between these two fields. A related issue is that whenever economics (i.e., the human capital theory) has been invoked, it has historically focused on training; no explanation has been made about the relationship between economics and organization development. A third problem is that there are critical HRD issues associated with the economic view that remain unseen, even though they have become widely recognized as important for organizations today. In particular, that is the case of knowledge in the organization.

The purpose of this paper is twofold: (a) to review and explain the economic theoretical underpinnings as they relate to HRD; and (b) to propose a framework to understand knowledge in the organization based on the economic theory of human capital. The paper will conclude with definitions of HRD and OD. These issues are crucial for HRD since HRD focuses on improving performance in the organization. Thus, HRD is unequivocally positioned and it is explained because of the economic context of the organization.

Theoretical Framework

Economic Theory as Theoretical Foundation of HRD

Economic theory, although recognized as an important theoretical foundation, has received little attention in the HRD literature. A recent survey reported by Hatcher (2000) indicates that in fact "psychology, followed by general systems theory, and ethics had the most influence on HRD theory and practice" (p. 44). However, economics is always associated with the benefits of training, and financial and other models have been developed to explain the return on investment provided by HRD interventions (Phillips, 1999; Swanson & Gradous, 1988).

Two major economic theories are here proposed as the leading foundations of human resource development—human capital, and the theory of the firm. Other economic theories and areas are related to HRD as well (Cho, 1998), but their contribution in terms of theoretical foundation are not as central. Therefore, we reduce the scope of our explanation to those proposed above.

Our explanation of the HRD economic theoretical foundation (using the theories of human capital and the firm) comes from the realization that they come to a point of convergence when the individual works in a firm. That is, the theory of the firm and the human capital theory will jointly explain firm investments in training (and HRD interventions in general) while the individual is in the workplace. The human capital and firm theories would not be fully understood, had we not had a general context provided by the firm where training occurs. This common area will be the focus of this paper.

The discussion undertaken in this paper is about the *fundamental economic aspects that relate to HRD.* Therefore, it does not neglect the importance of other economic areas and theories like internal labor markets, the principal/agent theory, transaction cost economics, vertical integration and the like. These latter, widely developed in the field of industrial organization, are to further explain related issues, many of them linked to human resource *management* instead. On the other hand, this paper's approach does not neglect the *profound* relationship of HRD with adult education theories or other HRD theoretical foundations and their particular explanation of the field.

Therefore, our primary interest is in how the theory of the firm and the human capital theory inform us about the behavior of the firm and why investments on human capital, or persons, should take place, and how investments in human capital are to improve the productivity of the person and of the firm.

One of the central aspects in this discussion is the realization that there is one *historical* and exclusive trend in explaining HRD from an economic perspective--the theoretical aspects of economics have been always related, in the HRD discipline, to the *training* component. Therefore, there is a need to provide an explanation about *organization development* from the economic perspective. The proposed framework of human capital and knowledge developed in the second part of this paper aims at providing an understanding of the economics of the *organization development* strand of HRD. To understand and develop that framework, we need to first review the core literature on human capital theory and the theory of the firm vis-à-vis the training component of HRD.

Human Capital and the Training Component of HRD. A Review of the Core Literature

Economic theory as foundation of the human resource development discipline can be depicted as in Figure 1. The theory of human capital has been pointed out as the theory that better explains the gains of education and training. What Schultz (1961, 1962), Mincer (1958, 1962), and most notably Becker (1993) explained with this theory is the impact education and training have in a person's lifelong earnings and wages.

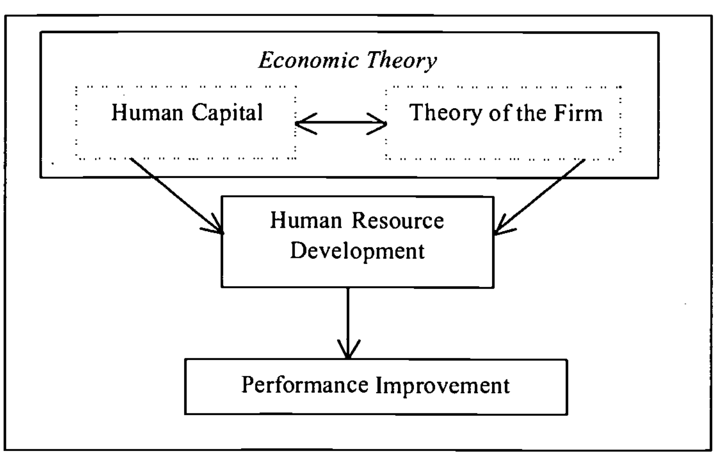

Figure 1. Economic Theory as Foundation of the Human Resource Development Discipline

The main proposition of the human capital theory is that human capital is considered a form of capital. Schultz (1961) stated that "skills and knowledge are a form of capital," and that "this capital is in substantial part a product of deliberate investment" (p. 1). That is, education and training are processes of human capital formation of people resulting from deliberate investments—although education and training are not the only to account for human capital formation, since the concept of human capital also encompasses other activities that improve the human capabilities, mainly health facilities and services, study programs for adults, and migration (Schultz, 1961, 1962).

Education and training are the most notorious concept of the human capital theory, and certainly the concepts that have most direct linkage with HRD. Becker (1993) contends that "school and college education in the United Sates greatly raise a person's income" (p. 17), and that "many workers increase their productivity by learning new skills and perfecting old ones while on the job" (p. 31). Education and schooling are seen as the activities that will prepare the labor force (Mincer, 1962), and account for the "otherwise unexplained rise in earnings" (Schultz, 1961, p. 10). In fact, "the earnings of more educated people are almost always well above average" (Becker, 1993, p. 17), a trend that has kept over the past decades and even increased: "Twenty years ago, the average college graduate earned 38 percent more than the average high-school graduate. Today, it is 71 percent more." (U.S. Department of Labor, 1999, p. 18). Costs of education, including actual expenditures and foregone salaries are considered investments.

Similarly, training in any form is also a form of human capital formation. As in education, training has been singled out as explaining the variation in wages and earnings. If formal school instruction is not sufficient to prepare the labor force, the training process "is usually the end of a more general and preparatory stage, and the beginning of a more specialized and often prolonged process of acquisition of occupational skill, after entry into the labor force" (Mincer, 1962, p. 50). Looking at education and training this way, it can be said they represent mostly an individualized perspective of the theory of human capital.

The Firm as the Context for Training and HRD

The theory of the firm relates to the production theories. It explains the use of inputs to produce an output. It also explains how firms organize their production in an efficient way, and how the costs of production change due to changes in the prices of input and the output level. In the production process, firms use inputs or factors of production. Traditionally, those factors of production included raw materials, capital, and labor. This traditional definition considered labor as being the *physical* activity. Modern literature maintains that labor as a factor of production is not enough to describe the work of persons in organizations, and call it instead *human capital*, which is a form of capital as described above, but it is different from the financial capital. For an efficient management of the firm, the factor labor or human capital needs to be adequately combined with the other factors. One way of doing it is by optimizing the performance of human capital through training. The emphasis in the role of human resources is called the "human resource-based view of the firm."

Training occurs in the context of the firm, and it is usually provided by the firm. If so, the investment decision is explained by the firm positioning and interests. In that manner, the theory of the firm will explain when and under what conditions investment decisions are made.

We have talked about human capital as a form of capital. However, the concept of human capital clearly diverts from firm's classical conception and its three factors of production—raw materials, labor and capital. The concept of human capital has forced to a redefinition of the concept of capital, and it is currently considered a form of capital. "The failure to treat human resources as a form of capital [...] fostered the retention of the classical notion of labor as a capacity to do manual work requiring little knowledge and skills" (Schultz, 1961, p. 3). Some authors have attempted to further clarify this point, and proposed that the human activity is present in the firm in two different factors of production--e.g., raw labor and human capital (Friedman,1990), the former called "rivalous goods" and "non-rivalous" the latter (Bradley, 1997; Klenow, 1998).

In the context of the firm, then, the process of human capital formation occurs mainly through training--as explained historically. However, two main types of training can happen in the firm.

General Training. The theory of the firm allows us to understand the way organizations manage their human resources. Becker (1993) distinguished the two types of on-the-job training—general, and specific. The first one, general training, is simply characterized as the training that is "useful in many firms besides those providing it" (p. 33). That is, the learned skills and knowledge can be used in that firm as well as in others. The resulting effect is that knowledge and skills are transferable from organization to organization.

By providing this type of training the firm may capture some of the returns from its investment, but they also take the risk of other firms taking those returns when the employee decides to switch jobs. That is why many firms would provide general training only if they do not pay for it. If workers pay for it, they are increasing their future wages—mostly in the form of working for another employer at a higher salary. The assumption here is that there are many buyers for those skills, so the employee can move in the labor market. General training allows the worker to increase his negotiation capability within the labor market—in terms of selecting a job in a different organization with a higher salary. It has been indicated that if a person with a general skill is needed, firms most likely will look for those skills outside the firm—e.g., through outsourcing (Lepak & Snell, 1999). What this reveals is that the firm may not be interested in paying for general training.

Firm-Specific Training. Specific training plays a different, opposite role of general training, and the consequences of specific training are different for both the employee and the firm. Specific training has been defined as training "that has no effect on the productivity of trainees that would be useful in other firms" (Becker, 1993, p. 40). That is, those skills and knowledge learned through specific training will most likely be used only in the firm providing the training. In this case, the organization pays for the training, but it will also collect the returns of that investment in the form of increased marginal productivity.

This is the reason why organizations will provide training, and by appropriating the returns in a sufficient manner, they will be covered if the employee decides to quit for a different job. However, if employers are interested in keeping those employees, the organization needs to share the rewards of the increased productivity with the employee, namely they have to increase his or her salary to an amount higher than the salary offered by any other employee (Flamholtz & Lacey, 1981). This condition will create a tie between the employer and the worker, and in times of downsizing "the probability of turnover for a specifically trained employee is lower than that of generally trained employees" (Flamholtz & Lacey, 1981, p. 33). In addition, the replacement cost of that employee with specific skills is high, in which case the employer will consider different alternatives to retain that employee before letting him or her go.

The purpose of specific training is to increase the employee's marginal productivity—i.e., to improve performance. That is the goal of the firm, and both the employee and the firm will benefit from the increased marginal productivity—the increased performance. The employee will benefit from having a better salary, and the firm will benefit from appropriating the marginal productivity. Wages are to increase after specific training, but they will be set below the worker's marginal productivity. The difference between the employee's new marginal productivity (the improved performance) and the salary paid is the return that firms will collect (Flamholtz & Lacey, 1981).

Some implications derive from this. The first one is that human capital developed by specific training becomes unique. Outsourcing and alliances may be considered to manage the uniqueness of this type of human capital and the needs for additional human capital, but it is not strategic. Thus, organizations are willing to invest in this type of training. Second, employees trained this way become strategically important for the organization, and become integral part of the competitive advantage of the firm. Finally, firms will develop, in that sense, an internal labor market, and will chose people from there before outsourcing (Lepak & Snell, 1999).

The Knowledge Organization: Developing a Framework from the Human Capital Perspective

The Knowledge Organization

We have explained above how investments in training impact both the person and the organization. One very important result for the organization is the amount of knowledge and skills developed to increase organizational performance—which also means the firm benefits from the individual's increase in marginal productivity. Training thus develops skills and knowledge *in the individual.* The employee will apply what she or he has learned to the job. The amount of knowledge actually applied will depend on each person, and in the organization's capability to make it happen. This pattern is repeated for all workers. The organization will be interested in getting those skills and knowledge applied to the jobs at a maximum level, so as to increase the worker's marginal productivity or performance, and therefore to increase the organization's profit maximization. In this process, the organization realizes the best way of maximizing those recently developed skills and knowledge (in addition to all the existing knowledge and expertise) is by aligning them around the organization's mission, goals and strategy. To accomplish this, the firm needs to organize those knowledge and skills. By doing so, it will increase the individual, team and organization performance.

What the firm does first is to *articulate* the acquired knowledge of the trained person with the knowledge acquired by other trained employees, and align the knowledge thus articulated with the organization strategy. Organizations do this to some extent, but only those that make that explicit perform better in business. But it is not enough to articulate knowledge in such a way. In order to become truly competitive, the organization will also need to *aggregate* the existing knowledge of these employees for a better performance of both employees and the firm as organization. That gives the organization the capability of moving towards *creating or innovating*, not only developing, knowledge. These two facets are critical for the organization for its positioning in a competitive manner in the business environment. These two compounded facets make up the *knowledge organization*.

Defining the Framework: The Five Strands of the Knowledge Organization

To better understand the knowledge organization, five defining strands are here proposed. They form the initial framework that explain why the organization deals with the employees' knowledge, and how human resource development efforts are meant to make that knowledge evident, improve its use, align it to the organization goals, and improve the firm's performance through its use.

The framework five defining strands are: the framework is based on the individual's own education, experience, and training; it implies the extensive use of knowledge, as opposed to physical labor; the knowledge is inter-related to others in the organization, and to the organization's processes and goals; the knowledge is organized by the organization; and it allows the use of knowledge at different levels.

1. Education, Experience and Training. The first defining aspect is that human capital formation while *in the firm* happens primarily as result of on-the-job training. However, training is built upon, develops and unleashes other skills and knowledge gained through the individual's education prior to or concurrent with entering the job market. In addition, persons will enter the firm with some experience gained in other settings. Finally, more experience is gained while in the firm. In fact, more people would be willing to give up earnings in exchange for experience that will also be part of the human capital formation process and that will result in improved performance. That is, the specialization of employees through training follows a built-upon model. The organization will identify the potential for specific training based on current performance, which in turn is based on education background, as well as experience. It is the human capital formation process that occurs in the organization primarily through training, but also through organization development (see below) that becomes the core of the knowledge organization.

2. Skills and Knowledge. The ultimate outcome of both education and training is the development of new skills and knowledge in the individual. Once the skills and knowledge have been identified, they are to be used by the organization to improve performance. In addition to personal growth, or consolidation of values and culture (both goals of adult education theories and philosophies), the organization will put emphasis in the *use of knowledge*. In other words, the emphasis is on the adequate use of the marginal productivity of the worker. There is no turning point so as to consider labor as a physical labor only like in the traditional concept of factors of production. There is a clear growth and change from the touch labor to the knowledge worker (Lepak & Snell, 1999).

3. Articulated Knowledge. Skills and knowledge are not used in an isolated manner and individually but in conjunction with other employees' knowledge and in the context of the organization's structure, policies and goals. There is an existing, actual knowledge that the organization needs to articulate, to organize. That knowledge comes from the individual's education, experience and training, and from other organizational interventions that will develop it (see below). Without linking that knowledge, without making connection of existing knowledge at different levels, without articulating the knowledge towards the common goal of the organization, towards the mission of the organization, the existing knowledge of those employees will be underused, underestimated, and the capacity of the organization, including its strategic positioning, will be diminished.

The articulation of knowledge needs to be an explicit function of the organization. Otherwise, the survival of the organization is in jeopardy. Existing literature already provides different definitions, ways of understanding, and means to aligning existing knowledge in the organization (among many others, Demarest, 1997; Edvinsson & Sullivan, 1996; Nonaka, Reinmoeller, & Senoo, 1998; Stewart, 1999; Wiig, 1997a; Wilkins, van Wegen, & de Hoog, 1997).

4. Aggregating Knowledge: The Organization's Potential. What distinguishes the *knowledge organization* is its capacity to organize the knowledge of its workers, but more importantly is its capacity to *aggregate* the existing knowledge, to transform it, and to use it in different forms. Innovation is clearly one of its main objectives and outcomes. Knowledge is then business arranged, strategically oriented, and profit maximizing. The knowledge organization will process knowledge (internally developed or acquired from external sources) in order to transform it—which will occur only as a result of the aggregation process knowledge. The aggregated knowledge is then a product of the organization's internal learning and its absorptive capacity (McMillan & Hamilton, 2000). To some extent, this aggregate vision of human capital has been neglected, and a continued discussion is needed. Nevertheless, many authors will explain the way educated or trained workers increased *their* salaries; they will also explain how those workers in those *companies* are responsible for economic growth; and how this is a distinguishing characteristics of the US and industrialized economies vis-à-vis less industrialized economies. However, the success of an organization is not attributed to the individual training of the organization's workers, but to the strategic use of the aggregated knowledge in that organization.

5. *Improvement Levels.* Knowledge articulated and aggregated in the way described above, through human resource development interventions, make improvement at three main levels: a) it improves functions for each person, team or unit; b) it improves relationships among and between personnel, teams, units and the organization as a whole; and c) it improves flows at the systems level, so as to adjust all components according to the knowledge thus articulated and aggregated.

Contributions to New Knowledge, and Implications for HRD

Redefining the Conceptual Nature of Organization Development. Traditionally, one way the knowledge articulation and aggregation is made is through what is called "knowledge management". (There are some authors that distinguish between knowledge management and intellectual capital, where the former is subordinate and supports the creativity of intellectual capital (Wiig, 1997b), but for purpose of this paper I will speak generally of knowledge management as encompassing both functions). As such, knowledge management is proposed as a specific function, translated most of times into a designated unit in the organization. In order to articulate and aggregate that knowledge within the organization, the organization follows at least seven distinctive steps: identifying, unleashing/creating, gathering, storing, managing, innovating and delivering.

What we propose here is that *organization development*, through all types of interventions, *is about managing knowledge*. That is, *the main function of organization development is to articulate and aggregate knowledge.* OD does that by unleashing knowledge and skills. Therefore, organization development is a major performer of knowledge management—although it has not always been understood that way. That is, from the human resource development perspective, knowledge management in the organization is performed through any organization development intervention. Existing literature does not make that explicit, nor practitioners are fully aware of this fact. By introducing changes in the organization with the purpose of improving performance, what organization development interventions are ultimately doing is identifying knowledge, unleashing/creating knowledge, gathering knowledge, managing knowledge, and certainly impacting in the storing, innovation and delivering of knowledge within and outside the organization.

Organization Development and Human Capital. If organization development is about articulating and aggregating knowledge, it follows that, as the training function, *organization development is a form of the human capital formation process*. That is, organization development, as training and in close interaction with it, makes possible the unleashing of knowledge in the organization to increase performance at different levels.

By understanding organization development this way there is a clear change in the understanding of its nature. But more importantly, there is a clear implication for the human capital theory that has been traditionally and exclusively related to training. In that sense, and although further work is needed in this area, human capital theory will need to be re-addressed so as to include organization development along with training to explain why investments in organization development interventions will also increase the individual's salary (by increasing its productivity or performance), and therefore the possibility of the firm to capture more returns due to increase of the individual's performance. Secondly, a formulation in that sense will also need to reconsider organization development in the same level as firm-specific training. Thirdly, organization development interventions, as in the case of training, will need to also be considered investments in human capital. The relationship between the human capital theory, the theory of the firm and the reformulated view of OD and training is depicted in Figure 2.

The Knowledge Organization, the Learning Organization, and the HRD Definition. The knowledge organization has here been described from the economic perspective, and HRD is responsible for fostering this function in the organization. Knowledge organization then becomes an overarching definition that is based on and goes beyond other definitions—e.g., the learning organization, the teaching organization—in the sense that knowledge encompasses both learning and teaching. One clear implication is reflected in the understanding of the learning organization (Watkins & Marsick, 1995). Learning organization describes the organization in a permanent process—i.e., learning. The knowledge organization postulates that learning is indeed central for the knowledge organization, but there is the knowledge component—i.e., skills, data, experience—that needs to be organized and re-discovered to feedback the organization itself, in a continuous alignment with the organization's mission and goals. As Cummings and Worley (2001) have suggested, the organization development profession needs to go beyond process measures and to increasingly rely on objective records of economic outcomes in doing its work.

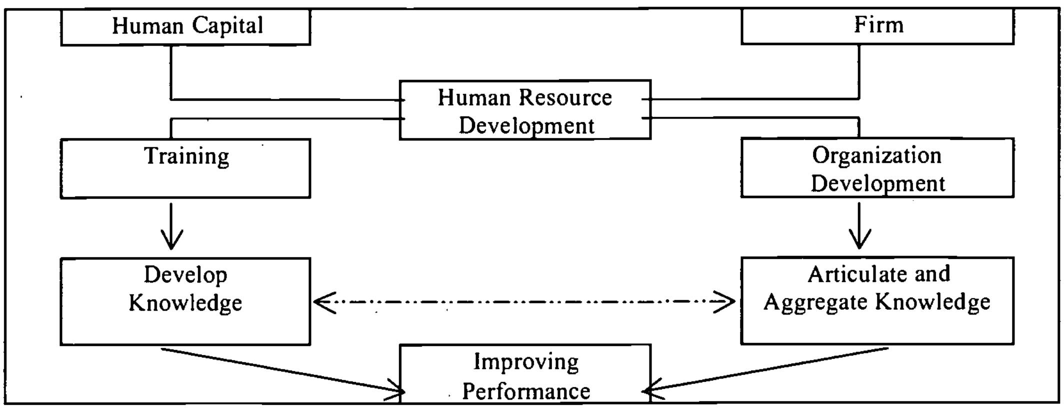

Figure 2. The Knowledge Organization

From the economic perspective, *the knowledge organization is then defined as the organization that has the capability to articulate and aggregate knowledge.* That is, it is the organization that *articulates* and *aggregates* the knowledge of employees going through the process of human capital formation. Because it is in the firm's economic interests to provide specific training to those employees, it is also in its interests to build on that knowledge to become even more competitive and be strategically aligned in its business environment.

Finally, based on the economic perspective, a new definition of HRD is proposed as follows: "HRD is a process of human capital formation through organization development, and training and development for the purpose of improving performance". The central aspect of this definition is the understanding of HRD as *the process of human capital formation.* It becomes a key element, since it encompasses the distinguishing function of both training and development, and organization development.

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