

# HR Portals and HR Metrics for Intellectual Capital Development<sup>1</sup>

Dino Ruta

Institute of Organization and Information Systems, Bocconi University  
Department of Organization and Human Resource Management  
SDA Bocconi School of Management  
Via Bocconi, 8. Milan 20136, Italy

**Abstract.** Intellectual capital is nowadays considered a key issue when analysing critical determinants to company performance. It represents one of the main and difficult to imitate source for sustainable competitive advantage and it helps organizations, which can create, maintain, measure and leverage it, generate a superior performance. Companies, according to their strategic needs, generate a unique mix of human, social and organizational capital and exploit it to achieve their strategy. This paper intends to explore how information technology, and in particular HR portals, could help the organization to really be able to create a superior competitive advantage by leveraging its intangible assets coherently with its strategy. In addition, the paper provides a deep analysis of HR portals implementation benefits, focusing on their contribute at measuring and aligning intellectual capital to company strategy.

## 1 The Intellectual Capital

### 1.1 Definitions and Dimensions

Intellectual capital can be defined as the sum of all knowledge that can be utilized to boost a company performance sustaining its competitive advantage. According to Yound, Subramanian and Snell [13], two are the peculiarities of this capital which have to be considered:

1. Knowledge exists and is created a numerous levels within and outside the organization and all of it has to be considered intellectual capital
2. Only the knowledge that is used and leverage in order to create competitive advantage can be considered intellectual capital

---

<sup>1</sup> I want to thank the reviewers of this paper which is at the early stages of its development. They gave me many suggestions to improve the manuscript and for time constraints I was able to adopt only some of them in this new version. Many others will be helpful for the next steps of my research.

So, intellectual capital has both an extra-organizational dimension, constituted by all the knowledge the company can attract from the outside players it interacts with (e.g. customers, suppliers, competitors...) and an intra-organizational one, which is constituted by all the knowledge, relationships and knowledge transfer/storage tools the company possesses. Furthermore this global knowledge has to be effectively utilised in order to be considered part of the intellectual capital, as it is essential to maintain a strict connection between knowledge/brainpower and company's performance and creation of superior economic value over time. According to Feiwal [8], intellectual capital meant more than just "intellect as pure intellect" but rather incorporated a degree of "intellectual action": intellectual capital is not only a static intangible asset per se but an ideological process with an end [2] .

Therefore I will proceed in this study by defining intellectual capital as "the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage".

As stated before, this knowledge expresses itself through different levels and instruments. A common classification, developed in recent years, presents intellectual capital as a multidimensional entity, formed by three basic type of capital: human capital, social capital and intellectual capital.

Human capital is composed by the personal and individual knowledge each employees within the organization has. His/her knowledge, ability and skills are part of the company's knowledge treasure and are a unique source of innovation and strategic renewal. Human capital has been a highly discussed topic [25] [7], gaining a general consensus about its conceptualisation. Four are the individual factors which, combined, define human capital: the genetic inheritance, the education, the experience, attitudes about life and business [9] . Recent studies also observed how this typology of capital does not naturally develop and evolve [13]. Rather, HRM, IT and R&D investments are her particularly important in order to really foster and exploit human capital.

A second expression of the intellectual capital is constituted by social capital, where I mean the knowledge in groups and network of people [18] . The focus is here on the relationships, the connections within different individuals and parts of the organization and their ability to create and share knowledge as well on the potential resources, knowledge embedded within, available through and derived from this network of relationships. Summing up, social capital comprises both the network and the assets that may be mobilized through that network. Within this dimension, the extra-organizational aspect of intellectual capital promptly emerges: such relationships are not limited to the ones existing within organization's boundaries but can extend to linkages with customers, suppliers, partners, and so on. It is worth to be mentioned that interaction is an essential precondition for the development and maintenance of high levels of social capital. Social capital has a tendency to accumulate in networks structures in which linkages are strong, multidimensional and reciprocal. Organizations can offer many opportunities for sustained interaction and conversations, by intentional design or by chance, helping the emergence of many facets of social capital [19].

The last component of intellectual capital comprehends a more extended and formalized kind of knowledge, and it is called organizational capital. It includes all the knowledge within the company which has been institutionalised or codified through

some instruments. Tools like databases, routines, manuals, and patents belong to this category. It has to be underlined how this is the only part constituting the intellectual capital which could be really considered as owned by the enterprise, as, once knowledge is externalised and stored, it becomes independent.

## 1.2 Interconnection and Combinations of Intellectual Capital

Even though intellectual capital presents a multidimensional nature, each of those three categories can not be created, developed and leveraged alone. There is a strict interconnection between them and a single action on one of those will surely impact on intellectual capital in its totality. Patterns of coexistence among those three types of capital have been identified but, as we have seen, recent studies have also focused on those three variables independently, analysing which of those dimensions might impact more on effective superior economic performance and how.

Empirical evidence, showed in fact that most companies have a tendency to focus primary on one kind of capital and its development [13].

Different organizations, according to their peculiar strategy and tasks, will be more likely to concentrate and focus on developing one of those three capitals. Contingency plays here a fundamental role, if related to the predisposition of the company to expand either human, social or organizational capital. According to an empirical research carried out by Subramanian and Youndt [26], a focused effort on the development of one typology of capital could directly improve a company ability to radically or incrementally innovate. Which also could be read as: a company, depending on its need of incremental (e.g. consulting companies) or radical (e.g. pharmaceutical) innovation will have to concentrate on the development of one particular dimension of intellectual capital. The research, through the study of about 300 companies, showed some interesting issues; the increase of organizational capital has been demonstrated to be directly correlated to the improvement of incremental innovation: institutionalised knowledge accumulated in and utilized through databases, processes and systems seems to help the organization reinforce its prevailing knowledge and augment incremental innovative capabilities. This is very remarkable, if we consider some observations made by Christensen and Overdorf [5], who state “at firms such as McKinsey & Co. processes and values are become so powerful that it almost does not matter which people get assigned to which project teams. In addition, an effective mix of human capital and social capital proportionally strives organizations’ ability to create radical innovation. Those findings surely underline the importance for each company to better understand which typology of capital needs to be leveraged the most in order to create an “ad hoc” contingent mix of those three capital which would lead to a superior performance.

It is anyway very important to consider that recent studies have observed how, generally speaking, social capital is by far the strongest predictor of performance [14], as its correct management may enable the organization to more efficiently use their knowledge base by leveraging it across the entire organization and therefore eliminating some system inefficiencies (redundancies, duplications, organizational costs). In particular, we can state that social capital is the contextual complement of human capital, as in most instances employees’ ability to leverage their intelligence,

education and experience depends in some part on how well, to whom and from whom they exchange information and knowledge [28]. Therefore, to effectively leverage investments in human capital, it may be imperative for organizations to invest in the development of social capital, to provide the necessary conduits for their core knowledge workers to network and share their expertise [26]. But social capital, beside being a tool to diffuse and exploit the intellectual capital already present in the organization, plays a predominant role also in the creation process of intellectual capital. According to Nahapiet and Ghoshal [18], intellectual capital can be created by two processes: combination and exchange. As far as combination is concerned, we could say that all knowledge creation naturally involves making new combinations, either by combining elements in new connections and associations or by recombining previously associated elements through new kind of combinations. Regarding exchange, we must say that it can be considered as a prerequisite for resource combination and therefore for intellectual capital creation. Relationships and linkages between different individuals and areas of the same organization could promote a process of combining the knowledge and the experience of those different parties, which could decide to exchange their resources in order to create new intellectual capital. So, as well as exchange contributes to the creation of social capital, social capital promotes the creation of exchange opportunities, therefore fostering the ability of individuals to combine knowledge in the creation of new intellectual capital.

Exchange and combination between individuals requires also some pre-conditions, essential to the creation of new knowledge [17]; first of all there must be an opportunity to make the combination or exchange. Different parties must have some tools to communicate and share their knowledge in order to create new intellectual capital. Recent developments in technology and their adoption in many organizations surely represent an improvement in this direction. Second, the parties must perceive such combination/exchange to create value and, thirdly, they must be adequately motivated to share their resources. Psychological contracts play here an essential role again, as organizations should explicit the importance of this process and its positive valuation for the whole community. Lastly, the individuals must possess some combination capabilities in order to make this creation of intellectual capital effectively possible.

Summing up, social capital also facilitates the development of intellectual capital by affecting the conditions necessary for exchange and combination to occur [18].

### **1.3 HR and Intellectual Capital**

Human Resources Management (HRM) activities as well as other staff functions (R&D, IT) play also a crucial role in the promotion of intellectual capital. In particular, intellectual capital can be considered as a mediating construct between Human Resource (HR) configuration and organizational performance: HR activities do not directly boost company's performance, but rather they help the development of the three types of capital which, in turn, drive organizational performance and strategic one [14]. In the two authors' findings, HR configurations could boost either human capital (through intensive/extensive staffing, competitive pay, intensive/extensive training programs, promotions), social capital (through broad banding, team structure, socialization, mentoring) and organizational capital (through soft management system

to motivate employees to share and record their knowledge and experience and HR policies that reinforced knowledge capture and access). But HR's role can not be limited to setting some self-configurations which lead to an increase of intellectual capital.

Given the importance of contingency in order to define which is the optimum equilibrium between the three categories of capital, HR function should also focus on understanding how to align company's strategy and intellectual capital configurations.

All actions implemented by the HR function and its representatives need to aim at aligning company's strategic path with employees values and behaviours. Different HR practices can be used in order to elicit from employees behaviours which are consistent to the company strategy [29]: communication, motivation, remuneration could all be considered valid drivers.

This also recall the concept of agency theory, where organizations that do a better job at aligning the interest of the employer (principal) and the employee (agent) will achieve greater performance [6]. And HRM is one of the main mechanisms by which managers integrate the actions of individuals to keep them conformant with the interest of the firm [24].

HR system and practices can be unique in their casual ambiguity and synergistic in how they enhance firm competencies, and thus difficult to reproduce [15]. A system of HR practices, with all the complementarities and interdependencies among the set of practices, would be in fact impossible to imitate.

The measurement of intellectual capital has also recently begun an interesting topic in organizational and strategic literature: it has become necessary to define the role of the workforce (and its contribution to intellectual capital creation) in the strategic success of the firm [1]. As intellectual capital is becoming the pre-eminent resource for creating economic value, how do we measure it [22]? How are intellectual capital management and intellectual capital measurement related one to the other? Are we sure that a poor understanding of intellectual capital metric measures will lead to a reduced capacity to effectively manage this important asset [4]?

## **2 The HR Portal**

### **2.1 Basic Features and History**

Portals, blogs, wikis, groupware seem to be very popular words in contemporary enterprises. The current focus is increasingly moving toward a strategy where communication, collaboration and information exchange are gaining a primary role. Forward-looking companies are considering a way to group their global intangible assets in a unique tool, where people can share their knowledge and experiences in order to increase the company global intellectual capital stock. To this extent, HR portal can be considered both a instrument for the creation and development of organizational capital (is helps the integration of existing formalized knowledge) and a relevant part itself of a company's organizational capital, in the way it digitalizes and stores a huge portion of the company's intellectual capital.

The HR portal notion was officially born in 1998, when an American financial institution, Merrill Lynch, used for the first time this word to describe an integrated access point to its corporate information [11]. In this occasion, Shilakes and Tylman [23] defined the HR portal as “an application that enables companies to unlock internally and externally stored information, and provides users with a single gateway to personalized information needed to make informed business decisions”. This definition underlines two basic characteristics of the HR portal: the fact that the portal aims at centralizing information which would otherwise remain dispersed anywhere outside and inside the organization, and the fact that it tries to provide the single user with aggregated personalized information, according to his/her strategic needs for the organization performance and success.

HR portal development is strictly dependent from the introduction and development of Internet and the World Wide Web: TCP/IP protocol, web servers, web browsers and HTML are the IT prerequisites to the diffusion of such a popular enterprise tool. In conclusion, we can imagine an enterprise portal as a web page which combines access to all significant information on the corporate network into a gateway, bringing together the information an employee needs in a single place, thanks to the use of different software applications.

HR portals are usually organized in four macro areas [21], each containing precious portions of knowledge for the final user:

- The HOME folder is mainly dedicated to corporate general information: different areas can lead to different information, like some links to most popular access functions, a search engine to quicker surf in the portal, People Finder to gain details about colleagues, a Q&A area, where most frequent questions are answered, a Feedback and Support area.
- The LIFE/WORK folder, where employees have personal and password protected access. This represents a connection area with the HR function: information is exchanged and transactions with the company are done here.
- The ORGANIZATION folder is a more content/country specific area. Information about a specific division or country branch is shared. A survey/poll area is here often included, as well as a bulletin boards.
- The MY@PORTAL folder, which represents the most personalized are of the whole HR portal. Each individual can customize this part, according to their interests and needs. This often includes calendar of events and reminder such as a personal agenda.

All those different areas should include some different functionalities, which are normally parts of a typical HR portal content, such as:

- Employee self service area (personal details, salary and career history, stock purchase plan, expertise areas)
- Personnel database (salary planning, performance evaluation area, reports area)
- Staffing and job posting area
- E-learning area (course enrolment, courses information and contents, virtual classes access, training history)
- Archive of company press releases, presentations and documents
- Information on company strategies, best practices and knowledge management

## 2.2 HR Portal Characteristics and Benefits

HR portals are aimed at accomplishing different and important functions, according to some basic characteristics they have [3]; first of all they represent an information pool for the user, aggregating data from disparate sources which could be either external or internal. It is a common repository which consolidates information previously dispersed around the company. This integration process can, through portals, be more dynamic and adaptive. Contents from different documents can be combined, changes in data and information captured and knowledge flows monitored. To this end, it serves as a web directed directory of categories, maintaining those and grouping content links. The portal also allow the integration of various business applications and help the employee access to all type of information/programs he/she needs: HR portals are aimed at lowering barriers during acquisition of information, decision making and execution of activities. Scalability is in fact a very important HR portal characteristic: the portal can support various server types and numbers as well as it can support unlimited application processing servers. Portals are then interactive instruments, which mean they enable bi-directional exchange flows: they allow users to question and share information. In this way, they differentiate from the simple intranet, which previously operated as an electronic board, and was mono-directional (organization-to-employee). Top down communication is still possible now, but it is surrounded by many other bilateral transactions and an increased vertical and horizontal interaction. They also allow the user to personalize the use they make of the portal, tailoring ad hoc information, personalizing view on corporate information, and adapting the portal interface. This personalization process is extremely important, because it enables people to set the portal in accordance with their own needs and wishes. In this way the HR portal really replaces the worktable and becomes an inimitable tool for each employee. Therefore, reach-ability of the HR portal has to guarantee: employees (who can be inside or outside the company), customers, distributors, suppliers and so on must have access to some areas of the portal, according to their needs and authorisations, and the company too should have access to information of its business partners via portal. All those data should be directly connected to the individual and not to the computer, meaning that users can access their data from anywhere and anytime they wish, with a simple assistance of a username and a password. Portals have usually also controlled access to specific resources. Limitation of the access can be used also at the personalization of the access because the intranet portal can be adjusted to different access levels. This establishes a sort of hierarchy according to the role within the company. Security is also an issue, when considering enterprise portals: data and information have to be protected against unauthorised access, but at the same time the access should be quick and easy. Therefore the portal have to be integrated with all the existing security schemas and log-in/log-off procedures constantly monitored.

Several benefits can be identified when considering a successful implemented HR portal within an organization.

First of all we have a general increase in efficiency within the whole organization's knowledge management processes [20].

Employees are now able to save time and effort, as information is now grouped and aggregate from different sources in a unique pool of data, which will not have the

typical different architectures, different ownership and duplicative content that various departments' single databases usually have [27]. The whole organizational capital can now be explored and exploited through a unique effective tool which organizes existing information sources: information will be easier to locate and share. Search of pertinent information will be minimized and there will be an increase of choice of portal software products. Furthermore, personalization of interface and contents also helps get the individual user to set up the views for legacy information that are most valuable for him/her and avoid wading through all the other views and functionalities of the legacy system. Employees collaboration can also be fostered by implementing an HR portal: workers will have an efficient and effective instrument to get in contact more easily, alleviating corporate fragmentation issues.

On the other side, individual employees will now be responsible for uploading some kind of personal data (e.g. personal information, etc) as well as directly and autonomously consult some areas of personal interest (e.g. compensations, benefits, working hours, holidays). This certainly translates into an increased efficiency in terms of time and costs as well as into a reduced (or eliminated) redundancy of data (often inconsistent) within the organization, and the possibility of some real time information flows, making the whole organizational information system more dynamic and fast to adapt to new environments. Costs and time wastes related to some specific processes, before assigned to the HR staff will now be eliminated.

Another benefit given by the introduction of an HR portal is that it leads to a natural reconfiguration of the HR function and its tasks, which will now really turn into a more strategic HR function. HRM can be considered strategic when there is a clear and explicit link between employees and their actions and the strategic objectives of the firm, in order to improve organizational performance and develop an organizational culture oriented to innovation and flexibility [10] [16]. This only happens if HR staff becomes a relevant player when defining organizational strategy and implementing it, and HR's new role in the implementation of the portal together with its management, surely gives HR a chance to wear a more strategic role. HR staff will now be responsible for this critical task: align people to firm's strategy. They will be accountable for monitoring resources and their development as well as for creating suitable opportunities to foster this development. The use of a technological instrument like an HR portal finally allows HR staff to differentiate interventions to the workforce, taking into account individual differences, preferences, capabilities, role within the organization and future organizational and strategic needs, extracting the highest value from the human capital. Given this new HR strategic orientation, people are now an economic asset, and therefore need metrics and measures to assess them. They will represent more than a simple cost for the firm and it is HR responsibility to understand their needs and exploit their capabilities, in order to maintain and develop this strategic intellectual capital they constitute and contribute to. HR function will also have the possibility to answer employees and organization's needs adopting a new business and strategic point of view, trying to effectively measure the value of intellectual capital.

Technology role, and in particular HR portal role, will now play a fundamental role in helping HR developing a measurement system aimed at monitoring organizational performance and individual contribution to that. This is due to the HR portals ability to serve as a dynamic database, recording all transactions and events in a par-



ticular time frame. They would act as a perfect recorder, able to trace the continuous flow of data generated and to store them into a system, avoiding duplicates and redundancies. A huge quantity of data, both structured and unstructured<sup>2</sup>, could be saved and stored, but especially managed, in order to provide a broader and deeper view of the organization and its intellectual capital. Data can now be multiplied and assembled in millions of ways and new relationships might emerge: this multiplicative effect is given by the chance to explore new queries and data combinations which are now affecting a higher amount of data. The organizations could now be perceived as a continuous flow of facts, each of them monitored, recorded, and used for different purposes: they can offer an historical trend, a present picture and a future simulation. The HR portal allows the HR function to aggregate and disaggregate those data in infinite ways and obtain new insights in the organization development and performance, as well as in its own role. In particular, the HR portal could serve as a precondition for the development of a Business Intelligence system, which would help the HR staff to increase its decision making process effectiveness and quality. An effective Business Intelligence System would allow an advanced management of data, through some particular functionalities: data mining, for example, would allow finding logic relations between uncorrelated data. Modelling would help simulating scenarios, or scorecards would present some static metrics, visualizing them through graphs.

Individuals can now be tracked in a more efficient and effective way: their data, besides from being constantly updated by themselves and by the system, will now be constantly ready for any investigation. There will be the possibility to aggregate them in various combination and to collect them in a personal folder which will now include different types of information: administrative (personal data, vacations, wage track, career track, etc.), task performance related (e.g. tasks, number of projects, succeeded projects, contribution to firm's revenues, etc.) and contextual performance related (e.g. trainings attended, team working, etc.). Employees' contribution to the creation of intellectual capital will now be monitored in a more rigorous way, and will be based on a consistent measurement system.

This HR portal benefit is confirmed by some empirical cases, where the UPIM case study ([www.sas.com](http://www.sas.com)) embodies a particular representative one. UPIM implemented a HR-specific data warehouse which is loaded with information extracted from a variety of specialized systems covering personal records, payroll, timecard, personnel cost budgeting, management by objectives, skill management, and the receipt of curricula vitae. "It allows us to map skills and people, pointing out critical areas, and to monitor key performance indicators through an HR dashboard. We can see at a glance changes in the company as they occur. Critically, it enables us to spot talent within the organization, and deploy it where it is required" says De Iaco, Chief Information Officer at UPIM.

---

<sup>2</sup> Structured data are represented by relational databases, legacy data stores and various reporting system. Unstructured data is basically constituted by e-mail, instant messaging, files and stored documents and systems for documents management.

### 3 Propositions and a New Integrative Model

The company's workforce should always be concentrated at increasing the stock of intellectual capital, as well as at doing it in a way which is consistent to the company strategy. An organization's specific strategic posture substantially influence the impact of HR practices on performance: the relationship between the use of specific HR practices and organizational performance is posited to be contingent on an organization strategy and there is empirical evidence for saying that a tighter fit between human resource competencies and strategy leads to a superior performance [12]. As far as HR portals are concerned, HR will be the part of the organization accountable for their implementation and management; they will be responsible for choosing the contents and the proper configuration. Which mean they will decide how to distribute the HOME, LIFE/WORK, ORGANIZATION and MY@PORTAL areas and how to configure them. They will fix the different components and this configuration will intrinsically communicate the users, the employees on which dimension of the intellectual capital the company's strategy relies on the most and which one it is more appropriate to foster. Different areas in fact have a different impact on the expansion of human, social or organizational capital; different applications can be declined according to their contribution to the development of the different components of intellectual capital.

Area of the portal	Application	Functions that can be performed	Category of Capital Developed		
			Human	Social	Organizational
MY@PORTAL	• PERSONAL ADMINISTRATIVE FOLDER	• autonomous update of personal information • tracking of administrative and accounting information			***
	• TRAININGS	• tracking of personal knowledge development	***		*
	• .....				
ORGANIZATION	• POLL AREA	• express a personal opinion on a particular topic of common interest		***	
	• NEWS AND INFO	• keeping updated on some branch/divisions issues • sharing of particular information related to the specific division	*	**	**
	• .....				
HOME	• PEOPLE FINDER	• retrieve people within the company • retrieve experts within the company	*	***	
	• DOCUMENTS FINDER	• retrieve extra and intra-firm documents • upload documents	**		***
	• .....	• .....	....	....	....

Fig. 1. Example of HR portal configuration and declination according to the different dimensions of intellectual capital.

HR staff, through the configuration and management of the HR portal, can communicate the importance of different types of intellectual capital to the workforce and align their contribution to the company strategy.

*Proposition 1: The HR portal configuration in respect to the different dimensions of intellectual capital reflects company's strategy. Its structure, configured by a strategic HR function, will be an immediate tool to communicate to the workforce the optimal mix of human, social, organizational capital is aligned with the strategy pursued by the company.*

Moreover, a successful implementation of an HR portal within the organization will help the whole firm to better measure its entire stock of intellectual capital, in terms of human, social and organizational one. Furthermore, the HR portal constitutes an instrument for analysing this stock and understanding, by some particular metrics, the individual contribution to this stock (task and contextual performance). As seen in the first chapter, task performance is usually pretty easy to identify and evaluate. And this is a process usually delegated to the management, which judges employees' performance and report this evaluation to the HR function. The use of an HR portal would now make the HR staff able to directly monitor and evaluate the employees' individual contextual performance and their personal contribution to the creation and maintenance of intellectual capital within the organization. If intellectual capital has been defined as the core asset for the organization's success, it is necessary to develop a tool to measure the contribution to this important asset. The HR portal will be an organizational tool to formalize this individual contribution and to add the employees' participation to the creation of intellectual capital to the typical performance-evaluation-feedback loop.

HR portal would therefore allow the monitoring of the intellectual capital development within the firm, focusing on the individuals' participation to this strategically fundamental process.

Those collected data and information could now increase the possibility to focus on some metrics which really capture also the strategic importance of the workforce (and therefore of the intellectual capital created by the workforce, in terms of human, social and organizational contribution). With the workforce scorecard concept, we pointed out that an effective measurement system should be first of all based on the real ability to collect some data; the HR portal would surely help the company to improve this data collection process, especially making the collection of some specific data easier and faster.

HR portal applications could therefore be declined according to its contribution to the formulation of some HR metrics, both for organizations and individuals, as follows:

Area of the portal	Application	Functions that can be performed	Category of Capital Developed			Possible measures at organizational level	Possible measures at individual level
			Human	Social	Organizational		
MY@PORTAL	• PERSONAL ADMINISTRATIVE FOLDER	• autonomous update of personal information • tracking of administrative and accounting information			***	• Remuneration Index • Salary Analysis	• Employee Search Form • Employee Costs
	• TRAININGS	• tracking of personal knowledge development	***		*	• Post Course Skill Enhancement • Skill Gap Analysis • Skill Gap Trend Analysis • Training Summary • Skill Absence by Employee • Course Quality • Course Quality Detail	• Skill Gap by Employee • Skill Level by Employee • Skill Improvers by Employee • Future Training Summary • Future Training Courses
	• .....	• .....				•.....	•.....

**Fig. 2.** An HR portal sub-area, according to its contribution to the creation of intellectual capital in its three forms and to the measurement of some HR metrics.

*Proposition 2: A successful implementation of an HR portal will lead to a more effective measurement of the stock of intellectual capital within the organization, helping the development of a strategic intellectual capital measurement system.*

In particular:

*Proposition 2a: It provides some ad hoc metrics in order to monitor the stock and development of the whole intellectual capital within the organization*

*Proposition 2b: It measures the individual contribute to the intellectual capital stock through the creation of personal folders*

As described before, HR staff, through the configuration and management of the HR portal, can communicate on which particular mix of intellectual capital the company is relying on and the subsequent expected workforce contribution to it. HR portal represents, in this sense, a tool for formalizing psychological contract to employees. Organizational expectations in terms of involvement in the process of intellectual capital creation find here a possibility to be made explicit: configuring HR portal in a particular way, the HR staff automatically communicates and incentives the workforce to participate this important process.

## 4 Discussion and Conclusion

The present paper provides an integrative model for intellectual capital and IT, in its particular form represented by the HR portal. The focus is particularly on the contri-

bution that HR portals can offer to the communication of strategy throughout the firm and to establishment of some HR metrics to measure intellectual capital stock.

HR portals, through their easy access to a substantial amount of data and through their characteristics of integration, personalization and interaction could be a strategic tool for HR in order to perform their role in a more effective and efficient way; the case, through a deep overview of the company's intellectual capital, as well as of its HR portal, demonstrated that HR portals, beside being an extremely important tool for the development of intellectual capital, can:

- provide some effective measures for intellectual capital and its different dimensions;
- communicate, through their own configuration, which optimal mix of human, social and organizational capital best answers the company's strategy, and therefore leverage this mix;
- help formalize psychological contract and, by this, align organization and employees' expectations about their contribution to intellectual capital creation and maintenance.

Those findings, together with the previous literature on HR portals, underline the strategic role of this IT tool and the necessity of its management in order to achieve superior competitive advantage and performance.

## References

1. Becker, B., Huselid, M. (2003). Measuring HR? Benchmarking is not the answer! HR Magazine, December 2003, pp. 57-61
2. Bontis, N. (1998). Intellectual Capital: an exploratory study that develops measures and models. *Management Decision*, Vol. 36, No. 2, pp. 63-76
3. Bottazzo, V. (2005). Intranet: A Medium of internal Communication and Training. *Information Services & Use*, No. 25, pp. 77-85
4. Caddy, I. (2002). Issues Concerning Intellectual Capital Metrics and Measurement of Intellectual Capital, *Singapore Management Review* Vol. 24, Issue 3, pp. 77-88
5. Christensen, C., Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, Vol. 78, No. 2, pp. 66-76
6. Delery, J. E., Doty, D. H. (1996). Modes of theorizing in Strategic Human Resource Management: tests of Universalistic, Contingency, and Configurational Performance predictions. *Academy of Management Journal*, Vol. 39, No. 4, pp. 802-835
7. Edvinsson, L. and Malone, M. S. (1997). *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower*. New York: Harper Business
8. Feiwel, G. R. (1975). *The Intellectual Capital of Michal Kalecki: a Study in Economic Theory and Policy*. The University of Tennessee Press, Knoxville, TN
9. Hudson, W. (1993). *Intellectual Capital: How to Build it, Enhance it, Use it*. John Wiley & Sons, New York, NY
10. Huselid M. A. (1995). Producing sustainable competitive advantage through the effective management of people, *Academy of Management Executive*, Vol. 9, pp.55-72.
11. Kakumanu, P., Mezzacca, M. (2005). Importance of Portal Standardization and Ensuring Adoption in Organizational Environments. *The Journal of American Academy of Business*, Cambridge, Vol. 7, No. 2, pp. 128-132

12. Youndt M. A., Snell, S. A., Dean, J. W., Lepak, D. P. (1996). Human Resource Management, Manufacturing Strategy and Firm Performance. *Academy of Management Journal*, Vol. 39, No.4, pp. 836-866
13. Youndt M. A., Subramanian, M., Snell, S. A. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns. *Journal of Management Studies*, Vol. 41, No. 2, pp. 335-361
14. Youndt M. A., Snell, S. A. (2004). Human Resource Configurations, Intellectual Capital and Organizational Performance. *Journal of Managerial Issues*, Vol. 16, No. 3, pp. 337-360
15. Lado, A. A., Wilson, M. C. (1994). Human Resource Systems and Sustained Competitive Advantage: a Competency based perspective. *Academy of Management Review*, Vol. 19, No.4, 699-727
16. Lepak D. P., Snell S. A. (1998). Virtual HR: Strategic Human Resource Management in the 21st Century. *Human Resource Management Review*, Vol. 8, No. 3, pp. 215-234.
17. Moran, P., Ghoshal, S., (1996). Value creation by firms. In J. B. Keys & L. N. Dosier (Eds.), *Academy of Management Best Paper Proceedings*, pp. 41-45
18. Nahapiet, J. and Ghoshal, S. (1998). 'Social capital, intellectual capital, and the organizational advantage'. *Academy of Management Review*, 23, 242-66.
19. Nahapiet, J. (1997). Social Capital, Intellectual Capital and the Creation of Value in Firms, *Academy of Management Proceedings*, pp. 35-39
20. Rose, J. G. (2003). The Joys of Enterprise Portals, *The Information Management Journal*, Sept/Oct 2003, pp. 64-70
21. Ruta, C.D. (2005). The Application of Change Management Theory to HR Portal Implementation in Subsidiaries of Multinational Corporations. *Human Resource Management*, Spring 2005, Vol. 44, No. 1, Pp. 35-53
22. Shaikh, J. M. (2004). Measuring and Reporting of Intellectual Capital Performance Analysis, *The Journal of American Academy of Business*, Cambridge, March 2004, pp. 439-448
23. Shilakes, C. C., Tylman, J. (1998). *Enterprise Information Portals*, Merrill Lynch, Inc., New York, NY
24. Snell, S. A., Youndt, M. A. (1995). Human Resource Management and Firm Performance: Testing Contingency Model of Executive Controls. *Journal of Management*, Vol. 21, No. 4, pp. 711-737
25. Stewart, T. A. (1997). *Intellectual Capital*. New York: Doubleday-Currency
26. Subramanian, M., Youndt, M. A. (2005). The influence of intellectual capital on the types of Innovative Capabilities, *Academy of Management Journal*, Vol. 18, No. 3, pp. 450-463.
27. Voth, D. (2002). Why Enterprise Portal are the Next Big Thing, *E-learning*, October 2002, Vol. 3 Issue 9, pp. 25-29
28. Wright, P. M., Snell, S. A. (1999), Social Capital and Strategic HRM: It's who you know. *Human Resource Planning*, pp. 62-65
29. Wright, P. M., Snell, S. A. (1998). Toward a unifying Framework for exploring Fit and Flexibility in Strategic Human Resource Management, *Academy of Management Review*, Vol. 23, No. 4, pp. 756-772