

TECHNOLOGICAL, ORGANIZATIONAL AND MANAGERIAL TOOLS FOR KNOWLEDGE MANAGEMENT SUPPORTING DISPERSED WORKERS

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ABSTRACT

Knowledge Management (KM) of intellectual capital has become a central theme in today's business environment and a commonly cited source of competitive advantage. This paper argues that one of the main drivers of knowledge-related organizational problems is the dispersed nature of organizational knowledge. In today's global economy, much of economic activity in and between firms is based on dispersed knowledge workers (DW). Therefore, developing tools to support KM in distributed environments is becoming a major challenge. Mobile technology opens a new perspective to work and organisation by increasing possibilities to select more freely the place of working than "wired" technologies. Research in this field deals with how to create a sustainable work organization – i.e. configuration of

organizational mechanisms, ICT and management tools (KM Levers) - which enables at the same time efficiency, innovation and good quality of working life.

The National research program (funded by MIUR) “Technological, Managerial and Organizational Tools for Knowledge Management (TOM)”, started in 2002, involving the Universities of Pisa and Genoa, and the Polytechnics of Turin and Milan.

Starting from a deep analysis of management literature state of the art, the project objectives consists in the analysis of the emerging KM models in dispersed knowledge workers networks, and developing management tools supporting the choice of the Levers for KM within these networks.

This paper presents the research framework and the first field results of TOM project, based on three case studies, aiming at identifying the KM Configurations in support of dispersed knowledge workers. The paper has an explorative nature.

1. INTRODUCTION

Knowledge Management (KM) of intellectual capital has become a central theme in today's business environment and a commonly cited source of competitive advantage (Garvin, 1997, Drucker, 1988). The key issue that makes knowledge a critical resource to be managed (different for instance from information and documents) is that most knowledge is the property of individuals, and not the firm (Garvin, 1997).

Many definitions of KM have been proposed in literature (Wiig, 1997; Pettrash, 1996; Birkett, 1998; Athens, 1991; Davenport, 1999; Nonaka, 1991; Quinn et al. 1996). All these definitions underpins some relevant aspects of KM:

- KM is a configuration of technical, organisational and managerial choices;
- The direct effect of KM is influencing people behaviours and through this company's performance;
- Knowledge Management can improve effectiveness in all phases of the knowledge lifecycle going from Knowledge assimilation and generation, to the transfer and sharing, and capitalisation and reuse.

A more comprehensive and at the same time operative definition of knowledge management can therefore be as follows:

Knowledge Management is the complex of Management systems, Organisational mechanisms, Information and Communication technologies (the levers) through which an organisation fosters and focuses individuals' and groups' behaviours in terms of Assimilation and generation, Transfer and sharing, Capitalisation and reuse of knowledge, in tacit or explicit form, that is useful to the organisation.

The utilization of knowledge is one of the key organizational problems that firms face and managers have to address, as it is widely recognized in the Knowledge Management debate (Drucker, 1991; Spender, 1996). This paper, according to several authors (Becker, 2001; Goodman, 1998), argues that one of the main drivers of knowledge-related organizational problems is the dispersed nature of organizational knowledge.

Globalization and virtualization have emphasized dispersion even more. In today's globalized economy, much of economic activity in and between firms is based on dispersed teams (Cramton, 1997, 1999; Furst, 1999). Dispersed or virtual teams are teams whose members cooperate across geographical boundaries..

The paper presents the first field results of the national research program "*Technological, Managerial and Organizational Tools for Knowledge Management* (TOM)", funded by MIUR, which started in 2002, involving Universities of Pisa and Genoa, and the Polytechnics of Turin and Milan.

The focus of this paper is on (1) dispersed workers types; (2) organizational, managerial and technological levers supporting KM process in dispersed environments; (3) the DW behaviours, fostered by the levers, in terms of knowledge creation, transfer and capitalisation; (4) the impact of such behaviours on people and business performances.

The paper is organized as follows. Section 2 presents the theoretical background of the research, § 3 introduces the methodological issues of the field analysis, describes the cases and presents the results of the comparative analysis. Finally, section 4 suggests some future developments of the work.

2. THEORETICAL BACKGROUND

In order to be successful, Knowledge Management efforts have to be oriented to the complex of management systems, organizational mechanisms and information and communication technologies and must be sensitive to the features of the context in which knowledge is generated, located (as an example, Becker 2001 illustrates organizational problems and managerial strategies in order to deal with dispersed knowledge), and applied.

A KM process is in general described as a sequence of three or more sub-processes or phases (Martensson 2000; Alavi and Leidner, 2001; Shin *et al.*, 2001), not necessarily sequentially or hierarchically ordered:

- Knowledge assimilation and generation (Knowledge Creation);
- Knowledge transferring and sharing (Knowledge Transfer);
- Knowledge capitalisation and reuse (Knowledge Capitalisation).

In the first stage of the project an interpretative framework was developed (Cainarca *et al.* 2002) in order to review literature regarding Managerial, Organizational and Technological tools through which an organisation can foster individuals' and groups' behaviours in terms of Knowledge Creation, Transfer and Capitalisation.

As regards organizational and managerial aspects, Zack (1999) illustrates how to configure a company's resources and capabilities in order to leverage its codified knowledge, highlighting the importance of adequate organizational roles. In addition, the choice of a particular approach for KM is strongly synergic with the other organizational and managerial dimensions, as argued by Hansen *et al.* (1999).

Holsapple and Joshi (2001) point out that the three main classes of factors that influence the success of KM are managerial, resource, and environmental. Moreover, the contingency theory asserts that, beside the resources (ICT tools and people), a Knowledge Management System has to consider the modalities of interaction of such resources (especially people) and their politics of management (organizational and managerial framework) (Becerra-Fernandez and Sabherwal, 2001). As a result, Bartlett and Ghoshal (2002) assert that, in order to build a competitive advantage, it is important to change the point of view from the traditional competency-based strategies to people-oriented strategy.

Topics such as task assigning, coordination mechanisms (organizational dimensions), rewarding systems and career paths (managerial dimensions) are integral parts that cannot be left out from an effective KM.

Lam (2000) argues that there is an interactive relationship between dominant knowledge types and organizational form. Osterloh and Frey (2000) point out that organizational forms (especially motivational aspects) must be able to generate and transfer tacit knowledge, surpassing the limits of knowledge sharing that comes from property right beliefs (Jarvenpaa and Staples, 2001). Gold *et al.* (2001) examine the issue of effective knowledge management from the perspective of organizational capabilities. This perspective suggests that a knowledge infrastructure consisting of technology, structure, and also culture are essential organizational capabilities or 'preconditions' for effective knowledge management.

As regards information and communication technologies, several contributions underline the potential role of ICT in knowledge creation process in terms of enabling interaction and collaboration through computer-mediated communication such as video-conference, chat lines, discussion forum, group support systems, extranets, intranets, intelligent agents, automated brainstorming etc. A phase of knowledge management immediately related to creation is application (Holtzner, 1979; Pentland, 1995). Knowledge

application means traducing knowledge into decisions and actions. Some authors propose to use knowledge discovery and management techniques to design decision support systems for example in marketing or new product development activities.

The role of ICT in facilitating explicit knowledge transferring, is widely recognized. Several authors deal with knowledge distribution intra and inter firms. Some authors link the speed on the availability of information to the development of successful innovations.

As regards knowledge capitalization, several contributions deal with the creation and updating of a corporate memory to facilitate the capturing and coding of knowledge and enhance its retrieval and sharing across the organization. Considering the problem of information overload, some authors suggest to shift from pull technology where the user has to actively initiate the request for information towards push technology, where available information is automatically delivered without user intervention.

As regards the impact of KM on performances, a big stream is recently emerging in literature (Haanes and Lowenthal 1997; Pettrash, 1996; Roos *et al.*, 1997; Schiuma and Marr, 2001; Sveiby, 1997). The main aspect the above cited authors underline, is that the effects of a KM project on an organizational system could be various. Furthermore, the impact on performances is strongly related to the approach adopted in the KM configuration (Davenport and Prusak, 1998; Wiig, 1997) and to the direct impacts on organizational behaviors in terms of knowledge creation, transfer and capitalization.

Recently, some contributions (Hansen *et al.*, 1999; Corso *et al.*, 2002) highlight the existence of different KM Configurations characterized by a different emphasis on the use of technologies, organizational and managerial tools to manage the flow of knowledge in codified or articulated forms. In particular, in Hansen *et al.* (1999) such Configurations are named Codification Strategy (knowledge is codified and stored in databases where it can be accessed and used easily by anyone in the company) and Personalization Strategy (knowledge is closely tied to the person who developed it and shared mainly through direct person-to-person contacts: computers chief purpose is to help people communicate knowledge, not to store it).

Basing on a survey on 127 Small and Medium Enterprises, Corso *et al.* (2002) confirmed and refined these findings, identifying three KM Configurations: "Traditional", "Codified" and "Network-based".

The Traditional Configuration is characterized, both internally and externally, by the use of traditional mechanisms based on interpersonal relationships for transferring and consolidating knowledge and by the relegation of ICT to a marginal role. The Codified Configuration is characterized by the strongest effort in managing and transferring knowledge in codified forms at inter and intra-firm level as well: ICT plays a key role in codifying knowledge and make it people-independent. In the Network-based Configuration, emphasis, at the intra-company level, is mainly on traditional organizational tools - paper documents and interpersonal relationships. At the external level, knowledge sharing is very strongly supported by the interaction with customers and suppliers and the use of gatekeepers; it is interesting to note how this cluster presents the utmost adoption percentage of 'borderer technologies' (Internet and 3D CAD), supporting collaboration with external actors along the supply chain.

The research investigation framework (Fig. 1) analyses four groups of variables and their relationships: Dispersed Workers Types, KM Configurations, Behaviours and Performances.

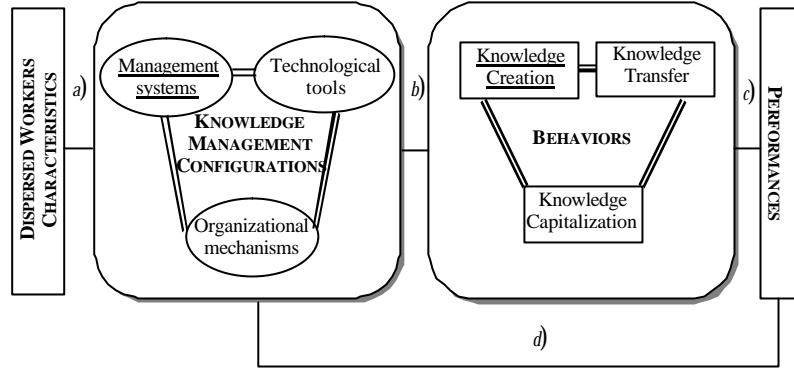


Fig. 1: The Research Framework

'DW Types' conceptualise a specific combination of variables describing the relationships of any dispersed workers with the firm. We hypothesize this block can influence the choice of the technological, managerial and organizational tools – the Levers - supporting the KM process.

'KM Configurations' identify the set of Levers firms adopt in order to foster individuals' 'Behaviours' in terms of knowledge creation, transfer/sharing and capitalisation.

Finally, the last group of variables sheds light on the effects that the organizational Behaviours, induced by the different KM Configurations, have on business and people 'Performances'.

In the model, the choice of the Levers, made accordingly to DW Types' (arrow *a*), produces effects in terms of Behaviours (arrow *b*) and, hence, in terms of Performances (arrow *c*). Obviously, in the long run, Performances tend to affect the choice and use of ICT tools, as well as the selection of the most appropriate management and organizational tools (arrow *d*).

Within this framework, the paper aims at answering to the following research questions:

- *RQ₁: What are the Levers, Behaviours and Performances of KM Configurations for dispersed workers?*

3. SUPPORTING DISPERSED WORKERS: AN EXPLORATIVE ANALYSIS

3.1 Dispersed Workers classification framework

In order to classify dispersed workers – the 'DW Types' block – we identified specific variables which can describe the relationships of any dispersed workers with the firm.

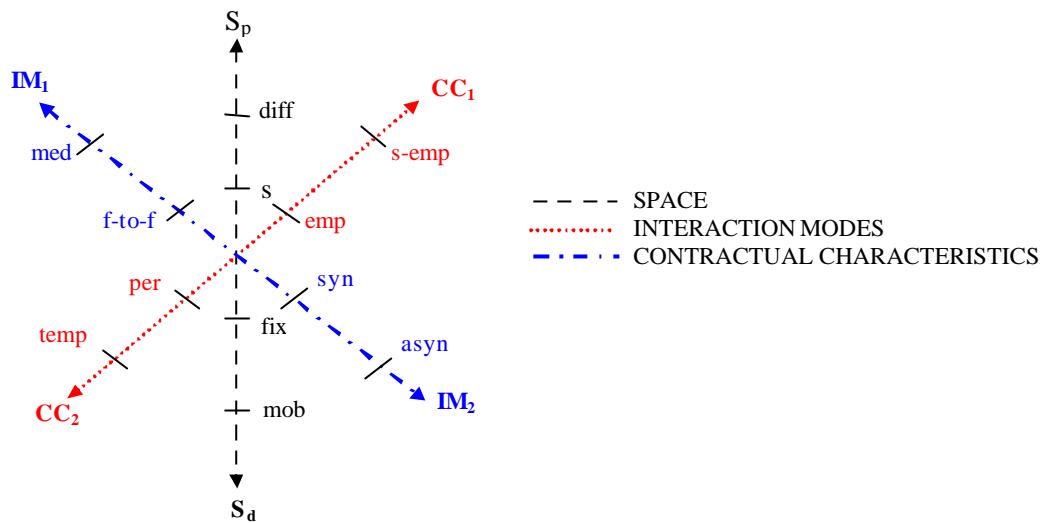


Fig. 2 – Dispersed workers classification

In particular, these relationships can be characterized with three groups of variables – *Space*, *Interaction Modes* and *Contractual Characteristics*. Each group encompasses two dimensions, resulting in a radar representation, as shown in Fig. 2.

The *Space* group refers to either the physical and the dynamic dimensions. The first one – S_p – identifies the place where the DW usually works: it can be the same as the location of the company (s) or different from that ($diff$). The second one – S_d – refers to the dynamic aspect of space, that is to the frequency in working in a certain place (s or $diff$): if a DW never changes its working place, then its space is *fix* (fix), while, on the opposite case, it is *mobile* (mob).

The *Interaction Modes* group refers to either the human and the time dimensions. The first one – IM_1 – identifies the degree of human interaction: it can be face-to-face communication ($f\text{-}t\text{-}f$) or a mediated one (med). Obviously, we can have a combination of the two variables. The second one – IM_2 – refers to the synchrony degree of interaction: it can be a synchronous (syn) or asynchronous ($asyn$) communication (or a combination of the two). Finally, the *Contractual Characteristics* group refers to either the contractual relation nature – CC_1 - between the worker and the firm – employer (emp) or self-employer ($s\text{-}emp$) - and the duration time of that relation ($permanent$ or $temporary$).

Depending on the combinations of the variables related to the six dimensions, a DW type can be identified.

A fully dispersed worker is a specific ‘extreme’ constellation of the six dimensions mentioned above.

3.2 Methodological settings

The dataset refers to three firms: A is the Italian leader and the European second producer of seamless steel tubes; B is the leading European operator in terms of GSM lines on a single network and leader in the domestic market; finally, A is a global leader in the research, production and marketing of medical diagnostic equipment and related services.

In all the case studies, we selected and analyzed the sales process as for the three investigated firms it represents a knowledge intensive process which involves dispersed workers.

3.2.1 Characteristics of the analysed firms and dispersed workers

A is part of a group operating worldwide mainly in the business areas of the steel industry, infrastructure projects, industrial plants and processes, energy and power field, and public services sector and is an integral part of another group leader in both production (13% at world level) and in exporting seamless tubes (19% of the world market). A is the leading producer of seamless tubes in Italy, employing 3,185 people, with an annual production capacity of 950,000 tons of finished products. In addition, A furnishes 4% of world-wide production and holds 6% of the world market. It exports more than 60% of its total shipments, achieving a turnover of 850 million dollars. In Italy, it owns five plants producing seamless, welded, and cold-drawn tubes, and gas cylinders. A offers to its customers a personalized treatment by means of its service centres, the logistic platforms localized in the most important Italian regions and a capillary network of authorized dealers. Thanks to an approach based on the total service to customers, A offers:- technical assistance and development of products manufactured on the basis of customer requests and/or developed together with the customer itself;- complete logistics services, managed by means of the service centres and the logistic platforms;- just in time supply and stock personalized management; - supply of complete packages of pipes and accessories in the petrochemical and energetic industries.

Within all these services, A offers an internet-based assistance to customers, who can:
purchase online cylinder and pipes for water and gas;
follow online the order tracking;
consult and download the industrial product catalogues, as well as check the different technical characteristics (order definition, reference norms, dimensions and tolerances, lengths, checks, surfaces, certification, identification and marking, minimum order, packaging, technical assistance and degree of machinability);
use the calculus models for steel tubes for general purpose thread, for mains pipes to carry water and gas and for tubes in carbon steel and alloy steel black plain ends.

A sales structure is rather complex. It consists of a director, three segments directors, eight area heads, approximately thirty sales people, closely working with customers for complex orders, and approximately sixty sales assistants, mostly working by telephone.

B is the leading European operator in terms of GSM lines on a single network and leader in the domestic market with about 24.6 million lines as at 30 September 2002. Basing on its old monopolistic position, B played a trail-blazing role in the mobile telecommunication industry, both opening in Italy a mass market for the mobile business and making Italy itself one of the most advanced European markets in terms of penetration and supply of advanced services.

In order to keep the leadership in a market in which the penetration level of the mobile voice services is already very high and competitors are more and more numerous, B competes on innovation both at the technological and the service level, consolidating its own leadership in the traditional voice business and concurrently becoming one of the fundamental players in the development of the whole tlc industry.

In the last years, B tried to enlarge its presence also outside Italy, particularly in Europe and in South America.

In Italy, B the sales force is divided into three groups, according to customers size. Large firms are directly followed by dedicated account managers; customers are contacted by

means of shops and ecommerce. For small and medium enterprises, B makes use of an indirect sales force, composed of approximately 150 agencies (Business Promoters), employing almost 1000 agents.

C, which is listed on the Milan stock exchange, is a global leader in research, production and marketing of medical diagnostic equipment and related services (2001 net sales 237,600 thousand euros, +9,3% on 2000).

Over 16% of its 700 employees is actively engaged in R&D in order to pursue new diagnostic technologies to be introduced in the international healthcare market.

In December 1995 C became part of a big pharmaceutical group (Beta), that is now its major shareholder.

Particularly worthy of mention, is the joint R&D program with Beta Group for the development of new medical imaging modalities, based on combining new generation contrast agents and dedicated equipment design, that is tuned to the specific characteristics of the contrast agent itself. Within this scheme, the two firms have formed a joint Advanced Research Team (ARC) that includes both electronic imaging experts (in Genoa) and contrast agent developers (in Geneva) with the aim at facilitating the sharing of knowledge.

Ultrasound is the core business of C with an extended product line. The firm is among the first ten (Siemens and Philips are the first two) that control over 95% of the global ultrasound market. This activity involves two business units: one within the parent companies in Genoa and Florence and one at its subsidiary in Maastricht (Holland). These two business units, while focusing on different target customers, share both technological know-how and a common coordinated distribution network.

C is acknowledged worldwide as the market leader in "dedicated" MRI (Magnetic Resonance Imaging): that is, MRI equipment developed for imaging joints and limbs. These systems require no special facility preparations, are very easy to use and cost-effective and, therefore, they are installed and used mainly in small medical surgeries.

C has also gained an international reputation in non-imaging diagnostics, specifically in high performance cardiology systems.

In just ten years, C has established direct activities in China, Holland, Belgium, Argentina and Brazil and partnerships with local entrepreneurs in Spain. Furthermore C franchises are operating in Turkey and in India. In addition, an international distribution network covers over 80 countries in the world.

	A	B	C
Sector	Steel	Telecommunication	Biomedical
Core product	Seamless tubes	GSM line operator	- Dedicated magnetic resonance imaging - Imaging diagnostics
Number of employees	3,185		700
Sites	5 Operative Units in Italy	- Europe south America Mediterranean basin	China Holland Belgium Argentina Brazil

Tab. 1 - Description of firms

Using the framework proposed in § 3.1 we identified the DW Types. As illustrated in Fig. 2, the three cases have almost the same DW type.

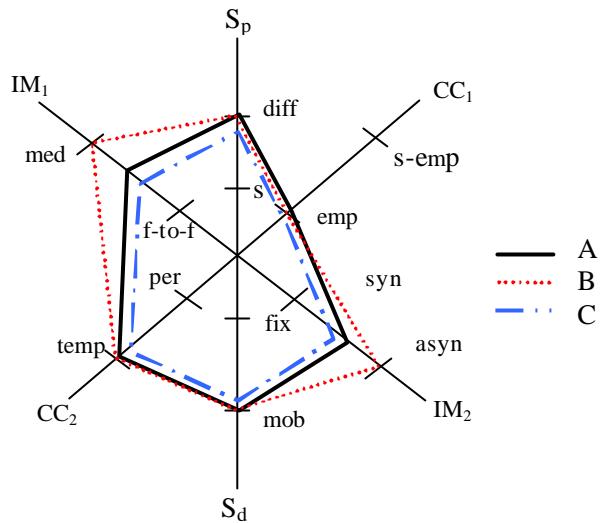


Fig. 2 – Dispersed workers types

3.2.2 Data collection

We collected data through semi-structured interviews with individual respondents and observations. We gathered information on the perspectives of high level of the management hierarchy (responsible of Human Resources/process) and the respondent backgrounds were a mix of engineering and economics ones.

We conducted case studies during 2002. During the site visit, we also kept record of impression and recorded informal observations we made in participating in coffee breaks and firm tour.

To conduct two-hour semi-structured interviews we used an interview guide and asked respondents open-ended questions.

The interview guide had two sections. The first part referred to the competitive sector description; the second was focused on DW (typology accordingly to the dimensions proposed in the model, statistics, tasks characteristics, main criticalities and needs, knowledge flows and performance). We also gathered financial data.

3.2.3 Data analysis

We analysed data by first building individual case studies and then comparing a cross-cases to build a conceptual framework. A case study for each site has been written using the interview and the record of impressions. In order to maintain the independence of the replication logic, we completed all case write-ups before using the cross case analysis. For each case we identified the KM Configuration (in terms of Levers), the Behaviours and the Performances. We compared the three cases to identify common dilemmas and created tables and graphs to facilitate further comparisons.

The conceptual insight developed through an iterative process: after the comparison of pairs of cases, we went back through the cases to confirm and adjust our ideas and we also went back to the original interviews in order to have consistency between our ideas and the data.

3.3 Results

3.3.1 Case 'A'

Differently from the other firms of the group, who have few large customers, A has got many customers, hence attributing to customer information management a great relevance. As a matter of facts, the different ways sales people had in organizing information, created great synthesis difficulties for both segments directors and area heads. This problem, which was exacerbated by the recent enlargement of the customers number resultant from the recent acquisition of two commercial organizations, required the re-design of the commercial structure as well as the introduction of new rules in order to guarantee a greater coherence in the acquisition procedures and in the management of customers information. The introduction of a CRM system allowed an integrated vision of the information regarding customers and the monitoring of their behaviour.

CRM supports the management and the display of the information regarding A customers. Such information are divided into four sections:

- *Customer sheet*, which keeps trace of the story of the relationship linking the customer itself to A, of personal and administrative information and of the requested product and services;
- *Visit report*, with data on the relationships sales people, technical personnel and product manager have with the customer;
- *Analysis*, containing statistical data in synthetic form (standard report) and personalized for (by means of query);
- *Management* with the tools for CRM system administration.

A fifth section - *Prospect* – is dedicated to the management of new customers.

CRM is used by the whole sales force, strategic marketing and administrative people, obviously with different right of access to the information. It is also used by product managers and engineers.

Differently from the past, sales people have direct access to *Customer sheets* in order to properly rank customer problems as well as to assess in real time their work performances. In addition, the sales force can directly transfer knowledge in the tool, avoiding the assistant interface.

The tool has changed either horizontal and vertical relationships: for the first point, a better knowledge sharing within agents, while, for the second, the weekly meetings with the area heads are not dedicated to customer situation update any more, but rather to discuss future commercial strategies.

Regarding performances, A registered: an higher level of empowerment, sales force professional updating, better response time to the customers and, finally a better corporate image.

3.3.2 Case 'B'

In front of the necessity to improve the poor knowledge and weak relationship B had with its agents (as at the end of 2000) – put in evidence by their high turnover level (greater than 50%), their unsatisfactory degree of qualification and their belonging feeling – B introduced a web-based platform (*B_plat*) for developing and creating a virtual community between the agents. The challenge was to make *B_plat* an environment where the agents could train, exchange experiences and acquire information regarding the company and its products. In other words, with *B_plat* the aim was to give agents the social dimension that the dispersed

work risks to deny and to build a direct communication with the agents, so avoiding the interface of the agency owners.

The platform is composed of five sections: *News*, where the most important information are classified and published; *Training*, where courses (with asynchronous fruition) are provided; *Offer*, containing information regarding B offer and the benchmark with that of competitors; *Community*, containing moderated forums, where agents can know each other, discuss, ask questions and exchange experiences, as well as information and *Desktop* with a schedule of interesting events and a selection of useful tools such as presentations, ideas for customers and a service provided by experts supporting agents on commercial, fiscal and technological matters.

The use of the *B_plat* was encouraged by means of a prize game rewarding those users who show to be more active in information sharing: the possibility to have a prize but, most importantly, the satisfaction the agents got in climbing the hit and growing in colleague esteem revealed to be the most stimulating factors to game participation.

Since its introduction, the platform received a success even greater than the expectation, as the rapid growth in the users number as well as the no working time usage proved. The forum, where the agents have the opportunity to ask questions/help and tell their own experience, immediately became the heart of the system. Soon after the agents became proactive in proposing and asking for changes to the platform. Between the most important changes, that make today *B_plat* a KM system, we should remember: i) the introduction of an offer channel with up-to-date information on B products and services; ii) the setting up of a ‘direct line’ where B marketing people answer to agents’ questions (such ‘direct line’ soon revealed as an important source of information and impressions regarding the market); iii) the introduction of a news channel for the publication of both information regarding industry and papers for stimulating dialogues with customers or colleagues; iv) the enrichment of the training channel with programmes for the development of sales skills.

In addition, B has obtained the following performances:

turnover reduction: thanks to *B_plat* and in addition with other initiatives, B has experienced in only six months the reduction of the turnover rate, falling from 59% as at 2000, to 29%, as at 2001;

better qualification of agents: the agents turnover reduction, the experience exchange and the training opportunities (e-learning allowed the reduction of training costs) have contributed to the improvement of agents’ qualification;

better understanding of the market: thanks to the better communication between the organization and the sales force, B has greatly improved market knowledge.

3.3.3 Case ‘C’

In 1995, when C was already a leading edge research company, dealing with sophisticated technologies as MRI and ultrasound, it had just started the development of an intranet infrastructure and most documentation about its advanced products was only in paper format. After, a new internet based tool that allowed the seller to make offers on site and to manage the approval cycle through a workflow system. The development of the new tool implied the redesign of the whole process and it took several months to be completed.

The centralized storage of updated information about products and customers can be considered an important step of knowledge capitalization that impacts on efficiency and effectiveness. Second, the system keeps trace of the offers made and the stipulated contracts allowing marketing and monitoring activities. The customer file is progressively enriched with the customer order history, the purchasing profile, the own products held and the

competitors products held, and previous contact response details. These data could be used to identify new customer needs, to study the purchasing patterns in order to better understand the customers behavior.

From the organizational and managerial points of view, it resulted in the formalization of responsibilities and autonomy of the seller – i.e. the dispersed worker- who was empowered to manage the customer in a more personalized way. Before the introduction of the automated process, a formal or informal check and approval of the offers and of the stipulated contracts always occurred. Now the cases that require check and approval are well defined and known. Anyway, in most cases, the whole cycle can be managed by the automated workflow, leaving the seller to be the only direct interface with the customer.

The system tends to execute some repetitive activities, that were generally performed by the sales personnel. The lightening of the sales department workload gives immediate benefits, leaving them more time to carry out tasks with additional value, such as customizing the offer and concluding commercial transactions. In this case, technology drives sales people empowerment.

People perceived a general improvement in the number of sales generated, customers gained and revenues. Sellers on the field perceive an improvement in their quality of working life and in the efficiency, due to the possibility of managing the whole sale on site. They feel to have gained autonomy and make pressures to extend the use of the system to more strategic purposes such as to improve customer retention, customer relationships and customer acquisition.

This would mean to act on organizational, managerial and technological configuration in terms of restructuring of information flows, redefining tasks and responsibilities and investing on a more sophisticated use of technology in order to radically innovate the way of making business. Successive interviews with senior managers indicate that they do not perceive the need of a more sophisticated use of presently installed system and, however, they do not consider it as a priority for the organization.

	A	B	C
LEVERS	CRM pilot project	Web-based platform Prize game	CRM
BEHAVIOURS	<ul style="list-style-type: none"> - Direct K access - Direct K transfer in the tool - Better K sharing within agents and between functions - Removal of K sharing with the area responsable 	<ul style="list-style-type: none"> - Rise in K sharing - Direct line - Direct K sharing within agents - Increase in K creation 	<ul style="list-style-type: none"> - Increase in K creation
PERFORMANCES	<ul style="list-style-type: none"> - More empowerment - Professional updating - Better response time - Better corporate image 	<ul style="list-style-type: none"> - Initiative in new functionalities demand - Professional updating - Turnover reduction - No working time usage - Spontaneous platform usage - Better market understanding 	<ul style="list-style-type: none"> - Initiative in new functionalities demand - More empowerment - Focus on additional value tasks - On site management of sales

Tab. 2 – Tools, Behaviours and Performances

The three cases, which are characterised by the same DW type, seem to adopt the same KM Configuration. We are in the pre-paradigmatic phase of the theory development on this

stream and theory building necessarily requires further field analysis; however from the three explorative cases, it seems to us that DW Types are drivers in KM Configurations choice.

4. FUTURE DEVELOPMENTS

Next research steps require to analyse different DW types respect to the ones presented in the paper, in order to identify the associated KM Configurations, Behaviours and Performances. This is necessary to validate the hypothesis which seems to emerge in the paper: *the ‘DW Types’ are key drivers for the ‘KM Configurations’*. Further case studies have been developing.

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