

KNOWLEDGE WORKERS, COMPETENCIES, VIRTUALITY AND MANAGEMENT

Mária Fekete Farkas, L. Gábor Török*

Abstract: In this paper the authors set out to interpret and define the concept of the „knowledge worker” with reference to the context of post-industrial transformation (new economy, information/network/knowledge/learning economy/ society). They are reviewing a three dimensional model applicable for the identification of different types of knowledge workers and discuss in detail various issues with regards their work-related competencies. The economy of emotions and attention as well as the phenomena of virtual work are also explored within the same context.

Keywords: knowledge workers, competencies, virtuality, management

Introduction

The earlier economic model dominated by the concept of mass production has been replaced by the " *new economy*" of the post-industrial era. Parallel to this transformation process, the social characteristics of the developed economies have been subject to change and new dimensions of social analysis have emerged. The nature of the new formations brought about by post-industrial development is indicated by the terminology used in attempt to describe any associated phenomena: information economy/society, network economy/society, knowledge economy/society, learning economy/society. The change that has taken place has triggered some radical repercussions in various domains, such as the world of work, organisations as such the content of work activities, the nature of human resources as well as requirements with regards employees and managers. One of the domineering consequences of change has been an expansion of the sphere of intellectual activities at work with particular regards to the role of knowledge workers. From a macro point of view, knowledge workers represent the new social type of labour. They form a segment of the labour market that is undergoing constant growth both in terms of headcount and importance. At the same time, from a managerial point of view, knowledge workers are increasingly considered members of the organisation the work and intellectual capacity of who is to be effectively leveraged and mental potential thoroughly capitalised upon. Performance in this field is becoming a critical success or failure factor as far as overall achievements are concerned. The specific features of knowledge work and knowledge workers can be approached from a variety of different angles. In the following we are going to discuss the definition and characteristics of knowledge workers from the point of view of work related competencies. It is beyond the scope of this paper to explore such important issues as knowledge and mental

* Associate Prof. Mária Fekete Farkas, Associate Prof. L. Gábor Török, Szent István University Gödöllő, Hungary

✉ Corresponding Author: Farkasne.Fekete.Maria@gtk.szie.hu

capital or the subject of knowledge management despite its manifold implications for both practical and theoretical thought. On the other hand, questions related to these issues are discussed in numerous publications, such as for example the monograph [1] by the Chełchochowa University of Technology. In this paper we only wish to underline the point that the prime task of management *is not* to manage knowledge that has already been created and become explicitly and available, *but to* manage the people who act as points of origin for the creation, storing and sharing (or not sharing) of knowledge. However, successful performance in this field requires the competencies of a *leader* much more than those associated with traditional *managerial* responsibilities.

Interpreting the concept of the “knowledge worker”

The term “knowledge worker” was coined in the 1960s as post-industrial “new economy” began to replace industrial mass production. It is a conceptual reflection upon the complex and underlying developments which evolved in the most advanced economies (with particular respect to Japan and the USA). Peter F. Drucker is the first whose early assertions with regards highly qualified intellectual labour have grown to meet the definition criteria that is in use today to describe knowledge workers. In his book published in 1999 [2], Drucker considered the productivity of intellectual labour as one of the key issues to be address by XXI. Century management and identified the following six points as of key importance.

1. *Task-orientation*: the basis for assessing performance is the task to be completed and therefore defining the task is of key importance.
2. *Autonomy*: labour in intellectual positions need to act autonomously, be self-led and take responsibility for the productivity of their performance.
3. *Innovation*: contribution to constant innovation is to be considered a task as well as responsibility of the intellectual worker; it is part of his job.
4. *Learning and teaching*: intellectual work requires continuous self-learning as well as an engagement to teach others and transfer knowledge.
5. *Quality-orientation*: assessing the productivity of intellectual labour is not or not predominantly a quantitative issue; quality here plays a decisive role.
6. *Asset vs. cost*: the productivity of intellectual labour requires that intellectual workers be regarded as an asset rather than a cost factor.

With regards the above, it is to be noted that the importance of teaching and learning as well as that of treating intellectual labour as an asset are such notions that later on grew to expand into new and broader concepts like knowledge management, organisational learning and learning organisation. Drucker even mentions that those who possess knowledge are to become new and unique actors of the economy: on the one hand side they become vessels of knowledge capital whereas on the other side they remain to be employees on a company’s payroll. This shift is to be viewed as a remarkable development with regards the capitalist

system that has predominantly been fuelled by financial capital – such a development calls for a reconsideration of the system itself.

The change taking place concerning the content and meaning of the term “knowledge worker” is embedded in the process in course of which the structural features and dimensions of the post-industrial “new economy” have emerged. These characteristics are well reflected in the terms “information intensive”, “network based”, “knowledge driven”, “learning oriented” which all imply new societal and economic qualities as well as may be applied to some new types of and phenomenon associated with organisations. Manuel Castells [3] defines the three most important characteristics of post-industrial society as the following.

1. Productivity and growth originates from the creation of knowledge which through the processing of information has an impact on the overall economy.
2. The domineering area of economic activities shifts from the production of goods to the provision of services. (...) The more advanced the employment and production system of an economy is, the more it is focused on services.
3. The new economy establishes a preference for those professions that require advanced skills of information processing. The scope of intellectual, managerial and engineering occupations requiring college or university degrees will outgrow all other occupations and become the core of a social structure.

The information processing capacity brought about by advancements in the field of information-communication technology (ICT) is identified by Castells as a pivotal factor to trigger the development of new production processes. As a result, a new “information paradigm” has been created which calls for a new system for the division of labour. This system is described by Castell by means of introducing a three dimensional typology.

1. Dimension of value creation. This refers to the tasks to be completed within the framework of information technology processes as well as the actors performing these tasks. These actors are differentiated as below:

- 1.1 *Top managers* – strategic planning and decision making
- 1.2 *R&D personnel* – innovation and renewal of products and know-how
- 1.3 *engineers* – adaptation, application and operationalisation of innovations
- 1.4 *integrators* – integrating the work done by decision-makers, innovators, planners and implementers with view to the organisational resources available
- 1.5 *operators* – execution of specific tasks with *much autonomy and self-initiative*.
- 1.6 *staff under supervision („human robots”)* – performing such complementary functions that are strongly pre-programmed, although not yet automated (perhaps cannot be automated).

2. Relationship dimension. This aspect refers to the types of needs and skills associated with establishing relationships for occupational purposes. Principally, this implies the position that one holds in a network of inter- and intra-organisational connectedness. These connections take place in real time, take the form of either personal interaction or through online channels of information communication. The types belonging to this dimension are:

2.1 *Network builders* – those who establish intra- or extra organisational relationships on their own initiative (they are considered an engine and source of dynamism for a network based company)

2.2 *Network-linked employees* – those who become (or may become) part of online networks but they are not autonomous to decide when, where or with whom they become linked to

2.3 *Employees with no link to the network* – those who perform specific well defined tasks which are communicated to them in the form of directions and instructions and without two ways interaction.

3. Dimension of decision making. This refers to the position that one holds in the decision making system as well as one's ability to contribute to the decisions made. The following types can be differentiated:

3.1 *Decision-makers* – those who practically make the decisions

3.2 *Contributors* – those who have a share in shaping the decisions made

3.3 *Executors* – those who operationalise and implement the decisions.

The model initiated by Castell lends itself for practical applications as well. It may serve as a useful frame of reference for managers to review how many different kinds of knowledge worker there are at their company or under their supervision. However, there is one aspect which seems to be missing from Castell's model as he himself is presumed to consider it a point of self-evidence: the escaping factor is "digital literacy" that is the individual's capacity to make efficient use of ICT applications in the course of his work. Once this level is known for the individual, the model becomes handy in identifying groups of knowledge workers in the organisation as well as to study the internal structure and stratification of these groups.

The competencies of knowledge workers

Competencies are such work related skills, know-how and personal characteristics which increase the probability that one can meet high expectation in a particular job in a sustainable manner. The aforementioned factor of "digital literacy" acts as a crucial competency for knowledge workers but it is not the only one that is relevant for effective and efficient performance. The basic competencies applicable to knowledge workers are in principal the same as those applying to jobs

in most organisations that set high demands for their employees. According to ground breaking book by Spencer and Spencer [4] the competencies (as weighted according to importance) that apply to technical experts and managers are the following:

Technical Professionals	Weigh	Managers	Weigh
Achievement Orientation	6	Impact and Influence	6
Impact and Influence	5	Achievement Orientation	6
Conceptual Thinking	4	Teamwork and Cooperation	4
Analytical Thinking	4	Analytical Thinking	4
Initiative	4	Initiative	4
Self-Confidence	3	Developing Others	3
Interpersonal Understanding	3	Self-Confidence	2
Concern for Order	2	Directiveness/Assertiveness	2
Information-Seeking	2	Information-Seeking	2
Teamwork and Cooperation	2	Team Leadership	2
Expertise	2	Conceptual Thinking	2
Customer Service Orientation	1		

Several skills classified by Goleman's model of *emotional intelligence* [5] as social competencies are of crucial significance for knowledge workers.

- The foremost important of these is the skill of establishing relationships. This skill bears particular relevance for groups of *network builders* as defined by Castell under section 2.1 of his model.

- *Developing others* is another skill that deserves special mention, particularly as Drucker regards “learning/teaching” as key aspects of intellectual work.

It is to be noted that this later skill or an aptitude in this direction is indispensable for having an effective system of knowledge management and it is also an indicative characteristic of the learning organisation as well. According to a source [7] referred to in a study [6] discussing the complementary competencies of knowledge workers, there are four such skills that are of significance particularly because of the specificities associated with the work performed by knowledge workers: *ability to deal with abstractions, systems-thinking, experimentation and cooperation.*

Being aware of the extent to which and at what level of proficiency these competencies have been attained by knowledge workers is of remarkable importance for managers for several reasons. On the one hand side, it provides a measure of the knowledge capital embodied in the form of individual employees as well the capacity of this capital for value creation. On the other hand, lacking areas regarding any competencies indicate the nature of the capital investment needed (education, training) in order to attain and sustain desired levels of proficiency. Thirdly, awareness of each individual’s level of skills attainment opens up a room for consciously taking advantage of the synergies that may emerge from cooperation. At last but not at least, for a manager to be in a position of recognising and taking advantage of the skills attained by knowledge worker, the manager himself needs to be competent in his role of leadership as well. Line management can be well supported by an innovative human resource management function by means of providing services in the domain of competency management. [8]

In addition to the aforementioned factors, we also need to indicate some such developments that contribute to expand the range of competencies required of workers in general and knowledge workers in particular. These developments are integrated into the global emergence and spreading of the information economy and society and are important for two main reasons. One is that the development of information communication based technology and the emergence of work processes crystallised around this technology render an increasing number of new human skills to service of value creation. Most of the skills concerned have previously been considered economically irrelevant, not desired or belonging to one’s private sphere. The other reason to be mentioned is the tendency to transgress the traditional spatial and time related boundaries of human life and the ever more realistic emergence of virtuality both at the place of work and at home.

The economic relevance of emotions – “the economics of emotions”

The hypothesised model describing „homo oeconomicus” as a creature driven by cold and decisive rationality and a fundamentally rooted self-maximising tendency has been subject to much criticism and attempts have been to develop models that take a more complex approach to human economic behaviour. One of

these alternative approaches focuses on the mental and emotional states that human individuals and groups go through in course of their everyday activities and use these factors to explain their economic behaviour and transaction. [9]

The mental factors concerned are of social origin as they are created in the everyday interactions of individuals and groups. They include such factors as positive and negative attitudes, prejudices, myths, norms and value-orientations. Some manifestations of these factors have become of particular importance in the post-industrial era. Such is the case of *trust* the vital importance of which to ensure the sustainability of market relationships and social cohesion we have only begun to understand in the course of globalisation. Other factors such as *envy*, *vanity* and *selflessness* have major capacities to influence human behaviour too. Therefore they play a crucial role in shaping economic/market behaviour with particular respect to consumer decisions. It is just a natural consequence of this phenomenon that sellers in the markets are eager to take advantage of whatever marketing tool they can in order to influence human cognition and thus to win the emotions of consumers. A particular segment of knowledge workers (designers, product development experts, marketing and PR specialists) are active contributors to this so called “mind industry”, whereas those outside live exposed to its influences.

A certain group of emotions takes the form of competency requirements and become important factors for labour market processes or company functions such as performance reviews. A good example of this is the section of Goleman’s model of emotional intelligence referring to personal competencies, which includes items such as *emotional awareness*, *self-confidence*, *self-control and dedication*. Positive attitude as well as loyalty towards the employer has also become competency requirements and attempts of various successes have been made to measure them by means of tools such as employee satisfaction surveys. By allowing for some simplification, the above line of thoughts can be summed up as follows: the employees’ capacity to succeed and/or get promoted in the post-industrial labour market is increasingly influenced by appearance- and mentality-related competency requirements specified in a ways as to represent the interests of the employer. [10]

The economic relevance of attention - “the economics of attention”

Nobel Laureate Herbert A. Simon asserted in 1971 that the abundance of information is inversely related to the amount of attention available to deal with it. [11] The best (although imperfect) measure of the amount of *attention dedicated to the processing of information* is time. In its natural form, time is the least flexible resource of all: it is not possible to produce more of it, nor can it be stored, sold or purchased. Due to the proliferation of internet accessibility, the abundance of information has been experiencing exponential growth. *Attention* has become a *scarcity resource* and therefore the skills related to catching, directing and making good use of it have become one of critical importance. [12] The most prominent stage where these development have been unfolding is the market for goods and services where vicious battles are fought with the aim of catching the attention of

potential buyers. The price of focusing attention (such as the price of advertisement time on television) has reached elephantine dimensions. Quite naturally, this industry harbours its own share of knowledge workers too. However our attention here is to be redirected to another aspect of human attention.

In case of human beings the information processing and attention sharing capacity of the central nervous system is rather limited. We can only deal with a few things at a time and it so appears that we can only bear in mind a list of ten items from which to choose a focus of deliberate attention. Information technology can be of assistance in sharing our attention span or to make an economic use of the time spent dealing with specific issues, but the overall limitations of human nature cannot be eliminated. It is for this very reason that skill of *being able to economise on time and attention capacity, the ability to prioritise tasks and make choices of alternatives* have become a complex and crucial competency of knowledge workers. It may perhaps even be referred to as a *differentiating feature*. The subject of our attention can be one or more individual or group at or outside the workplace. The attention (positive or negative) directed to any particular individual or group is not equally distributed and therefore acts as *means of exchange* in the courses of interaction taking place within the organisation. The direction of our attention is influenced by a variety of cognitive and emotional factors and therefore the economies of attention and emotions are closely interrelated. Our ability of *self-management* that plays such a crucial role in searching for a job or getting promoted at the workplace can be interpreted as our capacity to catch, engage and direct to ourselves the attention of others. According to the "economics of attention" our *attention capital* belongs to our stock of immaterial assets and is usually rewarded in the form of high prestige and strong lobbying power. It is to be noted that the issue of attention economics may be especially important for managers occupied in knowledge working positions. It may bring benefits both with regards their relationships with their colleagues and themselves.

Virtuality as manifested in the world of work

The term virtuality with reference to an occupational context refers to situations in which *the actors of a work process carry out their tasks in such a setting where they are separated from one another in space and/or time and where they rely on modern means of an information technology based infrastructure to communicate with one another*. This kind of virtuality has gained importance and become a characteristic feature of the network economy as a consequence of increasing internet usage and the acceleration of globalisation. Those working in a virtual setting are not all knowledge workers and not all knowledge workers operate in virtual environments. Nevertheless, the two categories concerned do indeed overlap to a significant degree and it can be asserted that labour base most fit to meet the specific requirements of the information/knowledge/network economy/society it is made up by knowledge workers who are well acquainted

with the technical ways of virtual work. We may conclude that the post-industrial era, with particular respect to the advancement of ICT tools and globalisation as such, has called to life a new type of labour to satisfy its needs of specific human resources.

In terms of some of its aspects virtual work requires *special competencies*. This is driven by an underlying change that marks the beginning of new era indeed. The change concerned means that *our traditional conceptions of time and space are becoming relative*. In the context of work this is manifested in phenomena such as the broadening (on a global scale) of communication possibilities and a narrowing of intimate personal connectedness. In other words, interpersonal communication takes place via the internet by the use of a highly advanced infrastructure based on information technology. By virtue of the internet things geographically apart in space become reachable and accessible under real time circumstances. It is possible to establish linkages between continents and send emails or electronic documents, exchange audio or video messages or conduct video conferences within a matter of seconds. People in different time zones may cooperate in the same time and virtual setting or they may pass on to one another work in progress around the clock.

At the same time, the relationships among people who, in terms of time and space work closer to one another, become more distant and less personal. In such cases, interpersonal distances emerge from the ground provided by the available technical possibilities and take the form virtual space. This should not be accounted for purely by technology itself. Such phenomena are reinforced by issues such as the intensity of knowledge work, concentration on tasks, and the economic use of attention as discussed earlier, which all contribute to the narrowing of indirect, personal relationships and interpersonal communications. Conclusively, virtual work creates new circumstances and conditions and forms new competency related criteria too. These phenomena apply to knowledge workers as team members operating under virtual circumstances in general and to managers supervising virtual teams from a distance in particular. With regards virtual teams, professional literature [13], [14], [15] claims the below competencies to be of crucial importance:

- ability to work in networking mode over hierarchical, functional and cross-organisational boundaries
- focused/efficient use of the tools of electronic communication and cooperation
- assertiveness to achieve the organisational environment needed for performance and the acquisition of resources
- proficiency in project management know-how: organise work and time
- achievement orientation, seeking responsibility and being “internally driven”
- high level of social awareness with regards relationships with team members and others (empathy, norm adherence)

The key competencies applying team leaders are the following:

- fulfilling the necessary managerial functions in the context of different cultures/subcultures
- introducing and adapting organisational systems/processes and know how that best fit the specificities of the team
- establishing forms of network based cooperation in and outside the organisation
- providing for the focused use of appropriate means of electronic communications and cooperation
- setting appropriate balances and proportions for communication via IT platforms and interactions taking the form of personal encounters
- assessing and managing performance without the possibility of taking advantage of traditional feedback opportunities
- managing the individual development and promotion needs of team members
- building and sustaining trust within and outside the team.

Summary

Rising number of the knowledge workers being the characteristic labour type of the XXI century. This century, calls for a new managerial approach. The high level of work autonomy allotted to knowledge workers means that for remarkable extent knowledge workers are managers of their own. This has twofold consequences: the content of managerial functions and roles undergo changes while, parallel to this, new functions and role expectations emerge. The increasing importance of the economics of emotions and attention should be thoroughly considered both from the perspective of market operations and organisational behaviour. Virtual work has been made possible by the spread of ICT technology and has been reinforced by the process of globalisation. Managers may want to become aware of the extent to which knowledge work is characteristic of their organisation and learn more about how knowledge workers could best be managed. A meaningful starting point for this is for them to take stock of the competencies that are required for sustainable good performance in knowledge working positions.

References

- [1] F. Bylok, L. Cichobłaziński (eds) Humanization of Work and Modern Tendencies in Management Częstochowa, Częstochowa University of Technology, 2010
- [2] Drucker, P. 21. századi kihívások a vállalatirányításban HVG Kiadó, Budapest, 2001
- [3] Castells, M. A hálózati társadalom kialakulása Budapest, Gondolat-Infonia, 2005
- [4] Spencer, L., Spencer, S. Competence at Work - Models for Superior Performance New York, John Wiley & Sons, Inc., 1993
- [5] Goleman, D. Érzelmi intelligencia a munkahelyen Budapest, SHL Hungary Kft., 2002
- [6] Harangi, L. A knowledge worker komplementer kompetenciái In: Tudásmenedzsment, 2008 (Vol. 9) No.2, pp. 21-30
- [7] Reich, R. The Work of Nations Simon and Schuster, New York, 1991

- [8] Pytel, M., Oleksiak, P. Competency Management as an Element of Innovative Human Resource Management In: Humanization of Work and Modern Tendencies in Management Częstochowa, 2010 pp 249-264
- [9] Hámori, B. Érzelemgazdaságtan, Budapest, Kossuth Kiadó, 1998
- [10] Makó, Cs. A munkaerő szubjektív, valamint emocionális és esztétikai jellemzőinek felértékelődése a munkafolyamatban (Példák a "régi" és az "új" gazdaságból) Vezetéstudomány, 2001. (32. évf./vol.), 12. sz./no., 13-24. old.
- [11] Simon, H. Korlátozott racionalitás, Közgazdasági és Jogi Könyvkiadó, Budapest, 1982
- [12] Szabó, K. - Hámori, B. Információgazdaság Budapest, Akadémiai Kiadó, 2006
- [13] Fisher, K., Fisher M. The Distance Manager -A Hands-On Guide to Managing Off-Site Employees and Virtual Teams. McGraw-Hill, 2001
- [14] Hoefling, T. Working Virtually Managing People for Successful Virtual Teams and Organizations. Sterling, Virginia Stylus Publishing, 2003
- [15] Duarte, D., Snyder N. Mastering Virtual Teams. Strategies, Tools, and Techniques That Succeed. San Francisco, Jossey-Bass, 2006

PRACOWNIK WIEDZY, KOMPETENCJE, WIRTUALIZACJA I ZARZĄDZANIE

Streszczenie: W niniejszej pracy autorzy podejmują się próby zinterpretowania i zdefiniowania koncepcji *pracownika wiedzy* w kontekście postindustrialnej transformacji (nowa gospodarka, informacyjna/sieciowa/wiedzy/ucząca się gospodarka/społeczeństwo). Badaniu poddano trójwymiarowy model stosowany do identyfikacji różnych typów pracowników wiedzy. Ponadto szczegółowo przedyskutowano różne kwestie odnosząc się do kompetencji związanych z pracą. Ekonomia emocji i uwagi a także fenomen pracy wirtualnej zostały również zbadane w tym samym kontekście.

脑力劳动者，能力，虚拟与管理

摘要：本文作者参照工业型后对力劳动者的概念及界定进行论他们正在全面地对不同类型的脑力劳动者鉴定，同时与他们工作相应的能力的细在同一范围内讨情，注意力，以及虚拟工作的现象。