SECTION 3. General issues in management

Deniel J. Adriaenssen (Denmark), Dagny A. Johannessen (Norway), Jon-Arild Johannessen (Norway)

Knowledge management and performance: developing a theoretical approach to knowledge workers' productivity, and practical tools for managers

Abstract

Issue: The number of knowledge workers continues to grow, but we know little about what factors will promote knowledge workers' productivity.

Problem for discussion: How can managers promote knowledge workers' productivity?

Purpose: To develop aspects of a theory to promote knowledge workers' productivity.

Method: Conceptual generalization.

Findings: Seven propositions (a mini-theory) for knowledge workers' productivity.

Keywords: knowledge worker, productivity, theory.
JEL Classification: M1.

Introduction

Possibly the most important contributions to progress in the 20th century were made by technological developments, in general, and information technology, in particular (Baird and Henderson, 2001). In the 21st century, according to Drucker (1999a, p. 135), the focus will be on knowledge workers, particularly on ways of motivating them and increasing their productivity.

While the most important contributors to productivity in the industrial society were industrial workers, whether skilled or unskilled, there is much to suggest that the most important contributors to productivity in the knowledge society will be knowledge workers, whether highly or extremely highly educated (May et al., 2002).

A literature review conducted by Wong (2013) in connection with his PhD thesis concluded that there have been relatively few studies worldwide of knowledge workers' productivity. Wong found no major studies that had conducted an empirical investigation of this topic.

Several researchers have highlighted the importance of – and the difficulties associated with – managing these new knowledge workers (Mabey et al., 2002; Smith et al., 2005; Alvesson, 2000; Swart, 2007; Guest, 2011). According to Hlupic (2014), a significant problem in knowledge organizations today is that management paradigms and management practices have not kept up with the times. Senior managers who follow outdated management practices will structure and manage their organizations using a hierarchical approach based on command and control principles (Hlupic, 2014).

The aim of this article is to develop a mini-theory concerning the management of knowledge workers and ways of increasing their productivity. In this context, we use the term "theory" to refer to a system of propositions (Bunge, 1977, 1985).

The problem for discussion is as follows: how can managers promote the productivity of knowledge workers?

Our objective in this conceptual study is to develop a system of propositions, i.e., a theory (Bunge, 1977, 1985) regarding factors likely to promote knowledge workers' productivity.

The OECD has described a knowledge worker as *a person whose primary task is to generate and apply knowledge* rather than to provide services or produce physical products (OECD, 2000a, b, c, d, e, 2001). This may be understood as a formal definition of a knowledge worker. This definition does not restrict knowledge workers to creative fields, as is the case with, for example, Mosco and McKercher (2007, pp. 7-24). The OECD definition also allows for the fact that a knowledge worker may perform routine tasks. The definition also does not limit the type of work performed by knowledge workers on tasks relating to creative problem-solving strategies, unlike the definition provided by Reinhardt et al. (2011).

We have developed a conceptual model (Fig. 1) that captures the essential features of what we

Deniel J. Adriaenssen, Research Fellow, Århus University, Department of Psychology, Denmark.
Dagny A. Johannessen, Blue Cross, Norway.
Jon-Arild Johannessen, Professor (Full), Kristiania University College and Nord University, Norway.

have discussed in the introduction and that answers the question: how can we promote knowledge workers' productivity? Figure 1 also shows how the article is organized.

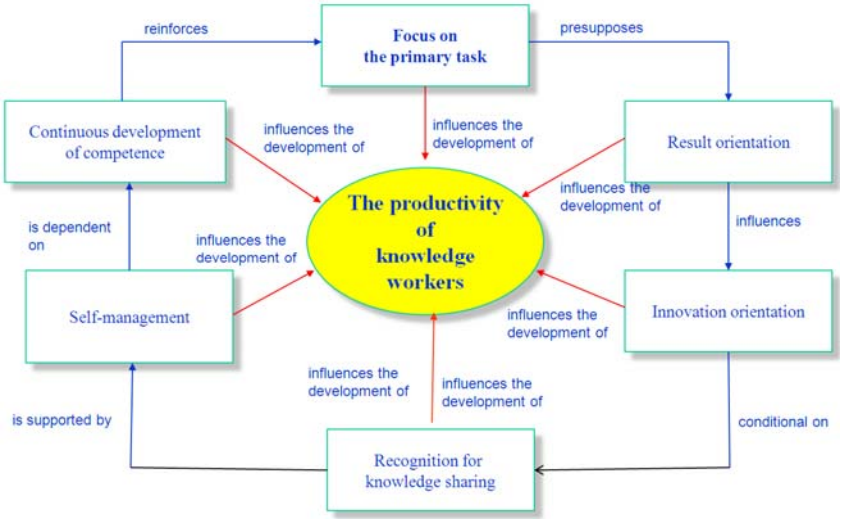

Fig. 1. The productivity of knowledge workers: a conceptual model

1. Organization

First, we will describe the method used in the article. Second, we will sequentially look at each element in Figure 1 and explain each one in relation to its theoretical basis. Finally, we will design a proposition for each element. The system of propositions will constitute a mini-theory (Bunge, 1977, 1985) for knowledge worker productivity.

2. Method: conceptual generalization

Research falls into two main categories: conceptual generalization and empirical generalization (Bunge, 1998, pp. 3-50, 51-107, 403-411). Conceptual generalization is an investigation whereby the researcher uses other researchers' empirical findings in conjunction with his or her own process of conceptualization in order to generalize and identify a pattern. This contrasts with empirical generalization, where the researcher investigates a phenomenon or problem that is apparent in the empirical data, and only thereafter generalizes in the light of his or her own findings (Bunge, 1998, pp. 403-411). The starting point for the researcher in the case of both empirical and conceptual generalization will be a phenomenon or problem in the social world.

Conceptual generalization and empirical generalization are strategies that are available for answering scientific questions. Which of these strategies one chooses to use will be determined largely by the nature of the problem and "the subject matter, and on the state of our knowledge regarding that subject matter" (Bunge, 1998, p. 16).

Conceptual generalization, which is the subject of our investigation here, is "a procedure applying to the whole cycle of investigation into every problem of knowledge" (Bunge, 1998, p. 9).

The approach here is to develop a conceptual model and, then, discuss each element in the model. An analytical scheme or model is a general sociological analytical tool (Turner, 1987, p. 162), which may be used to illuminate and organize a phenomenon, event, action or process. The purpose of an analytical scheme is "the construction of abstract systems of categories that presumably denote key properties of the universe and crucial relations among those properties… Explanation of specific events is achieved when the scheme can be used to interpret some specific empirical process" (Turner, 1987, p. 162). In this article, the analytical scheme will take the form of an analytical model (Figure 1), precisely, as Turner suggests, to show relationships between properties.

An analytical scheme may be used methodologically in two ways, says Turner. One way is when an empirical event can be placed in a category in the scheme: "then, the empirical event is considered to be explained" (Turner, 1987, p. 162). The other way is "when the scheme can be used to construct a descriptive scenario, of why and how events in an empirical situation transpired, then, these events are seen as explained" (Turner, 1987, p. 162). Both these methods will be used here. In addition to Turner's approach, we have drawn on Deleuze and Guattari's ideas concerning how a concept can be studied (Deleuze and Guattari, 2011, pp. 6-9, 15-17), and Adriaenssen & Johannessen's (2015) elaboration of conceptual generalization.

3. Focus on the primary task

What is the primary task? This is the key question related to knowledge worker productivity (Drucker, 1999a, p. 144). Stafford Beer (1995) says that the primary task is what the system is designed to do. In the case of an agricultural worker, industrial worker or

employee in the service sector, it is relatively easy to answer the question. However, for knowledge workers, the answer is somewhat more complex. This is, inter alia, on the grounds that we cannot quite define how a knowledge worker performs his/her work, even though we know what the primary task is (Davenport, 2005).

In the case of knowledge workers, we have not yet reached the stage where we ask what their primary tasks are (Drucker, 1999a, p. 144). It seems clear that most knowledge workers spend a good deal of their time on tasks that are not their primary tasks (Autor et al., 2003). For instance, an engineer, a nurse and others are often called away from their primary tasks to attend a meeting, fill out a report, document their work, conduct inspections, etc. (Wong, 2013). In most cases, these tasks prevent knowledge workers from doing their primary tasks, and these non-primary tasks could be performed by other employees at a much lower cost than when using specialists. For instance, a survey of nurses showed that they doubled their productivity[1] by transferring tasks that were not defined as their primary tasks to others (Drucker, 1999a, pp. 145-146).

When it is apparent what the primary task is, then one can advantageously use a method from "lean thinking", involving the elimination of non-value-added activities (NVA) (Liker, 2004; Womack, 2003). Eliminating non-value-added activities may be used to reduce costs and increase the productivity of knowledge workers. Non-value-added activities are all the activities and processes that do not create value for the customer. In this context, the customer concept of lean thinking ("the person next in line") is important (Womack, 2003; Liker, 2004). The primary task should be structured, i.e., all the activities and processes that do not specifically relate to the primary task should, as far as possible, be reduced and preferably eliminated or transferred to others. For instance, some of the activities that are considered necessary, but are not part of the knowledge worker's primary task can be taken over by others. When specialists in the fields of medicine, nursing, engineering or other fields use substantial resources to perform work not requiring their professional skills, this indicates that there is great potential for productivity improvements.

Proposition 1: The greater the extent to which knowledge workers are focused on their primary tasks, the more likely it is that their productivity will rise.

3.1. Result orientation. A principal function of management is to provide feedback on employee behavior and performance in relation to reaching the goals of the individual and the organization (Beer, 1995; Boselie et al., 2005). However, according to Latham et al. (2007, pp. 365-381), it is important that the following process steps are followed so individual and team performance can be promoted:

- First, the result that individual or team is expected to deliver should be clarified.
- Second, the development toward the result must in some way be remunerated, so that the individual, team and management know they are on the right track, i.e., a feedback analysis must be carried out.
- Third, management should continuously provide responses to the feedback analysis.
- Fourth, management should evaluate the results and make the necessary decisions based on the evaluation.

In result orientation, the first step is essential, because it is here that the knowledge worker, together with the management, defines what the individual or the team of which he/she is a member is expected to deliver. Performance will involve both quantitative and qualitative goals. If no such targets can be defined, it will be difficult for management to provide meaningful feedback. The objectives will, as a rule, be many and, therefore, the evaluation instrument should be able to handle sufficient variety to capture all the targets toward which the individual and team are working. The objectives must also be designed so that if the knowledge worker or team performs more than expected, this will affect the assessment and the reward system positively (Wagner and Goffin, 1997). If this does not happen, then, it is highly probable that the individual or team settles on the expected level (Cardy and Keefe, 1994).

Proposition 2: The greater the extent to which knowledge workers are focused on the results they are to deliver, the more likely it is that their productivity will rise.

3.2. Innovation orientation. Innovation is here understood as any idea, practice or material element that is perceived as new for the person using it (Zaltman et al., 1973). There are three points that are important in this definition (Johannessen et al., 2001).

- How does the individual perceive the innovation?
- The degree of novelty that determines whether it is an incremental or radical innovation.
- The requirement that the market must adopt an idea before it can be called an innovation.

Ideas are seen as the smallest unit in the innovation process (Hamel, 2002, 2012). However, this refers to the ideas that are in the process of development and not fully developed ideas. Before an idea can be characterized as innovative, it must prove to be beneficial to somebody, i.e., the market must accept the idea and apply it. Consequently, the creative

[1] The primary task in this case was defined as "patient care". Productivity was measured in the number of hours they used for patient care.

process of innovation is here understood as the benefit it has for a market (Amabile, 1990; Johannessen et al., 2001, p. 25). Thus, it is not sufficient that an idea is new for it to be considered an innovation. An idea may have a great degree of novelty, but if it is of no benefit to anybody in the market, then, it has no innovative value.

Innovation orientation presupposes: "a clear road map for making innovation everyone's job" (Hamel, 2008, p. 19). To achieve this, it is essential that businesses develop an information structure (infostructure) for creativity, so everyone can participate, not just the chosen few. This idea is an extension of Hamel's law of innovation (2002, 2007). The "law" states that only between one to two of one thousand ideas become innovations in a market. Therefore, an infostructure must be created to ensure that ideas are continuously produced in a business.

Proposition 3: The greater the extent to which knowledge workers focus on developing ideas to foster innovation, the more likely it is that productivity will rise.

3.3. Recognition for knowledge-sharing. There are few individuals, if any, that can develop knowledge on their own. An important point regarding organizations and institutions is that we depend on each other to develop knowledge. Therefore, every company should develop a system for transfer of experience and knowledge-sharing. Thus, we can become effective with the help of others. To achieve this, an organization needs to develop a system for organized and continuous improvement processes, or what the Japanese call "kaizen" (Maurer, 2012). This may be done in many ways. One way is to systematize lessons learned through information-sharing and organizational learning systems. Information is the knowledge worker's key resource (Drucker, 1999a, p. 123). Consequently, leaders should ensure that information is available, because it is information that enables knowledge workers to do their work effectively.

Recognition for sharing information and knowledge is primarily based on what others need to be effective, i.e., the focus is not on oneself. One should take responsibility for others and start a process in the organization, where one will also ultimately benefit from such a knowledge-sharing culture. By taking this perspective, a culture of knowledge-sharing can be created, which affects the entire communication climate in the organization (Bratianu, 2015). The management's responsibility in such a context is to support information and knowledge-sharing. The argument here is that if such knowledge-sharing does not exist in the organization, then, everybody will lose by it (Leistner, 2010). This is of course not a new insight; Barnard pointed this out as early as 1938 in his book *The Functions of the Executive* (Barnard, 1974), and later Mintzberg also pointed it out in 1973 in his book *The Nature of Managerial Work* (Mintzberg, 1997).

Skarzynski and Gibson describe one way of organizing transfer of experience (2008, pp. 45-85). First, teams of four are formed, comprising employees from different departments within the organization. The members represent a cross-section of employees, both in terms of expertise and experience. As a starting point, these teams should be dedicated to the tasks at hand, which is to develop, acquire and test new ideas. Each group is autonomous in relation to the organizational hierarchy (line) and the functional areas from which they originate and is accountable only to the manager in the organization, who is responsible for the process. Each group, then, takes a specific perspective in the process. Four perspectives are distributed among the four groups (Trompenaars, 2007):

1. Challenging prevailing thinking in the organization or industry.
2. Discovering underlying trends.
3. Examining your organization as a system of competences.
4. Understanding the unarticulated needs of the customers or potential customers.

The focus of each of the groups is new opportunities for value creation based on new ideas or the linking together of old ideas. The opportunities that are selected are organized as projects and, then, pilot projects are developed and tested in the market.

The organization of a pipeline for the transfer of experience is a strategic responsibility (Harris, 2005, p. 34). The aim is to transform the organization into a learning social system that integrates the knowledge that is spread throughout the organization (implicit knowledge), while it simultaneously utilizes the tacit knowledge of the organization (Pfeffer and Sutton, 1999) and accesses the knowledge that people don't know they have (hidden knowledge). Kirzner (1982) says that hidden knowledge is possibly the most important knowledge domain for creativity, innovation and entrepreneurship. By integrating the explicit knowledge, tacit knowledge, hidden knowledge and implicit knowledge of the organization with the external knowledge base, it is possible to develop a culture of experience-sharing (Seirafi, 2015).

Proposition 4: The greater the extent to which knowledge workers receive recognition for sharing their knowledge, the more likely it is that productivity will rise among all knowledge workers in an organization.

Proposition 5: The greater the extent to which knowledge workers are influenced by their co-employees, the more likely it is that their productivity will rise.

3.4. Self-management and self-organization. In the emerging knowledge economy, knowledge workers must to an ever-greater extent create their own careers. They must increasingly learn how to lead and organize their own work (Drucker, 2005). In this context, Drucker says: "They will have to place themselves where they can make the greatest contribution" (1999a, p. 163). Important in this context is the fact that not only the surroundings will change and affect businesses, but knowledge workers will also change, which, in turn, will also affect the businesses where they work. The biggest change for knowledge workers is that they must learn to manage themselves (Stacey, 1996). They must learn to recognize their own strengths and weaknesses; and they must know where they can make a difference. They must plan, develop and use a strong and robust network. They must plan for their next job, because they are very likely to work longer and outlive the organization they are working for (Stanford, 2013; Drucker, 1999a, pp. 163-165).

It is through knowing their own strengths and weaknesses, opportunities and obstacles that individuals can develop their personal change skills and achievements, so they can compare themselves with the best; they can also develop their personal motivation strategies, effectiveness skills and reputations (Roberts et al., 2005).

Whoever is able to manage themselves will be the winners in the knowledge economy, says Drucker (2005, p. 100). Most people know their weaknesses to some extent, but to a lesser extent their strengths (Drucker, 2005, p. 100). Gaining greater insight into one's strengths can develop performance (Roberts et al., 2005). In very few cases, if at all, is it possible to develop talent on the basis of weaknesses. Consequently, the individual must know specifically what he/she is does well and, then, reinforce this position.

It is only when the options' window is great and the options many, as is the case in the global knowledge economy, that there is really a need to develop insight into what one does well and, then, develop these aspects.

Before, when stability of the external world was relatively great and the pace of change relatively small, the need for continuous development of individual strengths was less important than in today's global knowledge economy, where the pace of change is rapid and complexity great (Stiglitz and Greenwald, 2015).

It is the emergence of the global knowledge economy that makes self-management and self-organization an important challenge for the individual knowledge worker. Self-management is based on interaction skills and emotional intelligence (Goleman, 1996). This means that every aspect of feedback is central to self-management. One aspect of feedback that is not immediately evident is the feedback type termed "feed-forward" (Hansen, 2015). Feed-forward is regarded here as an expectation mechanism. It seems reasonable to assume that our expectations influence our behavior in the present. It is, therefore, important that we make explicit to ourselves the expectations we have of a situation. By making expectations explicit, we have a greater opportunity to learn from our experiences and, thus, improve our performance. Feedback is the most important element in interactive skills and emotional intelligence (Goleman, 1996, 2007). In this way, there is a close connection between interactive skills, emotional intelligence and self-management. Analysis of feedback is a sure way to identify our strengths and, then, reinforce these (Wang et al., 2003).

It is the constant interaction between feedback analysis and the development of strengths (that we are not fully aware of) that makes self-management an important part of the individual's personal development in the knowledge society.

Self-management involves the transition from the question – What should I do? – to the question – What should my contribution be? (see Drucker, 2005, p. 106). The latter question is related to making a difference that really matters for one's self and others. To do this, the individuals must develop aspects of themselves (that perhaps they are not even aware of) to utilize the potential to make a difference. In this context, the individual must gain self-knowledge and also actively take relationship responsibility to become familiar with the strengths of others. In this way, it will be possible together to develop a difference that really matters, which is the first step towards a qualitative idea, which has the potential to be an innovation (Bateson, 1972, pp. 271-273).

The underlying elements of self-management, as we have emphasized them above, are the following:

- Feedback analysis.
- To understand others' goals and challenges and be able to take the others' perspectives (mentalizing).
- To focus on what you do well.
- To be part of a network that is committed to developing the reciprocal strength of what you and they already do well.
- To develop a personal story.

Proposition 6: The greater the extent to which knowledge workers can exercise self-management, the more likely it is that productivity will rise.

4. Continuous development of skills

A special feature of the knowledge society is that information flows freely, at a rate that does not incur time lag, and where financial, technical and cultural decisions are global (Castells, 1997). Florida (2008) has positioned the tension between the global and local levels to a few key urban areas in the world. The global level has acquired a geographic basis, focused on a few mega-cities, where key decisions are made that will have consequences for most people, instantly or with a time lag. This leads to, among other things, the fact that the knowledge society to a greater extent than the industrial society is characterized by a rapid rate of change, a lack of stability and high complexity. One of the consequences of the increasing complexity is that "crises hit unexpectedly and as a matter of routine" (Webster, 2002, p. 133). Another of the consequences is that those businesses that fail to adapt quickly will be rapidly swept away by the global economic juggernaut. Those who survive will be those who are mobile, who can build relationships quickly, create networks and participate in knowledge production (Baird and Henderson, 2001). Global competence networks are a natural consequence of the developments we have suggested above, where the mobility of capital, labor and services are underlying elements (Urry, 2004). Urry (2004, p. 190) says that this mobility concerns "peoples, objects, images, information and wastes". Mobility is closely related to the transitory. The mobile and the transitory may be understood as a tripartite structure. At the bottom exist the local and regional clusters that produce matter-energy and information for the global market. The clusters are relatively close in geographical terms and, therefore, termed by Porter (1998) as business clusters. There exist relatively clear boundaries around these clusters. In the middle of the structure, one can imagine the global networks of competence (Hamel, 2012) that have contact with the various local and regional clusters. The global competence networks connect the local and regional clusters in the global space. On the third level, patterns emerge that change character and direction like liquid (see Bauman, 2011). These are the virtual global competence clusters.

The local and regional business clusters are visible, while what constitute mobility are the global competence networks and the patterns that crystallize in these (Ulrich, 2013). Metaphorically, this may be understood as a transition from solid to liquid form in the social structures. The stability of the liquid structures is the pattern that connects the global networks of competence, what we refer to here as the virtual global competence clusters. The virtual global competence clusters may be divided into political, social, economic, technological and cultural patterns. It is when these five patterns interact that one may perceive the overall pattern. In the global knowledge economy, it seems reasonable to assume that those who control this pattern set the conditions for economic development.

Knowledge and skills transfers occur at both the local and regional cluster levels, as well as within and between the global competence networks (Sassen, 2002). In the innovation literature, the focus has for a long time been on the national and regional innovation systems and innovation in single businesses (Skarzynski and Gibson, 2008). If the assumption of mobility as a core phenomenon in the global knowledge economy is correct (Urry, 2004), then, it seems reasonable that the focus will turn more toward global competence networks.

OECD (2001) also emphasizes global competence networks as crucial for economic growth, although they use the term innovative clusters. The purpose of innovative clusters and global competence networks is the development, dissemination and use of new ideas that promote wealth creation. According to OECD (2001), the overarching drivers of innovation in individual businesses are: globalization, the knowledge-based economy, ICT and stability in public institutions. There is much to suggest that a greater degree of integration and cooperation between private and public sectors at the national and regional levels is an important prerequisite for initiating the innovative locomotive effect. The global competence networks are metaphorically the energy source that sustains the motion of this locomotive. It would be counterproductive to replace the locomotive once in motion. Conversely, the individual carriages of the locomotive (read: organizational level) may be changed, depending on their competitive position. The individual passengers on the train create ideas and knowledge through the processes that may be called creative chaos. In this way, we will arrive at a tripartite of the prerequisites for global competence networks. At the individual level, creative chaos occurs. At the organizational level, there will be creative destruction. At the social and global levels, creative collaboration takes place. These three processes create innovation and economic growth as an emergent, not as a "future perfectum", a planned process with given results. An emergent occurs if something new pops up on one level that has not previously existed on the level below. By emergent, we mean: *"Let S be a system with composition A, i.e., the various components in addition to the way they are composed. If P is a property of S, P is emergent with regard to A, if and only if no components in A possess P; otherwise P is to be regarded as a resulting property with regards to A"* (Bunge, 1977, p. 97).

A prerequisite for the reasoning above is that tension and competition at one level require collaboration at another level. Competition and cooperation are both necessary if one is to develop innovation and economic growth in the same manner that stability and change are necessary for flexibility. Too much of one (stability) leads to rigidity, and too much of the other (change) leads to chaos. Understood in this way, emergents cannot be planned. The point here is that knowledge workers must continually develop their competence, so they are receptive towards the creative and new that emerges as a result of emergents.

Proposition 7: The greater the extent to which knowledge workers have opportunities to continually develop their skills, the more likely it is that their productivity will rise.

Conclusion

In this article, we have investigated the following problem: How can managers promote knowledge workers' productivity? The short answer to the problem can be summarized in the mini-theory developed in this article. The mini-theory consists of seven propositions.

We have in the article discussed that in all probability, the greatest motivating factor for knowledge workers is the influence of co-workers, both operationally and strategically.

Further research into knowledge workers' productivity may be conducted along three different lines of enquiry. First, one might attempt to investigate the individual propositions by means of a longitudinal case study. Thereafter, it would be advantageous to apply the knowledge gained from the longitudinal case study to develop – on the basis of the propositions – hypotheses capable of being put into operation, and, then, to test these hypotheses by means of a larger empirical study.

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