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Explorations of social innovation

Social innovation for better jobs
and performance



Social innovation for better jobs and performance

Frank Pot PhD, Professor of Social Innovation at the Institute for Management Research,
Centre for Innovation Studies, Radboud University Nijmegen

Ernst Koningsveld Msc. Eur Erg, senior researcher and consultant TNO Quality of Life/Work
and Employment

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Abstract

Objectives: The paper presents the debate on the theoretical and practical claim of simultaneous improvement of quality of working life (QWL) and organisational performance.

Methods: Theories that support this claim or could provide additional support are discussed. A number of programmes on workplace development or social innovation in European countries are mentioned.

The results of some scientific evaluations are presented.

Results: The simultaneous improvement of QWL and organisational performance is sometimes achieved and sometimes not. Except for the participation of employees, other determinants of such achievements are difficult to distinguish because of differences in research designs and programmes.

Conclusions: Important issues for discussion remain concerning theory and research and concerning practical approaches.

Key terms: quality of working life; performance; workplace development; social innovation

1 Introduction

1.1 The debate on workplace development and innovation

Continuous innovation and growth of productivity are required to realise sustainable growth and welfare in the European Union. These cannot be achieved just by new technologies and by seeking competitive advantage by means of cutting costs. What is needed is the optimal utilisation of the potential workforce and flexible work organisations.

A number of European countries have started activities to meet these challenges.

The latest development in the Netherlands regarding innovation and productivity is the movement of so called '*Social Innovation*'.

Social Innovation in the Dutch definition is a broader concept than organisational innovation. It includes amongst other things: dynamic management, flexible organisation, working smarter, continuous development of skills and competences, and networking between organisations. It is seen as complementary to technological innovation. Social Innovation is a part of process innovation as well as product innovation and also includes the modernisation of industrial relations and human resource management.

These initiatives on 'workplace innovation and development' in a number of European countries, sometimes executed as national programmes, claim improvement of the quality of working life (QWL) as well as improvement of organisational performance. But critical assessments of earlier programmes such as 'high performance work systems' have shown that the outcomes of such programmes are uncertain or even unwarranted (Godard 2005), sometimes disappointing for employees and unions (Osterman 2000) or that conclusions cannot be drawn because of methodological limitations of the research such as inadequate measurement of interventions, contamination between interventions and performance and the paucity of longitudinal studies which make causal inference dubious (Wall & Wood 2005).

In this discussion paper, we will explore the actual societal conditions (economic and demographic trends, policies, stakeholders) and theoretical support for such claims and also discuss some evaluation studies that already have been executed.

Regarding *quality of working life*, we will look in particular at work organisation (job autonomy, task variety, flexibility, etc.), workplace ergonomics, human resources management (competence development, etc.) and management style (participation, trust, control, etc.). *Performance* covers factors like labour productivity per hour, process optimisation, product innovation, sound collaboration, etc. We do not use strict definitions because we refer to projects and programmes that use slightly different definitions and variables.

Calculations in terms of money are still very difficult. In this paper we present mainly recent surveys with opinions of stakeholders concerning interventions and effects. We will not include research that is only directed at the costs of absenteeism (missing work because of illness)¹ or presenteeism (a decline in productivity at work because of illness)² except for an illustration. Nor will we include the performance effects of working conditions such as noise, lighting and indoor air quality.

The experiences in these programmes and the debate might indicate that management, occupational health professionals and organisation professionals could be more successful if they join forces. This is even more important as the dominant trend in new forms of work organisation appears; 'lean production' often results in increased stress risks for employees (Landsbergis et al. 1999; Oeij et al. 2006). The Netherlands has one more special reason. According to the European Trade Union Institute the 'job quality' in the Netherlands is second best, Denmark enjoying the first position (Leschke & Watt 2008). We like to maintain our position in that ranking or even improve it.

¹ At the societal level, the costs of poor working conditions are a real burden. Several European studies show that the societal costs are in the order of 2-3% of the Gross National Product (GNP) (e.g. Koningsveld, 2003, 2005). Health effects, resulting in absence of work, occupational disability and medical treatment, are responsible for up to 80% of these costs. The quoted Dutch study (2003) provides a good overview of cost categories and their values, but does not include all effects. It turned out to be difficult to validate the financial effects of poor working conditions on companies' performances. So these costs are not included; some experts estimate that these may be another 2-3 percent of the GNP. See also Tompa et al. 2008a and Tompa et al. 2008b.

² Hemp (2004) points out that presenteeism can reduce an employee's productivity by 33% or more. Data from research of Biron et al. (2006) shows that workers went to work in spite of illness 50% of the time, while 40% of those who remain at work show signs of heightened psychological stress.

1.2 Healthy and productive work

Paying attention to organisational performance does not mean that occupational health is considered to be less important.

First of all, health is a value in itself. That is why the prevention of occupational diseases, accidents and work-related complaints is important and why the linked costs are justifiable.

Furthermore, considering the global situation, "the health of workers is an essential prerequisite for productivity and economic development." (World Health Assembly 23 May 2007; see also the ILO policy on 'decent work')

A third reason for health protection is to reduce the costs on both company level and society level that are caused by poor working conditions. A growing number of companies have experienced that investments in prevention pay off.

Some companies and public organisations have extended their policies to health promotion as part of their corporate social responsibility (Johanson et al. 2007; Kirsten 2008). We will go one step further and argue that many of the preventive measures, leading to a better QWL, also contribute to enhancing performance and innovation if interventions for prevention on the one hand, and redesign for better performance on the other hand, are purposefully combined.

'Working smarter' and 'utilisation of skills and competences' imply that work is not only productive but safe and healthy as well. Individual and group performance is not directly the result of employee satisfaction or motivation, but of involvement and commitment through workers' representation, HRM practices and work organisation.

A study in the early eighties already showed that a democratic style of leadership and delegation of responsibilities go hand in hand with better working conditions, lower absenteeism and better financial economic performance. From these interviews with general managers and HR staff in 85 companies in the Netherlands the opposite relation also appeared to be true (Smulders 1984).

Of course there is some evidence for the 'happy-productive worker hypothesis'. Judge et al. (2001) found a correlation of .30 between satisfaction and self reported productivity in their meta-analysis of 312 studies covering 54.000 workers. But, as Taris et al. (2008) argue, this correlation is still weak, might be explained by other variables such as work organisation, and does not allow conclusions on performance or productivity on department or organisation level.

Organisational commitment can be brought about by an organisational design that provides job autonomy, control capacity, possibilities of consulting others, learning opportunities etc. These are exactly the same measures that are recommended to reduce psychological stress risks as a way of 'prevention at the source' (Pot et al. 1994). Stress risks derive from discrepancies for example between quantitative job demands and available time or staff, between qualitative job demands and education or training, between problems and disturbances and support from supervisor and colleagues, between complexity of the job and job autonomy. These preventive measures appear to be much more effective than courses in individual stress management, although there are circumstances in which such courses can help.

The same holds true for ergonomic design of workplaces. This serves not only as the objective of health protection (better posture, less lifting) and health improvement (better movements) but also of productivity (easier and faster handling and processing, better lay-out).

Psychological stress counts for 28.7% of absenteeism, musculoskeletal disorders for 32.7%. In the Netherlands 40% of the stress cases and 45% of the MSD cases is estimated to be directly work-related (Koningsveld et al. 2004).

The European Association of National Productivity Centres (EANPC³) has elaborated on the connection between productivity, innovation and health in its memorandum 'Productivity, the high road to wealth' (2005).

³ www.eanpc.org

2 Policies and programmes

2.1 The challenge

The possibility of simultaneous improvement of QWL and performance is even more important as productivity and innovation are back on the political agenda of the EU countries, also in Western Europe. A growing number of countries is conducting or developing some kind of programme (www.workinnet.org) which includes labour productivity, development of competences, quality of work, learning, and innovation. Examples of programme titles are: work place development (Finland), *innovative Arbeitsgestaltung*; *Innovationsfähigkeit* (D), social innovation (NL and B), and workplace innovation (Ireland). In 2009, the UK started the 'Good Work Commission' with CEO's and trade union presidents. These policies on the level of organisations and sectors are connected to policies on national and European level concerning 'flexicurity' (employment, education and social security; European Commission 2007) and innovation⁴. Key concepts are 'dynamic management' (absorption of external knowledge), 'working smarter' and 'utilisation of skills and competences'.

The ongoing national programmes in Europe are different. Some of them are directed by the government, who supplies substantial amounts of money to stimulate action and for research (e.g. Finland, Germany, Ireland). In other countries the government is neither leading, nor financially in the forefront, and the initiative lies primarily with social partners and companies (e.g. Belgium, the Netherlands, UK), supported by consultants and researchers. This latter model could be a risk. As we know from Frieder Naschold's 'best practice model' for national workplace development, the strategic justification should primarily arise from macro-level industrial policy issues rather than the industrial relations system or the research and development system (Naschold 1994). But it is 15 years later now, and as far as we can see, social partners, at least in the Netherlands, are determined to keep the lead in this process, facilitated to some extent by the Dutch government and the European Social Fund. These parties established the Netherlands Centre for Social Innovation (www.ncsi.nl) together with the Erasmus University Rotterdam, the University of Amsterdam and the Netherlands Organisation for Applied Scientific Research (TNO) (Pot & Vaas 2008).

2.2 New urgency

There are 4 main reasons for the emerging attention for workplace development, social innovation etc. that might apply not only to the Netherlands but to most European countries.

The first one is the need to enhance labour productivity to maintain our level of welfare and social security in the near future with fewer people in the workforce due to the ageing population. Productivity is - just like in some other countries - no longer a taboo in collective bargaining; the debate is focussed on finding a balance between 'working harder', 'working more hours' and 'working smarter'.

The second reason is the need to develop and utilise the skills and competences of the potential workforce to increase the added value as part of a competitive and knowledge based economy. The EU draws attention to the need to foster high skills and 'high quality jobs' which are expected to contribute to the well-being of the employees, to high quality products and services and to enhanced productivity and innovation. Or - as it is called after the re-launch and refocus of the Lisbon strategy in 2005 - the two principle tasks of the EU, regarding the economy, are "delivering stronger, lasting growth and more and better jobs."

The third reason is that private and public work organisations can only fully benefit from technological innovation if technological innovation is embedded in social innovation (making technology work through proper organisation, dynamic management, competence development, commitment and involvement of employees, etc.). Technological innovation and research are productive in the Netherlands. However, the utilisation of new knowledge for innovation of products, services and processes, or - to put it another way - the absorptive capacity of organisations is rather weak; this is called the 'innovation paradox'⁵.

⁴ The link with European innovation policy is rather weak (Armbruster et al. 2006), although there is some attention for organisational innovation as part of non-technological innovation in recent Community Innovation Surveys (CIS).

⁵ Or 'technology transfer gap' or the issue of 'Umsetzung'

The fourth reason is that social innovation itself appears to be more important for innovation successes than technological innovation. Research by the Erasmus University/Rotterdam School of Management in industrial sectors shows that technological innovation accounts for 25% of success in radical innovation, whereas social innovation accounts for 75%. The success of incremental innovations can be based on 50% of both technological innovation and social innovation (Volberda, 2006). In the European Manufacturing Survey (3000 companies) the effects of product innovation, service innovation, technological innovation and organisational innovation were compared. Only organisational innovation has positive effects on all performance indicators. The best results are achieved if technological innovation and organisational innovation go hand in hand (Ligthart et al. 2008a and 2008b). Jacobs and Snijders (2008) investigated 22 companies in the Netherlands which proved to be repeatedly successful with innovations. Ten factors appear to be important and companies have to be competent in all of them, like in a decathlon. Surprisingly, technology is not among these 10 factors. The 10 factors refer to management, organisational structures, utilisation of staff, using correct performance data. Of course technology cannot be neglected, but it is not a decisive factor.

The financial and economic crises have not changed these 4 reasons for the emerging attention for workplace development, although it has become more difficult to connect short-term solutions (markets, costs) to long-term objectives (innovation, competences).

2.3 Dilemmas of employees and management

However, although there are enough reasons to develop workplaces from the perspectives of prevention and performance, it is not an easy job to do.

There are a number of dilemmas for employees and their representatives to be involved and to develop commitment to social innovation. Examples of these are long-term and short-term effects (employment), “getting 1 kilo of responsibility connected to 100 grams of co-determination only”, and different interests (legislation on dismissals).

The employers'/managers' side faces dilemmas as well. Benefits of social innovation are apparent later than the results of short-term budget cuts; bonuses and shareholders' interests stimulate short-term thinking; social innovation is more complex than technological innovation; sharing knowledge and power is not easy. However, research shows that the argument of many executives that they are prisoners of iron economic laws which dictate that they have no choice but to match working conditions offered by their lowest-cost competitors, is not valid (O'Toole 2008).

Of course a good starting point is that in a number of countries, such as Finland, Germany and the Netherlands, unions and employers' organisations have a tradition of co-operation and mutual consulting⁶. Workshops on 'trust' and how to translate trust in work organisation and work procedures are part of the programmes in these countries. Nevertheless, the dilemmas lead to discussions not only between unions and employers' organisations, but also within these organisations. It is sometimes hard for the pioneers.

⁶ The so-called 'polder model' in the Netherlands. In Germany, 'Zukunft der Arbeit' is under discussion.

3 Theoretical support

3.1 Concepts of productivity and performance

When we use the concept of productivity in this article we refer to *labour productivity per hour*, meaning the production per employee per hour. Productivity per hour is related to efficient work organisation, good ergonomics and tools, good climate, proper skills, etc.

It has to be distinguished from *labour productivity per employee* which is related to the number of hours employed, sickness absenteeism, vacation, productivity per hour. Prevention of sickness absenteeism decreases the loss of productivity and improves the productivity per employee.

Productivity on national level is related to employment and labour market participation. Adaptation of workplaces and job contents for people with chronic diseases or a handicap improves productivity on a national level but can decrease the labour productivity per employee and per hour.

However, productivity per hour is just one indicator of performance and not always easy to calculate.

Performance has many other aspects. For example, lead time/throughput time, quality of products and services, quality and smoothness of operations/error rate/failures and accidents, customer satisfaction, employee satisfaction/employee turnover/company image, innovation of processes and products/services (innovative capacity, learning organisation), development and utilisation of skills and competences, and quality of management-staff cooperation. In the research we have collected, these kinds of 'performance indicators' or 'core business values' are often mentioned, however usually without reporting the related operational costs. Sometimes they are listed in Balanced Score Cards. Of course, one could also label 'quality of working life' a performance indicator, but for our purpose we distinguish it from the other performance indicators.

As we review the existing research, we have to accept the kinds of performance indicators used, whether they are comparable to other research outcomes or not.

3.2 Work organisation, stress and performance

Of course there is a tradition of improving the work organisation for almost 100 years, starting with 'scientific management' via 'industrial democracy', 'sociotechnical design', '*Humanisierung der Arbeit*', 'workplace development', '*innovative Arbeitsgestaltung*' and leading up to 'social innovation'. Some of the present issues are the same, some are new. At any rate, the circumstances nowadays are different, increasing the urgency for social innovation and supporting theories.

Decision latitude (control, autonomy) and social support contribute to the decrease of stress risks, the enhancement of learning opportunities, and the improvement of performance *if* these objectives have been combined purposefully in the process of (re)designing jobs and work organisation. Karasek and Theorell (1990) distinguish three dimensions in their theoretical model to explain the relations between work organisation, stress risks and learning possibilities: high or low decision latitude, high or low psychological demands, and high or low support. In a job with low demands and low decision latitude (passive jobs) the learning possibilities are limited. Jobs with high demands and low decision latitude (high-strain jobs) imply a risk of psychological strain and physical illness. This effect is reinforced by low support. We call these stress risks. Furthermore, stress inhibits learning.

"We have seen that this imposes a double reason for managers, engineers and job designers to consider carefully that low levels of decision latitude carry the double penalty of high stress and loss of innovative potential. The good news is that, for many jobs across a broad range of contemporary industrial settings, the increases in autonomy and skill utilization that could reduce stress are often congruent with new

forms of job design and new conceptions of output value that enhance the quality, often the quantity, and almost always the humanity of the output.” (Karasek & Theorell 1990:199).

The best learning possibilities exist in jobs with high demands and high control ('active job - active learning' hypothesis). This effect is reinforced by high support. Research supports this theory (Taris and Kompier 2005).

It is assumed that learning opportunities lead to better performance on all sorts of levels, including productivity. But if we want to stand by this theory, we need to explain why traditional industries with many passive jobs are very productive. One option is that these industries could do even better if they had active jobs. Another explanation is that organisations with strong hierarchy, strict routines and passive jobs can do very well as long as the environment is stable. In times of globalisation, unstable markets and fast developing technologies organisations (should) switch to decentralisation, active jobs, learning possibilities and evaluation of existing routines to remain or become competitive and innovative (Sabel 2006).

One more comment can be made regarding the 'active job - active learning' hypothesis. We have the impression that a category of modern professionals or knowledge workers is coming into existence, individuals which have active jobs (high demands, high control) but who are nevertheless vulnerable to work-related psychological stress. Explanations for this are probably to be found in the changing employment relationship, mobile work and work-life-balance. It is also possible that the theory is correct when qualitative job demands are considered. An increase in quantitative job demands might be the problem. Data collected in 2005 in the latest European Working Conditions Survey show an increase of 'work intensity' over the past 15 years, but no difference between occupations (European Foundation 2007: 58-59). Further research with the same data indicates no specific relation so far between 'knowledge workers' (defined in terms of professions) and reported stress (Fauth & McVerry 2008).

'Modern sociotechnology' (MST) in the version of De Sitter (De Sitter et al. 1997; Van Eijnatten 1993) follows more or less the same line of thought. It aims at quality of the organisation and quality of work at the same time. Part of this design theory is a balance of demands and control. The concept of control has been developed much further than in the theory of Karasek and Theorell. A distinction is made between internal control (concerning decision latitude, autonomy in one's own job) and external control (concerning the organisation of work, the 'structure of the division of labour', setting targets, defining strategies, co-determination). Although *internal* control is important for well-being and a smooth process, it is the *external* control that enhances commitment and learning the most. In terms of the theory of Organizational Learning (Argyris and Schön 1978), one could say that external control in particular makes 'double loop learning' possible, compared to internal control capacity and 'single loop learning'. In terms of Sabel (2006), the innovative organisation is a 'networked organisation', not focussing on the static concept of efficiency, but on practices for continuous improvement and problem-solving, such as benchmarking, concurrent development and 'flexible formalisation' ("making tacit, lived knowledge explicit"). In such organisations there is no clear distinction between 'principals' who make initial plans and 'agents' who revise or remake those plans while executing them. "Choice of goals and the broad projects embodying them are as much the product as the starting point of organizational activity." (Sabel 2006:132).

Hacker (2003) also pays attention to external control in his 'action regulation theory', but he has elaborated on the demand-side of jobs as well. So-called 'complete jobs' (including qualitative job demands and control tasks) provide the best possibilities for learning. The job consists of both easy and difficult tasks. The job is complete from the perspective of skills: including preparatory, operational and supportive tasks. Lastly, the job includes coordinating or organisational tasks.

'External control capacity', 'flexible formalisation' and 'complete jobs' can also be understood as employees having different roles, rather than tasks or jobs. Schuiling (2008a and 2008b) describes the case of DSM Anti Infectionics in Delft, the Netherlands, where QWL and performance go hand in hand as a result of self-managing teams and advanced biotechnology. The operators have a 'role portfolio' meaning that they have parallel roles in different processes (production, support, strategy). As such, 'role theory' could improve our understanding of this kind of 'networked organisations' and contribute to HR practices to design 'employee-roles-matrices'.

In recent years the concept of 'work engagement' has emerged, referring to "a positive, fulfilling, affective-motivational state of work-related well-being that is characterized by vigour, dedication, and absorption." (Bakker et al. 2008).

'Work engagement' appears to be foretelling of job performance and client satisfaction and can be predicted best by job resources (e.g. autonomy, supervisory coaching, performance feedback) and personal resources (e.g. optimism, self-efficacy, self-esteem). The concept differs from 'job involvement' and 'organisational commitment' in other psychological theories, but the important point here is that the relations to job/organisation resources on the one hand and job performance on the other hand are more or less the same.

Yet another way of looking at the relationship between health and performance is the 'meta-analysis' by Taris (2006) of 16 studies concerning the negative correlations between exhaustion and in-role behaviour (5 studies: -.22), organisational citizenship behaviour (5 studies: -.19), and customer satisfaction (2 studies: -.55).

In summary, we conclude that a combination of qualitative job demands, internal and external control, and support decreases work-related stress risks and improves learning, which could enhance performance. Data on presenteeism and exhaustion support this indirectly by showing negative correlations with performance. The relation between learning on the one hand and performance and innovation on the other hand is theoretically not well developed.

We think it could be worthwhile to explore some other approaches in order to provide additional theoretical strength. We can learn from approaches such as strategic management theories concerning 'dynamic capabilities': the effects of absorptive capacity, work organisation, procedures, coordination and socialisation on competitiveness (Bosch et al. 1999; Eisenhardt & Martin 2000; Armstrong & Shimizu 2007), 'social capital theory' about how interactions and networks in organisations affect performance and health (Badura et al. 2008) and 'mental capital' on the relation of health and performance (Beddington et al. 2008; Weehuizen 2008).

3.3 Workplace design, physical and mental workload and performance

For many years, health protection and providing a safe working environment have been important matters in the work of ergonomists.

In industrially developed countries, musculoskeletal disorders are one of the two major causes of lost working days, next to psychosocial workloads. Here we see a trend that lower back pain has replaced upper limb disorders, and energetically demanding work changed into a new problem: work with not enough physical activity. On the other hand, in industrially developing countries, physically straining work and unsafe working conditions are still the predominant health hazards.

The scientific knowledge about human capacities has been largely extended. Limit values for actual workloads were defined and introduced at the level of legislation, standards or as good practice agreements between employers' organisations and unions. Solutions for hazardous workloads and unsafe conditions have been developed, tested, disseminated and implemented.

The consequences of poor working conditions are serious. Workers may suffer from health impairments and experience an insufficient quality of life. Injuries decrease their power to earn money, and ultimately their independence in life is affected. The employer may be confronted with high costs, though the direct financial effects differ widely over countries.

Many other costs can occur as a result of injuries and accidents: productivity losses, quality problems, reduced motivation, or loss of unique expertises. Eventually these effects may lead to the loss of clients and affect the market position of the company.

The development of ergonomics related to human performance has its roots in studies on physical performance. Employers were highly interested in increasing human performance, and therefore in the maximum capacities of humans. *Scientific Management*, a method that improved worker efficiency by improving the job process, became popular. Frederick W. Taylor was a pioneer of this approach and evaluated jobs to determine the "One Best Way" they could be performed. At Bethlehem Steel, Taylor dramatically increased worker production and wages in a shovelling task by matching the shovel to the type of material that was being moved (ashes, coal, or ore). Frank and Lillian Gilbreth made jobs more efficient and less fatiguing through time motion analysis and the standardising of tools, materials and the job process. By applying this approach, the number of motions in bricklaying was reduced from 18 to 4.5, allowing bricklayers to increase their pace of laying bricks from 120 to 350 bricks per hour (*Ergoweb* website). As the ministry of War/Defence was a large employer and battle was highly demanding, the armed forces constituted a major target group for ergonomic studies. Later, the scope changed from maximum performance to 'optimal' performance, indicating the workload that workers can endure for a lifetime of full-time working weeks. Today such studies are still important for many trades in which physical efforts are required. In addition, ergonomists investigate how to design workplaces that allow maximum performance without negative effects on physical workloads and discomfort (e.g. Rhijn et al. 2005).

The same holds true for mental workload related to man-machine-interaction. Since the nineteen-forties, ergonomists have been involved in cognitive, mental and organisational performances, resulting today in 'human centred technology'. The fast development of new technologies makes this even more important. Nonetheless, a large gap exists between the designers and users of information and communication technology. Designers are technology-driven, and show too little understanding of the way humans deal with technology, not to mention the way they want or expect technology to work. As early as the nineteen-seventies, studies about control room operators' behaviour and design recommendations were published by Edwards and Lees (1974). Reliability assessment became an important, though still underestimated item. Authors like Kirwan published several books on the matter (1994), also focussing on the mental workload and the internal process representation of the human operator.

After the integration of information technology and communication technology a new challenge emerged for managers, organisational experts en ergonomists: how to support flexible and mobile work of individual employees, often being professionals or so-called knowledge workers; and how to support virtual teams, the members of which could be working at any moment at any place in the world due to globalisation. And of course: how to combine this performance support with prevention of physical workload and psychological stress.

One important lesson from much research and experience is that the gap between designers and users can only be bridged by participatory design. And consequently, participatory ergonomics enhance not only comfort but also productivity (Vink et al. 2006).

Helander and Burri (1995) give their view on how ergonomics quality is experienced and assessed in companies, and they provide a model for it. They also cite some case studies proving the benefits of the ergonomics approach. These cases show positive to very positive cost benefit ratios. In some cases, productivity increase is the reason for these ratios, in other cases reduced quality (failure) costs are significant. Employee satisfaction is another important feature. Three cases at IBM Austin show improved yield (18%), increased operator productivity (23%) and a 19% injury reduction. These factors together are responsible for a cost reduction of over 7 million dollars. The contribution of injury reduction is less than 1% of the total benefits. Provided that ergonomics is applied in an early stage of the design process, the extra costs can be minor.

A Dutch study (Heuvel 2007) analysed the effects of upper limb disorders on productivity. The productivity loss was assessed for those respondents out of 1951 computer workers, who reported regular or prolonged neck/shoulder symptoms or hand/arm symptoms in the past three months. Sixteen percent of the workers reported neck/shoulder symptoms, almost 8% hand/arm symptoms, and 16% both symptoms. A dichotomous variable was constructed, based on the answers to the following questions: (1) 'Have your symptoms slowed down your work pace?'; (2) 'Have your symptoms decreased your working hours?'; (3) 'Have your symptoms caused disability to work for one or more days?'

The results show that in 26% of all cases of reported regular or prolonged symptoms in the past three months, productivity loss was involved. Most productivity loss was found in workers reporting both neck/shoulder symptoms and hand/arm symptoms. Overall, about 32% of the productivity loss resulted from sickness absence. Sickness absenteeism occurred more frequently in workers reporting both symptoms (43%) and considerably less frequent in workers reporting only hand/arm symptoms (11%).

The consequences of neck/shoulder and hand/arm symptoms are more extensive than the visible sickness absence due to these symptoms. Only one third of workers who experience productivity loss due to their symptoms actually take sick leave. For the other workers, productivity loss expresses itself in decreased performance at work.

These effects of physical health complaints are related to the phenomenon of 'presenteeism'. However, because these complaints could have been partly prevented by ergonomic interventions, we consider these research outcomes as a form of indirect support for the QWL-performance hypothesis.

Based on a broad literature review, Dul and Neumann (2007) suggest that ergonomics can contribute to many different company strategies, and can support the objectives of different business functions such as production, marketing and HRM (including OSH), and cross-functional strategies like TQM. In these terms ergonomics is seen as a tool or a means, rather than an end in itself. Based on this analysis, a discussion with experts from all over the world within the ergonomics community showed that linking ergonomics explicitly to business strategies and goals is feasible, has been done at times, but still remains a great challenge for the ergonomics discipline. For many ergonomists it means a paradigm shift, which requires a repositioning from an exclusive H&S focus to one that also includes strategic business objectives. However, by contributing to the shared goals of business performance, ergonomists may also be better able to reach their traditional objectives of well-being and health and safety.

In summary, we conclude that optimising ergonomic conditions of the workplace and work processes can serve the objective of prevention as well as the objective of performance.

4 Measurement and monitoring

The most extensive and best developed tool to assess effects of interventions is the 'Productivity Assessment Tool' designed by Oxenburgh et al. (2004), which was inspired and encouraged by some well-known scientists of the discontinued National Institute for Working Life in Sweden. It analyses reduced productivity, meaning the loss of production due to measurable factors that include: low skills of the employees; unsuitable hand tools; insufficiently maintained machinery; unsuitable machinery; physically strenuous work with not enough rest breaks; unsuitable environmental conditions (lighting, temperature, noise); and poor work station layouts. Performance and productivity gains in particular are an increase in the number of active working hours and in quality of products and services. The tool makes it possible to assess the financial costs and benefits of alternative interventions in advance and helps to identify the most critical factors. In our opinion, the tool can be best applied in cases of interventions on ergonomics and physical workload.

A more qualitative approach can be found in instruments like the 'Self-Assessment Tool Ergonomics/ Human Factors' (SATEH). Its purpose is to enable industrial organisations to determine independently to what extent the (design of a) production system is suited for the user of the system, the task to be executed, and the environmental factors. It can also start up an effective discussion between members of the organisation themselves and with experts (Kragt 1995).

The OSKAR-model is an example of tools for assessing interventions for stress prevention in organisations (Liukkonen et al. 1999). The authors emphasise that measuring financial performance looks only at the past. Measuring how fit a company is for the future must include predictive information on present and future employee health as well as the development of competences, together making up the concept of 'work ability'.

Based on participatory principles, which are familiar to many ergonomists, it was possible to develop cost benefit and human productivity models that are more or less generic. TNO in The Netherlands developed such a model for long-term health care. The model has been in use since the end of 2007, and health care institutions have used the model for almost one thousand intervention cases.

The health care sector is confronted with an increasing demand for care, and a (slightly) diminishing workforce. The challenge for all institutions is to develop 'smarter' work, which is specified by:

- increased labour productivity
- (preferably) reduced work loads
- at least the same level of care quality.

Interventions may include: better ergonomics, organisational changes, task diversification, improved safety, and so on.

For the analysis, software is provided through the Internet (in Dutch: www.zorgvoorbeter.nl).

The effects are measured by comparing the existing work situation with the situation after the intervention. The 'after'-situation is first analysed as a virtual situation, later on an effect assessment is made to evaluate the actual effects.

It is essential that the work process evaluated is precisely defined: with which activity does the work process start, and at which point does it end? For how many patients is care supplied, and what is the time period?

In the analysis, an important factor is labour productivity. The old situation is divided into tasks; for each task the employee(s) performing the tasks is/are identified, including the time spent on the task. The number of employees with that position performing the tasks together is noted (e.g. when manually lifting patients). Time spent is estimated or assessed, depending on the chosen level of accuracy. To make the virtual analysis, a participatory work session is held. The project manager is advised to invite a line manager above the level of team leader, two employees performing the task, a team leader, a client representative, and a controller. Optional participants are: a HRM official, and a supplier of technical equipment that is expected to be part of the innovation.

For interventions which are not overly complex, the work session takes about 2 hours and is divided into 5 steps:

- Step 1 - Case description and zero (existing situation) assessment.
- Step 2 - Description of the virtual situation and task analysis
- Step 3 - The care quality is rated for 8 quality aspects on a 1-10 scale
- Step 4 - The costs and benefits are analysed 'before and after'
- Step 5 - Non-financial effects of the intervention are determined.

Results are first and foremost the outcomes, like productivity data and costs and benefits (see 5.6, Table 2). Moreover, a greatly improved understanding of the intervention and the changes and effects for everyone involved in the participatory process is often acquired.

Monitoring

As one could expect, monitoring instruments - on national level as well as European level - focus either on occupational safety and health or on performance and innovation.

On national level the best combination can be found in the 'High Involvement Innovation Practice Survey' carried out in Finland (see 5.2). On European level an ambitious attempt was made to combine the 'Community Innovation Survey' and the 'European Working Conditions Survey' (see 5.5).

5 Empirical evidence in workplace developments projects

5.1 The research collected

We have collected research on the simultaneous improvement of QWL and performance, but the quantity of the research is not overwhelming. We regard this as reflecting the novelty of this kind of practices and related research.

Searches on internet sites were not successful. The best sources appeared to be our personal networks of colleagues who are interested in the subject.

Research from an OSH perspective and with OSH policy documents increasingly bring up the potential performance effects of OSH interventions but they do not refer to concrete research outcomes. However, more and more researchers address the economic side of OSH, although this is usually restricted to the costs of absenteeism. On the other hand, research on workplace or organisational development often assumes positive health effects without investigating them. One example of this is the interesting report of 'The Work Institute' in the UK on new forms of work organisation (Parsons et al. 2003). In some research, only the health effects of workplace development are investigated. A survey in Finland among 5270 employees confirmed the expected positive effects of workplace innovations on QWL but did not cover performance outcomes (Kalmi & Kauhanen 2008).

Flexible organisation covers 'working smarter' (division of labour, technology, ergonomics, lay-out, etc.), innovation of work-rest-schedules, and self management of work-rest-schedules.

This self-management of working schedules (self-rostering) is one of the most popular topics in the field of social innovation. It seems that around 80 % of the wishes of employees concerning working times can be met and that this is also more productive (more commitment, less absenteeism). This is the opinion of practitioners involved. Research is still lacking, however.

Furthermore, there are a number of projects that cover both prevention and performance but are still in the process of development (e.g. in Germany: Frevel et al. 2007; Elke et al. 2007). So we need to wait before any evaluations can be made.

5.2 Finland

The 'Finnish Workplace Development Programme' (www.TYKES.fi) has been clearly reported on. Although conclusions are drawn very carefully due to the methodological difficulties in evaluating this kind of programmes, there seems to be evidence that the development projects promote performance and the quality of working life simultaneously. We will discuss two evaluations.

The empirical data of the first evaluation consists of the results of the self-assessment by management, employees and experts of development projects implemented at workplaces in the period 1996 - 2005. This evaluation concerns 312 HRM-projects in different sectors, in particular municipalities and industry (Ramstad 2007). It is argued that simultaneous improvements are made, when both management and staff at the workplace agree that both the performance and the quality of working life (QWL) have improved.

The factor 'performance' comprised:

- a productivity of work;
- b quality of goods and services;
- c quality of operations;
- d flexible customer service; and
- e smooth running of operations (Cronbach alpha .7206).

The factor 'QWL' comprised the following variables:

- a cooperation between management and staff;
- b team-inspired working processes;
- c social relations in the workplace;
- d mental well-being; and
- e development of vocational skills (Cronbach alpha .7768).

The results indicate that the projects had a positive effect on performance and QWL. Correlation analysis shows that there is a positive relation between the performance and the QWL (Pearson $r=.501$; Spearman $\rho=.473$). Both management and experts saw effects more often in QWL than in performance. In contrast, the staff assessed that they had improved by about the same amount. The staff were generally more critical about the effects of the project on performance and QWL than management and experts. These differences were statistically significant.

In a more recent evaluation following the same methodology, the data are based on a sample of 1.113 responses from 409 projects (Ramstad 2008 a and b). Using the same variables and factors, Cronbach alpha for performance was .815 and for QWL .777. In 115 projects both QWL and performance were improved (called 'best' group); in 31 projects neither QWL nor performance improved (called 'weaker' group). In all other projects either QWL or performance improved. The results showed a significant difference between the 'best' group and the 'weaker' group concerning the implementation process. Personnel in the 'weaker' group was never the initiator and participated poorly in the development process. In spite of more detailed analyses, the researchers were not able to separate any clear clustering between the various practices that could be generalised. Rather, it seems that combinations vary from workplace to workplace depending on their specific needs and past development.

The second evaluation is the 'High-Involvement Innovation Practice Survey' designed for a select group of 71 projects in the private and public sectors in the period 2007 - 2007 of which measurements before ('entry') and after ('exit') the project were available (Alasoini et al. 2008a). In workplaces with teams, improvements were experienced regarding: own responsibility for the quality of work ($p<.05$), performance of several tasks, direct connections with other teams, direct connections with parties outside the workplace ($p<.01$), continuous development of their operations ($p<.05$), development of products/services, and selection of their own leaders. No improvement was reported for: deciding on their day-to-day tasks themselves and choosing their own members. However, supervisors had become more supportive and personnel had become more acquainted with the performance targets of the organisation (from 53% to 75%) and their own unit (from 74% to 85%). All these changes are seen by the researchers as steps towards an improved high-involvement innovation capacity. A more recent evaluation using the same methodology (107 projects until 2008) shows a clear advance in the use of information sharing and personnel competence practices. Still, no significant change was found in the category 'decide on their day-to-day and weekly tasks themselves' (Alasoini et al. 2008b). So from our theoretical point of view (balance of job demands and control capacity) one could pose a critical question about the results which seem to indicate that responsibility increases but the control capacity does not. This could mean a risk of psychological stress which would be inconsistent with the hypothesis of simultaneous improvement of performance and QWL.

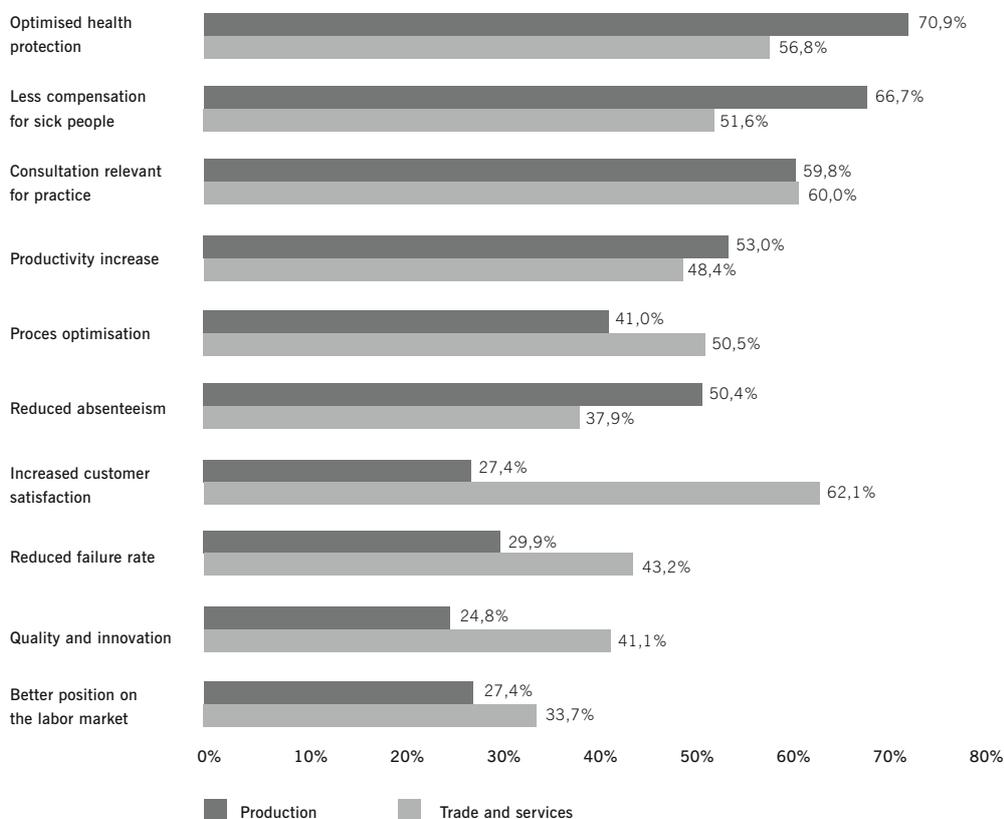
5.3 Germany

In Germany there were a number of programmes in recent years: 'Initiative Gesundheit und Arbeit' (by insurance companies; www.iga-info.de), 'Innovative Arbeitsgestaltung-Zukunft der Arbeit' (by the ministry of education and research; www.bmbf.de), and 'Initiative neue Qualität der Arbeit' (by ministries and BauA www.inqa.de).

In the evaluations that are available so far, the economic element is usually restricted to costs of sickness absenteeism. The cost-benefit ratio varies between 1 : 2,3 and 1 : 10,1 (Sockol et al. 2006: 65).

One exception is the management survey of AOK (an insurer) among 212 partner companies. A wide variety of issues were paid attention to in these companies (in production sectors as well as in trade and services), ranging from physical workload (91,5% of production companies; 80% of trade and services) to sickness absenteeism, ergonomics, work organisation, safety, style of leadership, up to stress management (30,8% production; 50,5 % trade and services (Bonitz et al. 2007). Performance results as assessed by management were substantial (fig 1).

Fig. 1. Performance effects as assessed by management (Bonitz et al. 2007:23)



Further analysis shows that higher productivity goes hand in hand with better communication, smoother processes and higher employability, as a result of both a decrease in absenteeism and an increase in social and vocational competences (Bonitz et al. 2007:34).

In a research project 'Konzepte innovativer Arbeitspolitik' the researchers draw our attention to the ambivalences of modern teamwork. Task and job integration as well as team self-management imply better jobs and the possibility to regulate the workload, but at the same time the required performance levels and the responsibility of the teams have increased considerably, as has time pressure. So, better jobs have not destroyed the risk of psychological stress. The teams have to establish a balance between performance demands, performance capacity of the employees, and the willingness to perform. This is even more difficult because the teams have no or little say in the performance goals (Balzert et al. 2003). In theoretical terms: the teams have a quite high internal control (autonomy) but a rather low external control. In the 'good practices' that were found by the researchers, the teams were involved in process optimisation and cooperation regarding planning and production improved. In these 'good practices' the performance capacity in general had become higher.

The same results were found at the Touran production site of Volkswagen where a special compromise between management and trade unions was reached in 2002. On the one hand, deteriorating terms of employment (pay, working times), and on the other hand the employment of unemployed people in the region and the introduction of an anti-tayloristic work organisation (against the world-wide trend of re-taylorisation). Besides successes in several areas (work organisation, learning, productivity), one of the shortcomings of the project so far is the lack of involvement of employees in target setting and company decisions (Schumann et al. 2005).

5.4 Ireland

In an important report on 'high performance work systems' in Ireland, employee well-being was measured by employee turnover only. Nevertheless, the conclusions of this investigation among 132 medium to large companies in the manufacturing and services industries are relevant. The results of HPWS confirm that "strategic human resources management practices are clearly associated with business performance outcomes, including labour productivity, innovation levels, and employee well-being. The more novel findings relate to the discovery that other factors, including diversity and equality systems, and workplace partner systems, are positively and synergistically associated with significantly higher levels of labour productivity, workforce innovation, and reduced employee turnover." (Flood et al. 2008)

5.5 European research

From European comparative research, the following conclusions can be drawn.

In the framework of the 'Green Paper on Partnership for a new Organisation of Work' (European Commission 1997) Totterdill, Dhondt and others investigated 100 cases in 6 countries and developed the concept of 'the high road of organisational innovation'. The high road aims at sustainable innovation by employee involvement and a high QWL. The low road is mainly characterised by cutting costs. Some benefits of the high road could be measured: productivity, quality of products, and costs. Less tangible effects were: knowledge, innovation, technological efficacy, and QWL (Totterdill et al. 2002).

Data from the 'European Working Conditions Survey' (EWCS) 2000/2001 indicate that teamwork goes hand in hand with a better learning environment (paid training, learning new things, complex tasks) than no teamwork (European Foundation for the Improvement of Living and Working Conditions 2007a). However, team workers are *not* more satisfied with their working conditions. They report an increased pace of work, working to tight deadlines, and having their health affected by work more often than workers outside a team. Nevertheless, a correlation between teamwork and lack of time for work could not be proven in most countries. Based on the same EWCS 2000/2001, a typology of work organisation forms was constructed: discretionary learning (teamwork, learning environment), lean production, taylorist organisation, and traditional organisation (Arundel et al. 2006). This typology was connected to data of the 'Community Innovation Survey 2001' (CIS-3), in particular to the typology of innovation modes: strategic innovators, intermittent innovators, technology modifiers, technology adaptors, and non-innovators. This analysis is very ambitious, from a theoretical as well as a methodological point of view. However, there appeared to be evidence that 'discretionary learning' is positively related to being a strategic or intermittent innovator while the other forms of work organisation are more often related to being a technology modifier or technology adaptor. The data from the EWCS 2005 (not - yet - related to yes/no teamwork) show a rise in the level of perceived work intensity (pace, deadlines, lack of time) (European Foundation for the Improvement of Living and Working Conditions 2007b).

In summary, these surveys show some evidence for new work organisation forms (teamwork, autonomy, complex tasks) that could be related to performance, but they show no evidence for the prevention element of the situation. In case studies, it seems to be less difficult to find a correlation between preventive measures and performance. Of course our hope is that not only successful cases were selected to be presented; this is always a risk in isolated case descriptions.

In an exploratory investigation commissioned by the European Agency for Safety and Health at Work several case studies were found in different member states of which the results were in line with theories regarding prevention and performance (De Greef & Van den Broek et al. 2004). The case studies also covered examples of ergonomics (working methods, equipment) and work organisation (autonomy, responsibilities, new shift system).

5.6 The Netherlands

In the Netherlands good practices of simultaneous improvement of QWL and innovation capacity could already be found in the nineties (Dhondt & Vaas 1996).

Recent Dutch research in 650 SME's indicates that companies with social innovation projects achieve higher productivity and financial results compared to companies which do not implement this kind of projects. However, the outcomes regarding QWL have not been measured except for employment that was extended in most cases (Hauw et al. 2009).

TNO in The Netherlands is not only a research organisation, it is also active in - research-based - consultancy. TNO Work and Employment is engaged in several projects of which the objectives are: improving performance and prevention. TNO also has a method to analyse costs and benefits of this kind of projects. The evaluation of financial effects as well as of qualitative effects of projects, is part of many commercially performed projects. Eighteen of these cases were reviewed by Koningsveld in 2008. The review intended to find out which factors were convincing for the decision to implement social innovation. The cases are diverse, ranging from ergonomically designed hand tools, via assembly work, and an integral health program, to job enrichment.

Seven of the eighteen cases show a return on investment (ROI) in less than 1 year, while two other have a ROI of a little more than one year (table 1). Managers usually decide immediately to implement interventions with a ROI of 1 year or less. All the other cases are profitable within 3 years; many companies consider three years as the maximum time period to take investments into serious consideration.

Table 1. Eighteen interventions in different trades and sectors analysed (Koningsveld 2008).

Intervention	Sector	Benefits per year/costs of intervention	Return on investment (in years)	Health & Safety benefits	Core business benefits
ergonomic screwdrivers	many	299%	0,3	4%	96%
ergonomic workplaces	assembly grasmowers	64%	1,6	29%	71%
ergonomic workplaces	quality control microchips	66%	1,5	16%	84%
ergonomic workplaces	assembly emergency lights	1281%	0,1	54%	46%
smaller bricks	brick laying for melting ovens	171%	0,6	63%	37%
ergonomic cabin	public transport (streetcar)	103%	1,0	78%	22%
job enrichment	painters	108%	0,9	1%	99%
job enrichment	plasterers	42%	2,4	8%	92%
ergonomic tools	window pane mounting	95%	1,1	21%	79%
mechanical paving	road construction (paving)	57%	1,8	2%	98%
mechanical transport	road construction (paving)	154%	0,6	3%	97%
rolling carpet in van	parcel delivery	84%	1,2	5%	95%
ergonomic vacuum cleaners	professional cleaning	211%	0,5	6%	94%
sit-stand office desk	office work	69%	1,5	32%	68%
integral health program	hospital	424%	0,2	52%	48%
safe road blocking	road construction	38%	2,6	0%	100%
lifts for patient handling	care of handicapped	60%	1,7	3%	97%
detection of wandering patients	care of demented elderly	99%	1,0	1%	99%

In the review, Koningsveld divided the benefits into two categories: traditional occupational safety and health benefits (OSH: injury and accident prevention, absenteeism, disability), versus 'core business values' (productivity, direct costs, extra output, failure costs, quality). The scope of core business values is in line with the 'human performance' indicators that we use in this article, i.e. a combination of parameters. In the cited article however, the benefits for these parameters were first identified, then quantified where applicable, and finally counted.

Despite the fact that almost all projects start from the OSH perspective, in all but one case, both core business and OSH benefits occur as a result of the intervention. However, the core business values of fourteen of the eighteen cases do exceed the OSH benefits. In ten of these, the core business benefits represent more than 90% of the total benefits. Only in two cases do the OSH benefits exceed the core business benefits evidently.

From this review it is evident that the prevention of unsafe working conditions and health impairment goes hand in hand with enhanced human performance.

As discussed in chapter 4, a large scale program is running in the Netherlands for the long term care called "Care for Better Care" ('Zorg voor Beter'). The background for this project is the ageing population, resulting in a forecasted increase in the demand for care of 45% over the next 25 years, while the workforce may decrease by 10%. As such, an increase in labour productivity is a necessity to be able to provide all the required care. Eighteen solutions to increase labour productivity were analysed virtually by TNO together with local managers and staff: the existing situation (zero assessment) was compared to the expected one (virtual assessment) (Kleijn et al, 2008). Beside the quantitative effects on productivity and costs and benefits, the effects on care quality, flexibility, working conditions (OSH), and side effects (e.g. position on the labour market), were rated qualitatively. Thirteen cases show high increases in labour productivity (table 2), three show a small effect, and two show a negative effect. Eleven cases show positive effects on working conditions (expressed as physical, mental, and emotional workload). Eight of the eleven cases with positive effects on working conditions show positive effects on labour productivity; in one case better working conditions were combined with no effect on labour productivity, and in another there was a negative effect on labour productivity.

For the opposite situation; from the thirteen cases with increased productivity, four show no real effects on working conditions. However, there are no cases with increased productivity that have a negative effect on working conditions.

In conclusion, in this program human performance improvement (here: productivity) works very well alongside attention to health protection.

Table 2. Eighteen interventions in long term health care and their effects on labour productivity and on occupational safety and health (Source: De Kleijn et al. 2008).

Intervention	Number of clients	Labour Productivity		OSH effects	Cost benefit ratio
		effect in %	time savings hours/client/year		
Registration of incidents	4.000	58%	1,0	+	neutral
Enhanced intake process	200	59%	16,5	+/-	very positive
Remote control	1	98%	558,0	+	positive
Policy on absenteeism	100	0%	0,0	+	very positive
Better coordination of care	322	6%	7,1	-	slightly negative
Changed somatic care	10	-10%	-103,4	+	negative
Hot meals service	45	20%	17,4	+/-	very positive
Prevention of falls	61	4%	0,6	+	slightly negative
Digital planning system	550	27%	2,6	+	slightly negative
Care TV	?	65%	194,7	?	uncertain
Keys control in home nursing	96	47%	96,0	+/-	neutral-positive
Registration of activities with PDA's	250	-506%	-2,9	-	negative
PDA's and electronic client files	60	34%	96,0	+	neutral
Ceiling lifts versus lifts on wheels	10	24%	194,3	+	neutral-positive
Re-indication process	32	20%	0,1	+/-	positive on long term
Job enrichment	44	0%	0,0	+	depending on choices
Detection of wandering demented	3	63%	150,7	+	slightly negative
Control process of medicins	225	67%	1,7	+	neutral

6 Conclusions and debate

6.1 Success factors and/or dilemmas

In a growing number of countries and sectors of industry, it is considered a matter of urgency to develop all competences of the potential workforce and to increase labour productivity by 'working smarter'. The recent financial and economic crises have not affected that conviction. It is an extra reason to invest in the simultaneous improvement of QWL and performance through interventions in the domain of social innovation. However, we are also aware of the existing scepticism of people who are of the opinion that the impact of technology and markets is far more important for performance. Or people who consider QWL as a separate goal or value that should not be mixed with performance.

As the reader already may have noticed, it is difficult to draw general conclusions from the theories and research that we have presented because concepts, measurements, and research designs differ considerably. As a result, most of our concluding paragraph consists of issues for further debate or research. Nevertheless, our study convinced us that prevention and performance improvement can work together very well. The best option is a combined focus on prevention and performance. This can also decrease the extension of 'precarious work' in some sectors⁷. But, as the Dutch examples show in particular, there were also performance effects when the project focussed on QWL and vice versa. However, the empirical evidence shows that simultaneous improvement of QWL and performance is not always achieved. Conditions for success and failure appear to be complex and partly dependant on local circumstances. The commitment of management combined with participation of the employees is definitely one important condition for success on both factors. Some evaluation studies indicate that the effects are stronger if more HR practices and/or organisational changes are implemented simultaneously.

Maybe Prud'homme van Reine and Dankbaar (2009) are right when they claim that recipes for the creation of innovative cultures by defining a list of success factors are not realistic, or maybe even myths. They are of the opinion that organisations have to deal with nine distinct dilemmas⁸. The ways in which organisations successfully deal with those dilemmas are very different, depending on many factors such as products, markets, technology, staff, industrial relations, and legislation. As an example they refer to an analysis of how Toyota deals with dilemmas and sometimes intentionally creates contradictions and paradoxes to move forward (Takeuchi et al. 2008)⁹. Also, Jacobs and Snijders (2008), although they indicate success factors, emphasise that every organisation has to deal with so called 'Janus faces'¹⁰. This could be an extension of our approach to dilemmas of stakeholders as described in paragraph 2.3.

Other important issues for discussion remain open. In the next paragraphs, we summarise the highlights. Our arguments can of course be found in the preceding paragraphs.

6.2 Issues for further debate: theory and research

- The relation between job demands/control capacity on the one hand and stress risks and learning opportunities on the other hand is well documented. Although there is some evidence for the relation between learning and performance and for the relation between learning and innovation on personal and organisational level, the theoretical explanations for these relations are rather weak and have to be extended. Among other things, the concept of 'role portfolio', meaning one person having roles in different related processes (operation, control, support), is promising in this respect. But we also have to look at cognitive processes.
- Most monitoring instruments covering control capacity include only internal control capacity (job autonomy). However, learning - in particular double loop learning - is probably best served by external control capacity (regarding strategic decisions, work organisation, targets). To investigate that relation, we recommend including 'external control capacity' in monitoring instruments, besides 'job autonomy'.

⁷ Precarious work, the opposite of what the ILO calls 'decent work' (a certain employment security, minimum wage, healthy working conditions) tends to expand in some sectors in Europe (cleaning, postal workers, taxi drivers etc.) because of international competition, privatisation and cost cuts.

⁸ 1. strong identification with own culture versus sensitive for diversity, 2. incremental versus radical innovation, 3. technology push versus market pull, 5. open versus closed innovation, 6. egalitarian management style versus hierarchical, 7. process orientation versus room for creativity and entrepreneurship, 8. individual performance versus collaboration in teams, 9. short term versus long term.

⁹ 1. Toyota (T) moves slowly, yet it takes big leaps, 2. T grows steadily, yet it is a paranoid company, 3. T's operations are efficient, yet it uses employee's time in seemingly wasteful ways, 4. T is frugal, but it splurges on key areas, 5. T insists internal communications be simple, yet it builds complex social networks, 6. T has a strict hierarchy, but it gives employees freedom to push back.

¹⁰ 1. take it easy versus don't take it too easy, 2. incremental versus radical, 3. concentration on core competences versus real new things occur outside the domain of core competences, 4. discipline and chaos, 5. carry on versus let go, 6. central control versus self management, 7. short-sighted versus long-sighted.

- People with 'active jobs' are not expected to have serious work-related problems, from a theoretical point of view. However, new work organisation (mobile work), changing work-life balance, and new control mechanisms ('employee entrepreneur') request attention for theoretically unexpected effects such as work-related stress among professionals with 'high-demands high-control jobs', part of them referred to as knowledge workers.
- It may be fruitful to add elements of strategic management theory, such as dynamic capabilities and absorptive capacity, to the 'job demands control model' and modern sociotechnology. The same holds true for 'social capital' and 'mental capital'. All these approaches have work organisation in the centre of their models.
- Many research projects are focussed on either QWL or performance. As a result, there is no opportunity to measure simultaneous effects. Therefore, in evaluation studies one should consider QWL indicators as well as performance indicators.
- One of the difficulties in drawing general and firm conclusions from research is the diversity of concepts and measurements. Harmonising concepts and measurements in international comparative and multidisciplinary research is recommended.
- Acquire (research institutes) or provide (funding agencies) funding for longitudinal research to improve causal explanations. Which interventions have long lasting effects on performance and QWL and what are the effects?

6.3 Issues for further debate: interventions

- The most interesting lesson is that the commitment of management combined with participation of the employees is definitely the most important condition for success in QWL and performance. The most important pitfall appears to be top-down projects rather than participatory projects with employees and their supervisors.
- Stakeholders in organisations have, to some extent, different interests and face different dilemmas which may cause conflicts and stagnation in bargaining and implementation processes. To deal with dilemmas and different interests of stakeholders, a common vision on a higher level of abstraction, trust, and reciprocal risk management can help. It will take time to establish these conditions.
- Each group of professionals has its own professional focus, interventions, research methodology, and journals. The results of their efforts are many times suboptimal because they do not sufficiently take related issues into account. Better outcomes can be achieved if management, OSH-professionals and organisation experts join forces.

6.4 Issues for further debate: (inter)national policies

- Workplace innovation and development projects should be embedded in macro-level policies (education, labour market, social security, innovation)¹¹. To give some examples: development of talents enables a more flexible organisation and contributes to a more flexible labour market. Flexibility must be supported by the social security system and collective agreements. For high quality jobs, a high quality education system is needed. National innovation strategies should not only focus on technological innovation but also on workplace innovation and 'working smarter'.
- National programmes (collaboration of government, social partners, consultants and research institutes) seem to generate more projects than activities of separate stakeholders. Although organisations are responsible for their own future, some public funding appears to be very effective in stimulating action, research, and dissemination.

¹¹ From an analytical point of view, the concept of 'flexicurity' on European and national level can be related to the concept of 'social innovation' on organisation level.

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Credits

About the authors

Frank Pot (PhD social sciences) is professor of Social Innovation at the Institute for Management Research, Centre for Innovation Studies, Radboud University Nijmegen, the Netherlands. His subject is the simultaneous improvement of the quality of working life and organisational performance. He was director of TNO Work and Employment and co-founder and board member of the NCSI. He was, and in some cases still is, a board member of international bodies involved in occupational safety and health (NEW OSH ERA, PEROSH, WHO) as well as productivity (EANPC).

Email f.pot@fm.ru.nl Telephone +31 6 51550675

Ernst A.P. Koningsveld works as a senior consultant at TNO Quality of Life in the Netherlands. In 1997 and 2003, he and his colleagues published a report on the total costs of poor working conditions in the Netherlands. For many years, the impact of interventions and the economic consequences have been part of his work as a European Registered Ergonomist. He made dozens of cost effectiveness analyses on and business cases of many different interventions, varying from ergonomic solutions to fresh drinking water for foresters in South Africa. Overviews of these have been published in various journals. He has trained hundreds of experts in several countries across the globe.

Email ernst.koningsveld@tno.nl Telephone +31 23 554 9524

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The NCSI (Netherlands Centre for Social Innovation) aims to support and increase job satisfaction and productivity in the Netherlands. The core function of the NCSI is promoting and initiating social innovations in the field of management, organisation and labour in companies and in industrial relations.

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**Stichting Nederlands Centrum
voor Sociale Innovatie (NCSI)**

Bezoekadres

World Trade Centre Rotterdam (Beurs WTC)
Kantoren Coolingsingel, kamer 512
Beursplein 37
3011 AA Rotterdam

Postadres

Postbus 30116
3001 DC Rotterdam

t +31 (0)10 205 27 80
f +31 (0)10 205 27 85
e informatie@ncsi.nl
i www.ncsi.nl

