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Davies, Hilary 2005, Productivity and the knowledge worker, *in Conference proceedings: The Queensland University of Technology Research Week International Conference*, Queensland University of Technology, Brisbane, Qld., pp. 1-16.

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PRODUCTIVITY AND THE KNOWLEDGE WORKER

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Abstract

The industrial age of Taylor and Ford transformed the landscape of office buildings. Office spaces were very uniform and highly supervised. People were units of production. Their work activities were routine. Work study, or “time and motion” studies measured outputs.

The current “information age” way of working, combined with major demographic shifts in the workforce (Gen-Xers, career-shifting Baby Boomers and a greater number of women and minority ethnic groups in the workforce), requires major changes in how to support service industry productivity. The motivations of knowledge workers are very different from those of the industrial age worker. Commitment to the organisation has gone as a result of business re-engineering processes that increased productivity but at the expense of job security. Workers are more likely to be “goal-focussed” rather than “prevention focussed” (Meyer et al 2004²) meaning that instead of doing only what is necessary to retain their job, workers actively seek more meaningful work that matches their personal value systems. They even want to have fun at work!

What contribution can the workplace make to support this work and increase productivity? Surveys have indicated that workers spend more than 75% of their time in their own office space with more than half of that time spent in concentrated work. Concentrated work requires quiet with few distractions, yet workers report that distractions are probably the biggest problem hampering their productivity. What are the current workplace solutions to office space usage? Probably the worst option for distractions is frequently used – open-plan offices, which are a more cost-effective use of space, but at the potential expense of productivity. Visioning architects such as Duffy (1999)³ advocate quiet spaces (“dens”) where workers can decamp to carry out their concentrated work. But is this workspace as efficient for the worker – who may have to transport materials back and forth?

Workers know what they need to support their productivity best. On the rare occasions when the staff have been given the opportunity to configure their work-settings, high productivity increases result. Besides noise, environmental quality is perceived as a key factor influencing productivity. Stuffy workplaces generate lethargy. Greater worker satisfaction with their workplace is reported when they have more individual control over the environment.

We need to seriously question the “one-size-fits-all” office building with cellular layouts. Workers need to be involved in the design and fit-out. They need personal control over their environment and an organisation that can support their individual aspirations and values. A number of interventions that could generate significant improvements in knowledge work productivity are proposed.

Keywords: productivity, office design,, environmental quality, motivation, knowledge worker.

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² Meyer, J P, Becker, T E, and Vandenberghe, C (2004) Employee Commitment and Motivation: A Conceptual Analysis and Integrative model, *Jnl. Applied Psychology*. **89**(6), 991-1007

³ Tanis J and Duffy F (1999) A Vision of the New Workplace Revisited. *Site Selection*, 805-814

INTRODUCTION

Offices are intended to provide the facilities and relationships that support office work and therefore generate income and profits for the organisation. Office design does not necessarily provide the best environment for maximum productivity.

There is increasing understanding of the complex factors that affect a particular worker's productivity. These range from the physical environment itself, to the psychological factors that affect worker commitment and motivation. The physical factors include the provision of comfort and, even more importantly, an environment that does not damage health. The relationships that interplay at work can also have impacts on a worker's efficiency and effectiveness. Conflicts with colleagues or supervisors can impact negatively on performance whilst good relationships, as in highly effective teams, can generate the new ideas that produce innovations in the market. Of increasing significance are the changes in the demographics of the workforce. Ageing baby-boomers are retiring from one profession but starting new careers. Better-educated women and ethnic minorities are making up a higher proportion of the workforce. These groups have differing work ethics and motivations. A re-examination of the psychological motivations of what people really work for and how this may influence their productivity is overdue.

WHAT IS PRODUCTIVITY?

A good place to start would be to determine what actually constitutes productivity for today's knowledge worker. Productivity: the state of producing rewards for results. Fruitful, lucrative and profitable. Peter Druker first introduced the term "knowledge work" to describe the use of information as the raw material of work. Analysis, creativity, collaboration, problem-solving are just some aspects of what is involved. This requires both work in teams and highly concentrated work alone.

But how to measure this? These tasks are not in easy units of production. In measuring knowledge work, effectiveness matters more than efficiency, quality more than quantity. Efficiency generates the greatest amount of production with a minimum of waste, expense and time. Effectiveness is about producing the right work ie the best quality with potential to add value or increase knowledge. However, quality, although more important to knowledge work (Leifer 2002), is even harder to measure than units of production. Vuorinen et al (1998) have used customer satisfaction as a substitute and relatively reliable measure for service quality. But not all knowledge work can be measured this way. We are left with partial measures – and the most used is worker estimates of their own productivity, which when combined with supervisors estimates has proved to be reliable (Brill 1984). This study however dates from before the information technology revolution. We continue to use self-assessments of productivity which have acknowledged difficulties of reliability and representativeness (Leaman 1995). Are we measuring productivity or some element of self-satisfaction with the work or the work environment? Another option is to look for new measures – measuring outcomes, determining value, or impact on the bottom line (McMorrow 2001).

WHAT REALLY AFFECTS PRODUCTIVITY?

Two strands of research seem to have developed depending on the background of the researcher. One focus comes from the built environment and attempts to find the impact of the office space itself on the workers in that space. A second area comes from the behavioural sciences – employee satisfaction, commitment, motivation and other impacts are reviewed. Clements-Croome (2000) has suggested that productivity depends on 4 clusters of variables:

1. Personal characteristics – phase in someone’s career, profession or skills
2. Social factors – relationships with colleagues
3. Organisational characteristics – organisational structure or management style
4. Characteristics of indoor climate – temp, lighting, acoustics; air quality (humidity, draughts, and pollution) and workplace layout

Detailed examination of these areas could indicate where the most effective interventions could generate productivity gains in knowledge work.

THE OFFICE ENVIRONMENT

Work Settings – Ways of Working

If current office layouts are intended to facilitate work, what do people actually do at work? What would suit knowledge work?

Knowledge work requires periods of concentration for creative understanding of information, creative problem-solving as well as opportunities for interaction and collaboration (Kaplan and Aronoff 1996). Work environments that have increased social spaces are thought to increase the potential for relationship building and therefore knowledge creation (Nenonen, 2004). However, an environment built for team working will not necessarily suit work situations where people have to concentrate (Pekala 2001). Duffy and Tanis (1993) concluded that knowledge professionals needed both “den” and “club” facilities – spaces for quiet work and collaboration to better support the increased interaction and greater individual responsibility of knowledge workers doing both concentrated and collaborative work.

So how much time is spent in collaboration and concentrated work? A survey of 13,000 workers by BOSTI (Buffalo Organisation for Social and Technological Innovation) showed that workers spend at least 75% of their in-office time in their own work space with over half of that time spent on concentrated tasks (Olson 2000). A Steelcase survey (2003) found that 68% of the workforce estimated that talking to people was their most valuable source of information. Tanis and Duffy (1999) surveyed 5000 workers in leading UK and US companies and found that 58% used both high interaction (teamworking) and high autonomy (solitary) models of working in the same day. Even workers in organisations with high levels of team working report that the majority of their time is spent at their own desks. The workplace needs to have mainly quiet spaces to support concentration and spaces for interaction and collaboration. What does the market provide?

Most offices are built as vehicles for speculative investment and pension funds. We have inherited thinking from the industrial age of Taylor and Ford that transformed the landscape of office buildings into very uniform and highly supervised work spaces. The “bull-pen” of this era developed into the 1970’s cubicle or open-plan layout. This generated cost-savings with less space per person, but increased flexibility to allow changes in organisation size and structure. The layout was intended to increase communication and consequent productivity gains. However, no relationship has been found between architectural accessibility and social contact between co-workers (Brennan et al 2002, Sundstrom et al 1980) contradicting the claims of office designers.

Facilities managers mainly report to Finance Directors and are driven more by cost containment than the usability and suitability of space to accommodate business processes (Glover, 2002). This could be counterproductive. When cost reduction is the primary objective of an office review process this could prove a false economy, generating less commitment from disgruntled and demotivated employees (Kerslake 2002). Companies spend less than 10% of their operating expenses on occupancy costs compared with the cost of labour, which is about 15 times that of the cost of the facilities that people occupy (Kaplan and Aronoff, 1996). It is therefore important to invest in the quality of the environment and facilities that enhance productivity (Roelofsen, 2002). Open plan offices offer possibly the worst possible solution – the work-success ratio for those who worked in cubicles was reported as 74% less than for those in enclosed offices (Pekala 2001). Workers are not happy either – staff surveyed after they were moved from traditional to open plan offices, were all less satisfied with their environment and thought that it affected their work performance (Brennan et al 2002). Current models of innovative or flexible work practices are intended to increase effectiveness, generate greater job satisfaction with more flexibility and lower costs. However, these do not necessarily provide the looked for organisational performance gains either (Ilozor et al 2002). Indeed, innovative worksettings can generate a whole series of potential productivity losses due to distractions, excessive noise, lost time from repeated log-ins and searches for free desks and reduced work satisfaction from loss of status, privacy, territory and identity. Total perceived productivity in a new office building with activity related and shared workplaces dropped from 7.5 to 6.5 (on a 10 point scale) (van der Voordt 2004).

The ability to concentrate would appear to be a key requirement for knowledge work. Probably the worst effect on productivity reported is because of distractions – be they conversations in adjacent cubicles, proximity to office equipment, or simply people walking past.

Distractions

Noise is on the increase in offices. Workstation density, speaker phones, personal audio, team areas, public traffic and more office equipment all add to the level. It has been estimated that employees spend 15% of their time on the job conversing in and around their office cubicles, generating significant distraction (Carsia 2002). Workplace grids have the potential to create large opportunities for distraction – each worker may have up to 8 neighbours. 65% of workers in open offices reported being often distracted

compared with only 48% for private offices (Olson 2000). The total financial impacts of unwanted distractions are not just the actual time spent but also the time to regain the train of thought in complex tasks. Increased errors are also a consequence of interruptions. Working in a noisy environment also takes extra mental effort which can generate stress. Noise is seen as the greatest influence on productivity (Leaman and Bordass 1999) and 70% of workers agreed that productivity would increase if office noise would decrease (Carsia 2002). Office noise is not the only distraction – visual privacy is also a desired feature of offices (van der Voordt 2004).

Enclosed single private offices would appear to be the best overall solution for today's workplace. Or, if not, much more attention needs to be given to eliminating distractions. Acoustical considerations can be reasonably easily dealt with by planning the space to isolate potential distractions, choosing materials that reduce reverberation times and providing sound masking for speech privacy (Carsia 2002). White noise, where provided, is used by as many as 40% of US office workers to mask nearby conversations (Wyon 2000). Privacy – both conversational and visual – is essential for spaces free from distraction (Pinder et al 2003). Perceptions of privacy are related to job rank– office managers and administrators with more control over social contacts rated privacy as more important than secretaries (Carlopio and Gardner 1992). Of necessity, workers make up their own solutions – using filing cabinets as screens to walkways or working with earplugs or headphones. Off-site working for tasks requiring concentration is another solution, but this would require possible changes not just in work place but workplace culture.

Space for quiet, uninterrupted working appears to be an essential and under-supplied commodity. Changes in this one area could generate substantial productivity gains.

Health, Well-Being and Comfort

Workers cannot be productive if their environment impacts their health and well-being. The consequences are not just for immediate lowered productivity rates but longer term costs with regard to rehabilitation and even insurance claims. There are two major areas where health and the office environment are connected – air quality and ergonomics. Discomfort at levels below health impacts can also have major influences on productivity.

Repetitive strain injuries are becoming a major health problem for office workers. The quality of the environment affects how long people can work at a task and their physical health (Kaplan and Aronoff 1996). A disruptive or uncomfortable work setting can have a double cost on performance – workers being quicker to fatigue and slower to recover. The overall loss in productivity can include lost time due to back pain and rehabilitation. Ergonomic furniture may not be a luxury but increasingly a necessity to allow workers to continue to perform at a high level and can contribute to productivity enhancement. Research by Kruk (1989) showed that a well-designed office chair increased job satisfaction by 27% and adjustable, ergonomically designed office furniture increased productivity by 15.4%.

Productivity gains from consideration of the worksettings themselves could be considerable.

Other major health risks are associated with air quality. Indoor air pollution affects productivity. Poor air quality results from inadequate ventilation and pollutants –carbon dioxide, humidity, VOC's, particulates, gases from glues and carpets, moulds and viruses. The ill health effects of pollutants include sick building syndrome (SBS) effects that can range from non-specific ailments such as headaches, irritated mucous membranes in the eyes and throat, chest tightness, general lethargy and increased susceptibility to illness, to more serious ailments such as asthma and allergies. Wargoeki et al (2002) identified that ventilation is strongly associated with comfort and health. Ventilation rates below 10 ls^{-1} per person are statistically associated with significant worsening in one or more health or perceived air quality outcomes (Seppanen et al 1999).

Pollutants in the air do not necessarily have to cause health problems to have an effect on productivity. Pollutants from new computers (Bako-Biro et al 2004) were having an evident effect on productivity 3 months after they were installed. Not all countries set levels for carbon dioxide, yet concentrations still considered acceptable (threshold 5000 ppm) have measurable influences on workers perception of air quality and productivity – sleepiness and lethargy are common symptoms of high carbon dioxide levels. Wyon (2004) recommends increasing ventilation from 3 to 10-30 ls^{-1} per person for measurable increases in productivity which can be as much as 15% (Damian 2004). Existing ventilation guidelines may be too low to protect occupants. Fisk (2000) and Milton et al (2000) both extrapolate the costs of lost productivity as a result of ill health from poor air quality. Fisk (2000) estimates the health benefits and savings for the USA from reduced respiratory illnesses at US\$6-14 billion, allergies and asthma US\$2-4 billion and SBS symptoms US\$10-30 billion with productivity gains of between US\$20-160 billion.

Improvements in ventilation would have large and measurable impacts on both health and productivity levels. Ventilation standards are inadequate for pollutants that are not considered immediately harmful.

Dissatisfaction and Discomfort

The indoor environment itself can have a large impact on worker comfort and productivity. There appears to be a clear link between worker discomfort and reduced productivity. A Steelcase survey (2003) found that 79% of workers surveyed believed physical comfort has a serious impact on worker satisfaction. This is supported by a series of Probe studies on office buildings in the UK finding a 25% difference in perceived productivity between comfortable and uncomfortable staff (Leaman and Bordass 1999, Leaman 1995). Ellis (1994) found that of 480 office staff surveyed in the UK, 96% were convinced that the design of a building affected productivity. Studies by Clements-Croome and Kaluarachchi (2000) found that the most frequently reported adverse conditions in UK offices were in order of frequency: high/low temperature or temperature changes; insufficient daylight and low-quality general lighting; stale/stuffy air and dry/humid air; and noise problems.

The measurement of the effects of discomfort on productivity are problematic. Lowered productivity can be evidenced by sick leave, absenteeism, extended lunch and tea breaks, excessive socialising and reduced working hours (organisations may get as little as 5 productive hours per day from workers). However, productivity changes can be measured - production rate, quality of production and changes in absenteeism. Some studies do seem to offer clear cut impacts when changes are made in the environment. Changes in lighting and acoustics in a post office generated an 8% increase in productivity and the lowest error rate in sorting (Browning 1997). A productivity increase of 10% was observed following improvements to the indoor environment of an office (Roelofsen 2002). Absenteeism dropped by 6-10% following HVAC improvements (Browning 1997). It is obviously important to spend time and effort on good environmental design to achieve comfortable conditions - employee's satisfaction with their work environment has been found to be directly related to employee's job satisfaction (Carlopio 1996).

But what constitutes comfort? Temperatures within a comfortable range, natural daylight, adequate lighting levels and ventilation are part of the basic physical environment. The problems come with perceived uncomfortable temperatures, lighting that cannot be adjusted, draughts, stuffiness, variable daylighting and glare on screens. And the word "perception" is key - workers can report unacceptable thermal conditions even when comfort limits are met (DeDear et al 1993). Perceptions of the environment are also moderated by job level and the type of work people perform (Carlopio and Gardner 1992). The variability of individual responses and the rich mix of factors impacting on productivity makes it difficult to assess the direct impact of work environments on productivity.

Employee Stress

Dissatisfaction and discomfort may not be related only to the work environment. The individual brings with them their own set of factors – home and work stresses and life aspirations. Some researchers have wondered about the spillover effect between the two domains of home and work. Judge et al (1994) found that the typical male executive does have a high degree of work-family and family-work conflict (taking work home mentally, working over long hours and carer responsibilities impinging on ability to work). Lingard and Francis (2004) found that burnout and significantly higher levels of work to family conflict were likely for site employees than those at regional or head offices.

Stress from a variety of sources will impact on productivity. The causes of workplace stress are not hard to see – increased workload, not enough time or resources. Add conflicts with colleagues or managers and the mix is potentially lethal – heart disease, ulcers, hair loss, muscular complaints and emotional exhaustion or burnout, all of which can result in absenteeism for long periods, extensive treatment regimes and management and administrative time spent on complex stress claims (Sutherland and Cooper 2000). Low levels of job control, monitoring, unsupportive or antagonistic supervisors lead to a high stress work environment (Kaplan and Aronoff 1996).

The work environment itself can contribute to stress levels. An open environment where workers can see and be seen creates poor levels of psychological privacy. Limited acoustic privacy and confidentiality, increased noise and disturbances all generate increases in physiological and psychological stress and reduce the ability to concentrate (Brookes and Kaplan 1972). Indeed lowered job performance is considered to result from decreased satisfaction with the physical environment (van der Voordt 2004), increases in physical stress and decreased team member relations (Brennan et al 2002). Flexible office solutions such as desk sharing add extra stress – workers cannot personalise space and express their need for territoriality or status.

Personal Control

One of the major problems for office environments is that they are trying to supply an average set of conditions. Individual occupiers have individual responses to that environment. One way to satisfy a greater majority would be to have some kind of individual control over the environment and a greater say in the design.

Several studies point to the improvements in productivity when workers have been allowed to participate and be involved in the design decisions (Campbell and Finch 2004, Glover 2002). Participation can even outweigh productivity bonus plans (Rosenberg and Rosenstein 1980). When people are involved in design decisions and “own the space” they are more likely to be more committed to it and be more willing to overcome their own territoriality, with consequent improvements in communication, attitude and morale (Kaya 2004). When employees were allowed to reconfigure their workplaces, efficiency and morale soared (Stern 1991).

Individual control over the environment – the ability to fine-tune locally, can be what makes the difference between a tolerable or intolerable workspace (Leaman and Bordass 1999). Moving the desk to avoid a draught or reduce glare on a screen, blocking a vent, opening a window – simple adjustments that can have a big impact, require flexibility in workplace design. Rudolf and Kleiner (1990) argue that most office environments are detrimental to productivity because they ignore the requirements of the individual. When lighting dimming controls were introduced, significant improvements in mood, room appraisal, environmental satisfaction and self-assessed productivity resulted (Veitch and Newsham 2000). A survey by Knoll (reported by Barber 2001) of workers showed that the greatest boost to productivity (over 70%) would come from having state-of-the art technology, the ability to control climate, storage space, quiet space and space that can be personalised.

The standard office solution of open-plan is no longer suitable for the productive office knowledge worker. They need to be involved in design decisions and allowed a degree of control over their individual worksetting.

THE KNOWLEDGE WORKER - PRODUCTIVITY IS ABOUT MORE THAN JUST THE WORKSPACE

How to Describe Today's Knowledge Worker

Major changes in the workforce are evident – globalisation, overseas degree education, mobile workers, better-educated women, more ethnic and racial diversity, more older workers – all have different aspirations and expectations from work. Business “re-engineering” or “down-sizing” practices have reduced worker loyalty and an increasing desire for balanced life-styles has helped create the “me-generation”. The workforce is seriously questioning devotion to careers and obligation to employers. Women want more flexibility to manage family and career and good quality serviced workspaces in order to enjoy their job more. Baby boomers intend to keep working during retirement – mostly in jobs other than those they retire from.

The protestant work ethic is being replaced with a desire for self-actualisation – employees regard it as their right to be provided with opportunities to develop to their full potential (Hamilton-Attwell 1998). A job is no longer a means to provide basic survival needs, it is often now viewed as the means of achieving personal and professional growth, with people being prepared to put some job and income security at risk if there is the opportunity to enhance their self-esteem and achieve a degree of self-fulfilment (Kerslake 2002).

Productivity resides in the individual. It is the collective efforts of individuals that generate the output for any organisation. The focus needs to be on the individual.

What Do People Actually Work For?

What factors motivate people? Herzberg proposed a two-factor motivation theory – job content and job context (Herzberg et al 1959). Job content motivational factors were described as achievement, recognition, work itself, responsibility, advancement and possibility of growth. These factors, according to the theory, operate to increase job satisfaction. Opposing these are a number of hygiene or job context factors which if not operating well, according to the theory, will cause job dissatisfaction. Job context factors are company policy, supervision, relationship with supervisors, work conditions, relationship with peers, salary, personal life, relationship with subordinates, status and job security. There has been a long history of attempting to understand motivation and commitment by organisational scientists (Meyer et al 2004). Both commitment and motivation theory have developed as a means to understand, predict and influence employee behaviour – and thus their productivity.

Motivation, Job Satisfaction and Commitment, Needs and Values

Motivation is “a set of energetic forces that originates both within as well as beyond an individual's being, to initiate work-related behaviour, and to determine its form, direction, intensity and duration” (Pinder 1998 quoted in Meyer et al 2004).

Those “energetic forces” are a combination of needs and values. Values help people choose, evaluate and give meaning to their work experience (and life). They are the

behaviour and activities to which you, as an individual, are naturally drawn. They could include such things as creativity, personal growth, discovery, adventure, mastery, contribution, community, catalysing, energising, leading, spirituality. We are driven to a greater or lesser extent by needs satisfaction. Needs are those things that must be met to enable you to operate fully. Work typically supplies many of these – such as status, recognition, relationships, rewards, respect, autonomy, trust, equity. When any of these needs are not met, dissatisfaction with work is likely to arise – most likely resulting in lowered productivity and, when serious enough, to encourage employees to leave. Employees are most likely to fully commit to their job when their needs are met. Commitment is often measured by turnover intentions (Carlopio 1996). Organisations are keen to explore the practices that inspire commitment (Stum 2001).

Does satisfaction with the job cause productivity? Does worker commitment increase productivity? It has proved difficult to unravel the cause-effect relationships. Could someone be very satisfied yet not very productive? Indeed only a weak link between individual performance and job satisfaction has been identified (Ostroff 1992). But a study by Schneider et al (2003) found that financial and market performance of an organisation brought increased pay levels which resulted in statistically significant and stable relationships with job satisfaction and security – in other words – performance (productivity), results in rewards, which in turn result in satisfaction. Individual employee satisfaction is in fact an outcome of individual performance followed by equitable rewards. It follows that reward systems need to be linked to what the employee values.

Commitment is one component of motivation. Commitment: “is a force that binds an individual to a course of action that is of relevance to a particular target” (Meyer and Herscovitch 2001). Commitment in the workplace “translates into employee belief in and acceptance of organisational goals and values, a willingness to exert considerable effort on behalf of the organisation and a strong desire to maintain membership in the organisation” (Meyer et al 2004). The most productive and highly motivated staff are likely to be those whose needs are fully met (hence job satisfaction) and where the job characteristics and opportunities for autonomous goal-setting provide reasonable congruence with their personal values.

Goal setting is at the heart of motivation – self-generated or assigned by others. Autonomous goals originate from personal values and are likely to get the highest levels of effort and persistence (Deci and Ryan 1985) since they invite our affective response. Affective commitment arises from value matching, identification with the relevant target, and personal involvement producing the strongest positive correlation with job performance (George and Jones 1996). High intrinsic motivation, low absenteeism and turnover, high quality work and high satisfaction result from psychological states, such as feeling that the work is meaningful (a good fit between work and personal values and beliefs), competence or mastery, autonomy and impact or significance (Spreitzer 1995).

An individual will set goals of varying difficulty according to their internal beliefs. These colour the individual's efforts and goal attainment strategies (or avoidance) (Loher

et al 1985). It is possible that those internal beliefs can make the difference between someone who is “goal-focussed” rather than “prevention focussed” (Meyer et al 2004). (“Goal-focus” being concerned with advancement, growth and accomplishment; “prevention-focus” being about security, safety and responsibility). Another explanation for the differences in motivation could be that the person is simply in the wrong job – with a poor match with their personal values and the work characteristics.

The growing desire for personal freedom and control, autonomy at work and a need for personal growth and development through their job indicates the growing importance of values to any individual in their life – values that inspire and motivate rather than simply needs being met.

Any Organisation Must Provide Needs Satisfaction

The job is just one part of what provides life satisfaction. Hart (1999) found that job satisfaction came only 4th out of a series of 7 factors identified as contributing to overall life satisfaction. To inspire worker commitment, at the very least an organisation must provide an environment that provides psychological needs satisfaction – such as a positive social organisational environment (good communication, autonomy, participation and mutual trust); reward systems and conditions of employment that are equitable and matched to likely behavioural outcomes and empowerment practices that could strengthen commitment.

Management and Productivity

Management can inhibit or stimulate productivity. Empowering, trust-based leadership, treating a person as an individual and with respect is most likely to lead to high commitment and motivation (Kerslake 2002). Managers with high expectations of subordinates can boost productivity and be very effective at increasing motivation at work (Eden 1990).

In contrast, poor management and supervision is possibly the greatest barrier to increasing productivity (Taylor 2005). A lack of autonomy and participation in decision making contributes to job stress – being told what to do and how to do it. Close monitoring by managers and a lack of trust produce a culture of “presenteeism” where workers feel they have to be highly visible (Robertson 2000). Work needs to be measured by output not by time spent in the office.

Managerial training could be a key investment in helping managers grow themselves and their employees. The growth in executive coaching highlights the necessity of treating everyone as an individual. Olivero et al (1997) reported 4 fold increases in productivity when managerial training was followed up with coaching. Fisher (2001) described payoffs averaging more than US\$100,000 (about 6 times the cost) resulting from coaching. The individual matters most.

To inspire the greatest productivity, the organisation needs to provide opportunities for personal growth and development so that the employees can fulfil their work and life aspirations and an empowering management style that supports employees.

CONCLUSIONS

Today's knowledge worker is looking for work that has meaning, that allows personal growth and helps in their search for achievement of their personal goals. The workforce is changing in demographics – profession-shifting Baby-Boomers, Gen-Xers, the Me-Generation have differing expectations of work and life. A re-examination of what people really work for and how this influences their productivity is overdue. Work itself is changing continuously with changes in IT. Organisational productivity is the sum of all the interactions of individual employees. A complex set of factors affect any one individual's productivity. However, so many offices are designed for an average set of conditions and rarely with the participation of the intended workforce. In the search for greater productivity, office design, the environment and employee motivations all need to be reviewed. Knowledge workers mainly spend their time in concentrated work, but need the support of relationships at work for collaboration as well. Open plan offices do not provide the ideal environment for this kind of work. Interruptions and distractions are causing major productivity losses. Space for quiet, uninterrupted working appears to be an essential and under-supplied commodity. Changes in this one area could generate substantial productivity gains. The environment itself needs to support worker health for maximum productivity. Too many offices create problems through job stress, uncomfortable working conditions, and even unhealthy environments with poor air quality. Improvements in ventilation would have large and measurable impacts on both health and productivity levels. Ergonomic worksettings would alleviate the growing set of back problems associated with VDU use. Employees appreciate being able to control their environment to suit themselves. The "one-size fits all" office is no longer suitable for the productive office knowledge worker.

What of the psychological factors that affect worker commitment and motivation? Much of the research has focussed on satisfying workers' needs – status, recognition, relationships, rewards, respect, autonomy, trust, and fair treatment – in the belief that in their satisfaction, the employee will then commit to the organisation their best and productive efforts. The most highly motivated workers however, have something else, affective autonomous goals that are more closely matched with what the work itself can provide – the chance to use their talents in pursuit of personal values such as creativity, personal growth, discovery, mastery, contribution, leading for example. Values help people choose, evaluate and give meaning to their work experience and life. To inspire the greatest productivity, the organisation needs to provide an empowering management style and opportunities for personal growth and development so that the employees can fulfil their work and life aspirations – in Maslow's terminology: "self-actualisation".

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