Defining the Knowledge Worker

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ABSTRACT

The phenomenon of knowledge workers is simultaneously both a new and an old occurrence. This gives rise to much confusion in identifying and developing knowledge workers. This paper presents the results of a survey undertaken to assess current status and perceptions of a knowledge workforce. The sample consists of 81 returned questionnaires representing 70 companies from mainly the manufacturing sector. Among the factors surveyed were organizational priorities and human resource practices, knowledge worker practices, knowledge worker skills and attitudes and level of IT competence. Findings indicate that management attitudes were generally positive towards developing a knowledge workforce but current practices were not supportive of this objective. This lack was evident in limited opportunities for knowledge widening and deepening activities, limited opportunities for employee participation and disregard of external knowledge sources. The situation appears to be one where the spirit is willing but the path is unclear. Defining the knowledge worker may be a first step in the right direction.

Keywords

Knowledge Worker, Definition, Practices, Attitudes, Skills, IT.

1. Introduction

Learning organizations and knowledge workers are concepts that have gained salience in a world dominated by Information Communication Technology. An added impetus is the specter of globalization that drives companies towards more efficient use of resources at hand. A first step in this direction is to define the role and characteristics of knowledge workers in modern organizations. The familiarity of the concept makes it even more urgent that a contemporary definition evolves to create shared awareness. Within this definition are also included infrastructure, policies and practices that develop and maintain knowledge workers. This paper presents the results of a survey conducted to determine existing perceptions of knowledge workers, to identify management structure and practices and their implications for developing knowledge workers skills and attitudes.

2. Knowledge and the Knowledge Worker

Data, information and knowledge can be ranked in terms of increasing complexity. Data refers to raw material; information refers to data used for a particular function and knowledge is the product of interaction between information and individual beliefs and values (Smith, 2000). Logan and Stokes (2004) have further refined these distinctions to view knowledge as the ability to use information strategically to achieve one's objectives. An additional dimension has been added in the form of wisdom that augments and guides knowledge such that application is consistent with one's values and those of the larger social context. Knowledge thus is interpretative in nature and located both within individuals and in a specific context. Within organizations, two forms of knowledge have been identified. Explicit organizational knowledge is that which has been codified, stored and managed such that it can be expressed and shared in a systematic manner. Tacit knowledge is personal, internalized knowledge that can be observed in actions, procedures, routines, ideals, values and emotions (Nonaka, Toyama & Konno, 2001). Both explicit and tacit knowledge are complementary and organizations use both to build and expand their knowledge base. However there is an interesting relationship

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between organizational knowledge and the knowledge worker.

Knowledge as an asset within organizations is developed through the efforts of individual workers and resides both within the worker (tacit knowledge) and within the organization (explicit knowledge). When the worker remains as a member of the organization, both these types of knowledge interact to contribute added value to the organization. When the worker leaves then the proportion of knowledge that is personal will be lost. Interestingly, individuals can develop knowledge both within and independently of the organization, however organizations cannot learn or develop knowledge independently of their human capital (Bogdanowicz & Bailey, 2002). This dependence of organizations on the personalized and cumulative knowledge of its employees defines the necessary relationship between employees and organizational structure, policies and practices. The relationship between both parties is one of interdependence where management has the responsibility to nurture knowledge workers while employees are duty bound to contribute their knowledge to the organization. However the balance is far from equal because knowledge is a portable asset. New workers entering the organization bring with them past knowledge and experience, just as they may transport knowledge when they move on to new employment. Thus there is a need for a flexible and dynamic relationship between knowledge workers and employers. Organizational structure and practices need to be geared towards developing and sustaining knowledge contribution, while individual knowledge workers should develop appropriate skills, attitudes and practices facilitating the effective use of both tacit and explicit knowledge. Based on this conception of knowledge, knowledge workers and knowledge organizations a research framework was developed that examined practices at both the organizational and individual levels of activity.

3. Research Framework

Four dimensions were identified for study, namely organizational policies and priorities, management practices, employee skills and attitudes and level of IT usage and competence. Each of these dimensions is described in greater detail below.

3.1 Organizational policies and practices

Knowledge deepening and knowledge widening are terms adopted from economists' use of human capital deepening and widening (Bogdanowicz & Bailey, 2002). Knowledge deepening refers to workers' mastery of work processes such that workers have complete and in-depth understanding of tasks, technology and equipment used in task performance. Mastery fosters the growth of confidence and freedom that are the foundations for fostering innovation and creativity.

Knowledge deepening is not synonymous with continuous improvement and multiskilling. Such practices have been criticized because they only provide partial support for developing knowledge workers (Ahanotu, 1998). In theory, continuous improvement schemes are thought to encourage employee participation, innovation and creativity. In practice however, it has been found that employees are unprepared for full participation due to their lack of knowledge about task processes. This incomplete knowledge about tasks, tools and technology handicaps employees who are then unable to fully function as knowledge workers. Another limiting factor is the tendency to bind employee knowledge to specific production activities. While cost effective in terms of training outlay, this narrow focus constrains knowledge development. True knowledge workers require full understanding of production processes and broader awareness of the entire system before they are able to fully participate.

Knowledge widening refers to workers' increased ability to acquire a variety of skills. Most commonly this objective is achieved through job rotation and multiskilling. Through knowledge widening employees acquire a more comprehensive understanding of work processes that in turn fosters cooperation, collaboration and team working that are the essence of knowledge work.

Another source of knowledge available to organizations is that held by customers and suppliers. This information and expertise held by customers, suppliers, external agencies and consultants has been termed relational capital and can be a valuable source of knowledge for organizations (Ahmed, Lim & Zain, 1999). Customer knowledge could be captured by developing customer profiles, vendor comparisons, gathering competitive intelligence

and creating opportunities for both formal and informal discussions for feedback, suggestions and reviews of customer satisfaction. Suppliers are able to contribute valuable information about raw material or products as well as ideas and suggestions during new product or service development. In return manufacturers are able to enhance supplier performance through training and consultancy, for example coordinating benchmarking activities between suppliers. All of the above activities rest on the assumption of relationships of mutual trust and cooperation between customers, organizations and suppliers. While this practice has been found to be effective among Japanese manufacturers and suppliers, its scope and effectiveness among local companies has yet to be determined. In addition to tapping knowledge from customers and suppliers, knowledge organizations should also consider utilizing the expertise of government agencies, trade and professional associations and both public and private institutions of higher learning. The concept of team working can be extended beyond organizational boundaries to include all other relevant parties in the business environment.

3.2 Management policies and practices

A common theme in the management literature associated with knowledge workers is the need to develop more facilitative leadership, hence the current interest in coaching and mentoring rather than leadership per se. It is well recognized that authoritative and hierarchical forms of relating between managers and subordinates are ill suited to creating responsible, adaptive and creative individuals. As an alternative, Colvin (2000) has suggested that management's role becomes that of creating, articulating and sustaining the organization's values. Within this framework, employees are encouraged wherever possible to work independently, to assume responsibility for individual career development and are given a greater degree of autonomy. Once deprived of their traditional controlling role, management is then driven to develop alternative ways of relating. Colvin terms this "coalescing around shared values" meaning that management's role becomes that of aligning individual values with those of the organization. In this win-win solution, the organization gains a knowledge based competitive advantage while employees, through greater organizational commitment, enjoy increased job satisfaction and reduced work stress. Though this arrangement may appear to be idealistic, management cannot afford to ignore the need to move towards more egalitarian and supportive relationships that support and facilitate the development of knowledge workers.

3.3 Employee skills and attitudes

Inductive learning or the ability to investigate, set up and test hypotheses is a crucial skill required of knowledge workers. It has been shown to be possible to develop these skills through functional on-the-job training (Cusimano, 1995; Ahanotu, 1998; Smith, 2000). Using participant learning exercises, team working and an emphasis on tasks, operational steps and performance objectives per job, it has been possible to transform blue-collar workers into knowledge workers without experiencing operational losses.

Team working skills are important for knowledge workers because they represent a means of accessing tacit knowledge and codifying it into explicit knowledge. Information exchange is also facilitated by the processes of socialization. Thus it is important to cultivate habits of work sharing, discussion and joint troubleshooting. This may be best achieved by working in teams, thus making team working an essential component of knowledge organizations. Allied skills are those of communication, problem solving and decision making. The latter are not new skills but gain salience in knowledge organizations because of their enabling role.

Knowledge work also requires an extension of employee attitudes to include the willingness to work independently and to take responsibility for one's own skill and career development. In addition to being self-directed learners, knowledge workers are also required to be flexible, innovative and curious. It has been observed that learning opportunities are usually the preserve of young, new, degree holders eager for promotion and career development. It is rare that such qualities can be observed unbounded by short term career objectives. As employees progress further up the promotion ladder, the willingness to learn to should increase. Too often senior employees tend to rely on experience rather than a combination of both learning and experience. These attitudes too need to realigned in modern organizations. For knowledge organizations the challenge is to develop a unified set of competences related to employee attitudes and values, social and interpersonal

competences as well as learning and work method competences (Evans, 2002). Additionally these attitudes and competences must be present at all levels of the organization and stages of the career pathway.

3.4 IT usage and competence

Local definitions of knowledge workers have given prominence to acquiring IT skills and knowledge, which is both useful and misleading at the same time. Without doubt the ability to use sophisticated IT tools will greatly enhance the knowledge worker's ability to access information and formulate appropriate responses. However it would be erroneous to assume that mere possession of IT skills alone is sufficient to create knowledge workers. In essence, knowledge work requires skills, information and an attitude of mind that is analytical, curious and independent. It is these qualities that encourage workers to collect, manipulate, create and disseminate information and knowledge. The use of electronic technologies and tools support these activities but does not in itself comprise knowledge work. Thus IT is placed in a supportive role as an enabler that facilitates knowledge manipulation. Unique to IT is the role of the Internet and Intranet for connectivity and information exploration and/or sharing leading to knowledge creation and dissemination both within and without organizations. In a world grappling with globalization connectivity tools permitting video conferencing and immediate communication are indispensable. Thus technology, when used appropriately, enhances access and utilization of both tacit and explicit knowledge and in this way plays a significant role in enabling knowledge workers.

4. Methodology

A cross-sectional design was used to obtain data on dimensions of a knowledge workforce. The questionnaire consisted of four sections, namely, organizational profile, knowledge worker practices, knowledge worker skills and attitudes and technology resources. The questionnaire items corresponded to the four subsections presented within the research framework described above.

Data was collected at four sessions organized by the National Productivity Corporation (NPC). The first two sessions were about productivity linked wage systems and the second two sessions were presentations cum discussions on the knowledge workforce. Participants completed the questionnaire at the end of each session. The final sample consisted of 81 respondents, made up of 62 respondents from the productivity linked wage systems and 19 respondents from the knowledge workforce sessions.

4.1 Sample Characteristics

The 81 returned questionnaires represented 70 companies in the manufacturing sector. A significant number of companies were from electrical and electronics manufacturing (22.9%), rubber industries (11.4%), plastic products (11.4%), food processing (8.6%) and fabricated metal products (7.1%). The majority of companies had been operating for over 20 years (36.1%) and had an annual sales total of between RM 10 to < 30 million (28.1%). 44.3 per cent of the companies were locally owned, 35.7 per cent were foreign owned and 20 per cent consisted of joint ventures. The majority of responding companies reported a full time workforce of between 100 to 499 employees (54.2%) with some companies having a workforce of over 1,000 employees (14.3%). While this sample represents some portions of the manufacturing sector, it cannot be considered to be truly representative because the sample consisted only of those companies who accepted the invitation to attend the NPC organized sessions. Within these limitations however it does serve to give a preview of perceptions about the knowledge workforce.

5. Results

The order of presentation corresponds to the study framework by starting at the general company and management level before focusing on individual knowledge worker skills and attitudes.

5.1 Organizational Priorities

In this section respondents were provided a checklist of 7 priorities and asked to rate them in order of current and future priority. Table 1 below presents the ranking of corporate priorities.

Table 1: Organizational Priorities

Priority Ranking	Present	5 Years Ahead
First Priority	Quality Improvement (43.1%)	Quality Improvement (30.9%)

Second Priority	Cost Reduction (28.8%)	Quality Improvement (17.9%)
Third Priority	Continuous Improvement (21.1%)	Continuous Improvement (17.9%)

The results indicate an accent on improving manufacturing quality and efficiency. This is to be achieved through direct efforts at quality improvement and also indirectly through cost reduction and continuous improvement.

Respondents were then given a checklist of 7 human resource issues and asked to rank them in order of current and future priority.

Table 2: Human Resource Issues

Priority Ranking	Present	5 Years Ahead
First Priority	Shortage of skilled labour (38.6%)	Cost of labour (30.8%)
Second Priority	Right sizing of personnel (20.0%)	Right sizing of personnel (18.5%)
Third Priority	Develop a culture of continuous learning (26.9%)	Increased access to training (23.8%)

Two out of three current HR priorities are concerned with upgrading skills and knowledge, while the other is related to cost efficiency considerations. Taken together both tables indicate management concern about remaining competitive. While there is awareness of developmental issues such as continuous improvement and developing a culture of continuous learning, these are given a lower priority compared to the more pressing need for business survival and growth. Thus one issue for the future of developing knowledge workers will be recognition and allocation of resources that includes time, personnel and integration with other company activities.

5.2 Knowledge Worker Characteristics

Respondents were presented with a list of 7 statements drawn from existing definitions of knowledge workers and asked to select the top 3 characteristics viewed as most relevant.

Table 3: Knowledge Worker Characteristics

Rank	Characteristics of K-workers
First Choice	Able to access and use knowledge in responding to tasks.
Second Choice	A versatile and flexible worker.
Third Choice	Able to make decisions to satisfy customer needs.

The results in Table 3 indicate an emphasis on the utility of knowledge particularly with respect to speed of response. It is interesting to note that respondents did not select statements referring to the mastery of ICT skills or those touching on innovation and creating new knowledge. The results of this survey indicate a conservative view of knowledge workers as merely being able to do better what they are already doing rather than operating in new and different ways.

Table 4: Management Attitude towards Developing a Knowledge Workforce

Management Attitudes	Disagree	Not sure	Agree
	(Percentages)		
Developing knowledge workers is top priority	6.5	19.5	74.1
Provide incentives for knowledge acquisition	18.2	44.2	37.7
Provide incentives for risk taking	24.3	44.6	31.1
Provide supportive leadership	3.9	32.5	63.7
Provide opportunities for sharing knowledge	6.5	22.4	71.1
Encourage reflection and learning from experience	6.5	23.7	69.8
Learning is equal in importance to productivity	6.5	22.1	71.5

The highest levels of management support available, as indicated in Table 4, are for the recognition of the importance of knowledge and learning such as providing opportunities for sharing knowledge, encouraging experiential learning and providing supportive leadership. There is less support for providing incentives for knowledge acquisition and for risk taking. The latter is an important quality to cultivate if employees are to be allowed and encouraged to apply their knowledge. Management attitudes are generally positive though more explicit action is required to accompany positive thought.

5.3 Knowledge Worker Practices

The next set of 3 tables present information on work practices within respondent companies. Three categories of practices were surveyed and for each category respondents were asked to indicate the frequency of usage at their respective companies. Table 5 below presents practices designed to develop knowledge and skills among employees.

The results indicate that IT resources were usually made available though not as extensively as may be hoped. The availability of IT training appears to lag a little behind accessibility of resources, as does sponsorship of training

Table 5: Knowledge Development Practices

Practices of Knowledge Development	Disagree	Not sure	Agree
	(Percentages)		
Basic IT training for all employees	33.8	37.7	28.6
Access to IT resources for all employees	33.3	29.5	37.2
Sponsor all employees who wish to upgrade skills and knowledge	29.9	33.8	36.4
Encourage multiskilling	62.0	24.1	14.0
Encourage job rotation	39.3	35.4	25.3

Job rotation appears to be a more frequently practiced in comparison to multiskilling. The answer to these questions is very much affected by whether the work design permits the use of flexible work practices. For example, assembly line processes tend to be structured and controlled, allowing little room for flexibility and innovation. Thus these results need to be interpreted within the context of manufacturing design and practice. Overall however, knowledge development practices indicate average or slightly below average utilization.

The next table, Table 6 below presents the results on perceptions of opportunities for employee participation.

Table 6: Employee Participation Practices

Practices of Employee Participation	Disagree	Not sure	Agree
	(Percentages)		
All employees are encouraged to suggest continuous improvements.	55.5	33.8	10.7
Feedback given on the effectiveness of suggestions.	46.2	41.0	12.9
Opportunities for employees to make job related decisions.	32.9	46.8	20.3
Use problem solving groups.	44.8	32.1	23.1
Customers able to discuss their needs directly with employees	35.9	38.5	25.6

Generally participation levels are low, even for continuous improvement schemes. Problem solving group appear to be familiar as are opportunities for customers to directly discuss their needs with the relevant workers. The latter though low indicates a move in the right direction as such feedback increases employee job commitment and ultimately performance. The next table below presents the results of practices designed to tap external knowledge.

Table 7: Practices to Access External Knowledge

Practices of Tapping External Knowledge	Disagree	Not sure	Agree
	(Percentages)		
Use information from trade and industry associations	29.4	57.3	13.3
Capture customer knowledge	44.7	37.4	17.9
Capture supplier knowledge	48.1	40.3	11.7
Use private consultants for organizational growth.	22.1	51.9	26.0
Use knowledge from academic/research institutions	21.8	39.7	38.5

In general it appears that companies are not in the habit of sourcing external knowledge. The results indicate the tendency to rely on internally generated knowledge. Even in areas involving customers and suppliers the majority of respondents have indicated that it is not their practice to regard these groups as sources of knowledge. It is heartening to see that similar disregard is not directed towards academic and research institutions though the percentage of use still remains low.

Overall the results on knowledge worker practices indicate the vast majority of responding companies as being rather conservative in work practices. There is plenty of scope to increase knowledge worker practices even through simple methods such as introducing more varied and flexible ways of working and creating opportunities for employee participation. A surprising result is that in spite of the high priority given to continuous improvement in the section on management priorities earlier (Table 1), actual practices within the company do not reflect this thinking.

5.4 Knowledge Worker Skills and Attitudes

The next section presents data on employee skills and attitudes. Respondents were given a list of knowledge worker skills and attitudes and asked to indicate the extent to which these statements described employees in their respective companies. For each skill or attitude, respondents were asked to rate three groups of employees, namely management, supervisors or technicians and production or service operators. This enables comparison of knowledge worker

skills and attitudes across three levels of the organization.

The tables below present mean ratings for each group of employees. Respondents were asked to give a score between 1 (strongly disagree) to 5 (strongly agree). Thus the scores in the next 3 tables below represent average rating. Three groups of skills were surveyed, namely, knowledge management, team working and communication skills and attitudes towards initiative and flexibility.

Table 8: Ratings of Knowledge Management

K-Skills & Attitudes	Manage-ment	Supervisors/ Technicians	Opera-tors
Able to identify problems.	3.93	3.68	3.27
Able to generate & evaluate alternatives	3.88	3.59	3.06
Able to solve problems independently	3.90	3.40	2.83
Able to independently access knowledge	4.00	3.40	2.78

Table 8 above indicates that generally management is rated higher on all knowledge management skills as compared to both supervisors and operators. The discrepancy is most obvious on the ability to work independently either in solving problems or accessing knowledge. The next table below presents scores on team working and communication skills.

Table 9: Ratings of Teamwork & Communication

K-Skills & Attitudes	Manage-ment	Supervisors/ Technicians	Opera-tors
Can work as part of a team	4.04	3.82	3.52
Able to discuss work with others	3.76	3.54	3.09
Able to listen	3.90	3.51	3.10
Able to express ideas clearly	4.00	3.75	2.96

Again a similar trend is observed where management scores are higher than employees in the other two categories, even on generic skills such as the ability to work in teams. The discrepancy is greatest between management and operators, especially on the ability to express ideas clearly.

A similar trend is again observed in Table 10 that presents ratings on initiative and flexibility. It is interesting however to note that respondents have rated operators almost on par with supervisors and technicians on their ability to realistically evaluate their own strengths and weaknesses. This is a crucial quality in developing knowledge workers as it indicates that employees have the basic knowledge that then allows individuals to learn through reflection and experience. Thus respondents appear to hold the view that operators may be developed as knowledge workers even if they are seen as lacking in many skills at the moment. Recognizing this potential for development is an important first step in developing knowledge workers.

Table 10: Ratings on Initiative & Flexibility

K-Skills & Attitudes	Manage-ment	Supervisors/ Technicians	Opera-tors
Able to evaluate own strengths and weaknesses	3.67	3.30	3.26
Has clear career goals	4.01	3.49	2.97
Able to handle varied tasks	3.97	3.51	2.81
Smooth response to change	3.90	3.39	2.77

Across the list of knowledge worker skills and attitudes, respondents have perceived management as being closest to knowledge workers, followed by supervisors and technicians and then operators. Thus clearly knowledge worker skills and attitudes appear to be confined to administrative rather than operational positions. This demarcation may be based on differing roles, abilities, educational attainment and even language ability. The implications are clear for the development of knowledge workers, where greater emphasis needs to be directed towards operational staff. There is a need to develop different programmes and activities that can train operational staff as knowledge workers and also programmes to enhance the abilities of managers, supervisors and technicians to support and sustain operators as knowledge workers.

5.5 IT Usage and Competence

The final category of questions assessed IT usage and competence on a list of IT applications that ranged from the generic to the specific.

Survey findings indicated that respondent companies were well equipped with basic IT resources such as word processors (89.4%), spreadsheet tools (90.6%) as well as email (95.5%) and Internet (78.7%). The lowest rate of availability was reported for specific tools such as Enterprise Resource Planning at 40 per cent. Average levels of competence were reported on most of the tools. Highest rates of competence were reported for the use of email (96%), local area networks (56.8%) and telecommunication tools (59.3%). These findings indicate that the responding companies were prepared technologically for the knowledge workforce. It is now a matter of developing knowledge worker skills and practices so that companies can derive greater benefits from exiting technology. As Logan and Stokes (2004) explain most companies use IT mainly to realize cost savings in communications, overlooking its potential as a tool for marketing, customer relations and product/services support and even for collaborative product development and manufacturing.

6. Discussion

The survey findings present a picture of organizations focused on immediate concerns about remaining competitive. Issues of training and developing employees as well as employing continuous improvement schemes are on their list of concerns but given lower priority compared to immediate economic concerns. Management attitude towards developing a knowledge workforce are highly positive but not matched by action in actual work practices. Perhaps the problem is in correctly positioning this concern among all the other competing demands.

The profile on knowledge worker practices was discouraging indicating that for this sample very little was being done to promote the development of knowledge workers. Employee participation was only modestly encouraged and practices such as multiskilling and job rotation were minimal. This is a surprising result given respondents' earlier characterization of knowledge worker. Table 3 indicates that knowledge workers were portrayed as being able to access and use knowledge in carrying out their tasks, they were also versatile and flexible and capable of making decisions that satisfied customers. Given the generally positive attitude and characterization of knowledge workers, it is interesting to speculate, based on survey data, as to why current practices only minimally support these stated expectations.

One possible explanation could be the perception that developing knowledge workers does not require drastic change in organizational infrastructure, policies and practices. After all management views 'developing knowledge workers as top priority' and places 'learning as equal in importance to productivity'. Perhaps the belief is that when there is so much support then it the responsibility of employees to develop themselves since knowledge development is a very personal and individual characteristic.

Another reason could be that it is not feasible to develop knowledge workers due to constraints such as business priorities, production pressures and operating staff having only basic educational standards which makes it difficult to develop self-directed methods of learning and language difficulties.

An associated view could be that operators do not need to become knowledge workers because their job roles do not require it. It is perhaps more realistic for managers and to some extent supervisors and technicians to become knowledge workers because their work activities require such thinking. Whereas for operators on-the-job training suffices to increase skills and specific job knowledge. The survey findings clearly indicate the perception that management is closer to being knowledge workers compared to operators. A perception that also reinforces the position that it is not necessary to change infrastructure, policies and practices, since key personnel are already performing as knowledge workers.

While not disputing these beliefs, it is also a fact that there is usually a symbiotic relationship between production and administrative staff in any manufacturing company, and that production staff usually outnumber management staff. Given such a situation it becomes a question of cost-benefit analysis to determine the extent to which production staff can be upgraded to become knowledge workers. Without doubt this category of employees represents an enormous potential to be tapped within organizations.

It is undeniable that the needs of production staff differ from those of management and administrative staff. Therefore it follows that

programmes to develop knowledge workers must be tailored to suit differing work conditions, processes and inclinations. The studies cited earlier (Cusimano, 1995; Ahanotu, 1998; Smith, 2000) offer an alternative perspective where it has been demonstrated that blue-collar workers may be trained to become knowledge workers without experiencing operational losses. In fact by empowering these workers with knowledge and mastery of skills they were able to produce beneficial results in terms of production quality and output.

The results of this survey provide some preliminary data on perceptions of knowledge workers. The study is limited by sampling considerations in that sampling was more opportunistic rather than planned. Another factor to be considered is the close link between job design and work processes. The scope to develop knowledge workers will be constrained by the extent to which job design allows participation, decision making and working independently. An example that comes to mind is that of operators in the electronic sector where much of the work process is computer controlled. Such an environment allows only limited opportunities for operating as a knowledge worker. Thus more accurate data needs to be gathered to examine the relationship between knowledge worker practices and specific work conditions. It is not possible to generalize these results which in any case only represent a first round of data collection.

The definition of knowledge worker presented in this paper has been generic without consideration of actual work processes. An attempt to categorize knowledge workers has been proposed by Maheswari (2002) who identified three categories. The first is the category of workers who utilize knowledge as a resource. Individual workers acquire and use knowledge for value-added activities at work. This group would include computer operators, office workers and technicians. The second category comprises workers who transfer or share knowledge, for example trainers who communicate knowledge directly and corporate mangers that communicate information indirectly but are in a position to influence a large number of knowledge producing employees. The final category is that of workers who generate knowledge. Within this category are research scientists who generate new knowledge and management consultants who may creatively apply existing knowledge to new situations. Thus it appears that knowledge workers may be place along a continuum of skills and activities from the novice worker to the highly skilled expert knowledge worker. Applying the continuum perspective to our definition of knowledge workers facilitates a shift from the unhelpful all-or-none perspective to a more helpful perspective of developing different categories of knowledge workers as circumstances dictate.

7. Conclusion

The purpose of this paper has been to present the findings of a preliminary survey on perceptions of knowledge workers based on the dimensions of company policies and practices, knowledge worker skills and attitudes and IT resources. The results have highlighted a disjunction between interest in and support for the concept and the reality of a lack of practices that actually support knowledge workers. This discrepancy could be as a result of misconceptions about knowledge workers or the view that this concept is not as effective as other strategic and business reengineering processes in improving competitiveness. Ultimately it is individual companies that must make a decision on developing knowledge workers. It is hoped that the findings of this survey will highlight the importance of clearly defining the scope of knowledge work within specific contexts before proceeding to implementation.

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