The Impact of Information Technology on Industrial Relations

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Introduction

Information Technology is the application of computers and techniques of using such computers to handle masses of data. IT, short for *Information Technology,* and pronounced as separate letters, is the broad subject concerned with all aspects of managing and processing information, especially within a large organization or company. Computers and communications technologies form the backbone of IT (Vitangcol 1999). Computers produce new information so quickly and accurately that they are changing people's views of the world. Competitive advantage increasingly lies in the acquisition and application of knowledge.

IT to a large extent underlies the rise of modern business and of the modern economy as well. Constantly, such technology forces an industry to learn, to acquire, to adapt, to change its very mindset, let alone its technical knowledge. IT is changing the work place and employment relations. IT invades the very core of the way things are done – including industrial relations.

The impact of IT on workplaces, individuals and society as a whole has increased dramatically during the last two decades of the 21st century. This period has seen maturation in the field of digital computing, combined with the use of telecommunications technology, in order to link many computers into what is 'virtually' a very large single network, the Internet. Data has become widely accessible, and readily inter-related. This matrix of widely inter-connected computers is being slowly but steadily augmented by the incorporation of robotics and artificial intelligence. This phenomenon can best be described as digital business or digital economy. It embraces e-commerce and the Internet, but extends much further. This makes IT a sole object that has the most pervasive effect on the modern society today.

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Companies around the world are changing the way they do business in adopting the information revolution. Information technology is changing relationships between companies and their customers and suppliers. It is also changing the ways they organize themselves. It is changing the very core of the business itself – the labor force.

Information technology affects everything a company does: not only relations with customers and suppliers but internal processes as well. As stated by Peter Drucker (1999), recognized management guru, management has to recognize that there is no one technology that pertains to any industry, on the contrary, all technologies are capable to have an impact on any industry.

The social issues that are explored in greatest depth in this paper are those of the workplace, terms of employment and industrial relations. As Jeremy Rifkin aptly put it:

> The hard reality is that the global economy is in the midst of a transformation as significant as the Industrial Revolution. We are in the early stages of a shift from 'mass labor' to highly skilled 'elite labor,' accompanied by increasing automation in the production of goods and the delivery of services. Sophisticated computers, robots, telecommunications, and other Information Age technologies are replacing human beings in nearly every sector. Factory workers, secretaries, receptionists, clerical workers, salesclerks, bank tellers, telephone operators, librarians, wholesalers, and middle managers are just a few of the many occupations destined for virtual extinction.

Business Impact of IT

According to Neuhana (1998), the application of IT has three distinctive levels of impact. The first level of impact relates to the automation of processing capabilities and the substitution of labor-intensive processes by machine-processed applications, and can be characterized as the *productive impact*. Technology applications improve productivity of operations in three different forms - the reduction of processing time, the reduction of processing complexity, or substitution of human labor by automated applications.

The next level of impact is related to the coordination of activities and processes across temporally and geographically distributed agents, and can be termed as a *coordinative impact*. This takes place in one of three ways - coordination either across time gaps, across geographically dispersed sites/agents, or the restructuring of relationships.

The final level of IT's impact on operations relates to support provided in enabling the strategic and competitive use of the information resource and for decision-making activities. This level can be termed the *informative impact*. At this level, IT enables the develop-

ment of extensive databases and knowledge-bases, and supports decision-making processes through the better use of information and the reduction of complexity in unstructured decision-making processes of the organization.

Table 1: Nature of Information Technology's Impact on Business Operations
Productive Impact: the automation of processing and labor • Reduction of processing time • Reduction of processing complexity • Substitution of human labor
Coordinative Impact: coordination of activities across temporally and geographically distributed agents • Coordination across time-gaps • Coordination across geographically dispersed sites/agents • Restructuring of (inter-) organizational relationship structures
Informative Impact: database. knowledge-based, and decision-making support provided by IT • Database support • Knowledge-base support • Decision-making support

The application of IT typically has a productive impact in its early phases in an organization. Firms focus on using technology to achieve productive efficiencies through the reduction of processing time and costs, increased processing volumes, and substitution of labor by IT applications. Most firms tend to have only an efficiency focus at this level, and the value afforded is limited to the acceleration of business processes and reduction of costs. Some firms start focusing on improving effectiveness of operations, and use IT applications to improve accuracy, provide agents with better management resources, and increase standardization and consistency of service quality.

While the application of IT to achieve a productive impact forms the base of the pyramid, the next two levels of coordinative impact and informative impact are what actually distinguish firms that successfully apply IT, and put them on a higher pedestal on the impact-value pyramid.

The Changing Workplace

The following are some of the most common worldwide phenomenon observable in a changing workplace arising out of the pervasive use of Information Technology and the 'electronization' of business:

Automation of Processing and Labor Reduction

Modern companies have resorted to the automation of processing capabilities and the substitution of labor-intensive processes by machine-processed applications. The information age has arrived,

asserts Jeremy Rifkin in *The End of Work* (1995); new, more sophisticated software technologies are going to bring civilization ever closer to a new workerless world. It is said that information technology has been used to deskill, discipline, and displace human labor in a global speed-up of unprecedented proportions.

With the emergence of a new era also comes upheaval across nearly every industry, often with surprising results. The flip side of squeezing inefficiencies out of business transactions, after all, is that it sometimes squeezes out entire businesses along the way. In coming years, thousands of employees could find their jobs turned topsy-turvy as human tasks, such as selling airline tickets or tending to customer complaints over the phone, are taken over by the one-to-one, buyer-to-seller nature of the Internet.

Rise of Telecommuting

Telecommuting has largely meant shifting work from one's existing office to one's existing home. Telecommuting is really only one of numerous changes resulting from the socialization of information technologies. This new wave of technology socialization has the potential to change completely all facets of our current society including business, work place, entertainment, education, transportation, government, politics, and other things of the society. This potential change is so fundamental that there are a variety of possible futures, good and bad, that could be created. These two possible futures of telecommuting are only small facets of this new electronic wave and the new electronic communities that will evolve out of it (Quay 1998). Instead of using the concrete highway, employees can conduct business close to home and reduce the stress and cost of long commute trips.

Outsourcing Phenomenon

Outsourcing involves letting another organization perform services the company used to perform but the former no longer consider it to be the mainstream for them (Turban et. al. 1996). With the use of the Internet and other on-line facilities, work normally done by the company are outsourced to some other companies or even to their customers. Big businesses have formed consortiums and joint ventures to outsource routine but important tasks, like vendor selection and purchasing. The Web makes it easier to deal with multiple suppliers, which is often too cumbersome and time-consuming to do offline. Wired corporations find themselves armed to play suppliers off one another and get lower prices or better service. These businesses now concentrate on their core competencies, with operational tasks being handled by outside technology-oriented service companies.

Process of Disintermediation

Availability of electronic information is eroding the role of brokers between producer and consumer. E-commerce and e-business has made it much easier to conduct business electronically and to

shorten traditional value or supply chains. This has spurred the process of disintermediation - cutting out the middle man from a transaction (Taylor 1998). Understandably, retailers feel most threatened by the prospect of web-based comparison shopping and direct sales. By using the Internet to link directly to suppliers, factories, distributors, and customers, these companies are electrifying their usually time-consuming and tedious tasks. It is nothing less than the collapse of time and space between partners. With the help of the World Wide Web, businesses are wringing time out of product design, speeding up the order and delivery of components, tracking sales by the hour, and getting instant feedback from customers.

A New Breed of Skilled Workers

Businesses are in the early stages of a shift from 'mass labor' to highly skilled 'elite labor,' accompanied by increasing automation in the production of goods and the delivery of services. As Edwards (2000) put it "technology and capital are globally mobile but labor is not. The quality of our workforce will increasingly determine the competitive advantage of nations." The challenge of the labor market now is to find the people equipped for high-technology jobs.

Flatter Organization

Business organizations are already becoming flatter, with layers of management being stripped out and decision-making responsibilities being pushed much further down the ladder (Wright 1999). Fewer people are consequently needed to achieve the same results. Charles Handy (1991), in his book *Age of Reason*, described this work structure as the 'shamrock', with one leaf for the 'core' of the business, the second leaf made up of contractors, and the third being the flexible labor force, brought in only when there is demand for their skills. As organizations become flatter people will not face the same challenges as climbing to the top of the ladder. In fact, there will be fewer and fewer key positions.

Virtual Management

Yoly Villanueva-Ong, chair of Campaigns and Grey and PR Inc. has resorted to virtual management. She is running her ad agency and PR outfit from the Harvard University campus, where she is enrolled in a two-year fellowship. That means weekly video conferences every Friday with her management team in the Philippines and 24-hour e-mail communication. She would still be involved in every major decision and will be practically running the business from the US (Espino, 2001, p C4). In video conferencing, participants in one location can see participants at another location or in several locations. Images of the participants can appear on a large screen or on a desktop computer. It allows several geographically dispersed groups to work together and communicate by voice simultaneously.

Industrial Relations Issues

Labor relations, or industrial relations, refer to the interactions between employer and employees or their representatives and the mechanism by which the standards and other terms and conditions of employment are negotiated, adjusted and enforced (Azucena, 1999). The advent of globalization and the prevalence of information technology have spurred industrial relations issues, some of which are discussed in the following sections.

Worker Empowerment

Workers are given access to information thereby enabling them the power of decision-making. With flatter organization in place and lesser layers of management, workers are deviating from their traditional roles as plain workers. They are now authorized to make mission-critical decisions, say on the shop floors, based on prevailing situations and technology based-information available to them. For these workers, information is the key resource. Information increasingly creates the link to their fellow workers and to the organization, and their "network". It is information that enables them to do their jobs.

The Wage Issue: Inequality

A great deal of attention has been given to information technology as the main empirical force changing the wage structure and giving rise to wage inequality. The theory that could actually explain the changing wage structure is some type of unbalanced growth model associated with the order of skill-biased technical change. Is there wage inequality and are IT workers paid higher, thereby creating such a wage distortion?

Take the case of the United States. On November 3, 2000, Janice R. Lachance of the US Office of Personnel Management (OPM) issued a memorandum for Human Resources Directors stating:

> Office of Personnel Management (OPM) has established higher rates of basic pay for entry- and developmental-level computer specialists, computer engineers, and computer scientists covered by the General Schedule (GS) pay system throughout the Federal Government. xxx The purpose of these higher rates of pay is to help agencies address significant problems in recruiting information technology (IT) workers in today's highly competitive IT labor market. The new higher rates of pay will become effective in January 2001 and will apply to xxx current Federal employees. xxx I encourage agencies to use retention allowances, to attract high-tech workers into the Federal service and to retain current employees who have critical IT skills. xxx

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DeUnionization

Joseph Boyett, in *Beyond Workplace 2000*, foresees a melt-down of the barrier between the leader and follower, the manager and worker. Bosses, in the traditional sense, will all but disappear (Boyett, 1995).   The optimists see the future in very indi-vidualistic terms but the pessimists tend to share a deterministic view of the inexorable, dehumanizing face of technology, manipulated by management to boost productivity regardless of the human costs. Few futurists see unions as central to the process of economic trans-formation; typically unions are portrayed as vestiges of an obsolete industrial system.

The number of individuals engaging roles as knowledge work-ers is increasing.   The individuals' aspirations and those of the union are increasingly diverging.   As a result, they prefer to negotiate their individual agreements or contracts tailored to their own needs.   Unions are founded by definition upon collective representation and cannot adequately represent the specific needs of these individuals (Gallacher, 2000).   Will labor unions survive the onslaught of globalization and IT?

E-mail as Proper Notice

In a true IT environment, communication between management and labor are done through e-mail and other forms of electronic com-munications, without need for hard paper.   One of the most recent Phil-ippine cases involving e-mail as evidence was filed before the passage of the E-Commerce Act of 2000.   This was IBM Philippines vs. NLRC, a wrongful termination case involving IBM employees.   Notices of termi-nation were e-mailed to IBM employees but Philippine law provides that written notice should be given to employees that would be terminated. Even though IBM presented printouts of the e-mail as evidence, the court said that the printouts were not authenticated by a certification from the IBM administration.   The final ruling on that case was given on April 13, 1999, in favor of the IBM employees.   The E-Commerce Act of 2000 has effectively changed the rules of evidence and e-mail mes-sages can be deemed proper notice – as if a written notice on paper was handed to the person concerned.

Survey Findings

A survey was conducted by the author from June 1 to July 22, 2001 involving some 20 local companies.   The overall composition of the responding companies are as follows:

Type of Company	%
Food Manufacturing	30
Holding Companies	20
IT companies	20
Car Manufacturing	15
Service Companies	10
Bank/Financial	5

These companies were asked whether or not the following issues are currently present, or is happening, in their respective workplaces. The percentage of positive responses are shown on the right column. It should be noted that all of these respondent companies are unanimous in saying that the their processing capabilities are automated and there is substitution of labor-intensive processes by machine-processed applications.

Issue	%
Automation of Processing & Labor Reduction	100
Worker Empowerment	80
Outsourcing	70
Need for Skilled Workers	70
Flatter Organization	70
E-mail as Standard of Communication	70
Creation of New Markets	60
Disintermediation	50
Virtual Management	50
Wage Inequality and Distortion	50
Automated Systems as Labor Saving Device	40
Deskilling/Displacement of Human Labor	30
Telecommuting	10
DeUnionization	10

It is surprising that although Telecommuting is very popular in other countries, the same work model has not been properly accepted and integrated in the Philippine business scenario. Furthermore, with deUnionization at a mere 10% present, it clearly shows that the labor unions are here to stay.

Conclusion

The existence of employer-employee relationship is determined by the presence of the following elements, namely: a) selection and engagement of employee; b) payment of wages; c) power to dismiss; and d) power to control the employee's conduct.

With the growing need for IT and IT-related skilled workers, management would be having a hard time hiring qualified people or retooling existing ones. This is becoming not only the problem of the labor sector but of the education sector, as well.

Half of the respondent Philippine companies admitted that there is wage inequality and distortion, tilting in favor of IT workers. According to Toffler (1990), "it can be said that in todays world it will not take masses of workers to bring a company's production to a standstill, or to damage it in other ways. A 'computer virus' slipped into a program, a subtle distortion of the information in a database, the leakage of information to a competitor – these are only the most obvious of a whole range of methods of sabotage available to the angry, the irresponsible, or the justifiably outraged individual. The 'information strike' of today could turn out to be a one-person protest. And no laws,

clever programs, and security arrangements can totally protect against this." Should this inequality be straightened out or do we give in to a perceived 'IT blackmail'?

To effect termination of any employee, the employer must serve a written notice on the worker and the Department of Labor at least one month before the intended date thereof (International Hardware vs. NLRC, G.R. No. 80770, Ruffy vs. NLRC, 182 SCRA 365). In IBM Philippines vs. NLRC, the court ruled that e-mail notices is not sufficient notice. However, in a true IT environment, communication between management and labor are done through e-mail and other forms of electronic communications, without need for hard paper. This should affect future labor cases of this nature.

Labor unions demand that management should first consult the union before it may contract out jobs that may last for six months or more. Such arrangement may curtail rather than allow business growth, hence, the Supreme Court turned it down. It recognized that contracting out is not unlimited; rather, it is a prerogative that management enjoys subject to well-defined legal limitations (San Miguel Employees Union vs. Basamira, 186 SCRA 496, Manila Electric Co. vs. Quisumbing, G.R. No. 127598).

Article 283 of the Philippine Labor Code states that, "The employer may also terminate the employment of any employee due to the installation of labor-saving devices xxx." It should be noted that all of the Philippine respondent companies are unanimous in saying that their processing capabilities are automated and there is substitution of labor-intensive processes by machine-processed applications. This changes the complexity and nature of Article 283.

According to Azucena (1999), the fourth element, power to control the employee's conduct, is the most important element of all. However, 80% of the respondents claimed that worker empowerment is present in their workplaces. Workers are given access to information thereby enabling them the power of decision-making. They are now authorized to make mission-critical decisions. Is this a contravention of the fourth element, to say the least?

Management therefore has to accept that all technologies are capable – and indeed likely – to be of major importance to any industry and to have an impact on the industry. Employees and workers, in the new IT world, will therefore need to look for other ways to stimulate their interests and their ambitions. Moreover, there is a need to review and revise Philippine labor laws so as to accommodate this new IT paradigm. The kind of 'electronic' workplace that would emerge tomorrow depends on the decisions and actions that are done today. The new global and technological economy demands a different framework for industrial relations.

References

Alarilla, J. G. 2001. 'Can e-mail be admitted as evidence in RP courts?', *Philippine Daily Inquirer*, 25 June, pp. B17-18.

Aldas, E. 2001. *Labor Law Review* (lecture), 23 July, Manila.

Azucena, C. A. 1999. *The Labor Code with Comments and Cases-Volume I*, Rex Book Store, Manila.

Azucena, C. A. 1999. *The Labor Code with Comments and Cases - Volume II.* Manila: RexBook Store.

Boyett, J. 1995. Beyond Workplace 2000: *Essential Strategies for the New American Corporation*. New York: Dutton Press.

Byrne, J. 1997. 'Management Theory — or Fad of the Month', *Business Week*, 3 June, pp. 47.

Drucker, P. 1999. *Management Challenges for the 21st Century*, Harper Collins New York: Publishers Inc.

Edwards, J. 2000. *Australia's Economic Revolution*. Australia: New South Wales University Press.

Espino, M. Q. 2001. 'Hands-on exec goes for virtual management', *Philippine Daily Inquirer*, Manila, 25 June, pp. C4.

Farber, H. S. 1999. *Alternative and Part-Time Employment Arrangements as a response to Job Loss*, 17 February, Princeton University, California.

Gallacher, M. 2000. *Future Directions in Industrial Relations: An Issues Paper,* NSW Coalition, Sydney, March 2000.

Handy C. 1991. *Age of Reason*. London: Hutchinson Press.

Hop, R.. 1998. *Doing Business in the Internet Age*. California: McGraw-Hill Companies Inc.

Kim, W. C. and Mauborgne, R. 1997. 'Value Innovation: The Strategic Logic of High Growth', *Harvard Business Review*, Jan.-Feb., pp. 103-112.

Lachance J. R. 2000. 'Memorandum for Human Resources Directors', 3 November 3.

Neuhana, R. 1998. *Information Technology: Nature of Impact on and Potential Value to Business Operations*. Illinois: Southern Illinois University.

Quay, R. 1995. *Information Technology: Nature of Impact on and Potential Value to Business Operations*. Illinois: Southern Illinois University

Rifkin, J. 1995. *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era*. New York: G.P. Putnam's Sons.

Szymanski, R., et. al., 1998, *Computers and Software Application*. Ohio: Merill Publishing Co.

Taylor, P. 1998. *The Financial Times*. London: The Financial Times, Ltd.

Toffler, A., 1990. *Powershift*. New York: Bantam Books.

Turban, E. et. al. 1996. *Information Technology for Management*, John Wiley and Sons Inc., New York.

Vitangcol, A. S. 1999. *Computers for Lawyers*. Manila: St. Vla Publishing Systems.

Wagner, M. 1998. 'Conquering E-Commerce Fears.

Wright, B. 1999. *Career Shift*, Mackays of Chatham PLC, London.