Turkish Journal of Computer and Mathematics Education Vol.12 No. 11 (2021), 2814- 2819
Research Article

Patterns of Occupation at the Industrial Sector of Information and communication Technology

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Article History: Received: 11 January 2021; Revised: 12 February 2021; Accepted: 27 March 2021; Published online: 10 May 2021

Abstract: The Information Technology (IT) industry has grown into one of the most resilient industries in the world. Information Technology industry is more than other industrial sectors in terms of its productivity, particularly focusing on the developed world as well as it is a key for global economic growth. The World Health Organization (WHO, 2018)1 estimated that by 2010, over 60 Percentage of North America's workforce was using computers. According to the Bureau of Labor Statistics (BLS), 77 million Americans use computers on the job, which accounts for more than half of the total employment of the American public. Moreover, given ongoing technological advances, future labour trends suggest that this type of work is expected to account for an even higher percentage of jobs in the future (NRC, 2011)2.In Australia, 66 per cent of adults use computers at home and/or in the workplace (Australian Bureau of Statistics, 2011).

Keywords: Invention, Profession, Communication Technology, Industry, Nature of Development

1. Introduction

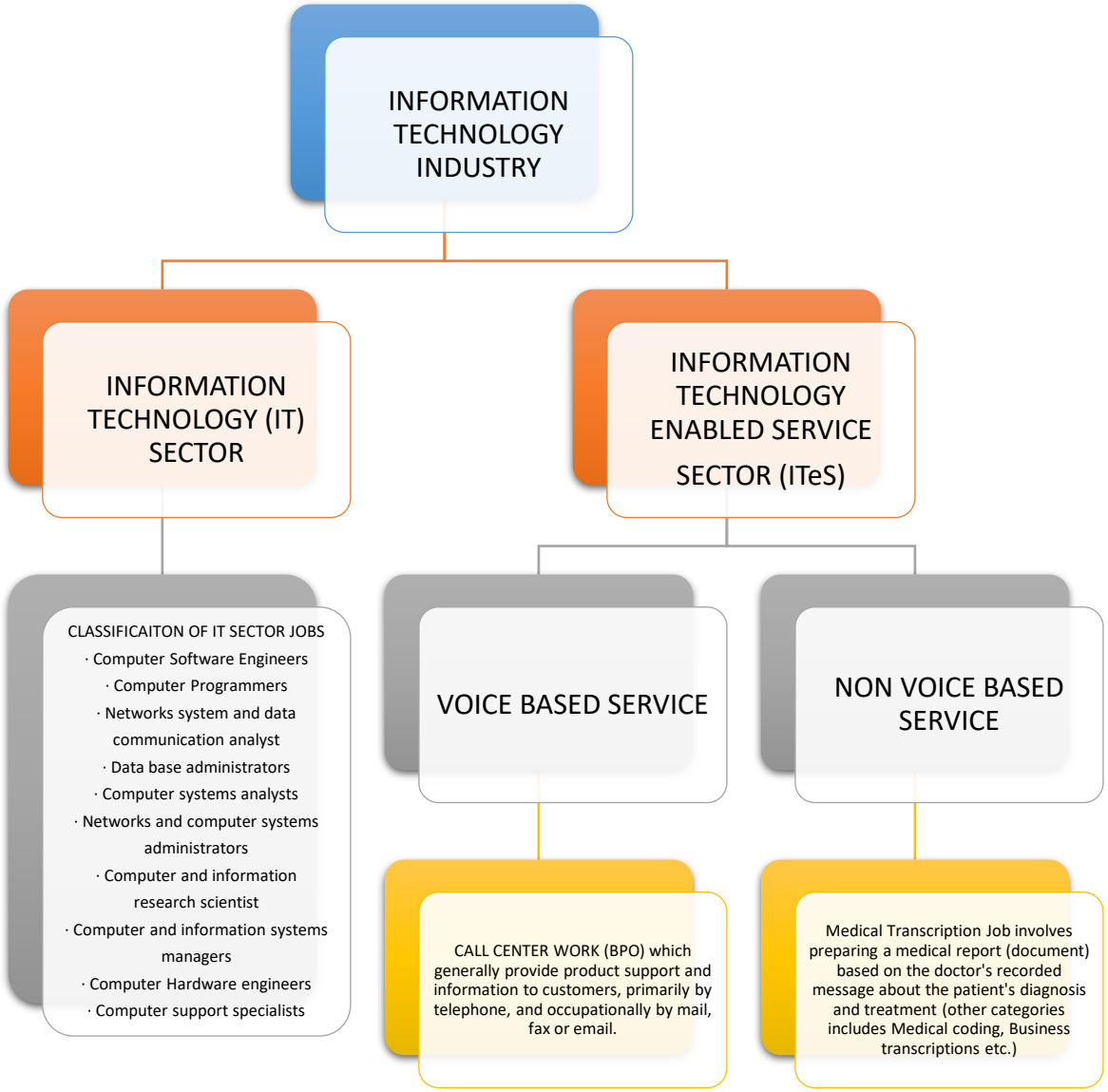
Today, as a result of technological change, the use of information technology in industrial sectors is inevitable. Continuous use of computers results in eye, musculoskeletal, postural and even neurological problems among IT executives. In addition, the mental stress generated by the project deadlines and the imbalance between their professional and personal lives contribute to this problem. The executives who are working in the Information technology industries have acquired the technical skills to operate the computers but do not possess the health-related knowledge is very essential to protect employees from the adverse effects of computers, since the employees of information technology were not exposed to theit knowledge at the educational level as well as at the company level at the time of recruitment. Although this is not yet a priority factor such as recruitment, retention or compensation, industry experts believe it may soon become a significant concern. Most companies realize the seriousness of this problem, but very few have taken concrete measures to remedy it. Thus, human resources managers have a new preoccupation on their agenda addressing the health issues of information technology executives to maximize the productivity of those employees. Workforce is at risk of serious illness, significantly disrupting the business-as-usual. As regards the worldwide level, employers lose an aggregate of Rs.2145375 Crores yearly for direct medical and indirect productivity costs. Most employers see an increase in the cost of employee benefits year-over-year as their employees remain vulnerable to serious clinical risks that include various chronic diseases. Comfortabilituy and mental health issues linked to lifestyle and socio-economic aspects of behavior. Bad nutritional consumption habits, lack of exercise, and non-adherent care plan are escalating the problems for employers, in many cases are spending nine lakh rupees per employee annually in medical expenses.

To execute this research at the more comprehensive level, the Information Technology employees working in three Information Technology sectors were covered and it includes (i) Information Technology Sector in which the employees are perform major work connected to the Programming and Software development; (ii) ITES-Voice based service sector in which employees of Call Centre and; (iii) ITES-Non Voice based service sector employees belonging to the medical transcription and coding are involved.

Grounded along the full nature of the Job, the Business Process Outsourcing can further be sorted as “Voice based Business Process Outsourcing (BPO)” and “Non-voice based Business Process Outsourcing (BPO)”.The Business Process Outsourcing (BPO) Voice which includes the employment in call centres.Business Process Outsourcing (BPO) is proximity to the information technology (IT) industry, it includes the first one is Information Technology Enabled Service (ITES), second one is Knowledge process outsourcing (KPO) and the last one is Legal process outsourcing (LPO) are the subsets of Business Process Outsourcing (BPO) units.

2. Nature Of Work At The Informaton Technology Industrial Sector

Classification of Information Technology Industry



Information Technology Sector

Employees in this sector are grouped into ten selected occupations which are commonly designated for their field of work related to computer science (Benjamin Wright, 2009)[4].

(i) Informatics and informatics researchers are exploring new ideas for information technology. Created and refined the theories which are the most important starting point of many computing products and systems.

(ii) Computer and the information system managers are the most responsible in an organization. They identify the IT products the organization needs, such as computers, networks and software, and supervise the workers who exploit these products.

(iii) Computer hardware engineers design computer hardware, such as chips, circuitry and computer readers. The products of these engineers can be found in personal computers, mobile phones and cars.

(iv) Software engineers are software developers. They analyze the needs of software users, then design, develop and test software that addresses those needs.

(v) Computer programmers who translates the designs to computer code and a language that computer understands. This code tells the computer what to do, such as navigate to a webpage when the user clicks on a link to it.

(vi) Database administrators identify how best to organize and store data.

They deploy and maintain database software systems and take measures to safeguard the data.

(vii) Network and data communications analyst's plan, design and test computational systems. They are also developing new ways for computing systems to exchange information.

(ii) Computer systems analysts help companies and other organizations select the best products to meet their IT needs. They identify the types of systems and software that have helped an organization meet its objectives and recommend ways to ensure system safety.

(ix) Network and information system administrators supervise the networks and information systems of an organization. They ensure that computer systems function effectively and keep the system safe.

(x) IT support specialists address technical issues facing computer users. Some of these workers execute diagnostic programs and maintain the network. Others answer technical questions from users or install computer equipment in clients' homes or business locations

1.1.2 Information Technology Enabled Service Sector (Ites)

The ITES sector is part of the wider and larger information technology industry, which covers different types of data processing and voice interactions which use a certain computer infrastructure as inputs, which do not necessarily require the production of computer products. In general, IT-enabled services include the Call Centre, Medical Transcript, Administrative Operations, Revenue Accounting, Insurance Claims Processing, Legal Database, Pay Files, logistics management, content development and animation, entertainment software, graphic design, computer animation, to name a few.

More specifically, depending on the nature of the work and the complexity of the task, the ITES sector is classified as voice and not voice services. The example of the voice services sector includes client service jobs, such as call centers and contact centers, and the non-voice services sector includes jobs related to medical transcription. These are as follows:

Nature of Work at the Voice Based Call Centers /Business Process Outsourcing

A Call Centre (CC) is defined as a place where contacts are established and received and is often the front door of a business where customer interaction is most critical. The primary purpose of the Call Centre is generally to provide support and product information to customers, via telephone and mail, fax or email. As a result, working at the call centre includes not only participating in phone calls, but also dealing with various types of interactions. As such, the functions of call centre work are: workforce management, technology management, financial management, quality management and reporting and communications (North American Quit line Consortium, 2010)[5].

Nature of Work At The Non Voice Based Medical Transcription Sectors

The nature of medical transcription work is to prepare a medical report (paper) based on the physician's recorded message about the patient's diagnosis and treatment. Doctors dictate in a phone the way they interact with the patient and the message is digitally recorded in a computer attached to the phone. This recorded message is transcribed by a medical transcriber through attentive listening and processes the data on a word processing as a medical document. The transcribed document undergoes two to three editing steps by professional consultants and experienced transcribers.This medical report is then transmitted to doctors via satellite (KumKum Tendon, 2011)

3. An Overview Of It/Ites Industries In India

India's information technology industry, which includes the information technology and computer services (ITES) sector with more than 2 million employees (NASSCOM, 2010).As a proportion of national GDP, revenues in the IT sector increased from 1.2 Percentage in the Financial Year 1998 with an estimated 7.5 Percentage of growth in the year 2012 (NASSCOM Strategic Review, 2012).According to NASSCOM's estimates, the overall revenues of the IT/CITI sector (excluding equipment) are estimated at USD 87.6 billion for fiscal year 2011-2012; and the industry is expected to grow by 19 Percentage in fiscal year 2012-2013.The size of the industry's market is expected to reach $225 billion by 2020, taking into account India's competitive position, growing export demand, government policy support, and growing global footprint. India's economic growth is driven by the IT/IT industry, which contributed an estimated 1.2 Percentage of national GDP in 1997-98 to 7.5 Percentage in 2011-12.For example, the information technology (IT) industry in India has played a key role in making India known to

the world. The information technology industry in India has been one of the most important growth drivers for India's economy. IT/ITES industries are highly localized and grouped into seven cities across India. The cities include Bangalore, Hyderabad, Chennai, Gurgaon/Noida/New Delhi, Calcutta, Mumbai and Pune.Infrastructure constraints as well as the land scarcity have been recently led to expansion of the new sites such as Ahmadabad, Bhubaneswar, Chandigarh, Coimbatore, Jaipur, Kochi, Madurai, Mangalore, Mysore and Trivandrum.

This significant growth of the IT/ITES sector in India resulted in employment opportunities, both direct and indirect, at the time of almost 2.8 million and about 8.9 million respectively. This growth should reach more than 14 million (direct and indirect) by 2015 and approximately 30 million by 2030.These data reveal that not only does the number of computer users' increase, but also the exposure to computer-related risk factors. However, the availability of these data for the Indian computer industry is very limited.

4. Critical Factors Influencing The Occupational Health Of The Information Technology Professionals

The literature consistently demonstrates that computer users are exposed to an increased risk of developing such health problems associated with musculoskeletal, mental and psychosocial problems.

There are a number of critical risk factors that contribute to musculoskeletal health issues among Video Display Unit workers and they are divided into three broad categories (Punnett and Bergqvist, 1997).To begin with, individual factors such as age, sex, obesity, physical activity, smoking habits, the use of eye correction and inherent psychological states, such as negative affectivity, may increase the risk of developing musculoskeletal problems. Secondly, the work related Physical risk factors consisting of the exposure to physical workstation design and job demands such as duration of Adequacy of Computer Chair for the users, Mouse & Keyboard position, Position of Computer Monitors, Type and use of input devices have been associated with musculoskeletal health problems. Finally, workplace psychosocial factors known as "work organization factors" are believed to contribute to the development of musculoskeletal disorders (Ariens et al., 2001; Johnston et al., 2007; Deepak Sharan et al., 2011)

5. Individual Risk Factors

The individual risk factors contributing to occupational health problems in IT executives are sex, age, ergonomic knowledge of the individual on occupational health, leisure opportunities (Athletics and Hobbies) and inappropriate sleep routines, which are described below: (i) Gender: Females have more musculoskeletal conditions than males. This is due to the fact that women work with a higher relative musculoskeletal load, for example by applying higher forces to the mouse and using a greater range of motion, more than men. This difference can also be attributed to differences in occupational exposure between men and women (Dennis t al, 2000).Two other studies have shown that women are more likely to be exposed to work-related conditions with low task variability and high probabilities of rest at work (Kilbom et al., 1998; Harenstam et al., 2001).

(ii) Age: An inverted U-shaped association between age and prevalence of musculoskeletal health conditions (e.g. neck pain) in the job environment. The risk of neck pain increased to 50 years and then decreased slightly. The best way to understand the increase with age is to increase the degeneration of articulations with age. Reducing neck pain in elderly people is more often difficult to explain. In general, chronic and other illnesses can get the upper hand due to age.

[iii] Free time Physical activity: Recreational physical activities are part of individual strategies to make it easier to "change your mind," reduce mental stress and improve your personal life. The stimulation of physical activity in leisure time is a reduction in musculoskeletal morbidity in the active population, particularly among sedentary workers. Regular physical activity can result in less muscatel problems.

(iv) The person's ergonomic knowledge of occupational health: IT employees' knowledge of the ideal workstation layout, the utility of computer peripherals and optimal work posture are negatively associated with the onset of occupational health problems. Employees with a good ergonomic knowledge of the computer workstation show less symptoms than those who do not know ergonomic principles (Kauasalya. R and Amuthalakshmi.P. 2007) (v); Inadequate sleep routine: Shift work, in particular night work, has a negative impact on the health of IT workers. The impact of the night shift includes sleep deprivation, excessive stress and fatigue that have a negative impact on the cognitive ability of IT workers. (Costa., 1996; TorbjornAkerstedt., 2003; Bijavara Shwetha and HonnamachanahalliSudhakar, 2012; Anjali Ramesh babu., 2013)

Additionally, other individual risk factors contributing to the occupational health problems are proportion of formal education, marital status, body weight in relation to the person's height (BMI), and Life style determinants such as smoking habits, alcohol consumption etc.

6. Conclusion

The hands and forearms perform small dynamic contractions during the keyboard work while the arm, neck and shoulder muscles have statically activated to main head and hand positions. The arrangement of Computer workstation may impose forward bending of neck or elevated arms and shoulders that exacerbate the postural loading on neck and shoulder muscles. Moreover, these stagnant postures adopted during the computer work for an extended period are also visually demanding, and the computer-based workplaces more substantial demands on the visual system than traditional office work. All these physical factors lead to Cumulative trauma disorders or repetitive strain injuries. Dry, irritated eyes and blurred vision are common complaints among the Professional Computer users.To overcome from all these health issues and to optimize the productivity of IT executives, it requires a complete understanding of the critical factors of health issues among the Information Technology Professionals which is a big challenge to the Human Resource Managers today. Occupational Health disorders are a significant cause of disability in the working population. Among them, the musculoskeletal health problems represented a significant source of pain and discomfort, and it is a significant source of lost workdays and workers compensation costs. The preliminary results of a prospective study (Deepak Sharan, 2001-2008)[44] conducted on30,000 Indian Information Technology executives found that 75 Percentage of those surveyed, reported having at least one musculoskeletal health symptoms related to work; 55 Percentage got injured within a year of starting their first job. These results demonstrate that most Indian computer users are unaware of safe computing techniques. Any computer user, who misuses the computer for more than an hour daily, are at risk of health hazards. The most productive and hardworking employees are the most likely to get injured. The executives who working in Information Technology industries have acquired the technical skills to operate the computers but lacking ergonomic and biomechanical knowledge which is essential to protect themselves from the ill effects of computer since the employees are not exposed to such knowledge at their educational level as well as at the company level during the time of recruitment.

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