

The Effects of Technology in the Modern Office Work Environment

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ABSTRACT

This research work determined the effects of technology in a modern office work environment. It specifically explored the impact of using latest trends in technology in the managerial, secretarial and other clerical work in modern offices. For a better understanding of the effects, the researcher established first the link between technology and office work. It was found that with the advent of technological advancement, office works required the use of updated technologies for the ultimate goal of being globally competitive. The reasons for adopting technology in offices include reduction of costs of production and services, improvement of performance, increased work productivity, being up-to-date, and becoming at the competitive edge over other markets. Through a further review of peer-reviewed literature and studies on the various effects of technology, it was found that the adoption of new technology in modernizing offices facilitates efficiency in the performance of job functions, increases productivity and increases computer-related job opportunities. The adoption of new technology and its effects on office work, however, face challenges regarding acceptance and approval by the employees, and financial barriers. Given the findings, it was concluded that adoption of technology in modern office work have a positive impact on performance and it creates employment opportunities rather than it eliminates. The challenges can be addressed by providing early notice about the change, the conduct of planning and training so that the personnel can successfully adapt to the changes and displacement of workers will be prevented. In the expected more rapid development of sophisticated technology in the future, this study recommends that the educational curriculum from primary to tertiary level be designed to equip every generation with the necessary skills to keep abreast with every change in technology.

KEYWORDS: technology, modern office work environment, displacement

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I. INTRODUCTION

Among the changes that happened in the advent of the 21st century, technological advancements have the most significant impact on the work environment. Like any other changes, updates in technology bring both opportunities and challenges in every workplace. The efficient use of technology defines a modernized office work, and it impacts the entire organization. This paper explores the various effects of technology in the modern office work environment to promote better understanding and appreciation of its positive impact.

Technology is applied science. It is the combination of scientific methods and materials, culminated in real inventions that are intended for use in meeting specific objectives or solving practical problems (Ahmad, 2014). Each workplace requires different forms of technology depending on the nature of transactions and services of the company. The technology that organizations adopt ranges from simple to complex. Provision of simple technology includes buying a personal computer with a word processor while indulging in complex technology can be investing in the latest state-of-the-art computer-aided manufacturing machinery (Ahmad, 2014). In the context of office work, the rapid development of modern computer system with its highly complex applications has been very beneficial for all kinds of firms. The adoption however of contemporary technology entails a radical change in the way offices operate. Organizations have to innovate so that the use of technology and integration of new system may advance the operations, products, and services for better results.

Technology has increased the prospect of doing office work and conducting business more efficiently and in a much globally competitive way. The workplace has transformed into a modern environment because of technology, and everything has been facile. Going then into the details of these effects or benefits of technology in the modern office work environment is highly interesting.

II. OBJECTIVES

This report aims to examine peer-reviewed literature and studies about the effects of technology in organizations and work environment. It will shed light specifically on the impact of technology in the modern

office work environment. The effects of technology will be better understood if the readers will have an idea first of the reasons why technology was introduced in the workplace and what are its implications. An elaborate discussion will be given to the various impacts technology have on the office work, but barriers and challenges that limit its successful use will also be explored. After sufficient research-based information has been collated, analyzed and discussed to meet the goals above, the researcher shall arrive at necessary conclusions and relevant recommendations. The potential of this paper to be as informative as possible about the effects of technology in the modern office work environment is the ultimate end it intends to reach.

III. THE LINK BETWEEN TECHNOLOGY AND OFFICE WORK

Technology offers tools, systems, and techniques that make work faster and easier. The offices in any organization are daily engaged in transactions, productions, and services with specific deadlines or time-limit; hence the need for tools and techniques that will be of help in doing the work at hand more efficiently. This shows the link between technology and office work.

The technology in offices

Among the latest technology that is deemed useful in office work environment are the automation and information technology (Ahmad, 2014). Some of the information or communication technologies worth adopting are Desktop Video Chat, Video Conferencing, and Online Visual Collaboration tools (Ahmad, 2014). Telephone communications and computer-process controls are among the technologies that involved the most rapid changes. Some more modern office technological gadgets include smartphones, faster Windows operating systems like Windows 7 and 8, laptops and tablets. These technologies can help boost the service of companies. These modern technologies incorporate powerful and low-cost microelectronic devices that are capable of increasing productivity in the offices when efficiently used by the employees (Mark, 1987).

In the early years of the 20th century, offices had bulky computers with only a few with an internet connection, cumbersome wires and oversized fax machines and copiers. This time, in just more than 15 years from then, those were already out-dated. They were already replaced with flat screens, wireless devices and high-tech conferencing system (Pfano, 2016). The World Bank Group (2015) further categorize technologies as smart machines, smart devices, and smart techniques. Smart machines refer to the advanced robots and machine learning. The smart devices refer to the personal computers, laptops, mobile networking, and smartphones. The smart techniques refer to cloud computing, big data and data analytics. The digital tools are further classified into three regarding how it enables the labor markets. The three categories of digital tools are transactional tools, complementary tools, and matching tools. The transactional tools are those that enable buyers and sellers of various goods and services to transact business with increased efficiency and transparency (World Bank Group, 2015). The complementary tools include the various software and hardware that may offices now use; while the matching tools refer to the medium through the internet and mobile networks that enable the matching of workers with jobs or tasks at different parts of the world (World Bank Group, 2015). Ten years from now, it is expected that modern technology will be more advanced such as multilingual and sensory-recognition software that will make work more efficient (Pfano, 2016).

People should take note however that these technologies have a finite lifespan, that is why it is essential to monitor their life cycles to maintain their proper functioning continually. People should always remember that technology may be used for decades but will eventually be superseded by innovations and updates, and so has to be replaced to ensure further efficiency. This reflects the changing or dynamic characteristics of the technology. Technology rapidly advances, and it becomes more complicated from time to time. This requires proper management of technology in offices so that it gets to be maximized for its intended use.

The modern office work environment

Technology knows no boundaries. Recently, it transformed the typical offices to virtual offices. The virtual office work can be the highly modernized office environment that makes office work all possible through the use of automation and information technology. The modern office than can be classified into two: a tangible cubicle or room equipped with the latest technology for efficient disposition of task, and a virtual or computer-generated office. The actual modern office requires the employees to work at a specified time within a permanent office room using the technologies provided by the company, while a virtual office allows employees to work for a company at times and in places of their own choice using their technology.

IV. REASONS FOR MODERNIZATION OF OFFICE WORK

The pressure to be at par with the rest of the organizations in the world and to be indeed globally competitive encouraged most offices to adopt new technology. The adoption of new technology makes a modernized office, and there are several more substantial reasons for it. Mark (1987) said that industries modernize their offices to reduce costs and compete more effectively in domestic and international markets.

Technologies are also adopted for reasons of increasing productivity in office tasks. The modern offices embrace technology with the optimism that technologies will reduce costs of production and services, improve productivity, increase quality, reduce dependence on skilled labor, make the office up-to-date and be globally competitive. These are the reasons that organizations consider in transforming offices into the modern workplace through the provision of advanced technologies relevant to the nature of the work in their respective offices.

V. EFFECTS OF TECHNOLOGY IN THE MODERN OFFICE WORK ENVIRONMENT

The effects of technology in the modern office work environment can be seen in four categories: nature of work, the design of work, structure of work and actual work performance.

VI. EFFECTS ON THE NATURE OF WORK

The nature of work refers to the types of work that an employee does. The nature of work can be best defined by the position and job functions of a specific worker. The adoption of new technology in offices positively affects the nature of work of employees, and so necessary adjustments have to be done depending on the extent of its effect.

The modernization of office work environment through adoption of technology can be traced back to the mid-1950s when computers were first introduced in the United States (Mark, 1987). During those years, it was predicted that the effect of modernization of offices would displace large numbers of clerical and kindred workers and that there would be fewer job opportunities. This prediction was made due to the idea that the nature of work would change in a way that it will require fewer people to handle jobs. On the other hand, the irony of the prediction happened. Over the three decades after the introduction of the computer in the U.S., employment of clerical workers even continued to increase. Clerical employment increased because the introduction of computers made previously costly and time-consuming work already possible, thus extending the scope of activities for many offices and creating employment opportunities (Mark, 1987). Some of the job opportunities in new occupations caused by the introduction of the computer are the systems analyst, programmer, key-punch operator, console operator, tape librarian, computer engineering, and computer technician. As years went by, the demand for computers increased and so along with this, new industries for manufacturing of computer and its related equipment and furniture were formed, thus further creating more job opportunities.

Technology has a profound impact on the nature of office work. The usual tasks done manually are already executed using technology. Automation replaced the entire process of recruitment with the use of computer applications and software like Resumix6 system from Hotjobs.com Ltd. (Ahmad, 2014). This reduced the cost per hire by more than 50 %. Meanwhile, it does not mean that technology reduced the need for more jobs. Technology even creates more jobs than it eliminates (Mark, 1987). Regardless of industries, the emergence of technology industry created millions of "digital jobs" for people in ICT productions and advanced users in offices, virtual or not, who need specific software and tools as a central element of their work (World Bank Group, 2015).

Figure 1 shows the relative scale of possible impact of technology on work based on the report by the World Bank Group (2015). The figure illustrates a comparison between the effects of digital jobs and the use of digital tools by workers. The figure shows that the outermost portion contains the unconnected workers or those who are not using digital tools in their jobs. As shown in the figure, the basic ICT users are also all the digital tool users. Not all basic ICT users though are into digital jobs. A portion of workers among the basic ICT users are further well-versed in ICT as they belong to the ICT sector jobs or advanced ICT users. The workers in the managerial positions, the secretaries, and other office workers must belong in the ICT sector jobs because, in the modern office work environment, basic knowledge on ICT use alone is deemed lacking if the goal is to be globally competitive.

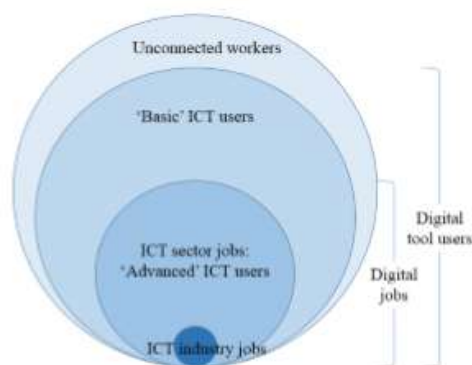


Figure 1: Relative scale of possible impact of technology on work (World Bank Group, 2015)

The advanced ICT users are those who perform office works like secretarial jobs through online platforms like the oDesk-Elance and Amazon Mechanical Turk (World Bank Group, 2015). These crowdsourcing platforms allow employers to define a task, hire online workers to perform the task from the comforts of their homes at their own times so long as deadlines are met, and process payments through ATM platforms using Payoneer, PayPal, and other online banking platforms.

In the aspect of wage payment system among employees, technology has also enabled offices to send employees' salary cheques directly to banks through online transactions (Ahmad, 2014). This eliminated much accounts work and long queues of employees when receiving wages every month. The new technologies as a form of communication provide a more efficient way for transacting business as it facilitates better workflow.

VII. EFFECTS IN THE DESIGN OF WORK

Technology influences the design of the organization at work. Among technological updates, the internet has the most significant impact on the design of office work. With the use of internet, e-businesses were born, and these businesses focus on design as they adapt to the dynamism of the internet environment (Ahmad, 2014). The internet also paved the way for the creation of virtual offices. Through the emergence of the virtual design of office workplace, technology has helped shape the lines between home and work (Ahmad, 2014). Through the internet used in personal computers, iPod and smartphones, people can work in virtual offices right from the comforts of their homes. This means that the design of work transformed into digital such that the contents, methods, and relationships of jobs satisfied technological requirements.

VIII. EFFECTS ON THE STRUCTURE OF WORK PLACE

The use of technology influences the structure of work in an organization. According to Jones (2010), the skills, systems, and procedures involving technology efficiently handle environmental factors at the input stage. From input to conversion to output, technology simultaneously improves the quality and service, overall efficiency and reduces cost at every level of the process (Jake, 2011).

The introduction of new technologies in office workplace modified the content of jobs. There had been less demand for jobs that entails manual dexterity, physical strength for materials handling, and for traditional craftsmanship (Mark, 1987). The manual tasks are replaced by computer-process control, advanced materials-handling equipment, and other innovations. Because of these changes in the structure of work, the workers' job is just to operate and monitor technologies being used.

IX. EFFECTS ON THE WORK PERFORMANCE

The effects of technology are best reflected in the work performance of office workers or employees. Performance of workers in online platforms can be easily monitored and evaluated as compared to the efficiency of work in the regular offices where evaluation is done by immediate supervisors apart from their timely compliance with required reports.

Work flexibility

Technology has a direct impact on work performance. Pfano (2016) emphasized that having advanced office technologies increases the work performance of managers because technologies make work a lot more flexible. Modern technology is often used to contain and organize valuable information about the company hence it has to be managed carefully. To effect increased performance, technology has to be relevant and appropriate. This means that the availability of many advanced technologies alone does not equate to increased performance but the effective use, relevance and appropriateness of the technology to the jobs in the office.

Pfano (2016) found that there is a strong correlation between the right use of office technologies and positive change in management performance in offices. These technologies, in particular, are computers and telephones which are useful in making communication within offices smooth and effective. Davenport (2013) stated that information and communications technology (ICT), when used effectively, can ensure continuous interaction between managers and their subordinates. It is vital that in offices, managers and subordinates establish clear lines of communication and it is in this respect that ICT plays vital roles. Among managers, the use of modern office technology helps them make their work very flexible and easy.

Mobility saves time

Another feature of technology that enables the attainment of increased productivity and profitability in businesses is its mobility. Unlike the desktop computers in the past decades, the latest personal computers and mobile technologies like mobile phones, laptops and tablets can be brought by workers anywhere they like to work at any times. The managers, for instance, can do business tasks at home anytime. They can reply to and send emails whenever they want to.

Mobile technologies in modern offices are beneficial in the areas of networking/communication and marketing. Using mobile technologies like smartphones and tablets, the managers, employees, and customers can smoothly interact and connect with each other through social media applications like LinkedIn, Facebook, Skype, and Twitter. This very accessible mode of communication benefits offices regarding efficient use of staff time, improved customer service, and a more excellent range of products and service delivered (Pfano, 2016). This is very possible so long as employees are disciplined enough to make use of mobile technologies for official work or job functions only. Mobile technologies also provided a new dimension to advertising and marketing for businesses worldwide (Haghirian et al., 2005). If in the past decades or centuries advertisements are only made through televisions and radio broadcasting, this time advertisements are easily accessed through mobile phones. Advertisements through mobile technology are very efficient since a large number of the world's population use it. This large group of customers already see business advertisements on mobile phones through various mobile marketing technologies like text messaging, mobile websites and mobile applications (Pfano, 2016).

Save valuable resources/Reduces costs

Offices now are involved in work that transcends beyond the four corners of the room due to globalization. Many businesses extend its market globally. Technology is of optimum use and helps for offices that deal with global transactions because technology makes global communications happen. Before the discovery of telephones and internet, the humanity relies on business letters for communication purposes. Now, the usual printed or typewritten business letters are all made electronic. Managers don't have to travel across countries to supervise its businesses and meet stakeholders. The great use of technology comes into play in today's global business set up. Technology helps save valuable resources like time and money in this aspect. In today's highly competitive business world, it was foreseen through empirical studies that the firms that can successfully incorporate the latest strategic technology advancements in their work setting would fare much better than others (Pfano, 2016).

Improved work performance

In the study conducted by Pfano and Beharry (2016), the analysis of the data concerning manager's use of technology in offices and the employees' perception on the importance of technology in the workplace revealed significant findings. The table below summarizes the results of the study among the respondents from 67 businesses considered in the study.

This recent study by Pfano and Beharry (2016) gives significant findings that can be very relevant in the adoption of technology in offices. This finding emphasizes that people of age 35 and above are already proficient in the use of technology in office work since 90% of the managers are revealed to be using technology while only 80% are of age above 35. This means that all of those of age above 35 are equipped with the skills for using technology.

Table 1: Data Summary of Results of Pfano and Beharry (2016) Study

Indicators	Percentage
Age > 35	80%
Managers using technology	90%
Businesses can afford technology	50%
Believe benefits are greater than cost	70%
Believe that technology increases efficiency	80%
Businesses need technology	80%

Furthermore, the above data stress the need for technology in the workplace as it revealed that 80% of the respondents believe that technology increases efficiency and 80% confirmed the need for technology in their respective businesses. This study by Pfano and Beharry (2016) affirms the positive effect of technology in increasing efficiency at work so long as the people are also equipped with the necessary skills in making use of the technology. Office technologies improve the performance of managers through improved communication between them and other employees (Pfano and Beharry, 2016). A strong positive correlation between use of technology and work performance mean that when businesses keep up with technological changes and increase use of modern technologies, the level of work performance also increases.

X. CHALLENGES IN A MODERN OFFICE WORK ENVIRONMENT

The transition from a traditional old-fashioned office to a modern office had not been that easy at all. Among the problems that organizations encounter is the struggle in achieving user acceptance and approval of new technology, and the challenge on how to retain an acceptable level of productivity and performance (Ahmad, 2014). User acceptance can be a struggle because of several factors like age, gender and peers' attitudes and perceptions that can affect an individual's attitude toward new technology. The resistance of employees to technological changes and adoption of new practices can be attributed to their lack of skills, ability or knowledge necessary to use the new technology in their job performance (Ahmad, 2014).

Some organizational and technological factors also limit the adoption and use of technologies. These factors include the organizational size, resources, management support and innovation history (Dawson, 2007). The insufficiency of budget limits organizations in the purchase of necessary technological resources. Other than that, the political and cultural barriers also hinder fast adoption of technology in offices. These barriers further include the lack of competent employees regarding technical expertise. Because technology may be new and strange to some employees who are not updated about technology, some employees may find themselves misfit with the adoption of new technology and who may feel insecure about their employment. This further leads to work alienation and resistance to changes, making the adoption of technology more difficult.

Table 1 revealed that financial barrier is one of the most significant challenges among businesses in the adoption of new technology in offices. The data showed that while 70% of the respondents believed that the benefits of technology are higher than its costs, only 50% of the businesses could afford new technology. This means that the other 50% of the companies are not financially fit to equip their offices with the needed technology even they feel the need for it. This further means that these businesses would intend to purchase new technology, they have to add capital or think of strategic plans on how to outsource funds for new technology. Meanwhile, Pfano and Beharry (2016) stated that the greatest challenge for companies is how to harness the newly emerging technology for the benefit of businesses.

XI. CONCLUSION

Technology helped reduce costs, improve quality and productivity, and encourage the use of innovative and creative methods for solving problems in the modern office workplace (Ahmad, 2014). Technologies are of great help in making the work more efficient, but this would never eliminate employees for being the leading central player in any organizations. The human workforce remains highly crucial in offices. They can never be replaced with technology.

The success in the use of technology in modern office work environment depends on the sufficiency of money, time and technical expertise. Technology has rapidly advanced to the point of having most of the jobs done digitally that it threatens the employment of people who are not literate on technological advancements. The adoption of technology may be costly, but if used effectively, increased work performance and productivity will reduce all the rest of the production and services costs in offices in the long run. In this modern highly competitive time, the use of technology is inevitable. It is not a want but a need especially in the field of office work of managers and secretaries where information is entered, processed, analyzed and reported to aid in the decision-making processes which are vital in the overall success of every organization.

RECOMMENDATIONS

The challenge that organizations meet regarding acceptance and approval of new technology can be faced successfully by making the change simple and easy. An orderly introduction of new technology in offices will help, and it involves three measures or actions. The first measure is to provide notice to workers affected by the new technology (Mark, 1987). Change can be made easy and straightforward by getting everyone involved from the initial stage of the adoption of new technologies. Employees have to be kept informed of all information about the technological changes that offices plan to bring and the skills that will be needed for it. By having them well-informed, they can plan their next move like initiatives to change themselves or equip themselves with the necessary knowledge and skills to remain relevant to the office. Offices and organizations have to be always humane enough to consider their employees in the adjustment period of the transition to a

modernized office by adoption of new technologies. Employees have the right to know how they will be affected by the changes and what they could do to meet the new challenges that come with the change.

The second measure is to coordinate labor adjustment with technical planning (Mark, 1987). Bringing change primarily in an office where not everyone is abreast with the updates in technology might result to sudden layoffs among workers, however through this technique; appropriate adjustments may minimize displacement of workers. While in the adjustment stage, temporary employees may be hired instead of hiring permanent ones. Some affected employees may also be reassigned to alternate jobs.

The third measure refers to the provision of new skills associated with the latest technology and retrains those displaced for other work (Mark, 1987). Training has become more formal, continuous and costly, but its importance in keeping the workforce up-to-date and flexible is deemed a priority. The technicality of the use of complex computer applications and other technology used in the office works highly requires an increasing amount of training. Training must be catered not just to the already in the labor force but also to the newly hired employees.

The researcher finds these three practical measures ideal for addressing the challenges that offices in organizations face when introducing new technology. These can help ease the difficulty in shifting into a modernized office. In the increased demand for digital jobs in the advent of the 21st century, many countries are facing problems in the shortage of qualified professionals. This problem further emphasizes the need for companies to create an appropriate enabling environment by offering free training for its current member of the labor force to be equipped with the necessary skills and knowledge on how to use every new advanced technology that offices adopt.

The researcher of this paper further recommends that organizations include in its learning and development intervention plans a continuous series of training for its employees for every update or advancement that technology undergo. This means that instead of depending on people outside offices for technical skills when troubleshooting problems with the technology they are using, they should instead invest in developing skills among their current employees by sending them to seminars and training. Another long-term solution that this research recommends is for every educational system of the many countries in the world to modify its educational curriculum in order to incorporate subjects in any course that will develop up-to-date knowledge and skills among students about advancements in technology, from basic ICT use to the complex ones that are relevant to their future jobs.

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