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Impacts of Artificial Intelligence and the Internet of Things on Company Competitive Climate and its Implications

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Abstract-Artificial Intelligence (AI) has shifted from research labs to business. Recent surveys suggest that in the last two years a significant number of organizations have developed AI applications, and application growth continues today. Many of these technologies are stand-alone systems, while some are combined with more traditional Ones, such as data processing and information management systems. Most applications are knowledge-based Expert Systems (ES), but there are an increasing range of other AI technology applications, such as neural networks, knowledge-based planning and scheduling systems, speech-synthesis systems, and voice recognition systems. Given the abundance of technology managers and engineers, they have little understanding of the practical issues associated with AI, management, and organizational interaction.

This is an important subject since the performance of an AI system depends on a number of technological, managerial, and organizational issues being resolved; yet there is little academic research. Some researchers addressed the organizational effect of ES either by conducting a single system study or by evaluating a collection of systems. Others studied the method of implementing ES in order to gain an understanding of 'key success factors' and provide managers with recommendations for effective implementation. This article addresses the impact of AI in an organization and also delineates the significance in future. It tells the way to enhance the quality of businesses of an organization.

Keywords: **Artificial Intelligence, Expert Systems, management, organizational**

1. The impact of AI an organization

Some of AI's impact on organizations include: power transitions; reassignment of responsibility for decision making; cost savings and improved service; and changes and downsizing of staff. Here we study these notable results, acknowledging that there are many others.

- **Power shifts**

The probability of power transitions within an organization was addressed due to changes in the ownership and control of information. For example, the PC Call Screener, invented by Eastman

Kodak in the late 1980s, is an ES that identified common issues with personal computers, including monitor, disk drive and communication problems. It allowed clerical staff to assist users over the phone, removing the need for technical personnel to make such on-site service calls. The system's implementation found that the system's clerks solved more problems than technicians without it, and that technicians participated in excessive tangential thought. The system gave clerks the opportunity to perform the positions of more highly trained technicians, thereby reducing the latter group's power.

Reassignment of Decision-making

- **Responsibility**

AI has the opportunity to transfer power and decision making responsibility. An example of this is the Authorizers Assistant of American Express, an ES that manages the vast majority of expenditure authorization requests made with the American Express card.

The system allowed American Express to automate much of its responsibility for credit authorization, removing the decision's ownership from human authorization clerks. With respect to personal loan and credit research, several major credit card firms, including Citibank and General Electric Financial Services, are now using neural networks to conduct some of the credit-granting decision making. Corporate confidentiality ensures knowledge of these programs and how they are used is scarce.

Cost reduction and enhanced service

Implementing AI systems can help cut costs, boost an organization's operation, or do both. The Authorizers Assistant has helped American Express to dramatically reduce labor costs and better manage its provision of a card with no fixed limits, in addition to automating authorization decision-making. Management now acclaims these forms of business benefits more than traditional benefits (including decreased decision-making time, better use of expert resources, and information codification).

Personal shifts and downsizing

AI may add to the software development costs of an enterprise, and also needs a dedicated support staff. While this is the case for other IS, the cost of maintaining and improving AI applications which surpass that of traditional IS given the complex nature of the technology. It was rumored that XCON had a full-time workforce of 50 devoted to its maintenance, at one point. As regards significant downsizing, AT&T announced in 1992 that it would replace up to

one-third of its 18 000 operators when a new voice-recognition system based on AI was introduced. This is the first example of substantial job losses due to the AI implementation. These examples show that AI can increase the number of overhead employees and decrease the amount of direct labor, and usually result in both [1, 2].

2. ARTIFICIAL INTELLIGENCE PREDICTION IN HEALTHCARE

Artificial Intelligence (AI) is characterized as machine intelligence, in contrast to human intelligence or other living organisms. AI can also be described as the study of "intelligent agents"—that is, any agent or system capable of perceiving and understanding its environment, and thus taking appropriate action to maximize its chances of achieving its goals. AI also applies to cases in which computers can imitate human minds in studying and analyzing, and thus can function to solve problems.

Often called machine learning (ML) is this sort of knowledge. Usually, AI requires a device consisting of software as well as hardware. AI's especially concerned with algorithms from a software perspective. An artificial neural network (ANN) is a computational system in which AI algorithms are implemented. It is a replica of the human brain an interconnected network of neurons, in which neurons have weighted channels of communication. One neuron can respond to multiple stimuli from neighboring neurons, and the entire network can change its state according to various environmental inputs. As a result, the neural network (NN) will create outputs as its responses to environmental stimuli just as the human brain responds to various changes in the environment. Usually the NNs are layered structures with different configurations. Researchers built NNs that could do:

Supervised learning, where the task is to infer a function that maps an input to an output based on example pairs of inputs and outputs;

Unsupervised learning, where the task is to learn from test data that has not been labeled, classified, or categorized, in order to identify common features in the data and, rather than responding to system feedback, to react based on the existence or inexistence of identified common features in new data; and

Reinforced learning, where the task is to act within the given surroundings in order to maximize rewards and minimize penalties, both according to some form of accumulative nature.

With the development of computing resources, NNs have become "deeper," indicating that the network requires more layers of neurons to emulate a human brain and perform learning. Furthermore, further functions can be integrated into the NN, such as combining extraction and

classification functions into a single deep network-thus the technical term "deep learning." From a hardware perspective, AI is concerned primarily with implementing NN algorithms on a physical computing platform.

The most straightforward solution is to implement NN algorithms in a multithread or multicore system on a general-purpose central processing unit (CPU). In addition, graphical processing units (GPUs), which are excellent at convolutionary computations, were found to be beneficial over large-scale NN CPUs.

CPU and GPU co-processing has proven to be more efficient than CPU alone, especially for spiking NNs. Furthermore, some programmable or customizable accelerator hardware platforms, such as field-programmable gate arrays (FPGAs) and application-specific integrated circuits (ASICs), can more efficiently implement NNs for a customized application, in terms of computing capability, power consumption.

These platforms can be tailored for a particular application compared with GPU and CPU, and can therefore be more power-efficient and lightweight than platforms for GPU and CPU. Further improvements in power efficiency and the form factor are required to deploy AI in edge devices [3].

3. THE FUTURE IMPACT OF AI TECHNOLOGY ON THE WORKPLACE

Artificial intelligence (AI) promises to revolutionize the workplace, thanks to its potential to slash overhead costs, enhance productivity and help drive innovation. Staffing is another area where AI technology is poised to make a big impact. From vetting candidates more thoroughly to helping employees strengthen their skills, AI technology has a vital role to play in how workers are hired and managed in the future.

Employment and AI Anxiety, many of the tech and business experts interviewed say they expect AI to affect the ability of businesses to develop and retain a highly qualified workforce — and that includes right now. The good news is that professionals who are keen on working with AI technology possibly won't have to wait long for it to be commonly used in their workplace [4,5].

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4. ARTIFICIAL INTELLIGENCE AND INTERNET OF THINGS ON BUSINESS AND STRATEGIES

The Internet of Things (IoT) is changing how we do business, work, travel and live. It is also the cornerstone of a modern industrial revolution, known as Industry 4.0, and the key to the digital transformation of businesses, communities, and society at large. Reason enough to consider what the Internet of Things is all about.

What is the Internet of Things, also referred to as IoT? Lots of meanings can be found below. But let's start straightforward. Look at it this way: people can link with devices such as smartphones and computers to digital networks and the Internet, in order to exchange information, talk, purchase, etc.

The Internet of Things basically helps us to link 'things' to the Internet (and to Internet-based networks). They can share information between these objects or items and transfer data to other devices and systems. Typically they will obtain data, too. The knowledge they exchange can be about the objects they are connected to and the world they are in (through sensors that show up for various parameters in several shapes). Also, smart devices and machines can share their internal status information.

*"So, they don't play games or buy online but capture data, share it and, depending on the precise thing, can act upon data they receive. In other words: physical objects and lots of them, far more than there are people"***.**

Physical things may have embedded technologies that allow them to do all of this (which is why they are sometimes called 'smart') or may be very 'dumb' as such but get equipped/tagged to link. The Internet of Things is a collective term for these connected things, how they convey and transmit data, the technologies that allow them to do so, and the reasons / goals for doing so.

The Internet of Things is the network of physical objects that contain embedded technology to communicate and sense or interact with their internal states or the external environment.

Although the Internet of Things begins with the connected devices infrastructure, both its advantages and risks are largely linked to the network technologies, systems , and applications built on this underlying layer. In principle, using IoT technology, everything can be linked to the Internet: physical objects and living things, such as 'beings' animals and humans. All things or linked components of more complex physical objects can be defined and dealt with uniquely through the Internet of Things.

"Examples of things range from consumer-oriented devices such as wearables and smart home solutions (Consumer IoT) to connected equipment in the enterprise (Enterprise IoT) and industrial assets such as machines, robots, or even workers in smart factories and industrial facilities (Industrial IoT, the essential component of Industry 4.0)".

The question isn't what you can link but why you'd do this: the intent, the results. And there are plenty of possible objectives here that decide what items you want to link so you can collect data from them (and send data from, from and/or to them). That's why you will always see distinctions made in this summary between Industrial IoT, Consumer IoT and many more words. So IoT is a paragliding concept with various use cases, tools, specifications, and implementations. It's also part of a broader reality, with much more technology. Stuff and data are the point of departure and meaning of what IoT enables and implies. IoT devices and properties are fitted with electronics, such as sensors and actuators, connectivity / communication electronics and software for recording, filtering and sharing data about themselves, their state and their environment. The link of IoT 'things' and the use of IoT data allows for numerous changes and developments in customer lives, in industry, health care, mobility, cities and society. IoT's future targets are also segmented into IoT use cases: reasons for implementing IoT. Examples: health monitoring, asset tracking, environmental control, home automation and predictive maintenance [5].

5. Conclusion

Artificial intelligence (AI) is awakening fear and enthusiasm in equal measures. Some have likened the advances in AI to "summoning the devil" and there are concerns that AI threatens to end humanity. AI can scare people, perhaps due to the science fiction notion that machines will take all of our jobs; 'wake up' and do unintended things. However, where some see danger, others see opportunity.

Many companies and individuals are hopeful that this workplace-driven AI change would cause more jobs to be generated than lost. As we build disruptive technology, AI can affect our economy positively by creating jobs that require the skills needed to introduce new systems.

Artificial intelligence is likely to quickly replace jobs involving routine or simple problem-solving tasks, and even go beyond present human potential. In industrial environments, customer service positions and within financial institutions, AI systems would be making decisions instead of humans.

Automated decision-making would be responsible for tasks like authorizing loans, determining whether to proceed on a customer or detecting corruption and financial crime. As a result of greater automation, companies will benefit from an increase in efficiency, which means more revenue will be generated. This also allows extra resources to be spent on maintaining services sector employment.

This article pulls together information from a series of articles on AI and machine learning, its' impact on the future world of work, and implications for occupational safety and health (OSH). It's likely that the upwards trend in capabilities of AI systems will continue; that systems will eventually become capable of solving a wide range of tasks (rather than a new system having to be built for each new problem), and that the adoption of AI within many industries will continue.

Evidence suggests AI is currently unable to reproduce human behavior or surpass human thinking; it's likely to stay a complementary workforce tool for a very long time to come. However, steady gradual improvements in AI could reach a point where AI exceeds current expectations. The continued development of AI will depend on moral public opinion regarding the benefits and acceptability of it, on businesses continuing to gain competitive advantage from using it, and continued funding for research and development of it.

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