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Connecting the Dots: Internet of Things and Human Resource Management

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Abstract: *With every organization increasingly becoming technology-obsessed to effectively manage business operations, HR leaders have no choice but to acclimatize to innovations in processes like recruitment, benefits management and payroll. One fascinating topic that is garnering loads of media attention these days is the so-called "Internet of Things" (IoT). Today, "The Internet of Things" (IoT) is becoming an increasingly delightful topic of discussion in the workplace and outside of it. Indisputably, the growth and expansion in technology has considerably enhanced the way we lead our lifestyle. Practically, in all the areas of life, technology has made its remarkable impact including different modes of communication using various types of electronic gadgets like laptops, mobile phones, tablets, smart phones etc., Today, it is a reality that gadgets and domestic appliances can be connected to the internet and invariably send and/or receive information from/to your smartphone and this scenario is just a preamble to an infinitely connected world in the near future. However, it is a known fact that people spend most of their time in doing office work and as such, it is high time to know how the world of Internet of Things (IoT) will change the workplace environment in future and to understand how it is already showing the signs of the impacting the way businesses are run today. From the progression of the mobile job seeker, to embedding microchips to manage employees, the growing nature of Internet of Things (IoT) appears to impact the way human resources work in organizations' and also the way organizations run their business operations.*

Keywords: *Internet of Things (IoT), Technology, Workplace, HR Leaders, Human Resource Management*

I. Introduction

In recent years, the internet of things or 'IoT' has become an extremely admirable catchword among any person who is interested in technology including consumer and organization. Undeniably technology plays an essential role in altering every single aspect of our lives, and is feasibly considered to be the greatest influential driver for workplace change because of its impact on work itself. The Internet of Things is all set to transform not only life at home but also human resource management in the workplace. Internet of Things will help organizations to save time and resources through connected or 'smart' devices and will lead to effective human resource management in the organization thereby creating new opportunities for growth. The rapid change in the evolution of technology, coupled with its faster adoption, instantaneous access to data and anywhere, anytime connectivity to gadgets like smart phones, mobile phones, laptops using internet resources, decreased cost of broadband connectivity, work from home options through connected devices are the things which either directly or indirectly influence organizations to rethink the way they manage their human resources to efficiently run their business operations thus compelling to continuously leap frog to swiftly adapt to the Internet of Things. Internet of Things can very well act as a catalyst for distinctive enhancements in managing the human resources thereby enabling organizations to reduce cost or to save time in the production of goods and/or services to their customers.

II. What is Internet of Things (IOT)?

According to Wikipedia, "The Internet of things (IoT) is the internetworking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings and other items – embedded with electronics, software, sensors, actuators and network connectivity that enable these objects to collect and exchange data".

III. Internet of Things and Workplace

Today, the way we communicate, utilize products or services and the way we lead our personal lives are transformed by the explosion of smartphones, tablets and Internet of Things (IoT) devices. The very nature of workplace is changed by the collective usage of smart phones and cloud-based applications which help an

organization to perform non-routine work schedules and to collaborate with open work spaces and these are considered to be the new normal for new generation employees called "GenMobile" which strongly believes in mobile working irrespective of time and location. Increased usage of smart phones with Internet of Things using mobile technology enables "GenMobile" employees to be efficient "desk-independent" workforce. Consequently, Internet of Things have influenced organizations to start making adjustments to their physical spaces and technology designs to attract and retain top talent from the pool of "GenMobile" employees as they generally prefer open collaborative work space within a mobile-friendly environment to enhance their productivity. With the help of Internet of Things and mobile technology, both employers and employees are now able to access and exchange work related documents while on-the-move at remote work places and even at home. Thanks to 4G LTE devices, as it will further enhance productivity levels across industries by enabling employees to utilize their time more efficiently in order to perform their job related tasks. Organizations' have started realizing the huge potential application of Internet of Things in establishing and managing smart and efficient workspaces such as real time monitoring and intelligent meeting rooms. Therefore, undoubtedly, the "Internet of Things" will not only empower things but also empower both employer and employee to effectively manage their work place.

Table-1: Internet of Things installed base by category (millions of units)

Category	2013	2014	2015	2020
Automotive	96.0	189.6	372.3	3,511.1
Consumer	1,842.1	2,244.5	2,874.9	13,172.5
Generic Business	395.2	479.4	623.9	5,158.6
Vertical Business	698.7	836.5	1,009.4	3,164.4
Grand Total	3,032.0	3,750.0	4,880.6	25,006.6

Source: Gartner (November 2014)

Synchronization between Workplace Design and Technology

The rise of Internet of Things (IoT) will influence organizations to provide a serious thought towards physical space and type of technology to be deployed in order to support Internet of Things (IoT) ecosystem while planning office building designs. For example, Intel has noticed that 60% of its cubicle real-estate was unutilized in any given time and therefore it has taken a decision to move to digital workplaces as it will not only increase employee engagement and boost productivity but also will lead to significant saving in real estate costs. Similarly, The U.S. General Services Administration report has stated that on average, unused employee workspaces cost organizations from $10,000 to $15,000 annually. Thus, the rise of Internet of Things (IoT) has made interior design organizations and commercial real estate organizations to rethink about the way they propose office design to potential business organizations. The new office settings should be able to support the device of choice for an employee which is mobile. The Internet of Things (IoT) will compel organizations to design their offices in such a manner that it possesses high speed connectivity and extremely secured Wi-Fi infrastructure so that it can support the mobile devices just similar to lighting and electricity in place in the office building. Internets of Things (IoT) help organizations' to minimize its operating costs considerably as effective human resource management with increased collaborative workplaces is a reality now. According to Gartner, the market-research firm, there will be 25 billion connected "things" will be in use by 2020 as against 4.9 billion in the year 2015. From the below table, it can be noted that Internet of Things (IoT) has become a significant aspect for transforming business that will have a disruptive impact across all industries.

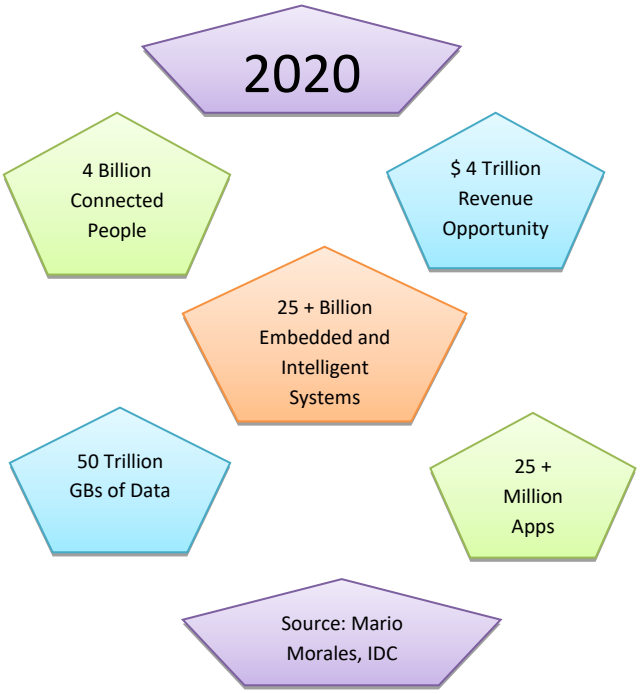
Connecting the Dots: Internet of Things and Human Resource Management

The rise of Internet of Things (IoT) technologies have immensely facilitated the organizations to connect, track and even measure everything that can be connected, tracked and measured whether it is machines or humans, into the world of digital work environment. Internet of Things (IoT) ecosystem will influence organizations not only to deal with products and gadgets that are brought by the companies to the market, but also to establish connections and partnerships to recruit employees especially "GenMobile" who are generally mobile app-driven job seekers. Internet of Things (IoT) ecosystem enables an organization to effectively handle internal Human Resource Information Systems (HRIS), Payroll function, Workforce management systems by establishing adequate data security and privacy measures.

Monitoring Employee Experiences

Internets of Things (IoT) ecosystem in an organization enable the concerned decision makers to make appropriate managerial decisions to benefit organizational growth with the availability of easy and cost-effective accumulation huge amount of employee related data. Internet of Things (IoT) helps to attach sensing machines practically to everything form coffee machines to employees and thereby every aspect of employees' experiences can be observed varying from their movements, behavior, emotions etc., Thus, Internet of Things

(IoT) enables managers to capture and analyze employee related data and to formulate appropriate policies/programmes so that crucial decisions be made to enhance employee productivity in an organization. Hence, analysis of data captured through Internet of Things (IoT) helps the organization to make better decisions thereby eliminating the drawbacks of decisions taken based on human intuition which may be flawed but a well-intentioned one.



Impact of Internet of Things (IoT) Devices on Human Resource Management

A. Mobile phones/Smart phones

Mobile phones or smart phones are considered to be one of the significant hubs of Internet of Things (IoT). Internet of Things (IoT) with the help of mobile phones helps an organization to seek employees' creative ideas and suggestions irrespective of their location to improve the quality of product and/or services offered to its customers/consumers. The Internet of Things (IoT) ecosystem enables employees' to access their own data and key analytics through their mobile phones so their valuable ideas can be shared with colleagues instantaneously through organizational social collaboration. Presence of solid Internet of Things (IoT) ecosystem in organizations' establishes a constructive connection between manager and his/her team members thereby making continuous performance management system easy. True implementation of flexi-working is possible wherein employees opt for a flexi workspace with the help of their mobile phone connected with Internet of Things (IoT) technology.

B. Fitness Trackers

Health of employees' always remains a vital concern for the organization. Many research reports have suggested that healthy employees' give better performance and also more engaged. Therefore, any measure taken by an organization to keep its employees' health is always good for enhancing productivity of its business. Organizations can provide all the employees a fitness tracker to monitor their health and can suggest corrective measures for their well-being. For example, fitness trackers in the market like Fitbit, Garmin, Misfit, Withings helps in monitoring 24/7 heart rate, reliable sleep tracking and GPS tracking etc., will be able to gather employee's health related data. Internet of Things (IoT) will help organizations to gather employees' health related data collectively thereby enabling organizations' to design and implement appropriate employee wellness programmes to improve the health of employees so that both productivity and profit of the organization can be enhanced.

C. Location Trackers

Internet of Things (IoT), will certainly help organizations to track employees' whereabouts and movements with the help of location trackers thereby monitoring the healthiness of employee or alertness of employee on the job performance. Needless to say that privacy concerns of employees' need to be decided on an individual basis. Perhaps, embracing Internet of Things (IoT) ecosystem in an organization may outweigh benefits derived from it than individual privacy concerns. For example, location trackers can monitor the fatigue level of truck drivers while driving and may be alerted whenever necessary to prevent fatal accidents. Similarly, clothing by itself can turn into an interactive surface. Forget about "Google Glasses", now the trend is all about "Google Pants".

Though, wearable technology is the future, there lies one problem as no one wants to wear the stuff. Therefore, Google has come up with "Google Pants" wherein conductive metal threads are woven into fabric which can be transformed into a touchpad. Google says the same technology can be adopted into shirt or anything made of fabric. According to Google, this conductive cloth is "indistinguishable" from regular fabric, comfortable which can be controlled by a chip in the size of jacket button which in turn senses touch, like a smart phone screen and can be communicated to external devices wirelessly. Google broadly calls it as "connected clothes" which can be used to interact with "services, devices and environments" and says it is up to the developers and inventors to utilize it on need basis according to diverse situations.

D. Virtual Reality, Augmented Reality and Mixed Reality

Virtual and Augmented reality will fascinate us with not one but with thousand steps ahead in the digitalization arena. Having said that, now is the time for HR leaders to collaborate work with IT and facilities department to effectively manage human resources and to carry out the work in an efficient manner. For example, the assessment of interview candidate during the recruitment process can be enhanced by employers by placing them in a virtual situation and will be able to test their behavior. Likewise, the candidates can attend their interviews from home and will be able to enjoy a more realistic experience in the office of their future job. Similarly, Microsot's "HoloLens" headset is a part of its new inclusive computing initiative which will spread Windows 10 evenly over a number of devices. It is the first self-contained, holographic computer, which will empower you to engage with your digital contents and can interact with the holograms in the world around you. "HoloLens" is essentially a head-worn computer which can be controlled through voice, hand controllers and gesture recognition. For instance, in the Microsoft "HoloLens x Volvo S90" mixed reality showroom, a futurist car lover will be able to tap the air to click through color and trim options on need basis on a car that does not even exist until now. Similarly, civil engineers can visualize appropriate engineering data onsite in order to monitor the progress of a building and to take corrective actions wherever required with the help of Microsoft's "HoloLens" 'Sketchup Viewer' called as automated progress monitoring. It will also help inspectors to avoid physical inspections thus by keeping them out of danger and allowing bridges and other structures to remain open. Consequently, in the near future, Microsoft "HoloLens" may be of very much helpful in marketing and promotional activities, work spaces, and in case of novel demos to be given to the prospective buyer.

IV. Conclusion

The Internet of Things (IoT) will witness rapid change constantly similar to technology in general and gradually it will become an integrated component of work and the workplace environment. Today, innovation and HR Technology are really at the forefront of the technology evolution and therefore, Internet of Things (IoT) is but one facet of an explosion in technology which in turn will dominate more of HR leaders' budgets and approaches to effectively manage human resources in an organization in the near future. The Internet of Things (IoT) can be integrated not only to recruitment practices but also to other HR functions like benefits administration, payroll and organizational safety. Yet, superior information security and personal privacy policies need to be formulated in organizations which are operating globally as employees may bring their personal fitness devices, smart watches or Google Glasses to their workplace. Consequently, the rise of Internet of Things (IoT) either directly or indirectly influences the organizations' to follow proactive management approach to formulate appropriate policies and operating procedures so as to remain competitive in the global work environment. Though Internet of Things (IoT) is still in its infancy stage, it will certainly change the way most of the jobs being done in the organization in the next few years. This is not the end, perhaps just a start.

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