Era of 2027 Computers in Human Resource Management with Internet of Things

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ABSTRACT: Modern era of computing plays key role in every aspects of applications. Human Resource Management principles vary slightly if compared on previous years . Internet of Things started doing surprising achievements in unimagined way to largest extent in real world. Business with high profit returns had became common in industry with various advancements. This paper focus on the Human resource management in the era of Internet of Things during 2027.

KEYWORDS: Resource, Principles, Multimedia,Internet

I. INTRODUCTION

Human resource management (HRM or simply HR) is the management of human resources. It is a function in the organizations designed to maximize employee performance in service of an employer's strategic objectives.[1] HR is primarily concerned with the management of people within organizations, focusing on policies and on systems. HR departments and units in organizations typically undertake a number of activities, including employee benefits design, employee recruitment, training and development, performance appraisal, and rewarding (e.g., managing pay and benefit systems).HR also concerns itself with organizational change and industrial relations, that is, the balancing of organizational practices with requirements arising from collective bargaining and from governmental laws.

HR is a product of the human relations movement of the early 20th century, when researchers began documenting ways of creating business value through the strategic management of the workforce. The function was initially dominated by transactional work, such as payroll and benefits administration, but due to globalization, company consolidation, technological advances, and further research, HR as of 2015 focuses on strategic initiatives like mergers and acquisitions, talent management, succession planning, industrial and labor relations, and diversity and inclusion.

Human Resources is a business field focused on maximizing employee productivity. Human Resources professionals manage the human capital of an organization and focus on implementing policies and processes. They can be specialists focusing in on recruiting, training, employee relations or benefits. Recruiting specialists are in charge of finding and hiring top talent. Training and development professionals ensure that employees are trained and have continuous development. This is done through training programs, performance evaluations and reward programs. Employee relations deals with concerns of employees when policies are broken, such as harassment or discrimination. Someone in benefits develops compensation structures, family leave programs, discounts and other benefits that employees can get. On the other side of the field are Human Resources Generalists or Business Partners. These human resources professionals could work in all areas or be labor relations representatives working with unionized employees.

In startup companies, trained professionals may perform HR duties. In larger companies, an entire functional group is typically dedicated to the discipline, with staff specializing in various HR tasks and functional leadership engaging in strategic decision-making across the business. To train practitioners for the profession, institutions of higher education, professional associations, and companies themselves have established programs of study dedicated explicitly to the duties of the function. Academic and practitioner organizations likewise seek to engage

and further the field of HR, as evidenced by several field-specific publications. HR is also a field of research study that is popular within the fields of management
A Business is an organizational entity involved in the provision of goods and services to consumers. Businesses as a form of economic activity are prevalent in capitalist economies, where most of them are privately owned and provide goods and services to customers in exchange for other goods, services, or money. Businesses may also be social non-profit enterprises or state-owned public enterprises charged by governments with specific social and economic objectives. A business owned by multiple individuals may form as an incorporated company or jointly organise as a partnership. Countries have different laws that may ascribe different rights to the various business entities.

The word "business" can refer to a particular organization or to an entire market sector (for example: "the music business") or to the sum of all economic activity ("the business sector"). Compound forms such as "agribusiness" represent subsets of the concept's broader meaning, which encompasses all activity by suppliers of goods and services.

The efficient and effective operation of a business, and study of this subject, is called management. The major branches of management are financial management, marketing management, human resource management, strategic management, production management, operations management, service management, and information technology management.

Businesses aim for their sales to exceed their expenditures, resulting in a profit or gain .Network is collection of Autonomous computers. Network of networks ie Internet has made it possible to connect the various regions of globe as if it were a single city. Originally set of protocols acts as backbone of TCP/IP Internet providing reliable form of communication for various purposes. Now a days it has became common uses of Internet for various tasks .

Computer programs in earlier days used for doing arithmetic calculations, simple mathematical problems, Accounting , Scientific calculations, Business purposes. Due to internet these basic operations done by computer are elaborated to advanced tasks including computer controlled electronics devices.

Main consumer electronics products include radio receivers, television sets, MP3 players, video recorders, DVD players, digital cameras, camcorders, personal computers, video game consoles, telephones and mobile phones. Increasingly these products have become based on digital technologies, and have largely merged with the computer industry in what is increasingly referred to as the consumerization of information technology such as those invented by Apple Inc. and MIT Media Lab.

II. RELATED WORK

Consumer electronics or home electronics are electronic or digital equipment intended for everyday use, typically in private homes. Consumer electronics include devices used for entertainment (flatscreen TVs, DVD players, DVD movies, iPods, video games, remote control cars, etc.), communications (telephones, cell phones, e-mail-capable laptops, etc.), and home-office activities (e.g., desktop computers, printers, paper shredders, etc.). In British English, they are often called brown goods by producers and sellers, to distinguish them from "white goods" such as washing machines and refrigerators. In the 2010s, this distinction is not always present in large big box consumer electronics stores, such as Best Buy, which sell both entertainment, communications, and home office devices and kitchen appliances such as refrigerators. Consumer electronics stores differ from professional audio stores in that the former sells consumer-grade electronics for private use, whereas the latter sells professional-grade electronics designed for use by audio engineers and audio technicians.

Radio broadcasting in the early 20th century brought the first major consumer product, the broadcast receiver. Later products included telephones, personal computers, MP3 players, audio equipment, televisions (first cathode ray tube TVs, then in the 2000s, flatscreen TVs) and calculators. In the 2010s, consumer electronics stores often sell GPS, automotive electronics (car stereos), video game consoles, electronic musical instruments (e.g., synthesizer keyboards), karaoke machines, digital cameras, and video players (VCRs in the 1980s and 1990s, followed by DVD players and Blu-ray disc players). Stores also sell digital cameras, camcorders, cell phones, and smartphones. As of 2016, some of the newer products sold include virtual reality head-mounted display goggles, smart home devices that connect home devices to the Internet (such as smartphone-controllable thermostats and lights) and wearable technology such as Fitbit digital exercise watches.

In the 2010s, most products have become based on digital technologies, and have largely merged with the computer industry in what is increasingly referred to as the consumerization of information technology. Some

consumer electronics stores, such as Best Buy have also begun selling office and baby furniture. Consumer electronics stores may be "bricks and mortar" physical retail stores, online stores, where the consumer chooses items on a website and pays online (e.g, Amazon). or a combination of both models (e.g., Best Buy has both bricks and mortar stores and an e-commerce website for ordering its products). The CEA (Consumer Electronics Association) estimated the value of 2015 consumer electronics sales at US$220 billion.

As of 2016, the vision of the Internet of things has evolved due to a convergence of multiple technologies, including ubiquitous wireless communication, real-time analytics, machine learning, commodity sensors, and embedded systems. This means that the traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of things(IoT).

Levitating speakers(Fig1) to food printers that decorate cakes, the 2015 CES gadget show in Las Vegas this week has included a wide range of new gadgets from the Internet of Things.

Smart Thermostat(Fig2) features includes
Precision Comfort. Using sensors across the home, it's now possible to set the temperature in any room, not just where the thermostat happens to be.

Remote Temperature Sensors – Manage the temperature in any room.
Any Room Set Points – Optimize the temperature in any room using the mobile app, Smart Schedules or Modes.
Dynamic Modes & Responsive Saving

Swing sensor(Fig3),this Zepp sensor, when attached to the end of a golf club, tennis racket or baseball bat, looks for general motion patterns and uses 3D and video analysis features to allow users to view and improve aspects of their swing.

Wireless lights (Fig 4) have advantage of switching the lights on and off, the color and intensity of BeeWi wirelessly controlled lights can also be adjusted from users' smart phones.

In-vehicle infotainment system(Fig5),Parrot RNB 6 in-vehicle infotainment system offers media playback, navigation, telephony, a dash cam, air control, parking assistance and onboard diagnostics.

The Invoxia Triby is a smart fridge magnet (Fig 6)1+that can make phone calls, receive digital messages and play music.

The Smarter iKettle(Fig 7) can boil water with a remote command from a smartphone or tablet. It will tell users when their hot water is ready to pour, remind them to refill and tell them when the kettle is empty. The kettle has several temperature settings and comes with an automatic shut-off feature. Smarter also offers a coffee maker.

The Baby Glgl (Fig8) by Slow Control holds a baby bottle and can record how fast and how much a baby is drinking. It can then send that information to a mobile device. The sleeve also informs users of the optimal degree of inclination to prevent the baby from sipping air bubbles along with its milk — something that can cause gas and colic.

The Vigilant Rainbow smart toothbrush (Fig 9)connects to a smartphone to keep records on brushing and allow for interactive games. It sounds like a children's version of the locally made Goodwell toothbrush, which recently debuted.

The Parrot Pot (Fig10) is linked to mobile devices and will automatically water users' plants from a reservoir of water inside the pot. The pot monitors soil moisture level, soil fertility, temperature and brightness and remaining water level. The app then shares this information and alerts the user if more water or fertilizer is needed

The XYZprinting 3D Food Printer (Fig11)turns ingredients into uncooked food, perfect for pastry decorating. Just like a 3D printer, the Food Printer can create various 3D edible items. The machine has an onscreen touch display that lets users select a preset design for the shape of the food. Users can also import designs from the Web or use a USB drive to upload their own designs

This da Vinci Jr. 3D printer(Fig12) also by XYZprinting, is on the market for $1,499, significantly less than any other printer of its type. While traditional 3D printers melt plastic to build 3D objects, these types use liquid ultraviolet curable photopolymer, called resin, and an ultraviolet laser to build a 3D object, layer by layer

The Liquid Image EGO LS-800 camera(Fig 13) is wearable and mountable. It also has the ability to record video and simultaneously broadcast that video over LTE.

The Withings Activite Pop smart watch (Fig14) tracks walking, running, swimming and sleep cycles, and it can also function as a silent alarm. Users can view details on a companion app.

Now consider primary responsibilities of a human resource manager:
To create knowledge of corporate culture, plans and policies.
To act as an internal change agent and consultant.
To initiate change and act as an expert and facilitator.
To actively involve himself in company's strategy formulation.
To keep communication lines open between the HRD function and individuals and groups both within and outside the organisation.
To identify and evolve HRD strategies in consonance with overall business strategy.
To facilitate the development of various organisational teams and their working relationship with other teams and individuals.
To try and relate people and work so that the organisation objectives are achieved effectively and efficiently.
To diagnose problems and to determine appropriate solution particularly in the human resources areas.
To provide co-ordination and support services for the delivery of HRD programmes and services.
To evaluate the impact of an HRD intervention or to conduct research so as to identify, develop or test how HRD in general has improved individual or organisational performance.

III. PROPOSED ALGORITHM

Machine learning algorithms use computational methods to "learn" information directly from data without assuming a predetermined equation as a model. They can adaptively improve their performance as you increase the number of samples available for learning.

The Internet of Things (IoT), also sometimes referred to as the Internet of Everything (IoE), consists of all the web-enabled devices that collect, send and act on data they acquire from their surrounding environments using embedded sensors, processors and communication hardware. These devices, often called "connected" or "smart" devices, can sometimes talk to other related devices, a process called machine-to-machine (M2M) communication, and act on the information they get from one another. Humans can interact with the gadgets to set them up, give them instructions or access the data, but the devices do most of the work on their own without human intervention. Their existence has been made possible by all the tiny mobile components that are available these days, as well as the always-online nature of our home and business networks.

Connected devices also generate massive amounts of Internet traffic, including loads of data that can be used to make the devices useful, but can also be mined for other purposes. All this new data, and the Internet-accessible nature of the devices, raises both privacy and security concerns.

But this technology allows for a level of real-time information that we've never had before. We can monitor our homes and families remotely to keep them safe. Businesses can improve processes to increase productivity and reduce material waste and unforeseen downtime. Sensors in city infrastructure can help reduce road congestion and warn us when infrastructure is in danger of crumbling. Gadgets out in the open can monitor for changing environmental conditions and warn us of impending disasters.These devices are popping up everywhere, and these abilities can be used to enhance nearly any physical object.

IV. PSEUDO CODE AND RESULTS

Step 1: Generate all the possible types of new electronics devices which can be controlled by vomputer programd
Step 2: Calculate the time factor for working of individual events by each of devices
Step 3: Check the options available for connectivity wireless or wired as per requirement
Step 4: Create effective computer programs for performing efficient tasks by devices
Step 5: Test the software
Step 6: Release product and do maintenance by releasing newer versions of softwares for updation
Step 7: Continuously detect to perform better and create algorithms and programs for complex tasks
Step 8: International business of such things must be given priorities based on flexibility and quality of services which ultimately creates new era of human challenges to make systems work as human beings where entire things controlled by Iot and associated technology.

V. CONCLUSION AND FUTURE WORK

In the future the Internet of things plays vital role and it may do task of HRM also including decision making, initiating change, prediction of company policies and its effects on profit , may be a non-deterministic and open network in which auto-organized or intelligent entities (Web services, SOA components), virtual objects (avatars) will be interoperable and able to act independently (pursuing their own objectives or shared ones) depending on the context, circumstances or environments. Autonomous behavior through the collection and reasoning of context information as well as the objects ability to detect changes in the environment, faults affecting sensors and introduce suitable mitigation measures constitute a major research trend.

Tentatively during years 2027, research and knowledge management wrt HRM may be digitised and every device it may be electrical, mechanical,electronics etc will be interconnected and operated only by computer programs with higher levels of intelligence. To achieve goals like this collaborated contribution required by engineers of several branches with key field of cloud computing, Internet of Things, Big data, Artificial Intelligence, Data Structures, Web computing , TCP/IP, Microcontroller , Thermodynamics, Advanced Algorithms, Multimedia, Embedded Systems, System Softwares. It also requires to develop new devices and released products in market have greater mp acts on business. The scenario of International Business rapidly increases by adopting the industry/company to that level where intelligent machines are produced. There is growth in import and export of such devices, which thereby have to perform tasks faster with quality results.

Fig1:Speakers

Fig2:Smart Thermostat

Fig3: Swing sensor

Fig4: Light Sensor

Fig5: in-vehicle infotainment system

Fig 6: Smart Fridge magnet

Fig7: Smart boiler

Fig8: Slow control

Fig9: Smart tooth brush

Fig10: Parrot pot

Fig11: Food Printer

Fig12: 3D Printer

Fig13 : Wearable Camera

Fig14: Smart watch

REFERENCES

[1] Bedre Heeramani, B.Nagaraj: Volume 2, Issue 4, April 2012 ISSN: 2277 128X,International Journal of Advanced Research in Computer Science and Software Engineering Research Paper:"Research Issues of Interactive Multimedia for Advanced Computing & Communication for Challenging Applications"
[2] Bedre Heeramani, B.Nagaraj: Volume 3, Issue 3, April 2013 ISSN: 2277 128X,International Journal of Advanced Research in Computer Science and Software Engineering Research Paper:"Emerging technological trends of 2012-2013 data flow supercomputer design issues for challenging applications"
[3] Bedre Heeramani , B.Nagaraj,Volume 3, Issue 4, April 2013 ISSN: 2277 128X,International Journal of Advanced Research in Computer Science and Software Engineering Research Paper:" Research Dimensions of Advanced Mobile Computing Technology Security Issues for the ComplexApplications" paper idv3i4-0499
[4] Bedre Heeramani , B.Nagaraj: Volume 3, Issue 6, April 2013 ISSN: 2277 128X,International Journal of Advanced Research in Computer Science and Software Engineering Research," Research of system software tool with innovative technological trends of detailed design in advanced software engineering and quality assurance tools for 2012-2013 applications " paper idv3i6-0382
[5] Bedre Heeramani , B.Nagaraj: Volume 2, Issue 1, may 2013 ISSN: 2320 0804 , International Journal of Engineering associates Research Paper:"Research of Modern Embedded Computer System Challenging Program Techniques for the Global Computer Science & Engineering Applications of Distributed Computing for 2012-2013", IJEA, ijea/13/05/02/13
[6] Bedre Heeramani, B.Nagaraj,paper "challenges of cloud computing" ,GJCSIT,Global Journal of computer science and information technology,volume 2, issue 4, 2015 Aug, ISSN: 2395-5759
[7] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj. Paper : Advanced challenges of nanotechnology based Accounting.Volume, Issue8 IJATES-INTERNATIONAL Aug2016
[8] Bedre Heeramani, B.Nagaraj, "Research of New Non Iterative Fastest Neural Network Algorithm" International Journal of Innovative Research in Science , Engineering & Technology.IJIRSET 4 (9), 9051-9057, 2015September,volume 4, Issue 9, ISSN:2319-8753
[9] Er.Bedre Heeramani, Er.Nagaraj B," Challenges of Network security", International Journal of innovative research in Science and Engineering, volume2, Issue 8, 2016 Aug, IJIRSE,ISSN 2454-9665

[10] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "Technology based commercial business impacts on environment and research issues for advancements in computerised trading 2016:2017", IJATES, Volume 4, Issue 9, sept2016,International Journal of Advanced Technology in engineering and science.ISSN 2348-7550
[11] Er.Bedre Heeramani, Er.Nagaraj B, Fourth international conference on recent trends in engineering, science & management, 2016August, "challenges of network security",ICRTESM-16, GOA,Panjim, ISSN-973-93-86171-01-6

[12] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj,"Advanced challenges of nanotechnology based Accounting",ICRISMET-2016, August,ISBN:978-93-86171-04-07. International Conference on Recent Innovations in Sciences, Management education and Technology, JCD memorial college Sirsa, Haryana
[13] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "INTELLIGENT ROBOT SOFTWARE RESEARCH ISSUES FOR MODERN BANKING MANAGEMENT" Second. International. conference on"Latest innovations in science, Engineering and Management" Goa
[14] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "INTELLIGENT ROBOT SOFTWARE RESEARCH ISSUES FOR MODERN BANKING MANAGEMENT" , IJATES,Volume 4, Issue 10.
[15] Mr.Krishna Murthy M.S , Er.Bedre Heeramani, Er.Bedre Nagaraj, " Current trends in mobile banking research issues", International Journal for Research in Business Management, Volume 2, Issue 11, November 2016, ISSN-2455-6114

[16] Mr.Krishna Murthy M.S,Er.Bedre Heeramani, Er.Bedre Nagaraj," RESEARCH OF BUSINESS ENTERPRUENERAL POLICIES FOR POWER OF COMPUTER SCIENCE AND ENGINEERING IN 2025 ", paper id 3674, Volume 3, Issue 1, 2017,IJARIIE, www.ijariie.com
[17] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "RESEARCH OF SMART BUSINESS MARKETINGTECHNIQUES BY INTERNET OF THINGS FOR GLOBAL TRADING IN 2017" , INTERNATIONAL JOURNAL OF SCIENCE TECHNOLOGY & MANAGEMENT, IJSTM, Volume 5, Issue 12, Dec 2016, ISSN(O)2394-1537, www.ijstm.com
[18] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "Technological Innnovative Research in the era of Advanced Computer Software Applications for Controlling the Electronic Devices with revolutionary opportunities in International Business during 2020", International Journal of Innovative Research in Computer and Communication Engineering, IJIRCCE, VOLUME 4, ISSUE 11 , November 2016
[19] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "RESEARCH OF SMART BUSINESS MARKETING TECHNIQUES BY INTERNET OF THINGS FOR GLOBAL TRADING IN 2017" , 3rd International Conference on Recent Innovations in Science, Technology, Management and Environment , ICRISTME-16, , IFUNA, Indian Federation of United Nations Associations, New Delhi, Dec 2016
[20] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "INFORMATION TECHNOLOGY MANAGEMENT CHALLENGES IN AUDIT CONTROL" , IJARIIE, ISSN(O)-2395-4396, VOLUME 2, ISSUE 6, December 2016
[21] Mr.Krishna Murthy M.S , Er.Bedre Heeramani, Er.Bedre Nagaraj, "Technology based commercial business impacts on environment and research issues for advancements in computerised trading 2016:2017", ICRTSTM-16, 2016, ISBN:978-93-86171-05-04.
[22] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "web commerce based online multimedia examination system", ijirmf, ISSN-2455-0620,Volume 3, Issue 1

[23] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "Challenges of Share Market and Software Business", 9th International Conference on Recent Innovations in Science, Engineering and Management (RISEM-17) ISBN:978-93-86171-22-1, Dhruva Institute of Engineering & Technology, Nalgonda, Telangana State(India), pages 348-353.
[24] Mr.Krishna Murthy M.S, Er.Bedre Heeramani, Er.Bedre Nagaraj, "Challenges of Share Market and Software Business", International Journal of Science Technology and Management, IJSTM, ISSN(O) 2394-1537, Volume 6, Issue 01, pages 968-973, Jan 2017,International Conference on Recent Innovations in Science, Engineering and Management(RISEM-17) ISBN:978-93-86171-22-1, Dhruva Institute of Engineering & Technology, Nalgonda, Telangana State(India), pages 348-353.
[25] "brown goods". Collins English Dictionary. Retrieved 5 December 2014.
[26] McDermott, Catherine (30 October 2007). Design: The Key Concepts. Routledge. p. 234. ISBN 9781134361809. Retrieved 5 December 2014.
[27] CEA: Industry Sales Data
[28] Wigmore, I. (June 2014). "Internet of Things (IoT)". TechTarget.
[29] "Internet of Things (IoT)". gatewaytechnolabs.com.
[30] Alippi, C. (2014). Intelligence for Embedded Systems. Springer Verlag. ISBN 978-3-319-05278-6.
[31] http://www.oregonlive.com/window-shop/index.ssf/2015/01/6_new_gadgets_that_anticipate.html#0
[32] O'Sullivan, Arthur; Sheffrin, Steven M. (2003). Economics: Principles in Action. Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 29. ISBN 0-13-063085-3.
[33] Johnason, P. (2009). HRM in changing organizational contexts. In D. G. Collings & G. Wood (Eds.), Human resource management: A critical approach (pp. 19-37). London: Routledge.
[34] Collings, D. G., & Wood, G. (2009). Human resource management: A critical approach. In D. G. Collings & G. Wood (Eds.), Human

resource management: A critical approach (pp. 1-16). London: Routledge.
[35] Paauwe, J., & Boon, C. (2009). Strategic HRM: A critical review. In D. G. Collings, G. Wood (Eds.) & M.A. reid , Human resource management: A critical approach (pp. 38-54). London: Routledge.
[36] Klerck, G. (2009). "Industrial relations and human resource management". In D. G. Collings & G. Wood (Eds.), Human resource management: A critical approach (pp. 238-259). London: Routledge.
[37] http://www.whatishumanresource.com/Human-Resource-Management-functions

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