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Employee Training and Development in the Age of Automation

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ABSTRACT

In the rapidly evolving landscape of automation and artificial intelligence (AI), organizations face unprecedented challenges in adapting their workforce to meet the demands of new technologies. This paper explores the impact of automation on various industries, emphasizing the critical role of continuous learning and development in maintaining a competitive workforce. It examines the shifting skillsets required by automation, the need for effective training strategies, and the importance of evaluating training program effectiveness. The paper argues that to remain relevant in the age of automation, organizations must adopt a holistic approach to employee development, focusing on upskilling, adaptability, and lifelong learning.

Keywords: Employee Training, Automation, Artificial Intelligence (AI), Continuous Learning, Workforce Development.

INTRODUCTION

Advancements in technology continue to reshape workplace dynamics, fueling critical discussions about the effects of automation and artificial intelligence (AI) on the workforce. These innovative applications of technology may augment or displace many roles. However, should that happen, does the workforce possess the requisite skills for acceptance? Such questions are not currently confirmed within the finance services assessment industry, the education assessment industry, or any industry seeking to harness the power of automation and AI. As powerful and exciting as automation and AI are, they are also profound, existential threats. Automation and AI are advancing quickly, potentially outpacing our ability to adapt to a changing world [1, 2]. Organizations already experience pressures to adapt workplace structures due to the effects of automation and AI. Currently, these pressures focus on particular roles, tasks, and skillsets vulnerable to the early phases of application. For instance, research on finance services reveals questions on what qualitative skills would be important to advancing decision-making automation and AI application instead of focusing solely on quantitative skills. Different types of organizations within the education assessment industry may not yet consider the necessity of workforce adaptation, the skills needed should technologies advance, or how to proceed in developing such skills. To successfully embrace the workplace changes wrought by automation and AI, all organizations must understand the coming workforce skill demands and the challenges in providing this skill education [3]. Recent advances in the scientific understanding of human cognition may enable the development of technology to monitor individual skill levels within increasingly complex probabilistic cognitive skill domains. Such understanding will cast doubt on conventional notions of workforce education. Defining and adjusting to workplace skills would likely be an ad hoc endeavor, increasingly involving attempts to train the workforce to match controls. Alongside different questions, recent education on factors influencing acceptance within the workforce may render fundamental behavioral and philosophical questions on human nature and what it means to be human [4].

THE IMPACT OF AUTOMATION ON THE WORKFORCE

The entry of automated systems and machines into the workplace has great implications and effect on how work is done. Work once done by people is now increasingly becoming the responsibility of

machines. Whole factories are being put in the hands of machines who require little human help. This has brought about great changes and challenges and many more are to come. As new and complex technology arrives there needs to be changes in the skills expected for people in the workforce. As work changes, the skills needed for the work to be done change also. Workers must now adapt to the work machine systems can do. More responsibility has shifted towards humans to be accountable for the decisions made in work. There is also a need for a different kind of thinking for the work being performed by machines. Typically, these skills are abstract thought, creativity, and social interaction [5]. The importance of training and development is paramount to this new environment. Education systems, once equipped for the old jobs, must now be transformed to create people who are ready to fill the future job requirements. Large lifestyle and behavioral changes must also be considered if people are to successfully transition to modern jobs. These groups and their roles in this environment must be identified to ensure that all parties participate and aid the transition. There are five groups that will play a part in the transition: Government, Corporations and Businesses, Individuals, Educators, Families and Parents. Each group has different roles and responsibilities to meet in training and developing their individuals to help ensure the growth of a new workforce [6].

TECHNOLOGICAL ADVANCEMENTS

Technological progress has been the catalyst behind the increases in living standards across time. One aspect of technological progress is automation. Automation has significant effects on the labor force. From World War II until now, routine tasks have largely been automated. It is imperative to continually educate society to match skills with the level of technology. In the long term, it is theoretically possible to automate all of human labor. Humans' ability to see, calculate, think, and respond is what makes them able to perform many tasks better than anything else. Such advancement is changing the structure of human labor. Improvements in technology drive the increase in living standards in a society. The United States is currently the world leader in technological advancement as a consequence of an extensive patent system that correctly rewards those who create valuable products. These innovations make work less taxing, living conditions more comfortable, and health care more extensive [7]. Additionally, occupations have rarely disappeared because humans find ways to create new jobs. The textile industry was the first to be mechanized during the Industrial Revolution. Mechanization completely reshaped this industry: production was expanded enormously, yet it decreased employment and lowered wages. Computers have replaced humans in various job positions. During the late 1990s, significant growth in professional, technical and managerial occupations occurred, while blue-collar jobs declined. However, the shift from human to computerized job roles was never as dramatic as the replacement of blue-collar positions with mechanization [8].

SKILLS IN DEMAND

Complementing the exploration of technological advancements, skills in demand are zoned in as the focus of this report. Skills in demand refer to behavioural and cognitive attributes—abilities or competencies that are increasingly sought as employees or workers in the age of automation. Whether low- or high-wage, full-time or part-time, IT occupations have been linked to an increase in demand for cognitive and noncognitive abilities, particularly noncognitive skills, and the political-economic context within which the advancement of 21st-century skills resonates. Although no agreements on what constitutes 21st-century skills exist, policies promoting these skills exist in most countries and have been put in place, to varying degrees. In terms of structure, technology is speculated to have a differential impact on labour depending on pre-existing skill levels; in turn, this influence on wage inequality can be used to devise policy strategies tailored to mitigate this inequality. Also, crucial in understanding how the labour force is affected by present and future technological change is how these forces shape job susceptibility to computerization [9]. The influence of technological advancements on the labour market seems to be multi-faceted, but overall, there is consensus that labour will need to be retrained and reskilled to keep up with the automation of routine tasks. Concerns surrounding technological unemployment date back to the early days of industrialization and the advent of mechanization, but the discourse has recently gained momentum after researchers highlighted how the capabilities of emerging technologies, including AI, are slowly beginning to encroach upon the work traditionally thought to be the domain of knowledge workers. Online labour markets are becoming increasingly important as an alternative hiring and employment channel. Despite their infancy in international competitiveness, many firms have adopted online labour markets as an alternative hiring strategy for workers from countries with lower wages and lesser employment protection. Research on online labour markets is varied, covering issues such as the extent of global gig economy growth, the effects on wages and job competitiveness in traditional

occupational contexts, and the platforms adopted by MNCs with already-established employment channels [6].

THE NEED FOR CONTINUOUS LEARNING

The world of work is changing—accelerating change is a constant in the workplace. Individuals entering the workforce today will experience many shifts in occupational conditions over their working lives, some of which will be unforeseen. Their capacities to respond positively to these changes are paramount to becoming and remaining employable. Workers’ abilities to develop new skills, capacities and qualities in the wake of constant change are intended in this paper to be viewed as core for going to work, and maintaining work, into the future. Such a perspective frames a view of learning that is wider than formal education and training and more encompassing than training alone. Within such a view, pathways into, and through, work depend upon peoples’ agency and capacity to learn on the job. This demands that workplaces be recognised as sites of wider learning, in addition to being venues for informal, incidental and non-instructional learning. Besides work task complexity and variability, resources for learning such as support from employers and co-workers, encouragement to engage in learning opportunities and time to learn, influence peoples’ standard and outcomes of learning. Workplaces need to value and build on their pivotal role in learning across peoples’ working lives, and invest in the longer-term skill base and employability of the workforce. The partnership for learning in workplaces frames a contribution to skill formation policy and practice [10]. The nature of work and prevailing economic conditions in the workplace have changed markedly over the last two decades. Far too often in the media there is reference to “down-sizing”, “rightsizing”, or “logicalisation” in the context of restructuring firms. Design and implementation of competitive strategies in a rapidly changing business environment are forcing choices in one or more of these areas of concern. In addition, advanced information systems and technology have emerged that allow workplace productivity improvements to be realised. Modalities of work task organisation and design have changed with a move away from mass production to lean production in some industrial sectors and to a focus on product or work teams in others. Central to these changes has been a need for a more broadly educated, highly skilled, multi-skilled and flexible workforce. Tied to this has been a widespread support for lifelong learning education and training and the establishment of new governance arrangements for the administration and delivery of vocational education and training (VET) and higher education [11].

ADAPTING TO CHANGE

Within the context of continuous learning, there is an additional dimension to be considered regarding the approach employees may take in responding to change. While environments of continuous learning may provide individuals with motivation to “upskill,” (i.e., actively learn the necessary skills to adapt to the changing environment), it is equally important to consider the approach individuals take in acquiring new skills. These approaches may determine the extent to which individuals successfully adapt to change and the outcomes of the developmental processes. Individuals who demonstrate agility and flexibility in acquiring the skills necessary to adapt to the changing environment are better equipped to thrive despite uncertainties, new challenges, and rapid changes to their work processes [12]. The extent to which programs may encourage ongoing re-training and upskilling post completion of formal training may strongly align with the socio-economic context in which they operate. Workforce dynamics are increasingly making it relevant for workers to adapt to constant change well beyond initial training. For employees, this may mean actively seeking to acquire the new skills necessary to be effective in their new role or work processes. In order to thrive in environments characterized by ongoing change, this initial upskilling process would have to be accompanied by a pro-active approach to learning new skills continuously. The development of this approach recognizes a deeper consideration of the learning processes triggered by the automation process [13].

EFFECTIVE TRAINING STRATEGIES

The notion that all employees have an identical style of learning is a fallacy. For effective training, trainers should take into consideration the diverse learning styles of the trainees. Addressing these varying learning styles will enhance the training experience and ultimately result in better retention. Organizations can employ blended learning approaches that integrate instructor-led training with eLearning courses to enable rescinding to developmental needs. Two promising technologies are social media and mobile devices. Using social media for training can provide a medium for social learning where employees can develop knowledge, skills, and abilities through the exchange of information socially. To achieve diverse employee engagement, organizations can employ a blended learning approach in which face-to-face classes can be complemented with online courses which employees in different time-zones can attend. Highly impactful training can take the form of virtual development workshops led by subject

matter experts where both novice and senior employees can learn and provide insights into industry developments and trends through questions and discussions prompted by the expert [14].

BLENDED LEARNING APPROACHES

There was a renewed interest in face-to-face training after the great success of distance training using an electronic system. Centralized control of cost, transparency in realization, and a higher degree of flexibility seem to be the greatest benefits of e-learning. Over time there was an intrinsic merging of automated, audio, and video technical systems allowing face-to-face training to be continued at a distance applied telephone systems, fax systems, and e-mail exchange. The first TELE training was in 1984 deployed in Germany with a intensive phone contact with 350 polytechnics in the area of metal cutting technology for engineering training. Today this concept is being observed and adapted all over the world [15]. Blended learning, integrating traditional classroom with online education, is gaining popularity in the decade since its introduction in 2000. This interest can be attributed to high ROI with blended learning despite its high development costs, improved learning outcomes in comparison to classroom-only or online-only courses, and adaptability, flexibility and fit with diverse learners. However, though the blended learning concept is gaining popularity, there is a very limited understanding of its meaning. Some literature is focused on the practical implications of blended learning, while others concentrate on theoretical definitions. Definitions vary from more specific ones related to technology use, pedagogy, to more general ones that ignore the terms traditional and technology. The most common understanding of blended learning among practitioners involves the use of both traditional classroom and on-line education. This is a very difficult question that one must answer before deploying an approach or model in practice. Since the blended pedagogical approaches were hardly mentioned in the literature, based on the author's experience and literature it could be suggested that depending on the degree of centeredness, blended pedagogical approaches can be classified as teacher-centered, learner-centered, and competent-centered [16].

MEASURING THE EFFECTIVENESS OF TRAINING PROGRAMS

Employee training and development initiatives need to be evaluated, assessed and measured for their effectiveness in meeting organization objectives and individual developmental needs. Evaluation measurement and assessment of programs is essentially about processes that can be followed to gauge the impact of training initiatives. These processes include needs analysis, data collection strategies, requirements for program design, and plans for keeping training current. Evaluation mechanisms can be quite simple and straight-forward, or they can be quite complex and highly sophisticated depending upon the stipulations of various stakeholder's concerns, how detailed the measurement is expected to be, and how it fits into the overall way in which employee, training and development, or performance improvement is viewed within the firm. As training has evolved into an increasingly important corporate strategy, the concerns regarding the accountability of training have grown proportionately. Describing and designing processes for evaluating training initiatives in a systematic and robust manner has become critical to the development and perpetuation of effective training organizations [17]. A systems approach has been developed to describing the nature and function of evaluation within the context of an organization's training and development initiatives. It provides a roadmap, a cohort, a recognizable path for building programs. It addresses the questions of who, what, when, where, and why concerning evaluation needs and methodologies. The approach does not dictate procedures for carrying out training and development evaluations. Rather, it is a framework for understanding evaluation, and developing internal capabilities for improving training and development efficiency and effectiveness. It focuses attention on the organization's environment, culture, and context within which evaluation needs and interventions should be interpreted [18, 19].

CONCLUSION

As automation and AI continue to redefine the workplace, the imperative for organizations to invest in robust employee training and development programs becomes increasingly urgent. The success of these programs hinges on a comprehensive understanding of the evolving skills landscape, the implementation of adaptive and personalized training methods, and the continuous evaluation of training outcomes. By fostering a culture of lifelong learning and adaptability, organizations can ensure that their workforce remains competitive and resilient in the face of technological advancements. Ultimately, the ability to effectively train and develop employees will determine the long-term success of organizations in the age of automation.

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