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Review Article

Comprehensive Review of the Impact of Advanced Technology Adoption on Work and Continuous Improvement

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Abstract

Technology advances are changing how companies and their employees do their respective jobs. The intervention of technology has revolutionized the way jobs are conceptualized, discussed, performed, and delivered. This analysis aims to deliver a summary of the impact of the adoption of advanced technology on job characteristics and the impact on job demand and continuous improvement, which can act as a reference for theorists and practitioners to map, research, and analyze the effect of technology on work systems and productivity. By presenting a systematic review of the literature along with several avenues for future research, we hope that this research will contribute to job demand and ongoing research. A total of 30 articles were reviewed from a total generated article database of 335, which were systematically selected from different academic databases between 2001 and 2021. The review signifies the role of technology in influencing work complexities, privacy, workload, workflow interruptions, manual work, role expectations, and developmental opportunities. This study is pivotal in substantiating the influence of technology in work systems, besides furnishing variables and themes for further studies in the area.

Keywords: Advanced Technology; Adoption; Work; Continuous Improvement.

1. Introduction

Continuous professional development necessitates knowledge of how the techniques of work impact and should be investigated with a theoretical lens [1–4], especially in the context of innovative and revolutionizing developments in organizational and vocational contexts [2]. Research into workplace technology, i.e., the usage of a device or system that can transform or enhance work tasks, usually focuses on one of the two themes of investigation: First, economic and sociological studies often raise concerns about large-scale technological unemployment and social inequality due to technological advances. Second, management literature raises concerns about the feasibility of the current organizational framework in light of the so-called Fourth Industrial Revolution [5]. Most of these academic publications speculate about the tremendous benefits of modern technology, resulting in a large influx of position papers.

Technology has influenced almost all aspects of human work systems; wherein investigations are aiming to understand the psychological and behavioural dimensions of these associations. The most recent investigations have focused on the effect of technology on employee well-being [6, 7], which mandates the need for structures and research models to systematically align their influences on each other. Moreover, with the advent of new advancements, the

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human pace of work is critiqued, which furthers the preposition of high-tech systems to support fundamental technologies [8, 9]. Though their alignment is still under scrutiny; thus, a need for sequential mapping of these systems is to be configured, which acts as an interface for research connections.

Though the studies have been consistent in investigating the effect of technological advancements on work systems, they have been inconsistent in mapping the specific antecedents of those technologies that drive the work protocols. Similarly, there has been no granular framework that defines their association with work systems; and variables that can picture the research model for the theorist and practitioner communities. Furthermore, it is unclear how distinct and novel technologies such as Artificial Intelligence, Automated systems, and robots will affect specific occupations [10]. Thus, it can be stated that technological advances are changing job demands by analyzing what workplace technology actually 'does' in the workplace [11, 12]. These advances can be attributed to the improvements in technology that allow us to replace various processes or entire jobs, freeing up our time for other tasks. A job is characterized by the tasks it must perform and the settings it must accommodate. It then specifies the skill or estimated ability required to perform the task [13]. As a result, professional training must aim for and inform employees about the advances that technology brings to work activities and the resulting work characteristics; only then will professional training be able to determine the necessary competencies of employees and create learning settings that facilitate their acquisition. These findings can be utilized to evaluate the impact of content, didactics, trainer conduct, evaluation, and resources in professional academic settings [14].

This comprehensive study aims to understand the impact of new technological advancements on performance in deriving basic job requirements and the development of formal learning environments in vocational training. The review offers a granularity of concepts, variables, and research models that will guide future studies on technology and work systems. This testable model is subject to validation owing to the ephemeral nature of IT and technology systems, especially in the context of work processes. Literature exhibits patterns of investigations into some of the traditional and general technology systems and their effects on work, like AI, digitization, and others. But there still lies a need to investigate their specific association with evolving and breakthrough technology. This lack of specific studies leaves a vacuum in the literature for the theory to progress. One of the significant reasons for the lack of such studies could be the dearth of relevant reviews, which can act as a ready reference for both theorists and practitioners. So, the current study attempts to address this gap by cumulating follow-up research questions that could be addressed, i.e., *How does advanced technology affect business performance? and What does this contribute to continuous improvement*?

Here is an overview of the recent technological advances, which further describes the systematic review process through the study review plan and methodology and presents the findings based on the classification structure. What follows is a discussion of the impact of new technologies on performance. Finally, the limitations and directions of future research are presented.

2. Recent Technological Developments

Research investigations rarely focus on the exact concept of technology, probably because of the underlying assumption that technical nomenclatures and terms are ambiguous [15] and conflicting interpretations of those terms [16] are overlapping. Research on studying technologies and their impact on work protocols aid in providing a clear vision, besides focusing on the pivotal objective of how workplace skills preserve and improve work processes in the form of accomplishing tasks. These tasks are technically described as components that produce the results of work activities [17]. Contextually, technology can be described as any digital or mechanical equipment, tool, or system that can replace or complement job performance [11, 16] and can act as a utility [16]. In contrast, technology can be viewed as the product of the historical context of time and place or the latest instrumental product of human intelligence, representing stages of development within a predetermined chronological process called industrialization [16].

McOmber (1999), expresses the characteristics of rapid replacement of predecessors and aging. The term instrumentality is especially appropriate for this study, given that the emphasis is on the individual impact of technology and its application to work. As a result, the technology must be precisely identified, like robots rather than digital transformation, and articulated in how the worker is challenged at work. Various viewpoints on the significance of technology in the workplace may be reflected in various notions. Cultural attitudes and opinions on organizational design and work relations are included in these archetypal viewpoints [18]. The contrast is in how complicated the social backdrop is thought to be in measuring the effects of technology on society. The influence may be ascertained by technology on its own, like technological determinism defined as strong relationships, like political interest, technology management, and perhaps the engagement between technology and its social relevance, like interpretive technology [18]. The subsequent study provided a more complicated approach, whereby the impacts of technology on companies are influenced by the actors' relationships, like socio-materiality [19]. The study's substance, goal, and aims may be guided by paradigm perspectives, which will influence the methodology and orientation of the study and may be discipline-specific.

New technological advances are widely discussed in various fields; illustratively, Ghobakhloo (2018) summarizes the anticipated use of technical ideas within the smart factories of manufacturers. The Internet of Things (IoT) is a term used to describe the autonomous communication of physical objects [20]. Big data is analyzing large amounts of data to predict the outcome of operational, management, and strategic actions [2] in an autonomous, transparent, secure, and trustworthy way. A human or machine that can blockchain is the foundation of transactions [21], and cloud computing is an internet-based dynamic architecture that handles all these processes simultaneously [21–23]. The main question leading to the next part is whether not only new technologies but established technologies such as information and communication technology (ICT) are constantly being augmented with new skills and to what extent they theoretically affect job characteristics. So, with the underlying nuances of the technology-embeddedness of jobs and its influences on human performances and interactions with jobs, this is a question under investigation.

3. Research Methodology

Systematic reviews identify, assess, and interpret all available research related to the phenomenon of interest, or a particular research topic [24]. It is also defined as a methodology that summarizes the process of collecting, organizing, and evaluating existing literature in the review area [25, 26]. A systematic review was appropriate, given the purpose of the study to identify research gaps in the current study and make suggestions for future research [27–29]. It is believed to contribute significantly to understanding research areas, identifying gaps, and proposing future research themes [30]. Systematic reviews can take many forms, including domain-based theory, method-based reviews, and theory-based reviews.

Meanwhile, Paul & Criado (2020) categorized systematic reviews into various sub-forms of domain-based reviews [31]. Structured topic-based reviews, framework-based reviews, bibliographic reviews, hybrid reviews, conceptual reviews, and more. Systematic reviews are increasingly important in all areas, especially IT and administration [32], owing to the technical embeddedness and cognitive sequencing required to portray the literature. IT professionals and managers read them to get the latest information in their respective domains, and they are often used as a starting point for developing IT practice guidelines [33]. This systematic overview is based on the structural process proposed by Watson (2015), which explicitly defines the search procedure and process [34]. The steps in these search processes include planning, execution, and reporting. For IT consultants and management professionals, it can be a daunting task to check relevant articles on evidence-based practices, as numerous publications on IT and management are constantly updated [35], especially with the ephemeral progress of technologies and their obsolescence in the area. Moreover, when IT consultants and management experts make decisions, they need to base their understanding and technology development on a congregation of investigations, as references to a few studies may elicit prejudices, making their understandings and results inconclusive [36]. In both practical and theoretical work, IT consultants and management experts must rely on strong evidence to inform practice. According to Evans (2003), a systematic review is one of the preeminent approaches that aid evidence-based IT and management practice [37]. Cecez-Kecmanovic & Boell (2015) argue that a systematic review is efficient by strictly adhering to predefined protocols and specific search processes [38]. Watson recognizes the importance of efficiency in research but argues that effectiveness is also important. He states that effectiveness is attained by *synthesizing the literature and revealing the depth of knowledge on an area's critical key concepts and the relationships between these concepts* [34].

Applying systematic review guidelines is significant for researchers using a systematic review approach [24], as they are evinced to be highly efficient when their sequences use a protocol for identifying, selecting, and evaluating relevant literature [39]. Systematic processes should be unbiased, objective, transparent, reproducible, and rigorous [38]. Thus, the systematic review approach chosen for this article includes strategies and rules proposed by Kitchenham (2007) [24] and Ali et al. [21–23], wherein it is three-phased, as proposed by Watson (2015) [34], Kitchenham (2007) [24], and Ali et al. [21-23] Several collective rules and guidelines were applied to the distinct steps of this systematic review, as suggested by Ali et al. [21–23]. The rules and guidelines applied during the planning phase include identifying systematic review needs, defining a classification framework, defining research questions, and defining research strategies. In execution steps, this study used keyword searches, applying filters, reading titles and abstracts, reading entire articles, reverse snowballing, and quality ratings. In the reporting step, this research included the classification of the selected articles and the discussion of the results. The steps, rules, and guidelines that are applied for this systematic review are described in Figure 1.

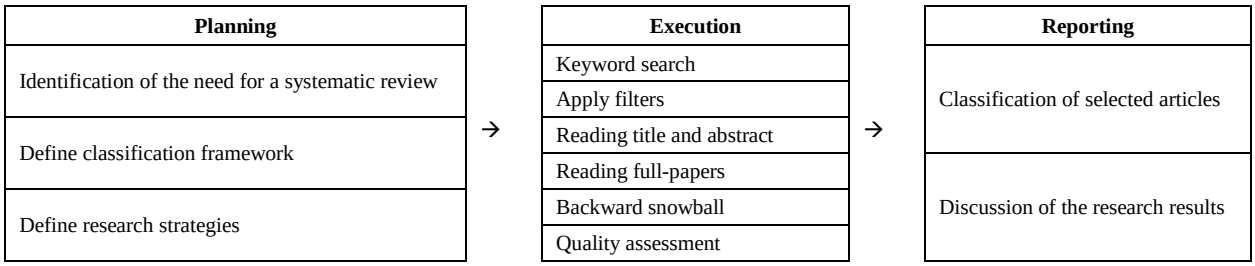

Figure 1. Systematic Review Stages

3.1. Planning Stage

The initial planning phase characterized the identification of systematic review needs, which stems from the necessity for researchers to thoroughly and impartially summarize all available information about the phenomenon. This summarization shall dwell, despite the presence of dynamic research into how the adoption of advanced technology impacts work and continuous improvement, as outlined in the previous section. The current review provides an overview of the findings and explains an in-depth analysis of the existing research and the documented practice on this theme of review.

The second planning phase consists of developing a research reporting protocol that is foundational for understanding current theoretical and practical perspectives on this topic. In the current review, the test protocols pre-specify the methods used to conduct specific systematic reviews, as these pre-defined protocols reduce the potential for researcher bias, making the review more wholesome and substantial. For example, in the absence of a protocol, individual study or analysis choices may be dictated by investigator expectations. The initial classification framework was authored by Ngai & Wat [40]; they used it to execute a systematic review of the applicable journal articles on how advanced technologies enable different sectors. The current study embraces an adjusted version of the comparative classification framework applied to a social science systematic review proposed by Vilamovska et al. [41]. Ali et al. (2020) [21] have also applied this classification framework to investigate how cloud computing enables the healthcare sector and how blockchain technology enables the finance sector. In this research, the proposed classification framework has been used; to identify how adopting advanced technologies impacts work and continuous improvement. The framework is divided into three different dimensions; specifically underused technology, work characteristics, and work-related aspects. Each of these dimensions is further subdivided into sub-categories, which group several aspects, and this is based on the findings of the review of the selected articles.

The developed classification framework encompasses specific three dimensions, and each dimension is branched into specific categories. This framework encompasses distinct aspects of that specific technological dimension. Each aspect, with its categories and aspects identified, is as follows: (1) Complexity, which is the degree to which extremely diversified and linked jobs, as well as the associated uncertainty, produce a lack of organization and transparency [22, 42, 43]. It involves job intricacy, density, arduousness, and situational awareness. (2) Privacy refers to employees' control over their public image and personal information in the workplace [43]. This includes privacy violations, tracking behaviour, controlling work-related data, and peer monitoring. (3) Workflow interruption is the employee's ability to focus on a single activity while avoiding interruptions [44]. These include the level of interruption, quality of workflow, level of multitasking, and need for ambidexterity. (4) The term workload refers to the amount of work and the speed at which it is completed. These include work overload, demands, speed, and time pressure. (5) Manual labour is the extent to which the workplace is characterized by physical obligations and needs. These include physical labour facilitation, routine content, the magnitude of physical labour, and physical demands. (6) Role expectations are how well a job fits one's own and others' anticipations of the part and its purpose. These include role ambiguity, expansion, connectivity pressures, production responsibilities, and meaningful work content. (7) Development opportunities relate to the extent to which employment provides possibilities for self-improvement and the need for skill and learning growth [44]. These include knowledge acquisition, professional development, ongoing skill requirements, and technical maintenance.

In all, 30 articles that were part of our review covered all seven work characteristics of the classification framework, namely: complexity, privacy, workflow interruptions, workload, manual work, development opportunities, and role expectations. For more details about the steps and processes for the article(s) selection, check the next sections. The research classification framework was developed to review the literature related to the nature of how adopting advanced technologies impacts work and continuous improvement.

Defining a research topic is the third step; in the planning phase, it is considered an important step [26]. Systematic reviews achieve their goals if they can answer research questions [26]. The research questions created for this review study are:

- *What is the impact of the introduction of advanced technology on the characteristics of work?*
- *What does this mean in terms of continuous improvement?*

Defining the item selection strategy is the fourth step of the planning phase. Paper selection strategies help identify primary studies that give direct evidence for the research question. To reduce bias, item selection strategies should be specified during protocol definition but can be refined during acquisition. At the time, a unified search strategy included extensive automated searches in various online databases and manual searches for themed articles [25].

A comprehensive automated search strategy enables the most appropriate integration of online sources [45, 46]. The online databases selected for this systematic review include Emerald, Scopus, EBSCO, and ERIC. In addition, we used the appropriate filtering tools for each selected database to limit the findings [47]. Manual verification employs a wide range of methods, which require reading the title, and abstract/summary of each research article [45]. Then interpret the entire content of the selected article and exclude irrelevant articles [22].

In addition to extensive automated searches and manual reviews, we used the reverse snowball technique to uncover items that previous strategies could not identify. This method used a summary of references to identify new articles [48].

The reverse snowball approach began by analysing reference lists and removing articles that did not meet key research criteria such as language, peer review, year of publication, and type of publication. After that, items that had already been investigated and found were removed from the rundown. The rest of the articles can be included in your research. For more details, see Table 1.

Table 1. Criteria for selection

Criterion	Inclusion	Exclusion	Rationale
Type of publication	Articles about scholarly themes	Written reports and other sources	To ensure that research draws information from academic-level sources/
Peer-reviewed	Peer-reviewed	Non-peer reviewed	To make sure the high quality of the used articles
Publication year	Articles published from 2010 to 2021	Articles that published prior to 2010	To make sure the validity of the content in any article that has been used in this research review. Th pace of technology changes in relatively rapid and tracing back 10 years is an appropriate time period when the authors can observe more solid trends.
Language	English language	Any other languages than English	English is the official language of research articles

3.2. Implementation Stage

During the *implementation phase*, the strategies specified in the previous planning phase were used to select relevant articles for our study. The main techniques applied in our study are explained below:

Identifying the search terms is an ongoing process, which begins with using unique search words from articles recognized in the area of study [26, 49]. The process ends once all the well-known articles are found using the same principles as above. The selected databases in our study are enabled with advanced research features, allowing the combination of relevant search words. In this research study, we identified the following keywords: information systems OR information technology virtual reality OR wireless OR technology OR advanced technology OR digital transformation OR robot OR big data OR cloud computing OR artificially intelligent OR mobile communication OR ICT* AND impact OR influence OR effectiveness OR effect AND work OR job OR workplace OR career OR employment OR internet of things OR blockchain technology OR mobile device OR wearable technology data processing OR social media.

While *searching the online databases*, filtering tools were applied to optimize the research results [33, 50]. In this research, we applied various filters, including the research area (IS and healthcare), year of publication (2001 to 2021), document type (journal articles and conference papers), and language (English). Once the results were attained, *the articles were manually* checked, focusing on the title and abstract, to ensure that they were relevant to the topic of the current study [51, 52]. All the articles obtained from the previous step were thoroughly *analyzed for relevant information* on our research topic [22, 53]. To identify articles that were not attained through the automated research strategy, we used the reverse *snowball technique* [54]. To confirm that all the articles included in our research were of value, we *applied quality assessment* [49]. A checklist was prepared to assess whether to include an article. The checklist questions were adopted from the studies conducted by Ali et al. (2021) [55] and Sadoughi et al. (2020) [52]. It included the following criteria: the discussion on the research objectives is satisfactory; the research problem and questions are clearly stated; the data used is available and well described; the adopted methodology is thoroughly elaborated; and the research results are presented comprehensively and answer the research questions.

This study used quality measures to test whether the key findings were related to the quality of the study. We also investigated whether some of the individual quality factors (sample size, test method, etc.) were related to the study's main outcome. If primarily relevant studies are selected, their quality should be assessed to minimize bias and maximize the effectiveness of systematic reviews. Therefore, the remaining 30 items were evaluated according to quality criteria. We assessed selected studies' scientific rigour, reliability, accuracy, and validity to ensure that the study concepts and methods were followed. We evaluated the results as original, relevant, and useful, focusing on future researchers, experts, and industries. These standards were needed to make a valuable and important contribution to the research community. These selected studies were classified according to their main study purpose, method, contribution, and outcome. This classification allowed us to identify, extract, classify, and synthesize data that answered research questions.

The current review study was conducted from September 18, 2021, to December 16, 2021, according to the research protocol specified during the planning phase. The first search based on the defined keywords identified 335 articles. After applying all the procedures, 30 research articles met the quality evaluation criteria.

3.3. Summarizing Stage

Table 2 shows the final number of articles selected for this review study. Specifically, we found 335 unique articles based on our initial research process (keywords). After applying the filter, the number of articles was reduced to 252. Researchers then performed a manual review to identify items that were not relevant to the study. In doing so, researchers focused on empirical and conceptual articles directly related to the topic of this study. As a result, 83 articles were deleted, leaving 214 articles for further consideration. Then the process of reading the entire article was performed. In

this process, researchers focused on specific criteria such as objectives, research questions, and descriptions of collected articles. Presentation of the data, the methodology used, and the analytical techniques used to analyze the data and ultimately the results. After reading the entire article, 143 more irrelevant articles were removed, leaving 71 articles. The reverse snowball technique was then applied, and that added three more items for 74 items. After reviewing the quality metrics, 44 articles were removed, reducing the number of articles to 30.

Table 2. Review search results

Stage	Action	Results
Process 1: Search the repositories using specific terms	Keywords: • Information systems, • Information technology, • Virtual reality, • Wireless, • Technology, • Advanced technology, • Digital transformation, and others AND • Impact / influence / effectiveness / effect, • Work / job / workplace OR career / employment and others.	335
Process 2: Application of Filtering tools	Criterions: • Year of Publication • Area of study, • Language.	252
Process 3: Exclude articles based on title and abstract	Reading title and abstract: • Review title, • Review abstract.	214
Process 4: Exclude articles based on full-text scanning	Reading full articles: • Review the whole article.	71
Process 5: Reverse Snowball Techniques	Reference list: • Check the reference list of each chosen article.	74
Process 6: Quality Metrics	Theme relevance: • Article Objective, • Research question, • Research Method, • Analytical techniques.	30

3.4. Some Common Attributes of the Selected Item

Distributing articles by year of publication: the earliest publications on how the adoption of advanced technology affects work and the date of continuous improvement since 2001 (see Figure 2). Researchers have observed that the maximum number of articles, i.e., eight, were published in 2014 and 2017. The one with the fewest articles was published in 2001, 2003, 2006, 2019, and 2021. Most of the published articles were published between 2014 and 2017, demonstrating recent interest in this area of research.

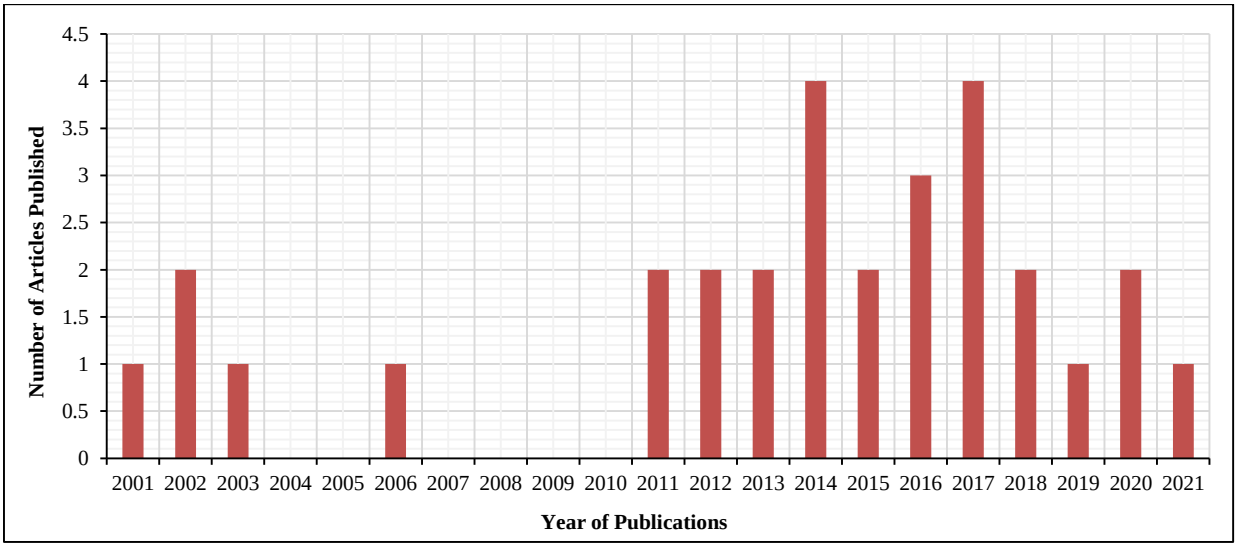

Figure 2. Articles distribution by publication year

Article distribution by the database: Figure 4 shows the distribution of selected articles by database source. We identified 12 articles from the EBSCO database, followed by nine articles from the Scopus database, five from the ERIC database, and four more from the Emerald database. (see Figure 3).

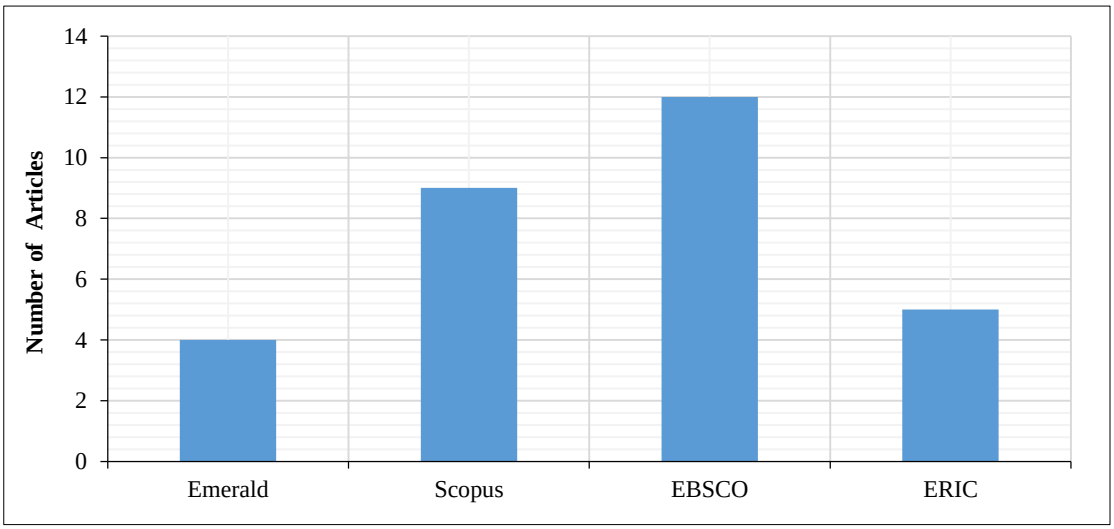

Figure 3. Distribution of articles by database sources

Table 3 shows the complete overview of the studies and results for the relation between work characteristics and technology.

Table 3. Technology and Work Characteristics

Technology	Work Characteristic	Work-Related Aspects	Sources
• Clinical technology • Automated systems • ERP	Complexity	• Job complexity • Situational awareness	[11, 17, 43, 44, 56-59].
• Field technology • Social media	Privacy	• Invasion of privacy • Behaviour tracking • Control over work-related data	[2, 17, 23, 43, 44, 60-62].
• Computer • Automated systems • Tools for digital communication • Robots	Workflow interruptions	• Level of interruptions • Quality of workflow • Level of multitasking • Need for multitasking	[3, 44, 57, 59, 62-66].
• Computer • Letter sorting machine • Social media • Bar-code • Work-extending technologies	Workload	• Work overload • Job demands • Level of job speed • Time pressure	[17, 44, 57, 60, 67-71].
• Automated terminals • Automated systems • Automated dispensing system	Manual work	• Easier physical work • Contents of routine work • Amount of physical task • Physical requirements	[3, 44, 57, 72-75].
• Automated manufacturing technology • Automated dispensing system • Social media • Robots	Role expectations	• Role ambiguity • Role expansion • Connectivity pressure • Production responsibility • Meaningful content of work	[2, 3, 17, 44, 60, 63, 72-78].
• Clinical technology • Automated systems • Tools for digital communication • Robots	Opportunities for development	• Knowledge-acquisition • Professional development • Continuous qualification demands • Stay up-to-date with new technologies	[3, 44, 57, 59, 62, 64-66, 78, 79].

4. Review Discussion

The systematic review across the themed variables hints at the specific narratives of each of those elements in the work processes. Thus, it becomes imperative to discuss each of them in categorical order, with their individual impact. Thus, the results could be discussed under each of the work process titles, as follows:

Complexity

The degree to which there is an absence of institutions and openness as an outcome of highly diversified and interrelated jobs and the accompanying uncertainty is referred to as complexity [21, 43]. Our findings point to a favourable association between IT system utilization and complexity, which has been observed in a series of studies [11, 17]. The inclusion of multiple technologies and the expedited obsolescence of past technologies lead to temporal and cognitive complexities that need to be addressed and bridged through thorough studies and investigations. Reciprocally, further data implies that automated systems have decreased contextual understanding, suggesting an upsurge in complications [21, 43, 57]. Thus, it becomes imperative for the consolidated efforts of theorists and practitioners to reduce complexities and devise ways by which each of these complexities could be ameliorated by systematic efforts and advances.

Privacy

Employee privacy refers to how much influence they have over their public persona and private details at work [43]. Our findings suggest that various IT properties have varied correlations with privacy infringement [17, 43]. It could be noted from the review that privacy is a function of the regulatory framework of the nation, and thus, the studies indicate the need for geographical and temporal investigations. Furthermore, according to certain evaluated research, social media is significantly linked to peer monitoring [2, 23], and field technology is adversely associated with employee data handling [62]. Thus, measures are being taken to institutionalize privacy norms and regulations to ensure the secrecy of classified information. Published literature advances measures to institutionalize privacy; however, advances have to be made using emerging and breakthrough technologies to ensure data security.

Workflow Interruptions

Workers' ability to concentrate on a primary job and prevent distractions is measured by workflow interruptions [44]. The findings of our study show a link between computer work and rising degrees of interruptions and a growing preference for multitasking [62]. Other research reveals that IT employment is linked to a higher number of interruptions on one side and workflow facilitation on the other [63]. Additional data shows that workplace robots improve workflow assistance [44], and automated machines appear to enhance the amount of multitasking needed in aggregate [44, 57]. The incessant discovery of work processes and technology has made evident the need for investigations that are more generalized and, concurrently, specific to the technologies that they work with. This has been stressed in more than one study, which focuses on future studies on breakthrough technologies. With literature on both sides of the story, wherein technology facilitates and also retards workflow interruptions, there has to be steady literature using standardized methods and tools to sufficiently substantiate this area of research and subsequently eliminate ambiguity in this area of investigation.

Workload

The term workload refers to the amount of work and the rate at which it is completed [44]. Our findings show a substantial favourable connection between computer work [69], as well as IT utilization and workload [17]. Since some IT elements have different impacts on workload, the connections are not predictable. Perceptions of a growing workload are significantly associated with IT attributes like the pace of change. Additional data suggest favourable links between workload constraints and time in the matter of computer-related work [70], working in an automated machine [60], and social media utilization suggest that different technologies and workloads are linked. Parallel results have been documented for ICT use [69], automated systems [57, 80], and clinical technologies [44]. Though investigations have hinted at the need for workload studies, there have to be detailed investigations pertaining to specific technologies, and that is too contextual, which highlights distinct operational verticals and work processes. Moreover, the norms of workload are mostly governed by the law of the land. Future studies should aim for the use of sophisticated tools and techniques that make an incremental contribution to the regulatory framework of the country, aid uniform workload norms across continents, and besides ensure a lack of fatigue.

Manual Work

The level at which physical tasks and objectives characterize the workplace is manual work [44]. When dealing with automated machines [57, 60] and robots, our findings show a reduction in the proportion of physically challenging activities [57, 72, 73]. There is substantiation of an upsurge in manual work for technical positions where automated systems are employed in one of the studies analyzed [3, 74]. Though technology has signified the reduction of manual work, the investigations are still indicative of the mental fatigue that is created with the adoption of new technologies [71], which can be ameliorated with future empirical investigations. On the one hand, the advent of breakthrough technologies like blockchain, robotics, cloud computing, and others has reduced manual labour, and on the other end, it has also escalated supportive manual labour. Thus, investigations could delve into clustering the nature of jobs, which, in linkage with technology, has led to an increase in manual labour. This shall aid organizations in making a systematic blend of these two clusters of work improvements and cherry-picking those relevant to their domains of work.

Role Expectations

The degree to which the work meets one's and others' standards for the role and its value is referred to as role expectation [44]. Our findings show that, based on the precise qualities of the technology, IT utilization is irregularly connected to role ambivalence [17]. Furthermore, our findings indicate that IT usage raises standards for accessibility and connectedness [2, 63] and that social media reduces networking load. Furthermore, our findings indicate that IT systems reduce relevant job substance and role expansion [3, 72], which can pave the way for future studies that can triangulate factors like role clarity, role enrichment, and role ambivalence being affected by technology and information technology systems. This could be an important crucible of role improvement; so, mapping roles with their respective expectations can be a fertile way of standardizing norms. References could be made here to Role-Balance Theory (RBT) and Performance-environment Fit Theory (PEFT), for aligned research prepositions and processes.

Development Opportunities

The level at which work provides possibilities and opportunities for self-improvement and demand for growth in skills and learning is called development opportunity [44]. Our results show the use of IT [57] and the operation of automated machines [59, 62, 79] increase the need for continuous learning. Some studies suggest that the impact of automation engines and learning opportunities depends on changing work responsibilities regarding system support and system structure [3]. While some studies indicate the relevance of IT systems to work processes, others also hint at the health challenges that can curtail work efficiency, productivity, and hence developmental opportunities, which could be deciphered with systematic research initiatives. Future studies can articulate the effect of learning (virtual and in-person) opportunities on the phenomenon of work improvement concerning technology and its adoption in organizations.

Impact of New Technologies on Job Characteristics

Robotization of work and continuous automation add complexity, for example, by automating the process of hiding some operations from workers. When tasks are automated, additional cognitive tasks are prioritized, such as fixing problems and monitoring machine operations [68]. The relationship between work and technology determines the magnitude and depth of manual labour (supported or not). The pervasiveness of technology increases workload and workflow disruption as the pace of tasks increases, resulting in time and workload constraints. High levels of autonomy seem to be connected with high workloads and more workflow interruptions [16], which is especially true when dealing with domain-specific IT and field technologies.

Our review is indicative of the relationship between work and technology in employment, which determines role expectations and prospects for advancement (supporting vs. being supported), which is in sync with the earlier studies [36, 81]. Though the necessity of being accessible or linked via digital devices, as well as a new distribution of tasks between personnel and technology, is frequently documented in research studies and surveys, our study coagulates those studies with distinct technologies and proposes that the effect on those connectivities is significant and synchronized. Employees require techniques to handle the increased workload, autonomy, and complexity in the workplace. Analytical and self-regulatory skills are among the skills needed for these techniques to prevail and excel in work. Furthermore, possibilities for role expansion and learning must be established (pro)actively by personnel, as they do not appear to follow naturally from the deployment and usage of new technologies. Employees must take increased ownership of their professional development and identity. They can cope with high workloads and interruptions, increased adaptability and complexity [56], the desire for constant availability, changing meanings of work [6, 82], changing job roles, and the need to develop and leverage learning perspectives.

The significant inferences of this review revolve around the significance of technology to ease and improve work systems. Barring a few higher-end technologies like robotics and the like, the advent and intervention of technologies into work processes have enhanced the effectiveness of work [2, 6, 12, 77], which is an encouraging event to be sequenced. Privacy infringement is yet another concern that the review highlights, wherein systematic steps could be taken by organizations to ensure the privacy of their employees. Parallelly, theorists can invest in research that improves the data security and privacy of employees while using technology at the workplace. While there are an equal number of supporting and restraining studies that indicate technology interruptions in workflow, the complexity of manual labour has decreased to a very large extent, which is a key takeaway of the current review. Finally, the review garners evidence that the advent of technology into work systems mandates continuous learning and adaptation, which could be another significant theme of study for future investigations.

Though there have been very few studies in the area that review the association between technology and work systems, there have been a significant number of empirical studies, which have been duly mentioned and stated in the current review [19, 83, 84]. The advent of new technologies poses a never-ending responsibility on employees to keep advancing in the knowledge and practice of their work systems. That can be a significant contribution to this review for organizations, employees, and researchers.

Finally, our study is indicative of the fact that technologies are ever-evolving and that their effect on work systems, productivity, and cognition is inevitable. However systematic steps towards understanding those technologies and incessant investigations by theorists and practitioners can ameliorate the negative effects and make the brighter side available for larger utilization. The review can act as a reference for theorists to create testable research models and put them into investigations, whereas professionals can aid in testing those hypotheses and augment them with relevant data for theory development.

5. Conclusion

The main purpose of this review study is to provide an overview of the impact of the introduction of advanced technologies on work characteristics and the impact on job demand and continuous improvement. There is some evidence that reviews like these could encourage future research on the theme of study, which will further articulate the practice and theory in the area of study. The article has been enshrined with the task of articulating concepts from both technology and work systems while studying their significance to improvements in work sequencing and performance. While there has been a thematic review, the conclusive inferences indicate the improvisation of work processes with the advent of technologies, though the apprehensions of replacing human intelligence are yet under scrutiny. Further, the study has been able to coagulate thematic discussions on the significance of advanced technologies to work characteristics and their cumulative influence on work improvements, which is witnessed to be positive. Finally, it could be stated that studies like these help the future generation of researchers to hypothesize relationships and put those prepositions to the test, which has the potential to advance theory and practice. Reviews like these are also handy for practitioners, wherein variables like role expectations, work complexities, career advancements, and workflow could be presumed to be a subset of existent technologies; hence, their mutual and cumulative impact on organizational processes can be warranted. While higher-end technologies like robotics can create complexities, and some other technologies can lead to information leakage, overall technology seems to positively influence work systems and work outputs. The current review garners attention from both theorists and practitioners to decipher and ascertain variables that can be influenced by the advent of higher-end technologies.

5.1. Limitations and Future Research Directions

When it comes to search techniques, using databases to investigate technologies is difficult [85]. Apart from a study in which they are the subject of study, technological and technical terminology are widely used. As a result, it generates a vast number of papers about technology with a variety of study purposes that can be complicated. The structured routing of journals interacting, particularly with technology, to determine studies could supplement the outcomes of this research and consider markers concerning the facets wherein the data is accumulated and the subjects by which the study is undertaken. This would be an intriguing priority for prospective studies. Domain-specific databases from the healthcare or manufacturing industries, for example, could offer more knowledge of the impacts of technology on work. An additional constraint is the lack of novel new technologies. ICTs and social media are two broad technology domains that have garnered some interest in the study, particularly regarding topics outside the focus of this analysis. Ghobakhloo (2018) discusses how newer technological advancements are completely absent from existing studies, which necessitates bridging this vacuum through empirical investigation, a precursor to which are reviews of the current nature [20].

It is necessary to do a study into how people's attitudes toward technology and its impacts have changed throughout the period. As a result, the study might reflect the true patterns of transformation and methods of development as they occur, allowing for highly beneficial interventions in practice to be informed. In addition, categorizing technical quality according to its impact can be beneficial because it provides a more detailed look at new technologies and their impact on specific organizations, workgroups, and different organizations. These surveys can also analyze influence based on roles, hierarchy levels, and skill thresholds. This is very helpful for companies and employers to tailor their professional strategies to meet the distinct needs of varied employee categories. The current review has taken the first step by defining the work aspects that technologies affect.

6. Declarations

6.1. Author Contributions

Conceptualization, M.M.M., and O.A.; methodology, O.A.; software, M.M.M., and O.A.; validation, M.M.M., and O.A.; formal analysis, O.A.; investigation, M.M.M., and O.A.; resources, O.A.; data curation, M.M.M.; writing—original draft preparation, M.M.M.; writing—review and editing, M.M.M., and O.A.; visualization, M.M.M., and O.A.; supervision, O.A.; project administration, O.A.; funding acquisition, M.M.M., and O.A.; All authors have read and agreed to the published version of the manuscript.

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Not applicable.

6.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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