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Does Artificial Intelligence Mediate between Ergonomics and the Drivers of Ergonomics Innovations - an Empirical Evidence

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Abstract

The purpose of this study is to examine how the field of ergonomics has been significantly influenced by the advancements made in artificial intelligence (AI), resulting in substantial progress in various aspects of modern society. This research aims to investigate the intricate relationship between AI technology and the development of ergonomic solutions, providing valuable insights into the transformative effects of AI-driven approaches on the creation and evaluation of ergonomic environments and systems. Furthermore, this study analyzes the interaction between AI-based data analytics and the concept of innovative ergonomic design, highlighting their potential to enhance workplace ergonomics, product design, and user experience. Additionally, we explore the advancements and challenges in this dynamic domain, underscoring the importance of adopting a comprehensive approach that combines the computational capabilities of AI with a deep understanding of human factors. Lastly, this research emphasizes the crucial role of artificial intelligence (AI) in shaping the trajectory of ergonomics, a discipline that resides at the intersection of technological advancements and human well-being. Consequently, there is an augmentation in the overall safety conditions within the workplace, leading to diminished risks and monetary advantages for companies. AI integration in ergonomics enables customization of ergonomic solutions, such as adaptable desks and chairs, to match the specific body dimensions and preferences of individuals.

Keywords: Artificial Intelligence, Ergonomic, Ergonomic Innovation, Human Factors, Innovation.

Introduction

The beginning of the 21st century the realm of literature, innovations are often seen as being characterized by progressiveness (1). However, within a particular domain, adaptations of techniques and operational procedures in the creative processes of goods and services have a significant significance, as they contribute to the enhanced utilization of resources available to the business (2). This confers a distinct significance to inventions. In the 21st century, the concept of innovation is connected with a wide range of activities that attempt to make changes that will lead to an improvement in modernity and economic competitiveness (3). The question of innovation has been the subject of several scholarly debates that have been going on for years (4). New goods or services, new technology, and changes in the manufacturing, organizational, and marketing infrastructure are the primary types of innovations that a contemporary entrepreneur considers to be important (5). Solutions that relate to the economics and human contact with a particular product are examples of creative strategies that are geared towards the recipient-user (6). These solutions are often referred to as ergonomic innovations (7). Ergonomic innovations encompass the application of new solutions in manufacturing, which involve the utilization of anthropocentric, social, biotic, and technic factors to modify the existing attributes of objects and products. These modifications include aspects such as size, quality, modernity, and efficiency (8). Ergonomic innovations may be defined as the implementation of fresh solutions inside the industrial process (9).

This study delves into the profound impact of artificial intelligence (AI) advancements on the field

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of ergonomics, leading to significant societal progress. It scrutinizes the complex interplay between AI and ergonomic solutions development, shedding light on how AI-driven methods transform the creation and assessment of ergonomic environments and systems. The research further explores the synergy between AI-powered data analytics and innovative ergonomic design, underscoring their potential to improve workplace ergonomics, product design, and user experience. It also navigates the progress and challenges in this evolving field, emphasizing the need for a holistic approach that merges AI's computational prowess with a profound comprehension of human factors. The study underscores AI's pivotal role in steering the course of ergonomics, a discipline at the crossroads of technological progress and human well-being. This leads to enhanced safety conditions in workplaces, reducing risks and yielding financial benefits for companies. The integration of AI in ergonomics facilitates the customization of ergonomic solutions, such as adjustable desks and chairs, to cater to individual body dimensions and preferences. Specifically, this study aims to address the following research questions:

1. How have advancements in artificial intelligence (AI) significantly impacted the field of ergonomics?
2. What is the nature of the interplay between AI and the development of ergonomic solutions?
3. How do AI-driven methods transform the creation and assessment of ergonomic environments and systems?
4. What are the current progress and challenges in the field of AI and ergonomics?
5. How does AI integration in ergonomics facilitate the customization of ergonomic solutions, such as adjustable desks and chairs, to cater to individual body dimensions and preferences?

Ergonomic Innovations

The concept of ergonomic innovation the primary motivations for contemporary organizations to engage in and execute innovations are mostly economic and social in character. These motivations ultimately aim to provide favorable circumstances for the successful execution of their long-term strategic plans, which are largely focused on satisfying the demands of their dynamic environment (10). Innovative solutions targeting the environment, receivers, and users include a range of strategies, including those pertaining to technology, economics, and human connection with a particular product. These solutions are often referred to as ergonomic innovations (11). Ergonomic innovations involve a systematic approach to developing and implementing novel solutions through the integration and collaboration of various disciplines within the realm of human sciences. Work physiology, work psychology, anthropometry, and occupational hygiene are some of the fields that fall under this category. This method also makes use of the technical and organizational sciences, which include fields such as quality science, work economics, work organization, technique, and technology (12). The scientific field of ergonomics is distinguished by its focus on practical applications, which need the integration of findings from a variety of different research areas. Ergonomic innovations in organizations relate to the application of tactics, technologies, and alterations to the work environment that are customized to the psychophysical capacities of people (13). These modifications may be made to improve workers' health and safety. These adaptations are influenced by anthropocentric knowledge, as well as social knowledge, biotic knowledge, and technical information. In order to accomplish the goal at hand, various parts of the properties of the facilities or the items themselves will need to be altered, with the primary emphasis being placed on improving qualities such as safety, quality, modernity, and efficiency (14) respectively. Ergonomic improvements in the context of professional work within companies include the practice of customizing the work environment to meet the requirements and preferences of workers, hence boosting the overall productivity and effectiveness of their work (15). Ergonomic improvements in the context of professional work within organizations involve the practice of customizing the work environment to suit the

needs and preferences of employees (16). There are six distinct stages to the process of enhancing work by making use of advanced facilities and technological systems. These stages may be divided according to their
respective functions. (17). The first phase encompasses the idea and creation of technical and organizational solutions, with a deliberate focus on the interactions among potential users. In the second stage of the design process, the incorporation of the principle of ergonomics is undertaken, followed by the following third stage whereby a prototype model is constructed to accurately represent the suggested adjustments. According to Bernardes, the fourth stage comprises the continued usage of the product or service in order to attain the highest possible level of ergonomic perfection. In the fifth phase, the facility is administered properly, including the incorporation of ergonomic concepts that improve both the overall quality of the work and the safety of the users (18). According to Nowacka, the last step of the process of developing an ergonomic innovation entails the potential that the idea may be abandoned. This may be accomplished by either the process of dismantling the invention or by renewing its selected components. A complete analysis of ergonomic advancements is warranted given their many characteristics. (19). The examination and improvement of ergonomic innovations become necessary when there is a drop in working conditions related to a certain component, such as a tool or equipment, or a particular system, such as a flawed technological technique. The implementation of adequate safety measures in the workplace is related with several favorable results (20) conducted a study. The benefits encompassed in this list consist of a diminished frequency and intensity of work-related incidents, a decline in the quantity of accidents and near misses, a decrease in absenteeism due to illness, a reduction in newly identified occupational illnesses, a decrease in labour expenses, a decrease in employee turnover, an increase in the maintenance of tools and equipment, a decrease in potential costs associated with repairing devices and machines, and a decrease in the necessity for personnel directly overseeing operations (21). According to Capodaglio, the implementation of innovative ergonomic modifications has been shown to enhance working conditions, resulting in heightened levels of safety and efficiency in the execution of work activities (22). Ergonomic advancements yield significant advantages for businesses, including enhancing the welfare of employees and users, commonly referred to as an elevation in work motivation (23). Additionally, they foster heightened engagement in work, work tasks, and associated objects. Moreover, they facilitate adjustment to work demands and alleviate mental strain. Furthermore, they contribute to the mitigation of interpersonal conflicts among employees and between employees and employers (24).

The concept of ergonomic innovations may be articulated via the use of both quantitative and qualitative measures, represented verbally through subjective assessments, particularly those that pertain to the direct influence on an individual and their surroundings (25). Ergonomic advancements are also shown via psychophysical units derived from human biomechanical characteristics, as well as through other economic and solely economic metrics. Based on the findings of the literature review, it has been shown that the core of ergonomic innovations lies in their ability to effectively enhance operational performance inside organizations (26).

The focus of the study is to explore the optimization of work efficiency, the rise in labour production, and the prevention of health harm (27).

- The process of modernizing the technology park of companies aims to update and improve the technological infrastructure used by businesses.
- Disability compensation refers to financial support provided to individuals with disabilities to help mitigate the economic challenges they may face.
- Measurable business benefits are tangible and quantifiable advantages that can be seen and evaluated in the context of company operations.

Adapting products and processes to the wants and preferences of consumers involves modifying and tailoring goods and procedures to better align with

the desires and requirements of customers (28). The ergonomic approach encompasses not only the strategic adaptation of methods to accommodate the anatomical, physiological, and psychological characteristics, capabilities, and needs of individuals, but also the appropriate selection of individuals and training of individuals for the effective utilization of technological advancements (29). The fundamental objective of ergonomic innovations is to fulfil the needs of individuals living in local communities as well as those living in communities all over the globe (30). This is accomplished by establishing, improving, and adhering to standards that are connected to the overall safety of goods and services (31). The aforementioned goods and services are created and delivered in a manner that not only indicates a genuine commitment to the conservation of the natural world but also places a great amount of attention on the health and safety of the people who are engaged in the process. This dedication can be seen both in the products themselves and in the manner in which they are given (32).

Ergonomic Innovation Improvements in Practice

Ergonomic innovations use the scientific advancements of ergonomics to enhance and streamline work processes, using a systematic approach to develop novel solutions and improve upon current technological and organizational frameworks. Examples of these innovations being implemented in organizations may be seen in the form of practical solutions that are characterized by their novelty and effectiveness.

- The analysis and implementation of work processes
- The structuring and coordination of work within an organization

Ergonomic workplace improvements generally include the design of work environments, with consideration given to the equilibrium between an individual's professional and personal spheres. The mentioned advances are related to the integration of strategies aimed at preserving occupational health and safety, as well as improving work motivation via the inclusion of anthropocentric, psychophysiological, and biomechanical modifications tailored to meet particular utilization needs (33). These advances are apparent in several domains, including the ergonomic configuration of movement areas for both the upper and lower extremities, catering to those engaged in either a vertical or seated posture. Furthermore, the design process takes into account ergonomic factors pertaining to the spatial requirements of the human body in respect to various work surfaces, operational facilities, machinery, and equipment. In addition, ergonomic designs are included into aesthetic workplaces, functional spaces, and communication spaces. Finally, the integration of ergonomic adjustments and designs is seen in the machinery, instruments, and equipment employed inside various industrial settings. According to the study conducted by Saini, Ergonomic improvements in workplace environments include modifying various characteristics of the physical work setting to mitigate the negative effects of noise (34). This is achieved by the use of measures such as the use of hearing protection, machine covers, and device filters. Furthermore, several techniques are implemented to manage the microclimate within a given environment. The manipulation of various parameters, such as air temperature, radiation temperature, humidity levels, air flow speed, infiltration rates, and aerobic fermentation processes, are all a part of these efforts. The use of anti-vibration measures serves to lessen the adverse impacts of vibration, whilst collective and individual protective measures are utilized to effectively counteract the effects of chemical agents (35). Additionally, emphasis is placed on both mechanical and biological variables to provide an atmosphere that is favorable to optimal performance. According to Attaianese, Ergonomic improvements play a crucial role in alleviating the physical and psychological burden that person’s face, therefore effectively addressing substantial dangers to their overall welfare and vitality. Innovative solutions include the use of mechanization in work processes, which serves to improve occupational status, optimize circumstances for information collecting, and enhance the arrangement of work time and content.

One pragmatic use of these technologies in corporate environments is the incorporation of workplace apparatus that is explicitly tailored to cater to anthropocentric users, exemplified by ergonomic seating arrangements and informational components. According to Butlewski, Dewicka, and Tytyk, the application of organizational approaches may help to promote job rotation and foster autonomous self-control within employee teams. The successful inclusion of ergonomic improvements into enterprises calls for the use of viewpoints from a variety of disciplines as well as a willingness to employ novel and unorthodox methods. It's possible that the fact that ergonomic developments are so novel, in addition to having such a large reach and being so difficult to understand, is the reason why there is so little scientific literature on the Subject (36).

The Mediating Role of AI in Ergonomics and Ergonomic Innovations

The integration of Artificial Intelligence (AI) into the realm of ergonomics is on the rise, with the aim of improving safety and efficiency in the workplace. AI's application in ergonomics is multifaceted. One such application is the use of computer vision, a subset of AI, to analyze worker movements, postures, and environmental factors in real-time. This analysis allows for immediate adjustments that mitigate ergonomic risks, thereby fostering safer and more comfortable workplaces (37-39). Another application is the use of AI-powered software to conduct virtual ergonomic assessments. These assessments utilize digital models of the workplace, and workers can input data about their workstations. The AI algorithms then suggest adjustments for an optimal ergonomic setup, eliminating the need for an in-person evaluator (40). In the healthcare sector, AI technologies are being developed and adopted as part of a digital transformation. These technologies find use across various domains, including imaging and diagnostics, prehospital triage, care management, and mental health (41). However, it's crucial to acknowledge that while AI holds great promise for enhancing ergonomics, there are still research gaps to be filled. These gaps are particularly evident when it comes to employees and their opinions. Therefore, it's important not to overlook the transition from forecasts to verifiable facts in the field of AI and ergonomics (42).

Methodology

The current study is a cross-sectional study in which a rigorous literature review was made to determine the components used in the research framework. A total of 36 scale items were framed with the aid of existing literature from Dewicka-Olszewska (2021). The questionnaire items were placed in a Google Form and distributed to the target samples. The entire survey was self-administered by the researchers. The purposive sampling technique was used to select the participants from across India. The survey's sample size is 487, and the participants were real estate executives handling the clients and ensuring hassle-free services. The survey was conducted from January 2023 to July 2023. PLS-SEM is used to analyze the structure relationship between variables. The inner model's path coefficients (the arrows linking latent variables) are (positive) 0.029 and (positive) 0.884 for the route from the function of ergonomics to ergonomics and AI, respectively (Figure 1 and Table 1). The coefficient for the regressive route from the function of ergonomics to ergonomics by way of AI is -0.026, which is negative. Standardization is always applied to the route coefficients. Path weights are now between -1 and +1 as a result of standardization. The strongest connections are indicated with weights closest to 1. The weakest connections are indicated with weights closest to 0. The above route weights of 0.029 and 0.884 demonstrate the beneficial influence of ergonomics on artificial intelligence. The indirect relationship between ergonomics and AI has a negative impact (- 0.244). For reflective models, the following table displays outer model loadings, which may be thought of as item reliability coefficients; the closer the loadings are to1.0, the more trustworthy that latent variable is.

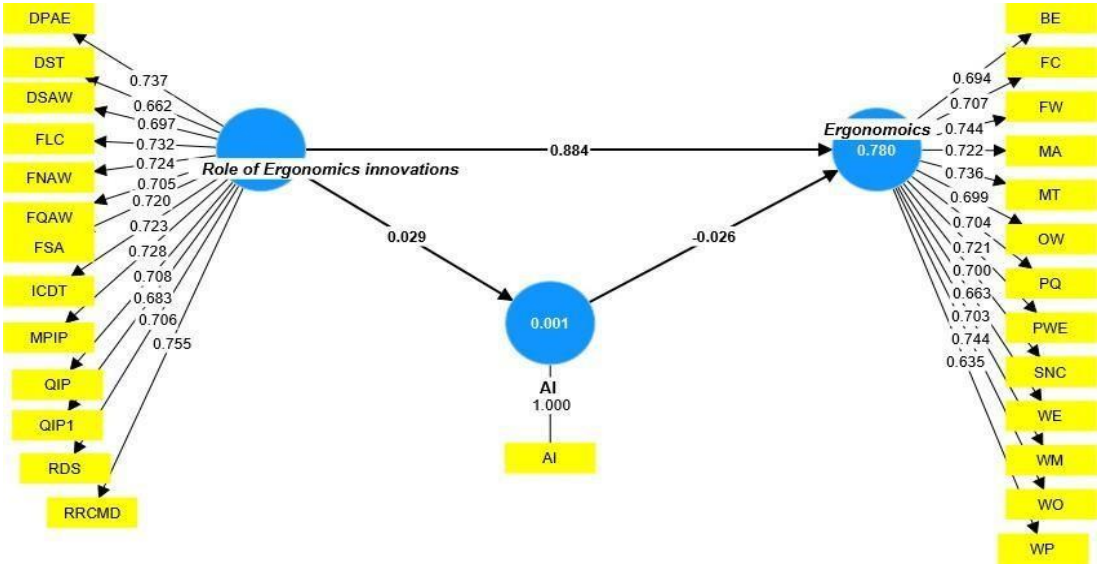

Figure 1: Structural Equation Model

Table 1: Inner Model

	AI	Ergonomics	Role of Ergonomics Innovations
AI		-0.026	
Ergonomics			
Role of Ergonomics innovations	0.029	0.884	

Table 2: Outer Loadings

	AI	Ergonomoics	Role of Ergonomics Innovations
AI	1.000		
BE		0.694	
DPAE			0.737
DSAW			0.697
DST			0.662
FC		0.707	
FLC			0.732
FNAW			0.724
FQAW			0.705
FSA			0.720

FW	0.744	
ICDT		0.723
MA	0.722	
MPIP		0.728
MT	0.736	
OW	0.699	
PQ	0.704	
PWE	0.721	
QIP		0.708
QIP1		0.683
RDS		0.706
RRCMD		0.755
SNC	0.700	
WE	0.663	
WM	0.703	
WO	0.744	
WP	0.635	

Convention dictates that route loadings greater than 0.70 are necessary for a good-fitting reflecting model (43).

For reflective models, the following table displays outer model loadings, which may be thought of as item reliability coefficients; the closer the loadings are to 1.0, the more trustworthy that latent variable is. Convention dictates that route loadings greater than 0.70 are necessary for a good-fitting reflecting model (43).

Accordingly, the aforementioned Table 2 exhibit variables with values higher than or equal to 0.70. Therefore, the model works well as a reflecting model. "Weights" in the external model do not range from 0 to -1 as loadings do. The range of possible weights is from zero to some value less than one. The preceding Table 3 conforms to the rule of thumb. Therefore, the outer model's maximum and average weight are reduced the more signs there are for a hidden variable.

Table 3: Outer weights

	AI	Ergonomoics	Role of Ergonomics Innovations
AI	1.000		
BE		0.109	
DPAE			0.113
DSAW			0.103
DST			0.110
FC		0.111	
FLC			0.119
FNAW			0.108
FQAW			0.106
FSA			0.104
FW		0.110	
ICDT			0.096
MA		0.124	
MPIP			0.111
MT		0.114	
OW		0.100	
PQ		0.113	
PWE		0.116	
QIP			0.118
QIP1			0.112
RDS			0.099
RRCMD			0.101
SNC		0.103	
WE		0.101	
WM		0.101	
WO		0.117	
WP		0.094	

Table 4: Discriminant Validity

	Cronbach's alpha	Composite reliability (rho_a)	Average variance extracted (AVE)
Ergonomics	0.916	0.917	0.498
Role of Ergonomics Innovations	0.920	0.920	0.510

Composite reliability, may be any value between 0 and 1, with 1 indicating complete accuracy. Composite reliabilities should be at least 0.6 in a model suitable for exploratory purposes; at least 0.70 in a model suitable for confirmatory purposes; and at least 0.80 in a model suitable for confirmatory research. The numerous indicators may be slight wording variations of each other rather than actually representative assessments of the concept the factor reflects if the composite reliability is very high (>.90). The researcher must think about whether the indicators are representative of the target dimension and merely correlate well or if the extremely high composite reliability represents this design issue. Since the overall dependability of the model is greater than 0.90, it complies with the rule of thumb (Table 4). Cronbach's alpha also addresses the issue of whether the indicators for latent variables exhibit convergent validity and, by extension, reliability. Conventionally, a good scale has a value of at least.80, an acceptable scale has a value of.70, and an experimental scale has a value of.60. The Cronbach's alpha values are greater than 0.80, indicating that the questions and the scales are reliable. To check for convergent or divergent validity, you may use the method known as average variance extracted (AVE). The average degree of social cohesion (AVE) between individuals in a reflective model's latent factors. Factors in an appropriate model should be able to account for at least half of the variation in their respective indicators, and AVE should be larger than 0.5 below AVE. Having an error variance greater than the explained variance indicates a score of 50. Based on the data shown here, the variable ergonomics is getting very close to the target value. The 50-person rule, plus the need for ergonomics, is sufficient.

The AVE square root should be larger than the correlation between any two latent variables. This implies that the variance that one latent variable share with its block of indicators is larger than the variance that it shares with any other latent variable. The square root of AVE is shown in the diagonal cells of the Fornell-Larcker criteria table in the Smart PLS output, with correlations displayed below it. According to the rule of thumb, the figure shown above in Table 5 is correct.

The SRMR statistic is used by the researcher to evaluate the closeness of the model fit. It is a way of gauging how different the actual correlation matrix is from the one that is indicated by the model. To rephrase, a lower SRMR indicates a better match since it represents the average size of such deviations. Good model fit is often defined as an SRMR value below 0.08. With an SRMR of 0.08, the framed model provides a satisfactory match (Table 6).

The HTMT ratio, which measures the strength of the association between two traits, should be less than 1 if the model is fitting the data adequately. Discriminant validity between a pair of reflective conceptions has been demonstrated if the HTMT value is less than 0.90, as suggested by Henseler, Ringle, and Sarstedt (2015) (43). The values in the preceding Table 7 conform to the rule of thumb.

Table 5: Fornell–Larcker criterion

	AI	Ergonomics	Role of Ergonomics Innovations
AI			
Ergonomics	0.038		
Role of Ergonomics Innovations	0.050	0.955	

Table 6: Model Fit

	AI	Ergonomics	Role of Ergonomics innovations
AI	1.000		
Ergonomics	-0.001	0.706	
Role of Ergonomics Innovations	0.029	0.883	0.714

Table 7: Heterotrait- Monotrait ratio of correlations (HTMT)

	Saturated model	Estimated model
SRMR	0.082	0.082
d_ULS	2.536	2.536
d_G	2.078	2.078
Chi-square	3441.015	3441.015
NFI	0.596	0.596

Discussion

After implementing ergonomic changes, the companies that were examined noticed a discernible improvement, which was described as "significant." These advances led to a decrease in the number of potentially accidental events and a drop in the incidence of sickness absence, both of which led to a reduction in overall workplace absences. After the adoption of ergonomic improvements, none of the companies that were evaluated reported any observable deterioration in the present state of their material and economic surroundings inside their organizational structures. This was the case even though some of the companies had experienced a drop in the past. The data that was acquired about the function that ergonomic innovations play in the disciplines of ergonomics and ergonomic innovation employing artificial intelligence was analyzed statistically. On the basis of this assumption, ergonomic innovations serve as a way of protecting and minimizing health-related damage to employees by lowering the number of instances of sickness-related absenteeism, decreasing the number of accident occurrences, and lowering the risk of unintended events occurring. The companies that were evaluated also incorporated developments in ergonomics, which had economic ramifications including a reduction in labour expenditures, amongst other aspects. The research that is now available on ergonomic advancements is not exhaustive in the sense that it does not cover the whole spectrum of themes, breadth, and complexity that are related with them. In addition, research is being done on an ongoing basis in order to better investigate the function of ergonomic advances, including their purpose, financing, driving factors, and sources.

Artificial Intelligence (AI) is spearheading a revolution in ergonomics, fostering innovation in multiple ways. It is paving the way for adaptive tools that are more attuned to individual needs,

including advanced cameras, wearable tech, and AI-guided recommendations that can promptly improve posture and foster healthier work habits. The fusion of AI and ergonomics is signaling a new age of workplace safety and efficiency. By synchronizing technology with human needs, industries can address physically challenging tasks with a proactive, intelligent approach. Ergonomists can employ AI-enabled software solutions for workplace risk management and the creation of ergonomic interventions, enabling a more efficient response to the swift pace of tech advancements. AI is enabling the rise of new autonomous systems that are transforming our personal and professional lives. Ergonomics in AI is focused on designing and interacting with these systems in a way that is human-centric, effective, and efficient. In healthcare, AI technologies are being developed and integrated as part of the digital transformation, being used in various areas including imaging, diagnostics, prehospital triage, care management, and mental health. In conclusion, AI is hastening innovation in ergonomics by providing adaptive tools, boosting workplace safety and efficiency, aiding in risk management and promoting human-centered design. Undoubtedly, there are several promising directions for future research that could enhance the scholarly conversation on the convergence of AI, Ergonomics, and Innovation. The first is Personalized Ergonomics, where the focus could be on how AI can be harnessed to devise ergonomic solutions tailored to individual needs. This might involve the creation of AI algorithms that learn from the behaviors and preferences of individual users to offer bespoke ergonomic advice. The second area is AI in Ergonomic Training, this could explore the potential of AI in educating individuals about ergonomics, possibly through the use of AI-enhanced virtual or augmented reality systems for immersive ergonomic training experiences. The third potential research direction is Predictive Models, future studies could concentrate on creating predictive models using AI that can anticipate potential ergonomic problems based on a variety of factors, including workplace design and individual behaviors. The fourth area is Ethical Considerations, as AI's role in ergonomics and innovation continues to expand, it will be crucial to investigate the ethical ramifications. This could involve research into issues of data privacy and the impact of AI decisions on individuals. The fifth potential area is Longitudinal Studies, long-term studies evaluating the effects of AI-driven ergonomic interventions on health outcomes, productivity, and user satisfaction could yield valuable insights. The sixth and final area is Integration with IoT. Research could examine how AI-driven ergonomic solutions can be integrated with other technologies like the Internet of Things (IoT). This could result in the creation of intelligent environments that adapt in real-time to users' ergonomic needs. These research directions hold significant potential to contribute meaningfully to the understanding and application of AI in the field of ergonomics and innovation.

Practical Implications

The integration of artificial intelligence (AI) with ergonomic innovation has significant practical implications for a wide range of businesses and work environments. The following are many practical aspects that should be taken into consideration: Enhanced working Safety: (AI) has the capability to continuously survey the working environment, therefore mitigating ergonomic hazards and effectively averting accidents, ultimately leading to a reduction in workers' compensation claims. As a result, there is an enhancement in the overall safety conditions inside the workplace, leading to reduced risks and financial benefits for companies.

Improved Productivity

The implementation of ergonomically optimized workplaces has been shown to enhance employee comfort and well-being, leading to a subsequent rise in productivity. AI-powered solutions have the capability to adjust and accommodate individual preferences, hence enhancing the efficiency of people in their job. The mitigation of musculoskeletal diseases and other health conditions associated with inadequate ergonomics may lead to a decrease in healthcare expenses for both workers and businesses. The integration of AI

in ergonomics enables the customization of ergonomic solutions, such as adjustable desks and chairs, to align with the distinct body dimensions and preferences of individuals. This personalized approach fosters enhanced comfort and mitigates the occurrence of pain or weariness during professional activities. This discipline is characterized by ongoing development and has considerable opportunities for improving work conditions in several sectors.

Conclusion

The implementation of ergonomic innovations has the potential to prevent potential dangers that may occur from work operations, hence decreasing the overall operating costs of an organization. The efficacy of ergonomic innovation relies on the organization's proficient management of its many resources, including innovative solutions and concepts, which are then transformed into concrete enhancements for widespread dissemination. Nevertheless, it is essential to acknowledge that the integration of ergonomic advancements within the workplace has substantial importance in the economic functioning of businesses. The exploration of enhancements in ergonomics, including their conception, methodologies, impacts, and influential aspects, presents a promising trajectory for future research and advancement.

Abbreviation

AI – Artificial Intelligence

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Author Contributions

M.Priyanka: Original drafting, Conceptualization, Design, Analysis and Interpretation of results. Dr. Subashini. R Proof Reading, Literature review, Data Analysis and interpretation of results.

Conflict of Interest

The Authors declare no conflict of Interest.

Ethics Approval

Not applicable

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