SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 219

ERGONOMICS IN ORGANIZATIONAL MANAGEMENT: A KEY FACTOR FOR PRODUCTIVITY GROWTH IN A 5.0 SOCIETY

Agnieszka GOŹDZIEWSKA-NOWICKA

Bydgoszcz University of Science and Technology, Faculty of Management; agnieszka.gozdziewska@pbs.edu.pl, ORCID: 0000-0001-5949-3901

Purpose: The purpose of the study is to analyze the role of ergonomics as a key factor for productivity growth in organizational management in the context of society 5.0. The work aims to understand how the application of ergonomic principles contributes to better use of human and technological resources, improving the efficiency, health and well-being of employees and, as a result, the productivity of the entire organization.
Design/methodology/approach: The study used a research and analysis approach, based on a literature review of ergonomics, management and the concept of society 5.0. Employee and manager surveys were conducted to assess the impact of ergonomic innovations on their work comfort and efficiency.
Findings: The results of the analysis show that implementing ergonomic solutions increases productivity, reduces stress and fatigue, and minimizes health risks for employees. An ergonomic approach in management enables technology to better adapt to people's needs, which promotes productivity and quality of work. Society 5.0, which puts people at the center of technology, offers tremendous opportunities for ergonomics in creating healthy and effective workplaces.
Research limitations/implications: The main limitations of the study stem from the diversity of industries, where standardized ergonomic standards are hard to come by.
Practical implications: Implementing ergonomic practices in organizations increases efficiency and comfort at work. Organizations that incorporate ergonomic principles into workplace design can gain greater productivity, reduce employee absenteeism and increase employee engagement.
Social implications: Ergonomics supports not only employee health, but also work-life balance, which is important in a 5.0 society. Promoting ergonomic work standards can contribute to an overall increase in quality of life and social well-being.
Originality/value: The work provides a unique perspective on ergonomics as a central element of management in modern society 5.0. It shows how ergonomic management can support harmonious cooperation between humans and technology, contributing to the sustainable development of organizations and society as a whole.
Keywords: ergonomics, organizational management, efficiency, society 5.0.
Category of the paper: research paper.

1. Introduction

Ergonomics in organizational management is a field that is playing an increasingly important role in building effective, healthy and sustainable work environments. The goal of ergonomics is to adapt working conditions to the needs and capabilities of employees, which translates not only into their comfort and health, but also into increased efficiency and motivation in the workplace. In the context of organizational management, ergonomics encompasses both the design of workstations and the proper planning of processes and organizational structures to minimize stress, fatigue and the risk of work-related injuries.

It should be noted that ergonomics also plays a key role in the development of the concept of society 5.0, which emphasizes the harmonious integration of technology and human life. In this society, advanced technologies such as artificial intelligence, robotics and big data coexist with humans to support their needs and improve their quality of life. Ergonomics, the science of adapting working conditions to human capabilities and limitations, is therefore becoming an important factor in increasing productivity, health and well-being. With an ergonomic approach to the design of workstations, tools, as well as digital environments, it is possible to increase employee efficiency and satisfaction, which in turn translates into innovation and development of entire organizations.

Despite the growing awareness of the importance of ergonomics, there is a lack of comprehensive research on its integration with modern organizational management strategies in Society 5.0. Existing research focuses mainly on physical and cognitive ergonomics, while the aspect of organizational ergonomics, which takes into account psychosocial factors, still needs to be studied in depth (Wilson, 2014).

The purpose of this work is to analyze the role of ergonomics as a key factor in productivity growth in organizational management in the context of society 5.0. The work aims to understand how the application of ergonomic principles contributes to better utilization of human and technological resources, improving the productivity, health and well-being of employees, and ultimately the productivity of the entire organization.

This article is scientific, based on research and analysis, including methodology and research results. It will present the key principles of ergonomics and the benefits it brings to employees and the organization as a whole, as well as practical solutions that can be implemented in different types of organizations to improve the quality of the work environment. While the second part of the article will address the issues of key principles of ergonomics, its impact on productivity and the benefits it brings in the context of a 5.0 society, in which technologies support people, not replace them.

2. The role of ergonomics in organizational management

Ergonomics is a term derived from the Greek words "ergon" (activity, work) and "nomos" (custom, law, knowledge), i.e. knowledge of human work (Kotowski, 2008). The creator of the term ergonomics, is the Pole W. Jastrzębowski, who introduced the term for the first time in the world in his texts, which appeared in the journal Nature and Industry in 1857. In an article titled "A Drawing of Ergonomics, or the Science of Work Based on the Laws Drawn from the Science of Nature". Jastrzębowski introduced the concept of ergonomics, defining it as follows: "by the name of ergonomics we denote the science of work, that is, the use of the powers and abilities given to man from the Creator."

The origins of ergonomics can be traced back to the beginning of human life on Earth, since even then work was the foundation of human development, both on an individual and social level. Analyzing the course of technological progress and organizational structure, one can conclude that mankind naturally sought to maintain harmony between the technical world and the sphere of organic life (Bartnicka, Kabiesz, 2018).

The modern definition of ergonomics emphasizes the key role of aligning the mental and physical characteristics of humans with the technical systems involved in the work process (Żutowski, Kotuła, 2006). Ergonomics in its basic definition focuses on improving work. It can be described as an organized system of human cooperation with the means of work in a given material and social environment, aimed at producing an effective product (Muszyński, 2016).

The role of ergonomics in the management of an organization is extremely important, as it enables the work environment to be adapted to the needs and limitations of employees, which has a direct impact on productivity, health and employee engagement. Ergonomics supports organizational management at several key levels, which will be presented in detail below.

The relationship between ergonomics and increased productivity and efficiency is well documented in the research literature. Ergonomics, which focuses on adapting the work environment to the needs and capabilities of employees, directly improves comfort, health and job satisfaction, resulting in better job performance and greater organizational efficiency. Ergonomically designed workstations reduce the physical strain on employees, which reduces fatigue and increases their ability to work for longer periods of time without compromising the quality of their tasks. Workers who are less fatigued are more productive and their concentration is higher, allowing them to perform their duties more efficiently (Wilson, 2000). Computer workstations with monitors set at the right height and distance minimize strain on the neck and eyes, allowing people to work at the computer for longer periods of time without experiencing discomfort.

One of the many roles of ergonomics in supporting organizational management is the optimization of workstations. Comfortable, well-designed workstations allow workers to concentrate on their tasks, which reduces errors. Studies show that ergonomic workstations reduce physical stress, which in turn reduces mental stress, which is one of the causes of errors (Hendrick, 1996). This is the process of adapting working conditions to the physical and mental capabilities of employees, resulting in their comfort, health and efficiency. Properly designed workstations can significantly reduce the risk of injury, fatigue and improve overall productivity. The process involves a variety of aspects, from the arrangement of tools and equipment to lighting and interface design. There is no doubt that workers whose workstations are ergonomically optimized exhibit fewer defects in final products, which increases quality and reduces the costs associated with corrections.

Another important area is that thanks to ergonomic recommendations implemented in the company, the safety of employees is improved, which also indirectly improves work results. Ergonomics reduces the risk of work-related injuries, such as carpal tunnel syndrome, back pain and neck injuries. Studies show that organizations using ergonomic solutions have lower rates of absenteeism related to health problems (Wilson, Corlett, 2023). Fewer sick days mean that employees are available for work more often, which has a direct impact on organizational productivity. In addition, ergonomics increases employee satisfaction, which reduces turnover, which helps retain experienced employees and minimizes the cost of recruiting and training new people. It can therefore be concluded that ergonomics reduces injuries and absenteeism, which directly reduces costs for the organization. Costs related to absenteeism, compensation and the need for changes are lower in companies that implement ergonomic solutions (Dul, Weerdmeester, 2018). In the long run, ergonomic workstations save money, as fewer accidents and health problems mean lower medical and insurance costs.

In a 5.0 society, where human-technology interaction plays a key role, ergonomics enables a work environment conducive to effective collaboration with modern tools. Ergonomically designed interfaces and devices, such as mice, keyboards and software, allow for intuitive and efficient use, which increases employee productivity (Baba, 2017). The introduction of ergonomic digital tools and digital workstations allows for faster adoption of technology and better use of its capabilities, resulting in increased operational efficiency (Chapanis, 1996).

Increasing employee engagement and satisfaction through ergonomics is a key factor in employee motivation, loyalty and overall job satisfaction. Ergonomics influences the sense of comfort and safety in the workplace, which directly translates into a positive attitude towards the duties performed and identification with the organization. Implementing ergonomic solutions is a clear signal that the employer cares about the health, comfort and well-being of its employees. When an organization invests in improving working conditions, employees feel more valued and see that their needs are important to the company. This directly builds a sense of loyalty and increases commitment to the tasks at hand (Kamiński, 2023). It should be noted that ergonomic workstations help reduce physical strain, which reduces the risk of muscle and

bone injuries and mental fatigue. Employees who do not experience back, neck or wrist pain can concentrate on tasks and are less likely to experience interruptions due to discomfort. Ergonomic workstations therefore improve mood and overall job satisfaction, which translates into greater willingness and enthusiasm to complete tasks. There is no doubt that employees tend to be more engaged when their workstation is comfortable and their safety and health needs are adequately met.

Further evidence that ergonomics plays an important role in organizational management is the fact that employees who are satisfied with their working conditions and have the opportunity to work in an ergonomic environment are less likely to decide to change employers. Improving ergonomics increases job satisfaction, which reduces employee turnover and stabilizes teams. Studies have shown that investing in ergonomic workstations can lead to higher retention of employees who are more motivated and committed to the long-term development of the organization (Hendrick, 2016). What's more, ergonomics also affects relationships between employees. Properly designed workstations that promote comfort and health reduce conflicts resulting from discomfort and stress. Employees who are less physically and mentally fatigued are more likely to be cooperative, better able to cope with challenges and have positive attitudes toward their co-workers, which has a positive impact on the morale of the entire team.

Summarizing the above considerations, it should be noted that the introduction of ergonomic solutions is indicative of an organizational culture that prioritizes employee well-being. This type of approach attracts employees who value organizations that take care of their needs, which increases the overall satisfaction and commitment of the team. Ergonomics thus becomes a tool for building a positive image of the organization as an employer that is fully committed to caring for the health and well-being of its employees.

3. Society 5.0 and cognitive ergonomics: integrating man and technology for enhanced comfort at work

Society 5.0 is a new socio-economic concept that originated in Japan and has been proposed as a response to the challenges of technological advances and an aging society. It is based on deep integration of digital technologies into daily life to improve people's quality of life and create a sustainable, collaborative work environment and society. The main pillars of society 5.0 are advanced artificial intelligence (AI), the Internet of Things (IoT), big data and robotics, which support people in various areas of life, from work to health and transportation. The Japanese government did the analysis and, based on that, developed the Fifth Science and Technology Base Plan, which was adopted in January 2016 (Hayashi, 2019) . The plan calls for a transition from Industry 4.0 to a society 5.0, in which all aspects of society, including industrial work, is shaped by the latest techniques and technologies. Japan has had to develop

a new model for how society operates, as it is experiencing problems related to energy shortages and energy imports from abroad, limited natural resources and an aging population. One of the main ideas of policymakers is to use artificial intelligence (AI) to solve long-term problems (Ricciolli, 2023).

Society 5.0 relies on technology to serve people, to make their daily lives easier, to solve productivity problems, and to balance ecological and natural resource issues. Unlike the previous "society 4.0", which focused mainly on the technological industrial revolution, society 5.0 aims to harmonize modern technology with humans. The goal is to create an inclusive society that reduces inequality and improves the quality of life, especially through access to resources and reducing risks from automation (Fukuyama, 2018). AI plays a central role in the 5.0 society, with the task of processing and analyzing large amounts of data in real time, which supports decision-making processes and increases operational efficiency in industry, healthcare and education. The Internet of Things enables the exchange of information between devices to automate and optimize many processes, such as resource management in cities and smart transportation that reduces traffic jams and reduces CO2 emissions (Mikołajewski, 2024).

It can be said that a hitherto underestimated area that finds an important place in the 5.0 society is cognitive ergonomics. Cognitive ergonomics is a field of ergonomics that focuses on the study of interactions between humans and information systems with respect to cognitive processes such as perception, attention, memory, thinking and decision-making. The goal of cognitive ergonomics is to design environments, tools, devices and systems that are compatible with the natural cognitive abilities of humans, thus minimizing cognitive load and the risk of errors, while improving work efficiency and comfort (Fiserova, 2013).

The most important task of cognitive ergonomics is to adapt the work environment to human cognitive abilities. In a 5.0 society, its role is particularly important, as it is intended to lead to the design of systems by understanding cognitive processes, taking into account how humans perceive, process and interpret information. Well-designed interfaces are those that take into account aspects of contrast, information hierarchy and intuitiveness. It is also important to design interfaces that support quick and accurate decision-making. This can be achieved, for example, through appropriate grouping of data, automatic completion of information or anticipation of user needs (Wasi, 2024). Thanks to the basic tenets of cognitive ergonomics, it is known that interfaces should allow the user to react immediately to actions and provide feedback in a comprehensible manner, which supports learning and adaptation processes. Cognitive ergonomics also seeks to minimize cognitive overload by streamlining access to information and reducing unnecessary stimuli. It is assumed that systems and tools should reduce the user's mental load (Kalakovski, 2019).

Society 5.0 uses a variety of technologies that integrate with cognitive ergonomics to create safe and productive workplaces. AI supports cognitive ergonomics, improving work efficiency, reducing cognitive load and increasing safety in the work environment. AI can analyze data about user behavior, habits and preferences to customize interfaces. This reduces the number

of decisions the user has to make, which reduces the cognitive load (Hancock, Szalma, 2008). Another useful action may be that AI Algorithms can analyze biometric data (e.g., heart rate, eye movement) and behavioral patterns to detect signs of fatigue or excessive cognitive load. If such a condition is detected, the systems can suggest a break or a reduction in work intensity. AI-enabled systems, such as virtual assistants or real-time data analysis software, can suggest solutions to problems or prompts, allowing workers to focus on key tasks (Wilson, 2014). AI combined with virtual reality allows for the creation of adaptive training environments that respond to user behavior. This allows employees to hone their skills in a safe environment. By automating routine processes, AI frees employees from performing monotonous tasks, allowing them to focus on more complex tasks that require creativity and analysis (Davenport, Kidby, 2016).

Cognitive ergonomics plays a key role in reducing the cognitive load on workers by designing tools, systems and work environments in a way that optimizes human-technology interactions. It promotes work efficiency, improved safety and the psychological well-being of workers, especially in occupations that require intense concentration and rapid decision-making (Lagomarsino et al., 2022). By reducing the amount of information processed simultaneously, cognitive ergonomics enables better management of the user's cognitive resources, which reduces the risk of errors and occupational stress. For example, the introduction of adaptive user interfaces, which automatically adjust the presentation of data to the user's current needs, significantly reduces cognitive overload in occupations such as air traffic control and medical diagnosis (Parasuraman et al., 2000). In addition, cognitive ergonomics integrates supporting technologies such as artificial intelligence and virtual reality to simulate complex situations in a safe environment, thereby increasing the effectiveness of training and the readiness of employees to deal with real-world challenges (Hancock, Szalma, 2008). By using these solutions, organizations can increase the efficiency of work processes while reducing the negative effects of cognitive load on employee health and productivity.

4. Methodology and results

In order to assess the impact of ergonomics on work comfort and productivity, a survey was conducted at a plastics manufacturing company. The survey was conducted on a group of 63 employees working in various positions, including both production workers and office staff.

The aim of the survey was to identify key ergonomic factors affecting health, well-being and work efficiency in the context of the company's specifics. In addition, the survey aimed to determine how implemented ergonomic innovations, such as adjustable workstations, state-of-the-art tools or assistive technologies, affected overall employee productivity and satisfaction.

The questionnaire consisted of 18 questions, divided into 6 sections: general perceptions of ergonomics in the workplace, ergonomic innovation and comfort, ergonomics and productivity, ergonomics and health and well-being, ergonomics in the context of society 5.0, ergonomics and organizational productivity.

63.5% of production workers participated in the survey, that is, they were machine operators, production technicians, warehouse workers. Of the clerical staff, 23.8% were surveyed, and they were specialists in administration, production planning, quality control. On the other hand, 12.7% of those surveyed were executives, that is, production team leaders, shift managers, operations managers. 34.9% of women and 65.1% of men participated in the survey. Less than 30% of employees were between the ages of 40 and 50, 12.7% were over 50, and the youngest employees, before the age of 30, comprised 23.8% of respondents. The longest length of service was 20.6% of employees, while 15.9% worked for less than a year. Nearly 40% of employees had seniority of more than a year, but less than 5 years. The largest group of respondents were men between the ages of 30 and 39, with seniority of less than 5 years, working in manual labor.

Respondents represented a wide range of positions and experiences, which allowed data to be collected on various aspects of the impact of ergonomics in the organization. Production workers were the dominant group (63.5%), reflecting the nature of a manufacturing company, but the significant participation of office workers and management provided a comprehensive view of the issue. The diversity of age and seniority made it possible to analyze the impact of ergonomics on people at different stages of their careers.

Table 1.
Summary sheet of survey results (part 1)

Question from the survey questionnaire	**Response scale**				
	Very low impact	**Low impact**	**No impact**	**High impact**	**Very high impact**
Section 1: general perceptions of ergonomics in the workplace					
1. How do you assess the impact of ergonomics on the workplace?	3	17	0	23	20
2. To what extent do you think ergonomics in your workplace affects your productivity?	10	10	0	20	23
3. To what extent do you feel the impact of an ergonomic work environment on your well-being?	3	3	5	27	28
Section 2: ergonomic innovation and comfort					
	yes		no		don't know
4. Has your workplace recently introduced ergonomic innovations	35		25		3
5. If so, what innovations have had the greatest impact on your comfort level?	very low impact	low impact	no impact	high impact	very high impact
ergonomic furniture	0	0	0	5	30
IT equipment	7	10	0	10	8
supporting technologies	0	0	0	0	35
other - please specify	0	0	0	0	0

Cont. table 1.

6. To what extent have ergonomic innovations improved your comfort at work?	very low impact	low impact	no impact	high impact	very high impact
	2	2	1	15	5
Section 3: ergonomics and productivity					
	yes		no		don't know
7. Do you think ergonomic improvements allow for better time management?	48		12		3
8. Have you noticed a reduction in errors at work after ergonomic innovations?	53		7		3
9. What specific aspects of ergonomics have the greatest impact on your productivity?	very low impact	low impact	no impact	high impact	very high impact
adaptation of the workstation	0	0	0	1	62
ease of use of technology	0	0	0	2	61
elimination of physical nuisances	0	0	0	0	63

Source: own study.

In table 1 it was presented the results of a survey on the perception of ergonomics in the workplace and its impact on various aspects of employee functioning. Several important conclusions can be drawn from the analysis of the data. The majority of respondents (43 out of 63) consider ergonomics to have a "high" or "very high" impact on the workplace. This indicates a strong belief that ergonomics is a key element of work organization. 43 feel that ergonomics has a significant impact on productivity, highlighting its role in work efficiency. As many as 55 people indicate that ergonomics has a positive impact on their well-being, confirming its importance in health and psychological aspects.

In terms of ergonomic innovations, it turns out that 35 respondents indicated that their workplace has introduced ergonomic innovations, suggesting an interest in improving working conditions. The most appreciated innovations were ergonomic furniture and assistive technologies, which earned high ratings of "very high impact", 30 and 35 responses, respectively. Despite the improvements made, some groups, such as IT equipment, received relatively low ratings, which may suggest the need for further improvement.

The impact of ergonomics on productivity was also found to be significant, with as many as 48 people believing that ergonomic improvements support better time management, highlighting their impact on work organization. A large majority (53 people) noted a reduction in work errors due to ergonomics innovations, demonstrating their effectiveness. Factors such as eliminating physical inconveniences and adjusting the workstation have the greatest impact on productivity, indicating the fundamental importance of ergonomic fundamentals in workplace design.

The data clearly shows that ergonomics is a key element in supporting productivity, comfort and employee well-being. High ratings for innovations such as ergonomic furniture and assistive technologies suggest that investments in these areas can yield significant benefits. At the same time, relatively low ratings for some aspects, such as IT equipment, suggest the need for further improvements in these solutions. The table underscores the importance of

ergonomics as a tool for improving both individual performance and the overall quality of the work environment.

Table 2.
Summary sheet of survey results (part 2)

Question from the survey questionnaire	Response scale				
	Very low impact	**Low impact**	**No impact**	**High impact**	**Very high impact**
Section 4: ergonomics and health and well-being					
1. How do you rate the impact of ergonomics at work on your physical health?	0	0	0	4	59
2. What impact does the ergonomics of your workplace have on your mental well-being and motivation to work?	0	0	0	8	55
3. What impact do the ergonomic recommendations implemented in your company have on reducing stress at your job?	0	1	0	17	45
Section 5: ergonomics in the context of society 5.0					
	yes		no		don't know
4. Does ergonomics supported by modern technology enable better use of human resources in your organization?	39		16		8
5. Do you think ergonomics should be a key component of an organization's management strategy in a 5.0 society?	30		10		23
6. How do you assess the role of ergonomics-enhanced technologies (e.g., artificial intelligence, robots) in improving the productivity of your work?	very low impact	low impact	no impact	high impact	very high impact
	0	8	0	15	40
Section 6: ergonomia a produktywność organizacji					
	yes		no		don't know
7. In your opinion, do ergonomic innovations introduced through society 5.0 contribute to the productivity of the entire organization?	48		12		3
8. Do you think investing in ergonomics has long-term benefits for the organization?	54		6		3
9. What areas of the organization do you think benefit most from ergonomic improvements?	very low impact	low impact	no impact	high impact	very high impact
efficiency of teams	0	0	0	3	60
reduction of absenteeism	0	1	0	12	50
improvement in quality of work	0	3	0	12	48

Source: own study.

Table 2 shows the results of a survey on the impact of ergonomics on various aspects of health, productivity and management strategies in the context of society 5.0. As many as 59 respondents out of 63 rated the impact of ergonomics on physical health as "very high", clearly indicating a strong belief in its beneficial impact in this area. The lack of responses in the "low impact" or "no impact" categories confirms widespread acceptance of the importance of ergonomics in the physical aspect. 55 respondents noted a "very high impact" of ergonomics on psychological well-being and motivation, indicating that a properly designed work

environment not only improves health but also promotes employee engagement. 45 indicated a “very high impact,” while 17 responded “high impact”. These data suggest that ergonomic improvements are seen as an effective tool for reducing occupational stress.

Another area surveyed was ergonomics in the context of society 5.0 39 people believe that modern technologies supported by ergonomics enable better use of human resources, highlighting their importance in improving management in the context of society 5.0. In turn, 30 respondents consider ergonomics an important part of an organization's strategy in society 5.0, although as many as 23 people “have no opinion” on the subject, which may be due to insufficient education about the potential benefits. In contrast, ergonomic technologies such as artificial intelligence and robots received high marks: 40 people gave them a “very high impact” on improving productivity, underscoring their strategic importance in modern workplaces.

The section on ergonomics in the context of organizational productivity was then surveyed. 48 respondents indicated that ergonomic innovations in a 5.0 society contribute to improving organizational productivity, demonstrating their high value in the context of long-term strategy. 54 expressed the belief that investments in ergonomics have long-term benefits, highlighting the importance of this area in strategic planning. The most beneficial effects were seen in improving the efficiency of teams (60 “very high impact” ratings), reducing absenteeism (50 responses) and quality of work (48 responses). These results underscore that ergonomics has benefits at both the individual and team levels.

4. Conclusions

Ergonomics in organizational management is undoubtedly a supporting tool, but it is also one of many factors in the quest for productivity growth, especially in the context of society 5.0. As organizations embrace advanced technologies and foster human-centric environments, ergonomics bridges the gap between innovation and well-being. By prioritizing ergonomic principles, companies demonstrate a commitment to both productivity and employee welfare, creating workplaces that are not only efficient but also adaptive, inclusive, and future-ready.

Investments in ergonomic solutions—whether through advanced AI-driven tools, adaptable workstations, or streamlined workflows—translate into measurable benefits such as enhanced productivity, reduced absenteeism, and improved employee satisfaction. In a society 5.0, where the balance between technological advancement and human-centric values is paramount, the integration of ergonomics reflects a forward-thinking approach that aligns organizational goals with the evolving needs of the workforce.

Ultimately, leveraging ergonomics as a core component of management strategy empowers organizations to thrive in competitive, dynamic environments. It fosters a culture of innovation and trust, ensuring long-term sustainability and resilience in the ever-changing landscape of

modern business. As we step further into the future, embracing ergonomics is no longer an option but a necessity for organizations aiming to lead in a society where human potential and technological excellence must coexist seamlessly.

It should be noted that the survey responses obtained are only for the surveyed group of employees. The analysis shows that ergonomics plays a key role in managing an organization in the context of Society 5.0. The application of ergonomic principles allows for more efficient use of human and technological resources, leading to increased productivity and improved employee health and well-being. By adapting working conditions to individual needs, organizations can increase employee engagement, reduce absenteeism and improve overall operational efficiency. Integrating ergonomics with modern management strategies fosters a sustainable and innovative work environment, an important factor for success in the era of digitization and automation. Conclusions from the paper underscore the need for further research on adapting ergonomics to specific technological and psychosocial requirements in a dynamically changing world of work.

References

1. Baba, M.L. (2017). Anthropology and business: Influence and interests. *Journal of Business Anthropology*, *2(1),* pp. 20-37.
2. Bartnicka, J., Kabiesz, P. (2018). Ergonomic and workflow study of sausage production process in the context of manual transport tasks. *Proceedings of the XV International Conference Multidisciplinary Aspects of Production Engineering MAPE*, ed. W. Biały, Gliwice: PANOVA, pp 695–-701.
3. Chapanis, A. (2016). *Human Factors in Systems Engineering*. John Wiley & Sons, p. 40.
4. Davenport, T.H., Kirby, J. (2016). Just how smart is smart? Automation, AI, and robotics in the workplace. *Harvard Business Review, 7,* p. 32.
5. Dul, J., Weerdmeester, B. (2018). *Ergonomics for Beginners: A Quick Reference Guide*. CRC Press, p. 21.
6. Fiserova, S. (2013). *Methods of cognitive ergonomics in assessment of psychosocial risks in work systems.* Zielona Góra: Wydawnictwo Polskiego Towarzystwa Profesjologicznego, p. 190.
7. Fukuyama, M. (2018). Society 5.0: Aiming for a New Human-Centered Society. *Journal of Economic and Financal Sciences*, pp. 47-48.
8. Hancock, P.A., Szalma, J.L. (2008). Performance under stress: A psychophysiological analysis of adaptive cognition. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 50(3),* pp. 438-451.

9. Hendrick, H.W. (2016). The Ergonomics of economics is the economics of ergonomics. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, *40(1),* pp. 1-10.
10. Herzberg, F., Mausner, B., Snyderman, B.B. (1959). *The Motivation to Work*. John Wiley & Sons, p. 154.
11. Kalakoski, V. *Cognitive Ergonomics is a Matter of Cognitive Factors*. Finnish Institute of Occupational Health.
12. Kamiński, A. (2023). *Satysfakcja czy Zaangażowanie Pracowników: Kluczowe Różnice Wpływające na Sukces Organizacji*, conference materials. Szczecin.
13. Kotowski, R. (2008). *Ergonomia i zasady bezpiecznej pracy z komputerem.* Warszawa: Wydawnictwo Polsko-Japońskiej Akademii Technik Komputerowych, pp. 2-4.
14. Lagomarsino, M., Lorenzini, M., Momi, E., Ajoudani, A. (2022). Robot Trajectory Adaptation to Optimise the Trade-off between Human Cognitive Ergonomics and Workplace Productivity in Collaborative Tasks. *IEEE Transactions on Cognitive and Developmental Systems, Vol. 1,* p. 8.
15. Mikołajewski, D. (2024). The Internet of Things and AI-based optimization within the Industry 4.0 paradigm. *Bulletin of the Polish Academy of sciences technical sciences*, *Vol. 72(1),* pp. 3-5.
16. Muszyński, Z. (2016). Rozwój ergonomii w Polsce i na świecie. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, *29(1)*, 87-100.
17. Parasuraman, R., Sheridan, T.B., Wickens, C.D. (2000). A model for types and levels of human interaction with automation. *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans, 30(3),* pp. 286-297.
18. Ricciolli, L. (2023). Artificial Intelligence: innovation for society 5.0. *SSRN, 2,* p. 21.
19. Wasi, A.T. (2024). CogErgLLM: Exploring Large Language Model Systems Design Perspective Using Cognitive Ergonomics. *Human Computer Interaction*, *12(11),* p. 23.
20. Wilson, J.R. (2000). Fundamentals of ergonomics in theory and practice. *Applied Ergonomics*, *31(6)*, pp. 557-567.
21. Wilson, J.R. (2014). Fundamentals of ergonomics in engineering. *Applied Ergonomics*, *45(3),* pp. 337-345.
22. Wilson, J.R., Corlett, E.N. (2023). *Evaluation of Human Work*. CRC Press, p. 45.
23. Żutowski, P., Kotuła, W. (2006). Ergonomia w zarządzaniu organizacją. *Ergonomia*, *28(4)*, 18-26.