

# Impact of generative artificial intelligence on workload, efficiency and labour productivity

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**Abstract:** In recent years, generative artificial intelligence (GAI) has gained significant importance in production and operations management (POM) due to its potential to enhance worker productivity. This article aims to characterise the impact of GAI on workload, efficiency and labour productivity across various industries. The research question was formulated and, using the CIMO framework (context, intervention, mechanism, outcome), the search and retrieval of articles were conducted in the Scopus and Web of Science (WoS) databases, and yielded 149 articles. After the selection, evaluation and content analysis of each study, 74 articles were ultimately included in the systematic literature review. Seven industries were identified in which GAI has demonstrated impacts on workload, efficiency and labour productivity, with four sectors accounting for 80% of the studies. The impacts of GAI reveal four trends, all of them key in POM: automation and optimisation of workflows; support in decision making; improvement in human-machine interactions; enhancement in communication. To fully apply the potential of this technology, it is necessary to continue researching and addressing the identified issues, including ethical, employment, privacy and information quality challenges.

**Keywords:** Generative artificial intelligence, productivity, efficiency, workload, workforce

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## 1. INTRODUCTION

Production and operations management (POM) constitutes a discipline that is based on developing, analysing and improving systems in an organisation to deliver products or services to customers (Chao, 2021). These systems are composed of resources, such as labour, machinery, materials, information, and technology. The primary functions of POM centre on planning, scheduling, organising and controlling these resources (Wolniak, 2020). POM focuses on the areas listed below: process design and optimisation, quality management and continuous improvement, project management, production planning and control, operations strategy and competitiveness, decision support, work organisation, ethics and environmental considerations, technology, maintenance and reliability, supply chain and inventory management (Corrêa, 2008).

In the POM discipline, a pivotal sphere of academic scrutiny delves into the factors that influence worker productivity. In this context, human resources play a fundamental role in production and operations in organisations because they are the driving force that makes things happen. The best way to demonstrate this is through labour productivity. However, this indicator depends on several factors, including workload and efficiency, which directly influence of reaching a high productivity level (Tri & Anjanarko, 2022). Although much is already known about this subject, the technological changes that have emerged in recent year, particularly those related to artificial intelligence (AI), demand new ways of conceptualising productivity (Diwas, 2020). Furthermore, AI, established by McCarthy in 1956 (Radanliev, 2024), has significantly advanced, and enables innovations like search engines and autonomous vehicles (Goar, 2022). Microsoft

developed a large language model (LLM) in 2020, and ChatGPT had over 100 million users by 2023 (Grzybowski et al., 2024). AI has traditionally been used for data analysis and decision making across several POM areas. Nevertheless, advances in this technology pose challenges related to worker productivity and performance (Papadopoulos et al., 2022). Generative artificial intelligence (GAI), unlike traditional AI, focuses on producing comparable realistic and creative content to what humans create (García-Peñalvo & Vázquez-Ingelmo, 2023). In recent years, a wide range of sectors and industries has begun experimenting with this technology, and has, in turn, influenced workload, efficiency and labour productivity. This challenge prompts us to put forward the research question outlined below: what is the impact of GAI on workload, efficiency and workforce productivity across various sectors and industries?

The objectives of this article are to: (i) characterise the impact of GAI on efficiency, productivity and workload in the POM realm; (ii) guide further scholarly efforts in research; (iii) ease the devising of strategies that enable organisations in GAI in both operations and supply chain management goods and services sectors to efficiently leverage this new technology for human resource management. This paper is organised as follows. Section 2 describes the review methodology. Section 3 presents the literature review, where the impact of GAI on workload, efficiency and productivity across various industries is characterised. Section 4 analyses the main challenges. Finally, Section 5 provides conclusions along with future research lines.

## 2. REVIEW METHODOLOGY

The systematic literature review follows mainly the steps

proposed by (Denyer & Tranfield, 2009). This methodology is based on five important stages: (i) formulating research questions, which involves posing a general research question about the current state of research into the effect or impact of AI on reducing workload in goods and services organisations; (ii) searching for and locating relevant articles. In this stage, the Scopus and WOS scientific databases are used. Keywords and their respective synonyms are derived from research questions aligned with CIMO (context, intervention, mechanism and outcome) criteria and are searched using Boolean operators; (iii) selecting and evaluating the identified articles. Only articles in English were considered and, after reviewing their abstracts, only those that address the research question are selected, which yielded 107 chosen references; (iv) analysing and synthesising the selected articles. The chosen articles undergo content analysis; (v) presenting the literature review results and identifying research gaps based on 74 articles.

### 3. LITERATURE REVIEW

The literature review is structured according to the framework presented in Figure 1, which illustrates how GAI impacts workload, efficiency and labour productivity in various industries. Based on the analysis, these industries were classified into seven sectors: (i) healthcare industry; (ii) science and technology; (iii) management, economics and business; (iv) research and education; (v) manufacturing and industry; (vi) design and creativity; (vii) the environment and sustainability. Subsequently in each sector, studies were classified by type of generative model (GM), the field in which GAI is used and the application of this technology.

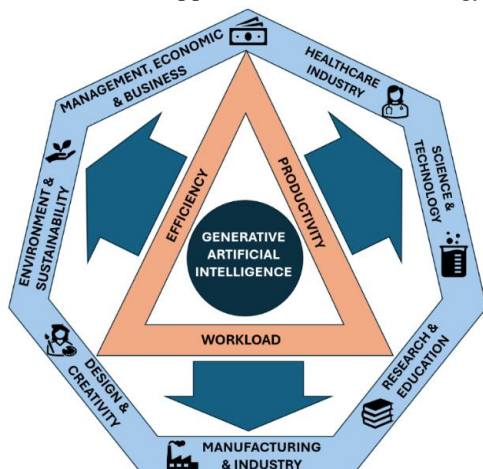


Figure 1. The framework of the impact of GAI on workload, efficiency and productivity.

#### 3.1 Healthcare industry

Table 1 displays the categorisation of studies about the healthcare industry, which account for 43% of the selected articles. GPT (generative pretrained transformer) is the most widely used technology. In this industry, imaging and diagnostic specialties are the most represented with 38%, with radiology being the most prominent discipline, followed by medical and clinical specialties (28%), critical care services (22%), and finally surgical and perioperative specialties (12%).

Regarding the use of this technology, the literature reveals a marked trend towards the optimisation of workflows and data

management. Various studies highlight that optimising workflow, automating data management and automatically calculating scores significantly reduce the workload in clinical settings. This automation enables greater efficiency in information management by freeing human resources for higher value-added tasks and, consequently, increasing productivity. An emerging trend involves support in diagnosis and clinical decision making. The automated generation of diagnostic reports, assistance in interpreting results and automated patient triage have been shown to improve the accuracy and speed of the diagnostic process. The integration of these technologies into clinical practice is associated with a reduction in healthcare professionals' cognitive load and with more efficient, timely medical care.

Table 1. GAI on the healthcare industry

Author	GM	Field	Application
<b>Imaging &amp; diagnostic specialties</b>			
(Temperley et al., 2024)	GPT	Radiology	Optimising workflow
(Mese et al., 2023)	GPT	Radiology	Optimising workflow
(Park et al., 2024)	-	Radiology	Generating patient-friendly reports.
(Wu et al., 2024)	GPT, Claude.	Radiology	Assigning categories to reports
(Srivastav et al., 2023)	GPT	Radiology	Efficient diagnostics
(Klang et al., 2024)	GPT, Gemini	Radiology	Analysing texts
(Hadi et al., 2025)	GPT	Radiology	Reducing communication time.
(T. Zhang et al., 2024)	GPT	Diagnostic imaging	Automating diagnostic reports
(Hu et al., 2024)	GPT	Medical imaging	Improving clinical flow
(W. H. Wang et al., 2024)	GPT	Ultrasound	Helping to interpret reports
(Sorin et al., 2024)	GPT	Neuroradiology	Assisting in diagnosis.
(Ting et al., 2024)	GPT	Nuclear medicine	Automating test evaluation
<b>Medical and clinical specialties</b>			
(M. Li et al., 2024)	-	Oncology	Exploring efficiency
(Kolla & Parikh, 2024)	-	Oncology	Improving efficiency
(S. W. Li et al., 2023)	GPT	Gynaecology	Performing clinical exam tasks.
(Jo et al., 2024)	GPT	Cardiology	Automating medical advice.
(Reynolds & Tejasvi, 2023)	GPT	Dermatology	Generating answers and resources for patients
(Tabuchi et al., 2024)	Stable Diffusion	Ophthalmology	Generating synthetic images
(Javid et al., 2024)	GPT	Urology	Advising patients.
(Urban et al., 2023)	GPT	Dentistry	Automating data management
(Lossio-Ventura et al., 2024)	GPT	Psychology	Analysing sentiments
<b>Critical care service</b>			
(Biesheuvel et al., 2024)	-	Intensive care	Optimising flows
(Saner et al., 2024)	GPT, Bard, Perplexity AI	Intensive care	Automating scoring calculations
(Williams et al., 2024)	GPT	Emergency	Automating patient triage
(Matulis & McCoy, 2023)	GPT	Primary care	Assisting in clinical tasks
(Y. Li & Li, 2024)	GPT	General medicine	Improving efficiency
(Haoran et al., 2023)	GPT	Nursing	Optimising nursing follow-up
(Y. Liu et al., 2024)	GPT	Telemedicine	Summarising dialogues
<b>Surgical and perioperative specialties</b>			
(S.-W. Lee & Choi, 2023)	GPT	Anaesthesiology	Assists in identifying topics and correcting texts
(Le et al., 2024)	GPT	Surgery	Optimising workflow
(Lim et al., 2023)	GPT, BARD, Bing	Plastic Surgery	Providing clinical advice
(Kienzle et al., 2024)	GPT	Orthopaedics	Assisting in preoperative communication

Communication and report generation for patients is another notable trend in the literature. By enabling the generation of reports in accessible language, reducing communication times and synthesising dialogues, this technology optimises the interaction between medical personnel and patients, which results in greater efficiency in healthcare delivery. Finally, an impact is observed in content analysis and creation. On the one hand, text and sentiment analysis, along with the identification and correction of topics, provide robust tools to extract and structure relevant information from large data volumes.

#### 3.2 Science and technology

Science and technology sector studies account for 15% of all the selected articles and are categorised in Table 2. The most

widely used generative model in this sector is GPT. Virtual reality is the most prominent field, followed by software development. Most studies focus on how GMs can reduce repetitive tasks and streamline decision making, which demonstrates clear orientation towards enhancing efficiency and productivity in various domains, a key factor in POM. The convergence of techniques and methods is observed: integrating GPT with other technologies.

Table 2. GAI on science and technology

Author	GM	Field	Application
(Hassani & Silva, 2023)	GPT	Data Science	Automating workflows
(Matzko & Konur, 2024)	GPT	Bioinformatics	Software development
(Yan et al., 2024)	GPT	Technology	Improving tasks
(Y. Zhang et al., 2024)	AutGPT	Geoinformation	Automating tasks
(Chen et al., 2024)	GPT	Technology	Personalising interaction
(Gong et al., 2024)	-	Biotechnology	Optimising design-testing
(Gura et al., 2023)	-	Virtual reality	Improving remote work
(Bratu, 2023)	-	Virtual reality	Redefining jobs
(Vochozka et al., 2023)	-	Virtual reality	Improving workspaces
(G. Li et al., 2023)	GPT	Software development	Software development
(Zeng et al., 2023)	GPT	Chemistry	Automating instructions

### 3.3 Management, economics and business

Table 3 displays the articles corresponding to the management, economic and business sectors, which represent 15% of all the studies. Several pieces of research indicate that GMs streamline management, assistance, analyses and training tasks and, thereby, increase efficiency at various organisational levels. The analytical support provided by this technology enables large data volumes to be handled and reduces uncertainty, particularly in finance, trade and human resources planning. In addition to GPT, models like Bard, Bing and Llama are also featured, and evidence an increasingly diverse ecosystem in generative AI. Although the objective is to reduce workloads and to boost productivity, a clear emphasis is placed on not compromising job security, a balance that is crucial for responsible AI implementation.

Table 3. GAI on management, economic and business

Author	GM	Field	Application
(Yu & Qi, 2023)	GPT	Emergency	Increasing productivity without reducing employment
(Bughin, 2024)	GPT	Management	Asymmetric gains
(Manresa et al., 2024)	-	Job performance	Improving performance.
(Marimon et al., 2024)	-	Job performance	Improving engagement
(Kumar et al., 2025)	GPT	Management	Improving communication
(Borissov & Hristozov, 2024)	-	Public administration	Improving efficiency
(L. X. Liu et al., 2024)	GPT	Finance	Assisting in complex financial analyses
(Prasad & De, 2024)	GPT	Human Resources	Improving HHRR practices
(Limma & Kraiwanit, 2023)	GPT	Tourism	Improving customer service efficiency in hospitality
(Alhusban et al., 2024)	GPT	Business	Streamlining corporate training, improving efficiency
(Abolghasemi et al., 2024)	GPT, Bard, Bing, Llama	Trade	Assisting in forecasting.

### 3.4 Research and education

The research and education sector represents 12% of all the studies, as shown in Table 4. Of the trends identified in this sector, the first is support and optimisation for academic research given the technology's potential to assist with writing tasks, data imputation and the peer review process. This could expedite the initial evaluation of manuscripts and ensure consistency. Additionally, there is mention of accelerating citation selection, which helps researchers to filter relevant literature quickly. Secondly, a trend towards enhancing efficiency in decision making and consultations is identified owing to GPT's decision-making capabilities; this translates into tools that help researchers to analyse large volumes of data or literature.

A third trend is the support provided to educators and teaching processes, where technologies like GPT assist educators by streamlining teaching efforts, supporting material development, assignment grading and providing students with immediate feedback.

Finally, a fourth trend is the enhancement of learning and competency development, with particular emphasis placed on using GPT for coding assistance, which benefits both computer science students and educators in supervising and providing feedback on programming exercises.

Table 4. GAI on research and education

Author	GM	Field	Application
(Sridharan & Sivaramakrishnan, 2024)	GPT	Research	Decision support
(Khlaif et al., 2023)	GPT	Research	Assisting in academic writing tasks
(Nazir et al., 2023)	GPT	Research	Automating data imputation.
(Saad et al., 2024)	GPT	Research	Assisting in peer review, streamlining process
(B. Zhang, 2023)	-	Education	Improving librarians' efficiency in consultations
(Fu & Yang, 2023)	GPT, ERNIE Bot, Bard	Education	Improving efficiency in university libraries
(Sun, 2024)	GPT	Education	Helping educators, improving teaching efficiency
(Cirett-Galán et al., 2024)	GPT	Education	Assisting in coding
(Oami et al., 2024)	GPT	Research	Accelerating citation screening

### 3.5 Manufacturing and industry

Table 5 characterises how 7% of studies correspond to the manufacturing and industrial sectors. In this area, the application of GMs, such as GPT, focuses on reducing cognitive loads and enhancing efficiency in human-robot interactions during product assembly and can, therefore, lay the foundations for Industry 5.0, where technology centres on human beings. Regarding the transportation industry, there is a trend towards using GAI to automate diagnosis and troubleshooting, which ultimately reduces errors in autonomous driving and motion planners. Finally, this technology also contributes to solve mechanical problems.

Table 5. GAI on manufacturing and industry

Author	GM	Field	Application
(S. Liu et al., 2024)	GPT	Manufacturing	Improving efficiency in human-robot assembly
(Colabianchi et al., 2024)	GPT	Manufacturing	Reducing cognitive load in assembly
(J. Wang, 2024)	GPT	Transportation	Reducing errors in autonomous driving
(Ni & Buehler, 2024)	GPT	Mechanics	Automating mechanical problem-solving
(Lin et al., 2024)	GPT	Transportation	Automating diagnostics and repairs of planners.

### 3.6 Design and creativity

Table 6 displays the articles related to the design and creativity sector, which represents 5% of all the studies. The primary identified trend is GAI use to enhance productivity in design and art creation. A wider variety of tools is noted, such as Midjourneu, Vega IA, Stable Diffusion and DALL-E, unlike in other sectors where GPT is more predominant.

Table 6. GAI on design and creativity

Author	GM	Field	Application
(Lu et al., 2024)	GPT, Midjourney, Vega AI	Design	Improving productivity in automotive design
(S. K. Lee & Koo, 2024)	GPT	Design	Assisting in workshops, increasing productivity
(Zhou & Lee, 2024)	Midjourney, Stable Diffusion, DALL-E	Creativity	Improving productivity in digital art creation
(W. Li et al., 2024)	-	Design	Generating designs, optimising styling processes

### 3.7 Environment and sustainability

The environmental and sustainability sector represents 3% (Table 7). This technology utilises GPT GMs in the sustainable policy creation and agriculture fields. The GAI applications in

this sector include assisting in the development of sustainable policies and accelerating data review and extraction.

Table 7. Characterisation of the impact of GAI on the environment and sustainability

Author	GM	Field	Application
(Buitrago-Esquinas et al., 2024)	GPT	Sustainable policy creation	Helping in policy, improving efficiency
(Jiang et al., 2024)	GPT	Agriculture	Accelerating data review and extraction

4. DISCUSSION

Seven industries are identified in which GAI impacts workload, efficiency and labour productivity. More than 80% of all the studies are concentrated in four sectors: (i) healthcare industry; (ii) science and technology; (iii) management, economics and business; (iv) research and education. Of these, the health sector, which represents 43%, demonstrates the most significant outcomes using this technology, which clearly indicates that the medical field has taken the lead in this domain. Although GPT predominates in most sectors, it is increasingly being integrated with other technologies and compared to alternative GMs, which reveals a diverse ecosystem that aims to achieve improved results. Finally, four cross-cutting trends are identified across studies: the automation and optimisation of workflows, support in decision making, enhancement of human-machine interactions and improvement in communication, all of which are promising in POM.

5. CONCLUSIONS

In recent years, GAI has captured professionals, researchers and the general public’s interest. The systematic literature review in this article is structured according to a framework that encompasses the use of this technology by various sectors and industries, as well as its influence on the workforce’s workload, efficiency and productivity. Its characterisation reveals applications of GAI models in seven sectors or industries ranging from automation, optimisation, and support, to improved communication, creation, design, advanced data processing and transformation of work. Overall, GAI is a promising technology in the POM field, where resource management and process optimisation are essential. However, challenges remain, including ethical concerns, potential job displacement, data security and privacy, and ensuring the quality of generated information.

Future research should address these challenges and explore new applications of this technology in emerging sectors and industries.

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REFERENCES

Abolghasemi, M., Ganbold, O., & Rotaru, K. (2024). Humans vs. large language models: Judgmental forecasting in an era of advanced AI. *International Journal of Forecasting*.  
Alhusban, M. I., Alshurafat, H., & Khatatbeh, I. N. (2024). Exploring professional perspectives on integrating generative artificial intelligence into corporate learning and development: an organizational change perspective. *Development and Learning in Organizations*.

Biesheuvel, L. A., Dongelmans, D. A., & Elbers, P. W. G. (2024). Artificial intelligence to advance acute and intensive care medicine. *Current Opinion in Critical Care*, 30(3), 246–250.  
Borissov, B., & Hristozov, Y. (2024). Potential for Using Artificial Intelligence in Public Administration. *Economics - Innovative and Economics Research Journal*.  
Bratu, S. (2023). Generative Artificial Intelligence and Virtual Reality Immersive Training Tools, Algorithmic Monitoring and Cognitive Computing Systems, and Voice and Gesture Recognition Technologies in Virtual Immersive Workspaces. *Analysis and Metaphysics*, 22, 197–215.  
Bughin, J. (2024). What drives the corporate payoffs of using generative artificial intelligence? *Structural Change and Economics Dynamics*, 71, 658–668.  
Buitrago-Esquinas, E. M., Puig-Cabrera, M., Santos, J. A. C., Custódio-Santos, M., & Yñiguez-Ovando, R. (2024). Developing a hetero-intelligence methodological framework for sustainable policy-making based on the assessment of large language models. *MethodsX*, 12.  
Chao, R. O. (2021). What is Operations Management? *SSRN Electronic Journal*.  
Chen, J., Liu, Z., Huang, X., Wu, C., Liu, Q., Jiang, G., Pu, Y., Lei, Y., Chen, X., Wang, X., Zheng, K., Lian, D., & Chen, E. (2024). When large language models meet personalization: perspectives of challenges and opportunities. *Worldwide Web-Internet and Web Information Systems*, 27(4).  
Cirett-Galán, F., Torres-Peralta, R., Navarro-Hernández, R., Ochoa-Hernández, J. L., Contreras-Rivera, S., Estrada-Ríos, L. A., & Machado-Encinas, G. (2024). Assessing the Use of GitHub Copilot on Students of Engineering of Information Systems. *International Journal of Software Engineering and Knowledge Engineering*.  
Colabianchi, S., Costantino, F., & Sabetta, N. (2024). Assessment of a large language model based digital intelligent assistant in assembly manufacturing. *Computers in Industry*, 162.  
Corrêa, H. L. (2008). Changes in The Role of Production and Operations Management in the New Economy. *Journal of Operations and Supply Chain Management*, 1(1).  
Denyer, D., & Tranfield, D. (2009). Producing a systematic review. In D. A. Buchanan & A. Bryman (Eds.), *The SAGE handbook of organizational research methods*. In *The Sage handbook of organizational research methods*.  
Diwas, K. C. (2020). Worker productivity in operations management. *Foundations and Trends in Technology, Information and Operations Management*, 13(3).  
Fu, R., & Yang, X. (2023). Analysis of AIGC Language Models and Application Scenarios in University Libraries. *Journal of Library and Information Science in Agriculture*, 35(7), 27–38.  
García-Peñalvo, F. J., & Vázquez-Ingelmo, A. (2023). What Do We Mean by GenAI? A Systematic Mapping of The Evolution, Trends, and Techniques Involved in Generative AI. *International Journal of Interactive Multimedia and Artificial Intelligence*, 8(4).  
Goar, V. K. (2022). The Impact and Transformation of Artificial Intelligence. In *International Journal on Recent and Innovation Trends in Computing and Communication* (Vol. 10, Issue 8).  
Gong, X., Zhang, J., Gan, Q., Teng, Y., Lyu, Y. H. J. and, Liu, Z., Wu, Z., Dai, R., Zou, Y., Wang, X., Zhu, D., Zhu, H., Liu, T., & Yan, Y. (2024). Advancing microbial production through artificial intelligence-aided biology. *Biotechnology Advances*, 74.  
Grzybowski, A., Pawlikowska-Łagód, K., & Lambert, W. C. (2024). A History of Artificial Intelligence. *Clinics in Dermatology*, 42(3).  
Gura, K., Alakoum, A., Melenciu, M., & Henley, S. (2023). Mobile Biometric and Sentiment Data, Generative Artificial Intelligence and Behavior Tracking Tools, and Wearable Sensor-based and Connected Monitoring Devices in Immersive Interconnected 3D Worlds. *Analysis and Metaphysics*, 22, 255–273.  
Hadi, Y. H., Altalhi, F. K., Ali, H. M., Shabli, M. A., Aqil, A. I. A., & England, A. (2025). Enhancing CT examination efficiency with ChatGPT-4o for multilingual Hajj pilgrims: A short communication. *Journal of Medical Imaging and Radiation Sciences*, 56(1).  
Haoran, X., Xiaoyan, C., Huiming, Z., Li, S., Ting, C., Tianwen, W., Xingyue, L., & Yali, W. (2023). Construction and practice of big data platform for self-monitoring and follow-up of patients after artificial mechanical valve replacement with chatGPT. *Chinese Journal of Practical Nursing*, 39(29), 2276–2284.  
Hassani, H., & Silva, E. S. (2023). The Role of ChatGPT in Data Science: How AI-Assisted Conversational Interfaces Are Revolutionizing the Field. *Big Data And Cognitive Computing*, 7(2).  
Hu, M., Qian, J., Pan, S., Li, Y., Qiu, R. L. J., & Yang, X. (2024). Advancing medical imaging with language models: featuring a spotlight on ChatGPT. *Physics in Medicine and Biology*, 69(10).

- Javid, M., Bhandari, M., Parameshwari, P., Reddiboina, M., & Prasad, S. (2024). Evaluation of ChatGPT for Patient Counseling in Kidney Stone Clinic: A Prospective Study. *Journal of Endourology*, 38(4), 377–383.
- Jiang, C., Li, S., Cai, D., Ye, J., Liu, C. B. Q. and, & Wang, S. (2024). ChatGPT-based meta-analysis for evaluating the temporal and spatial characteristics of deoxynivalenol contamination in Chinese wheat. *Journal of Hazardous Materials*, 480.
- Jo, E., Song, S., Kim, J.-H., Lim, S., Kim, J. H., Cha, J.-J., Kim, Y.-M., & Joo, H. J. (2024). Assessing GPT-4's Performance in Delivering Medical Advice: Comparative Analysis With Human Experts. *JMIR Medical Education*, 10.
- Khlaif, Z. N., Mousa, A., Hattab, M. K., Itmazi, J., Hassan, A. A., Sanmugam, M., & Ayyoub, A. (2023). The Potential and Concerns of Using AI in Scientific Research: ChatGPT Performance Evaluation. *JMIR Medical Education*, 9.
- Kienzle, A., Niemann, M., Meller, S., & Gwinner, C. (2024). ChatGPT May Offer an Adequate Substitute for Informed Consent to Patients Prior to Total Knee Arthroplasty-Yet Caution Is Needed. *Journal of Personalized Medicine*, 14(1).
- Klang, E., Alper, L., Sorin, V., Barash, Y., Nadkarni, G. N., & Zimlichman, E. (2024). Advancing radiology practice and research: harnessing the potential of large language models amidst imperfections. *BJR Open*, 6(1).
- Kolla, L., & Parikh, R. B. (2024). Uses and limitations of artificial intelligence for oncology. *Cancer*, 130(12), 2101–2107.
- Kumar, S. S., Ku, B., Sen, R., Kumar, M., & Lata, R. (2025). Exploring the Impact of Communicative Leadership on Employee Engagement: The Mediated Moderated Effect of Employee Perceptions of Communication and Leaders' Intention to use ChatGPT. *Journal of Ecohumanism*, 4(1), 86–105.
- Le, K. D. R., Tay, S. B. P., Choy, K. T., Verjans, J., Sasanelli, N., & Kong, J. C. H. (2024). Applications of natural language processing tools in the surgical journey. *Frontiers in Surgery*, 11.
- Lee, S. K., & Koo, Y. (2024). Proposal of a Facilitation and Process Model for Enhancing Creativity in Co-design Workshops with Generative AI: The Use of ChatGPT. *Archives of Design Research*, 37(2), 249–281.
- Lee, S.-W., & Choi, W.-J. (2023). Utilizing ChatGPT in clinical research related to anesthesiology: a comprehensive review of opportunities and limitations. *Anesthesia and Pain Medicine*, 18(3).
- Li, G., Peng, X., Wang, Q. X., Xie, T., Jin, Z., Wang, J., Ma, X. X., & Li, X. D. (2023). Challenges from LLMs as a Natural Language Based Human-machine Collaborative Tool for Software Development and Evolution. *Ruan Jian Xue Bao/ Journal of Software*, 34(10).
- Li, M., Xiong, X., & Xu, B. (2024). Attitudes and perceptions of Chinese oncologists towards artificial intelligence in healthcare: a cross-sectional survey. *Frontiers in Digital Health*, 6.
- Li, S. W., Kemp, M. W., Logan, S. J. S., Dimri, P. S., Singh, N., Mattar, C. N. Z., Dashraath, P., Ramlal, H., Mahyuddin, A. P., Carter, S. W. D. K. S. and, Thain, S. P. T., Fee, E. L., Illanes, S. E., Choolani, M. A., & G, N. U. S. O. &. (2023). ChatGPT outscored human candidates in a virtual objective structured clinical examination in obstetrics and gynecology. *American Journal of Obstetrics and Gynecology*, 229(2).
- Li, W., Zhang, W., Wu, W., & Xu, J. (2024). Exploring human-machine collaboration paths in the context of AI-generation content creation: a case study in product styling design. *Journal of Engineering Design*.
- Li, Y., & Li, Z. (2024). Knowledge, Attitude, and Practices Regarding ChatGPT Among Health Care Professionals. *The American Journal of Managed Care*, 30, e258–e265.
- Lim, B., Seth, I., Bulloch, G., Xie, Y., Hunter-Smith, D. J., & Rozen, W. M. (2023). Evaluating the efficacy of major language models in providing guidance for hand trauma nerve laceration patients: a case study on Google's AI BARD, Bing AI, and ChatGPT. *Plastic and Aesthetic Research*, 10.
- Limna, P., & Kraiwanit, T. (2023). The role of ChatGPT on customer service in the hospitality industry: an exploratory study of hospitality workers' experiences and perceptions. *Tourism and Hospitality Management*, 29(4), 583–592.
- Lin, Y., Li, C., Ding, M., Zhan, W. T. M. and, & Althoff, M. (2024). DrPlanner: Diagnosis and Repair of Motion Planners for Automated Vehicles Using Large Language Models. *IEEE Robotics and Automation Letters*, 9(10), 8218–8225.
- Liu, L. X., Sun, Z., Xu, K., & Chen, C. (2024). AI-Driven Financial Analysis: Exploring ChatGPT's Capabilities and Challenges. *International Journal of Financial Studies*, 12(3).
- Liu, S., Zhang, J., Wang, L., & Gao, R. X. (2024). Vision AI-based human-robot collaborative assembly driven by autonomous robots. *CIRP Annals-Manufacturing Technology*, 73(1), 13–16.
- Liu, Y., Ju, S., & Wang, J. (2024). Exploring the potential of ChatGPT in medical dialogue summarization: a study on consistency with human preferences. *BMC Medical Informatics and Decision Making*, 24(1).
- Lossio-Ventura, J. A., Weger, R., Lee, A. Y., Guinee, E. P., Chung, J., Atlas, L., Linos, E., & Pereira, F. (2024). A Comparison of ChatGPT and Fine-Tuned Open Pre-Trained Transformers (OPT) Against Widely Used Sentiment Analysis Tools: Sentiment Analysis of COVID-19 Survey Data. *JMIR Mental Health*, 11.
- Lu, P., Hsiao, S.-W., Tang, J., & Wu, F. (2024). A generative-AI-based design methodology for car frontal forms design. *Advanced Engineering Informatics*, 62(C).
- Manresa, A., Sammour, A., Mas-Machuca, M., Chen, W., & Botchie, D. (2024). Humanizing GenAI at work: bridging the gap between technological innovation and employee engagement. *Journal of Managerial Psychology*.
- Marimon, F., Mas-Machuca, M., & Akhmedova, A. (2024). Trusting in Generative AI: Catalyst for Employee Performance and Engagement in the Workplace. *International Journal of Human-Computer Interaction*.
- Matulis, J., & McCoy, R. (2023). Relief in Sight? Chatbots, In-baskets, and the Overwhelmed Primary Care Clinician. *Journal of General Internal Medicine*, 38(12), 2808–2815.
- Matzko, R. O., & Konur, S. (2024). BioNexusSentinel: a visual tool for bioregulatory network and cytohistological RNA-seq genetic expression profiling within the context of multicellular simulation research using ChatGPT-augmented software engineering. *Bioinformatics Advances*, 4(1).
- Mese, I., Taslicay, C. A., & Sivrioglu, A. K. (2023). Improving radiology workflow using ChatGPT and artificial intelligence. *CLINICAL IMAGING*, 103.
- Nazir, A., Cheema, M. N., & Wang, Z. (2023). ChatGPT-based biological and psychological data imputation. *Meta-Radiology*, 1(3).
- Ni, B., & Buehler, M. J. (2024). MechAgents: Large language model multi-agent collaborations can solve mechanics problems, generate new data, and integrate knowledge. *Extreme Mechanics Letters*, 67.
- Oami, T., Okada, Y., & Nakada, T. (2024). Performance of a Large Language Model in Screening Citations. *Jama Network Open*, 7(7).
- Papadopoulos, T., Sivarajah, U., Spanaki, K., Despoudi, S., & Gunasekaran, A. (2022). Editorial: Artificial Intelligence (AI) and data sharing in manufacturing, production and operations management research. In *International Journal of Production Research* (Vol. 60, Issue 14).
- Park, J., Oh, K., Han, K., & Lee, Y. H. (2024). Patient-centered radiology reports with generative artificial intelligence: adding value to radiology reporting. *Scientific Reports*, 14(1).
- Prasad, K. D. V., & De, T. (2024). Generative AI as a catalyst for HRM practices: mediating effects of trust. *Humanities & Social Sciences Communications*, 11(1).
- Radanliev, P. (2024). Artificial intelligence: reflecting on the past and looking towards the next paradigm shift. *Journal of Experimental and Theoretical Artificial Intelligence*.
- Reynolds, K., & Tejasvi, T. (2023). Potential utility of ChatGPT in responding to patient questions and creating patient resources. *JMIR Dermatology*, 2023.
- Saad, A., Jenko, N., Ariyaratne, S., Birch, N., Iyengar, K. P., Davies, A. M., Vaishya, R., & Botchu, R. (2024). Exploring the potential of ChatGPT in the peer review process: An observational study. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, 18(2).
- Saner, F. H., Saner, Y. M., Abufarhan, E., Broering, D. C., & Raptis, D. A. (2024). Comparative Analysis of Artificial Intelligence (AI) Languages in Predicting Sequential Organ Failure Assessment (SOFA) Scores. *Cureus Journal of Medical Science*, 16(5).
- Sorin, V., Klang, E., Sobeh, T., Konen, E., Shrot, S., Livne, A., Weissbuch, Y., Hoffmann, C., & Barash, Y. (2024). Generative pre-trained transformer (GPT)-4 support for differential diagnosis in neuroradiology. *Quantitative Imaging in Medicine and Surgery*, 14(10), 7551–7560.
- Sridharan, K., & Sivaramakrishnan, G. (2024). Assessing the Decision-Making Capabilities of Artificial Intelligence Platforms as Institutional Review Board Members. *Journal of Empirical Research on Human Research Ethics*, 19(3), 83–91.
- Srivastav, S., Chandrakar, R., Gupta, S., Babhulkar, V., Agrawal, S., Jaiswal, A., Prasad, R., & Wanjari, M. B. (2023). ChatGPT in Radiology: The Advantages and Limitations of Artificial Intelligence for Medical Imaging Diagnosis. *Cureus Journal of Medical Science*, 15(7).
- Sun, G. H. (2024). Prompt Engineering for Nurse Educators. *Nurse Educator*.
- Tabuchi, H., Engelmann, J., Maeda, F., Nishikawa, R., Nagasawa, T., Yamauchi, T., Tanabe, M., Akada, M., Kihara, K., Nakae, Y., Kiuchi, Y., & Bernabeu, M. O. (2024). Using artificial intelligence to improve human performance: Efficient retinal disease detection training with

- synthetic images. *British Journal of Ophthalmology*, 108(10), 1430–1435.
- Temperley, H. C., O'Sullivan, N. J., Corr, A. C. B. M. M. and, Meaney, J. F., Kelly, M. E., & Brennan, I. (2024). Current applications and future potential of ChatGPT in radiology: A systematic review. *Journal of Medical Imaging and Radiation Oncology*, 68(3), 257–264.
- Ting, Y. T., Hsieh, T. C., Wang, Y. F., Kuo, Y. C., Chen, Y. J., Chan, P. K., & Kao, C. H. (2024). Performance of ChatGPT incorporated chain-of-thought method in bilingual nuclear medicine physician board examinations. *Digital Health*, 10.
- Tri, S., & Anjanarko, J. (2022). The Effect of Workload and Compensation on Employee Productivity. *Management, Engineering, and Technology T. S. Anjanarko & Jahroni*, 1(2).
- Urban, R., Haluzova, S., Strunga, M., Lifkova, M. S. J. and, Tomasik, J., & Thurzo, A. (2023). AI-Assisted CBCT Data Management in Modern Dental Practice: Benefits, Limitations and Innovations. *Electronics*, 12(7).
- Vochozka, M., Horak, J., & Morley, N. (2023). Generative Artificial Intelligence and Voice and Gesture Recognition Technologies, Virtual Team Movement and Behavior Tracking, and Haptic and Biometric Sensors in Virtual Immersive Workspaces. *Contemporary Readings in Law and Social Justice*, 15(2), 160–178.
- Wang, J. (2024). Hallucination Reduction and Optimization for Large Language Model-Based Autonomous Driving. *Symmetry*, 16(9), 1196.
- Wang, W. H., Wang, S. Y., Huang, J. Y., Liu, X. Di, Yang, J., Liao, M., Lu, Q., & Wu, Z. (2024). An investigation study on the interpretation of ultrasonic medical reports using OpenAI's GPT-3.5-turbo model. *Journal of Clinical Ultrasound*, 52(2), 105–111.
- Williams, C. Y. K., Zack, T., Miao, B. Y., Sushil, M., Wang, M., Kornblith, A. E., & Butte, A. J. (2024). Use of a Large Language Model to Assess Clinical Acuity of Adults in the Emergency Department. *JAMA Network Open*, E248895.
- Wolniak, R. (2020). Main functions of operation management. *Production Engineering Archives*, 26(1).
- Wu, Q., Li, H., Wang, Y., Bai, Y., Wu, Y., Yu, X., Li, X., Dong, P., Xue, J., & Wang, M. S. D. and. (2024). Evaluating Large Language Models for Automated Reporting and Data Systems Categorization: Cross-Sectional Study. *Jmir Medical Informatics*, 12.
- Yan, W., Hu, B., Liu, Y., Li, C., & Song, C. (2024). Does usage scenario matter? Investigating user perceptions, attitude and support for policies towards ChatGPT. *Information Processing & Management*, 61(6).
- Yu, J., & Qi, C. (2023). The Impact of Generative AI on Employment and Labor Productivity. *Review of Business*, 44(1), 53–67.
- Zeng, Z., Nie, Y.-C., Ding, N., Ding, Q.-J., Ye, W.-T., Yang, C., Sun, M., Weinan, E., Zhu, R., & Liu, Z. (2023). Transcription between human-readable synthetic descriptions and machine-executable instructions: an application of the latest pre-training technology. *Chemical Science*, 14(35), 9360–9373.
- Zhang, B. (2023). Prompt Engineers or Librarians? An Exploration. *Medical Reference Services Quarterly*, 42(4), 381–386.
- Zhang, T., Meng, J., Yang, Y., & Yu, S. (2024). Contrastive Learning Penalized Cross-Entropy with Diversity Contrastive Search Decoding for Diagnostic Report Generation of Reduced Token Repetition. *Applied Sciences-Basel*, 14(7).
- Zhang, Y., Wei, C., He, Z., & Yu, W. (2024). GeoGPT: An assistant for understanding and processing geospatial tasks. *International Journal of Applied Earth Observation and Geoinformation*, 131.
- Zhou, E., & Lee, D. (2024). Generative artificial intelligence, human creativity, and art. *Pnas Nexus*, 3(3).