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Review Article

Navigating AI challenges: Adopting ancient and modern methods for enhanced techniques

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ABSTRACT

Artificial Intelligence is the emerging trend to use by every country for the development with the support of the Information technology sector. The invention of Artificial Intelligence was made to fulfill the needs of the scarcity or demand in the society. Initially the researchers have invented devices which support Human computer interaction; later the invention has developed in a wide range by including the latest applications and techniques. Now the Artificial Intelligence has been spreading all the domains of the every on life. Some sector uses the artificial intelligence application for the growth some sector uses the Artificial Intelligence support for the emergency, some few still doing the research on how to incorporate the usage of the Artificial Intelligence. This article aim to study of research development in the Artificial Intelligence during the past five years on different domains and elaborates the Artificial Intelligence developments on different domains like health care, education, research, replacing the humans, applications, latest technologies incorporated in to the AI domain, generative AI, management, stock market, public, government etc to support the human and develop the human and computer Interaction with the methods used and merits and demerits, for making the survey the article focuses on the latest five years of the research articles from 50 to 60 count published in the various publication domain and consolidates the survey. Every domains research article are organized in the way of methods followed for the invention, merits and demerits of the each innovated method and finds the research scope needed on the each domains. Finally discussed about the feature scope of the Artificial Intelligence is needed to make collaboration with the human ethics to attain the best research.

Keywords: Artificial Intelligence; Chat GPT; GEnAI

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1. Introduction

When Human-Computer Interaction (HCI)[1] was introduced in the tech industry, it led to the development of man-machine interfaces designed to assist human needs. Assisting the human need has been supported with the invention of new devices, these devices work based on knowledge given by the inventors or the developers. Day by day the basics of knowledge are trying to do the equivalent to the human brain[2] is called Artificial Intelligence.

This kind of intelligence is trying to think on its own and making the decision based on the scenario given by nature. Many research work was carried out in the Artificial Intelligence with all the domains like health care, education, research, replacing the humans, applications, latest technologies incorporated in to the AI domain, generative AI, management, stock market, public, government etc. as shown in the **Figure 1** to support the human and develop the human and computer interaction. Artificial Intelligence has initiated to take the invention wherever the demand is needed.

Society needs health care related assistance, which is not able to make it efficiently in emergency situations. Initially the artificial has been initiated to support the health care domain for elderly people later which has been enhanced to public health practices[3] with AI and ML algorithms, drug discovery[4], and early disease detection[5] and images analysis of patients for surgery[6]. AI research is not limited to the health care which has been spread across to the education in ICT[7], Chat bot[8], medical education[9] etc., Even the AI uses in the field of research article preparation[10-15], generative AI[16-18]. In addition to that, AI is incorporating many modern technologies like machine learning[19], neural network[20], deep learning[21], and big data[22] to provide vast services to society. Latest AI related services are in application developments like pollution reduction[23]; sensors with IOT[8], finally the government sectors[24], industry[25] and aerospace[26] are using the AI technique to develop their domains.

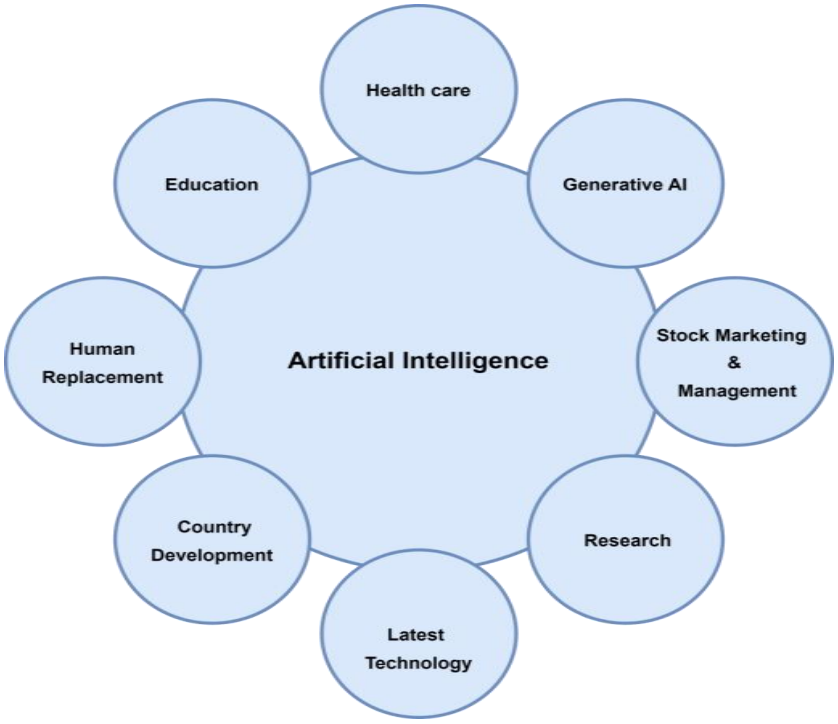

Figure 1. Artificial intelligence dimensions.

Initially the Artificial Intelligence technique were used in the computer to replace the human interaction, which has gained many benefits to make the application in an effectively. This innovation has spreader to others domains like the medical field, industries, public sectors, government sectors where the need of the intelligence to promote the field. But the developing stage of the Artificial Intelligence from the ancient year to present could not predict also the latest prediction of Artificial Intelligence methods in last five years is rare to estimate which could be support to the researcher to make the clear vision on their future research. This article elaborates the survey about the Artificial Intelligence in various domains and also discusses the methods of invention with merits and demerits of each domain. This article has been organized as follows, in section II discuss the various domain literature survey, section III discuss the brief discussion about the domains needs and feature work of each domain in each field is proposed and finally section IV concludes the survey work.

2. Literature Survey

The Invention of Artificial Intelligence was spread in to various domains to reduce the mental stress of humans in the working professions. This section elaborates the development of Artificial Intelligence in different domains like health care, education, research, replacing humans, applications, latest technologies incorporated into the AI domain, generative AI, management, stock market, public, government etc. Every domains innovations has usage of new methods to develop the innovative research on the Artificial Intelligence to support the work to be easier, but the innovation produce the various metrics as well demerits. To overcome the demerits on the work another artificial based innovation has invented. In order to ensure that the research papers and content sources cited in this report accurately reflect current knowledge on Artificial Intelligence and reliable findings from peer-reviewed journals or reputable authors, they were most likely chosen based on their applicability to the study's topic. The writers might have searched for pertinent research using AI keywords in specialized academic databases like PubMed or Google Scholar. Older or irrelevant papers were rejected, and the inclusion criteria most likely concentrated on empirical or current investigations. By cross-referencing important works, more sources might have been found, and journal impact might have had an impact on the choice.

2.1. Survey related to health care

Health care profession is the highest prioritize profession in the world since it is a humiliation if the work is not done perfectly. So the research needs an additional support to the health care monitories person to overcome the issues. Some authors made the research work on adding the Artificial Intelligence into the health care, by incorporating the disease assistant, drug discovery, surgery and virtual therapy, each research has encountered some limitations as well as some credits to make the research on health care. The summary of the research was compared in **Table 1** with merits and demerits. Patel Keyur[3] invented the AI on public health with the support of AI with machine learning algorithms , the invented AI assists the disease management with ethical considerations finally this methods could not able to supports for ethical consideration of security, privacy, biases, and legal uncertainties, also needs legislation and individual rights and well-being. Eman Shawky Mira *et al*[4] was invented a healthcare based AI for AI diagnosis, predictive analytics, drug discovery which improved diagnosis accuracy, personalized treatment, enhanced drug discovery but not suitable for all kind of health cares.

David *et al*[5] was proposed the mental health care for virtual therapists to achieve the early detection, personalized treatment plans, AI driven virtual therapists which improved accessibility and efficacy of mental healthcare, but the future directions for regulatory frameworks and ethical considerations. Chi Zhang *et al*[6] was invented integration of AI in surgery, preoperative imaging analysis, real time decision support, the research improved postoperative outcomes and augmentation of surgeon knowledge but it could not support for emergency surgery.

Table 1. AI research related to health care.

Author	Methods	Merits	Demerits
Patel Keyur[3]	Transformational effects of AI on public health	• AI and ML algorithms play a crucial role in transforming public health practices. • AI assists in disease management, prevention, and personalized interventions. • Ethical considerations are highlighted, emphasizing the	• Ethical concerns regarding user consent, security, privacy, biases, and legal uncertainties. • Need for legislation to adapt to AI advancements and address accountability issues. • Balancing technological advancements with individual rights and well-being.

		importance of user consent and data protection.	
Eman Shawky Mira *et al*[4]	Healthcare	• AI diagnosis, predictive analytics, drug discovery	• Improved diagnosis accuracy, personalized treatment, enhanced drug discovery
David *et al*[5]	Mental Healthcare	• Early detection, personalized treatment plans, AI driven virtual therapists	• Improved accessibility and efficacy of mental healthcare, future directions for regulatory frameworks and ethical considerations
Chi Zhang *et al*[6]	Healthcare	• Integration of AI in surgery, preoperative imaging analysis, real time decision support	• Improved postoperative outcomes, augmentation of surgeon knowledge

2.2. Survey related to education

AI domain is needed in the education sector to improve the education strategy. Another set of researchers are doing the research work on providing AI into the education field by introducing ICT communication ,chat bots, and medical education for providing health care treatment. The summary of the research related to Education is listed in **Table 2** with its merits and demerits. P. S. Venkateswaran *et al*[7] used Information & Communication Technologies (ICT) in higher education for transformation of traditional teaching and learning practices student-cantered learning-enhanced efficiency in administrative tasks, the results achieves that potential challenges in technological integration but fails on dependency on technology for educational processes. Ammar Abulibdeh *et al*[8] was proposes the AI integration in curriculum, AI chat bots which gains personalized learning, innovative teaching methods, efficiency in grading and assessment but the effectiveness of integration was lags. Integration of AI in medical education was proposed by Manuel *et al*[9] by using the guidelines for successful integration of AI in medical education and ensuring preparedness of healthcare professionals for modern medicine-upholding ethical standards finally the results lack of comprehensive guidelines for AI integration in medical education also need for careful consideration of ethical and professional implications.

Table 2. AI research related to the education.

Author	Methods	Merits	Demerits
P. S. Venkateswaran *et al*[7]	Information & Communication Technologies (ICT) in Higher Education	• Transformation of traditional teaching and learning practices • Student-cantered learning-enhanced efficiency in administrative tasks	• Potential challenges in technological integration • Dependency on technology for educational processes
Ammar Abulibdeh *et al*[8]	Education	• AI integration in curriculum, AI chat bots	• Personalized learning, innovative teaching methods, efficiency in grading and assessment
Manuel *et al*[9]	AI Integration in Medical Education	• Guidelines for successful integration of AI in medical education • Ensuring preparedness of healthcare professionals for modern medicine-upholding ethical standards	• Lack of comprehensive guidelines for AI integration in medical education • Need for careful consideration of ethical and professional implications

2.3. Survey related to AI for research support

Researcher needs an AI support for making use of their research work in confidential. So a set of researchers focusing on generating Artificial Intelligence tools for the research support for drafting the article for improving the research efficiency, manuscript submission to aid the researchers to put more attention on the research innovation, the summary of the research is given in the **Table 3** below. Messeri L., Crockett M.J[10] was discusses the vision of scientist for promising to improve productivity and objectivity by overcoming human shortcomings, potential to improve research efficiency. The research results exploitation of cognitive limitations may lead to illusions of understanding. Risk of scientific monocultures dominating alternative approaches but the introduction of a phase where more is produced but less is understood in scientific inquiry. Next researchers Perrault R. & Clark J[11] prepared AI for AI index report; the research achieves the comprehensive coverage of AI trends and data. Provides unbiased and rigorously vetted data for policymakers, researchers, and the public but limits on lack of detailed analysis on specific AI applications and limited insight into individual AI technologies and their implications. Kayvan Kousha & Mike Thelwall[12] was done peer review automation of publishing related tasks, assistance in finding suitable reviewers, potential for quality control in manuscript submissions in review automation. The research could not produce the value of AI in peer review processes and limited evidence on the efficacy of automation in publishing tasks. Moe Elbadawi *et al*[13] uses AI for writing the scientific research writing with the support of LLMs since the potential for LLMs to generate original scientific research and streamlining of research processes with multi-disciplinary expertise demonstrated by LLMs. but the research produced the lack of referencing to literature also need for human input, interpretation, and data validation in scientific research. AI/ML for SLR synthesis research was taken by Atkinson[14] for offering automation of SLR data synthesis and abstraction, reducing time and cost but this work requires coding expertise and may overlook nuances captured through manual review. Review of XAI models and frameworks was done by Hassija *et al*[15] to provides comprehensive overview of XAI models and their implications but the results limited discussion on practical implementation challenges and real-world applications of XAI.

Table 3. AI research related to the research.

Author	Methods	Merits	Demerits
Messeri L., Crockett M.J[10]	Taxonomy of scientists' visions for AI	Promises to improve productivity and objectivity by overcoming human shortcomings, potential to improve research efficiency.	-Exploitation of cognitive limitations may lead to illusions of understanding. -Risk of scientific monocultures dominating alternative approaches.- Introduction of a phase where more is produced but less is understood in scientific inquiry.
Perrault R. & Clark J[11]	AI Index report	Comprehensive coverage of AI trends and data. Provides unbiased and rigorously vetted data for policymakers, researchers, and the public	-Lack of detailed analysis on specific AI applications. Limited insight into individual AI technologies and their implications.
Kayvan Kousha & Mike Thelwall[12]	Peer Review Automation	-Automation of publishing-related tasks-Assistance in finding suitable reviewers-Potential for quality control in	-Unclear value of AI in peer review processes-Limited evidence on the efficacy of automation in

		manuscript submissions - Potential for LLMs to generate original scientific research - Streamlining of research processes - Multi-disciplinary expertise demonstrated by LLMs	publishing tasks - Lack of referencing to literature - Need for human input, interpretation, and data validation in scientific research
Moe Elbadawi *et al*[13]	AI in Scientific Writing		
Atkinson[14]	Utilization of AI/ML for SLR synthesis	Offers automation of SLR data synthesis and abstraction, reducing time and cost	Requires coding expertise and may overlook nuances captured through manual review
Hassija *et al*[15]	Review of XAI models and frameworks	Provides comprehensive overview of XAI models and their implications	Limited discussion on practical implementation challenges and real-world applications of XAI

2.4. Survey related to application of AI

Application of AI spreads in all other domains like Industries, technological aspects, the set of research work was carried out by inventing the Artificial Intelligence domain into different applications like pollution reduction, transforming technological changes, industry usage, nursing care etc, which is summarised in **Table 4**. Yuping Shang *et al*[23] was elaborates the AI's impact on pollution reduction and AI technology contributes to pollution reduction in enterprises, the results supports the effectiveness of AI in reducing emissions, but it need for careful analysis and interpretation of empirical data, ethical considerations regarding labor substitution and technological innovation effects and potential environmental and social implications of widespread AI adoption. AI technological changes was discussed by the Thangaraja Arumugam *et al*[27] which involves the transformation of enterprise operations and improved customer understanding and targeting for personalized marketing initiatives, but the results limits on limited adoption due to lack of understanding, potential for data privacy concerns and dependency on technology for marketing strategies. Industrialization of AI was invented by the van der Vlist *et al*[28] for corporate partnerships, acquisitions, financial investments, cloud platform offerings, but limits on wide adoption of AI technologies, industry-specific solutions, and growth of AI ecosystem. Systematic review of AI in nursing care was proposed by the Ruksakulpiwat *et al*[29] for provides comprehensive overview of AI applications in nursing care, identifying key themes and implications. The results produced on limited discussion on challenges in implementing AI solutions in nursing care settings and practical implications. Ammar Abulibdeh *et al*[8] proposed the AI integration of TENG sensors with IOT, the results proposes innovative approach for developing smart sensor systems using TENG sensors and deep learning but it requires further validation and scalability testing in real-world applications.

Table 4. Applications of Artificial Intelligence.

Author	Methods	Merits	Demerits
Yuping Shang *et al*[23]	AI's impact on pollution reduction	AI technology contributes to pollution reduction in enterprises. - Empirical evidence supports the effectiveness of AI in reducing emissions	Need for careful analysis and interpretation of empirical data. - Ethical considerations regarding labor substitution and technological innovation effects. - Potential environmental and social implications of widespread

			AI adoption.
Thangaraja Arumugam *et al*[27]	Technological Changes	- Transformation of enterprise operations - Improved customer understanding and targeting - Personalized marketing initiatives	- Limited adoption due to lack of understanding - Potential for data privacy concerns - Dependency on technology for marketing strategies
van der Vlist *et al*[28]	Industrialization of AI	Corporate partnerships, acquisitions, financial investments, cloud platform offerings	Wide adoption of AI technologies, industry-specific solutions, growth of AI ecosystem
Ruksakulpiwat *et al*[29]	Systematic review of AI in nursing care	Provides comprehensive overview of AI applications in nursing care, identifying key themes and implications	Limited discussion on challenges in implementing AI solutions in nursing care settings and practical implications
Ammar Abulibdeh *et al*[8]	Integration of TENG sensors with IOT	Proposes innovative approach for developing smart sensor systems using TENG sensors and deep learning	Requires further validation and scalability testing in real-world applications

2.5. Survey related to AI in latest technologies

Latest technologies like deep learning, machine learning, robotics and meta verse etc are integrated with the AI technologies to produces various applications domains. Set of researchers are doing the research work by combining the artificial intelligence technique into the latest technologies of machine learning, neural network, natural language processing, deep learning, virtual assistance, and meta verse etc as summaries in the **Table 5**. Automation of business processes with AI was proposed by the Apsilyam N. M.[30] which increased productivity and enhanced decision-making in the AI domain, but ethical, social, and legal concerns, potential job displacement and data confidentiality issues are not solved. Machine learning based AI was proposed by the J. D. Smith[19] for improving sales strategies and enhanced customer engagement with cost reduction the results limits on potential bias in algorithms, data privacy concerns and data quality. Neural networks based AI was invented by the Ali Husnain *et al*[20] for advanced pattern recognition, personalized financial services and enhanced risk management but the work produced the complexity in model training, interpretability issues and computational resource requirements. Natural language processing based work was invented by the Li X., Zheng *et al*[31] for efficient data analysis, enhanced customer service and market trend forecasting. But the research outcomes are facing language ambiguity, cultural nuances and accuracy challenges. Workflow optimization invented by the Frederick *et al*[21] to reduced manual labor and increased efficiency, the results reveals the efficiency increase but it needs initial setup costs and required resistance to change and potential job displacement. Robo-advisers was invented by the Zengyi Huang *et al*[32] for personalized asset management and strategies analysis for the user convenience, even though the invention was efficient investment but it relies on algorithms basic and required regular human touch and facing challenges in regulatory. Deep learning based AI proposed by the Frederick *et al*[21] for disease classification with the complex data analysis to overcome prediction, but it is like a black-box nature of models and has a explain ability issues and data bias. Virtual assistants based predictive analytics for disease surveillance from proactive interventions of personalized treatment plans was proposed by Ali Husnain *et al*[20], the result of this invention provide the round time clock service and data privacy but it need to achieve this ethical consideration also this innovation is algorithm bias. Big data and semantic analysis was proposed by the Ok-hue Cho[22] for improved

resource management, decision-making and streamlined operations, this work could able to perform even in a large datasets but limits on data privacy concerns and data quality issues, also has the complexity in data integration and language ambiguity then the dependence on data quality with complexity in analysis. AI based regional heterogeneity in effect on economic growth for positive effect on economic growth through technology, value, and application was proposed by the Wang X *et al*[33], the final results proved that policy design based but lack of significant contribution at high levels of development. Integration with VR, blockchain, NLP with Metaverse technology was proposed by the Soliman *et al*[34] the work proved that personalized experiences, automation, immersive interactions need to improve.

Table 5. Artificial Intelligence with latest technology.

Author	Methods	Merits	Demerits
Apsilyam, N. M.[30]	Artificial Intelligence	Automation of business processes - Increased productivity - Enhanced decision-making	Ethical, social, and legal concerns - Potential job displacement - Data confidentiality issues
J. D. Smith[19]	Machine Learning	- Improved sales strategies - Enhanced customer engagement - Cost reduction	Potential bias in algorithms - Data privacy concerns - Dependence on data quality
Ali Husnain *et al*[20]	Neural Networks	Advanced pattern recognition - Personalized financial services - Enhanced risk management	Complexity in model training - Interpretability issues - Computational resource requirements
Li X., Zheng *et al*[31]	Natural Language Processing	Efficient data analysis - Enhanced customer service - Market trend forecasting	Language ambiguity - Cultural nuances - Accuracy challenges
Frederick *et al*[21]	Automation	Workflow optimization - Reduced manual labor - Increased efficiency	- Initial setup costs - Resistance to change - Potential job displacement
Zengyi Huang *et al*[32]	Robo-advisers	Personalized asset management - Efficient investment strategies - User convenience	Lack of human touch - Potential algorithmic biases - Regulatory challenges
Frederick *et al*[21]	Deep Learning	Complex data analysis - Disease classification - Outcome prediction	Black-box nature of models - Explain ability issues - Data bias
Ali Husnain *et al*[20]	Predictive Analytics & Virtual Assistants	Proactive interventions - Personalized treatment plans - Disease surveillance Round-the-clock support - Real-time monitoring - Enhanced patient engagement	Data privacy concerns - Ethical considerations - Algorithm bias Privacy concerns - Accuracy challenges - Limited understanding of emotional cues
Ok-hue Cho[22]	Big Data Analysis Semantic Analysis	Insights from large datasets - Informed decision-making - Optimization of operations - Improved resource management - Informed decision-making - Streamlined operations	Data privacy concerns - Data quality issues - Complexity in data integration Language ambiguity - Dependence on data quality - Complexity in analysis
Wang X *et al*[33]	Artificial Intelligence	- Significant positive effect on economic growth through technology, value, and application - Regional heterogeneity in effect on economic	- Ethical, social, and economic effects - Regional disparities in impact - Lack of significant contribution at high levels of

		growth - Recommendations for policy design based on findings	development
Soliman *et al*[34]	Metaverse	Integration with VR, blockchain, NLP	Personalized experiences, automation, immersive interactions

2.6. Survey related to GENAI

Generative AI has involved in the development of the AI with several domains development. Group of research work was carried out by the researchers to provide generative Artificial Intelligence tools to support Chat GPT, GENAI , Chat bot and generative AI are summaries in the **Table 6**. Writing peer-reviewed articles with Chat GPT was developed by Kacena *et al*[16] to reduce the writing time a potential assistance in writing credible scientific articles which high inaccuracies in references cited by AI-only approach. Increased likelihood of plagiarism with AI-assisted approach. The limitation of the approach was limitation in accessing recent literature due to AI's cutoff date, and requirement for extensive fact-checking which needs for careful oversight by humans when using AI in scientific writing. Alier *et al*[17] proposed the generative AI for content generation, personalized learning customized learning experiences, automation of repetitive tasks which only concerns about academic integrity, authenticity of generated content not for global aspect. Conceptual analysis of AI-driven chat bots given by Durach and Gutierrez[18] that offers insights into benefits and challenges of integrating AI chat bots in operations and supply chain management but lacks empirical validation of proposed ERI Framework and its impact on organizational performance. Qualitative analysis of GENAI in education was done by Min Salinas-Navarro *et al*[35] which support for experiential learning in higher education but reliance on qualitative analysis may limit generalizability.

Table 6. Artificial Intelligence with generative AI.

Author	Methods	Merits	Demerits
Kacena *et al*[16]	Chat GPT for writing peer-reviewed articles	- Reduction in writing time. - Potential assistance in writing credible scientific articles. - Possibility of improving writing efficiency.	- High inaccuracies in references cited by AI-only approach. - Increased likelihood of plagiarism with AI-assisted approach. - Limitation in accessing recent literature due to AI's cutoff date. - Requirement for extensive fact-checking. - Need for careful oversight by humans when using AI in scientific writing.
Alier *et al*[17]	Generative AI	Content generation, personalized learning Customized learning experiences, automation of repetitive tasks	Concerns about academic integrity, authenticity of generated content
Durach and Gutierrez[18]	Conceptual analysis of AI-driven chat bots	Offers insights into benefits and challenges of integrating AI chat bots in operations and supply chain management	Lacks empirical validation of proposed ERI Framework and its impact on organizational performance
Min Salinas-Navarro *et al*[35]	Qualitative analysis of GENAI in education	Highlights potential of GENAI for experiential learning in higher education	Reliance on qualitative analysis may limit generalizability

2.7. AI survey on country and industries

Every countries trying to adopt the AI for the development of industries and public organizations, Artificial Intelligence has been used in government sector for legal regulation, automation in industry, satellite aerospace operation, and public organization as shown in the **Table 7**. Use of AI in government, digitization, legal regulation was reviewed by the authors Odilov *et al*[24] for government digitization's and legal regulations, which lags to achieve the faster communication, efficient state activity. Mia *et al*[25] invented industry 4.0 for integration of AI and robotics, increased automation, predictive maintenance, quality control this support to enhanced operational processes, novel approaches to human-robot collaboration. AI for satellite operations, Trusted Autonomous Satellite Operations (TASO) was done by Kathiravan Thangavel *et al*[26] for AERO space organization which support to enhanced systemic performance, resilience in space environments. AI adoption in public organizations was proposed by Neumann *et al*[36] for the identification of factors influencing successful AI adoption in public organizations-theoretical understanding of AI adoption stages and sector-specific obstacles that limits on complexity of AI implementation in public sector need for attention to broader implications such as fairness and accountability.

Table 7. Artificial Intelligence for the country.

Author	Methods	Merits	Demerits
Odilov *et al*[24]	Government	Use of AI in government, Digitization, Legal regulation	Lags Faster communication, Efficient state activity
Mia *et al*[25]	Industry 4.0	Integration of AI and robotics, Increased automation, Predictive maintenance, Quality control	Enhanced operational processes, Novel approaches to human-robot collaboration
Kathiravan Thangavel *et al*[26]	Aerospace	AI for satellite operations, Trusted Autonomous Satellite Operations (TASO)	Enhanced systemic performance, Resilience in space environments
Neumann *et al*[36]	AI Adoption in Public Organizations	- Identification of factors influencing successful AI adoption in public organizations - Theoretical understanding of AI adoption stages and sector-specific obstacles	- Complexity of AI implementation in public sector - Need for attention to broader implications such as fairness and accountability

2.8. Survey on AI in stock market and management

Many of the company's growth are based on the stock market and management, so the inventors play a vital role in developing the AI based share prediction and growth modeling to get the financial growth of the company, so that the inventors can easily invest the company. Artificial Intelligence field supports in the field of management and share marketing with quality based AI energy and multi perspective as discussed in the **Table 8**. To provides comprehensive framework for assessing AI sustainability for the development of SCAIS Framework Friederike Rohde *et al*[51] was suggested the methods to support the share, but the framework done AI assessment well, it needs framework may require refinement and validation through practical implementation. Tania Babina *et al*[38] has done the analysis of firm-level AI investments to reveals increase in AI investments and their positive economic impact on sales, employment, and innovation but it lack detailed analysis of specific sectors or regions. AI Trust & Security based work was done by Adib Habbal *et al*[39] for

making AI Trust, Risk and Security Management (AI TRISM) framework to ensuring reliability and trustworthiness of AI systems. Jakubik *et al*[40] has develop the business model for the data-centric AI paradigm, framework for data-centric AI, overview of tools which has limits on effective and efficient AI-based systems and enhanced business model innovation.

Table 8. Artificial Intelligence in stock market and management.

Author	Methods	Merits	Demerits
Friederike Rohde *et al*[51]	Development of SCAIS Framework	Provides comprehensive framework for assessing AI sustainability	Framework may require refinement and validation through practical implementation
Tania Babina *et al*[38]	Analysis of firm-level AI investments	Reveals increase in AI investments and their positive economic impact on sales, employment, and innovation	May lack detailed analysis of specific sectors or regions
Adib Habbal *et al*[39]	AI Trust & Security	AI Trust, Risk and Security Management (AI TRiSM) framework	Ensuring reliability and trustworthiness of AI systems
Jakubik *et al*[40]	Business	Data-centric AI paradigm, Framework for data-centric AI, Overview of tools	Effective and efficient AI-based systems, Enhanced business model innovation

2.9. Survey on Artificial Intelligence for public

Set of development work was carried out for the use of the public sector using Artificial Intelligence such as hospitality, industrialization, human as summaries in **Table 9**. Law *et al*[41] authors has done the AI research in hospitality for systematic review of recent AI research in hospitality and identification of research gaps and future directions, review finds that inadequacies in theory, context, and methods in contemporary and needs for more research on generative AI applications. Balaram Yadav Kasula[42] proposed the ethical implications of AI in healthcare for examination of ethical implications of AI in healthcare, critical assessment of privacy, bias, and decision-making transparency and consideration of societal impact but the work need for transparency in decision-making processes. Impact of AI on worker experience was done by Sarah Bankins *et al*[43], they done the identification of individual, group, and organizational factors shaping human-AI interaction and pathways for future research but the work need for further research and practical recommendations on AI integration in organizations. Industrialization of AI was established by Van der Vlist *et al*[28] for corporate partnerships, acquisitions, and financial investments, cloud platform offerings the research fails on wide adoption of AI technologies, industry-specific solutions, and growth of AI ecosystem. The review of ML models in bio-fuel production was done by Muhammad Hamza Naveed *et al*[44], they highlights superiority of ML models in optimizing bio-fuel production processes but limited discussion on challenges in integrating ML models with existing bio-fuel production systems.

Table 9. Artificial Intelligence for public.

Author	Methods	Merits	Demerits
Law *et al*[41]	AI Research in Hospitality	Systematic review of recent AI research in hospitality	Inadequacies in theory, context, and methods in contemporary AI research Need for more research on generative AI applications

Balaram Yadav Kasula[42]	Ethical Implications of AI in Healthcare	Examination of ethical implications of AI in healthcare - Critical assessment of privacy, bias, and decision-making transparency Consideration of societal impact	Ethical concerns related to privacy and bias. Need for transparency in decision-making processes
Sarah Bankins *et al*[43]	Impact of AI on worker Experience	Systematic review of empirical research on AI use at work. Identification of individual, group, and organizational factors shaping human-AI interaction Insights into pathways for future research	Mixed discourse on AI's impact on worker experiences. Potential for harm to human workers. Need for further research and practical recommendations on AI integration in organizations
Van der Vlist *et al*[28]	Industrialization of AI	Corporate partnerships, acquisitions, financial investments, cloud platform offerings	Wide adoption of AI technologies, industry-specific solutions, growth of AI ecosystem
Muhammad Hamza Naveed *et al*[44]	Review of ML models in bio-fuel production	Highlights superiority of ML models in optimizing bio-fuel production processes	Limited discussion on challenges in integrating ML models with existing bio fuel production systems

2.10. Research on AI influence the humans

In many countries using the habit of replacing the human with the support of AI due to the reasons of nature of the work is heavy, impact of the wok leads to affecting the human body, scarcity of the labors etc as shown in the **Table 10**. Authors Jean-François Bonnefon *et al*[57] machines as moral agents, patients, proxies, they proved that machines can perform as moral agents, making decisions affecting human outcomes. Machines can be perceived as moral patients, influencing by human decisions and machines can serve as moral proxies in human interactions. Even the human replacement could not able to address the ethical implications of machines making moral decisions, complexity in human-machine cooperation, potential consequences for trust between human groups and unexplored questions regarding AI's impact on intimate human relations.

From the survey, this section summaries that the Artificial Intelligence domain has vast developing arena in the field of health care, education, research, replacing the humans, applications, latest technologies incorporated in to the AI domain, generative AI, management, stock market, public, government etc. Still there are many researches are propagating in AI with all the field of engineering and non engineering domains.

Table 10. AI research related to the replacing the humans.

Author	Methods	Merits	Demerits
Jean-François Bonnefon *et al*[57]	Machines as moral agents, patients, proxies	Machines can perform as moral agents, making decisions affecting human outcomes. Machines can be perceived as moral patients, influencing by human decisions. Machines can serve as moral proxies in human interactions.	Ethical implications of machines making moral decisions. Complexity in human-machine cooperation. Potential consequences for trust between human groups. Unexplored questions regarding AI's impact on intimate human relations.

3. Methodology

The research design for an AI survey on developments across domains such as healthcare, education, research, human-computer interaction, management, the stock market, government, and the public sector should aim to explore how AI technologies are transforming these areas. The objective is to assess the incorporation of AI into these fields, focusing on the latest technologies like generative AI, AI's role in replacing or augmenting human labor, and its support in decision-making processes. The survey will use a systematic literature review (SLR) to gather insights from peer-reviewed studies, tracking AI methodologies and applications in each domain. Data extraction will focus on the benefits (e.g., increased efficiency, automation) and challenges (e.g., ethical concerns, job displacement) of AI adoption. The analysis will include thematic analysis for qualitative trends and bibliometric analysis for quantitative trends, highlighting key developments, merits, and limitations of AI in supporting human activities and advancing human-computer interaction. The findings will help identify gaps and suggest future research directions to optimize AI for societal benefit across various sectors.

A comparative approach can enhance the AI survey by juxtaposing how different domains-such as healthcare, education, management, and government-utilize AI, highlighting both the similarities and differences in AI integration, applications, and outcomes. The research design can incorporate comparative analysis to explore the following:

(1) **Healthcare vs. Education**: Compare AI's role in improving decision-making (e.g., diagnosis in healthcare vs. personalized learning in education). Examine the effectiveness of AI-driven tools in both fields and evaluate the impact on human experts (e.g., doctors vs. teachers).

(2) **Generative AI vs. Traditional AI**: Contrast the rise of generative AI technologies (e.g., GPT-4, DALL · E) with traditional AI models in domains like creative industries (art, writing) and structured environments (finance, stock market predictions).

(3) **Management vs. Government**: Compare how AI supports decision-making in corporate management (e.g., predictive analytics for business) versus in public governance (e.g., policy-making, law enforcement), focusing on efficiency, transparency, and ethical considerations.

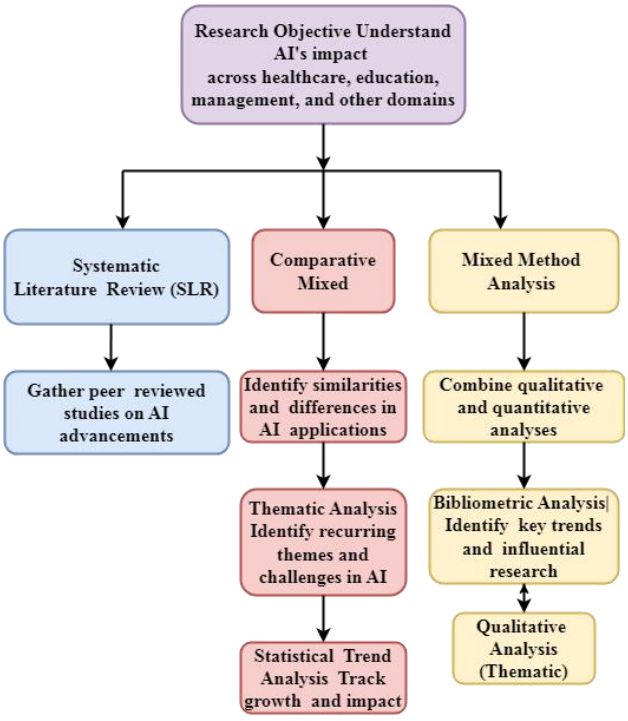

Figure 2. Research methodology.

(4) **Human Augmentation vs. Replacement**: Compare AI applications that augment human capabilities (e.g., decision-support systems) with those that aim to replace human labor (e.g., automation in manufacturing, AI-driven customer service), analyzing the societal and economic implications in various sectors.

The comparative analysis will help identify the merits (e.g., efficiency, cost reduction) and demerits (e.g., ethical concerns, job displacement, bias) across these domains, providing a nuanced understanding of how AI transforms different areas of society. This approach will highlight sector-specific challenges and best practices for optimizing human-AI interaction.

For this survey article, the chosen methods and analysis are appropriate for the research objective because they provide a comprehensive, structured, and systematic approach to understanding AI's impact across multiple domains. A Systematic Literature Review (SLR) ensures that the survey is thorough, reliable, and replicable by using defined search criteria to gather relevant and recent studies from reputable sources. This method helps maintain objectivity and ensures that the research captures a complete picture of AI advancements across sectors like healthcare, education, and management.

4. Discussion

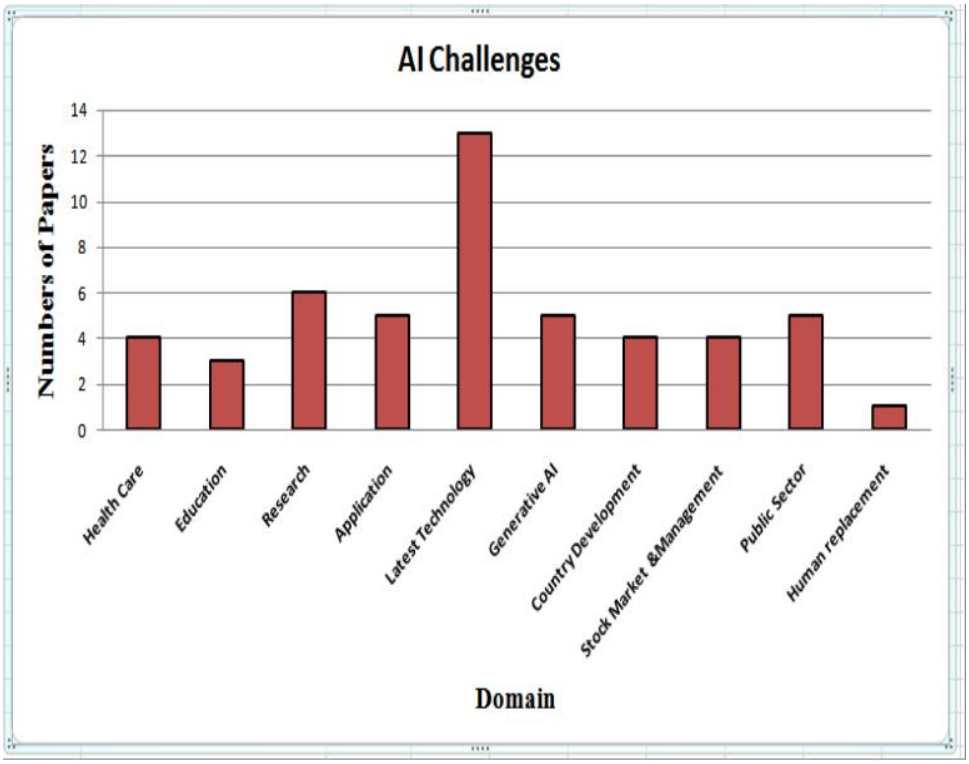

Figure 3. Artificial Intelligence challenges.

The primary aim of the AI survey article is to provide a comprehensive overview of existing research, trends, and developments within a specific sub-field of AI (e.g., machine learning algorithms, computer vision, AI ethics). Survey question are what are the current trends and advancements in the selected AI domain? What methodologies and technologies are prevalent? and How are these methods and technologies applied across various industries or fields? A survey is appropriate to synthesize the extensive body of AI research, identifying gaps, challenges, and opportunities for future research.

This section has made a brief discussion about the AI challenges in the various domains of health care, education, research, application, latest technology, generative AI, country development, stock marketing and management, public sector and human replacement by considering a year of publication from the survey part. From the **Figure 3**, the most research work has been made on usage of the latest techniques in all areas and predicting that Artificial Intelligence will contribute more research works in this domain. Second highest

contribution is on AI for research in the count of 6, which conclude that the researcher needs to minimize time in the narrating work rather than implementing. Third places are occupied by the public sector, application and generative AI; this proved that the AI techniques reach to the public usage. Next count as health care, county development and share market and management, which prove that the Artificial Intelligence is accepted by the people for the usage. Next count in the education sector using Artificial Intelligence is a nominal count since the many educated people are there to replace the AI role; the least count was human replacement because of the availability of the employer. Form the **Figure 3** concludes that the AI replaces the domain where it needs more scarcity. Findings of this section provides a comprehensive overview of the challenges and advancements associated with Artificial Intelligence (AI) across various domains, including healthcare, education, research, generative AI, country development, stock market management, and the public sector. By analyzing the publication years from the survey, we gain insights into the trends and focus areas of AI research. As depicted in the accompanying figure, a significant proportion of research efforts has been directed toward leveraging the latest AI techniques across these fields. This trend suggests that Artificial Intelligence is poised to contribute increasingly to research and innovation in these domains, underscoring its growing importance and relevance.

The second highest area of focus is AI in research, with a recorded count of six publications. This indicates a pressing need for researchers to streamline their processes, focusing more on implementation rather than extensive narrations of their work. This shift could enhance efficiency, allowing researchers to derive actionable insights more rapidly and contribute to the practical applications of AI in various sectors.In terms of distribution, the third tier is occupied by the public sector, applications, and generative AI. This finding illustrates that AI techniques have made significant inroads into public usage, indicating a broader acceptance and integration of AI technologies into everyday life. The subsequent categories include healthcare, country development, and the stock market, which together affirm the acceptance and positive reception of AI solutions among the populace. These areas highlight how AI can enhance decision-making processes, improve service delivery, and foster economic growth.The education sector, while showing a nominal count in AI usage, reflects a nuanced dynamic; the presence of a highly educated workforce means that there is potential resistance to AI replacement, as many individuals hold roles that require a human touch. The least emphasis was placed on human replacement, primarily due to the existing employer landscape and the complexity of human roles in various industries. **Figure 3** further elucidates that AI is more likely to replace tasks in domains characterized by scarcity of resources or expertise, emphasizing its role as a tool for optimizing efficiency and addressing gaps.

Looking ahead, the future scope of Artificial Intelligence necessitates the integration of ethical considerations into its development and deployment. As AI continues to evolve, it is crucial that its operations align with the ethical standards and values of society, ensuring that the technology serves the public good. Various public sectors are increasingly utilizing AI as an expert system application, such as in enterprise supervision and advanced healthcare techniques aimed at preventing cardiology issues. Other applications include safeguarding features for data privacy, enhancing energy efficiency, conducting business reviews, analyzing personality traits, and reviewing current and future potentials of AI technologies. Moreover, AI's potential in fields such as skincare and educational settings is being recognized, as evidenced by growing research in these areas. Generative AI, in particular, presents exciting business model opportunities and has shown promise in healthcare recommendations and learning assessments. By fostering interdisciplinary collaborations and addressing ethical implications, the ongoing research in AI can significantly enhance its contributions to society, paving the way for innovative solutions that not only advance technology but also support sustainable development. The feature scope of the Artificial Intelligence is needed to add the Ethics in the domain the invention expects the operation to be the same as the nature of the work. Many public sectors using At as a expert system application[46], and enterprises supervision[47], advanced health care techniques of prevent cardiology[48], safeguarding the features[49], energy efficiency[50],

business review[51], personality traits[52], review of current and future potentials[53], annual review[54], Gen AI[55], skin care[56], education setting[57], Gen AI-business model[58], health care review recommendation[59] and learning assessment[60].

5. Conclusion

In conclusion, this survey highlights the multifaceted impact of Artificial Intelligence (AI) across various domains, including healthcare, education, research, generative AI, country development, stock market management, and the public sector. The analysis reveals that while significant research efforts are focused on the latest AI techniques, there is also a pressing need for researchers to prioritize implementation over lengthy narrations. The notable emphasis on AI in research underscores the potential for AI to streamline processes and drive practical applications across diverse fields. The findings indicate a growing acceptance of AI technologies among the public, particularly in areas such as healthcare, country development, and management, where AI is increasingly recognized for its ability to enhance decision-making and service delivery. Conversely, the education sector exhibits a more cautious approach to AI integration due to the highly skilled workforce, suggesting a nuanced dynamic where human roles remain critical. The limited focus on human replacement further emphasizes the complexity of integrating AI into the workforce, with a preference for enhancing human capabilities rather than outright replacement. Looking forward, it is essential to incorporate ethical considerations into the development and deployment of AI technologies. Ensuring that AI aligns with societal values and serves the public good will be crucial as these technologies continue to evolve. The diverse applications of AI as expert systems in public sectors, advanced healthcare techniques, and innovative business models demonstrate its vast potential for positive societal impact. By fostering interdisciplinary collaboration and addressing ethical implications, the ongoing research in AI can pave the way for sustainable solutions that not only advance technology but also enhance the quality of life across various sectors. Ultimately, as AI continues to mature, it holds the promise of transforming industries while supporting human progress and innovation.

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Conflict of Interest

There is no conflict of interest among the author for publication of article in your journal.

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