Perceived Benefits of Artificial Intelligence Integration within Management Information System for Decision-Making Processes in the context of County Governments in Kenya

Charles Owuor Omoga

School of Business, Economics and Human Resource Development, Alupe University, Kenya

Abstract: This research explores the perceived benefits of integrating Artificial Intelligence Technologies within Management Information Systems (MIS) for enhancing decision-making processes in the context of County Governments in Kenya. With the growing complexity of organizational operations and the abundance of data generated, AI integration has emerged as a potential avenue to transform traditional decision-making paradigms. This study investigated the specific advantages that County Governments in Kenya attribute to AI integration within MIS, shedding light on how these technologies contribute to informed and effective decision-making. Through a comprehensive analysis of perceptions and experiences, this research aimed to provide insights that contribute to a deeper understanding of the value proposition offered by AI technologies in the Public service landscape

Keywords: Artificial Intelligence, Management Information Systems, Integration, County Governments

I.   INTRODUCTION

In the dynamic and data-driven landscape of contemporary business, effective decision-making is paramount for organizational success. The surge of interest in Artificial Intelligence technologies has prompted businesses worldwide to explore their potential in revolutionizing decision-making processes [1]. This introduction focuses on the Public service context, where the integration of AI within Management Information Systems (MIS) is gaining attention as a means to enhance decision-making efficacy. With the rapid digitization of operations and the increasing availability of data, organizations are seeking innovative ways to harness this information for strategic advantage. The integration of AI within MIS emerges as a strategic response, promising predictive insights, automation of routine processes, and optimization of resource allocation.[1]

In the rapidly evolving landscape of business and technology, the integration of Artificial Intelligence technologies within Management Information Systems (MIS) has gained prominence as a transformative approach to enhancing decision-making processes. In the Americas, particularly the United States, organizations have embraced AI integration within MIS to bolster decision-making processes. The perceived benefits revolve around leveraging AI's predictive capabilities to anticipate trends, enhance accuracy, and facilitate data-driven insights. AI-powered algorithms are applied to vast datasets, enabling organizations to extract meaningful patterns that inform strategic choices. Moreover, AI-driven automation expedites routine tasks, freeing up resources for more strategic decision-making. In sectors such as finance, healthcare, and e-commerce, the perceived benefits include improved risk management, personalized customer experiences, and streamlined operations.[2]. In Asia, countries like China and India are rapidly adopting AI technologies within MIS to transform decision-making dynamics. The perceived benefits in this region encompass agile decision-making, where real-time data analysis and predictive insights drive rapid responses to market changes. AI are being utilized to optimize supply chains, enhance customer engagement, and accelerate innovation. In sectors like manufacturing, AI-driven automation enhances operational efficiency and quality control. The perceived benefits also extend to the optimization of logistics, energy consumption, and resource allocation.[2]

In Europe, organizations are recognizing the potential of AI integration within MIS to drive competitiveness and innovation. The perceived benefits include improved accuracy in decision-making through AI-enhanced data analysis. Predictive analytic s powered by AI offer organizations the ability to make proactive decisions based on future trends. Additionally, European businesses highlight the role of AI in optimizing customer experiences, personalizing recommendations, and enhancing service delivery. AI-driven insights are increasingly being integrated into the strategic planning process to guide innovation and growth.[2]

In the African context, the integration of AI within MIS is gradually gaining traction, with perceived benefits aligned with addressing unique challenges. Organizations are using AI-powered data analytic s to tackle issues such as agricultural productivity, healthcare access, and financial inclusion. The perceived benefits include improved resource allocation, enhanced disease prediction models, and optimized financial decision-making for under banked populations. AI technologies offer African organizations the potential to leapfrog traditional constraints and drive sustainable development.[2],[3]

In conclusion, across America, Asia, Europe, and Africa, the perceived benefits of AI integration within MIS for decision-making processes reflect a universal aspiration to enhance accuracy, efficiency, and agility. Organizations in these regions recognize the potential of these technologies to extract insights from data, enable predictive analytic s, and automate routine tasks. While the perceived benefits align with regional nuances and industry requirements, the overarching theme underscores AI's transformative role in guiding strategic choices and driving competitive advantage on a global scale.

In the rapidly evolving landscape of business operations, the integration of Artificial Intelligence technologies within Management Information Systems (MIS) has garnered attention as a potential avenue for enhancing decision-making processes. Nevertheless, even as public service organizations (PSOs) have commenced their AI investment endeavors[4], a substantial portion of these entities are encountering difficulties in realizing the anticipated advantages linked to AI technologies [5] .hence,the extent to which County Governments in Kenya perceive and experience these benefits remains a critical area of inquiry.

County Governments in Kenya operate within a unique socio-economic and technological landscape, where factors such as limited resources, skill gaps, and variable digital readiness play a role in shaping the integration process. Additionally, the alignment of perceived benefits with tangible outcomes is influenced by contextual factors such as industry, size of the organization, and existing decision-making practices. Therefore, the fundamental problem addressed by this study is to explore the gap between the perceived benefits of AI integration within MIS for decision-making processes in County Governments in Kenya and the actual impact realized. By examining this disconnect, the study aims to provide insights that contribute to a nuanced understanding of the challenges, opportunities, and outcomes associated with AI integration in the context of Kenyan MIS. The findings of this research may shed light on the effectiveness of AI in driving decision-making improvements in County Governments in Kenya and offer recommendations for bridging the perception-reality gap. The general objective of this study was to identify the perceived benefits of AI integration in MIS for decision-making processes in the context of County Governments in Kenya.

This study was subsequently guided by the following research questions:
1.What are the perceived benefits of integrating AI technologies within MIS for enhancing decision-making processes in the County Governments in Kenya?

II.   LITERATURE REVIEW

Enterprises frequently generate or possess substantial quantities of data. This information, if harnessed, has the potential to provide managers with more insightful choices. However, due to the intricate nature of this data, manual analysis by humans is unfeasible. As a result, managers are resorting to AI as a method for extracting insights from data, thereby enhancing the decision-making processes [6] Predictive analytic s, a facet of AI, employs data to make precise predictions and decisions on a transaction al level [7]

2.1 Accuracy of data analysis as a perceived benefit
The significance of data accuracy is evident. For instance, AI-driven computer vision aids in accurately identifying minute brain hemorrhages in MRI images, aiding doctors [8] . Similarly, AI detects cancer patterns with high precision [8] and contributes to surgical procedures by assisting physicians during complex surgeries [7].

2.2 Insight Generation as perceived benefit
 AI-driven insights expedite decision-making processes within organizations. Predictive analytic s, empowered by AI, foresee future trends, enabling proactive decisions. Machine learning algorithms identify intricate data patterns and correlations that might elude human perception, contributing to more comprehensive decision-making. AI's notable impact is in unlocking concealed patterns within extensive datasets, facilitating informed decisions [9] This underscores AI's role in presenting novel information and guiding insight-driven decisions, setting organizations apart [10]

2.3 Business Process Transformation as a perceived benefit

Organizations harness AI to overhaul business processes, aiming for radical transformations [11] AI's implementation leads to the redesign of existing processes, influencing both the organizational structure and human resource utilization. The introduction of AI necessitates new skills, potentially leading to job redesign and creation [7].

2.4 Financial Performance as a benefit

Over the past years, AI has progressively permeated key organizational functions, driving business growth across various sectors[12] Enterprises adopting AI solutions have experienced financial and accounting performance enhancements, such as amplified revenue and cost reduction [13] An empirical study by [9] underscores that structured AI adoption coupled with organizational proficiency in novel technologies leads to performance improvements. Their analysis highlights the affirmative influence of AI capability on critical financial and accounting performance indicators, including overall financial growth. Nonetheless, limited research addresses other financial performance measures post AI implementation, such as return-on-investment, profitability, and gross profit margin.

2.6 Market-Based Performance as a benefit

Efforts involving AI in marketing are expected to yield several advantages. AI's potential to enhance marketing performance lies in segmenting customers based on distinct needs, facilitating tailored marketing strategies. AI's processing and learning from existing customer data allows for a more intricate understanding of customer preferences and lifestyles, enabling more precise segmentation [11] This precise segmentation enables organizations to enhance marketing targeting and personalize experiences [11] . By doing so, AI amplifies marketing effectiveness by directing appropriate strategies to the right audience. AI's adaptability to evolving customer behavior ensures timely regeneration of segmentation suggestions, aiding flexible marketing strategies[14]

2.8 Enhanced Customer Satisfaction as a perceived benefit

Customer satisfaction directly influences customer loyalty and retention. AI offers insights into customer behaviors, enabling proactive prevention of unfavorable experiences[15] Such insights empower companies to provide offerings that reduce attrition risks, including personalized services or offers. AI-driven interactions enhance customer satisfaction through well-informed and tailored solutions [16]. Nevertheless, AI's utilization may sometimes lead to customer dissatisfaction, particularly in direct interactions like AI-powered chatbots[17] Therefore, designing AI systems that engage customers must prioritize their experiences and perceptions.

2.8 Enhanced Sustainability Performance a perceived benefit

AI's disruptive potential can drive innovative sustainable business models, aligning organizational activities with environmental and societal concerns [18] AI influences environmental sustainability by minimizing energy costs, reducing energy consumption, and consequently mitigating environmental impacts [6], [18]. AI tools contribute to pollution and waste reduction, while also enabling circular economy strategies that promote recycling and emission reduction[19]

III. METHODOLOGY

3.1 Research design

The research design employed in this study was a descriptive survey, which draws substantially from the positivist research philosophy. This approach entailed conducting a survey to collect quantitative data, aiming to evaluate the degree of integration of Artificial Intelligence (AI) technologies within Management Information Systems (MIS) within the County Governments of Kenya.

3.2 Study Population and Sampling Method

The focal group for this study comprised the 47 County Governments situated in Kenya. To select the study participants, a two-stage sampling technique was adopted. The initial stage involved employing a simple random sampling approach to identify the sampling units, specifically the County Governments in Kenya. Subsequently, a purposive sampling technique was employed to select the respondents for the study, specifically targeting the ICT Directors. The sample size was determined utilizing the statistical equations method. By applying [20] with a confidence level of 95% and $P = 0.05$, the final sample size was identified as 42 County Governments in Kenya.

3.3 Research Tool

For data collection, a structured self-administered survey questionnaire was employed as the research instrument. The questionnaire is a quantitative data collection tool. Its selection was guided by its cost-effectiveness, flexibility, and potential for research procedure replication, thereby enhancing the validity of research outcomes.

3.4 Data presentation

The presentation of data within the study was facilitated through the use of tables, chosen for their clear and straightforward interpretative nature. Among various software options, SPSS was preferred due to its systematic approach and extensive coverage of common statistical and graphical data analysis methods.

3.5 Ethical Considerations

The research stage often brings about ethical considerations [21]. In this study, participant anonymity was safeguarded by utilizing codes instead of actual names. This approach ensured privacy and confidentiality [22]. The voluntary nature of participation was emphasized, with participants not subjected to any form of coercion to engage in the study.

IV. RESULTS

4.1 Analysis of Survey response

The analysis of survey response was done to determine the number of respondents who did or didn't respond to the survey. Out of a total of 42 respondents, 29 responded to the questionnaire The response rate was at 70%

Table 4.1 Statistics on responses on perceived benefits of artificial intelligence integration within MIS

	Percv1	Percv2	Percv3	Percv4	Percv5	Percv6	Percv7	Percv8	Percv9	Percv10
N	29	29	29	29	29	29	29	29	29	29
Mean	4.45	4.31	4.34	4.38	4.38	4.34	4.34	4.34	4.34	4.34
Median	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Mode	4	4	4	4	4	4	4	4	4	4

Source: Research Data(2023)

The data in table 4.1 represents the responses to various statements related to the perceived benefits of AI integration within Management Information Systems (MIS). The responses were measured using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The statistical measures like mean, median, mode, skewness, and kurtosis provide insights into the central tendency, distribution shape, and data dispersion.The Perceived Benefits indicators were coded as percv1-percv10,which relate to the indicator statements.The results are interpreted below:

Statement 1-AI integration improves the accuracy of data analysis, leading to more informed decision-making.This statement had the following statistics:Mean: 4.43,Median: 4.00,Mode: 4,Skewness: 0.283 (Positively skewed),Kurtosis: -2.062

Interpretation: The responses for this statement are centered around 4, indicating a generally positive perception that AI integration improves data analysis accuracy. The skewness indicates a slight positive tail in the distribution, suggesting that more respondents leaned towards agreement. The negative kurtosis suggests a distribution slightly less peaked than a normal distribution.

Statement 2: Predictive analytic s powered by AI help identify future trends, enabling proactive decision-making.This statement had the following statistics:Mean: 4.30,Median: 4.00,Mode: 4,Skewness: -2.379 (Negatively skewed),Kurtosis: 9.617

Interpretation: Respondents generally agree that predictive analytic s powered by AI help identify future trends for proactive decision-making. The negatively skewed distribution indicates that more respondents leaned towards agreement. The high kurtosis suggests a distribution with a very sharp peak.

Statement 3: Machine L earning algorithms identify patterns and correlations in data that humans might overlook, aiding in more comprehensive decision-making.This statement had the following statistics:Mean: 4.37,Median: 4.00,Mode: 4,Skewness: -0.074 (Slightly negatively skewed),Kurtosis: -0.796

Interpretation: Respondents generally agree that ML algorithms enhance decision-making through pattern and correlation identification. The distribution is close to symmetric with a slight negative skewness. The platykurtic kurtosis suggests a distribution with less pronounced tails than a normal distribution.

Statement 4: AI-powered automation reduces the likelihood of human errors in MIS-related tasks, leading to more reliable decisions.This statement had the following statistics:Mean: 4.37,Median: 4.00,Mode: 4,Skewness: -0.074 (Slightly negatively skewed),Kurtosis: -0.796

Interpretation: Respondents generally agree that AI-powered automation reduces errors and enhances reliability. The distribution characteristics are similar to statement 3.

Statement 5: AI integration allows us to process and analyze large datasets that were previously unmanageable, leading to deeper insights.This statement had the following statistics:Mean: 4.33,Median: 4.00,Mode: 4,Skewness: -1.251 (Negatively skewed),Kurtosis: 3.827

Interpretation: Respondents generally agree that AI integration enables processing large datasets for deeper insights. The negatively skewed distribution suggests more agreement. The leptokurtic kurtosis suggests a distribution with a relatively high peak and heavier tails.

Statement 6 to 9. The interpretations for statements 6 to 9 are similar to statement 5, as their mean, median, mode, skewness, and kurtosis values are almost identical.This statement had the following statistics:This statement had the following statistics:Mean: 4.33,Median: 4.00,Mode: 4,Skewness: -1.251 (Negatively skewed),Kurtosis: 3.827

In summary, the respondents generally hold positive perceptions about the benefits of AI integration within MIS for decision-making processes. The central tendency is around agreement, with varying levels of skewness and kurtosis indicating the shape of the distribution and the degree of peakedness/tailness.

4.2 The measurement for the Perceived benefits of integrating Artificial Intelligence within MIS
The measurement for the Perceived **benefits of** Integration of Artificial Intelligence within MIS was composed of ten items.The respondent were required to respond on a five point likert scale.The responses are categorized into different levels of agreement: Strongly Disagree (SDA), Disagree, Neutral, Agree, and Strongly Agree

Table 4.2: **The measurement indicators for the Perceived benefits of integrating Artificial Intelligence within MIS**

STATEMENT	SDA	DA	N	A	SA
AI integration improves the accuracy of data analysis, leading to more informed decision-making.	00	00	00	16(55.2%	13(44.8%)
Predictive analytic s powered by AI help identify future trends, enabling proactive decision-making.	01(3.4%)	00	00	16(55.4%	12(41.4%)
AI-driven insights enhance the speed at which decisions are made within our organization.	01 (3.4%	00	00	16(55.4%	12(41.4%)
ML algorithms identify patterns and correlations in data that humans might overlook, aiding in more comprehensive decision-making.	01 (3.4%	00	00	16 55.4%	12(41.4%)
AI-powered automation reduces the likelihood of human errors in MIS-related tasks, leading to more reliable decisions.	013.4%	00	01(3.4%)	16)55.4%	11 (37.9%
AI integration allows us to process and analyze large datasets that were previously unmanageable, leading to deeper insights.	00	01(3.4%	01(3.4%	12(41.4%	15 (51.7%)
The integration of AI enhances the efficiency of decision-making processes within our organization.	00	00	01(3.4%)	12(41.4%	15(55.2%
AI-powered recommendation systems suggest optimal courses of action, contributing to better decision outcomes	00	01(3.4%)	03(10.3%	12(41.4%)	13(44.8%)
ML models help us identify potential risks and opportunities in real-time, contributing to more agile decision-making.	00	00	0413.8%	1241.4%	1344.8%
Our organization considers AI technologies in MIS as essential tools for gaining a competitive advantage in decision-making.	00	013.4%	013.4%	1241.4%	1555.2%

Source: Research Data,(2023)

V.   DISCUSSION OF RESULTS

The discussion below represents responses to various statements related to the perceived benefits of AI integration within Management Information Systems (MIS). The responses are categorized based on a Likert scale, ranging from Strongly Disagree to Strongly Agree.

AI integration improves the accuracy of data analysis, leading to more informed decision-making:

The results were:Strongly Disagree: 0%;Disagree: 0%;Neutral: 0%;Agree: 16 (55.2%); Strongly Agree: 13 (44.8%).From these results, a significant majority of respondents (around 55.2% Strongly Agree and 44.8% Agree) hold the view that AI integration enhances data analysis accuracy, contributing to more informed decision-making.

On whether Predictive analytic s powered by AI help identify future trends, enabling proactive decision-making.The results show that:Strongly Disagree: 1 (3.4%);Disagree: 0%;Neutral: 0%;Agree: 16 (55.4%);Strongly Agree: 12 (41.4%)From the results,most respondents (55.4% Agree and 41.4% Strongly Agree) believe that AI-driven predictive analytic s aid in identifying future trends, facilitating proactive decision-making.

When asked whether AI-driven insights enhance the speed at which decisions are made within our organization.The responses were:Strongly Disagree: 1 (3.4%);;Disagree: 0%;Neutral: 0%;Agree: 16 (55.4%);Strongly Agree: 12 (41.4%)This means that Respondents predominantly agree (55.4% Agree and 41.4% Strongly Agree) that AI-driven insights expedite decision-making processes within the organization.

On the statement as to whether Machine learning algorithms identify patterns and correlations in data that humans might overlook, aiding in more comprehensive decision-making.the results were as follows:Strongly Disagree: 1 (3.4%);Disagree: 0%;Neutral: 0%;Agree: 16 (55.4%);Strongly Agree: 12 (41.4%)The interpretation for this result would be that majority of respondents (55.4% Agree and 41.4% Strongly Agree) perceive that ML algorithms contribute to comprehensive decision-making by identifying patterns and correlations in data.

AI-powered automation reduces the likelihood of human errors in MIS-related tasks, leading to more reliable decisions.This statement resulted in the following responses::Strongly Disagree: 1 (3.4%);Disagree: 0%;Neutral: 1 (3.4%);Agree: 16 (55.4%);Strongly Agree: 11 (37.9%). Interpretation is that Respondents generally agree (55.4% Agree and 37.9% Strongly Agree) that AI-powered automation enhances decision reliability by reducing human errors.
These results are mirrored by studies: [8],[7],[11]Which highlighted the benefits of Integrating Artificial intelligence within various information systems

In summary, the majority of respondents hold positive perceptions about the benefits of AI integration within MIS for decision-making processes. This suggests a general consensus that AI technologies can significantly contribute to enhancing decision-making in various aspects.

VI.   CONCLUTION

The exploration into the perceived benefits of integrating Artificial Intelligence (AI) within Management Information Systems (MIS) for decision-making processes in the context of County Governments in Kenya has shed light on a transformative pathway that holds tremendous potential for the advancement of administration and outcomes.The array of benefits uncovered through this investigation demonstrates that AI integration has the capacity to revolutionize decision-making in Public service From enhanced data analysis and informed decision-making to streamlined operations and personalized learning experiences, the advantages are vast and profound. The potential to optimize resource allocation, improve administrative efficiency, and create a more responsive and effective environment underscores the far-reaching impact of AI.

In conclusion, the integration of AI within MIS presents an unprecedented opportunity for County Governments in Kenya to elevate their decision-making processes, better allocate resources, and ultimately provide a more enriched learning experience for students and faculty. By navigating the challenges and embracing the possibilities presented by AI integration, these institutions can position themselves at the forefront of innovation and effectiveness in the dynamic landscape of modern management

VII.   RECOMMENDATIONS

Based on the exploration of the perceived benefits of integrating Artificial Intelligence (AI) within Management Information Systems (MIS) for decision-making processes in the context of County Governments in Kenya the following recommendations are proposed:

Comprehensive AI Strategy: County Governments in Kenya should develop a comprehensive AI integration strategy tailored to their specific needs and goals. This strategy should outline how AI will be leveraged to enhance decision-making across various administrative and academic functions.

Resource Allocation: Adequate resources, both financial and technological, should be allocated to support the successful integration of AI within MIS. This includes investing in AI infrastructure, acquiring necessary software tools, and providing training for staff.

Ethical Considerations: Ethical guidelines should be established to ensure responsible AI integration. Decision-making algorithms should be transparent, fair, and bias-free. Protecting the privacy of student and faculty data is paramount, and robust data security measures should be implemented.

Change Management: County Governments in Kenya should implement effective change management strategies to facilitate the adoption of AI. Faculty and staff should be informed about the benefits of AI integration, provided with necessary training, and given a platform to voice their concerns.

Pilot Projects: Initiating pilot projects within specific departments or administrative functions can serve as a proof of concept. These projects can demonstrate the tangible benefits of AI integration, building support and enthusiasm among stakeholders.

REFFERENCES

[1]. Giulia M., Luca T., Luca G.i,& Michele Benedetti(2023)Exploring the factors, affordances and constraints outlining the implementation of Artificial Intelligence in public sector organizations,International Journal of Information Management,Volume 73,2023,

[2]. McKinsey Global Survey(2021) The state of AI in 2021 December 8, 2021, Survey https://www.mckinsey.com/capabilities/quantumblack/our-insights/global-survey-the-state-of-ai-in-2021

[3]. Aleksandra G.(2018) Coming To Life:Artificial Intelligence in Africa.november 2018

[4]. Merhi,M.I (2022)An evaluation of the critical success factors impacting artificial intelligence implementation. International Journal of Information Management (2022), 10.1016/j.ijinfomgt.2022.102545

[5]. P. Mikalef, K. Lemmer, C. Schaefer, M. Ylinen, S.O. Fjørtoft, H.Y. Torvatn, M. Gupta, B. Niehaves (2023)Examining how AI capabilities can foster organizational performance in public organizations.Government Information Quarterly, 40 (2) (2023), Article 101797, 10.1016/j.giq.2022.101797

[6]. Aline F.S. B., Fernando J.B. L, Mauro M. S, Rodrigo F. G, Claudia A. M.,(2021)The strategic use of artificial intelligence in the digital era: Systematic literature review and future research directions,International Journal of Information Management,Volume 57,102225,ISSN 0268-4012,https://doi.org/10.1016/j.ijinfomgt.2020.102225.

[7]. Makarius, E., Mukherjee, D., Fox, J. D. and Fox, A. Rising With the Machines: A Sociotechnical Framework for Bringing Artificial Intelligence Into the Organization (August 25, 2020). Journal of Business Research, Vol. 120, 2020, Available at SSRN: https://ssrn.com/abstract=3784946

[8]. Mohammad H. J. (2018) Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making Business Horizons, 2018, vol. 61, issue 4, 577-586

[9]. Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. Inf. Manag., 58, 103434.

[10]. Jelonek, D., Mesjasz-Lech, A., Stępniak, C., Turek, T., & Ziora, L. (2019). The artificial intelligence application in the management of contemporary organization: Theoretical assumptions, current practices and research review. Future of Information and Communication Conference

[11]. Mishra, A. N., & Pani, A. K. (2020). Business value appropriation road-map for artificial intelligence. VINE Journal of Information and Knowledge Management Systems, 51(3), 353–368

[12]. Eriksson, T., Bigi, A., & Bonera, M. (2020). Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation. The TQM Journal, 32(4), 795–814.

[13]. Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. Harvard Business Review, 96(1), 108–116

[14]. Afiouni, R. (2019). Organizational learning in the rise of machine learning. International Conference on Information Systems, Munich, Germany

[15]. Riikkinen, M., Saarijärvi, H., Sarlin, P., & Lähteenmäki, I. (2018). Using artificial intelligence to create value in insurance. International Journal of Bank Marketing, 36(6), 1145–1168. https://doi.org/10.1108/IJBM-01-2017-0015

[16]. Schmidt, R., Zimmermann, A., Moehring, M., & Keller, B. (2020). Value creation in connectionist artificial intelligence–A research agenda

[17]. Castillo, D., Canhoto, A. I., & Said, E. (2020). The dark side of AI-powered service interactions: exploring the process of co-destruction from the customer perspective. The Service Industries Journal, 1–26

[18]. Toniolo, K., Masiero, E., Massaro, M., & Bagnoli, C. (2020). Sustainable business models and artificial intelligence: Opportunities and challenges. In: In Knowledge, People, and Digital Transformation (pp 103–117). Springer

[19]. Rajput, S., & Singh, S. P. (2019). Connecting circular economy and industry 4.0. International Journal of Information Management, 49, 98–113

[20]. Yamane, T. (1967) Research Methods: Determination of Sample Size.

[21]. Saunders, M., Lewis, P. and Thornhill, A. (2007) Research Methods for Business Students. 4th Edition, Financial Times Prentice Hall, Edinburgh Gate, Harlow.

[22]. Creswell, J. W. (2014). Research Design Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). Thousand Oaks, CA Sage. - References - Scientific Research Publishing.