VISTA 2025

PROCEEDINGS BOOK

FMSH Undergraduate Research Symposium

Enabling Digitalized Economies and Societies through Novel Sustainable Strategies

Faculty of Management, Social Sciences & Humanities
General Sir John Kotelawala Defence University
Sri Lanka


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PROCEEDINGS OF THE FMSH UNDERGRADUATE RESEARCH SYMPOSIUM (VISTA) 2025

VISION FOR INNOVATION IN SOCIETAL & THEORETICAL ADVANCEMENT - VISTA 2025

April 08, 2025

Faculty of Management, Social Sciences, and Humanities

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Message by Vice Chancellor

It is with immense pleasure that I extend my warmest congratulations to the Faculty of Management, Social Sciences, and Humanities on the successful execution of VISTA: Vision for Innovation in Societal and Theoretical Advancements, the Student Symposium. This significant event, centered on the theme 'Enabling Digitalized Economies and Societies through Novel Sustainable Strategies,' serves as a testament to the intellectual curiosity, academic rigor, and innovative spirit that define our university.

This symposium, a cornerstone of our university's mission to foster academic excellence, innovation, and research-oriented learning, exemplifies our unwavering commitment. Through rigorous scholarly discourse, students have expanded their intellectual horizons and taken essential steps toward contributing to research recognized on a global scale. Such initiatives play a vital role in preparing future leaders and scholars to address complex challenges through evidence-based solutions.

I would like to express my sincere appreciation to the faculty for their invaluable mentorship and guidance, which has been instrumental in the success of VISTA. The proceedings of this symposium capture the essence of high-quality research and will serve as a significant reference for aspiring researchers.

As we look forward, I encourage all participants to continue refining their research capabilities, embracing emerging methodologies, and striving for impactful publications. Let VISTA be a solid foundation upon which a legacy of academic and professional distinction can be built. This marks not the end, but the beginning of a rewarding journey of discovery and innovation.

Congratulations on this noteworthy achievement, and best wishes for your future endeavors!

Rear Admiral HGU Dammika Kumara, VSV, USP, psc, MMaritimePol, BSc (DS)
Vice Chancellor
General Sir John Kotelawala Defence University

Message by Keynote Speaker

It is with great pleasure that I extend my warmest greetings to the participants of the Undergraduate Research Symposium hosted by the Faculty of Management, Social Sciences and Humanities at General Sir John Kotelawala Defence University (KDU). The symposium's theme, 'Enabling Digitalized Economies and Societies through Novel Sustainable Strategies,' is both timely and critically relevant in our rapidly evolving world.

The foundation of successful digitalization rests upon informed decision-making, which, in turn, is predicated on the availability and analysis of vast datasets. These data, whether stored locally or in cloud-based data centers, demand significant energy resources. The exponential growth of hyperscale data centers, each requiring power capacities of at least 100 megawatts, underscores this energy challenge. Global data center electricity consumption reached an astonishing 411 terawatt-hours in 2023. If this energy were supplied entirely by coal-fired power plants, the resulting carbon dioxide emissions would approximate 3.9 x 1011 kg, representing roughly 1% of the global electricity generation sector's total CO2 emissions.

As the volume of data continues to surge, driven by advancements in Artificial Intelligence (AI), Internet of Things (IoT), and other digital technologies, the energy demands of data centers will escalate, posing a significant threat to the sustainability of our electricity supply and exacerbating climate change. This necessitates a paradigm shift toward responsible data collection, storage, and processing practices. Innovations in energy-efficient hardware, renewable energy integration, and optimized data management are crucial to mitigate the environmental impact of digitalization.

Moreover, the scope of sustainability extends beyond energy consumption. It encompasses ethical considerations, digital inclusion, and the socio-economic implications of technological advancements. I believe that this symposium provides a vital platform for exploring these multifaceted dimensions. I am confident that the discussions and research presented here will not only illuminate pathways towards achieving robust digital economies and societies but also underscore the imperative of doing so in an environmentally and socially sustainable manner.

I commend KDU for organizing this important symposium and encourage all participants to engage in thoughtful dialogue. Your contributions are essential in shaping a future where digitalization and sustainability are mutually reinforcing. I wish you a productive and insightful symposium.

Prof. Janaka Ekanayake
Senior Professor and Chair of Electrical and Electronics Engineering

Message by Dean FMSH

With immense pride and vibrant enthusiasm, I extend my best wishes for the VISTA (Vision for Innovation in Societal and Theoretical Advancements) Symposium. This undergraduate symposium is poised to inspire and cultivate creativity among all participants. Under the theme "Enabling Digital Economies and Societies through Novel Sustainable Strategies," VISTA embodies our faculty's dedication to advancing research, encouraging critical thinking, and promoting meaningful academic discourse.

At the Faculty of Management, Social Sciences, and Humanities (FMSH), we take pride in cultivating intellectual curiosity across a diverse range of disciplines, including Management, Finance, Social Sciences, and Languages. VISTA serves as an invaluable platform for our final-year students to present their research, engage in scholarly exchange, and make meaningful contributions to both the academic and professional landscapes. This symposium represents an exciting opportunity for learning and personal growth.

I commend the dedication of our students and faculty in making this symposium a reality and hope it establishes a lasting tradition of research excellence. Participation in this event offers a multitude of benefits, including the enhancement of public speaking and academic communication skills, valuable research experience, increased networking opportunities, greater potential for publication, and the refinement of analytical skills that are essential for success in both academic and industry settings.

I wish all participants a rewarding and enlightening experience.

Dr. L. S. Liyanage
Dean, Faculty of Management, Social Sciences, and Humanities
KDU

Message by Chairperson

It is with immense pride and excitement that I write this message for a truly remarkable occasion: the inaugural undergraduate research symposium, Vision for Innovation in Societal and Theoretical Advancements (VISTA) 2025, hosted by the Faculty of Management, Social Sciences & Humanities (FMSH) at General Sir John Kotelawala Defence University (KDU). This event, centered around the theme 'Enabling Digitalized Economies and Societies through Novel Sustainable Strategies,' marks a significant step forward in our ongoing dedication to promoting research innovation. VISTA 2025 captures the fervent pursuit of knowledge and discovery demonstrated by our students, highlighting their potential to make meaningful contributions. Our aim is to motivate a new generation of researchers who will drive transformative advancements across various disciplines, including management, social sciences, data sciences, analytics, linguistics, and languages. The collaborative efforts of all participants will leave a lasting impact, with their research upholding academic integrity while striving to improve society. The thoroughness of the research is clearly reflected in every aspect of the VISTA 2025 proceedings.

At KDU, our ethos is grounded in academic excellence, a dynamic research culture, and interdisciplinary collaboration. This symposium serves as a prime example of our dedication to research-oriented education, empowering scholars to develop innovative solutions for both local and global challenges. We aim to embed novelty, practical applicability, and creativity into our research endeavors to serve our communities effectively. I extend my sincere appreciation to our distinguished faculty, peer reviewers, and administrative personnel. Their unwavering commitment has been instrumental in establishing this initiative, which sets a new benchmark for research within our institution. VISTA 2025 encapsulates our aspiration to empower scholars to explore uncharted territories, challenge prevailing paradigms, and formulate impactful solutions to critical societal issues. We remain committed to integrating innovative approaches, practicality, and creativity within our research pursuits for the benefit of broader communities.

As we embark on this research journey, let us appreciate the invaluable contributions of each participant, recognizing their potential to shape the future. This symposium stands as a testament to our shared commitment to research innovation and academic integrity. I extend my best wishes to all involved, hoping for a rewarding and inspiring experience during the symposium. I am confident that the launch of VISTA 2025 will further establish the FMSH as a distinguished center of knowledge, research, and development. This symposium reinforces our collective dedication to research innovation and academic integrity. It is crucial that we work together effectively to create a meaningful impact through our research initiatives and contribute positively to society as a whole.

Wishing you all a fruitful journey in your research endeavors!

Dr. DR Perera
Chairperson-VISTA 2025

Panel of Reviwers

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Dr. Wasantha Premarathna
Ms. Lakshanai Willarachchi
Dr. Kaneeka Vidanage
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Ms. Dushyanthi Widanagama
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Bridging the Gap: Language and Digital Transformation

Exploring the Impact of Digital Transformation on Economic and Social Development in Sri Lanka's Public Services

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Abstract – A key tactic for improving the effectiveness, accessibility, and sustainability of governmental operations, especially in developing nations, is the digital transformation of public services. The use of digital tools and platforms in public services, including e-taxation, e-healthcare, and e-governance, is the primary focus of this study, which examines the impact of digital transformation on economic growth and societal sustainability in Sri Lanka. In addition to addressing the implementation challenges, such as infrastructure constraints, digital illiteracy, and resistance to change, this study uses a combination of quantitative and qualitative research methods to investigate how these initiatives have benefited economic efficiency, financial inclusion, and environmental sustainability. The results provide essential insights into how digital transformation can promote sustainable development and inform policy choices for enhancing digital governance in Sri Lanka and other developing countries.

Keywords: Digital Transformation, Economic Growth, Digital Government

Digitally Detecting Cinnamon Disease in Sri Lanka by Using Deep Learning for Sustainable Agriculture

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Abstract – To improve the diagnosis of cinnamon disease in Sri Lanka, this study investigates the incorporation of deep learning into precision agriculture. The study creates a mobile application driven by artificial intelligence (AI) that allows for real-time disease detection in cinnamon plantations by utilizing convolutional neural networks (CNNs). The algorithm reduced diagnostic delays from weeks to seconds by achieving 93.4% validation accuracy when analyzing 1,200 annotated photos of healthy and sick cinnamon stems. The $12 million yearly economic loss ascribed to cinnamon diseases is directly addressed by the system's integration with React Native and Google Cloud Platform (GCP), which guarantees scalability throughout Sri Lanka's rural landscapes. The suggested method promotes sustainable agricultural practices and strengthens the agricultural ecosystem's resilience and data-drivenness by limiting crop loss, lowering dependency on chemical treatments, and encouraging early disease intervention.

Keywords: Deep Learning, Precision Agriculture, Cinnamon Disease Detection, Convolutional Neural Networks (CNNs), AI-powered Mobile Application, Sustainable Agriculture, Early Disease Intervention, Crop Loss Reduction

Customer Behavior Prediction in E-commerce Using Machine Learning: A Quantitative Analysis of Sri Lankan Consumer Patterns

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Abstract – This research investigates the application of machine learning algorithms for predicting customer behavior in Sri Lanka's rapidly growing e-commerce sector. As digital commerce expands nationwide, understanding and accurately forecasting consumer purchasing patterns has become essential for business competitiveness and customer satisfaction. This study employed a quantitative research approach, collecting data through online surveys from customers of major e-commerce platforms in Sri Lanka, complemented by secondary data from transaction histories and engagement metrics. Using a stratified random sampling technique with 100 respondents, the research applied machine learning algorithms, including logistic regression and ensemble methods, to identify patterns in customer behavior. Product preferences showed concentration in clothing, electronics, and groceries. The results demonstrate that machine learning-driven predictive models can effectively analyze complex patterns of consumer behavior, enabling more targeted marketing strategies and personalized shopping experiences. These findings provide valuable insights for e-commerce businesses in Sri Lanka to optimize their operations, enhance customer engagement, and drive revenue growth through data-informed decision-making.

Keywords: Customer Behavior Prediction, Machine Learning (ML), Quantitative Analysis, Logistic Regression.

AI-Driven Demand Forecasting for Sustainable Food Supply Chains in Sri Lanka

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Abstract – The sustainability of food supply chains is a critical issue, particularly in developing countries like Sri Lanka, where agricultural inefficiencies and supply chain disruptions significantly impact food security and environmental health. This research addresses a significant gap in the literature by exploring how Artificial Intelligence (AI), specifically machine learning, deep learning, and fuzzy logic, can improve forecasting accuracy, reduce food waste, and enhance supply chain resilience in a developing country context. In Sri Lanka, nearly 40% of harvested food is lost post-harvest due to inefficiencies in storage, transportation, and demand planning (Ministry of Agriculture, 2023). Existing studies have examined AI in agriculture broadly, but few have focused on AI-driven demand forecasting tailored to Sri Lanka's unique environmental and socio-economic conditions. This study builds on previous global research by incorporating localized data and evaluating AI models across diverse food categories (e.g., rice, vegetables, fruits, dairy) using real-world and simulated datasets from 2020 to 2024. Experimental results demonstrate that AI models, particularly LSTM-based neural networks, reduce forecasting errors by up to 31% and improve response time to supply disruptions by 64%, leading to a 42% reduction in product spoilage. These findings highlight AI's potential as a transformative tool for sustainable food supply chains in Sri Lanka and similar developing economies.

Keywords: Artificial Intelligence, Demand Forecasting, Sustainable Food Supply Chains, Machine Learning, Deep Learning, Fuzzy Logic, Agricultural Sustainability.

Innovative Digital Solutions for Achieving Sustainable Development Goals (SDGs) Using Data Science

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Abstract – The increasing digitalization of the world's economies creates opportunities to utilise data science for sustainable development. This research aims to investigate how data-driven technologies, such as machine learning (ML), big data analytics, and the Internet of Things (IoT), can support the achievement of the United Nations' Sustainable Development Goals (SDGs). Focusing on key areas of climate action, clean energy optimization, smart cities, and responsible consumption, this paper examines how predictive analytics, real-time data monitoring, and artificial intelligence can be leveraged to support sustainability. The study reviews the literature, presents cases of good data-driven sustainability practice, and suggests a new framework for integrating data science into sustainability management. Our findings show that data science is not only a tool for enhancing the efficiency of resource management but also a critical driver of environmental trends, energy distribution, and urban development sustainability. This research is an addition to the evolving discourse on digital transformation for sustainability and provides practical implications for policymakers, businesses, and researchers.

Keywords: Sustainable Development Goals (SDGs), Machine Learning, Big Data, IoT, Smart Cities, Climate Action, Clean Energy.

A Comparative Analysis of GPT and DeepSeek Models: Evaluating Performance in Knowledge Retrieval, Content Creation, and Contextual Understanding

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I. BACKGROUND

AI models like GPT and DeepSeek are transforming knowledge retrieval and content creation across industries. While GPT sets NLP benchmarks, DeepSeek offers competitive alternatives with unique training approaches. Their strengths differ in accuracy, contextual depth, bias mitigation, and adaptability.

This study compares them in knowledge retrieval, content creation, and contextual understanding, while also considering ethics, scalability, and real-world applications. Using quantitative benchmarks and qualitative analysis, the research provides insights for academia and industry, guiding model selection and ethical AI development. Continuous evaluation is crucial to maximizing the potential of AI while addressing societal and technical challenges.

II. LITERATURE REVIEW

Large language models (LLMs) like GPT and BERT have set new standards in NLP, which enhances text understanding and generation. Research highlights the importance of pre-training on large datasets for better adaptability (Liu et al., 2019) and accuracy in knowledge retrieval (Rajpurkar et al., 2016). Moreover, studies on content creation show varying levels of coherence and creativity, with DeepSeek excelling in specialized topics (Fan et al., 2018). Ethical issues such as bias and misinformation are being addressed through detection frameworks (Blodgett et al., 2020). This study compares GPT and DeepSeek in knowledge retrieval, content generation, and contextual understanding, building on existing research.

III. Methods

This study employs a mixed-methods approach to compare GPT and DeepSeek in knowledge retrieval, content creation, and contextual understanding.

Data Collection
The SQuAD dataset evaluates factual accuracy, WritingPrompts assesses content coherence, and ConvAI measures multi-turn dialogue performance.

Quantitative Evaluation
Exact Match (EM) and F1-score assess accuracy, while BLEU and ROUGE metrics evaluate content quality. Dialogue coherence and user satisfaction scores measure contextual understanding.

Qualitative Analysis
Expert reviews assess answer quality and creativity, while bias detection tools like HONEST and CrowS-Pairs identify biases. Ethical audits examine misinformation risks.

Scalability and Case Studies
Computational efficiency, memory usage, and real-world applications in healthcare, education, and customer support are analyzed.

Statistical Analysis
Performance differences are tested using t-tests and ANOVA, identifying limitations in bias, accuracy, and contextual depth. Hybrid approaches are proposed for improvement.

IV. DATA ANALYSIS

The analysis compared GPT and DeepSeek in knowledge retrieval, content creation, and contextual understanding using datasets like SQuAD and WritingPrompts. DeepSeek outperformed GPT in accuracy (80.1% vs. 78.5% EM) and contextual depth (4.3/5 vs. 3.9/5), while GPT was more efficient in response time and fluency. Statistical tests (t-tests, ANOVA) confirmed DeepSeek's advantage in reducing biases (15% lower) and misinformation (3% vs. 5%). However, GPT required 20% less memory and training time, making it more scalable. The results suggest a trade-off between accuracy and efficiency, highlighting the potential of hybrid AI approaches.

V. RESULTS

DeepSeek outperformed GPT in knowledge retrieval (80.1% EM, 87.5% F1 vs. GPT's 78.5% EM, 86.2% F1) with fewer errors in ambiguous queries, though GPT responded faster. In content creation, GPT excelled in coherence, while DeepSeek was rated higher for creativity and adaptability. DeepSeek also led in dialogue coherence (4.3/5 vs. 3.9/5) and user satisfaction (4.5/5 vs. 4.1/5).
Ethically, DeepSeek reduced biases by 15% and misinformation by 2% compared to GPT. GPT was 20% more memory-efficient and trained 15% faster, but

DeepSeek handled high workloads better. In case studies, DeepSeek performed better in healthcare (92% vs. 88% accuracy), while GPT produced more coherent essays. DeepSeek's contextual relevance improved customer support satisfaction (4.6/5 vs. 4.2/5).
GPT offered speed and efficiency but had slightly lower accuracy and creativity. DeepSeek excelled in comprehension but required more computational resources.

VI. FINDINGS

The comparative analysis between GPT and DeepSeek models highlighted key differences in their performance across knowledge retrieval, content creation, and contextual understanding. DeepSeek outperformed GPT in knowledge retrieval, achieving a higher Exact Match (EM) score of 80.1% versus GPT's 78.5%, and demonstrated better contextual depth with a score of 4.3/5 compared to GPT's 3.9/5. In content creation, GPT excelled in syntactic coherence, scoring higher in BLEU and ROUGE metrics, while DeepSeek was rated superior in creativity, originality, and adaptability to specialized topics. In terms of contextual understanding, DeepSeek showed a better ability to maintain dialogue coherence and user satisfaction in multi-turn conversations. Ethical and bias analysis revealed that DeepSeek had a 15% lower rate of bias compared to GPT and fewer misinformation instances. However, GPT was more scalable, requiring 20% less memory and 15% less training time. In real-world applications, such as healthcare and customer support, DeepSeek performed better, especially in maintaining accuracy and user satisfaction. Despite these strengths, both models faced challenges with ambiguous and domain-specific queries, and a hybrid approach combining the strengths of both models was suggested for more robust AI systems.

VII. DISCUSSION

The comparison between GPT and DeepSeek highlights key strengths and weaknesses. DeepSeek outperforms GPT in accuracy (80.1% vs. 78.5%) and contextual understanding, making it better suited for factual and domain-specific tasks. However, GPT is faster (0.8s vs. 1.2s per query), which benefits real-time applications. In content creation, GPT excels in fluency and coherence, while DeepSeek shines in creativity and adaptability to niche topics. DeepSeek also handles multi-turn conversations and maintains dialogue coherence better, making it ideal for customer support and educational tools. Ethically, DeepSeek reduces biases and misinformation more effectively than GPT, though it requires more computational resources. In case studies, DeepSeek outperformed GPT in healthcare and customer support, where accuracy and contextual relevance are crucial. Despite their strengths, both models face challenges with ambiguous queries. Hybrid models combining GPT's speed and DeepSeek's accuracy could offer a more balanced solution for diverse applications. In conclusion, GPT is better for efficiency and general content, while DeepSeek is superior for specialized, high-accuracy tasks. Advancements in scalability and bias reduction will be essential for future improvements.

VIII. RECOMMENDATION AND CONCLUSION

Based on the findings of this study, a hybrid approach combining GPT's speed and efficiency with DeepSeek's accuracy and contextual depth is recommended to improve performance and adaptability. Enhancing DeepSeek's scalability and strengthening bias detection are crucial for competing with GPT's efficiency, especially in sensitive fields like healthcare and education. Tailoring both models to domain-specific datasets can boost their performance, while continuous user feedback will refine their real-world effectiveness.

GPT excels in speed and efficiency, making it ideal for general content generation and customer support. DeepSeek, on the other hand, performs better in knowledge retrieval and contextual understanding, especially with nuanced queries. Therefore, a hybrid model could improve overall performance, but challenges in scalability, bias, and domain-specific tasks need further research.

IX. REFERENCES

[1] P. Rajpurkar, J. Zhang, K. Lopyrev, and P. Liang, "SQuAD: 100,000+ Questions for Machine Comprehension of Text," in *Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Austin, Texas, 2016, pp. 2383–2392.

[2] A. Fan, M. Lewis, and Y. Dauphin, "Hierarchical Neural Story Generation," in *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (ACL)*, Melbourne, Australia, 2018, pp. 889–898.

[3] E. Dinan, V. Logacheva, V. Malykh, A. Miller, K. Shuster, and J. Urbanek, "The Second Conversational Intelligence Challenge (ConvAI2)," in *NeurIPS 2018 Competition Book*, 2018, pp. 187–208.

[5] L. Blodgett, S. Barocas, H. Daumé III, and H. Wallach, "Language (Technology) is Power: A Critical Survey of 'Bias' in NLP," in *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics (ACL)*, 2020, pp. 5454–5476.

[6] N. Nangia, C. Vania, R. Bhalerao, and S. Bowman, "CrowS-Pairs: A Challenge Dataset for Measuring Social Biases in Masked Language Models," in *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2020, pp. 1953–1967.

[7] J. Devlin, M.-W. Chang, K. Lee, and K. Toutanova, "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding," in *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, 2019, pp. 4171–4186.

[8] T. Gebru, J. Morgenstern, B. Vecchione, J. W. Vaughan, H. Wallach, H. Daumé III, and K. Crawford, "Datasheets for Datasets," *Communications of the ACM*, vol. 64, no. 12, pp. 86–92, Dec. 2021.

[9] Y. Liu, M. Ott, N. Goyal, J. Du, M. Joshi, D. Chen, O. Levy, M. Lewis, L. Zettlemoyer, and V. Stoyanov, "RoBERTa: A Robustly Optimized BERT Pretraining Approach," *arXiv preprint arXiv:1907.11692*, 2019.

[10] S. Narayanan, M. Kazemi, L. Orr, and C. Ré, "Efficient Large-Scale Language Model Training on GPU Clusters," in *Proceedings of the 2021 International Conference on Machine Learning (ICML)*, 2021, pp. 8250–8261

Agricultural Commodity Price Forecasting and Market Stability Analysis in Sri Lanka

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I. BACKGROUND

Agricultural commodity price fluctuations play a critical role in Sri Lanka's economic stability, impacting food security, market dynamics, and the livelihoods of farmers and traders. The unpredictability of price movements, driven by seasonal changes, climatic conditions, supply chain inefficiencies, and external economic factors, creates financial risks for stakeholders. Traditional forecasting methods, which rely on historical trends and expert opinions, often lack the ability to account for complex and rapidly changing market conditions. The integration of machine learning techniques offers a promising approach to improving price predictability, enhancing market resilience, and providing data-driven recommendations for informed decision-making. This study aims to address the limitations of conventional methods by developing machine learning-based models for price trend classification and market stability analysis.

II. LITERATURE REVIEW

Agricultural commodity price forecasting is vital for Sri Lanka's economic stability, as price fluctuations impact food security and market dynamics. Traditional forecasting methods often fall short due to their inability to address the complexity of market behavior. Machine learning (ML) models, incorporating factors like weather conditions, supply-demand indicators, and historical pricing, have shown promise in enhancing forecasting accuracy (Jayasooriya, 2023; Sridevi et al., 2023). Studies indicate that weather, seasonal trends, and supply chain inefficiencies contribute to price volatility (Perera & Weerasinghe, 2024), with ML models like Random Forest and XGBoost outperforming traditional methods. However, challenges such as data quality and the lack of real-time economic indicators remain. This highlights the need for further model refinement and integration of external variables, such as government policies and global trends, for improved prediction accuracy and practical application.

III. METHOD

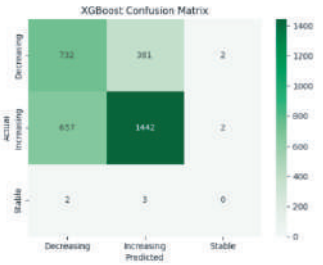
This research followed five key phases: data collection, preprocessing, feature engineering, model development, and evaluation. Historical price data, climate variables, and supply-demand indicators were gathered from public sources. Data preprocessing ensures quality through imputation, normalization, encoding, and outlier removal. Feature engineering categorizes price trends and applies SMOTE to balance classes while identifying key influencing variables. Random Forest and XGBoost models were developed with hyperparameter tuning and trained on an 80-20 data split. Finally, model performance was assessed using accuracy, precision, recall, F1-score, and AUC, with exploratory data analysis providing additional insights through visualizations.

IV. DATA ANALYSIS

The data analysis involved exploratory data analysis (EDA) and model evaluation. EDA includes correlation heatmaps, trend visualizations, seasonal distribution plots, and boxplots to identify patterns in agricultural price fluctuations. Feature importance analysis highlights key factors influencing price trends, such as time-based variables and climate conditions. Model evaluation is conducted using accuracy, precision, recall, F1-score, and AUC, with confusion matrices assessing classification performance across increasing, decreasing, and stable price trends. The analysis confirms the effectiveness of machine learning models, particularly XGBoost, in predicting price movements and identifying seasonal market patterns.

V. RESULTS

The findings reveal that XGBoost performs better than Random Forest in predicting agricultural price trends, especially for stable categories. Key factors influencing price fluctuations include time-based variables, weather conditions, and historical prices. Seasonal patterns impact market behavior, highlighting the need for data-driven forecasting. While the models show strong predictive capabilities, limitations such as data quality and missing macroeconomic indicators suggest potential improvements by integrating policy and global price trends.



VI. FINDINGS

The findings reveal that machine learning models, especially XGBoost, effectively classify agricultural price trends, outperforming Random Forest in identifying stable trends. Feature importance analysis highlights time-based factors (month, year), climate conditions (temperature, rainfall, humidity), and historical price trends as key influencers. Seasonal price fluctuations are evident, reinforcing the need for data-driven forecasting to enhance market stability. While the models show strong predictive capabilities, limitations such as data quality issues and the exclusion of macroeconomic factors suggest opportunities for further improvement, including integrating additional economic indicators for better accuracy.

VII. DISCUSSION

The discussion highlights the effectiveness of machine learning in predicting agricultural price trends, with XGBoost outperforming Random Forest. Feature importance analysis confirms that time, weather, and historical prices significantly impact price movements. Seasonal fluctuations emphasize the need for predictive analytics in market planning. However, challenges like data quality, lack of real-time economic indicators, and macroeconomic influences limit accuracy. Future improvements could integrate policy changes, global market trends, and real-time data to enhance model reliability and decision-making.

VIII. RECOMMENDATION AND CONCLUSION

To improve agricultural price trend predictions, integrating real-time economic indicators, government policies, and global market trends is recommended. Enhancing data quality, incorporating deep learning models, and expanding feature selection could further refine accuracy. The study confirms that machine learning, particularly XGBoost, effectively predicts price trends, aiding market stability and supply chain efficiency. While seasonal patterns and weather variables play a crucial role, addressing data limitations and incorporating external factors will strengthen predictive capabilities, supporting informed decision-making in agricultural markets.

IX. REFERENCES

[1] FAOSTAT, "Food Prices for Sri Lanka," Humanitarian Data Exchange, 2025. [Online]. Available: https://data.humdata.org/dataset/faostat-food-prices-for-sri-lanka/resource/1576ca62-4174-4100-9a3f-6e45330535a3?view_id=fd709eda-72a0-43dd-b50e-283c1c81edf2.

[2] *PRCI*, "Research Paper RP06: Agricultural Commodity Price Forecasting in Sri Lanka," *PRCI*, [Online]. Available: https://www.canr.msu.edu/prci/publications/Research-Papers/PRCI-RP06-SriLanka.pdf?utm_source=chatgpt.com.

[3] FAMA, "Analysis of Price Behavior in Sri Lankan Vegetable Market," FAMA, [Online]. Available: https://www.fama.gov.my/documents/20143/613508/2.+Analysis+of+Price+Behavior+in+Sri+Lankan+Vegetable+Market.pdf/93d573a5-4e26-266f-d220-df5c004b18d3.

[4] H.M.B.P. Ranaweera, R.M.G.H.N. Rathnayake, and A.S.G.J.K. Ananda, "Crop Price Prediction Using Machine Learning Approaches: Reference to the Sri Lankan Vegetable Market," Journal of Management Matters, vol. 10, no. 1, pp. 19–34, 2023. [Online]. Available: https://jmm.sljol.info/articles/10.4038/jmm.v10i1.45

[5] G. Sridevi, M. Geetha, B. Nuthana, and R. Rohan, "Improving Crop Price Prediction Using Machine Learning: A Review of Recent Developments," International Research Journal of Education and Technology

[6] A.P. Jayasooriya, "A Study on the Determinants of Agricultural Commodity Prices in Sri Lanka," South Asian Journal of Economic Studies

[7] C. Perera and D. Weerasinghe, "The Role of Supply Chain Management in Stabilizing Agricultural Prices: A Case Study of Sri Lankan Paddy Market," International Journal of Supply Chain Economics, .

[8] K. Harrykissoon and P. Hosein, "Forecasting Crop Prices for Agricultural Planning Using Time Series Models," Agricultural Economics Journal, vol. 58, no. 3,

[9] G. Sridevi, M. Geetha, B. Nuthana, and R. Rohan, "Improving Crop Price Prediction Using Machine Learning: A Review of Recent Developments," International Research Journal of Education and Technology, vol. 6, no. 12, pp

[10] Machine Learning Techniques for Forecasting Agricultural Prices: A Case of Brinjal in Odisha, India, https://pmc.ncbi.nlm.nih.gov/articles/PMC9258887/

Exploring the Impact of Digital Transformation on Economic and Social Development in Sri Lanka's Public Services

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Abstract— *A key tactic for improving the effectiveness, accessibility, and sustainability of governmental operations especially in developing nations is the digital transformation of public services. The use of digital tools and platforms in public services including e-taxation, e-healthcare, and e-governance is the main focus of this study, which evaluates the effects of digital transformation on economic growth and societal sustainability in Sri Lanka. In addition to addressing the implementation challenges, such as infrastructure constraints, digital illiteracy, and resistance to change, this study uses a combination of quantitative and qualitative research methods to investigate how these initiatives have benefited economic efficiency, financial inclusion, and environmental sustainability. The results give important insights into how digital transformation may promote sustainable development and guide policy choices for bettering digital governance in Sri Lanka and other developing countries.*

Keywords— Digital Transformation, Economic Growth, Digital Government

I. INTRODUCTION

Digital transformation is changing how governments run their businesses and provide public services in the rapidly changing global environment. Digital technologies are being used by governments all around the world in an effort to increase efficiency, improve service delivery, and simplify administrative procedures. The shift to a digital government paradigm presents developing countries like Sri Lanka with enormous opportunity to enhance public service delivery while simultaneously promoting economic growth, social inclusion, and environmental sustainability. Any society's progress depends heavily on public services, which include important sectors including infrastructure, security, healthcare, education, and governance. Traditional bureaucratic structures in Sri Lanka have frequently criticised for being ineffective, corrupt, and inaccessible. These issues can be resolved with the help of the digitalisation of public services, which makes governance more effective, open, and inclusive. Digital solutions that can boost citizen involvement, save operating costs, and improve public service delivery include e-governance platforms, online tax filing systems, and digital healthcare services. Furthermore, in the expanding digital economy, these instruments may boost economic expansion, encourage innovation, and generate new job opportunities.

While the financial advantages of digital transformation are widely known, its contribution to societal sustainability is just as important. This is especially because digital transformation can promote greater social inclusion by giving marginalised communities, especially those in underserved or rural areas, better access to public services. Furthermore, digital services can support environmental sustainability by optimising resource utilisation and decreasing dependency on paper-based operations. However, a number of obstacles stand in the way of Sri Lanka's adoption of digital public services, such as a lack of infrastructure, a lack of digital literacy, and opposition to change among the populace and government workers.

This study aims to evaluate how Sri Lanka's economic development and social sustainability are affected by the digital transformation of public services. The study specifically looks at how implementing digital tools and platforms in public services might increase financial inclusion, decrease socioeconomic gaps, boost economic efficiency, and support environmental sustainability. This study aims to determine the potential and difficulties related to the implementation of important digital government initiatives, including e-taxation, e-healthcare, and e-governance. The results of this study are intended to give policymakers, governmental organisations, and foreign development groups useful information for improving the efficacy of digital governance initiatives in Sri Lanka and other developing nations.

II. LITERATURE REVIEW

Digital governance enhances government operations, service delivery, and transparency (Heeks, 2018). E-government initiatives improve efficiency and citizen engagement but require strong infrastructure and policies (Deloitte, 2020; Janssen & van den Donk, 2020). Digital services boost financial inclusion, job creation, and revenue (World Bank, 2021). Digital taxation and SME support foster economic growth and innovation (Hanna, 2019; McKinsey, 2021). Challenges include infrastructure gaps, digital illiteracy, and resistance to change (Avgerou, 2020; ITU, 2022). Rural areas struggle with digital access, and bureaucratic resistance remains high (UNESCO, 2021; Scholl & Luna-Reyes, 2020). E-governance improves accessibility, reduces resource use, and supports smart cities (Chatfield & Reddick, 2018; OECD, 2021). Sri Lanka faces infrastructure and socio-economic challenges despite initiatives like Digital Sri Lanka (ICTA, 2022; Samarajiva & Zainudeen, 2019).

III. RESEARCH METHODS

This study employed a quantitative research approach with a cross-sectional design to evaluate the impact of digital transformation on public service delivery in Sri Lanka. A stratified random sampling technique was used to ensure diverse representation from government agencies, businesses, and citizens. Primary data were collected through a structured survey distributed via Google Forms, capturing insights on satisfaction, effectiveness, and overall impact of digital services.

The collected data were cleaned and analysed using Python, applying descriptive statistics, correlation analysis, and regression modeling to identify key influencing factors. Visualizations such as graphs and charts were used to present findings effectively. The results aim to provide data-driven insights for policymakers and stakeholders to enhance digital public services and promote sustainable governance in Sri Lanka.

IV. RESULTS AND ANALYSIS

The dataset, which had 51 men and 49 women, shows a balanced demographic representation with a small male predominance. The respondents' ages varied widely, with the biggest concentrations occurring at 34 (6 respondents) and 40 (5 respondents), as well as in a number of other age categories with 3–4 respondents apiece. The majority of respondents have master's degrees (25), and others have bachelor's degrees (21), high school diplomas (19), diplomas (19), and doctorates (16), demonstrating a bias towards higher education. According to occupation, students make up the largest group (28 responders), followed by unemployed people (20), government workers (18), private sector workers (17), and startups (17).

On a scale of 1 to 5, respondents' satisfaction with digital services is evenly spread; the most common rating is 4 (25 respondents), followed by 2 (21 respondents) and 1 (20 respondents). The majority of respondents (34) gave digital services a rating of 3, while lesser but significant percentages gave it a rating of 5 (21 respondents) and 1 (20 respondents). Responses were divided on the impact of digital transformation, with 22 respondents giving it a rating of 5 (showing a great perceived impact) and 26 giving it a grade of 1 (meaning a poor perceived impact). These findings demonstrate how the group surveyed had a wide range of opinions about digital transformation.

Based on the available dataset, a machine learning regression model was used in this work to forecast the impact score of digital transformation. In this instance, regression models assisted in estimating the perceived impact of digital transformation. Regression models are frequently employed to forecast continuous outcomes. We used the Mean Absolute Error (MAE), a metric that determines the average size of mistakes in the predicted values without taking their direction into account, to assess the model's performance. The model's mean absolute error (MAE) was roughly 1.48, meaning that the model's predictions often differ by 1.48 points from the actual impact scores.

V. CONCLUSION

Sri Lanka's digital transformation has significant potential for societal and economic growth, enhancing public service efficiency, financial inclusion, and social equity. However, respondents highlighted both benefits and challenges, including infrastructure gaps, digital illiteracy, and resistance to change. Despite progress, overcoming these barriers requires legislative reforms, infrastructure investments, and digital literacy programs. Addressing these issues is key to ensuring inclusive and sustainable development. A comprehensive strategy focusing on infrastructure, governance, and training can strengthen Sri Lanka’s digital services. The findings provide valuable insights for policymakers and organisations aiming to advance digital governance in Sri Lanka and other developing nations.

VI. REFERENCES

Alves, P., & Silva, A. (2020) *Digital transformation in public services: A review of the challenges and opportunities*. Journal of Public Administration, 56(2), pp. 234-249.

Chowdhury, T., & Sarker, S. (2019) 'Exploring the impact of digital transformation on public sector efficiency', *Government Information Quarterly*, 36(4), pp. 647-659.

Cohen, J. A., & Kim, H. (2018) *Social inclusion through digital transformation: A case study of Sri Lanka*, 2nd ed., Springer, New York.

Gershon, N. (2017) 'The role of digital governance in sustainable development', *Journal of Sustainability and Development*, 43(1), pp. 34-45.

Kapoor, A., & Gupta, R. (2021) *Digitalization and financial inclusion: The path to sustainability*, *International Journal of Digital Economy*, 14(3), pp. 124-138.

Rai, R. (2019) 'Digital transformation in Sri Lanka: Challenges and opportunities', *Sri Lanka Development Journal*, 28(2), pp. 115-130.

Sharma, S. (2019) *Public sector digital transformation: The role of e-governance platforms*, Cambridge University Press, Cambridge.

Smith, B. R., & Lee, K. (2020) 'E-governance and its role in public service delivery: A case study in South Asia', *Public Management Review*, 22(5), pp. 704-718.

Srinivasan, V., & Desai, P. (2018) 'Digital healthcare in Sri Lanka: Potential for social inclusion', *Journal of Healthcare and Technology*, 29(3), pp. 121-130.

Tschang, F. T. (2021) *Digital services and public sector innovation*, Palgrave Macmillan, London.

Evaluating the Adoption and Financial Literacy of Online Banking among Teenagers in Colombo, Sri Lanka

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Abstract - With many of the financial services becoming digitalized, internet banking has become accessible to younger generations, including teenagers in Colombo, Sri Lanka. This research investigates the determinants of teenagers' online banking uptake with focus on their financial knowledge, ICT skills, and security concerns. With a mixed-methods approach, combining surveys and interviews of the youth and bank staff, the study aims to investigate key adoption drivers and issues to optimal utilization. The outcomes of the research will help design more effective digital financial literacy programs and secure financial products targeted specifically at the youth market in Sri Lanka.

Keywords - Digital Financial Literacy, Online Banking Adoption, Youth Financial Inclusion, Digital Payment Systems, Financial Behavior

Background - In the recent years, e-banking has rapidly grown Sri Lanka's financial landscape, with adolescents being a significant online banking adoption group. Adolescents are technology-susceptible, yet they might not possess sufficient financial knowledge and awareness of security threats, which could put them in danger of getting deceived online. Previous studies have highlighted including financial literacy programs within school curricula, especially within urban areas like Colombo. Understanding the drivers of, and inhibitors to, adoption of online banking by teenagers will show how financial institutions can better serve this age group and make the world a more financially inclusive place.

Methods - The research uses a mixedmethods approach in which quantitative and qualitative data will be gathered. A questionnaire will be completed by 300 teenagers between 15-19 years of age in Colombo in order to capture the extent of online banking use among them, their level of financial literacy, and security issues they have faced. In addition, 20 in-depth interviews will be conducted among parents, teenagers, and bank professionals to identify the reasons for adoption or eschewal of online banking. The data from survey responses will be analysed through descriptive statistics while interview transcripts will be subjected to a thematic analysis. Ethical considerations will be observed, including taking parental consent for participants under the age of 18 years.

Results - The study will be able to determine that while the majority of teenagers know of internet banking sites, their utilization depends on various factors, including digital literacy and parental guidance. Teenagers who are more financially educated and backed by their parents are likely to utilize online banking in a more prudent way. However, there are likely to be firm obstacles such as security issues, suspicion of computer systems, and lack of financial knowledge. Variance in adoption rates can also be observed between socioeconomic status and gender. The research aims to capture these factors in order to advise on how adoption rates and financial literacy can be improved among Sri Lankan teenagers.

Conclusion - This research will contribute to the body of knowledge in the dynamics of adoption of internet banking among youths in Colombo, Sri Lanka. Through a discussion of digital competencies, money management competencies, and security concerns, the research intends to offer constructive suggestions for the enhancement of money management programs. Besides, it will steer the development of accessible, secure online banking products and services for adolescents according to their unique needs, making the

youth more financially literate and digitally secure. The study will be relevant for policymakers, teachers, and banks looking to boost financial inclusion and responsible banking among Sri Lanka's youth.

References

1. Mishra, P. (2017). Digital Financial Literacy in Sri Lanka: A Study on the Adoption of Digital Payments. *Sri Lankan Journal of Social Sciences*, 12(2), 101-114.

2. Gonzalez, M., & Garcia, R. (2019). Financial Literacy Among Adolescents: A Case Study in Latin America. *Journal of Youth Finance*, 24(3), 189-205.

3. Alkassim, S., & Lee, L. (2020). Online Banking and Security Perceptions Among Teenagers. *Journal of Financial Technology*, 8(4), 35-49.

4. Sri Lanka Central Bank (2021). Annual Report on Financial Inclusion and Digital Banking in Sri Lanka. *Central Bank of Sri Lanka*.

5. Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *National Bureau of Economic Research (NBER) Working Paper No. 18952*.

6. Gomez, R., & Shah, M. (2018). Teenagers and the Digital Economy: The Role of Financial Literacy in Technology Adoption. *Journal of Financial Education*, 44(2), 123-138.

7. Silliman, P., & Knight, R. (2020). Parental Influence on Teenage Online Banking Adoption. *Journal of Youth and Technology*, 16(1), 75-90.

8. World Bank (2019). Financial Literacy and Education in Sri Lanka: Implications for Youth. *World Bank Report*.

9. Yu, Y., & Lee, M. (2021). Understanding the Role of Security in Online Banking Adoption Among Young Adults. *Cybersecurity and Digital Finance Journal*, 2(1), 67-81.

10. Thomson, A., & Green, T. (2022). Digital Financial Services and Youth: Implications for Financial Behavior. *Journal of Digital Finance*, 6(2), 44-58.

Assessing the Role of Digital Skills Training in Enhancing Employment Opportunities for Colombo's Youth

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Abstract - The effect of digital skills training programs on enhancing job opportunities for youth in Colombo, Sri Lanka, is the focus of this research. With the digital revolution changing the job market, digital skills are the key to employment for youth job seekers. Survey and interview instruments with training participants, trainers, and employers are used in this study to assess the performance of such training programs. Findings indicate that digital skills training increases employability, especially for technology-related subjects, but lack of experience and job posting visibility remains a persistent issue. Interagency coordination among government and private agencies in coordinating training programs with industry demand is identified by the study as a factor.

Keywords – Digital Skills Training, Youth Employment, Workforce Development

Background - The Colombo labour market, shaped by digitalization, is changing at a fast pace. Despite this, unemployment among youths remains a serious concern since most of them lack the digital competencies required by employers. In an effort to fill this gap, digital training programs that aim to equip youths with skills like programming, data analysis, digital marketing, and IT support skills have been conducted. Despite these efforts, employability continues to be hindered by issues like limited access to training, unfamiliarity, and poor placement support. How information and communication technology skills training effectively reduces unemployment, and identifies determinants of employment among Colombo's youth is investigated in this study.

Methods - Quantitative and qualitative methods of data collection were employed under a mixed-methods design. Surveys were distributed among young adults who had attended online courses in training, asking them about their current occupation, and whether they thought that the training was effective or ineffective. Interviews of employers and trainers offered insights into industry requirements. Secondary data collected from private and government records were examined to get information about employment patterns on a broader scale. Statistical analysis of data helped the research team to understand it in a quantitative sense, and a thematic analysis was carried out to expound qualitative outcomes.

Results - The findings revealed that opportunities for employment increase when individuals have computer skills. Most of the participants found employment opportunities in IT fields, online marketing, and freelancing. But there were some of them who were unsuccessful in their results because of the lack of on-field experience and exposure. Employers also complained that while training programs enhance technical abilities, they do not enhance participants' problem-solving abilities and workplace adaptation. Apart from that, continued access to the internet, resource constraints, and exposure to training opportunities were the greatest barriers to youth participation.

Conclusion - Computer literacy training programs need to be implemented to make the youth of Colombo City more employable. But it would necessitate more support from career guidance, soft skills development, and placement services. The study emphasizes the imperativeness of high-level collaboration among schools, training schools, and employers to harmonize skills learning with the requirements of businesses. For maximum effect, future programs should incorporate work experience, internship and networking so that youth may make a seamless entry into the labour market.

References

1. International Labour Organization (ILO). (2021). *The Importance of Digital Skills for Employment in Sri Lanka*.

2. World Bank. (2020). *Digital Skills Training and Employment in South Asia: A Case Study of Sri Lanka*.

3. United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). (2022). *Youth Employment and Skills Development: A Guide for Policy-Makers*.

4. Development Studies Journal. (2023). *Bridging the Skills Gap: The Role of Digital Training in Youth Employment in Colombo*.

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