

**Faculty of Technology**

**University of Sri Jayewardenepura**

**ITS 4202**

**Emerging Technologies**

**Final Report**

**Group Members**

G. S. Chamika - ICT/20/818

Y. N. S. Dissanayake - ICT/20/837

B. G. D. T. T. Jeerasinghe - ICT/20/863

S. A. Dilanka Sandeepa - ICT/20/926

# **1. Overview of Each Strategy**

## **1.1 Manual Approach**

**Process and Tools:**

* Group members read the papers individually, took notes, and extracted important details.
* Topic summaries centered on objectives, methodologies, findings, and limitations.
* Research gaps were revealed by the discussion of weaknesses, such as small data sets, lack of external indicators, and omission of some advanced or hybrid methods.

**Key Characteristics:**

* Human Interpretation: Enables higher-level understanding but may include subjective bias or neglect.
* Time-Intensive: Takes extensive reading, note-taking, and repetitive discussions.
* Structured Output: Each paper’s summary and research gap analysis were presented in a straightforward, standardized manner (objectives, methodology, findings, limitations, gaps).

**Strengths and Limitations:**

* Strengths: Depth in reading, direct human judgment, and understanding of context.
* Limitations: Inconsistent details if different group members vary in summarization style.

## **1.2 AI-Assisted Approach**

**Process and Tools:**

* Both DeepSeek and ChatGPT were given properly formatted prompts that spelled out how to contrast methodologies, identify main findings, discuss limitations, and suggest future research.
* The tools extracted contradictions (e.g., ARIMA vs. LSTM performance) and suggested standardized ways to evaluate models (e.g., consistent metrics, feature sets).

**Key Characteristics:**

* Efficiency: Rapid generation of summaries, tables, and bullet-point results.
* Comparative Focus: AI tools provided side-by-side comparisons of models (e.g., ARIMA, LSTM, Bi-LSTM), data granularity, and accuracy measures.
* Automated Depth: Rapid recognition of research gaps, such as the lack of hybrid approaches or limited macroeconomic feature integration.

**Strengths and Limitations:**

* Strengths: High consistency in format, faster turn-around time, systematic analysis of large text blocks.
* Limitations: Dependent on prompt quality and AI model. Occasional omissions may occur if prompts do not explicitly request certain details.

# **2. Comparison of Outcomes**

|  |  |  |
| --- | --- | --- |
| **Comparison Factor** | **Manual Approach** | **AI-Assisted Approach** |
| Structure and Readability | - Straightforward summaries but in different formats. - Can differ in depth among papers, depending on team members. | - Highly structured output (tables, bullet points). - Ensures more consistent formatting and presentation. |
| Identification of Research Gaps | - Highlights missing parts (e.g., real-time data, external factors). - Different team members may miss different things. | - Reinforces known gaps while providing further details (e.g., hybrid models, standardized metrics). - Highlights contradictions. |
| Depth vs. Breadth | - In-depth on individual papers, leveraging human judgment. - Potential inconsistency in research paper comparisons. | - Covers all papers equally using AI. - May miss important details unless clearly asked. |
| Time and Resource Efficiency | - Requires multiple readings, discussions, and manual integration. - More time-intensive. | - Rapid summarization once the prompt is crafted. - Significantly reduces manual effort for drafting comparative tables. |
| Potential Errors or Bias | - Subject to human bias or oversight. - Variations in summarization style across team members. | - Dependent on the quality of the AI model, data, and prompts. - Might miss the details if the prompt is not structured or clear. |

# **3. Conclusion**

Both strategies effectively summarized three Bitcoin price prediction research studies and identified important research gaps, including the need for hybrid modeling, real-time sensitivity, and benchmarked metrics. The manual approach excelled at detailed, context-rich reading but was time-intensive and could introduce human variability. The AI-assisted approach delivered more rapid, structured, and comparative outputs but relied heavily on prompt quality.

# **4. Individual Contribution**

|  |  |
| --- | --- |
| G.S. Chamika  ICT/20/818 | * Summarized the Research paper and identified Research gaps - Paper 2 * Created the final report (Comparison of Outcomes and Conclusion) |
| Y. N. S. Dissanayake  ICT/20/837 | * Identified Research gaps - Paper 1 and create the document * Created the final report (Overview of Each Strategy) |
| B. G. D. T. T. Jeerasinghe  ICT/20/863 | * Summarized the Research paper - Paper 1 * Created the presentation |
| S.A. Dilanka Sandeepa  ICT/20/926 | * Summarized the Research paper and identified Research gaps - Paper 3 * Created the presentation |