**ENHANCING DATA VISUALIZATION AND ANALYSIS: A STREAMLIT BASED SURVEY ANALYSIS PROJECT USING THE SDLC APPROACH**

K.Luxshi\*, R.M Kapila Tharanga Ratnayaka\* and Yohaseelan Yoheswaran\*\*

*\*Department of Physical Sciences & Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, P.O. Box 02, Belihuloya.*

*\*\*MyDynamica (Pvt) Ltd, No 71/3 Arasady road, Jaffna, north 40000, LK.*

Survey data analysis functions act as an essential method to harvest results in research fields like industrial, healthcare, and social. Current survey analysis methods that use static reports, manual entry generate extensive and time-consuming processes. An interactive automated system developed using Python libraries like ‘Pandas’ and ‘Matplotlib’ for data handling, and utilize Streamlit to build a web interface. This system aims to improve survey analysis by creating an efficient platform for handling data, generating dynamic visualizations, and perform trend analyses, which supports real-time, user-friendly decision making. The system achieves greater efficiency, minimize human intervention, and maintains data integrity. Every stage of the data collection and analysis process conforms to the Software Development Life Cycle (SDLC) framework which ensures systematic organization. The dashboard empowers, end users access real-time survey data, which reveals user actions, preference patterns and demographic distributions. The system handles data cleaning before it produces dynamic visual representations that displaying significant patterns in diverse survey responses. The project’s analysis of user response data identifies crucial patterns that help stakeholders make informed decisions. Feature-rich graphical interfaces combined with real-time statistics evaluation allow businesses and researchers obtain higher clarity into their customer. The automated evaluation method reduces survey workload while increasing both accuracy and operational speed of output results. The research shows how automated survey processing through Python delivers fast and dependable solutions when managing huge datasets in quantitative analysis. Modern computational tools determine survey analysis improvements essential for decision-making making across multiple sectors.This project created an automatic Python-based dashboard for real-time survey data analysis, which increased both procedural speed and precision. The system strengthened data visualizations and trend detection, which simplified the interpretation of insights. Through its design, the system provides a foundation for integration of machine learning capabilities to enable advanced predictive analytics in future enhancements.

**Keywords:** Python, Interactive dashboards, Data visualization, Streamlit, Real time analytics