ABSTRACT

Technology-Based Startups (TBS) have emerged as dynamic engines of innovation, driven by visionary entrepreneurs aiming to introduce ground breaking products and services to the market. Their significance extends beyond mere entrepreneurship, as TBS are acknowledged as vital catalysts for disruptive advancements and the generation of employment opportunities. The pivotal indicators underpinning these start-ups' performance encompass a complex interplay. Navigating this intricate landscape equips TBS with the tools to thrive and shape the future of industries and economies. This thesis delves into the intricate realm of technology-based startups (TBS) through a systematic and data-driven approach. By amalgamating insights from literature reviews, advanced feature selection techniques, predictive modeling, and practical implementation, this research seeks to unravel the potential of TBS and empower entrepreneurs and investors with informed decision-making tools.

The research begins by leveraging meta-analytics, systematically reviewing and synthesizing multiple studies to identify significant features associated with startup success. Simultaneously, machine learning models are trained on diverse startup datasets, uncovering intricate patterns and correlations between characteristics and outcomes. The integration of meta-analytics and machine learning facilitates a holistic understanding of influential startup features.

Central to the framework are two proposed methodologies built upon Particle Swarm Optimization (PSO) and various machine learning-based feature selection techniques. These methodologies effectively pinpoint crucial features that drive TBS performance. The fusion of PSO's solution search capabilities with feature selection techniques enhances model robustness and efficiency, leading to higher prediction accuracy and deeper insights into performance drivers. Recognizing the essential role of technology startups in society and the economy, the research advances to ensemble and deep learning-based predictive models. Ensemble learning combines multiple models to yield more accurate predictions, reducing biases and enhancing overall stability. Deep learning, characterized by multi-layered neural networks, captures intricate financial patterns, enabling precise predictions. By harnessing ensembled and deep learning, predictive accuracy for technology-based startup financial performance is significantly elevated. To facilitate empirical analysis, a unique dataset of Indian technology-based startups is meticulously curated through data gathering, transformation, and cleaning processes. This dataset serves as a robust foundation for analyzing the financial performance of Indian startups across various sectors. The culmination of the research involves developing

a cloud-based web application designed to empower startup stakeholders with data-driven decision-making capabilities. This innovative application seamlessly integrates cloud technology with user-friendly interfaces, providing unprecedented growth opportunities. By harnessing the power of this tool, stakeholders can make informed future decisions by accessing predicted performance outcomes.

In conclusion, this thesis pioneers a comprehensive approach to TBS performance prediction by amalgamating meta-analytics, machine learning, and deep learning techniques. The resulting cloud-based decision support framework empowers startup stakeholders to navigate the complexities of the corporate landscape, fostering growth. This research unearths the latent potential of technology-based startups by amalgamating theoretical exploration, advanced data analysis, predictive modeling, and pragmatic application. It equips stakeholders with actionable insights, fostering a new era of technology-driven entrepreneurship.

Keywords: Technology Based Startup, Feature Selection, Machine learning, financial performance