1.1 Background of the Study

Student performance evaluation represents a fundamental process in educational systems worldwide, serving as a critical mechanism for assessing learning outcomes, measuring educational effectiveness, and informing instructional decisions. Traditionally, this evaluation has relied on conventional assessment frameworks comprising periodic examinations, standardized tests, coursework evaluations, and final grade computations (Alenoghena et al., 2022). These methods form the established paradigm for measuring academic achievement across educational institutions, providing a structured approach to quantifying student learning progress and knowledge acquisition within formal education settings (Romero & Ventura, 2020).

The conventional framework for evaluating student performance typically employs summative assessment techniques that emphasize end-of-term examinations, cumulative grading systems, and periodic standardized testing (Ifenthaler & Yau, 2020). This traditional approach primarily focuses on measuring learning outcomes at specific intervals rather than monitoring continuous learning processes. While this system has demonstrated effectiveness in certifying academic achievement, it presents significant limitations in providing timely interventions, identifying at-risk students during the learning process, and offering personalized feedback mechanisms that could prevent academic failure before it occurs (Aldowah et al., 2019; Khan & Ghosh, 2021).

Educational technology has emerged as a transformative force in redefining student performance evaluation through the integration of data analytics, machine learning, and artificial intelligence (Baker & Inventado, 2018). Modern technological solutions enable the analysis of diverse educational datasets, including learning management system interactions, assignment submission patterns, attendance records, and participation metrics (Hussain et al., 2018). These technologies facilitate the development of intelligent systems capable of processing complex educational data to identify patterns, predict outcomes, and provide actionable insights that enhance the evaluation process beyond traditional assessment methods (Sharma et al., 2019).

The transition from conventional evaluation methods to technology-enhanced approaches is justified by the increasing availability of educational data, the need for more responsive assessment systems, and the growing demand for personalized learning experiences (Daniel, 2015). Technology-driven evaluation systems can process large volumes of student data in real-time, identify subtle patterns that may escape human observation, and provide educators with evidence-based insights for timely intervention (Siemens & Baker, 2015). This approach addresses critical educational challenges including student retention, learning optimization, and resource allocation while maintaining alignment with contemporary educational objectives (Ifenthaler & Yau, 2020).

Despite advancements in educational technology, a significant gap exists between the theoretical potential of intelligent evaluation systems and their practical implementation within institutional frameworks (Popenici & Kerr, 2017). Current research predominantly focuses on algorithmic development and predictive modeling without addressing the comprehensive integration of these technologies into existing educational ecosystems (Agudo-Peregrina et al., 2016). There remains insufficient exploration of how intelligent systems can effectively complement traditional evaluation methods while addressing implementation challenges such as system interoperability, data privacy concerns, and user acceptance within conventional educational settings (Romero & Ventura, 2020).

This research addresses identified gaps by developing an intelligence-based system that enhances conventional evaluation frameworks through technological integration (Khan & Ghosh, 2021). The project aims to bridge traditional assessment methods with advanced analytics capabilities, creating a hybrid approach that leverages the strengths of both conventional and technological evaluation paradigms (Baker & Inventado, 2018). By focusing on practical implementation within established educational structures, this study seeks to transform student performance evaluation into a more responsive, predictive, and personalized process that effectively supports both educators and learners in achieving improved educational outcomes (Ifenthaler & Yau, 2020).