

# **A Model for Career Selection Enhancement Systems: A Case of Ugandan Secondary School Students**

## **ABSTRACT**

Career selection is a critical life decision shaping students' educational paths, personal fulfilment, and socio-economic mobility. In Uganda, however, secondary school students often make these decisions with limited support due to the absence of structured career guidance programs, trained counsellors, and access to reliable information. While Artificial Intelligence (AI) and Machine Learning (ML) models offer strong predictive power in career guidance, they tend to overlook many context-specific variables crucial in low-resource settings. This study aimed to develop a model for Career Selection Enhancement Systems for secondary school students in Uganda. Guided by Social Cognitive Career Theory and Holland's Vocational theory, the model integrates socio-behavioural and contextual constructs to improve on the variable scope of AI/ML models to reflect the comprehensive realities of Uganda's career guidance environment. Adopting a pragmatic philosophy, the study used a Design Science Research approach with both quantitative ( $n = 784$ ) and qualitative ( $n = 19$ ) data collected from secondary school and university students and career guidance stakeholders. Data were analysed using SPSS and NVivo while PLS-SEM was used for model development. Eight key SCCT-aligned variables were identified: Contextual Influences, Contextual Affordances, Learning Experiences, Career Goals, Outcome Expectations, Self-Efficacy Expectations, Personality, and Career Decision-Making. The model demonstrated good statistical fit, with 3.2% of variance in career decision-making explained by contextual influences and self-efficacy expectations. Additional qualitative insights highlighted five new factors: Information and Policy, Systemic Constraints, Personality Complexity, Success Stories, and System Integration. Model evaluation through expert walkthroughs yielded 79.3% satisfaction rate while prototype evaluation with 51 users yielded an 80% satisfaction rate. The model provides a robust and adaptable model for improving career decision-making and is well-suited for integration into AI and ML-based systems in Uganda and similar settings. A longitudinal study is recommended to track students' career trajectories from school to employment, alongside the development of a mobile application to enhance accessibility and usability.