Design and Development of Indonesian Family Relationship Quality Screening System

Rani Purbaningtyas, S.Kom., MT. (*Advisor*)

Ageng Puji Pangestu

Informatics Engineering Study Program

Information Technology Department

ABSTRACT

The family is the smallest social environment that plays a vital role in shaping a child's emotional development and psychological well-being. However, the evaluation of family relationship dynamics currently still relies heavily on manual questionnaire methods, which are prone to subjectivity and time-consuming. Therefore, this study aims to develop a web-based expert system (RelasiBaik) to facilitate the screening process digitally and objectively. The system was developed using the Software Development Life Cycle (SDLC) Waterfall model, adopting three validated psychometric instruments: the Father Presence Questionnaire (FPQ), the Mother-Child Interaction Questionnaire (MCIQ), and Family Member Well-Being (FMWB). The system processes questionnaire inputs through a Rule-Based Reasoning (RBR) algorithm combined with statistical calculations of Mean and Standard Deviation for category classification, and is equipped with an innovative adaptive weight sensitivity feature for users with verified roles (Father/Mother).

System evaluation was conducted through four comprehensive testing stages to ensure its feasibility. Algorithm Validation Testing (Accuracy Testing) showed a 100% accuracy rate with no deviation between system and manual calculations. Furthermore, Decision Logic Testing (Rule-Based Logic Testing) Testing proved that the inference engine accurately determines diagnoses and robustly handles invalid input validation scenarios. In terms of user experience, System Usability Testing using the System Usability Scale (SUS) obtained an average score of 77.5, which falls into the "Good" and "Acceptable" categories. Thus, the RelasiBaik system is proven to be valid, responsive to user role dynamics, and feasible to be implemented as a tool for detecting the quality of family relationships.

Keywords: *Family Screening, Rule-Based Reasoning, FPQ, MCIQ, FMWB, System Usability Scale, Waterfall.*