



# Pro-Active Strategies to Avoid Disputes in Road Construction Projects of Pakistan Construction Industry: Based on Knowledge-based Expert System

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*Abstract*—The construction industry, which includes building physical infrastructure and related activities is essential to the nation's economy. The international construction industry also estimated a 15.5 % GDP contribution in 2021 and 18.89 % in 2022.

This study identifies problem-solving ways to avoid road construction disputes. KBES is used in various engineering fields. This work develops an expert system to suggest and regulate road construction dispute avoidance measures. Hence, to address major road building project disputes. KBESDAS prevents disagreements. Unstructured interviews and questionnaire surveys discovered important problems and disputed avoidance strategies, ranked by Average Index (A.I) approach. Most experienced Sindh public sector road construction clients provided the data NHA, Works and Services, and Pakistan Works Department (PWD). Based on the identified significant difficulties and proactive avoidance tactics, a Knowledge-Based Expert System (KBES) was designed with structured query language MYSQL database PHP server site scripting and user interface on HTML JavaScript and Cascading Style Sheets (CSS).

*Keywords*—Construction Industry, Disputes, Road Projects, Avoidance Strategies/Controlling Measures, Knowledge-Based Expert System