

StakeQP : a semi-automated stakeholder quantification and prioritisation technique for requirement selection in software system projects

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ABSTRACT

Stakeholder quantification and prioritisation (SQP) is performed on the basis of the stakeholder's influence. The involvement of adequate stakeholders plays a crucial role in identifying and selecting the most essential requirements to produce a successful system. However, the current SQP techniques still face serious limitations, such as having insufficient low-level implementation details, being time-consuming, lacking an automation level, heavily relying on professional expertise and having no attribute measurement criteria (AMC) for stakeholder evaluation. These key issues serve as the motivation of the present study. Hence, this study is aimed at proposing a new semi-automated technique called StakeQP to address the reported key limitations. StakeQP introduces new low-level implementation details to perform SQP automatically on the basis of the newly proposed AMC using the multi-attribute decision-making method, namely, the technique of order preference similarity to the ideal solution (TOPSIS), to achieve an efficient StakeQP. The effectiveness of StakeQP is evaluated using a benchmark dataset of the actual software project. The findings show that StakeQP can produce more accurate results with less time consumption and is more effective in addressing the defined key limitations compared with other alternative techniques.

KEYWORDS

Stakeholder analysis; Stakeholder prioritization; Stakeholder quantification; Multi-attribute decision-making; TOPSIS; Software system project

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