

Development of a valid and reliable software customization model for SaaS quality through iterative method: perspectives from academia

ABSTRACT

Despite the benefits of standardization, the customization of Software as a Service (SaaS) application is also essential because of the many unique requirements of customers. This study, therefore, focuses on the development of a valid and reliable software customization model for SaaS quality that consists of (1) generic software customization types and a list of common practices for each customization type in the SaaS multi-tenant context, and (2) key quality attributes of SaaS applications associated with customization. The study was divided into three phases: the conceptualization of the model, analysis of its validity using SaaS academic-derived expertise, and evaluation of its reliability by submitting it to an internal consistency reliability test conducted by software-engineer researchers. The model was initially devised based on six customization approaches, 46 customization practices, and 13 quality attributes in the SaaS multi-tenant context. Subsequently, its content was validated over two rounds of testing after which one approach and 14 practices were removed and 20 practices were reformulated. The internal consistency reliability study was thereafter conducted by 34 software engineer researchers. All constructs of the content-validated model were found to be reliable in this study. The final version of the model consists of 6 constructs and 44 items. These six constructs and their associated items are as follows: (1) Configuration (eight items), (2) Composition (four items), (3) Extension (six items), 4) Integration (eight items), (5) Modification (five items), and (6) SaaS quality (13 items). The results of the study may contribute to enhancing the capability of empirically analyzing the impact of software customization on SaaS quality by benefiting from all resultant constructs and items.

Keyword: Customization approaches; Content validity; Iterative method; Model development; Reliability study; SaaS quality; Software as a service