

# **Multi-Criteria Evaluation of System Change Controls Based on Grey Systems Theory**

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## **ABSTRACT**

Today, more than ever, the dependence and exposure of information systems is significantly high, constantly threatening perhaps the most valuable asset in an organization, its information. Protection of such information from constant attacks, as well as compliance with new and existing laws and regulations have significantly shifted the focus of internal controls in organizations, especially of general information technology controls. General information technology controls include controls related to information systems that must be adequately designed and implemented in order to support critical business processes. They commonly include controls over change management. Change management is a process that ensures the effective implementation of changes in an information technology environment. Change management controls are also referred to as system change controls. Alarming facts and figures within the literature point to inadequacies in change management practices, particularly the evaluation and prioritization of system change controls in organizations. Research efforts have resulted in various methodologies developed to deal with the assessment of system change controls. Nevertheless, a closer look at these methodologies identifies weaknesses that can prevent effective assessment of those controls and, ultimately, adequate selection. This research proposes a novel approach using Grey Systems Theory that quantifies the importance of each system change control considering organizations' goals and objectives. Through a case study, the approach is proven successful in providing a way for measuring the quality of system change controls based specifically on organizations' criteria.