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# A Perception-based Model for Smart Grid Adoption of Distribution System Operators - An Empirical Analysis

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# A Perception-based Model for Smart Grid Adoption of Distribution Network Operators - An Empirical Analysis

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## ABSTRACT

Smart grid technologies (SGT) comprise technologies from various domains, among others information systems (IS). IS can contribute decisively to upgrade the nowadays electromechanically controlled energy systems to electronically controlled networks. However, to date the empirical evidence regarding organizations' technology adoption in general and SGT in particular is rather limited. Thus, we develop a model based on the technology-organization-environment framework (Tornatzky and Fleischer 1990) and validate the model based on data collected from 180 German distribution system operators. Our findings suggest that the technological and regulatory context variables are only marginal drivers while the organizational context variables (internal knowledge, dedicated staff) have a substantial impact on the adoption decision. Also the number of industry clients and firm size were found to be significant determinants. The paper's findings help refining researchers' understanding of organizational technology adoption and are useful for all stakeholders interested in SGT-diffusion.

## Keywords

Technology Adoption, Energy Informatics, Smart Grid, Technology-Organization-Environment Framework