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When Do IT Security Investments Matter? Accounting for the Influence of Institutional Factors in the Context of Healthcare Data Breaches

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Abstract

In this study, we argue that institutional factors determine the extent to which hospitals are symbolic or substantive adopters of information technology (IT) specific organizational practices. We then propose that symbolic and substantive adoption will moderate the effect that IT security investments have on reducing the incidence of data security breaches over time. Using data from three different sources, we create a matched panel of over 5,000 U.S. hospitals and 938 breaches over the 2005–2013 time frame. Using a growth mixture model approach to model the heterogeneity in likelihood of breach, we use a two class solution in which hospitals that (1) belong to smaller health systems, (2) are older, (3) smaller in size, (4) for-profit, (5) non-academic, (6) faith-based, and (7) less entrepreneurial with IT are classified as symbolic adopters. We find that symbolic adoption diminishes the effectiveness of IT security investments, resulting in an increased likelihood of breach. Contrary to our theorizing, the use of more IT security is not directly responsible for reducing breaches, but instead, institutional factors create the conditions under which IT security investments can be more effective. Implications of these findings are significant for policy and practice, the most important of which may be the discovery that firms need to consider how adoption is influenced by institutional factors and how this should be balanced with technological solutions. In particular, our results support the notion that deeper integration of security into IT-related processes and routines leads to fewer breaches, with the caveat that it takes time for these benefits to be realized.

Keywords: Data security breach, institutional theory, firm characteristics, IT security, health IT, panel data, growth mixture model, longitudinal