Confidentiality, Integrity and Availability in Information Security Incidents and Firm Value: The Dynamic Interplay between Investors’ Reactions and Social Media Fear and Anger

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Abstract

Firms rely on information systems to deliver value to customers, becoming vulnerable to information security risks. This study categorizes information security incidents based on impact on the confidentiality, integrity, and availability of information. This research investigates the impact of CIA breaches on investor reactions and social media emotions, and their dynamic interactions. Our empirical analyses involve a panel vector autoregression model with a dataset of 158 events, augmented by emotion analysis of +2M social media posts. We found that availability breaches are most damaging, leading to an average loss of 1.6% in shareholder value. Availability breaches also elicit the strongest fear and anger responses from social media users. Finally, our results reveal the following dynamics: fear has a delayed negative effect, cumulatively leading to .9% decline in firm value, while anger has both immediate and persistent impact, cumulatively resulting in a 3.3% loss in firm value.

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