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Reading the Disclosures with New Eyes: Bridging the Gap between Information Security Disclosures and Incidents

Ta-Wei "David" Wang wang131@purdue.edu



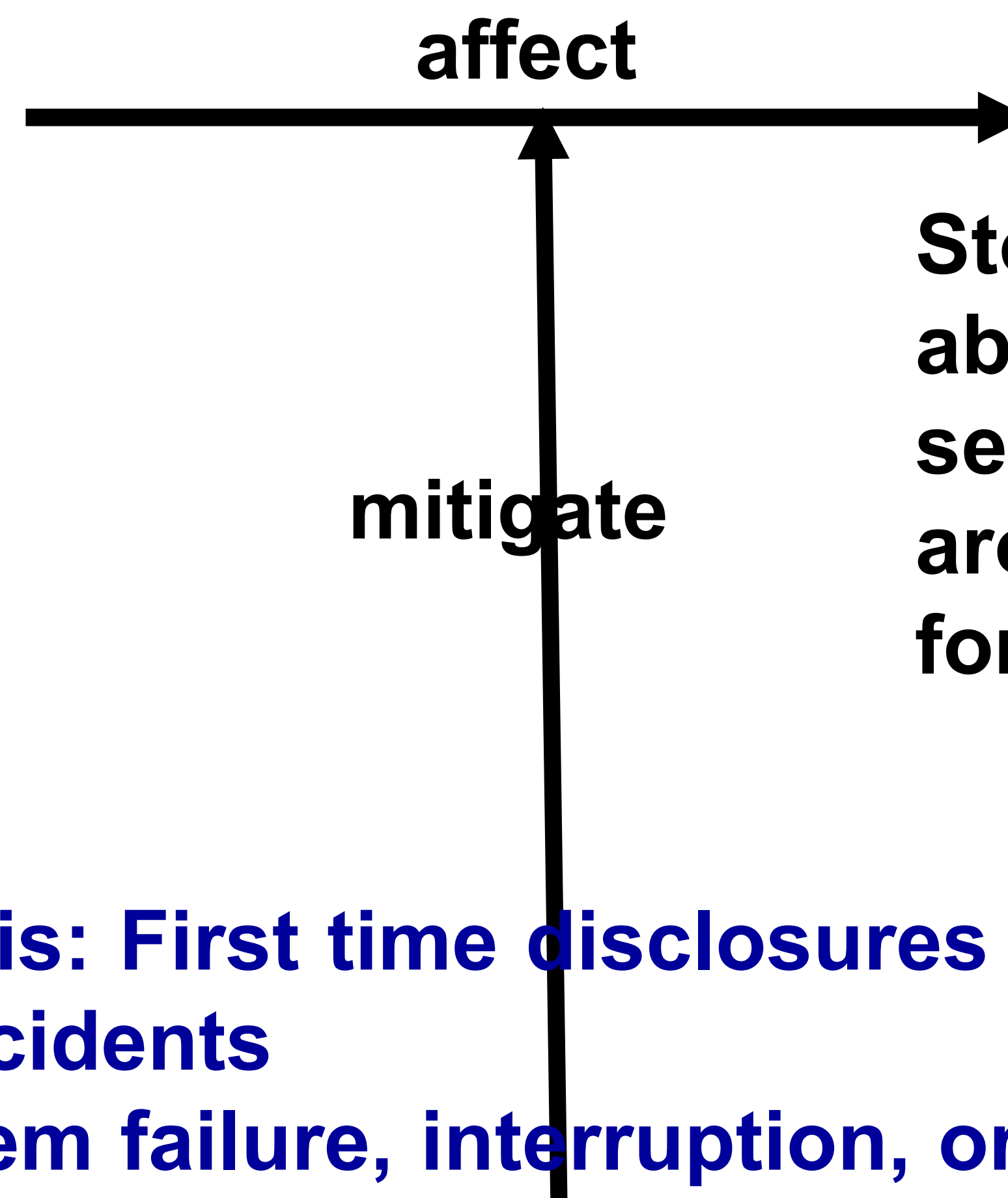
Information Security Incidents

Media announcements from 1997 to 2006 in the Wall Street Journal, USA Today, the Washington Post, the New York Times, CNET, ZDNet by searching 12 keywords



Business Value

Stock price reactions (cumulative abnormal return, CAR) to information security incidents in the two-day period around announcements after controlling for confounding effects



Results:

1. Cross-sectional analysis: First time disclosures mitigate the impact of information security incidents
2. Content analysis: system failure, interruption, or disruption negatively correlated with CAR



10-K filings

Disclosures of Information Security in Financial Reports

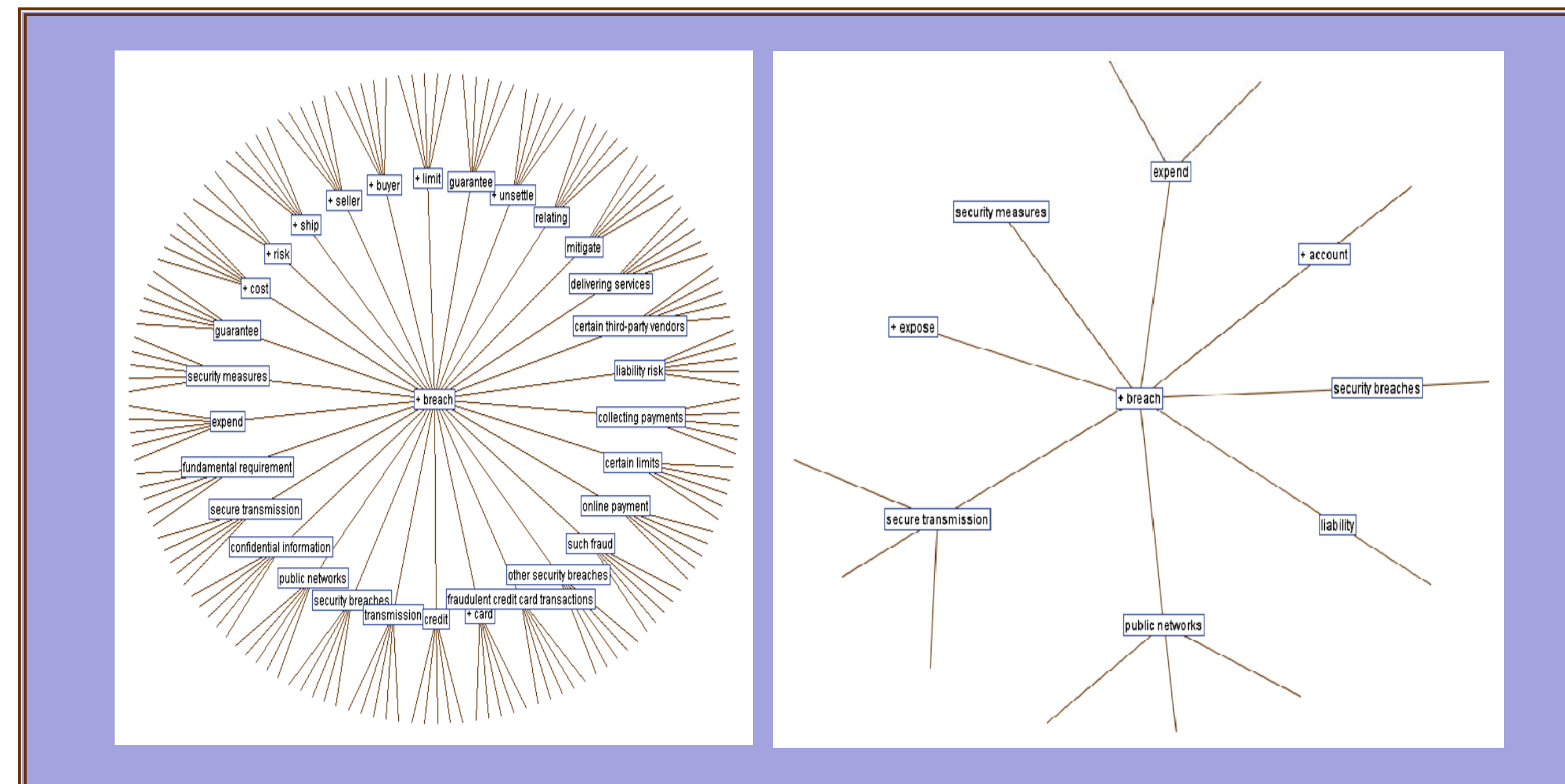
1. Control Report, mandated by SOX
2. Voluntarily disclosed Information Security Risk Factors

Cluster Analysis (Text Mining)

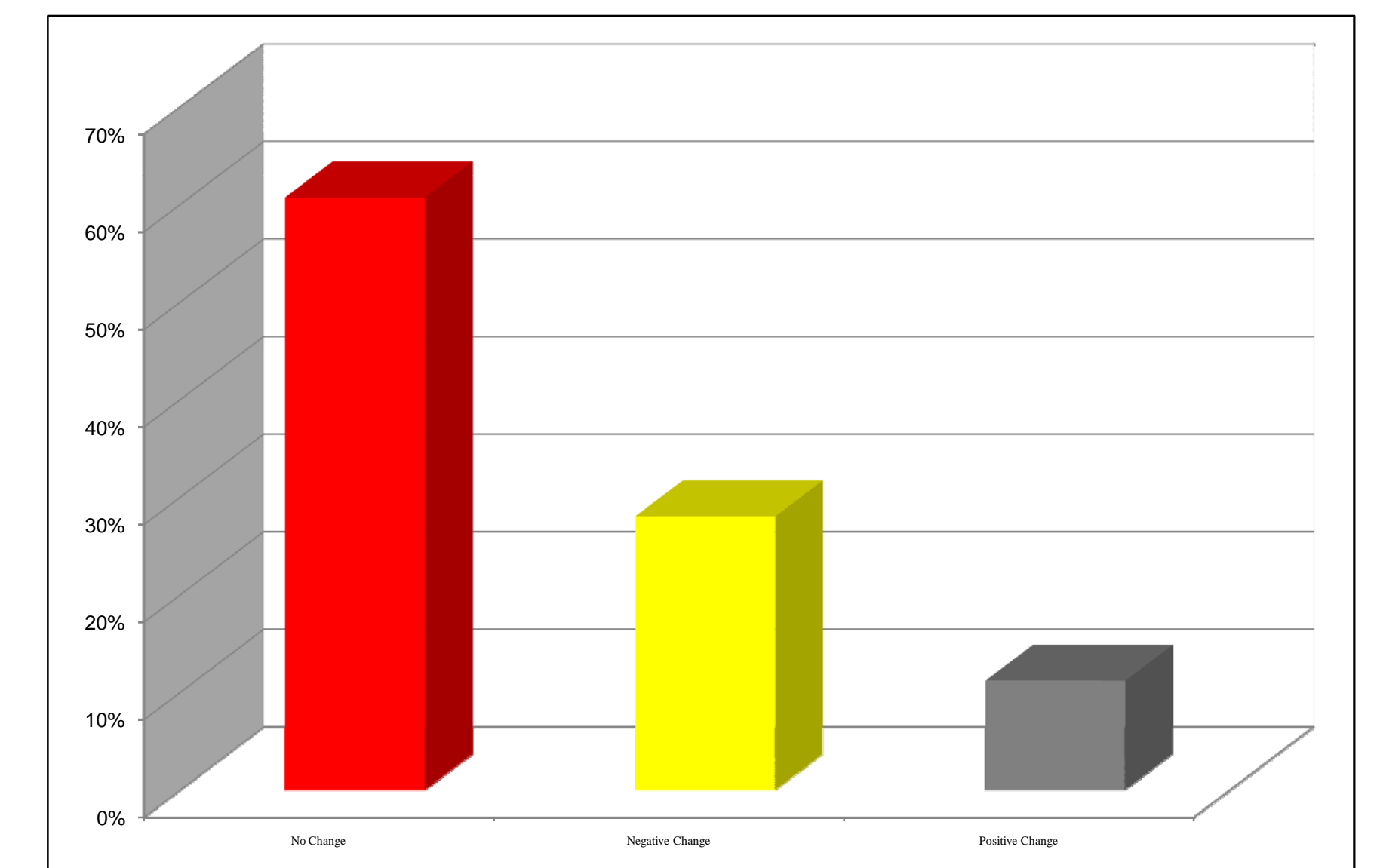
Classification Model (Text Mining)

Terms	Experimental Group	Freq.	Percentage	RMS Std.
Resolution: High				
+ attack + harm + have + other + type		9	17%	0.152
+ event + failure + operating results + result + site		9	17%	0.131
+ continue + experience + increased + infrastructure + traffic		8	15%	0.133
Resolution: Medium				
+ event + failure + site + system + web		9	17%	0.178
+ customer + product + protect + revenue + software		9	17%	0.163
+ breach + confidential information + public networks + secure transmission + transmission		9	17%	0.176
Resolution: Low				
+ attack + experience + harm + number + other		20	37%	0.163
Control Group				
Resolution: High				
+ depend + failure + interrupt + interruption + system		11	42%	0.220
+ implement + other + protect + require + transaction		10	38%	0.207
+ impact + information + not + process + s		5	19%	0.237
Resolution: Medium				
+ implement + protect + require + transaction + transmission		7	27%	0.04
+ affect + computer systems + failure + result + system		6	23%	0.213
+ control + employee + failure + process + potential		5	19%	0.212
+ customer + damage + harm + interrupt + product		4	15%	0.113
+ depend + interrupt + interruption + power loss + result		4	15%	0.000
Resolution: Low				
+ affect + failure + financial + security + system		14	54%	0.254
+ depend + harm + interrupt + result + system		6	23%	0.069
+ implement + protect + require + transaction + transmission		6	23%	0.015

Negative Impacts and Shift of Risk Factors



Disclose additional and more specific risk factors after incidents



Classify disclosures based on stock price reactions to incidents with 60% accuracy

Results:

1. Reflect possible security concerns → lower investors' sensitivity to information security incidents
2. Different disclosure patterns help firms lower stock price reactions to information security incidents