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**How Management's Response to Fraud Affects the
Likelihood of future fraud.**

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Spring 2023

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Abstract

This article studies the effect of two parts of deterrence theory: sanction certainty and sanction swiftness, on their ability to prevent and deter embezzlement within companies. I will use an experiment, a research instrument, survey questions, and SPSS and ANOVA software to determine if sanction certainty and sanction swiftness have significant effects on how a fictional company is perceived by participants. Participants will be given a scenario that has a combination of a slow or swift punishment and a high or low detection rate. In the experiment, deterrence theory's effect will be measured by dependent variables such as organizational attractiveness, intention to quit, management's response, the work environment, and the likelihood of future fraud. I will also give background information on different fraud types and their differences, types of internal controls, the fraud triangle, and the dark triad.

1. Introduction

Embezzlement is a very important type of fraud that can be common among employees who see an opportunity and feel pressures. It involves employees misappropriating the assets of the company or business they work for, for their own personal use. Embezzlement can be as small as stealing money from a cash register or fraudulently misappropriating hundreds of thousands of dollars from your company. It is up to management to detect this fraud and put in place punishments and additional procedures to prevent further fraud in the future.

Embezzlement is an interesting topic because of the large array of embezzlement cases that have gone on over the years. It is interesting to see how businesses respond to embezzlement within their company and how effective this response is in deterring other employees from doing it in the future.

The main question I will look to find the answer to in this study is “What is more important in preventing embezzlement: The risk of getting caught or the swiftness of the punishment?” Some types of fraud prevention procedures that can be put in place include segregation of duties and increased monitoring and supervision. I will be exploring these types of procedures as well as investigating the types of punishments for embezzlement that can do the best job at preventing it. Most of my research will be based on deterrence theory, which is the utilization of sanctions to deter people from committing criminal acts or acts of fraud, with the hope that there is an increased compliance with the rules and regulations (Malimage et al., 2020, p. 124). In deterrence theory, the amount of compliance depends on the certainty, the swiftness, and the severity of the punishment (Piquero et al., 2011, p. 337). Using this research, I have created three main hypotheses: “Higher sanction certainty increases organizational attractiveness”, “A swifter sanction increases organizational attractiveness”, and “For a less swift sanction, higher sanction certainty increases organizational attractiveness. For a swifter sanction, the effect of sanction certainty on organizational attractiveness does not differ.” Through my experiment, I got results that confirmed that sanction certainty has a great impact on organizational attractiveness, but sanction swiftness has much less of an impact.

Large growth in technology in recent years has made fraud harder to stop within companies, causing a great deal of concern on how to prevent it. “Management, employees and auditors should consider early warning signals, famous as red lags to detect and prevent fraud occurrence” (Mangala and Kumari, 2015, p. 53). Now more than ever, companies are looking for the best way to prevent fraudulent acts such as embezzlement with strong internal controls, increased interaction from upper management, and new surveillance technologies (Mangals and Kumari, 2015, p.53). Companies look for the most efficient ways to prevent fraud from within, so

determining what method is most useful is very important. Knowing this can help companies allocate their time more efficiently and can allow their business to run smoother with a decreased risk embezzlement. In this paper, I will be discussing research associated with types of fraud, types of internal controls, deterrence theory, the dark triad, and the fraud triangle. I will also go into detail about my experiment as well as give the results to determine to what extent my hypotheses were supported or not supported.

2. Preliminary Review of Literature

Overview of the Types of Fraud

As mentioned earlier, embezzlement occurs when employees steal assets of the business they work for and use them for their own personal needs. In other words, it is when “a person fraudulently misappropriates or misapplies something that has been legally entrusted to that person but which he or she does not own, thereby usurping the legal owner's control” (Green, 2022, p. 96). Although embezzlement seems straight-forward, the criteria for a crime to be considered embezzlement can be a bit confusing. First, people tend to believe that embezzlement is only the misappropriation of money when embezzlement can be the misappropriation of any asset including intangible assets such as trade secrets. This can make it very difficult to determine if something is stolen or who stole it. Next, criminal conversion is when someone takes control of the property of another person without authorization. Criminal conversion is slightly less specific than embezzlement and “is often an essential element of embezzlement, and some jurisdictions have only conversion statutes by which to punish embezzlement” (Green, 2022, p. 96). This means that the crime committed by the perpetrator can often fall into either category, making it difficult to determine a punishment. Finally, there is also much debate as to

whether embezzlement is a type of fraud or if it is its own type of crime. Some sources say, “If the intent occurred prior to possession of the property stolen, then the offense usually constitutes fraud rather than embezzlement. Yet, many persons have been convicted of embezzlement even though they formed the intent to steal before gaining possession of whatever was peculated”. Other sources would categorize embezzlement as a type of financial fraud, but the qualifications of what is considered embezzlement are still very complicated. This in combination with another type of crime that is similar to embezzlement called larceny, can make determining what is embezzlement and what is not very difficult.

Even though embezzlement is the type of fraud that will be used in the experimental scenario, there are other types of fraud that could be affected by the swiftness of the punishment and the rate of detection. Management fraud is when upper management commits the fraud instead of lower-level employees and “In its most common form, management fraud is deception perpetrated by top management’s manipulation of financial statements. The victims of management fraud are typically stockholders, lenders, and others who rely on financial statement information” (Albrecht et al., 2019, p. 2). Investment scams are another common type of fraud where “fraudulent and usually worthless investments are sold to unsuspecting investors” (Albrecht et al., 2019, p. 2). Vendor fraud can come in many different forms and involves an overcharge for purchased goods, the shipment of inferior goods, or the non-shipment of goods even though payment was made” (Albrecht et al., 2019, p. 2). Consumer fraud is the opposite of vendor fraud and involves the customers lying or deceiving their way into getting goods for cheaper than they are worth or for free. The swiftness of the punishment and the detection rate can have a similar impact on all of these types of fraud because if the perpetrators of these crimes are severely punished it may deter others from committing the same crimes.

Although these types of fraud can be impacted by these factors, embezzlement is the main type of fraud that is the focus of this experiment. To give us a better picture as to how embezzlement is carried out and how it is hidden from authorities, it is best to look at a few embezzlement cases throughout history and examine the details of each of them. For example, the Roslyn High School embezzlement case in the mid 2000's is the largest school embezzlement case in history. It involved Superintendent, Frank Tassone, and his assistant, Pamela Gluckin. Together, they embezzled millions of dollars from the school for their own personal use, which involved buying houses, cars, and vacations (Elder and Yebba, 2017). More recently, ex-NFL player, Brett Favre, has been accused of embezzling 8 million dollars' worth of welfare payments for himself and the University of Southern Mississippi for the renovation of their volleyball stadium. The Mississippi Department of Human Services filed a lawsuit against Favre and 38 other defendants "seeking to recoup Temporary Assistance for Needy Families (TANF) funds that were diverted to the rich and powerful. A state audit found that at least \$77 million in welfare funds was misspent" (Olivieri, 2023). Since then, Favre has filed multiple defamation lawsuits and the trial is still ongoing.

Overview of Internal Controls

There are many different types of internal controls or fraud prevention procedures that companies put into place to prevent embezzlement and other types of fraud. "Internal controls are policies and procedures which protect company's assets from the usage fault, make sure that the business information provided is accurate, and convince that laws and regulations have been obligated" (Warren, Reeve, and Fess, 2004). These internal procedures are then tested to ensure that they are efficient in preventing fraudulent acts and to safeguard against errors made by the company. Over time, new technological developments have made it more important than ever for

companies to continually test control procedures. New developments in control technologies have caused older control systems to become obsolete and much more inefficient than they used to be (Mashhadi, 2021, p. 13). The two main types of internal controls used within a company are financial internal controls and operational internal controls. Financial internal controls are used to help a company comply with the Generally Accepted Accounting Principles and to make sure their financial statements are reliable. These internal controls are essential to “provide senior management with the necessary information to take financial and administrative decisions related to the department's activity” (Mashhadi, 2021, p. 17). Operational internal controls are “the comprehensive process for the operational unit or the organization as a whole to evaluate its various systems, administrative control and performance” (Mashhadi, 2021, p. 16). These internal controls are used to test the efficiency of the financial internal controls and check for any possible loopholes and weaknesses in them. “By the way of accounting and audit controls, the embezzler is discouraged from breaching his/her trust through fear of detection and fear of punishment” (Shaw and Bologna, 2000, p. 11).

Some of the internal procedures that can be put into place by a company are segregation of duties, gathering intelligence about the personal habits of employees, through analyzing differences between operating expectations and performance, and through increased monitoring and supervision of the work environment. The two main types of internal controls that will be tested in this experiment are segregation of duties and monitoring and supervision. Segregation of duties is when the responsibilities and roles of business personnel are split among many different people so “no single person can take advantage of the situation for personal gain or other impropriety” (Audrey et al., 2010, p. 30). The main goal of segregation of duties is “to prevent employee fraud by reducing the possibility of collusion wherever there are conflicts of

interest” (Kim et al, 166). Keeping the roles and responsibilities of employees as separate as possible decreases how much power one employee gets and keeps employees from working together to commit fraudulent acts. Segregation of duties does not 100% prevent fraud, however, and material weaknesses in segregation of duties can put companies at risk in their disbursement cycle where unauthorized purchases and payments can be made (Audrey et al, 31). A variety of solutions have been discovered to prevent these material weaknesses with the simplest one being to hire more employees so that the power among them is as diluted as possible and each of them have less responsibility. However, this is not a feasible option for many small companies because of possible resource constraints. These companies may resort to increased management oversight, a rotation of duties, or increased third-party oversight to limit their weaknesses in segregation of duties (Audrey et al, 32-33). Increased monitoring and supervision is another way to prevent types of fraud such as embezzlement within a company. Companies often implement supervisors to keep watch over to employees to make sure they are completing their assigned work correctly, to make sure control activities are efficient, and to make sure employees are abiding by the rules of the company (Hevesi, 22). Companies may also implement cameras and surveillance systems to keep a closer eye on their employees and costumers to detect fraud as it happens, which can be a good internal control if implemented properly.

Overview of Deterrence Theory

The deterrence theory relates to “the utilization of sanctions to influence employees’ behavioral intentions” (Milimage et al. 124). The main focus is to determine if punishments put into place by companies and the government have a substantial effect on someone’s willingness to participate in criminal behavior. In deterrence theory, “sanction threats and imposed punishments are presumed to inhibit initial criminal activity and deter its subsequent recurrence

by increasing the costs of crime” (Piquero et al, 337). Deterrence theory is based on the severity of the sanction, celerity or swiftness of the sanction, and the certainty of the sanction. The theory of the severity of the punishment is “a more severe sanction (arrest) should inhibit future domestic violence more than a less severe sanction should” (Piquero et al. 336). Most of the time, if the company implements a more serious and severe punishment to prevent future fraud, then there will be lower probability of future fraud within the company. More severe punishments could be heavy fines or significant prison time and less severe punishments could be getting fired from your job or community service/probation. The sanction’s “certainty relates to the likelihood or risk of detection and subsequent punishment” (Piquero et al. 337). This part of deterrence theory relates to the effect that internal controls and fraud prevention procedures have on the likelihood of someone attempting fraud. Generally, if the risk of getting caught is high, then people will be much less likely to attempt to commit fraud. This connects to how companies use internal controls such as segregation of duties or monitoring and supervision to help increase the rate of fraud detection from within. Lastly, “swiftness refers to how quickly the sanction is applied after the offense and subsequent detection” (Piquero et al. 337). If the punishment is carried out quickly, (right away vs. a warning), then the likelihood of future fraud tends to decrease. Just implementing a warning could give the perpetrator more of a reason to take the risk and steal from the company while electing to fire perpetrators could make the risk of being caught too high.

Overview of Dark Triad

The dark triad of narcissism, psychopathy, and Machiavellianism are all linked to increased fraudulent and manipulative behavior. These three traits in combination with each other can “be predictive of callous, self-serving, and manipulative attitudes and behaviors” which

have been proven to influence unethical activities such as fraud (A. Harrison et al, 54). People with Machiavellianism often “use manipulative behaviors and believe others to be gullible and foolish. A person rated high on Machiavellianism is characterized by holding cynical views of others and the belief that manipulation is a valid and useful method for attaining goals” (O’Boyle et al. 2012; A. Harrison et al. 56). People with Machiavellianism can fool others into doing what they want and into believing their lies. Machiavellianism is a part of the dark triad that would make sense to be common among embezzlement fraud because a perpetrator who embezzles would likely need to be able to lie and deceive their way into stealing without drawing attention. People with Machiavellianism are perceived to be more intelligent and attractive than others, but there is not a proven correlation between it and wealth, income, and status (Jakobwitz, 332). This shows that although people with Machiavellianism may be more cunning than others, there is still not much of a correlation between this high income meaning these types of people may still have a financial reason to commit acts of fraud. People with narcissism have a large “ego and sense of entitlement [that] create desires to boast and engage in other attention-seeking behaviors” (A. Harrison et al. 56). A narcissist can often belittle others to make themselves seem bigger and “often incorporates entitlement with a strong desire for success and achievement” (Ames et al. 2006; A. Harrison 56). A narcissist may be more willing to commit acts of fraud because they could be more overconfident in their ability to not get caught and they may also believe they deserve all the money they are stealing as if it is owed to them. Psychopathy is described as “exhibiting a pattern of intrinsically anti-social behaviors that are based on judgments concerning an elevated importance of one’s own wishes and well-being while, at the same time, minimalizing the rights and wellbeing of others” (Levenson 1992; A. Harrison 56). Psychopaths are known to conn and manipulate which can make it more likely for them to

embezzle or commit other acts of fraud. It has been hypothesized that there are three core characteristics of psychopathy: “an arrogant and deceitful interpersonal style, deficient affective experience, and an impulsive and irresponsible behavioral style” (Jakobwitz, 2006, p. 332).

Psychopathy is often confused with being a psychopath but that is not always the case and various tests such as the Psychopathy Checklist-Revised are used to determine how prevalent certain psychopathic traits are based on a three-point scale.

Fraud Triangle Overview

The fraud triangle relates to the possible reasons why people may decide to commit acts of fraud such as embezzlement. According to the American Institute of Certified Public Accountants, “fraud, whether fraudulent financial reporting or misappropriation of assets, involves incentive or pressure to commit fraud, a perceived opportunity to do so, and some rationalization of the act” (Lederman, 2019, p. 1156). The fraud triangle has been assumed to have been created in the 1950’s by Donald Cressey while he was doing his research and studies on embezzlement (Lederman, 2019, p. 1156). Through his research, Cressey discovered that all 133 of the embezzlement offenders that he was studying met the same four criteria: They were having financial problems, embezzlement could be seen as a solution, they had the knowledge to embezzle, and the offender found a way to rationalize the crime (Green, 2022, p. 102). The fraud triangle is much more highly correlated with embezzlement than with other types of fraud because certain employees are trusted with assets of the company and Cressey was attempting to figure out why some people elected to break that trust while others did not (Lederman, 2019, p. 1158). The motivation to commit fraud can often be split into pressures and incentives. Pressures could be seen as “personal pressure to pay for lifestyle, employment pressure from continuous compensation structures, or management’s financial interest, and external pressure such as

threats to the business financial stability” (Kassem and Higson 192). These pressures could drive someone to embezzle money because they may feel like they need to in order to support themselves and their family. Many believe the motive may be the most important part of the fraud triangle because “external circumstances are able to change goals and vice versa; thus, motivation can be modified, to attain a desirable state, which is one reason why some organizations with many opportunities have very little fraud” (Schuchter and Levi, 2013, 4). Rationalization when “individuals attempt to minimize bad conscience and try to find a way to show their frauds as less wrongful, more plausible to themselves to maintain self-esteem, self-respect or a favorable self-concept” (Schuchter and Levi, 2013, p. 6). They may use rationalizations like “it was only one time”, “I deserve this”, or “everyone is doing it”. Using these phrases and this thought process can make the perpetrator feel better about themselves and can reassure them that what they are doing is okay in their own mind. Opportunities to commit fraud within a company often come to light when the fraud prevention procedures of the company are weak and there is less risk of getting caught. “Perceived opportunities to commit fraud examples include a weak board of directors, a lack of or circumvention of controls that prevent/detect fraudulent behavior, failure to discipline fraud perpetrators, lack of access to information, and the lack of an audit trail” (Kassem and Higson, 2012, p. 192). Having strong internal controls such as segregation of duties and monitoring and supervision is paramount in decreasing the opportunity for someone to embezzle money.

3. Research Questions and Hypotheses

Through conducting a literature review, I have come up with many questions that I will try to answer through the results of my experiment and further research. The main research question I will be answering is:

***Q1:** What is more important in preventing embezzlement: The risk of getting caught or the swiftness of the punishment?*

The fraud prevention procedures that a company implements such as segregation of duties and monitoring and supervision can reduce the probability of embezzlement depending on how effective they are. The more effective an internal procedure is, the less likely an employee will try to embezzle money because of the higher risk of being caught. For this part of the research question, I will try to figure out what types of fraud procedures can be the most effective, such as segregation of duties, and increased monitoring. I will also attempt to determine to what extent the swiftness of the punishment can reduce the probability of embezzlement within a company with the use of scenarios that include warnings or immediate firing. I can then compare these results to see what has the greatest impact on the probability of future fraud.

***Q2:** Do people with personality traits on the dark triad tend to be more willing to commit embezzlement no matter what the detection rate or the swiftness of the punishment are?*

I will also try to determine which types of personalities are the most likely to steal based off research on the fraud triangle. Some of these personalities can be narcissistic, Machiavellian, and psychopathy. Studies by (A. Harrison et al.) demonstrate that “each factor in the dark triad facilitates different parts of the cognitive processes that result in fraud. Psychopathy, narcissism, and Machiavellian each influence factors in the fraud triangle during short-term interactions” (A. Harrison et al, 2018, 54). Surveying how people who fit these traits react to different detection rates and punishments can be important in determining which factor is most important in preventing fraud.

H1: Higher sanction certainty increases organizational attractiveness.

I believe that the certainty of the sanction will have a great impact on how attractive an organization will be perceived. According to (Malimage et al.) “sanction certainty was found to have a significantly positive influence on policy compliance intentions”, meaning that when the rate of detection was higher, people tended to be more willing to comply with the rules (Malimage et al., 2020, 125). I believe that if employees see that a company is willing to put strict rules and regulations in place to prevent fraud, then that would make that company more attractive in their eyes.

H2: A swifter sanction increases organizational attractiveness.

I believe that a swifter sanction will have a great impact on how attractive a company is perceived by employees. Based on prior research on the impact of state laws on willingness to drunk drive by (Malimage et al.), “sanction certainty variables, such as per se laws, and sanction celerity variables, such as license suspensions, have a significant influence” (Malimage et al, 2020, 125). This research shows that the certainty and celerity (swiftness) of the sanction have greater impacts than the severity of the sanction.

H3: For a less swift sanction, higher sanction certainty increases organizational attractiveness.

For a swifter sanction, the effect of sanction certainty on organizational attractiveness does not differ.

I expect to find that the risk of getting caught is more important than the swiftness of the sanction. My reasoning is the type of punishment has much less of an impact if the perpetrator is highly confident that they will get away with it. Likewise, even if the punishment is less severe, if the perpetrator is sure they will get caught, they likely will not even attempt to embezzle

money. According to research by (Piquero et al), “the certainty of punishment was a greater deterrent than was the severity of punishment”, which shows that a higher risk of getting caught can have a greater effect on likelihood to commit fraud than the type of punishment after the perpetrator is caught (Piquero et al, 2011, 341). I believe that a high sanction certainty with a low sanction swiftness will have a greater impact on how attractive an organization is perceived than a low sanction certainty with a high sanction swiftness.

Additional Hypotheses

H4: A higher sanction certainty and a swifter sanction will decrease the likelihood that management will step down or be fired due to ineffectiveness.

H5: A higher sanction certainty and a swifter sanction will make management seem more serious in attempting to improve the work environment.

H6: A higher sanction certainty and a swifter sanction will create a more ethical work environment.

4. Research Design

Experiment Overview

For my form of primary data collection, I used a 2 (sanction certainty: higher vs. lower) x 2 (sanction swiftness: less swift vs. more swift) experimental design. 122 Paul students at the University of New Hampshire were recruited and completed a survey in Qualtrics that contained a scenario about embezzlement and fraud prevention. Each student was given one of four different scenarios about a fictional company that was having embezzlement problems. Each

scenario had a different combination of fast vs. slow punishments and high vs. low detection rates.

Experiment Introduction

Each participant was given an introduction to the research instrument which was about a fictional company called Tom's Pastries that has been having embezzlement problems. The company has been looking for the best ways to prevent embezzlement in the future and has thought about using either a warning or an immediate firing, and an internal control with either a 40% or 90% detection rate. Each participant got one of four following combinations of sanction swiftness and sanction certainty: a warning (less swift) and a 40% detection rate (low), a warning and a 90% detection rate (high), immediate firing (more swift) and a 40% detection rate, and immediate firing and 90% detection rate.

Instrument

The participants then answered questions about organizational attractiveness, intention to quit, management's response, the work environment, and the likelihood of future fraud based on a Likert scale from 1-7. Each question relates to a different dependent variable that was tested to see how it was impacted by sanction swiftness and sanction certainty. The participants also answered behavioral questions about the dark triad that were created by (Harrison et al) about a scenario in which they had the option to lie about the condition of a product they were trying to sell in order to make more money. The answers to these tested to see if they had any correlation with the other instrument questions about the scenario I created.

Manipulation Check Questions

The two manipulation check questions were asked to the participants to make sure they read and answered the scenario questions carefully and understood them. Participants who did not answer one or more manipulation check questions correctly had their responses factored out of the experiment. The questions that were asked were “what was the detection rate in the scenario?” and “what was type of punishment in the scenario?”

5. Results

The results for my survey questions were tallied up and ran through SPSS and ANOVA software to determine the significance for each variable. The sanction swiftness of immediate firing was coded at 1 and sanction swiftness of a warning was coded at 0. The sanction certainty of 90% (high) was coded at 1 and the sanction certainty of 40% (low) was coded at 0. The correct manipulation check answers were coded at 1 and the incorrect answers were coded at 0 and participants who had at least one 0 were not factored into the final results.

Tests of Hypotheses

My first hypothesis was supported because for organizational attractiveness, the responses on the Likert scale were significantly different between high and low sanction certainty, but were not significantly different for sanction swiftness. The mean responses were also greater for higher sanction certainty rather than lower, while the mean response for sanction swiftness were not significantly different. These results are consistent with the experiment by (Malimage et al) that determined “in accordance with general deterrence theory, increasing the certainty ($t=2.512$) and celerity ($t=3.373$) of sanctions does significantly increase the intent to comply with a new information security policy” (Malimage et al, 2020, p. 130).

My second hypothesis was not supported because for organizational attractiveness the difference in responses for sanction swiftness were not significantly different. This means there is not much of an increase in perceived organizational attractiveness between high and low sanction swiftness. These results are not consistent with (Malimage et al.) because in this experiment the sanction swiftness did not significantly affect the organizational attractiveness, while in the other research, swiftness was significant in impacting compliance with a new information security policy.

My third hypothesis was supported because the responses for organizational attractiveness between high and low sanction certainty were significantly different (p -value=.001) when swiftness was low. When swiftness was high, the responses between high and low sanction certainty were not significantly different (p -value=.123). In other words, when swiftness is low, sanction certainty must be high in order for a company to look attractive, but when swiftness is high, sanction certainty does not make a significant difference.

My fourth hypothesis was not supported because for the question about whether the employees believed management should be fired due to ineffectiveness, the p -values were over 0.1 for both swiftness and sanction certainty making them both insignificant. My fifth hypothesis about the question involving how serious the company looked in trying to improve the ethical work environment, got very similar results and neither sanction swiftness nor sanction certainty were significant. My sixth hypothesis was supported with sanction swiftness having a p -value of 0.023 (moderately significant) and sanction certainty having a p -value of 0.008 (significant). This means that participants believed that both an increase in sanction swiftness and sanction certainty made the ethical environment of the company seem much better.

Results for Organizational Attractiveness

Organizational Attractiveness is the dependent variable that gave the best results overall. With a low detection rate (40%) and low swiftness (warning), the mean response on Likert scale was 3.49, and when the detection rate was low (40%) and swiftness was high (firing), the mean response was 3.80. When the detection rate was high (90%) and the swiftness was low (warning), the mean response on the Likert scale was 4.45 and when the detection rate was high and swiftness was high, the mean response was 4.16. This demonstrates that on average, a high detection rate generates higher responses and makes a company seem more attractive than if swiftness is high. Furthermore, the total mean when the detection rate is low is 3.65 and the total mean when detection rate is high is 4.26. This is a significant leap in attractiveness from a low to a high detection rate, but the perceived organizational attractiveness does not always increase from low sanction swiftness to high sanction swiftness. This demonstrates that sanction certainty had a greater impact on the responses to organizational attractiveness than sanction swiftness.

When looking at the P-Values, this trend continues. Sanction certainty has a P-Value of less than 0.001, meaning there is a highly significant difference between responses when there is a low detection rate vs. when there is a high detection rate. Sanction swiftness is the opposite, with a P-Value of 0.953, meaning there is not a significant difference between responses when there is a warning vs. when there is immediate firing. For the correlation between detection rate and swiftness, the P-Value is 0.097, meaning the responses were moderately significantly different. When swiftness is low, high and low detection rates both have a P-Value of less than 0.001, and when swiftness is high, high and low detection rates both have P-Values of 0.123. This means that when swiftness is low, differences in responses between high and low detection rates are significant for organizational attractiveness. When swiftness is high, the differences in

responses between high and low detection rates are not significant for organizational attractiveness.

Results for Firing Management

The results for firing management were inconsistent and offered much less information than organizational attractiveness. The means of the responses varied in an inconsistent manner depending on the swiftness and sanction certainty. Also, the P-value for swiftness was 0.854, the P-value for detection rate was 0.114, and the P-value for swiftness*detection rate was 0.983. All of these P-values were above the 0.1 threshold and resulted in insignificant difference between Likert scale responses for the firing management survey question.

Results for Ethical Work Environment

The results for the ethical work environment survey question showed that the mean response for low sanction certainty was 3.61 and the mean for high sanction certainty was 4.37. This difference was significant with a P-value of 0.003, but the difference between high and low sanction swiftness was insignificant with a P-value of 0.28. These results show that the participants thought that the work environment was much more ethical when sanction certainty was higher rather than lower, but their responses were not significantly affected by sanction swiftness.

Results for Willingness to Improve the Work Environment

The results for if management is serious in trying to improve the work environment gave insignificant P-values for swiftness, detection rate, and swiftness*detection rate. However, the mean responses on the Likert scale continued to show that higher sanction certainty resulted in higher responses than with a lower sanction certainty, while responses for higher sanction

swiftness were actually lower than for lower sanction swiftness. The results showed that changes in sanction swiftness and certainty did not significantly change responses for if management seems serious in trying to improve the work environment.

Results for Likelihood of Future Fraud

These results showed that Likert scale responses continued to greatly increase when sanction certainty was higher rather than lower. The P-value for sanction certainty was 0.008 meaning there is a significant difference in responses based on sanction certainty. The P-value for sanction swiftness was 0.023 which means there is a moderately significant difference in responses based on swiftness. This illustrates that sanction certainty has a highly significant impact on if employees believe that the new procedures decrease the likelihood of future fraud, while sanction swiftness has a moderate significance.

6. Conclusion

This experiment provides crucial details as to the extent in which sanction swiftness and sanction certainty impacts willingness to commit embezzlement. Throughout the experiment, I found that sanction certainty had a greater impact than sanction swiftness because it consistently had p-values below 0.1 meaning it was highly significant. Sanction certainty on the other hand consistently had p-values above 0.1 except for the ethical environment dependent variable meaning it tended to be less significant in decreasing acts of embezzlement. For organizational attractiveness, the highest average response came when sanction certainty was high and sanction swiftness was low and lowest average response was when sanction certainty was low. This shows that, especially for organizational attractiveness, sanction certainty had a much bigger impact on how attractive the organization was perceived by the participants. Finally, I did not

find any correlation between any of the dark triad questions and my instrument questions because there was no significant difference in responses depending on personality traits. Overall, I believe this experiment can help determine what companies should focus on when they attempt to prevent embezzlement. This study can make a great contribution to companies who are having problems with embezzlement by showing them how certain detection rates and internal controls are perceived by the participants. I hope that this research is expanded upon and used for other types of fraud or other crimes to help wide ranges of businesses improve their work environment for the better.

Appendix

Experiment Introduction

“You are an employee at Tom’s Pastries. Tom’s Pastries is a popular French bakery located in various areas around Massachusetts, with its headquarters located in Boston. It is known for its fresh baguettes, brioche breads, and great customer service. The bakery also makes sweets such as macarons, cupcakes, croissants, and much more. Management is very well respected, and the employees have a good time working for the company.”

“Since Tom’s Pastries has expanded to various locations around Massachusetts, management has had trouble keeping up with each shop and managing their everyday operations. Their shops also have recently had trouble maintaining employees and currently have only a few employees working in each shop. Generally, one person works the cash register and tallies up the money at the end of each day, and a couple of people will do the baking and dishes/cleaning throughout the day.”

“Coming as a shock to management, two of their shops have recently had cases of employees being caught stealing money from the cash register. Before management punishes the perpetrators, they need to come up with a proper plan to prevent further fraudulent acts in the future. In this plan, they want to make sure they implement punishments and fraud prevention procedures that can send a message to the employees to deter them from stealing.”

Experiment Scenarios

(Less swift punishment, low sanction certainty)

Management thinks of using a warning as a punishment for the employees who stole the money. They then will provide the employees with education sessions for fraud prevention. For a fraud prevention procedure, management wants to supervise and monitor the bakery more closely. Before, management would travel between the shops every couple of weeks and stay mostly in the Boston location, but under this procedure cameras will be implemented into the shops. Although these cameras can be effective, they are of a very low quality because the shop does not have the funds to buy more high-tech ones. This can make the picture on the camera blurry and difficult to see. Management estimates this fraud prevention procedure to have a 40% success rate.

(Less swift punishment, high sanction certainty)

Management thinks of using a warning as a punishment for the employees who stole the money. They then will provide the employees with education sessions for fraud prevention. Management also wants to implement a segregation of duties fraud prevention procedure. Before, one person worked the cash register AND counted the money and put it in the safe at the end of the day. Now, one employee will work the register, a different employee will count the money, and another will put it in the safe. If someone else is checking the employees' work and their jobs are separated, it will make it less likely for any of them to steal. Management estimates this fraud prevention procedure to have a 90% success rate.

(Swifter punishment, low sanction certainty)

Management decides to fire the employees who stole the money immediately and will do the same for anyone caught stealing in the future. For a fraud prevention procedure, management wants to supervise and monitor the bakery more closely. Before, management

would travel between the shops every couple of weeks and stay mostly in the Boston location, but under this procedure cameras will be implemented into the shops. Although these cameras can be effective, they are of a very low quality because the shop does not have the funds to buy more high-tech ones. This can make the picture on the camera blurry and difficult to see. Management estimates this fraud prevention procedure to have a 40% success rate.

(Swifter punishment, high sanction certainty)

Management decides to fire the employees who stole the money immediately and will do the same for anyone caught stealing in the future. Management also wants to implement a segregation of duties fraud prevention procedure. Before, one person worked the cash register AND counted the money and put it in the safe at the end of the day. Now, one employee will work the register, a different employee will count the money, and another will put it in the safe. If someone else is checking the employees work and their jobs are separated, it will make it less likely for any of them to steal. Management estimates this fraud prevention procedure to have a 90% success rate.

Instrument

For me, this company is a good place to work.

Strongly disagree 1-----2-----3-----4-----5-----6-----7 Strongly agree

To what extent do you exert a great deal of effort to work for this company?

Not at all 1-----2-----3-----4-----5-----6-----7 To a great extent

To what extent are you no longer interested in working for the company anymore except as a last resort? (reversed)?

Not at all 1-----2-----3-----4-----5-----6-----7 To a great extent

It is likely that I will leave this company within the next year.

Not at all true 1-----2-----3-----4-----5-----6-----7 Very true

It is likely that I will frequently think about leaving this company.

Not at all true 1-----2-----3-----4-----5-----6-----7 Very true

Based on management's implemented procedures, I believe management should be fired or step down due to ineffectiveness.

Not at all true 1-----2-----3-----4-----5-----6-----7 Very true

(Holt et al. Journal of Information Systems, 2017)

I believe Tom's pastries has an ethical work environment.

Strongly Disagree 1-----2-----3-----4-----5-----6-----7 Strongly Agree

I believe the owner is serious in attempting to improve the work environment by implementing this new plan.

Strongly Disagree 1-----2-----3-----4-----5-----6-----7 Strongly Agree

I believe the newly implemented procedures will be successful in creating a more ethical work environment.

Strongly Disagree 1-----2-----3-----4-----5-----6-----7 Strongly Agree

Manipulation Check

What is the estimated success rate that the fraud prevention procedure talked about is successful?

_____40%

_____90%

What is the punishment of being caught embezzling money that is talked about in the scenario?

_____warning

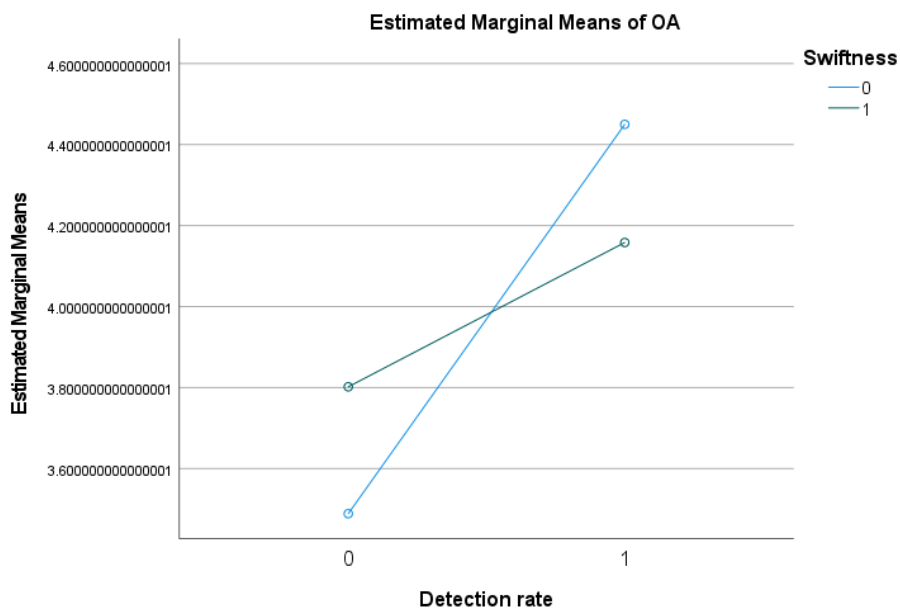
_____immediate firing

Tables and Graphs**Descriptive Statistics**

Dependent Variable: OA					
Detection rate	Swiftness		Mean	Std. Deviation	N
0		0	3.48888889	0.9376474	30
		1	3.80208333	0.8375565	32
	Total		3.65053763	0.8940757	62
1		0	4.45	1.1560924	20
		1	4.15833333	0.9841696	40
	Total		4.25555556	1.0439795	60
Total		0	3.87333333	1.1246365	50
		1	4	0.9327966	72
	Total		3.94808743	1.0132461	122

Tests of Between-Subjects Effects

Dependent Variable: OA					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.815 ^a	3	4.605	4.921	0.003
Intercept	1811	1	1811	1935.5	<.001
Detectionrate	12.433	1	12.433	13.287	<.001
Swiftiness	0.003	1	0.003	0.004	0.953
Detectionrate * Swiftiness	2.621	1	2.621	2.801	0.097
Error	110.41	118	0.936		
Total	2025.9	122			
Corrected Total	124.23	121			



1. Detection rate * Swiftiness

Estimates

Dependent Variable: OA					
Detection rate	Swiftness	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
0	0	3.489	0.177	3.139	3.839
	1	3.802	0.171	3.463	4.141
1	0	4.45	0.216	4.022	4.878
	1	4.158	0.153	3.855	4.461

Pairwise Comparisons

Dependent Variable: OA						
(I) Detection rate	(J) Detection rate	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
0	1	-.961*	0.279	<.001	-1.514	-0.408
1	0	.961*	0.279	<.001	0.408	1.514
0	1	-0.356	0.229	0.123	-0.811	0.098
1	0	0.356	0.229	0.123	-0.098	0.811

Univariate Tests

Dependent Variable: OA					
Swiftness	Sum of Squares	df	Mean Square	F	Sig.

0	Contra st	11.085	1	11.085	11.847	<.001
	Error	110.41	118	0.936		
1	Contra st	2.256	1	2.256	2.411	0.123
	Error	110.41	118	0.936		

2. Detection rate * Swiftmess

Estimates					
Dependent Variable: OA					
Detection rate	Swiftmess	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
0	0	3.489	0.177	3.139	3.839
	1	3.802	0.171	3.463	4.141
1	0	4.45	0.216	4.022	4.878
	1	4.158	0.153	3.855	4.461

Pairwise Comparisons							
Dependent Variable: OA							
Detection rate	(I) Swiftmess	(J) Swiftmess	Mean Difference (I-J)	Std. Error	Sig. ^a	95% Confidence Interval for Difference ^a	
						Lower Bound	Upper Bound
0	0	1	-0.313	0.246	0.205	-0.8	0.174

	1	0	0.313	0.246	0.205	-0.174	0.8
1	0	1	0.292	0.265	0.273	-0.233	0.816
	1	0	-0.292	0.265	0.273	-0.816	0.233

Univariate Test

Dependent Variable: OA						
Detection rate		Sum of Squares	df	Mean Square	F	Sig.
0	Contrast	1.519	1	1.519	1.623	0.205
	Error	110.41	118	0.936		
1	Contrast	1.134	1	1.134	1.212	0.273
	Error	110.41	118	0.936		

Descriptive Statistics				
Dependent Variable: Firemgt				
Detection rate	Swiftness	Mean	Std. Deviation	N
0	0	3.63	1.299	30
	1	3.59	1.043	32
	Total	3.61	1.164	62
1	0	3.25	1.517	20
	1	3.2	1.381	40
	Total	3.22	1.415	60
Total	0	3.48	1.389	50
	1	3.37	1.25	72
	Total	3.42	1.304	122

Tests of Between-Subjects Effects					
Dependent Variable: Firemgt					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.845 ^a	3	1.615	0.949	0.419
Intercept	1340.2	1	1340.2	787.4	<.001
Detectionrate	4.326	1	4.326	2.542	0.114
Swiftness	0.057	1	0.057	0.034	0.854
Detectionrate * Swiftness	0.001	1	0.001	0	0.983
Error	200.84	118	1.702		
Total	1631	122			
Corrected Total	205.68	121			

Descriptive Statistics				
Dependent Variable: EthicalE				
Detection rate	Swiftness	Mean	Std. Deviation	N
0	0	3.43	1.165	30
	1	3.78	1.128	32
	Total	3.61	1.15	62
1	0	4.25	1.618	20
	1	4.43	1.318	40
	Total	4.37	1.414	60
Total	0	3.76	1.408	50
	1	4.14	1.271	72

Tests of Between-Subjects Effects					
Dependent Variable: EthicalE					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19.607 ^a	3	6.536	3.927	0.01
Intercept	1808.804	1	1808.804	1087	<.001
Detection rate	15.28	1	15.28	9.182	0.003
Swiftnes s	1.959	1	1.959	1.177	0.28
Detection rate * Swiftnes s	0.214	1	0.214	0.129	0.72
Error	196.36	118	1.664		
Total	2152	122			
Corrected Total	215.967	121			

Descriptive Statistics				
Dependent Variable: Improve				
Detection rate	Swiftness	Mean	Std. Deviation	N
0	0	4.97	1.377	30
	1	4.81	1.203	32
	Total	4.89	1.282	62
1	0	5.35	1.387	20
	1	5.1	1.194	40
	Total	5.18	1.255	60
Total	0	5.12	1.38	50
	1	4.97	1.198	72
	Total	5.03	1.272	122

Descriptive Statistics				
Dependent Variable: CethicalE				
Detect ion rate	Swiftn ess	Mean	Std. Deviation	N
0	0	3.63	1.377	30
	1	4.41	1.16	32
	Total	4.03	1.318	62
1	0	4.5	1.147	20
	1	4.82	1.357	40
	Total	4.72	1.29	60
Total	0	3.98	1.348	50
	1	4.64	1.282	72
	Total	4.37	1.343	122

Tests of Between-Subjects Effects

Dependent Variable: CethicalE					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.

Corrected Model	24.941 _a	3	8.314	5.071	0.002
Intercept	2160.2	1	2160.2	1317.6	<.001
Detectionrate	11.837	1	11.837	7.22	0.008
Swiftiness	8.636	1	8.636	5.267	0.023
Detectionrate * Swiftiness	1.437	1	1.437	0.877	0.351
Error	193.46	118	1.639		
Total	2547	122			
Corrected Total	218.4	121			

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