Factors Engendering Corporate Fraud and Mechanisms for Enhancing the Detection and Prevention of Fraudulent Financial Practices in the UK Retail Industry

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Abstract

This thesis aims to explore the factors determining fraud in retail companies in the UK and the mechanisms that can be used to improve fraud detection and fraud prevention. The conceptual framework of the study is based predominantly on the Fraud Triangle Theory. This theory helps to explain the behavioural factors behind fraud and why instances of fraud take place.

The aim and objectives of this thesis are attained using a mixed-methods research design based on primary data analysis. The primary data is collected by means of structured questionnaires and interviews over skype. The questions in the survey are coded using the Likert scale and analysed in SPSS. The main methods of analysis implemented in this study include frequency tables, descriptive statistics, t-tests, ANOVA, Cronbach's alpha, logistic regression modelling and structural equation modelling (SEM). Interview questions are interpreted using a qualitative thematic analysis.

The final sample of respondents represented 106 managers and employees from UK retail companies. The companies are taken from both the traditional sector and e-commerce. These 106 responses were collected from October 2019, when the first pilot study was arranged, to January 2021. The results demonstrate that the necessity for managers to sign an anti-fraud statement, the perceived higher quality of external audit, and the existence of an anonymous hotline for reporting fraudulent activities have a significant impact on the probability of fraud occurrence. The probability of fraud occurrence is also found to be correlated with the size of the company, which is consistent with the Opportunity dimension of the Fraud Triangle. It has also been revealed that monetary rewards for anonymous reporting of fraud produced a positive impact on fraud detection in UK retail companies.

The main theoretical contribution of this study is that it has proposed a new scale for measuring the three constructs of the Fraud Triangle and tested this scale in the context of the UK retail industry. The main empirical contribution is that the factors of fraud detection and prevention have been demonstrated not only for publicly listed companies often studied in the past but also in the context of small private firms, for which the secondary data was not available and primary data was collected. The main methodological contribution of this thesis is that it combines quantitative techniques such as SEM and regression analysis with qualitative thematic analysis to examine the relationships between the constructs of the Fraud Triangle and the fraud occurrence on a deeper level.

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I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously presented for an award at this, or any other, university.

Chapter One: Introduction

1.1. Research Background

1.1.1. An Overview of the Recent Trends in the UK Retail Industry

Retailing is defined as "the sale of goods and services to the ultimate consumer for personal, family or household use" (Cox and Brittain, 2004, p.3). In a broad sense, any purchase of a tangible product or a service by an individual can be classified as a retail transaction, while business and industrial purchases are not considered retail transactions (Cox and Brittain, 2004). The key functions of retailing include the provision of a convenient location for product/service consumption, granting access to smaller quantities of goods, instant availability at a reasonable price due to product stock, and the facilitation of supplies movement along the distribution chain from manufacturers to the end consumer (Madaan, 2009). Additionally, retailers perform the functions of in-store marketing facilities and after-purchase service provision (Jain, 2015).

The phenomenon of retailing can be approached from the standpoint of two major theories such as natural selection and the 'wheel' of retailing (Sternquist, 2011). The natural selection theory of retailing takes its origin in Darwin's biological adaptability of species to environmental conditions. Similarly, retail organisations have to adapt to the three types of environmental factors, namely: changes in consumer behaviour, technological progress, and market changes, which are associated with competitive pressures and new market opportunities (Pradhan, 2011). The 'wheel' of retailing theory suggests that innovatory stages of retailing, such as the introduction of discounts, attract new customers. Due to trading up, retailers reach maturity stages and become high-price stores, thus increasing their market vulnerability. This again leads to innovatory stages and a strategic update. The core factors influencing the transition of retailers from one stage into another are organisational deterioration and economic conditions (Cox and Brittain, 2004).

According to the House of Commons briefing paper on the UK retail industry, the entire sector is currently facing a radical shift in terms of consumer purchasing patterns, the structure of supply chains, and new methods of customer-retailer communication (Hutton,

2021; Panzoneet al., 2021). In 2020, the total economic output of the retail sector constituted £97 billion, which displayed a 2.5% fall compared to 2019. The total volume of retail sales in Great Britain reached the level of £437 billion and again demonstrated a 0.6% decrease in comparison with 2019 (Office for National Statistics, 2021). Nevertheless, the share of online sales was equal to 28% of the full sales volume in 2020, while the same indicator was below 20% in 2019. A negative tendency towards retail organisations' closure has been observed recently. Thus, only in 2020, 54 British retailers ceased to exist, which led to the closure of over 5,000 stores (Hutton, 2021).

The most important pressures on the UK retail sector, such as the growth of internet retailing, should be viewed as challenges for retail organisations' sustainability, potentially undermining their corporate governance, reporting practices, and transparency (Sternquist, 2011; Cox and Brittain, 2004; Elliott, 2021). Compared to apparel retailers (Office for National Statistics, 2021), food retailers were not sufficiently prepared for the accelerated rates of online shopping. Although the UK is the leading European country in terms of the online shopping spread, with 90% of customers who purchased goods online at least once in 2020 (Hutton, 2021), British retailers were still challenged by the altering online demand. Smaller traditional stores, which did not have enough resource capacity for e-commerce and effective home delivery services, turned out to be less competitive in the industry (Panzone et al., 2021).

The UK retail sector is represented by the 'big four' companies such as Tesco, Sainsbury's, Asda, and Morrisons, whose market shares were equal to 27.1%, 15.3%, 15.1%, and 10.1%, respectively, in April 2021 (Statista, 2021). Nonetheless, the total number of retail companies exceeded 310,000 in 2020, and businesses employing more than 100 individuals are not numerous in the industry, making less than 0.5% of all organisations. Conversely, up to 60% of retail stores in the UK do not hire employees, meaning that store owners are the only staff in such venues (Hutton, 2021). Around 35% of retail organisations in the UK hire 1-9 employees (Office for National Statistics, 2021). The reviewed industry statistics imply that the issue of corporate fraud is only relevant to a limited number of retail firms, which are accountable to the public and have commitments in front of their employees. On the other hand, even small stores can understate their profits and provide misleading financial information to controlling bodies (Goldstein and Yang, 2019).

An interesting trend towards circular economy was examined by Upadhyay et al. (2021) in the context of the UK retail industry. The conventional retail model suggests a linear flow from production to consumption and further disposal (Jaeger and Upadhyay, 2020). Alternatively, the circular economy emphasises the importance of transiting towards reuse, recycling, and sharing. The pursued analysis of the top ten British retailers demonstrated that retail organisations seek to integrate circular economy principles in their business models. Specifically, Upadhyay et al. (2021) noted that Tesco was planning to introduce fully reusable packaging by 2025. In turn, 73% of unsold food products were donated by Sainsbury's to social groups with a low level of income. Finally, Morrisons is effectively reducing water consumption along its supply chain and attempts to decrease the amount of plastic packaging (Upadhyay et al., 2021).

Buil-Gil et al. (2020) argue that the changes in consumer preferences towards online shopping contributed to the growth of cybercrime via social media and email. Naturally, the growth of online fraud is explained by the increasing share of online transactions between consumers and retailers (Hutton, 2021). However, Buil-Gil et al. (2020) confirmed that individuals proved to be more vulnerable to online fraud than organisations because the latter applies more advanced cybersecurity solutions. Interestingly, retail organisations were found to avoid reporting cases of cybercrime and online fraud because these signals might be harmful to corporate reputation (Buil-Gil et al., 2020). The observations of Buil-Gil et al. (2020) contribute to the understanding that corporate-level fraud is an issue that is usually concealed and masked by retail organisations because of public image risks. On the other hand, the amount of fraud is forecasted to grow in the future due to technological progress and the spread of remote shopping (Tarhini et al., 2021).

1.1.2. Classifying Fraud Types

Fraud is defined as misleading or deceptive actions aimed at generating personal gains for the party committing the fraud (Lawrence and Wells, 2004). In turn, a fraudulent practice is understood as "any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead a party to get a financial or other benefit or to avoid an obligation" (Baker et al., 2020, p.19). While any fraud is associated with deception, not all deceptions in corporate relations are recognised as a fraud. The following criteria need

to be met in order to commit corporate fraud. First, any act of fraud suggests that two parties would be involved, a victim and a fraudster. Second, there is always a false statement represented in the form of figures or proclaimed facts. Third, the fraudster is aware of their statement being initially wrong. Fourth, the victim is supposed to accept or agree with this misleading statement. Fifth, a harmful effect is observed when corporate fraud takes place, though the degree of this effect, as well as the affected parties, may vary (Baker et al., 2020). It is arguable whether one of these components can be missing in the definition of corporate fraud. For instance, if no organisational or personal harm was registered, this does not necessarily mean that an act of fraud was not committed. The entire organisation or its specific representatives may perform as fraud victims (O'Gara, 2004).

At a theoretical level, the main characteristics of a fraudster are access to power and authority to make statements on behalf of the organisation, understanding of the caveats existing in an accounting system and the points where control is especially weak, individual confidence that the act of fraud would not be identified and punished, and readiness to cope with stress and risks associated with the fraudulent activity (Baker et al., 2020). Dorminey et al. (2012) theorised fraudsters' motivation by means of the MICE framework, where the fundamental motives were identified as money, ideology, coercion, and ego.

In the context of the UK, the main law governing instances of fraud is the Fraud Act 2006. This act classifies fraud into the following types: false representation, non-disclosure of information, and abuse of power or position (Fraud Act 2006). False representation is often linked with manipulations of accounting statements in order to misrepresent the real figures and conceal losses or enhance accounting profits. This can be done in order to influence financial markets and the value of compensation received by managers in the form of shares and share options (Chen et al., 2019). This can also be done in order to avoid particular obligations or earn at somebody else's expense. Non-disclosure of information is considered a type of fraud because it misleads one of the parties if the other party makes specific arrangements without providing the full or legally required information and earns abnormal profits in case of such arrangements. Examples of such fraud may include non-disclosure of important risk characteristics of particular securities before selling them to investors or the public (Goldstein and Yang, 2019). This would be treated not only as a problem of corporate governance and ethical issue but also as fraud if, in such cases, the party responsible for the non-disclosure of information enjoyed financial gains from this information asymmetry.

Lastly, the abuse of power is a type of fraud when the executives in high positions misuse their positions for general personal gains.

An alternative classification of fraud types was developed by Baker et al. (2020), who differentiated between asset misappropriation, corruption, and financial statements fraud. These types of fraud may also be categorised according to the corporate parties involved. For example, asset misappropriation is a typical employee fraud because personnel members are involved in the embezzlement of cash or non-cash resources. In turn, corruption may occur at both managerial and employee levels (Baker et al., 2020). Lastly, financial statements fraud is predominantly committed by managers as they are attributed the maximum amount of power and perform a representative function in public relations (O'Gara, 2004). Asset misappropriation is subdivided into cash misappropriations (e.g., theft, false cash receipts, fraudulent disbursement, etc.) and inventory misappropriations (e.g., misuse of corporate assets, stealing inventory, and fake sales). Corruption includes bribery, favouring suppliers, vendors and other external stakeholders, and a hidden conflict of interest. The manifold aspects of financial statements fraud are wrongly stated revenue, improper timing of financial reporting with the intention to demonstrate better results, hidden expenses and liabilities, and inappropriate valuation of assets (Baker et al., 2020).

A five-fold classification of corporate fraud types was suggested by Comer (2017). Although Baker et al.'s (2020) and Comer's (2017) classifications are similar, the latter presented the conflict of interests and technological abuse as separate types. Apart from these, corruption, false reporting, and the theft of assets match with Baker et al.'s (2020) groups. Technological abuse factors touch upon electronic methods of fraud, including unauthorised access, sharing confidential corporate information with third parties, distributing malicious code and viruses, and sabotage (Comer, 2017). It is arguable whether technology-related fraud should be viewed as a separate mechanism of misleading practices because computer systems and electronic means have become deeply integrated into all areas of corporate relations. Hence, committing other types of fraud (e.g., asset misappropriation, corruption, and misleading financial statements), fraudsters may also rely on technology (Tarhini et al., 2021).

It is also important to distinguish between fraud committed by insiders and outsiders of a company. The fraud committed by outsiders includes hacking attacks on the company's servers and websites, credit card fraud aimed at stealing money from customers of a

company, and fraud committed by customers when dealing with the company's assets (Ali et al., 2019). According to the expanded classification of Buil-Gil et al. (2020), outsider fraud in the online environment includes computer malware or spyware, using bots to make the service unavailable to customers, hacking a computer server, hacking social media or email accounts, stealing personal information for unauthorised access to a service or payment systems, and other methods of online fraud such as consumer scams, fraudulent sales, and phishing. In contrast, the fraud committed by insiders includes cases of fraud in which managers and employees of the company are involved (Cordis and Lambert, 2017). These include financial statement manipulation, public claims made by executives not backed by real facts when these claims lead to manipulations of financial markets, and hiding important information from external auditors or colluding with auditors to mislead investors.

While both types of fraud, those committed by insiders and those committed by outsiders, have been explored in the literature (Buil-Gil et al., 2020; Cordis and Lambert, 2017; Skousen et al., 2009), this thesis is focused on the fraud committed by insiders, as it is associated with corporate governance of companies and is usually investigated separately from the fraud committed by outsiders. Taking into account that both employees and managers of retail organisations may be involved in different corporate fraud types (e.g., asset misappropriation, corruption, and financial statements) (Baker et al., 2020), the area of interest of this thesis is not limited to a single employee group but rather covers both managers and employees.

Among the various types of fraud covered in this section, this thesis focuses on financial fraud, referred to as financial statement fraud by Baker et al. (2020). This focus includes external accounting. There are several reasons why this thesis narrows down the category of corporate fraud to financial fraud only. The first rationale for this type of fraud is that it is detectable. In the case of external accounting, auditors can detect fraud. In the case of internal accounting, audit committees and internal auditors who report to the audit committee can help detect fraud. Hence, it is possible to collect instances of confirmed fraud cases based on previous investigations. Another reason why this study focuses on financial fraud is that it affects nearly all stakeholders of a company. Financial statement fraud hurts investors who use the financial information from the company to make investment decisions; it hurts financial analysts who make wrong predictions. It affects regulators who have to get involved and enforce new measures to prevent companies from misusing financial reporting, and it

affects tax authorities and the government whose tax revenue may be affected by corporate financial fraud. Finally, this type of fraud also affects society in general as the taxes not paid by companies imply that the government expenditures on some vital infrastructure could be reduced, thus lowering the welfare of society. Considering the scale of the effects of financial fraud on all stakeholders compared to other types of fraud, the former has been chosen as the predominant focus of this thesis.

1.1.3. Strategies for Fraud Prevention

The present thesis differentiates between factors potentially leading to committing corporate fraud and strategies for fraud prevention. The latter is a result of a proactive position of companies to prevent fraud cases (Johansson and Car, 2016), while predictors of fraud are rather a monitoring or auditing category giving an understanding of whether a specific organisation currently faces triggers of fraud which make non-compliance more probable (Dellaportas, 2012). This subsection introduces specific corporate strategies of fraud prevention in order to develop a more informed approach to hypotheses development. However, more detailed theorisation and underpinning of the hypotheses are available in further chapters.

A mainstream scholarly opinion is that different forms of control contribute to the prevention of corporate fraud (Skousen et al., 2009; Dyck et al., 2010; Rae et al., 2008). Comer (2017) singled out such measures of preventive control as physical security, control via policy-making, due diligence, and technical controls. In the case of physical security, organisational stakeholders' access to assets and corporate information is restricted. Additionally, responsibilities are separated in employee teams in order to avoid conflicting interests. The policy-making perspective on controls is associated with stricter regulation of processes (e.g., leaving audit trails in accounting, following process instructions etc.) (Comer, 2017).

The due diligence mechanism requires organisations to systematically test employees' honesty before trusting their resources and decisions (Comer, 2017). However, there should be consistency in such validations because tests may fail to be representative. As argued by Baker et al. (2020), fraudsters only become involved in illegal activities when they are confident that no external control will be exercised. In practice, fraud often occurs in

scenarios when employees are fully trusted but choose to convert their positive reputation into personal gains (Goldstein and Yang, 2019). Finally, technical control strategies involve electronic methods and cybersecurity infrastructure aimed at preventing organisational stakeholders from committing fraudulent activities. There is an ongoing scholarly argument regarding which form of control, proactive or reactive, is more effective (Manurung et al., 2015). Naturally, it is cheaper for organisations to prevent fraud and the costs associated with it, but Comer (2017) emphasised that not all forms of fraud may be prevented and introduced the concept of reactive controls.

Corporate governance, which deals with "the ways in which suppliers of capital make sure that they get a return on their investment" (Akyol, 2020, p.109), is said to determine the likelihood of corporate fraud occurrence. Hence, Akyol (2020) differentiated between internal governance and external governance mechanisms of fraud prevention. The internal perspective prompts that board structure and composition influence corporate fraud to a substantial degree. Specifically, board independence, as well as the inclusion of financial experts on the board, reduces the possibility of fraud (Donelson et al., 2017). Other internal governance practices are regular audit committee meetings, stock ownership by outside directors, separating the functions of the CEO and the board chairman, and overall controlling the environment in organisations. From an external governance perspective, the presence of 'blockholders' and outside agents who can execute external control reduces the chances of corporate fraud (Akyol, 2020). Further research should be undertaken in the area of corporate governance strategies for fraud prevention with a specific emphasis on the UK retail sector, as Akyol's (2020) study only offered a meta-level review without contextualisation.

While it is challenging and resource-consuming for organisations to practice ultimate forms of control over employees and managers, Wang et al. (2020) attempted to test the effectiveness of ultimate control for fraud reduction. In the Chinese context, the link between these variables turned out to be positive. However, the relationship between ultimate control and fraud prevention was moderated by a number of variables such as institutional law, the board size, board independence, previous attempts and experience to commit fraud, volatility, firm size, stock returns, and leverage (Wang et al., 2020). Interestingly, ultimate control rights do not completely eliminate stakeholders' attempts to commit fraud but rather make fraud detection at early stages more probable. From the viewpoint of this thesis, ultimate

control is a subjective measure, which would be recognised differently by employees and managers. Therefore, it would be more reasonable to introduce specific variables standing for strategies of fraud prevention (e.g., the role of the internal audit committee, the contribution of external audit, the effect of technological factors, the availability of corporate training, and the implementation of monetary incentives) (Comer, 2017; Akyol, 2020; Johansson and Car, 2016).

1.2. Problem Statement

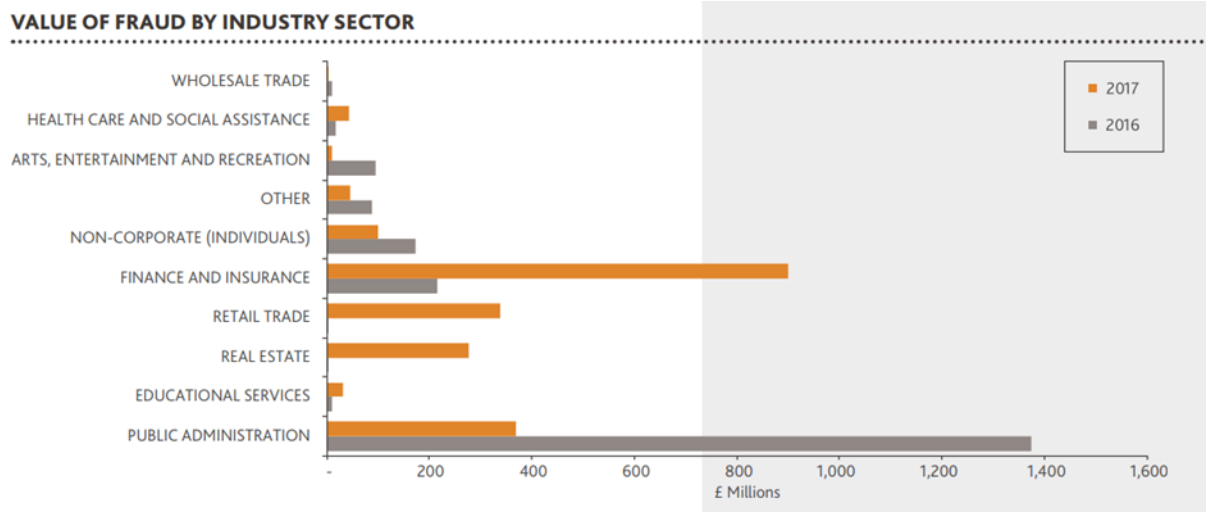
The research problem to be studied by this thesis stems from the reviewed context. This particular context of the UK and retail industry, specifically, has been chosen for several reasons. One of the reasons is the accessibility of primary data in the UK. It would be much more difficult to approach managers of companies in other countries to collect the answers to the same questions as have been asked in this survey. This can be explained by the language barriers that would emerge when interviewing foreign stakeholders. Furthermore, focusing on the international context rather than the UK context will imply that a representative sample of countries would have to be selected in order to make a valid generalisation of the results for the global retail industry. Given the limitations associated with primary data collection, such a focus on the international context would not be possible, and for this reason, this study was decided to be set in the context of the UK, where there are no language barriers, where the data is feasible to collect, where a solid regulation and best practices of corporate governance (e.g. the Corporate Governance Code) exist and where the case law is developed with sufficient disclosure of information for outsiders who can check and confirm whether the companies selected in this thesis have actually had formal investigations of financial fraud.
Another reason why this thesis focuses on the context of the UK retail industry rather than other financial or non-financial sectors is that the retail sector features a much larger number of transactions compared to industrial companies and manufacturing companies, which makes it easier to manipulate the financial statements using the cost of goods sold, inventory management, and accounts receivable (Kang and Kim, 2019). The large volume of individual transactions in the retail industry also implies that audit companies would have to use technological innovations and data mining instruments to detect potential cases of fraud and misstatement (Balios et al., 2020). As a result, due to such complexity, the management will

have more opportunities to the committee the corporate fraud with the risk of being caught or detected lower than in the industries with lower volumes of daily transactions.

The retail industry has also been selected because it has been subject to many digital innovations, which have changed the way in which goods are accounted for. For example, there are cash transactions, point-of-sale (PoS) bank card transactions, mobile payment transactions, online payment transactions, pay-later options offered by retail companies and even cryptocurrency payment options (Moorhouse et al., 2018). The variety of ways to make a transaction in the retail industry, coupled with the volume of transactions, make this industry a lucrative field for financial fraud.

Moreover, the UK's retail sector has been the second largest industry from the private sector, where most frauds occurred, only behind the well-researched financial industry. An abnormal increase in the cases of financial fraud in the UK retail industry was observed in 2017, as seen in the following graph:

Figure 1 Value of Fraud by Industry Sector



Source: BDO FraudTrack Report (2018)

UK-based retail organisations seek to adapt to the changing environmental factors and learn how to perform more effectively in the conditions of decreased consumer demand and the growing popularity of online shopping (Hutton, 2021; Office for National Statistics, 2021). To reach the maturity stage in this environment, British retailers need to successfully undergo a series of organisational changes that would lead small and large companies to a better market fit (Upadhyay et al., 2021). This highly dynamic process involves plenty of opportunities for corporate fraud, which may be potentially committed by employees and managers to pursue their personal goals while simultaneously challenging organisational accountability and transparency (Baker et al., 2020). The existing conflicts of interest

between different stakeholder groups in the retail industry might end in a failure of retail organisations to build a sustainable business model (Elliott, 2021). Therefore, there is an urgent need for effective internal and external governance mechanisms that would allow retail companies to prevent corporate fraud at all levels. The effectiveness of these fraud prevention strategies has not yet been explicitly tested on UK-based retail organisations.

Another important area to be investigated by this thesis is diagnosing which specific company characteristics and corporate governance mechanisms are related to corporate fraud occurrence. Taking into account that preventive strategies of corporate fraud management prove to be more effective than reactive ones (Comer, 2017), it is essential to equip retail companies with an empirically tested summary of such factors. Early identification of these factors would allow retail firms to quickly investigate cases of corporate fraud and avoid significant losses. The relevance of these research problems is supported by the recent statistics on retail crime. As reported by the British Retail Consortium (2020), the average cost of administrative errors and various forms of retail crime is equal to £5.5 billion annually. This figure is difficult to estimate accurately, and there might be different methodologies for calculating it, but the scale of corporate fraud opportunities is enormous, and proactive actions should be taken by retail organisations to avoid such significant losses.

The risks of corporate fraud in the retail sector are estimated as especially high because of several factors outlined in the Deloitte (2020) report on economic crime. First, global supply chains which involve retail organisations become increasingly complex due to a large number of stakeholders and multi-layer relations between them. Second, global retailers who operate in more than one county have to obey several jurisdictions and manage potential conflicts between them (Deloitte, 2020). In these conditions, non-disclosure or misappropriation of resources may become unintentional. Hence, organisations need to develop protective mechanisms to reduce the risk of unintentional non-compliance. Third, the retail industry in the UK and other countries is marked by a high employee turnover rate (Hutton, 2021). This makes the problem of information security and limited access to organisational resources even sharper because intensive employee rotation is likely to provoke security breaches (Zamzami et al., 2016).

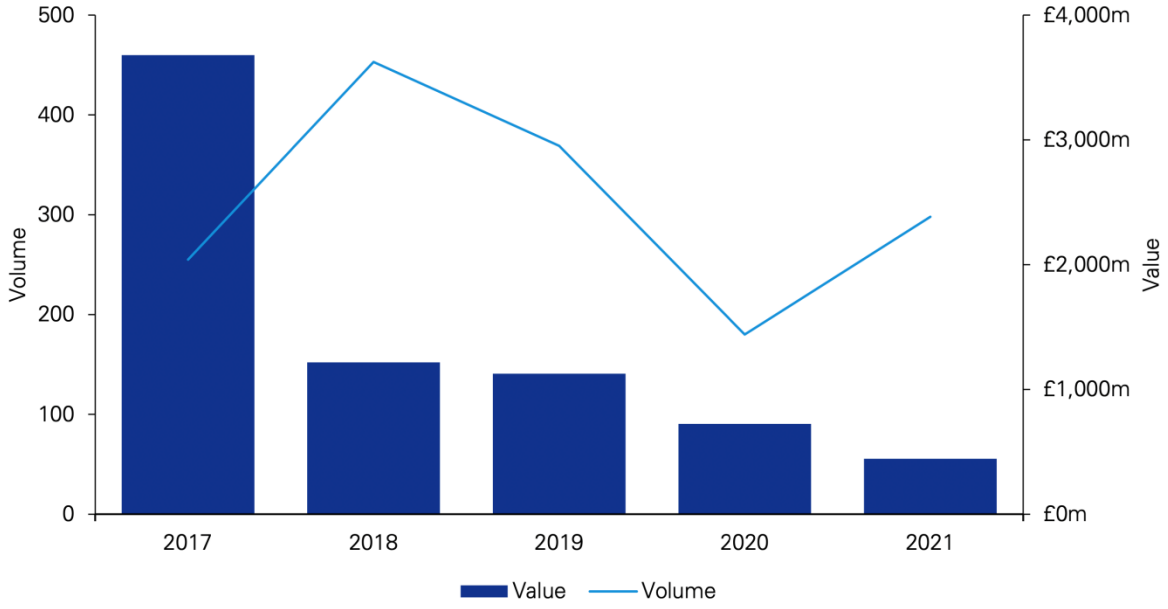
Fourth, there is a tendency towards corporate saving on fraud prevention measures because global retailers bear high marketing expenditures (Deloitte, 2020). When security budgets are

limited, it is challenging to implement a balanced anti-fraud strategy, especially in a small or medium-sized retail organisation. Fifth, people-oriented leadership, which is frequently used in retail teams (Setiadi et al., 2020), underestimates the role of controls and, in turn, provides potential fraudsters with favourable crime opportunities. Sixth, the retail sector is demanding with respect to machinery, real estate, and IT investment. Similar to marketing expenses, these items may redirect investment flows from fraud detection mechanisms and leave a gap in retailers' security (Deloitte, 2020). These reasons are convincing enough to examine both potential predictors of corporate fraud and measures aimed at fraud prevention with a focus on British retail organisations.

1.3. Motivation for Research

The majority of the previous studies reviewed in the next chapter (e.g., Skousen et al., 2009) show that the financial industry is one of the most researched sectors, as major cases of fraud historically took place in this sector (Suh et al., 2019). However, with the advent of new technologies, non-financial industries have also been objects of fraud. Furthermore, due to the specifics of the financial industry, such as its unique regulation on both local and international scales with anti-money laundering (AML), liquidity and risk-taking oversight, it is expected that the same mechanisms of fraud prevention and detection will not apply to the non-financial sector, which is not subject to similar regulations. The non-financial sectors are very diverse and range from manufacturing to services industries. This thesis is focused on corporate financial fraud, particularly in the UK retail industry, because this sector saw a rapid rise in 2017, five years ago, and a subsequent rapid decline in the volume of corporate fraud, as the following figure illustrates.

Figure 2 Value and Volume of Fraud Cases in the UK in 2017-2021



Source: KPMG (2022)

According to the statistics provided by Financial Times (2018), the number of cases of fraud almost doubled in 2017, and the value of losses associated with corporate fraud rose to more than £300 million. The case of the UK is interesting to explore as, over the past five years, from 2017 to 2021, it has shown an interesting trend in the decline of the value of corporate fraud, which could help explain the effectiveness of the studied fraud prevention and fraud detection mechanisms. Furthermore, these mechanisms could then be recommended for other countries that struggle with high corporate fraud rates.

Another rationale for choosing the retail industry for the investigation is that it has seen several major scandals during the past five years. One of them is the case of Tesco in 2015 and when the Financial Reporting Council (FRC) obliged all UK retailers to disclose more information about their financial reporting. Other cases include the misconduct of Ted Baker in 2018 and fraud associated with pension payments by BHS (Accountancy Age, 2019). Thus, it is important to examine how both larger and smaller retailers can detect and prevent fraud in this industry.

This thesis is also motivated by the need to develop practice-oriented recommendations for British retail companies on how to prevent corporate fraud at early stages. While there is a number of empirical studies that examine fraud detection mechanisms and factors

forerunning fraud occurrence (Efindi et al., 2017; Wilks and Zimbelman, 2004; Asare and Wright, 2004), only a few researchers in the field arrive at practical recommendations in the end. For example, Hogan et al. (2008) concluded that managers' personal characteristics, such as individual ethical standards, integrity, and consistency between words and actions, have a strong influence on fraud prevention. The thesis should go beyond Hogan et al.'s (2008) observations and equip retail managers with specific competency and skills requirements, which would be shared across organisational departments and serve as selection criteria at the recruitment stage. According to the due diligence mechanism of fraud prevention (Comer, 2017), employees' honesty should be tested practically before the allocation of real tasks and responsibilities. This investigation will contribute to developing explicit and implicit criteria for detecting employees with a high level of integrity whose chances of committing corporate fraud are low.

The researcher is personally interested in understanding the role of internal governance mechanisms, which might contribute to fraud prevention. The retail sector proves to be attractive in terms of employment and career growth (Panzone et al., 2021), which makes it essential to comprehend managerial roles in retail corporations. The researcher would be willing to become a board member in a global retail organisation in the future, which makes the matters of board structure and composition highly attractive as a study subject. Fraudulent activities are often perceived by academic researchers as a 'dark matter (Buil-Gil et al., 2020), which also stimulates the interest of the researcher and emphasises the need to establish a cause-and-effect relationship between organisational factors the corporate fraud possibilities.

1.4. Aim and Objectives

The aim of this research thesis is to uncover the main factors that predict corporate fraud in the context of the UK retail industry and recommend effective measures that can help detect and prevent this fraud. The main objectives are:

- To investigate the role of opportunities, pressure and rationalisation in corporate fraud committed in the UK retail industry;
- To test the effectiveness of internal control in predicting the probability of corporate fraud occurring in the retail industry;

- To examine the effectiveness of the internal audit committee in preventing corporate fraud in the retail industry in the UK;
- To evaluate the effect of external audit on the prevention of fraud in the UK retail sector;
- To study the influence of technological factors in facilitating effective fraud detection and prevention in the context of the UK retail industry;
- To research the effect of training on the ability of UK retail companies to prevent corporate fraud;
- To assess the role of monetary incentives in the prevention of corporate fraud in the UK retail sector.

1.5. Summary of Research Methodology

These objectives are attained by implementing the mixed-methods research design that implies a combination of the qualitative and quantitative analysis of data. The quantitative statistical analysis has been performed using the methods of correlation modelling, regression modelling and structural equation modelling in SPSS. The theoretical constructs used in the structural equation modelling have been constructed based on the Pressure, Opportunity and Rationalisation factors from the Fraud Triangle, whereas the extent to which observed variables from the survey load on these factors has been measured by means of the confirmatory factor analysis. These techniques have been applied to a sample of 106 respondents working in UK retail companies. The primary data have been collected by means of structured questionnaires in a survey of managers of UK retailers. The qualitative analysis has been performed using the qualitative thematic analysis of five interviews conducted via the phone. The interviews have a semi-structured format.

1.6. Summary of Findings

There are several reasons why fraud is committed in the first place. One of the leading theoretical frameworks that summarises these reasons is the Fraud Triangle, which is also often used by auditors to detect fraud (Dellaportas, 2013). According to this framework, corporate fraud is driven by opportunities, pressure and rationalisation. Opportunities include the presence of loopholes in accounting, knowledge of managers how to manipulate information and technological capabilities to hide fraud. Pressure includes the reasons why

the parties involved in fraud make a decision to pursue fraud. These may include financial motives, psychological factors, and behavioural traits. Rationalisation implies personal justification or excuse for committing fraudulent actions. If the party committing fraud can justify why they have to do it, in their view, they would consider themselves right. The rationalisation is often explained by psychological theories such as the Self-Perception Theory (Robak et al., 2005) and Attribution Theory (Savolainen, 2013).

The main findings from this thesis are as follows. The results demonstrated that the necessity for managers to sign an anti-fraud statement, the perceived higher quality of external audit, and the existence of an anonymous hot line for reporting fraudulent activities had a significant impact on the probability of fraud occurrence. The probability of fraud occurrence is also found to be correlated with the size of the company, which is consistent with the Opportunity dimension of the Fraud Triangle. It has also been revealed that monetary rewards for anonymous reporting of fraud cases produced a positive impact on fraud detection in UK retail companies.

In contrast to expectations, the presence of an internal control unit was not found to have a significant influence on the probability of fraud occurrence in UK retail companies based on the regression analysis. However, the results of the qualitative thematic analysis revealed that internal control was still important in the detection and prevention of fraud in UK retail companies.

1.7. Contributions to Accounting Literature and Practice

There are theoretical, empirical and methodological contributions made by this thesis. In terms of the theoretical contribution, this study has relied on the Fraud Triangle Theory, but it has represented each of the three elements of the theory using unique observed variables. Moreover, this thesis contributes to accounting literature by explaining each dimension of the Fraud Triangle using behavioural theories and Agency Theory, which allows for building a more holistic framework of fraud. This combination of theories allowed for the development of a unique scale for measuring the constructs of the Fraud Triangle and validating the scale in the context of the UK retail industry. Thus, the main theoretical contribution is that the thesis has provided a new scale for measuring the constructs of the Fraud Triangle, and this scale can be further tested in future empirical studies in different contexts.

The main empirical contribution of this research thesis is that it has investigated and provided evidence not only from public retail companies, as done in previous studies, but also from smaller private retailers in the UK for which secondary data is unavailable and previous studies could not cover them. This has been possible by conducting a survey based on structured questionnaires and semi-structured interviews. The survey was also expected to reveal cases of fraud that are not widely known to the public, especially those found in smaller companies. News capture big-scale scandals, but in order to ensure effective prevention of fraud and detection of fraud, it is not enough to study only the largest cases. An analysis of both large and small cases would allow for greater generalisation of the findings and reveal more implications for the industry and regulators.

Finally, the main methodological contribution of this thesis is that it uses a combination of quantitative techniques, such as structural equation modelling and regression analysis, with qualitative techniques, such as thematic analysis, to get rich insights into the data and uncover the nuances which are not possible to detect using only one type of methods.

The thesis makes several contributions to practice. In particular, based on the results of this study, business managers and business owners should implement practical solutions to fraud detection and prevention in their companies. More specifically, the results of the thesis imply that an effective measure undertaken by business managers would be to make signing anti-fraud statements a mandatory action for all employees and managers. This will address the Rationalisation factor of fraud and draw a line between the perceptions of fraud among employees and managers and what the company considers fraudulent actions. Furthermore, the results of the thesis add value to business managers and owners who can use the findings from the research and introduce hotline and monetary incentives for whistleblowing, which have been found to be effective mechanisms in the UK retail industry. Regulators can use the findings from this thesis to determine the minimum acceptable requirements for members of the audit committee and enforce more frequent meetings of the audit committee to minimise the cases of fraud.

1.8. Outline of the Thesis

This chapter has provided a background of the research and set the main aim and objectives that will be pursued in subsequent chapters. The next chapter provides a review of theories related to fraud, which allows for constructing the theoretical framework of this study. Chapter Three provides a review of empirical literature related to fraud and its determinants. Based on the reviewed literature and theories from Chapter Two, research hypotheses are deduced. Chapter Four explains how the formulated hypotheses are tested and discusses the methodology of the study, which includes the formulation of the research design, approach, strategy, methods, type of data and sampling issues and design of the research questionnaire used for collecting the primary data. The chapter also covers ethical considerations. Chapter Five presents the results and findings of the primary data analysis. This includes the interpretation of the SPSS output from the structural equation modelling (SEM), the correlation analysis, regression analysis and ANOVA testing and t-tests. Then, in Chapter Six, these findings are discussed using evidence from the previous literature and theories covered in Chapter Two. Chapter Seven of this thesis formulates the final conclusions based on the evidence achieved and the limitations that have been faced. Then, practical implications and recommendations for future studies are stated.

Chapter Two: Theoretical Framing

2.1. Introduction

There have been various studies on the topic of fraud around the world. While some of these have focused on the actual behavioural traits that led to the fraud, such as Shi et al. (2017), others, such as Nurlaeliyah and Anisykurlillah (2017), tended to analyse the systemic weaknesses in organisations that allowed such instances of fraud. In addition to this, there have been other studies that have focused on understanding the motivations of managers who engage in fraudulent activities (Said et al., 2017). It is evident that the multiple instances of fraud that have taken place historically around the world cannot be attributed to one single driving factor. This is because every case is different from the others, and therefore the motivations of the person committing the fraud can vary from case to case. In addition to this, the ability of an organisation to detect and punish fraudulent activity can also play a crucial role in determining the rate at which fraud takes place (Hess and Cottrell, 2016).

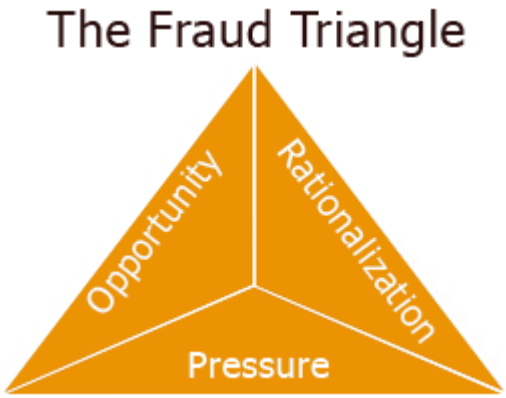
According to Manurung et al. (2015), the term fraud can be defined as an action executed by an individual with the ultimate goal of acquiring personal wealth by making illicit use of resources available to him or her. Fraud in organisations can be further complicated by the fact that managers and other employees have access to sensitive information which can be used to push their own personal agendas and actions. Further, such actions can lead to long-term damage to the organisation since many instances of fraud are undetectable and irreversible. Even though all employees and managers have the duty to act ethically in the interest of the wider organisation, this does not always materialise. This is primarily due to behavioural factors. There are various behavioural theories that have attempted to explain the fraudulent behaviour of managers in organisations. These include the Fraud Triangle Theory, the Agency Theory, the Theory of Perception and the Attribution Theory. Each of these theories can be used to define the behaviour of managers who are acting on their own behalf rather than fulfilling their moral responsibilities towards the organisation. In addition to this, these theories also factor in the key aspects of human behaviour that can lead them towards such an unethical practice (Mansor, 2015). The theories can also attribute to why humans tend to act in a fraudulent manner despite internal control systems as well as detection mechanisms being present in organisations around the world. The purpose of this chapter is to review these theories and combine them in a way to form a cohesive theoretical framework

that would explain fraud in the UK retail industry and reveal what mechanisms can be used to detect and prevent fraud.

2.2. Fraud Triangle Theory

The cornerstone of the proposed theoretical framework of this study is represented by the Fraud Triangle Theory. According to Cressy (1951), there are numerous internal as well as external factors that can influence individual behaviour, leading to the person committing an act of fraud. One prominent theory which aims to identify and examine these factors is the fraud triangle theory. According to this theory, some of the key elements which contribute to fraudulent activity include the perceived pressure, the act of rationalising the fraud, as well as the potential opportunity seen by the person committing the fraud. When combined together, these three form the fraud triangle. The fraud triangle theory (FTT) is depicted in Figure 3 below:

Figure 3 The Fraud Triangle



Source: Dellaportas (2013)

According to the fraud triangle theory, the primary driving factors that can lead to fraud include perceived situational pressure. There have been numerous cases, such as Enron, where situational factors have driven managers towards committing fraud. These factors can be defined as the perception of an individual that he or she is being compelled to commit fraud. Some of such pressures include personal debt, as well as the urge to ensure that your company performs better than the rest. Most individuals that commit fraud tend to state that they feel these pressures, even though such pressures might not actually exist. Several researchers, such as Albrecht et al. (2012) and Dellaportas (2013), classified pressures into:

- financial pressures;
- vices;
- work-related problems;

- miscellaneous pressures.

In addition to this, perceived pressures can be classified into financial and non-financial in nature. It has been estimated that around 95% of fraud cases are driven by these perceived pressures, thereby making them the single most important driving force behind fraud (Mansor, 2015). Apart from the financial pressures discussed above, there are also non-financial pressures such as personal pressure, employment stress, and external pressure. Personal pressures may include factors such as greed and addiction, while external factors might include family health or other problems. All these factors can create an environment where an individual is perceivably coerced into committing fraudulent activity (Hess and Cottrell, 2016).

The second factor which can drive fraudulent behaviour is the rationalisation of unethical behaviour. More often than not, individuals who are engaged in the act of committing fraud tend to rationalise the act by providing logical reasoning. However, these are only logical in the eyes of the person committing the fraud. In actual terms, these are merely excuses or justifications offered by the individual in order to defend their crime. Such rationalisation can be extremely hard to detect for organisations simply because it does not logically exist. Any individual can create a perception in his or her mind that the fraud they are about to commit is justified because of various reasons. However, in most cases, this perception is not true, and it exists only in the form of an excuse to commit fraud. As with the pressures, rationalisation is often classified into different forms of denial, namely: denials of responsibility, presence of a victim party and harm (Anand et al., 2004). It can be concluded that the rationalisation of fraud is done in order to create a link between the perceived pressure and the potential opportunity to commit the act.

The third aspect of the fraud triangle is the potential opportunity seen by the offender to commit the crime. Such opportunities arise as a result of the ineffective control systems of an organisation (Mansor, 2015). Another possible trigger can be the lack of a governance or punishment mechanism in the organisation. The reasoning behind this is that if an individual feels the prevalent control and monitoring system is not adequate, he or she senses an opportunity to commit an act which is unethical. Further, weaknesses in the system can create multiple opportunities for fraudulent activities. Witnessing or being party to one or more of such incidents without being punished creates an image in the mind of the offender that they can commit the act and not get punished for the same. In addition to this, if the internal control mechanisms of an organisation are not robust enough, this allows the managers or

other employees to sense an opportunity to exploit their insider information in order to complete their unethical acts of fraud. It has been observed that if the risk of getting punished is lower, the probability of the fraud taking place becomes higher (Schuchter and Levi, 2016). The two are inversely proportional since fraud is likelier to be committed if the risk of getting caught is low. However, this is not true in every case. Just like the perceived pressure, this opportunity to commit fraud can also be a perceived one. It may not actually exist in reality. Nevertheless, negligence on the part of the organisation can result in fraud being committed on a more regular basis.

Said et al. (2017) tested this theory for the Malaysian banking sector. The scholars found that two elements of the fraud triangle were extremely relevant in terms of driving fraudulent activity. The study concluded that opportunity and rationalisation were two elements that were positively co-related with instances of employee fraud. Thus, the study validated the fraud triangle theory in the Malaysian banking sector. Similarly, Abdullahi and Mansor (2018) tested the fraud triangle theory in the context of the Nigerian public sector. The scholars found that all three components of the FTT held a positive relationship with fraud instances. This proves that the theory holds true in the case of the Nigerian public sector. Both these studies found empirical evidence that the FTT does hold relevance in the modern corporate scenario. Further, these results are also indicative of the fact that both internal, as well as external factors play a critical role in driving fraud.

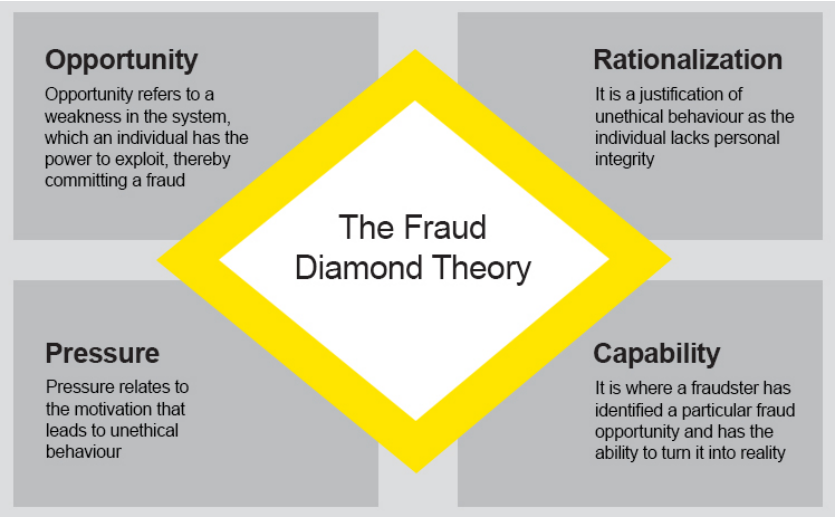
2.3. Fraud Diamond Theory

With the advent of technology, instances of fraud have become more complex and also more frequent. Such sophisticated forms of fraud have been executed in the shape of corruption, asset misappropriation as well as advanced forms of financial fraud. In order to counter such advanced forms of fraud, organisations need to understand and mitigate the potential risks in a much better manner. In order to analyse the characteristics of advanced forms of fraudulent activity, the fraud triangle theory has been extended further to create the Fraud Diamond Theory. This theory was proposed by Wolfe and Hermanson (2004) and incorporated an additional factor in the form of capacity. The key concept behind this theory is that individuals within an organisation have varied levels of responsibility. In addition to this, the decision-making power allocated to different employees varies across the board. Therefore, an individual's role within an organisation may allow him or her to commit various forms of fraud. For instance, those at middle managerial and upper managerial levels in the hierarchy of an organisation may be able to execute frauds, which lower-level employees may not be

able to do (Ruankaew, 2016). This is because not all employees have decision-making responsibilities in an organisation and this power vests with a select few individuals. One primary example is the position of Chief Executive Officer (CEO). CEOs of most companies have all the power and control required to execute widespread fraud in an organisation (Shao, 2016). They have the ability to not only conduct fraudulent transactions themselves but can also influence others to comply with their unethical decisions.

Figure 4 indicates the key components of the fraud diamond:

Figure 4 The Fraud Diamond Theory



Source: Abdullahi and Mansor (2015)

As seen in the figure above, the Fraud Diamond Theory is generally similar to the Fraud Triangle Theory except for one dimension. In particular, the main difference between these two theories is that the Fraud Diamond Framework has introduced capacity or capability as the fourth pillar of the diamond. It is noted that those who occupy higher management roles in an organisation have a higher capability to execute fraud since they have the intelligence to manipulate the company's control mechanism as well as its disciplinary policies. Furthermore, higher management employees often have a big personal ego and also have the confidence that they can get away with any unethical activity. Finally, another contributing factor may be that such individuals who are power centres within an organisation execute fraud since they have the capacity to deal with the stress associated with the act. They are used to dealing with stress on a regular basis, and this enables them to be composed and "manage" their fraud in a much better manner. All these factors are clearly indicative of the fact that the capacity of an individual also plays a critical role in the act of committing fraud. Those with higher decision-making responsibility have the ability to utilise this capacity in order to put their own interests above that of the organisation (Ruankaew, 2016). Further, Baz

et al. (2016) tested this additional pillar of the fraud diamond in the context of the Saudi Arabian banking sector. The scholars concluded that there is a positive relationship between capacity and fraudulent activity. This result indicated that the fraud diamond theory is indeed relevant and could be considered a valuable extension of the Fraud Triangle. Similarly, Enofe et al. (2016) tested the fraud diamond theory in the context of the Nigerian public sector. The study concluded that the theory holds true in the Nigerian scenario. The scholars also recommended that the entire criminal justice system in the country needs to be revamped in order to apply the theory more effectively.

It is evident that the Fraud Triangle Theory and its extension, represented by the Fraud Diamond Theory, clearly describe the key drivers of fraud in an organisation. These theories indicate how fraudsters make use of loopholes in the system and commit their act based on their belief systems and their position in the organisation. Further, with newer frontiers of fraud emerging in recent years, the fraud diamond theory has defined the additional pillar, which takes into account the position of an individual within an organisation (Abdullahi and Mansor, 2015). Analysing this aspect can enable companies to understand the prevalence of fraud within their operating structure better and may also aid them in developing better risk mitigation solutions. However, the Fraud Triangle Theory has been preferred in this thesis to the Fraud Diamond Theory because of the lack of access to high-ranking managers, such as CEOs of large retail corporations, that would allow for testing the fourth dimension. Even though the data have been collected on the positions of the representatives of retail companies in the UK, it is difficult to arrange them hierarchically. Thus, testing the Fraud Diamond Theory remains challenging and possible only in studies that can gain access to managers at all levels.

2.4. Theories Supporting the Fraud Triangle Framework

2.41. Theory of Perception

In order to view particular circumstances as Pressure and Opportunity factors described by Fraud Triangle Theory, managers have to process the available information. Therefore, it is important to provide a theory that may explain how Pressure and Opportunity factors are perceived. A theory that can serve this function is called the Theory of Perception.

The theory of perception defines the way humans process and interpret environmental information. This interpretation then influences their behavioural patterns (Werner and Wapner, 1952). In any organisation, the environment plays a crucial role in how employees behave. In this respect, the Theory of Perception is similar to the Fraud Triangle Theory and

Fraud Diamond Theory. The key components of this organisational environment range from its internal control systems, its defence mechanisms, its corporate policies, as well as its disciplinary action. However, what is perceived by a person can be extremely different compared to the actual reality. This is because the entire process of building a perception is built upon human attitudes (Manurung et al., 2015). Further, according to Jones (1976), human perception and behaviour are dependent on numerous external and internal variants. Such perceptions are the key drivers for an individual's ability to pay attention to the environment and determine his or her course of action.

Nevertheless, the perceptions of people in terms of fraud can vary to a great extent. For instance, one common perception among individuals is that online fraud can be termed as a criminal activity. This may act as a major deterrent for the individuals who are planning to engage in such an act. However, there are also some people who believe that the intentions behind the act are more important than the act itself. If an individual commits an act of online fraud unintentionally, then it should not qualify as a crime. In this way, the perception theory reinforces the rationalisation element of both the fraud triangle and fraud diamond theory, thus enhancing the latter. There are people who are of the opinion that the medium by which the fraud is committed is also a key factor in determining whether the act is a crime. For instance, if an act of theft has been committed because the person is hungry, many people believe that it should not qualify as a crime. In addition to this, it is perceived by most people that committing any kind of fraud is socially, culturally, and religiously unacceptable. Such a perception arises from the fact that every instance of crime is condemned by society. There are various regions where fraud is also seen as a social taboo. For instance, in Saudi Arabia, fraud is seen as an anti-social crime which is harmful not only to the organisation but to society as a whole. In addition to this, most individuals are aware of the fact that their knowledge levels about fraud can determine their probability of committing a crime (Alanezi and Brooks, 2014). In line with the Theory of Perception, Cumming and Johan (2013) argue that financial fraud is a subjective matter that depends on the jurisdiction and the perception of corporate actions by society and regulators. They also noted the significance of the role of law enforcement and listing rules in different countries. This shows that the theory of perception can be central to fraud prevention as well as fraud detection. Furthermore, this theory helps to clarify the rationalisation aspect of the Fraud Triangle and Fraud Diamond theories.

In addition to this, Sjoberg (2000) studied the importance of risk perception in influencing and driving human behaviour. If individuals have conflicting perceptions about risk, this can

make policies less effective. The scholar stated that every individual has their own perception mechanism. Such a mechanism helps them identify the risk associated with any event. This risk perception is a cognitive ability, although it is also determined by judgments and decision-making. In addition to this, the scholar stated that risk perception is also influenced by individual biases. Also, risk perception can be a consequence of individual attitudes. For instance, if an individual has lower confidence levels, he or she is likely to be swayed by risk perceptions. Such individuals are less likely to take risks simply because their inherent attitudes deter them from doing so. Additionally, the ability of an individual to think rationally can also have a major influence on their risk perception. For instance, if someone has a rational approach towards life, he or she is less likely to be swayed by an opportunity. Finally, the scholar added that the accumulation of knowledge is also central to the idea of building a risk perception. If an individual has higher awareness levels and is knowledgeable about policies and directives, they are less likely to go against the law. This is because their risk perception is high, and they are aware of the possible consequences of taking the risk. The study concluded that there are numerous variables that can be associated with risk perception, and this is the key driving factor behind an individual's actions.

Similarly, Alanezi and Brooks (2014) tested the impact of perception on online fraud committed in the Middle Eastern nation of Saudi Arabia. The scholars studied instances of online fraud in organisations and studied the impact of human perception in the committing of the actual crime. The study found that an individual's social, cultural, moral and religious perceptions can have a significant impact on their awareness levels. This, in turn, can have a major impact on their decision-making towards actually committing the fraud. Similarly, the individual's perception also influences their ability to assess whether a fraudulent activity can be caught and then punished by an organisation. Further, the scholars argued that technological measures alone might not be sufficient in preventing instances of fraud. Instead, there is a need to deter the perceptions of employees that fraud can be conducted within the organisation without consequences. Individuals who commit fraud are always likely to consider a few factors before they proceed with their actions. Often is the case that they can be deterred because of their perceptions regarding disciplinary mechanisms present in the organisation. However, in other instances, the person committing the fraud perceives his or her actions to be safe, resulting in the fraud actually being executed. The study concluded that perceptions have a direct relationship with fraudulent activities, and by influencing these perceptions, fraud can be minimised.

2.4.2. Cognitive Evaluation Theory

Managerial behaviour in relation to fraud, including the motivation of managers to commit fraud, is also explained by another behavioural theory, namely: the Cognitive Evaluation Theory. It was proposed by Deci and Ryan (1985). This theory specifies that various external factors can have a major influence on human motivation. Further, the theory mentions that human behaviour can be influenced by internal as well as external motivations, which drive individual behaviour. In this way, the Cognitive Evaluation Theory supports the Pressure dimension from the Fraud Triangle and Fraud Diamond Theories. Cognitive Evaluation theory is considered to be one of the key theories defining human thinking and behavioural patterns (Haldane and Greene, 2015). In addition to this, according to Lee et al. (2015), the cognitive evaluation theory focuses on investigating the key factors that drive humans towards behaving in a certain manner. The scholars stated that the conditions prevailing in and around an individual could have a grave impact on their ability to think and act in a rational manner. The scholars attempted to study the key factors which undermine the intrinsic motivation of humans. The study also focused on evaluating whether the relationship between the cognitive evaluation theory and the unified theory of acceptance is a significant one. The study concluded that human performance could be driven by extrinsic motivation as much as intrinsic motivation.

There have been numerous scholars who have attempted to analyse whether the cognitive evaluation theory is able to explain cases of fraud in organisations. For instance, Shi et al. (2017) attempted to establish whether there exists a relationship between cognitive evaluation and fraud in organisations. The scholars stated that external pressures could have a major impact on a person's internal motivation to do what is the right thing. In this respect, the theory elaborates on the Pressure element of the Fraud Triangle and Fraud Diagram. Further, the scholars stated that this could also be defined as the crowding out effect. This means that a person's internal motivation to do the right thing can be overpowered by the external exposure he or she gets to the neighbouring environment. Such factors can prove to be the key drivers behind fraud in organisations. Such a distinction between internal and external motivations and the potential conflicts between them is what makes this theory different from Fraud Triangle, which collectively refers to the motivations for fraud as Pressure factors. Further, Shi et al. (2017) added that external pressures could prove to be decisive in the working of top management executives. For instance, the CEOs and CFOs working in top organisations have external expectations which drive their behaviour and actions. There have been numerous cases where institutional investors of a particular company have influenced

key decision-makers to take a call on a particular topic. Such external influences can also drive executives in companies to commit fraud. Finally, the study concluded that such external factors could hamper the executives' honesty towards their organisation (Shi et al., 2017). In addition to this, external factors can also increase the managers' risk propensity. Such a higher risk propensity allows them to make decisions which they would not have made in the absence of the said pressures. Thus, scholars have used the cognitive evaluation theory as a driving force behind corporate fraud.

Schweitzer et al. (2004) went further and linked the top executives' behaviour with individuals who are not even direct investors in the firm. For instance, the rating agencies engaged in the business of checking the credit risk associated with a particular company can also influence executive behaviour. The scholars studied a case where one such rating agency downgraded the credit profile of a company, which resulted in the top management being pressurised. Similarly, if a securities analyst has very high expectations from a company in terms of financial performance, this means that the executives strive to match up to them. This is because if an executive fails to meet the expectations in terms of financial performance, this can drive down the actual market price of the shares, which can prove to be extremely harmful to any company. In order to meet and exceed the expectations that have been set by the market, top executives often take a route which is not ethical. This can be in the form of accounting fraud or acquiring a company which is overvalued. Such instances of executive decision-making can be attributed to the cognitive evaluation theory. The scholars concluded that top managers are often willing to compromise their morality and their code of conduct in order to comply with external pressures and expectations. In order to curb such behaviour, organisations need to ensure that their objectives and goals are clearly defined and are independent of the external expectations of any individual or entity. Schweitzer et al. (2004) suggested that the pressure of compliance can lead to fraudulent behaviour, and therefore it is important that organisational policies consider the behavioural aspects as well.

Thus, while the Cognitive Evaluation Theory has elaborated on the Pressure factors from the Fraud Triangle, it is valid to argue that this theory has a smaller scope and does not consider the rationalisation for fraud and the opportunities as done by the Fraud Triangle. Therefore, the Cognitive Evaluation Theory can be used in combination with the Fraud Triangle, but it is not sufficient to build a holistic conceptual framework of corporate fraud on its own. Furthermore, the Cognitive Evaluation Theory differs from the Perception Theory in that the former is focused on the fraudster's decision-making process, whereas the Perception Theory places a heavy weight on the societal perception of fraud rather than individual perceptions.

2.4.3. Attribution Theory

In addition to the Theory of Perception and Cognitive Evaluation Theory, there is another theoretical viewpoint on how managers make their decisions in relation to fraud; this viewpoint is expressed by the Attribution Theory. The attribution theory in its current form was proposed by Weiner (1972). The scholar attempted to explain the causalities behind particular events or human acts. The theory is based on the principles of observed behaviour and the causes and intentions behind it. According to the scholar, there are three main causal dimensions which can be used to define an act or a person's behaviour. These are the locus of control, the controllability, as well as the stability. Locus of control can be defined as the key originating force behind the act (Kaplan et al., 1986). This means that an act can be instigated by internal factors or external ones. Secondly, controllability seeks to define whether the causes of the behaviour were controllable or not. Thirdly, stability revolves around the question of whether the key causes behind the act can change over time (Dweck, 2018). Once all of these dimensions have been identified, they can be used to determine the causality behind the act or the behaviour. The attribution theory is considered to be one of the fundamental theories which define human psychology as well as behaviour.

There have been numerous studies which have analysed how the attribution theory can explain corporate fraud. According to Kang (2008), the attribution theory is one of the fundamental theories which can be used to analyse instances of corporate fraud by executives and by organisations as a whole. In terms of corporate fraud, investors are always likely to attribute the responsibility for the wrongdoing to the corporate leaders of the firm. In addition to this, the external non-executive directors of the firm engaged in fraud are even more likely to face scrutiny because it is assumed that they should be able to identify internal wrongdoings from afar. In other words, the external non-executive directors of a firm are expected to monitor the firm more effectively since they are not engaged in the business full-time themselves. In this way, the attribution theory agrees with the Agency Theory, further discussed, which also states that one of the ways to mitigate the principle-agent problem and make managers responsible stewards of shareholders is to increase control and monitoring mechanisms. Further, Kang (2008) argued that in most cases, when investors are looking to find the key reasons behind the fraud, they tend to exclude external elements. The scholar also stated that after a fraudulent act has been committed, the company suffers in terms of financial as well as reputational losses. The reputational losses can be attributed to the fact that investors tend to revisit their expectations in terms of the cost of capital. It is evident that the cost of capital for an organisation goes up after a fraud simply because investors fear that

another such fraud could take place again in the future. In cases of financial fraud, attribution error can be fairly common (Justice et al., 2018). This is because the cases of financial fraud are not straightforward, and, in most instances, there is more than one person involved in the act. This results in the fact that investors often find it hard to pinpoint the perpetrators. This can give rise to spill-over effects, which can damage the reputation of the organisation even further. It is noted that directors and other top positions in an organisation tend to be blamed for financial irregularities even though they are not always responsible for it (Kang, 2008). This is because of the investors' possible perception that the instances of fraud are instigated at the top level. Thus, at a firm level, the attribution theory can play a key role in identifying the key reasons behind any instance of fraud.

In addition to this, according to Robinson et al. (2012), the attribution theory can be used to predict the fact that employees are more likely to report theft compared to accounting fraud. This is because of the fact that both kinds of misconduct are very different in their magnitude. Theft can be a one-off incident, while accounting fraud tends to be a more collusive act conducted by a group of individuals. Further, the scholars stated that individual biases could also impact decision-making in terms of corporate fraud reporting. In this aspect, the attribution theory appears to be in line with the Perception Theory, which also emphasises the role of biases and perceptions of fraud not only among the parties who commit the fraud but also among the members of society and external stakeholders. One of the fundamental attribution errors can be that individuals who are acting as whistle-blowers in an organisation can link the prior behaviour of an individual with his or her perceived wrongdoing in terms of fraud. However, past behaviour is not always a good indicator of future actions. Such social attribution errors can also lead to reputational damage for the individual in question or even the organisation as a whole. In addition, the scholars also stated that contextual attribution could also impact whistleblowing in an organisation. There may be a case where an individual wants to report an act of fraud that he or she has witnessed. However, they may not go ahead with reporting the act if they believe that the act is beneficial for the organisation. This is another case of a fundamental attribution error.

Desai and Gupta (2015) applied the attribution theory to their investigation of corporate fraud and concluded that auditors could also fail to attribute fraud correctly at times. The scholars argued that selective perception biases could result in fraud audit results being skewed. This can prove to be a tricky situation for any organisation since audits are central to risk evaluation and assessment. In addition to this, it is evident that individual auditors tend to look at the same situation in a different manner (Purnomo and Khafid, 2017). This can be

attributed to the selective perception as well as the contextual reading of a particular situation. Audits are often conducted by external organisations or partner firms that do not have a daily association with the organisation. This may result in audit firms having limited knowledge about the firm, thus resulting in selective perception. Also, it is observed that audit firms are often swayed by top management since they have their own personal motivations (Negangard and Jenkins, 2015). All of these factors make it hard for the organisation as well as the audit firm to obtain accurate results about the financial statements of an organisation. Therefore, it is pertinent that organisations are cautious while accepting audit results since these are not always completely accurate and may be influenced by perceptions and biases.

Similarly, Nurlaeliyah and Anisykurlillah (2017) used the attribution theory to define the possible role of management in allowing for fraudulent activities. The scholars suggested that accounting fraud can occur due to weak internal controls, which agrees with the arguments of the Agency Theory. This is because if the internal control system of an organisation is weak, it can lead a person to behave unethically. Such unethical tendencies, in turn, can lead to instances of fraud. This reasoning from the attribution theory supports the notion from the Fraud Triangle that weak internal controls could be viewed as the Opportunity factor for managers to commit fraud in their company. The scholars also added that another possible way to attribute fraud to environmental factors could be a case where an individual commits the act since he or she deems his compensation to be inadequate. This argument also supports the Fraud Triangle, where inadequate compensation could be viewed as a Pressure factor triggering fraudulent behaviour. However, from the perspective of the attribution theory, such a case is more likely to drive individual theft or fraud rather than a collusive financial statement fraud. The scholars concluded that the attribution theory could prove to be greatly beneficial in defining instances of fraud. Finally, the scholars stated that irregularities in human behaviour could lead to corporate fraud, but this cannot be attributed to his or her internal motivations only. Not all cases of theft are driven by personal motives, and therefore the right attribution becomes even more important. On the contrary, another school of thought is that if the external controls are too stringent, this can also lead to an increase in the instances of fraud. This is because tighter controls mean that the pressure on executives is higher, which results in them resorting to unethical means to improve organisational performance on certain occasions.

2.4.4. Agency Theory

While the previously discussed theories dealt with the question of why fraud occurs and what drives the fraudulent behaviour of managers, it is also important to include a theory that would explain how fraud can be prevented to address all objectives of this thesis. Fraud prevention is addressed by corporate governance mechanisms, and Agency Theory explains how different mechanisms of corporate governance can help prevent fraud.

The Agency Theory was put forward by Jensen and Meckling (1976). It is considered to be one of the prominent theories in the field of management and corporate governance. The theory focuses on the relationships between agents (managers) and principals (shareholders) and the delegation of control. The theory focuses on how to manage and organise relationships between organisation executives and the owners in order to maximise shareholder value, which also implies the minimisation of chances of fraud as the latter destroys shareholder value. It is evident that the personal interests of individual managers do not always align with those of the organisation's owners. The principle behind the relationship between the two is that there is a transfer of duty and trust from the owners to the executives. However, this transfer of trust and duty can also lead to corporate fraud and conflicts of interest. This can lead to the "agency problem" (Lo et al., 2017).

As managerial fraud is a consequence of the conflict of interests and information asymmetries between investors and managers, the agency theory suggests two ways in which the instances of fraud can be minimised through the alignment of the interests of shareholders and managers. The first way is to introduce more control over managers in the company. This can be achieved by increasing the percentage of non-executive directors and introducing committees such as the internal audit committee. All these examples represent monitoring mechanisms of corporate governance, which will be discussed in the literature review. The second way is to create incentives for managers to work ethically without committing fraud. The most common solution is to introduce performance-based remuneration and stock-based compensation, which would allow managers to benefit from the appreciation in the value of the company. By executing this strategy, executive behaviour can easily be aligned with organisational goals in most cases and instead of resorting to fraud, managers would be pursuing shareholder value maximisation and improvement of the firm performance as this would also benefit them. However, numerous studies, such as Davis et al. (1997), state that despite such initiatives, agency problems can continue to exist in organisations. This is because the behavioural patterns of executives tend to be complex, and they are difficult to predict. This can result in the persistence of fraud despite aligning their interests with that of

the organisation (Choo and Tan, 2007). Furthermore, the monetary incentives linked to the firm performance can even increase the instances of fraud as managers will be inclined to inflate the earnings of the company in order to benefit from the higher value of the company (Cumming et al., 2016).

Further, Eisenhardt (1989) analysed the ways in which agency theory can be used to identify potential risks in organisations and help in developing mechanisms to deal with them. The scholar noted that agency theory has practical applications in numerous fields, such as economics, accounting, finance, and marketing. The study also suggested that although the theory has been controversial in nature, it can be implemented by organisations looking to mitigate risks. Further, organisations that are dealing with the nuisance of the clash of interests can also benefit from the remedies provided by the theory. Because of the fact that behaviour-oriented contact between parties happens at every level of an organisation, the probability of conflicting interests is high. Also, in many cases, this conflict can develop due to human perceptions and beliefs, as stated in the Theory of Perception. Such conflicts can be a starting point for fraud, which is a way to exploit asymmetric information in favour of just one party. The positivist researchers around the world, such as Jensen and Roeback (1983), have observed the effectiveness of incentives and control to mitigate agency conflicts. On the other hand, there have been negativist researchers such as Perrow (1986) who have believed that the theory lacks clarity in terms of its purview and application in the practical world. Nevertheless, the scholar concluded that the theory remains one of the most prominent pieces of literature in terms of human behaviour, and it can help explain how cases of fraud among management can be prevented or controlled. When comparing Agency Theory to Fraud Triangle, it can be noted that the former does not fully explain why fraud occurs. Agency Theory only asserts that fraud stems from the misalignment of the interests of shareholders (principals) and managers (agents). The Perception Theory complements the Agency Theory by stating that differences in the individual perceptions of the organisational performance, why the firm exists and what constitutes fraud can explain the differences in the interests and actions of principals and agents. However, the Fraud Triangle completes the picture by introducing both internal (Pressure) and external (Opportunity) drivers of fraud, whereas behavioural theories such as the Perception Theory tend to focus on internal drivers only. Agency Theory, similar to the Fraud Triangle, also distinguishes between internal and external factors, but these factors do not predict fraud but explain how it can be prevented. The internal mechanisms of fraud prevention, according to Agency Theory, include monetary

incentives, whistleblowing, internal audit and internal controls, whereas external mechanisms include external audit and regulation (Yusuf et al., 2018).

Further, in order to assess the applicability of the theory in modern organisations, there have been various scholars who have researched the behavioural patterns concerning company executives and owners. Albrecht et al. (2004) studied the scope of the agency theory and researched the behavioural traits that exist in company executives. The scholars stated that the relationship between the different stakeholders of a company could never be defined in a straightforward manner. This is because such relationships are multi-faceted and are driven by various components such as personal interests as well as career goals. It is not feasible for an organisation to devise policies and mechanisms that can account for all these factors. These components often overpower an individual's ability to think and act rationally. Such overpowering elements can result in the executive committing an act of fraud. Company owners place a lot of trust in their executives to steer their company in the right direction. However, such executives are often driven by personal gain and do not live up to that trust. The scholars concluded that there is no possible optimal combination of an organisation's components which can result in fraud risk being reduced. Further, the study added that executive behaviour in a corporate environment is likely to remain unpredictable despite the prevention mechanisms that are devised by organisations on the basis of the agency theory.

Shi et al. (2017) studied the theory in terms of accounting fraud. The scholars stated that most organisations are familiar with the fact that their top executives engage in various kinds of manipulative actions when it comes to accounting statements. In order to deal with this behavioural trait, many organisations build risk assessment mechanisms aimed at reducing instances of accounting fraud. However, such is the complicacy of human behaviour that even strict controls cannot deter individuals from committing financial fraud. The scholars argued that external pressures such as investor activism, questioning from security analysts and the need for control could drive top executives towards committing accounting fraud. In order to cope with these external pressures, top managers of leading organisations engage in unethical behaviour such as fraud. In addition to this, the scholars concluded that financial misbehaviour would continue to persist in corporate organisations simply because of the external pressures that exist on the managers. In the presence of such pressures, managers tend to put a lesser emphasis on the possible ramifications of their acts, and they behave in a reckless manner. For example, the behavioural aspects of agency theory state that organisations should resort to making more realistic assumptions when it comes to the behaviour of their executives. The scholars suggested that the agency theory, along with

another theory known as the cognitive evaluation theory, can be used to describe the behaviour of managers in an organisational setup.

Agency theory has become the dominant theoretical framework employed for exploring corporate governance mechanisms and their impact on various aspects of firm performance (Dalton et al., 2008). A central postulate of agency theory states that when the interests of principals and agents do not coincide, agents may behave contrary to the interests of principals (Ibrahim and Lloyd, 2011). Also, when principals do not have opportunities to verify and control the actions of agents directly, the latter can undertake self-serving activities and remain unpunished (Jensen and Meckling, 1976). For modern corporations, the agency problem is connected with the separation of ownership and control. Shareholders acting as principals delegate the right of decision-making to hire managers who act as agents.

The agency problem is so significant for corporate governance since top managers are much better aware of firm affairs than shareholders, which allows managers to undertake strategic actions that would disproportionally benefit them but contradict the interest of owners. Examples of such decisions may be excessive growth of the firm by means of organising joint ventures (Reuer and Ragozzino, 2006), expansion to a foreign market (Sanders and Carpenter, 1998), diversification into new spheres of business (Boyd et al., 2005) or undertaking short-term projects that would boost sales and increase firm value in the short run but would destroy value in the long run. Such actions might increase the power and influence of top managers but curtail returns received by shareholders (Habbash et al., 2013).

The primary initiative suggested mitigating this goal divergence between top managers and owners has been the intentional provision of firm stock to managers (Dalton et al., 2008). The coincidence of owners' and managers' goals rises due to the provision of equity to executives, which, in turn, reduces the probability of managerial and financial misbehaviour and malfeasance (Demsetz and Lehn, 1985; Shleifer and Vishny, 1997). In practice, stock-based compensation for managers depending on firm performance has been widely adopted in corporations as a tool for aligning executives' and shareholders' interests and stimulating managers to actions that would benefit shareholders (Westphal and Zajac, 1995).

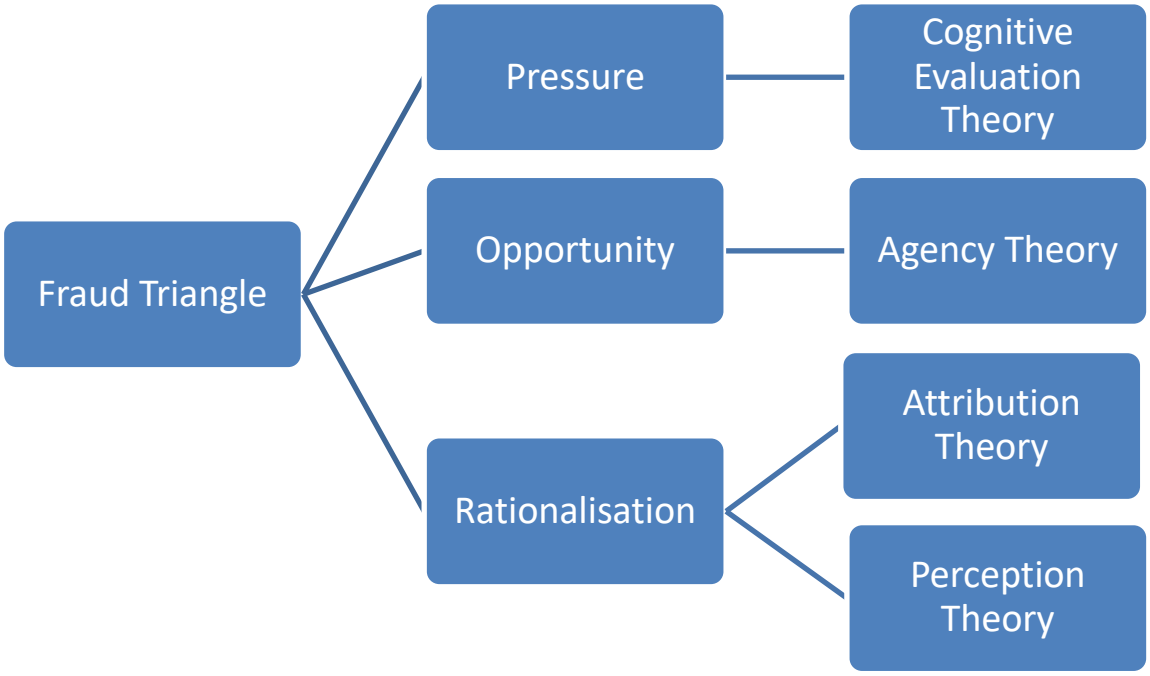
Although the practice of providing equity incentives to managers has become widespread, and the share of the stock-based element may exceed 50% of total remuneration (Sanders and Hambrick, 2007), empirical research does not provide a clear confirmation of a positive and significant impact of this allocation on subsequent firm performance (Sundaramurthy et al., 2005).

An opposite viewpoint has recently been suggested by a researcher who claimed that redundant stock-based compensation might unintendedly stimulate a CEO and other managers to apply excessively aggressive accounting methods such as earnings management (Desai et al., 2006) or to report distorted firm performance outcomes (O'Connor et al., 2006). In this case, managers would be willing to artificially embellish earnings to make sure they receive a performance-based part of compensation. Such managerial behaviour breaks investor trust and destroys the value of stockholders (O'Connell and O'Sullivan, 2014).

2.5. Formulation of the Theoretical Framework

Based on the theories reviewed, the theoretical framework of this research is represented by a synthesis of these models outlined in the following figure.

Figure 5 Theoretical Framework



The central theory in the theoretical framework that explains fraud is the Fraud Triangle. Even though there is an extended version of the theory titled Fraud Diamond, the original Fraud Triangle has been preferred because the new factor of Capacity added by Fraud Diamond relates to individual parties who commit the fraud rather than the organisation. This thesis is more concerned with the organisational response to fraud and how companies deal with fraud, whereas the Capacity factor from Fraud Diamond would better fit research that focuses on the capabilities of criminals. The Fraud Triangletheory suggests that fraud happens because there is the pressure felt by the party committing fraud. This pressure is explained by the cognitive evaluation theory, which distinguishes the pressures into external

and internal factors. The fraud triangle theory also suggests that fraud happens because there are opportunities provided by weaknesses in the system. The agency theory explains these opportunities by the presence of asymmetric information, a delegation of control to the management, a conflict of interests between owners and managers, and a lack of incentives and control mechanisms in the system. Lastly, the fraud triangle theory argues that fraud happens because the parties involved lack integrity and ethical qualities. In other words, they are able to rationalise their fraud and justify it. This rationalisation is explained by the attribution theory and perception theory.

2.9. Summary

This chapter has analysed the prior research in terms of the key theories that can be used to define fraudulent behaviour. For instance, the chapter discussed the utility of the Agency Theory as well as the Fraud Triangle Theory in analysing human behaviour. Further, the chapter also focused on reviewing previous literature around the advancements in these theories and their application in fraud analytics. In addition to this, the chapter also analysed the applications of these theories in various industries around the world. The key findings of various scholars are that the Fraud Triangle Theory, the Agency Theory, and others can be used to analyse employee and customer behaviour that leads to cases of fraud. On the other hand, there are also scholars who conclude that these theories are obsolete and do not find relevance in the present-day scenario. Nevertheless, the primary conclusion is that the theories of human behaviour can be used to define and analyse instances of fraud to an extent simply because these theories have the ability to predict the behaviour and the conditions that can foster instances of fraud. Therefore, it is evident that prior research on these theories has been relevant and useful for corporate organisations around the world. At the same time, there is a need for further research in order to understand the actual relevance of these theories in the context of the retail sector in the present-day scenario. While the prior research on these theories has been important, there is a need to delve deeper into the topic and analyse the relevance of these theories to retail fraud (Kim et al., 2003).

Chapter Three: Literature Review

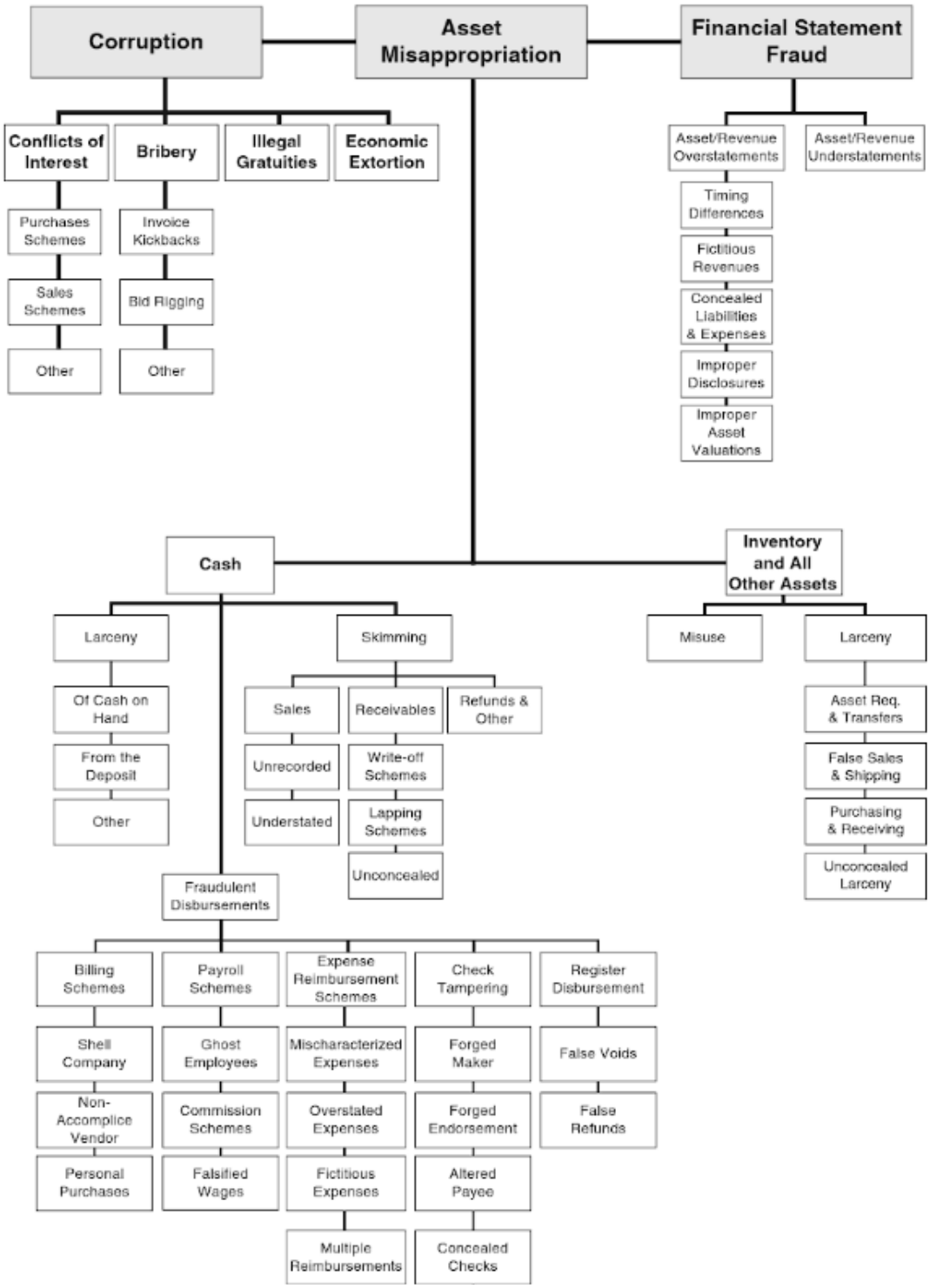
3.1. Introduction

The global retail industry is one of the most important markets in the world. This industry includes a wide range of sub-sectors, such as Apparel, Food, Jewellery, Furniture, and more. There are numerous channels through which retail sales can take place. These include speciality retailers, e-commerce, convenience stores, supermarkets and department stores. In terms of individual markets, the retail industry is highly developed in the North American and European regions. However, the retail industry in other regions, such as Asia and Africa, is still on a growth path. These regions are expected to drive the future growth of the industry since the countries here are expected to develop at a rapid pace. For example, countries such as China and India have growing economies driven by huge populations. This provides a major opportunity for retailers to expand their presence and increase revenues. Favourable regulations and policies in these countries have attracted even more retail players in these markets (Lavania and Dixit, 2017).

However, this continued growth in the industry is not without its own risks. There are numerous risks which can be major threats to the industry in the present scenario. These risks include cases of fraud, supply chain execution risks, and technology risks. These risks can have a major economic impact on the retail industry. Therefore, in order to mitigate these risks, it is critical that retail organisations around the world make use of innovative strategies (Gabbur et al., 2011). This thesis focuses on one risk factor, namely fraud in the retail industry.

Fraud is a complex phenomenon and can be broken down into the following categories.

Figure 6 Classification of Fraud



Source: Wells (2017)

Corruption, as a type of fraud, originates from conflicts of interest explained by the agency theory. It often happens when managers misuse their power and position in their own interests rather than the interests of investors and the company. Corruption includes taking bribes, arranging procurement schemes that allow for stealing the company's resources,

illegal activities and extortions. Previous studies show that companies with more corruption have a higher probability of being caught in financial fraud, earnings manipulations and creative accounting (Xiaoding, 2016). Asset misappropriation is a type of fraud in the course of which managers cans still cash off the company, arrange fraudulent disbursement and acquire assets of the company in illegal and unethical ways (Nia and Said, 2015). Lastly, accounting fraud deals with the manipulation of financial statements. Accounting fraud, in turn, can be divided into overstatements and understatements of income, assets or liabilities of the company (Lisic et al., 2015). The motivation for overstatement is the desire to show the company's performance better than it is to maintain the value of the company high and performance-based remuneration high. The motivation for understatement is often the desire to avoid particular obligations such as tax payments.

Fraud detection and management have become one of the most critical aspects of the retail business (Gabbur et al., 2011). Since the retail industry is so vast and comprises numerous sub-sectors, there are also various opportunities for engaging in unethical behaviour. The retail industry involves contact between numerous stakeholders, such as supply chain individuals, managers, and customers. Furthermore, there are various points of contact, such as retail stores, warehouses, and even factories. This complicated nature of the industry is vulnerable in terms of possible fraud. Since there are various contact points, individuals can engage in immoral behaviour at any of these points and exploit the system by using their insider knowledge for their personal motives. Contemporary methods, such as data mining, allow for detecting these cases of fraud in the retail industry (Ribeiro et al., 2016). In order to avoid such behaviour and mitigate fraud risks, every retail organisation needs to employ fraud prevention and detection procedures.

This chapter will study and analyse the research mediums in order to establish the best mechanisms for the retail industry which can be used to minimise fraud risk and detect the presence of such behaviour in the system. This chapter aims to use an integrative process and sample the existing volume of literature on the topic.

While attempting to analyse previous studies, this chapter aims to investigate previous instances of fraud. This investigation is focused on the key behavioural reasons as well as the external aspects which led to an environment conducive to the fraud taking place. In addition, the research aims to establish the key policies and defence mechanisms which need to be developed by organisations which are looking to minimise the impact of such fraud. In addition to this, the study aims to analyse the role of non-conventional approaches in dealing with fraud. This is because the traditional accounting-based approaches or the regulation-

based approaches have failed to deal with instances of fraud in an appropriate manner. Therefore, it is imperative that newer ways to mitigate fraud risk are established and implemented worldwide. Thus, the study will contribute to the existing research on the topic and add value to organisations in terms of providing practical solutions to counter fraud risk.

3.2. Fraud Detection and Prevention

3.2.1. Overview

There have been various scholars around the world who have linked the ability of companies to prevent financial fraud with corporate governance mechanisms and following the principles of corporate governance. In addition to this, there have been several studies focusing on the use of metrics to measure the effectiveness of corporate governance in financial fraud prevention. However, these metrics are criticised for providing a subjective view and being difficult to compare across different companies (Jiang et al., 2008). The key disadvantage is that no two companies are the same, and hence it is difficult to utilise findings from one company to another one (Klausner, 2018). The role of corporate governance in terms of avoiding fraud has also been scrutinised by scholars such as Tan et al. (2017). The scholars stated that fraud in an organisation could take place in two major forms: one is financial statement fraud, and the other one is misappropriation of assets. Further, there are numerous ways in which these frauds can be executed. One way is to collude with other executives and to misreport critical information, which can alter the true financial picture presented to investors. Another way is to make use of techniques such as re-stating accounts. These forms of fraud can be identified by auditors and regulators since they tend to be based on recorded data (Bhasin, 2015). However, the misappropriation of funds is a type of fraud that can be hard to identify. This is because corporate governance principles in organisations tend to revolve around cases which cause a material loss to the firm. Misappropriation of funds does not always show up since it is not always tangible in terms of losses (Tan et al., 2017). The most efficient way for an organisation to detect such instances of fraud is to develop holistic corporate governance models.

3.2.2. Mechanisms in Fraud Detection and Prevention

Corporate governance mechanisms adopted by companies in order to prevent corporate fraud are broadly divided into two categories, namely: control mechanisms and incentives mechanisms (Sanchez-Marin et al., 2017; John and Senbet, 1998). Control mechanisms such as the presence of Audit Committees are used to monitor managers and minimise their

chances of committing fraud. Incentive mechanisms, such as performance-based pay, are used by companies to reduce the pressure on managers to commit fraud. Empirical literature shows that both mechanisms affect the occurrence of financial fraud. In this section, a review of studies on the effects of each type of corporate governance mechanism on fraud prevention and detection is provided.

3.2.2.1. Control Mechanisms

One of the most common control mechanisms adopted by companies to reduce the probability of financial fraud is the presence of an audit committee predominantly comprised of independent directors. In fact, the topic of the effectiveness of internal audit committees in fraud prevention has gained much attention in the academic literature on financial fraud. This is mainly because financial reporting procedures are the main means to disguise and hide instances of fraud, and the major role of audit committees is to oversee the disclosure of financial information and reporting in the company (Eulerich et al., 2019; Miko and Kamardin, 2015). There are numerous laws and regulations in place around the world that require firms to monitor and regulate their financial reporting activities. For example, the Sarbanes-Oxley Act of 2002 requires American companies to assess their internal control mechanism and also take additional help from external auditors in order to report fraud. Such regulations are aimed at ensuring that instances of financial fraud are minimised, and companies engage in ethical behaviour. However, the implementation of such laws can be complex. This is because each company has its own reporting mechanisms, which can be difficult to standardise. Nevertheless, acts such as the Sarbanes-Oxley act ensure audit committees are given the responsibility to monitor that the company does not engage in financial fraud (Krishnan and Visvanathan, 2007). This makes it clear that the role of corporate governance in fraud detection is critical.

Coram et al. (2008) also studied the instances of corporate fraud and the role played by the internal audit. The scholars stated that the internal audit mechanisms of firms have increasingly been scrutinised in the media as well as by the regulatory authorities. In addition to this, the topic of organisational fraud and weak governance mechanisms has increasingly become a matter of public debate around the world. The scholars cited the example of Australia and New Zealand, where 491 instances of fraud were identified by a survey undertaken by KPMG in 2004. The researchers stated that the only way by which companies can minimise fraud instances is by strengthening their internal audit committees, making them more independent.

Besides internal audit committees, an important role in fraud detection and prevention is played by the independence of the board, which is usually estimated as the ratio of independent non-executive directors. Chen et al. (2006) studied the impact of board independence on detecting financial fraud in China. The scholars stated that the Chinese corporate governance model is vastly different from that of Western countries such as the US. Further, the number of litigations filed in China is far less compared to the US. This is not necessarily indicative of the robust corporate governance procedures and is rather due to the complicacies of the judiciary system in the country. Traditionally, the ministries and local governments of China used to play a major role in appointing senior-level executives of companies. Even though this role has been reduced in recent years, the government bodies still have a say in the key appointments. The scholars concluded that board independence does play a positive critical role in fraud prevention as well as detection. According to Chen et al. (2006), a greater ratio of non-executive or independent directors on the board helps in reducing the probability of financial fraud occurrence. However, in contrast to previous studies, such as Yang et al. (2017), who argue that ownership structure and particularly the stake of large block holders or institutional investors help prevent financial fraud, Chen et al. (2006) did not find these characteristics to be influential in fraud detection or prevention. Thus, only board composition was important. However, Yang et al. (2017) observed that board independence, managerial ownership in the company and even the presence of internal audit committees did not significantly influence fraud prevention.

In contrast to Yang et al. (2017) and supporting the evidence from Chen et al. (2006), Smaili and Labelle (2009) also studied the instances of fraud in organisations and the contribution of board independence as a corporate governance mechanism to help prevent fraud. The scholars stated that the primary purpose of having an independent board in place is to protect the interests of a company's investors. The scholars studied 107 companies listed on the Canadian market for instances of fraud. The study concluded that financial irregularities are directly correlated with the standards of corporate governance existing within a firm, and there is a significant negative association between the ratio of independent directors and the probability of financial fraud. The scholars concluded that the higher the quality of the corporate governance mechanisms, the lower the probability of financial fraud being committed. This result reinforces the view that corporate governance has a major role to play in minimising instances of fraud. The key recommendation of the study was that firms should have more independent directors in place and should also ensure that the flow of

communication between management and the auditors is streamlined. Both these steps can ensure that instances of fraud are minimised.

3.2.2.2. Incentives Mechanisms

While control mechanisms of corporate governance suggest that financial fraud can be prevented by increasing overseeing in organisations, the incentives mechanisms suggest that financial fraud can be prevented by making it more profitable for stakeholders not to commit the fraud. The most common incentive mechanisms include the performance-based bonuses of top managers, giving a stake in the company to managers, and even paying for whistleblowing. Interestingly, the latter aspect has received much attention in the academic literature on corporate governance and fraud.

For example, Dyck et al. (2010) studied the corporate governance mechanisms of American companies in the context of whistleblowing. The scholars stated that the primary function of corporate governance mechanisms is to ensure that there is no misallocation of resources rather than uncovering fraud instances. The scholars noted that around two-thirds of alleged frauds in organisations are identified by individuals who do not form a part of the company's corporate governance mechanism. These include regulatory authorities in 15% of the cases, newspapers (10%), stakeholders (17%) and analysts (11%). This is indicative of the fact that fraud identification is not always done via corporate governance mechanisms. Therefore, the scholars suggested that whistleblowing and identification of fraud should be considered as a holistic responsibility of all stakeholders of an organisation. The scholars concluded that while corporate governance does have a role to play in the fraud detection process, there are other actors in the play that are also important. Another key finding of the study was that there are instances where a company's corporate governance mechanism identifies fraud but does not choose to report it due to conflicts of interest. Such situations set a dangerous precedent for any organisation. Finally, the scholars concluded that the role of external stakeholders, such as authorities and analysts, in fraud detection, had been undermined for a number of years, and this needs to change in order to give them more credit for their efforts in minimising corporate fraud. Similarly, Lee and Fargher (2013) studied the role of corporate whistleblowing policies in fraud detection and prevention. The researchers concluded that there exists a lack of uniformity when it comes to whistleblowing policies in different organisations. The scholars stated that unless anonymous reporting is encouraged, corporate governance mechanisms alone will fail to detect all instances of fraud. Further, the

scholars recommended that all organisations should provide support to whistleblowing activities such that employees and other stakeholders are encouraged to report fraud.

It is interesting to note that incentive mechanisms such as the top managers' pay linked to performance is an effective measure of fraud prevention based on the Fraud Triangle. According to the Fraud Triangle, pressure drives managers to commit fraud to earn more than they make at work. However, if the pay is high enough, managers will experience less pressure to commit fraud, and the latter will be prevented. This point of view has been supported by Zhou et al. (2018), who investigated the relationship between CEO and CFO compensations and the probability of committing fraud in Chinese corporations. The results strongly supported this hypothesis and evidenced that top managers with higher pay were less inclined to commit financial fraud. Thus, both control and incentive mechanisms can be effectively used in companies to combat financial fraud.

3.2.3. Importance of Corporate Governance in Restoring Trust

Another aspect of corporate governance and financial fraud, which needs to be assessed, is whether the corporate governance principles would lose their credibility after an instance of fraud. Further, it is important to understand whether such credibility can be restored by means of a robust corporate governance framework. Any instance of fraud can lead to a damaged reputation for an organisation. For instance, the reputation of the American company Enron suffered great damage after the accounting scandal in the early 2000s (Coffee, 2001). The financial reporting and disclosure issues that surfaced at the company resulted in Enron losing the trust of shareholders, media, regulators and analysts alike. This was due to the fact that the company had failed to disclose continuous financial mismanagement (Sims and Brinkmann, 2003). Further, the company had made efforts to ensure that the financial statement fraud did not come out in the open. The company even engaged in unethical and illegal practices such as document shredding and improper financial disclosures (Healy and Palepu, 2003). Even after the extent of the fraud was disclosed, the company's top management made several attempts to play down the implications so that Enron's reputation was not damaged further. This case, along with another large case of WorldCom, was characterised not only as a case of financial fraud but also as a case of corporate governance failure (Dibra, 2016). Other researchers referred to such large cases of fraud as an instance of crisis in corporate governance (Hamilton, 2003).

Similarly, it is noted by Farber (2005) states that if an instance of financial fraud has been uncovered in an organisation, the mere strengthening of its corporate governance procedures

does not suffice to rebuild its reputation. The scholar studied 87 firms registered with the Securities and Exchange Commission (SEC) in the US that had been engaged in financial statement fraud. The study found that once a scandal or fraud has been disclosed, it is clearly an indicator of the fact that the corporate governance mechanisms of the firm were not sufficient. In the aftermath of the scandal, even if the company lays down a new charter defining its corporate governance framework, it does not lead to an increase in institutional holdings or analyst following being improved. The study concluded that this is a clear indicator that firms that take actions to improve corporate governance mechanisms after fraud has occurred find it very hard to repair their reputation. This may also explain the discrepancies in previous findings on the relationship between various corporate governance mechanisms such as board independence, concentration of ownership, CEO pay structure and managerial ownership and value of companies (Lozano et al., 2016; Mertzanis et al., 2019; Bhagat and Bolton, 2019). Although Farber (2005) noted that improved corporate governance mechanisms could lead to a significant improvement in the share price of a firm, this does not imply that the company's reputation is repaired on a permanent basis. Therefore, the scholar suggested that having strong corporate governance mechanisms in place before fraud happens is a better way to avoid reputational damage.

Johnson et al. (2014) studied companies that have witnessed corporate fraud and have dealt with the repercussions in terms of a damaged reputation. The scholars stated that once a case of fraud has been identified in an organisation, it is likely that the company will suffer in terms of product sales. This is because the scholars observed a direct relationship between instances of fraud and consumer behaviour. Further, the study stated that, more often than not, in the aftermath of fraud, a company tends to perform poorly in terms of its operations. Also, the reputational losses that are incurred as a result of fraud can set a dangerous precedent for the firm. The scholars noted that such a damaged reputation could be very hard to repair, and this often results in the company's performance becoming even worse. In addition to this, the scholars stated that all these events could be minimised if the presence of a strong corporate governance framework is ensured. Similarly, Agrawal et al. (1999) studied the possible reputational damages incurred by a firm after fraud has been identified. Further, the scholars examined the relationship between corporate governance and the damage control process in terms of the company's goodwill. The study observed that lost reputational capital could be extremely hard to regain. In addition to this, the scholars noted that the exposing of fraudulent activity results in a new incentive for the company to change its corporate governance structure. However, such a change in structure does not always help in curbing

future instances of fraud and rebuilding the damage that has been done to the brand. Further, the scholars found little evidence regarding radical changes in top management in the aftermath of fraud. The scholars stated that this is a clear indicator of companies' resistance to change even after a case of fraud has been identified.

Also, Marcel and Cowen (2014) studied US companies that have dealt with cases of financial fraud. The scholars suggested that once a case of fraud has been identified in a company, it leads to an upheaval in the top management. This is because of the fact that top executives are concerned about their personal reputations as much as they are worried about the company. The study observed that once a case of financial misconduct is witnessed, this can quickly turn into a corporate crisis. In terms of dealing with this crisis, there are two main methods that can be employed by organisations. One approach can be based on quick decision-making. This approach has been termed as a risky one by scholars since this approach tends to be based on a knee-jerk reaction rather than a well-thought-out one. The second approach revolves around replacing the top management or the directors who are held responsible for the fraud. However, this approach also has its shortcomings. The scholars concluded that it could be a complicated decision to remove executives on the basis of one instance of fraud. Finally, the study recommended that post-fraud decision-making of firms should take into account all aspects of the business before arriving at a solution.

3.3. Mechanisms Used to Prevent Fraud Outside Traditional Accounting-Regulatory Based Approaches

3.3.1. Overview

Fraud is not a new phenomenon. Instances of fraud, manipulation as well as trickery can be observed in ancient history. Anti-fraud mechanisms have been in place as early as ancient Egypt. However, in recent decades, fraud in organisations has come under the spotlight due to high-profile cases such as Enron. In order to counter such cases of financial statement fraud as well as other forms of fraud, organisations around the world have been focusing on developing mechanisms that curb such unethical and illegal activities. Some of these mechanisms are based on traditional approaches, such as accounting-based mechanisms or regulator-driven systems. Further, in the modern era, regulators have always had a key role to play in ensuring that fraud does not take place. In addition to this, there are external stakeholders such as auditors and analysts who are associated with a company that plays a major role in fraud detection. Nevertheless, the primary stakeholders responsible for ensuring

that fraud does not take place are the company's management and directors. In order to minimise fraud risk, these executives tend to make use of anti-fraud mechanisms and policies that are aimed at regulating all transactions within a firm. Such mechanisms include internal audits, regulatory software to monitor data, as well as penalties in case fraud is committed. Educating the employees regarding what constitutes fraud, as well as the potential implications, also form a key part of the defence mechanism. Thus, all of these traditional mechanisms ensure that instances of fraud in an organisation can be minimised(Petraşcu and Tieanu, 2014).

According to Chen et al. (2015), traditional approaches towards fraud prevention are not always successful. Advanced fraud prevention and detection mechanisms work on the latest techniques, such as Big Data based models. Such techniques are beneficial in the prevention of cyber fraud and allow companies to regulate and report fraudulent behaviour. This is the primary reason why modern-day firms such as Alibaba are making use of advanced techniques that help in fraud prevention. The Chinese company has developed an advanced technology-based solution that can help the company minimise instances of fraud. Alibaba is making use of Big Data Analytics in order to identify and monitor instances of fraud. The company has developed an anti-fraud system that links fraud with various attributes and then analyses the data to detect future instances of fraud. Such advanced mechanisms are increasingly being deployed by companies in order to prevent and detect instances of fraud.

3.3.2. Disadvantages of Traditional Fraud Prevention Approaches

Suryanto (2016) studied the companies listed on the Indonesian stock market for fraud prevention mechanisms that are being used by firms. The scholars stated that one of the fundamental concerns for a company is to attract the right investors. This can be done only if the company has disclosed its financial statements in an accurate and transparent manner. Any kind of irregularities in the financial statements can result in potential investors choosing not to lend their funds to the firm. This can be avoided by taking steps towards improving the corporate governance mechanism of the company. The scholars suggested that one of the primary methods to avoid such instances of fraud is to have a clear dividend policy. This is one of the traditional approaches used by firms in order to avoid financial statement fraud. The study noted that most firms that tend to record instances of fraud have irregular dividend policies that allow for financial manipulation. In addition to this, the scholars suggested that another traditional approach is to make use of Information Technology (IT) based infrastructure and services. According to scholars, implementation of the latest technology

and software can help a firm in preventing fraud. This has also been confirmed by Cumming et al. (2017), who found a significant intersection between corporate fraud and technological development. In particular, they argue that advances in new technologies facilitated the speed of detection of fraud and contributed to the reduction of both the number and value of fraud cases. Another traditional approach that was identified by scholars was the accounting principles-based mechanism. According to this mechanism, companies can make use of stringent policies and systems that are focused on truthful accounting. Such an approach is also beneficial at the time of audit and allows regulators and other external entities to validate the financial statements more easily. However, the efficiency of such approaches is questionable. This is because having clear dividend and accounting policies alone cannot ensure that fraud instances are minimised. Companies need advanced mechanisms that can prevent and detect fraud so that the associated risks can be minimised.

Similarly, Micheni et al. (2016) studied banks in Kenya that are listed on the Nairobi Stock Exchange (NSE) in order to identify key weaknesses in their fraud prevention mechanisms. The scholars suggested that all organisations are susceptible to financial as well as non-financial fraud. Further, there has been a rise in the number of fraudulent activities in recent years. In addition to this, financial institutions around the world are even more susceptible to fraud because of the volume of transactions as well as the nature of the business. Therefore, in order to deal with this increasing level of fraud, companies are relying on traditional anti-fraud mechanisms and policies which are aimed at fraud detection as well as prevention. However, according to scholars, the success of such policies is debatable. The scholars found that banks and financial institutions that are listed on the NSE tend to rely on traditional accounting-based control systems that are not effective in reducing instances of fraud. The scholars studied 11 institutions operating in Kenya and tested their current internal control mechanisms for effectiveness. The study concluded that up to 56.2% of the instances of fraud that have been identified in these banks could be attributed to a weak internal control mechanism. This result clearly indicated that banks and financial institutions in Kenya are reliant on traditional accounting and regulatory-based defence mechanisms that are not proving to be effective. The scholars concluded that weak management and control systems are the key deterrents to fraud prevention, and these need to be strengthened by adopting a more dynamic approach towards fraud risk management. Such a dynamic approach should include advanced security controls as well as hazard evaluation. The scholars concluded that these techniques could ensure that fraud instances are minimised, and financial services organisations are able to conduct their business without disruptions.

Zamzami et al. (2016) studied public sector universities in Indonesia in order to assess the effectiveness of fraud prevention mechanisms. Indonesia is a developing country which has witnessed several instances of corruption and fraud in its public sector universities. The scholars noted that Indonesian universities tend to make use of a wide range of anti-fraud mechanisms. Most of these mechanisms are based on traditional approaches such as strong accounting systems as well as financial monitoring. However, scholars observed that these mechanisms have not been successful in reducing instances of fraud. The scholars stated that a traditional approach, such as analysing financial statements in order to detect fraud, does not work. In addition to this, hiring external forensic accountants who examine the books of a firm also does not prove to be effective. The study concluded that such organisations need to develop advanced fraud detection mechanisms which can prove to be helpful in actually reducing fraud instances. For instance, scholars suggested that such organisations need to deploy ethics officers who can prevent and detect such fraud instances based on data analysis. Further, the scholars suggested the use of advanced techniques, such as a stringent code of sanctions which covers not only the organisation's employees but also all partners and vendors.

Thus, to sum up, it is evident that all businesses around the world need to develop advanced fraud prevention and detection mechanisms in order to curb instances of fraud. Identification and monitoring of fraud are essential for firms across industries ranging from financial services to healthcare, retail, and even pharmaceuticals. Fraud can be extremely damaging to any organisation since it not only causes monetary damage but also adversely impacts the reputation of the firm involved. This can result in long-term implications, such as investors pulling out of the company as well as a lack of customer trust. In order to avoid this situation, it is critical that businesses make use of advanced fraud prevention and detection techniques such as Big Data and Machine Learning. Unless advanced technology-based solutions are implemented by firms, the instances of fraud will continue to rise, hurting organisational revenues as well as reputations.

3.3.3. Non-Traditional Approaches

3.3.3.1. Use of Big Data

Firms around the world are increasingly employing technology-based fraud prevention and detection mechanisms. This is because of the fact that traditional fraud prevention approaches have not always been successful. Therefore, organisations are looking towards more radical and sophisticated solutions such as Big Data. Such data analytics techniques allow forms to

analyse large data sets in order to prevent and detect instances of fraud. The key concept behind Big Data is to transform raw data patterns into meaningful information. There are various companies around the world, such as Microsoft, IBM, and SAS, that are developing big data technologies in collaboration with governments. In addition to this, there are open-source communities that can be accessed and implemented freely by organisations around the world.

Bologa et al. (2013) studied the public health insurance sector of Romania. This sector has been dealing with increasing instances of fraud. In order to deal with this problem, scholars suggested that the country should adopt Big Data Analytics. Since the instances of fraud are large-scale and span a wide proportion of the population, there is a need to develop a holistic analytics solution which can identify and prevent fraud. The scholars observed that Big Data has the potential to prevent fraud since the insurance sector covers numerous data points. There are two major reasons for this. Firstly, human memory and logical thinking have their own limitations because they cannot process large data sets. Secondly, even if a large number of analysts are hired to conduct data analysis, this is not feasible in terms of the associated costs. Therefore, the best alternative is to use a system that is not only holistic but can also process large databases. This was the reason why the scholars recommended Big Data Analytics for fraud prevention. Before the implementation of the Big Data Analytics fraud prevention project, around 5% of the total revenues were being lost due to fraudulent activities. The scholars concluded that once Big Data is implemented, this rate can be reduced significantly. This is a prime example of the role that can be played by Big Data in fraud prevention.

Similarly, Konasani et al. (2012) studied the global healthcare sector and concluded that Big Data Analytics could be employed in order to reduce the instances of fraud. The scholars stated that nearly US$70-260 billion worth of fraud takes place in US healthcare schemes on an annual basis. Similarly, in the EU, annual healthcare fraud amounts to US$30-100 billion. Traditional mechanisms have managed to recover only 10% of such losses. Therefore, the scholars suggested that Big Data based solutions can help the authorities reduce the instances of fraud. Further, such platforms can also be deployed on third-party systems which do not need regular monitoring. In addition to this, another advantage of Big Data solutions for fraud prevention is that huge amounts of historical data can be analysed within minutes. For example, the instances of previous fraudulent claims can be assessed in order to predict future fraud trends. Also, the massively parallel processing capabilities of Big Data mean that organisations can identify multiple fraud instances at the same time, helping in regulation as

well as prevention. Finally, the scholars concluded that automated Big Data Solutions have the ability to process complex algorithms, which are useful in enlisting fraud prevention trends. The implementation of such a solution would not only minimise the instances of fraud but could also be used to improve the general performance of an organisation or a public authority.

3.3.3.2. Hazard Evaluation Techniques

In addition to Big Data, another technique that could be used to manage fraud risk is hazard evaluation. There have been numerous instances of fraud in various sectors. Speights and Hilinski (2017) studied the retail industry for instances of fraud. The scholars noted that there is an increasing number of customers that engage in return fraud around the world. As of 2017, US$17-22 billion per annum is being lost to return fraud in the US. Such instances of fraud cost retailers up to US$6.5 per US$100 in terms of returns. That is a very significant number. Around 10% of all retail returns that are made in the US are deemed to be fraudulent. This has compelled retailers to look for innovative solutions that can evaluate fraud risk. One of the most widely used hazard evaluation techniques being used by US retailers is the implementation of a consumer-based system rather than a product-based system. The scholars noted that such a consumer-based hazard evaluation system tracks the individual behaviour of retail customers and identifies hazardous trends. For example, customers that have a long track record of returns typically tend to abuse the return policy of retailers more than others. Such hazard evaluation systems can intervene before too much damage has been caused to the organisation. In addition to this, the scholars noted that consumer-based systems also have another advantage that they can create a central database which can be tracked by any executive. Further, such a system catches abusers early into their act, resulting in other fraudsters being deterred. Finally, such hazard evaluation systems are helpful in ensuring that the profit margins of the retailers are not adversely impacted.

Similarly, Akuh (2017) studied instances of cashier fraud in retail. The scholar focused on smaller retail businesses that are dealing with increasing instances of employee fraud. The scholar stated that based on the Fraud Triangle Theory, managers and executives of small retailers develop traditional anti-fraud mechanisms. However, such traditional mechanisms are not always effective. Therefore, the scholars suggested that such businesses develop risk evaluation systems that take into account all aspects of fraud. In order to safeguard business assets, small businesses need to look beyond traditional approaches and develop advanced internal mechanisms for risk evaluation and fraud prevention. In addition to this, Matagaro

(2018) studied the instances of employee fraud in Kenyan supermarket chains. The scholar noted that despite the presence of strong corporate governance mechanisms, the country's supermarket retailers have continued to witness employee fraud. This is attributed to the weaknesses in the implementation of the existing mechanisms. The scholar recommended that advanced hazard evaluation checks need to be performed on the company employees. This would provide the organisation with vital data sets pertaining to employee behaviour and past records of fraud. Further, an advanced risk profiling of each employee would allow the firms to monitor and regulate their unethical behaviour. The scholar concluded that advanced technology-based risk profiling solutions need to be deployed by the firms in question so that occupational fraud can be minimised. Finally, the study also stated the need for training competent anti-fraud professionals who can not only prevent fraud but can also help in investigations and penalties.

3.3.3.3. Increased Automation

In sectors such as Financial Services, the need for advanced fraud detection mechanisms is even higher. This is because the inherent nature of the business is such that fraud is bound to take place. Further, manipulations and fraud instances in the financial markets domain can lead to far-reaching consequences not just for the individual and the firm but also for external investors and other stakeholders associated with the firm. Therefore, the Financial Services sector needs advanced fraud prevention and detection software. There can be various forms of fraud in financial markets, such as mispricing, monetary fraud, or even arbitrage-based fraud. These can be executed using a wide range of mechanisms, either manual or automated. In order to prevent such incidents from taking place and ensure that the sanctity of the organisational system is maintained, a multi-dimensional fraud prevention technique is required.

Siering et al. (2017) studied cases of financial services fraud in the US as well as in other regions such as Europe. The scholars stated that financial services organisations around the world need to develop advanced decision support systems that automate most transactions which take place in the industry. Such a heightened level of automation can help in the identification and prevention of fraud because the perpetrators are not allowed the time and space to execute their unethical activities. Further, by implementing automated systems, organisations are limiting the risk that is posed by human conflicts of interest. For example, as stated in the Agency Theory, there is a continuous conflict of interest between company managers in terms of executing their duty and taking care of their personal motives.

According to scholars, such conflicts can be avoided by making use of fully automated systems that have the ability to take decisions. In addition to this, regulators such as the Securities and Exchange Commission (SEC) of the US already require companies to detect and report all instances of fraud at the earliest. This can be achieved in a more efficient manner by implementing an organisation-wide system that is fully automated. The scholars concluded that decision support system developers could be hired by the organisation, or the entire process could be outsourced. The implementation of such automated systems is necessary in order to minimise fraud instances.

Additionally, Van Vlasselaer et al. (2016) suggested the use of automated systems that can deal with network fraud. The scholars suggested the implementation of an automated system known as GOTCHA. This system makes use of an algorithm that revolves around diffusing instances of fraud via networks. The scholars noted that the use of such advanced automated systems could result in instances of fraud being reduced significantly. The GOTCHA system revolves around exploiting the associations between employees and their companies in order to detect the presence of fraud. According to scholars, such a system would work by using resources to infer the probability of fraud in the future. Apart from the prevention of fraud, such an automated system could also help by means of providing immediate feedback to the top management as well as faster detection of fraud instances. The study concluded that the proposed framework could be used in a range of different organisations that are looking to reduce instances of fraud. Save et al. (2017) suggested the use of decision-tree based automated mechanisms in order to deal with instances of credit card fraud. The scholars suggested that decision-tree based systems are effective since they make use of complex algorithms that are holistic. Further, such systems make use of techniques such as data mining in order to fetch past transactions that have been executed by a customer. Such past transactions can act as indicators for future behaviour based on a decision-tree mechanism. Decision trees allow top management to develop advanced neural networks that have the ability to identify and prevent fraud from actually taking place. The scholars suggested that a decision tree system makes use of multiple validation checks that can ensure that the instance of fraud does not materialise.

3.3.4.4. Appointing Ethics Officers

Hoffmann and Rowe (2007) studied the instances of fraud in organisations post the Enron scandal. The scholars noted that investigations into various scandals had revealed that senior management teams of firms were not adequately monitoring employee actions. The top

management of a firm is seen as the team which is responsible for ethical oversight. However, in various companies, this role is either overlooked or the top management fails to execute it in an efficient manner. Therefore, the need for appointing external ethics officers has been observed by scholars. The role of such ethics officers would be to ensure that no unethical activities are taking place within the organisation. Such ethics officers would not only monitor the activities carried out by the employees but could also keep a check on the actions of the top management of the firm as well. The scholars also noted that there had been some instances of ethics officers being appointed by firms. However, in most cases, such officers are not provided with the appropriate decision-making powers in order to curb instances of fraud. The scholars suggested that whilst appointing ethics officers is a viable solution towards curbing instances of fraud, and this must be substantiated by providing the officers with the necessary tools. Once this has been implemented, the ethics officer can act as an agent of the board of directors and support the senior management in monitoring and preventing fraudulent activities in the organisation.

Similarly, Kaptein (2015) noted that various organisations around the world are now implementing newer techniques of fraud prevention, such as developing ethics programs and appointing ethics specialists. The scholar stated that although organisations have a wide variety of options in terms of ethics programs to choose from, it can be difficult to estimate which program would be the most suitable for the firm. This is because the nature and operations of each firm are different from the others. The scholar suggested that typical ethics programs which are aimed at fraud prevention consist of nine components. These include ethics officers, ethics reporting lines, and investigation policies, among others. Further, the scholar observed that ethics training proves to be one of the most important ways of avoiding fraudulent actions. In addition to this, the scholar studied a data set of 5065 respondents from organisations across the US in order to determine the effectiveness of ethics programs and the appointed ethics officers. The scholar concluded that although ethics officers and programs work in an indirect manner, these mechanisms are effective ways to reduce instances of fraud. Further, the study concluded that ethics reporting lines are a useful mechanism in terms of reducing instances of unethical behaviour in an organisation. Finally, the scholar suggested the use of incentive-based mechanisms that can ensure that employees behave in an ethical manner.

Thus, the role of ethics officers can prove to be an effective one in reducing instances of fraud. Also, appointing ethics officers can ensure that the procedure of investigating fraud is also much more streamlined. In addition, some technology industry organisations have gone

even further in order to appoint Chief Ethics Officers and other top-level ethics executives. For instance, Google has a Vice President & Chief Compliance Officer in place that also looks after ethics. Such appointments are made in order to implement a company's ethics and compliance code. These are top management executives whose sole purpose is to ensure that the ethical standards of a firm do not slip below the expected levels. In addition to this, appointing a top management executive in the domain of ethics can act as an indicator to employees and other shareholders of the firm that it is serious about ethical behaviour.

3.3.4.5. Machine Learning and Artificial Intelligence (AI)

Technological advancements such as Machine Learning and Artificial Intelligence can also be used in order to prevent and detect fraud. According to Jordan and Mitchell (2015), Machine Learning mechanisms can prove to be extremely successful in fraud detection, especially in businesses that are transactional in nature. The scholars studied the example of industries where payments are made using credit or debit cards. In these instances, AI-based machine learning algorithms can learn how to mark transactions as "fraud" or "not fraud". In addition to this, such algorithms can "learn" and improve with time in order to detect fraudulent transactions in a more efficient manner. Such classification-based fraud identification can prove to be extremely useful for financial services firms that deal with a large number of transactions on a daily basis. Further, the scholar noted that such AI-based mechanisms could prove to be time efficient as well as cost-efficient, especially in cases where a large data set has to be analysed with a quick turnaround period. The scholar concluded that the use of such advanced technologies can not only reduce the instances of fraud but can also make organisations more effective as a whole.

Bauder and Khoshgoftaar (2018) studied the potential of using Machine Learning based fraud detection mechanisms in the medical and healthcare domains. The scholars noted that countries such as the US run public health and welfare programs such as Medicare. As of 2015, this program was already accounting for about 18% of the US total healthcare budget. However, the scholars noted that about 3-10% of the total healthcare spending in the US is lost due to fraudulent incidents. This is a very significant number in the context of the US budget. The scholars suggested the use of a Machine Learning based mechanism in order to reduce the instances of Medicare fraud. Specifically, the scholars stated that data pertaining to provider utilisation and payments could be analysed using Machine Learning based algorithms. The scholars recommended that fraud labels be allocated to transactions that are deemed to be suspicious by the software, and then these transactions would be further

analysed to determine the presence of fraudulent activity. The scholars concluded that such an advanced system would allow for regulating fraudulent activity and minimising it as much as possible.

In addition, Qiu and He (2018) studied the possibility of using Machine Learning mechanisms in order to reduce the instances of fraud in the Chinese film industry. The kind of fraud prevalent in the industry includes under-reporting of sales by cinemas and inflated box office figures. The scholars suggested the use of Machine Learning based mechanisms that can analyse large data sets and ensure that the correct box office figures are being reported. In addition to this, Artificial Intelligence based mechanisms can analyse sales data and ensure that there is no under-reporting on the part of the cinemas. The scholars stated that such AI mechanisms could work on the basis of allocating a risk factor score to the reported data based on past fraud instances. This could prove to be extremely beneficial in terms of audits as well as supervision of the industry by the regulatory authorities of China. The scholars concluded that fraud risk assessment by means of Artificial Intelligence could prove to be a highly effective method of reducing fraud in the industry.

3.4. Empirical Evidence on Fraud

3.4.1. Empirical Testing of the Fraud Triangle

Schuchter and Levi (2015) used the Fraud Triangle framework in order to reveal which of the three aspects of the triangle were most significant in explaining the illegal behaviour of fraudsters. The researchers employed the interview method in which fraudsters were questioned. Even though the sample of the study was very small and only thirteen people were interviewed, the results showed that no elements of the fraud triangle were equally important in explaining the fraudsters' behaviour. In particular, Schuchter and Levi (2015) found that the Opportunity factor was the only necessary element of the framework for committing fraud. Rationalisation and Pressure found weaker support. The respondents were asked questions about their work environment and their thoughts and triggers for committing a crime. Morales et al. (2014) conducted an empirical study using the method of documentary research with an aim to trace the applicability of the fraud triangle framework in the past. They revealed that the framework was popularised after large accounting scandals in the early 2000s, but its usefulness was limited to providing organisations with a set of criteria on how risky employees can be detected and controlled in order to prevent fraud. They argue

that this framework changed the approach of studies to exploring fraud. Instead of looking at fraud from a social perspective, empirical studies started exploring fraud from an individualistic perspective.

Until recently, the popular fraud triangle framework was not tested against competing frameworks in the field. One of the first attempts at empirical testing was made by Boyle et al. (2015), who argued that their study was the first one to empirically test the efficiency of the Fraud Triangle and Fraud Diamond frameworks. They employed the method of factor analysis using eighty-nine auditors as a sample. These auditors were making fraud assessments with the Fraud Triangle and Fraud Diamond frameworks in a set of experiments. The results revealed that higher assessments were detected with the Fraud Diamond, whereas Fraud Triangle performed slightly worse. This study confirmed the significance of the Capability factor in explaining corporate fraud. Among the pressure factors, Boyle et al. (2015) considered abnormal sales growth and profitability, rivalry in the industry, remuneration structure, insider holdings in the company, and expectations and demand for the company's products or services. The Opportunity factors included the complexity of the organisation, complex bookkeeping, the quality of monitoring by committees, control mechanisms introduced and tenure of managers. Rationalisation factors were represented by the variables such as previous violations of regulations, high expectations from auditors, previous disagreements with auditors, the reaction of managers to previous mistakes, reaction to achieving or not achieving forecast targets and reaction to problems with control. Finally, the capability factors were represented by variables such as managers' interest in the field of accounting, their ability to tackle stress, their communicative abilities, their confidence, and their expertise in specific fields.

Previous empirical studies also provide criticism of the Fraud Triangle and its ability to effectively explain fraudulent activities in the corporate world. For example, Lokanan (2015) used the case study methodology and the critical discourse analysis to investigate if the Fraud Triangle could be successfully employed for fraud combating purposes. The results of their research revealed that this theory was not effective in spite of its popularity and wide acceptance among accountants and auditors. Lokanan (2015) argued that the Fraud Triangle possesses serious limitations. First of all, it cannot be applied to all types of fraud as the three components of this theory, namely pressure, opportunity and rationalisation, are not always present. This was found based on the analysis of cases of corporate fraud in Walmart, one of the largest retail companies in the world, KPMG, a leading audit company and Lehman Brothers, a former large investment bank. Secondly, Lokanan (2015) found that the Fraud

Triangle theory works poorly in explaining the actions of "predator" fraudsters. These are the people who do not need money or have pressure to commit fraud. They are individuals and groups of individuals who seek any opportunity to commit fraud because they believe they can avoid punishment. These types of fraudsters also do not need rationalisation, which is one of the key components of the fraud triangle. Hence, the research of Lokanan (2015) has shown that a more comprehensive framework for explaining fraud is required to enhance the Fraud Triangle.

Suh et al. (2019) used the theoretical framework of the Fraud Triangle to examine occupational fraud in the context of the banking industry. These researchers used the methodology of the survey based on primary data collection from human participants. The surveys were conducted among almost four hundred employees from Korean banks during the year 2016. Suh et al. (2019) distributed the questionnaire through emails and social networks. In the survey, they used the Likert scale and binary variables. In particular, the dependent variable was represented by a "yes" or "no" answer to the question of whether financial fraud ever took place in the respondent's company during the last five years. Even though it is possible to argue that the answers to such questions would be biased and unreliable, Suh et al. (2019) countered by stating that if respondents are given anonymity and confidentiality, they will have almost no reason to provide biased or misleading answers. Since the dependent variable in their study was represented by the binary variable, Suh et al. (2019) employed a logit regression. This regression, in contrast to OLS models, estimates the probability of fraud occurring based on the given factors as explanatory variables. The findings have shown that opportunity reduction had a negative association with the probability of fraud occurrence. This confirmed the Fraud Triangle postulate that opportunity is an important driver of fraudulent acts. The researchers also showed that the number of fraud control mechanisms did not matter in preventing fraud, but the quality of these instruments and the ability of managers to skillfully use these mechanisms were important. Therefore, one of the ways to more effectively combating of fraud is to increase anti-fraud training among employees and managers.

Another study by Wang et al. (2019) used the same dependent variable as Suh et al. (2019), namely whether or not corporate fraud was committed in a given company. However, Wang et al. (2019) managed to approach their study using secondary data analysis instead of surveys. This was possible because of the specifics of the industry they investigated and the availability of the data. They investigated the financial industry, and mutual funds in particular, and Chinese databases provided historical statistical information on the fraud cases

reported in the financial industry. Therefore, it was possible to employ the Fraud Triangle framework and logistic regression based on secondary data, which helped to avoid the problem of addressing participant bias and ethical issues. As in the case of Suh et al. (2019), logistic regressions were preferred to the traditional OLS models, and coefficients were interpreted in terms of the odds ratios rather than elasticities. In fact, when the dependent variable in a study is represented by a dummy indicator with values of either 1 or 0, probit and logit models work better than their alternatives (Gujarati, 2003).

Choo and Tan (2007) also used the Fraud Triangle theory to explore corporate fraud in the US. However, instead of surveys, they preferred the strategy of case studies. This strategy has limitations when applied in the context of fraud prevention and detection. In particular, it did not allow Choo and Tan (2007) to find any significant relationships. Cases were used as anecdotes to illustrate the applications of theories. Therefore, stronger research requires alternative methodologies. Choo and Tan (2007) demonstrated that the Fraud Triangle theory is linked to the Broken Trust and American Dream theories. Interestingly, all these theories were argued to be linked through the mediating effects of corporate governance. In particular, Choo and Tan (2007) argued that in most cases, CEOs and Chairmen of companies are responsible for corporate fraud. They classified this fraud as misrepresentation, thus distinguishing it from employee-related fraud such as misappropriation. Choo and Tan (2007) observed that top executives follow different behavioural patterns. In some cases, their behaviour is consistent with the agency theory and managers work well when they have adequate compensation linked to performance. In other cases, they observed that managerial behaviour was consistent with the stewardship theory, where managers have mostly driven my internal motivations and career-building ambitions as well as their desire for recognition. In these two different cases, the Fraud Triangle theory was argued to work differently. These differences are captured by the Broken Trust Theory. Thus, the latter is a fine-tuned Fraud Triangle. In one case, managers are assumed to violate their agency agreements and thus break trust. In other cases, managers are assumed to become poor stewards of shareholders and again break their trust. However, it is valid to criticise the Broken Trust theory for not giving enough evidence on the rationalisation stage of the Fraud Triangle while the pressure and opportunities are covered. An alternative explanation for corporate fraud was provided by Choo and Tan (2007) by referring to the American Dream theory. According to this view, managers are mostly driven by the social environment and expectations, such as the need to be successful by all means. This social pressure eventually leads to corporate fraud.

Skousen et al. (2009) used the Fraud Triangle framework to test how effectively corporate fraud can be detected and predicted in companies. They employed sub-samples of fraud-committing companies and companies that were not found to have committed any fraud. For each of the three elements of the Fraud Triangle, Skousen et al. (2009) chose several proxies retrieved from secondary sources. Thus, their research did not require primary data collection. In particular, the pressure elements included the profitability of the company, analyst expectations of company performance indicators, managers' compensation and wealth and the presence of financial targets. The opportunity elements were represented by such variables as the monitoring functions of the board, organisational structure, internal controls and ownership structure. Rationalisations were represented by proxies such as communication, expectations, previous history of misbehaviour and relationships with auditors. The results of their study revealed that the probability of corporate fraud was positively affected by the companies' need for the use of financial leverage, a fast increase in the value of the company assets and a lack of cash holdings or need for more cash. It was recommended by Skousen et al. (2009) that one of the ways to prevent corporate fraud was to increase the number of independent members of audit committees. Thus, they pointed to internal factors that can help reduce the probability of fraud occurrence.

3.4.2. Empirical Evidence from the Retail Industry

The empirical literature provides evidence of corporate fraud in both the financial and non-financial industries, such as the retail industry. In particular, the retail industry also witnessed significant corporate scandals associated with fraud, such as the accounting fraud at Tesco in 2014. Chen et al. (2006) argue that corporate governance mechanisms are effective tools for reducing fraud. They conducted a cross-industry analysis in China using a number of corporate governance indicators as explanatory variables. These variables included the composition of the board and the characteristics of both executives and shareholders of the chosen companies. They implemented the probit model, which estimates the probability of cases of fraud. The results revealed that the tenure of executives, frequency of board meetings and independence of the board played a significant role in determining whether fraud would occur in the analysed companies. However, the findings of these studies are difficult to apply to the context of the UK, which is the focus of this research, as it was conducted in a single country, namely China. In fact, considering cross-country differences in terms of corporate

culture and corporate governance, the generalisation of studies on fraud does not appear to be feasible unless researchers use a cross-country evaluation.

Uzun et al. (2019) replicated the approach used by Chen et al. (2006) in the context of the USA. They also divided the sample into two groups. One of the groups had companies which were caught in fraud, and the other group had companies not stained with cases of fraud. In assessing the probability of fraud in US companies, Uzun et al. (2019) also found that the proportion of independent directors on the companies' boards helped reduce the probability of fraud. A similar relationship was found between the composition of the internal audit committee and the probability of fraud. However, in contrast to expectations, their results also showed that compensation committees contributed to fraud expansion. The authors explained this phenomenon through the inefficient work of compensation committees and poorly designed performance-based compensation packages offered to managers. Their study also covered different industries and did not focus on any specific sector in particular.

The main advantage of investigating fraud in the context of many industries is that this allows for a large sample for the study with more diverse evidence. However, each industry is unique and offers different opportunities for corporate fraud based on the sensitivity of the information, efforts made to protect the information and areas in which fraud has more chances to take place. The retail industry, in particular, provides much room for manipulations of earnings using accruals and personal judgements. For example, Cotter and Hutchinson (1999) reviewed the manipulations of accounting statements by managers in retail companies. They argue that such income manipulations were mainly driven by the desire to meet financial market analysts and keep the capitalisation of retail companies high in the UK. The researchers uncovered that retail companies, unlike other industries, provide opportunities for manipulating financial statements based on both accruals and real activities of the retail companies. Moreover, many such manipulations are legal and are conducted using the loopholes and flexibilities provided by accounting standards. However, the research conducted by Cotter and Hutchinson (1999) was conducted during a time when UK retailers followed the UK GAAP, whereas today UK based companies have to comply with the International Financial Reporting Standards (IFRS).

Another gap in the literature is that many of the previous studies explore the factors of fraud and mechanisms of fraud detection and prevention, and very few studies provided useful recommendations on how the detection mechanisms can be innovated and how the prevention of fraud can be enhanced. For example, Hogan et al. (2008) note that personal characteristics of managers, such as their ethical standards, integrity and ability to keep their word, had a

strong impact on the probability of fraud occurrence. This research, therefore, concentrated only on the rationalisation stage of the fraud triangle and did not single out any particular industry. In the same way, Abbott et al. (2004) focused on the opportunity stage of the fraud triangle and examined the impact of the audit committee's expertise and independence on the probability of fraud. In fact, most of the empirical studies that used corporate governance variables were predominantly based on the opportunity stage of the fraud triangle, and this stage was best explained by the agency theory (Cohen et al., 2007). Interestingly, some of the studies that explored the pressure stage of the fraud triangle also referred to corporate governance theories, namely the agency theory, to argue that a lack of incentive mechanisms created pressures or stimuli for corporate managers to act fraudulently. This was shown, for example, by Efindi et al. (2017), who found a significant link between equity-based compensation and financial fraud in companies.

Previous research on the detection and prevention of corporate fraud can be broadly divided into two categories. In the first category are the studies that relied on secondary data analysis and employed either the case study strategy or financial ratio analysis along with logistic regressions to assess the probability of corporate fraud based on company-specific and manager-specific factors (Persons, 1995; Calderon and Green, 1994; Lou and Wang, 2009). The second category of empirical studies relied on primary data collection and the use of the survey strategy to uncover the factors that affect the probability of fraud occurrence (Bell and Carcello, 2000; Wilks and Zimbelman, 2004; Asare and Wright, 2004). The main limitation of the first category of studies is that they had a limited ability to consider psychological factors and motives of fraud. In other words, they could not address all elements of the Fraud Triangle. In contrast, empirical studies from the second category that used primary data and surveys managed to examine all elements of the Fraud Triangle by asking auditors or managers questions. However, the main limitation of such studies is that they relied on a large number of variables based on complex survey structures and were subject to participant bias, as argued by Lou and Wang (2009). There is also an unresolved issue of whether the Fraud Triangle framework could be considered universal or if it should be adjusted in each particular context, as was shown its limited applicability to the cases of predator fraud. In order to fill in such a gap in the literature, a deeper analysis of the characteristics of fraudsters is required. This can potentially be done by using interviews rather than surveys, as interviews allow for more elaborated and open responses that can reveal more genuine information, even though this information will be qualitative in nature and not subject to statistical analysis.

3.4. Hypothesis Formulation

In accounting and audit literature, one of the most important factors of financial fraud prevention is an internal control (Abiola and Oyewole, 2013). The latter is a process aimed at checking how well the organisation performs and complies with the existing laws, policies, listing rules, regulations and accounting standards. While the internal audit is viewed as an essential party responsible for internal control, it is valid to argue that other stakeholders are also involved in this process. In particular, the internal audit is responsible for compliance with laws and regulations, but it reports to both the executive management and the audit committee, which oversees the internal audit. Previous studies such as Putri and Irwandi (2016) found a significant role of internal control mechanisms in reducing accounting fraud. However, other researchers, such as Anan (2021), while finding the positive effects of internal controls, could not confirm their statistical significance. Such differences in the results can be attributed to heterogeneity in the samples and contexts used. Furthermore, studies such as Ana (2021) admit that they have used non-probability sampling techniques, which do not allow for effective generalisation of the results.

In the context of small and medium-sized businesses, there is also evidence that stronger internal control is significantly and negatively associated with financial fraud, implying that more internal control reduces the frequency and value of fraud in such companies (Fernandhytia and Muslichah, 2020). Scholars such as Donelson et al. (2017) explain the significant association between internal control and financial fraud through the opportunity offered to the top management. Weaker internal control means that there are lower barriers for the management to commit fraud. This argument agrees with the explanation of fraud provided by the Fraud Triangle, which states that in environments where there is a higher opportunity and lower barriers for committing fraud, there will be more cases of fraud (Donelson et al., 2017)). Thus, the importance of internal control in preventing fraud stems from both the Fraud Triangle and Agency Theory and is also supported by much of the empirical literature, even though there are exceptions and studies with mixed evidence still exist.

Setiawan (2018) confirmed the significance of internal control in preventing accounting fraud. However, their study used the experiment design involving a relatively small sample of respondents, namely: 85 accounting students. Thus, the research did not have a random sample that would ensure generalisation and was not set in the real business context. Joseph et al. (2015) also found a statistically significant effect of internal control represented by risk management, monitoring, communication and control environment in reducing and

preventing accounting fraud. However, their results were tested only in the context of a single county in Kenya and are difficult to generalise in the global context due to the limited sample. In fact, small sample sizes and issues with random sampling selection are the two most important deficiencies of previous studies focused on factors of fraud and fraud prevention and detection mechanisms. Interestingly, some studies, such as Rae and Subramaniam (2008), found that internal control could have not only a direct but also moderating effect on accounting fraud, which implies that interactions of internal controls with other factors of fraud, such as ethical behaviour of employees and justice perceptions are important to investigate.

Based on the studies reviewed above and being guided by Agency Theory, which advocates the role of internal control in fraud prevention, the following hypothesis is formulated:

H1: Internal control mechanisms reduce the Opportunity for managers to commit financial fraud and are, therefore, effective in corporate fraud prevention in the context of the UK retail industry.

Besides internal control, empirical studies stress the importance of external corporate governance mechanisms and audits, in particular as effective measures to prevent financial fraud. (Lisic et al., 2015). One stream of research attempting to explore the effect of external control mechanisms on fraud distinguished the quality of external audits based on the size of the audit. However, such studies make a strong assumption that larger audit firms can perform better audit services. In some cases, such as in China, where large audit firms are under greater sanctions from the government, this could be true (Lisic et al., 2015), but this may not always be generalised to other contexts. Other studies, such as Hung and Cheng (2018), are more sceptical about the effectiveness of external audits in reducing instances of fraud. In particular, even if the audit standards are followed and detection mechanisms are implemented, there is a large information asymmetry between companies and external audits and this asymmetry increases with the complexity of business operations and transactions. Thus, in more complex organisations that derive revenue from multiple sources, there is a greater opportunity to commit financial fraud with a lower chance of it being uncovered. Furthermore, the success of external audits in such organisations will also be lower. This could result in unexpected relationships detected between the external audit and fraud, where a better external audit may not necessarily lead to lower fraud. To mitigate such instances, it is important to control for the size of the company or similar factors that can reflect the business complexity (Hung and Cheng, 2018). The scepticism about the effectiveness of external control mechanisms in reducing fraud was also expressed by Shi et al. (2016), who

challenged the arguments of the Agency Theory, which promotes both external and internal control. Their findings show that the pressure from external control could often have the opposite effects. However, their differences from the conventional view suggested by Agency Theory can be explained by choice of external mechanisms they selected for the investigation. In particular, they focused on analyst following and activist owners as external controls, whereas the studies that report positive effects of external controls often referred to external audits (Ionescu, 2017).

Similar to the case with internal control, some studies, such as Chen, Cumming, Hou and Lee (2013), found that external audit may have not only direct but also indirect moderating effects on fraud. More specifically, an external audit can moderate the relationship between managers' integrity and financial fraud. Regardless of whether the effect is direct or indirect, external control and audit can be viewed as a manifestation of the Opportunity construct of the Fraud Triangle. By increasing external control, companies implement higher barriers for fraud and, hence, the probability of fraud occurrence becomes lower. The previous studies' discrepancies and mixed evidence on the effectiveness of external control in preventing and detecting fraud can be explained by the differences in perceptions. Studies such as Moyes et al. (2013) confirmed these differences in perceptions by showing that even external and internal auditors have different perceptions of red flags indicating fraud and do not agree with each other. Similarly, other stakeholders, such as business owners and business managers, can perceive external and internal control effectiveness differently.

Based on the above-mentioned studies, the following hypothesis is formulated for further testing in this thesis:

H2: External control mechanisms such as audits reduce the Opportunity for managers to commit financial fraud and are, therefore, effective in corporate fraud prevention in the context of the UK retail industry.

According to Fraud Triangle, monetary reasons are an important Pressure factor that explains why individuals commit financial fraud. If fraudulent behaviour offers the individual significantly higher monetary gains than integrity, there will be more pressure to commit fraud and increase personal welfare. When managers are hired by corporations, they receive different types of remuneration, starting with base salary to stock-based compensation, options and bonuses. If the compensation structure links the manager's pay to the firm performance, there will be a monetary incentive for the manager to increase the firm performance in order to receive higher gains. One of the ways to increase the firm performance is to manage the firm diligently and expect that the more efficient firm will

generate more performance-based pay to the manager. The other way is to manipulate the financial reports and make the firm appear better than it is. If this fraud is not detected, the management will receive higher compensation (Andergassen, 2016). This illustrates how monetary incentives can stimulate fraud occurrence based on the Fraud Triangle theory. However, there is also empirical evidence that confirms this theoretical reasoning in actual practical contexts. For example, Davidson (2022) investigated a sample of almost two thousand executive directors in companies implicated in financial fraud and not implicated in the fraud. The results of their study reveal that the managers who had a higher share of stock-based compensation were significantly and positively associated with the probability of financial fraud. This means that monetary incentives provided by the stock-based compensation linked to the firm performance act as the Pressure factor driving managers to commit financial fraud.

This evidence from Davidson (2022) was also supported by Chen et al. (2021), who also found statistically significant relationships between the CEO compensation of a firm and the likelihood of financial fraud being committed. They also argue that companies offering higher stock option compensations to their directors were considerably much more likely to become victims of financial fraud committed by managers. Thus, the latter evidence also supports the theoretical reasoning of the Fraud Triangle theory. Similar evidence of the significant positive association between performance-based compensation and the probability of financial fraud was detected and confirmed by Hariss and Bromiley (2007) as well as by O'Connor et al. (2006). The same results were attained by Efendi et al. (2007). However, all these findings seem to go against the postulates of the Agency Theory, which, in contrast to the Fraud Triangle, predicts that performance-based compensation should prompt managers to act more diligently in the interests of the shareholders of the firm. It is not surprising that some of the studies that attempted to test the links between the types of performance-based remuneration and financial fraud found no significant results (Armstrong et al., 2013). Therefore, further testing of the relationship between monetary incentives provided by director compensation and the probability of financial fraud is required.

Based on the empirical literature reviewed above, the following hypothesis is formulated for subsequent testing in this thesis:

H3: Monetary incentive mechanisms such as performance-based pay constituting the Pressure construct increase the likelihood of financial fraud in the context of the UK retail industry.

Hypothesis 1 and 2 dealt with the Opportunity dimension of the Fraud Triangle, which was split into internal and external factors. Hypothesis 3 focused on the Pressure construct. The

next step is to develop a hypothesis for the relationship between the Rationalisation of fraudulent actions and the likelihood of corporate fraud. Recent empirical studies such as Ameer and Othman (2021) explored how men and women differed in how and why they committed corporate fraud. These authors demonstrated a significant positive effect of rationalisation of their actions from both men and women when they committed fraud. This implies that wrongdoers do not always perceive their actions as fraud, or they have strong reasons to consider their actions acceptable.

Similar to Ameer and Othman (2021), a significant positive effect of rationalisation on the likelihood of financial fraud was detected by Demetriades and Owusu-Agyei (2021). However, their results are limited by the fact that the results could not be generalised as their research focused on a single case of fraud at Toshiba. Furthermore, they proxied the Rationalisation construct using only one variable represented by the Audit Opinion. Meanwhile, another study conducted by Izevbigieand Ibhadode (2020) showed that Rationalisation variables represented by audit opinions on red flags do not have a significant association with the probability of fraud. The discrepancies between their results can be explained by the completely different approaches to the studies, with the former study employing the case study strategy and the latter implementing the quantitative probit regression modelling and a larger sample. In contrast to Izevbigie and Ibhadode (2020), Achmada et al. (2020) supported the Fraud Triangle Theory and the significant positive association between Rationalisation and likelihood of fraud in a study with a comparatively large sample of more than two hundred respondents and regression modelling method. This shows that even when implementing similar methods, the results may still vary as it is difficult to obtain a perfectly representative sample and achieve generalisation. As such, more research is required in new contexts to test the existing theories and notions on the factors and drivers of financial fraud.

Based on the studies reviewed above, it is possible to formulate the following hypothesis:

H4: The rationalisation of fraudulent actions produces a significant positive impact on financial fraud in the context of the UK retail sector.

3.5. Summary

This chapter has focused on analysing the global retail sector as well as the instances of fraud within the sector. Also, the chapter analysed prior research on the corporate governance principles that are implemented by firms around the world to prevent fraud. It focused on the

different kinds of mechanisms that are used by firms and analysed the effectiveness of these structures. It was evident that a number of previous studies have been undertaken in the context of corporate governance, and these studies have analysed all the aspects of the corporate governance frameworks that are commonly used around the world (Admati, 2017). Further, there have been various scholars who indicated that current corporate governance mechanisms do not suffice in minimising instances of unethical behaviour. In addition to this, the chapter also analysed the previous literature on corporate governance principles in the context of corporate fraud. Further, the chapter also studied the prior studies on the topic of corporate governance being used to repair a firm's reputational damage after instances of fraud have taken place (Khanna et al., 2015). The primary finding of the analysis is that there is a significant amount of research that is present across industries and geographies in the context of corporate governance and its role in fraud risk mitigation. However, there is a dearth of research in the context of corporate governance principles followed by firms operating in a retail environment. This is because the context of retail is very different from other sectors since the industry is extremely fast-paced and depends on a large number of employees and vendors. Such internal and external stakeholders often have access to crucial insider data about the firm and its transactions, which can be exploited in order to execute fraud. Therefore, it is important that further research is conducted on corporate governance in the context of the retail sector.

In addition to this, the chapter has also reviewed the previous studies on the topic of non-conventional approaches that can be adopted by firms looking to combat instances of fraud. Further, it was observed that traditional approaches of corporate governance have failed to curb the instances of fraud and therefore, it is important to establish newer ways of dealing with corporate fraud. There have been various studies that have analysed newer approaches employed by firms around the world, such as Big Data Analytics, Machine Learning, and Artificial Intelligence (Cross and Kelly, 2016). It has been observed that more and more firms around the world are adopting non-conventional methods to combat fraud that are distinctly separate from accounting and regulatory-based approaches (Aithal, 2016). Since there have been no significant studies specifically investigating the factor of financial fraud in the retail sector, it is important to fill in this gap and explore this industry in more detail in this thesis. It is evident that there is a need to conduct more analysis of non-traditional fraud prevention and detection techniques in the retail industry. Further, it is critical that the current corporate and technological environment is taken into account while studying the topic of fraud management. With the advent of technologies, there is a possibility that even more advanced

fraud prevention mechanisms have been developed. Research is needed in order to assess and certify whether fraud prevention techniques can be improved even further.

The next chapter will focus on the key methodologies that will be used as part of this study. In order to achieve this, the chapter will begin by enlisting the key research questions that have been identified for this study. Further, it will enlist the research instruments that will be employed by the study in order to execute the analysis. It will also analyse the data sources that will be used in order to identify the best non-traditional mechanisms that can be used to prevent and detect fraud in the retail sector. In addition to this, the chapter will also define the data analysis techniques that will be used in order to arrive at the results. Further, the chapter will also enlist the key limitations and considerations of the research methodology. Finally, the chapter will focus on the key advantages of the methodology that has been employed.

Chapter Four: Methodology and Methods

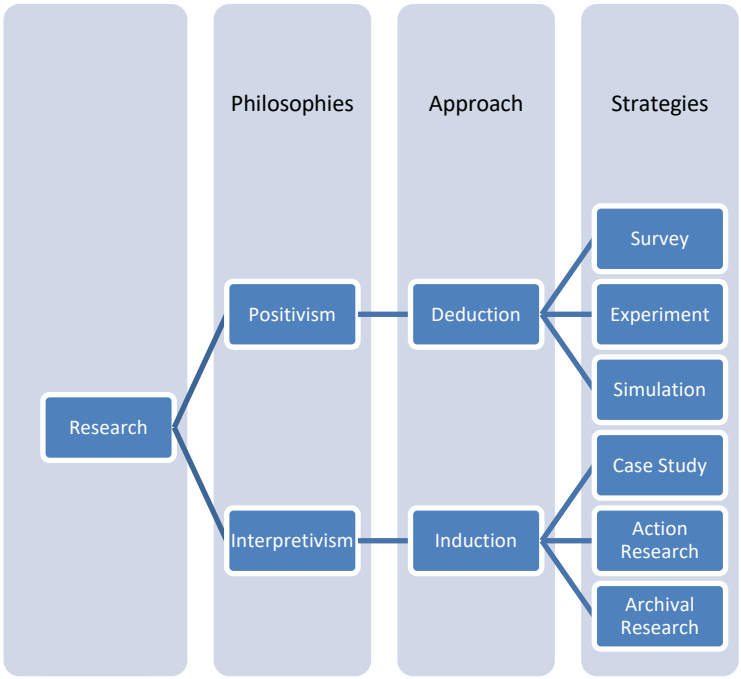
4.1. Introduction

This chapter has the purpose of explaining what type of data is used in the research to investigate the cases of fraud in the retail industry and how to prevent it. The chapter also discusses the methods by which the data is transformed and analysed. The research adopted a mixed-method research design, which implies a combination of quantitative and qualitative methods of analysis. The study used a semi-structured survey and interviews to collect primary data from stakeholders in the UK retail industry. The analysis is conducted in SPSS, and the research design is consistent with the deductive approach to exploring the studied phenomenon. The design of the study is rooted in the philosophical stance of positivism, which in turn helps to develop the optimal research strategy. Building on and improving similar studies in the context of other industries and cross-industry studies, this thesis provides a triangulation by sources and methods. Triangulation by sources is achieved by collecting primary data from both the questionnaire survey and semi-structured interviews. Triangulation by methods is attained by mixing quantitative and qualitative methods of analysis and using a combination of statistical techniques that include frequency tables analysis, regression analysis and structural equation modelling (SEM). Since the research is concerned with primary data analysis, this chapter also presents an evaluation of the major ethical issues considered. Lastly, the chapter outlines the limitations of the chosen methodology.

4.2. Research Design

The main elements of research design include the philosophical stance of the research, the approach to the study, the strategy adopted by the researcher, the type of data used and the type of methods employed for data analysis (Saunders et al., 2015). The philosophical position adopted by the researcher also determines the choice of approaches and strategies for the study. This can be schematically presented in the following diagram.

Figure 7 Research Design



Source: Saunders et al. (2015)

The following subsections discuss each element of the research design in more detail.

4.2.1. Philosophical Stance

Before determining a choice strategy, it is important to consider from which philosophical stance the research is conducted. Positivist philosophy asserts that reality and all matter exist independent of observers. In other words, new knowledge is not created or made up – it is discovered. Hence, new knowledge is something that has always been there but has not been known until discovery. Therefore, when new knowledge is discovered, it is put to scientific testing and doubts. Once the new knowledge is proven, it is accepted as reality. For this reason, positivist philosophy is the foundation of science (Alharahsheh and Pius, 2020). However, its application in social sciences has especially been a matter of debate.

An alternative to the positivist philosophy is interpretivism. This stance suggests that all reality exists in the minds of observers. If there is no observer, there is no reality. Hence, different things have different meanings for people and are interpreted in various ways. As a result, the interpretive philosophy does not see any value in testing hypotheses. In contrast, such researchers are concerned with making observations and giving their interpretation in particular contexts. Therefore, the strategies adopted by interpretive researchers are usually based on qualitative data analysis, whereas positivist researchers generally work with quantitative or quantified data using scientific methods (Thanh and Thanh, 2015).

Since this study has used the Fraud Triangle as the theoretical foundation and deduced hypotheses based on this theory and supported by previous empirical evidence in order to test them in a new context, the positivist stance appears to be more appropriate as the dominant research paradigm. The choice of positivism can be explained by several arguments. The first argument relates to the axiological stance. Axiology is the study of the contribution of researcher values to the research. A study can be conducted in a value-free manner when the research is not attached to the subject and does not interfere with the studied phenomenon, and does not express their own biased opinions. A value-free approach suggests that the researcher is an observer who is independent of the researched field or participants in the research and is ready to make objective comments about the findings regardless of whether or not they agree with the initial expectations. This type of axiological approach is especially important when the research has the purpose of investigating fraud detection and fraud prevention mechanisms in the whole retail industry. When it comes to generalisations, the value-free axiological approach, which agrees with the philosophy of positivism, is the ultimate choice (Saunders et al., 2018).

The second argument in favour of positivism relates to the field of epistemology, which is the study of knowledge and what makes knowledge acceptable or non-acceptable in specific contexts. In order for the findings of the research to be accepted by the broader society, it needs to be ensured that people agree on the methods that can help prove particular knowledge or hypotheses. If people do not agree on the methods and their validity, they will not be convinced that the findings are true, even if the researcher claims they are true. The philosophical position of positivism resolves this issue of trust between the researcher and the audience by promoting scientific methods that rely on observations that can be measured consistently in the same way by any researcher and replicability of the research. The latter implies that even if the initial inputs are given to a different researcher, he or she will arrive at exactly the same results if the same data and the same methods are used. However, it is also valid to note that the constructs of the Fraud Triangle, such as the Rationalisation dimension, interlink with ethical and behavioural aspects of fraud, which can be subject to different interpretations, as seen from the Perception Theory. Both fraudsters and external stakeholders can have different rationalisations for their actions. Therefore, it is important to allow for a combination of the elements of interpretivism with positivism in order to paint a holistic picture of financial fraud. Such an idea of combining two paradigms was previously expressed by Burrell and Morgan (2017) and is currently reflected in the pragmatic and post-positivist stance on attaining knowledge (Saunders et al., 2018).

4.2.2. Deductive vs Inductive Approach

The choice of the philosophical stance adopted in the research determines the choice of approach that should be taken to investigate the mechanisms of fraud prevention and detection. The two main approaches available are deduction and induction. The deductive approach is associated with the scientific method and implies taking a theory, formulation of research hypotheses based on the theory, and testing the hypotheses in a specific context. Thus, it is a general-to-specific approach, as described by Saunders et al. (2018). In this study, the general theory used as a foundation of the study is the Fraud Triangle reviewed in the previous chapter. Based on this theory, research hypotheses have been formulated. Finally, these research hypotheses are tested in the specific context of the UK retail industry.

The deductive approach is most closely associated with the chosen philosophy of positivism, and therefore it is preferred as an optimal approach for this study (Saunders et al., 2018). Even though empirical studies often use a combination of deduction and induction (Awuzie and McDermott, 2017; Hurley et al., 2021), there are several reasons why a greater focus has been shifted to deduction in this thesis. First, the inductive approach would have been better if there had been no theory available and observations had to be made in order to develop a new theory. In this case, the inductive approach would be specific to general inquiry. Since a general theory has already been developed and is available for this research, there is no need to create a new theory, but there is a need to test the existing theory in a new context, which has not been researched and which allows for making a significant empirical contribution to knowledge. Therefore, the deductive approach is more suitable for this study than the inductive approach.

The second reason for using induction to a greater extent than induction is that the former stipulates the use of highly structured research, which can be easily replicated by other scholars in the field given the same inputs that are at the disposal of the researcher. This would ensure that the findings attained in the study are scientific and can be trusted by the audience.

Third, the inductive approach is more often associated with qualitative research design, whereas this thesis has both quantitative and qualitative data, but the main testing is performed using quantitative data. The deductive approach typically implies the use of quantitative data, but it can also work with both qualitative and quantitative data. Since the deduction is better suited for the research purpose and allows for more effective attainment of

the research objectives, it has been preferred to the alternative inductive approach in this study.

4.2.3. Research Strategy

There are many research strategies available. They include a survey, experiment, simulation, case study, action research, and archival research, among others. This section of the methodology chapter provides justification for the choice of the survey strategy adopted in this study and answers the question of why it has been preferred to the other alternatives.

A survey is a research strategy that implies targeting respondents and asking them questions related to the studied research phenomenon. Thus, the main characteristic of this strategy is that it works with primary data. Since primary data has been chosen in this study as the main source of information, the choice of the survey strategy appears to be suitable. The main advantage of the survey strategy is that it can be tailored specifically for the purpose of the research, as respondents can be asked unique questions that secondary data could not provide. However, the main limitation of the survey strategy is that it can be associated with participant bias and ethical issues that have to be considered by the researcher.

Quantitative studies conducted using the deductive approach and from the viewpoint of the philosophy of positivism can also implement the strategy of experiment or simulation. An experiment implies taking a treatment group whose behaviour is being studied and compared the observations attained to the control group. It can be argued that if the respondents targeted for the research could be divided into two groups, such as those who personally committed fraud and those who did not, the strategy of the experiment could have been used. However, asking the respondents whether or not they personally committed financial fraud did not appear as an ethical question, and therefore, it was decided to ask the respondents whether or not their companies were ever involved in the accusation of corporate fraud. As such, it was not intended to compare different groups of respondents, but it rather sought to find the attitude of the contacted managers from the UK retail industry to fraud detection mechanisms and fraud prevention. Therefore, a survey appeared to be a more suitable research strategy for the study.

The choice of another quantitative research strategy, namely: simulation, has also been rejected in this study because simulations are based on a prediction of future outcomes based on specific predetermined parameters. Since the research purpose was to investigate the fraud

detection mechanisms using historical evidence from the UK retain industry, the simulation did not appear to be a viable strategy as it would pay little consideration to the past.

Qualitative research strategies such as case studies, action research, and archival research have also been rejected in this thesis. A case study has been rejected because such a strategy implies focusing on a single company and making an in-depth qualitative investigation. Even though the depth of the analysis could have been deeper, it would be impossible to generalise the findings and apply the knowledge to the rest of the retail industry, as a case study is usually not representative. It can be argued that this research strategy is best fit for studying unique companies or unique phenomena that do not require generalisation but are interesting on their own. If such unique cases were included in a large sample, they would have often been considered outliers and excluded because the methods and strategies that aim at generalisation do not favour the inclusion of unique or original cases that stand out significantly from the rest of the sample. Since the purpose of this thesis is to investigate the mechanisms of fraud detection and fraud prevention in the whole retail industry in the UK, the case study strategy is not suitable for this purpose.

An action research strategy is another qualitative strategy that implies the personal involvement of the researcher in the studied phenomenon. For example, if the topic is fraud detection and prevention, action research would mean that the researcher would have to be employed as a forensic accountant and investigate the cases of fraud from within the companies. Alternatively, the researcher could have been employed part-time to understand the business and how corporate fraud could occur. In both cases, action research requires the deep involvement of the researcher, which strongly contradicts the philosophical stance of positivism and its value-free axiology. Hence, no statistical analysis would be possible with the action research as the results would be biased. Furthermore, similar to the case study strategy, the action researcher strategy could have been best suited for either unique cases or the companies in which the researcher is employed. In both situations, the main limitation of the action research similar to the case study strategy is the small sample size and the lack of generalisation ability. For this research, this strategy has also been rejected, and the survey has been favoured.

Among the alternative strategies, not all of them tend to focus on small samples. There is archival research that does not require access to primary data, and it can provide an analysis of a large sample. The main characteristic of archival research is that it focuses on the collection and assessment of a large number of documents and historical evidence to make a final conclusion and judgement. It can be argued that this strategy is common in legal studies.

It could also be applied to the case of fraud detection and fraud detection. A strength of this strategy would have been the ability to survey all possible instances of corporate fraud that took place in the retail industry in the UK. However, this strategy has not been selected due to several weaknesses and limitations. In particular, there is no reliable and accessible sampling frame with the required documentation to find all instances of corporate fraud in the retail industry in the UK. Hence, findings of good-quality secondary data would have been an issue. Furthermore, a limitation of this strategy is that it works poorly with statistical analysis and assessment of quantitative data. This is mostly a qualitative research strategy, which puts a limitation on this research. Finally, the archival research strategy is focused on the past and history rather than the present and future, which is good for historical research but not as good for forward-looking research that seeks implications for the future. Since archival research does not imply the collection of primary data from experts in the field, it is difficult to use this strategy to uncover current issues in the field of fraud detection and prevention. For these reasons, this research strategy has been rejected in the case of this thesis, and the alternative survey strategy has been selected as the ultimate option for the research strategy.

The choice of the survey strategy is also justified by the fact that one of the most popular strategies adopted in past studies to explore fraud. This was, for example, done by Lin et al. (2015), who explored the three factors of the Fraud Triangle using a combination of secondary data and primary data collected from experts. However, the secondary data had severe limitations, such as a representation of the Pressure factors by negative cash flows and declines in profitability. While deteriorations in financial performance can put pressure on managers to get involved in fraud, it is important to link their personal welfare with the performance of the companies they manage before adopting such proxies. For this reason, primary data is often more advantageous as it allows for capturing the personal pressures of managers.

4.2.4. Qualitative, Quantitative and Mixed Method Research Design

The research methods that can be adopted in a study are generally divided into qualitative and quantitative, depending on what type of data they deal with. In particular, quantitative methods deal with the variables represented by numbers and measured on a ratio scale. By contrast, qualitative methods are used with qualitative data, which is often represented by textual, audio or visual information (Saunders et al., 2015). Sometimes, the qualitative data can be quantified in order to facilitate analysis. This quantification results in the creation of

categorical variables, such as the dummy variables and interval variables, such as the Likert scale measures. In this case, originally, qualitative data can be analysed using quantitative methods of data analysis.

Most studies have either a qualitative research design or a quantitative research design. However, the popularity of the mixed-methods approach, which combines qualitative and quantitative data and data collection techniques, has been on the rise recently. The qualitative research design implies not only the use of qualitative data such as text, visuals and sounds to address the aim and objectives of the research. This design also implies the use of qualitative methods of analysis, such as thematic analysis and systematic literature review, among others. Qualitative thematic analysis is often applied to interviews or text assessments. The main idea of qualitative thematic analysis is to read texts or transcripts and identify common themes and patterns in responses to formulate more general ideas from specific observations. A systematic literature review is another popular method of qualitative data analysis that, in contrast to the traditional literature review, focuses on specific search criteria and search strategies used in the identification of empirical studies that are included in the research or excluded from the research. While a traditional literature review can be compared to a convenience sampling in primary data collection when the researcher gathers the articles that are most relevant according to his or her point of view, a systematic literature review is stricter and value-free, suggesting that instead of using the researcher judgement, specific phrases and words combinations are used to retrieve all literature from the sampling frame such as a database to make a review. This eliminates a potential bias associated with the researcher.

A quantitative research design implies the collection of quantitative data and applying quantitative methods of data analysis. Quantitative data is represented by numbers, and therefore it can be both secondary, such as the data retrieved from statistical databases, and primary, such as the data collected by a survey. The most typical quantitative methods of data analysis are univariate analysis and multivariate analysis. The former is applied to time-series or single variables and involves the methods such as unit root tests, autoregressive models, and volatility models, among others. The multivariate analysis includes the techniques such as regression analysis, correlation analysis, structural equation modelling, and factor analysis, among others.

A mixed-method research design involves a combination of both qualitative and quantitative data and a combination of qualitative and quantitative methods of analysis. The research employs a mixed-method approach, which has advantages over mono-method studies that

rely only on qualitative or only on quantitative data and data analysis techniques (Saunders et al., 2009). A mixed-method study employs a combination of qualitative and quantitative data and methods to achieve the research aim. This is often needed for several reasons. The first reason is reliability, which can be achieved by triangulation. When the data is collected from different sources and analysed by more than one method, it is possible to check the consistency of answers and ensure greater validity of results. The second reason is the complexity of the research aim and objectives and the impossibility of attaining them with a single method. Since this study aims to uncover the main factors that predict corporate fraud in the context of the UK retail industry and recommend effective measures that can help detect and prevent this fraud, a mono-method design would be less effective. The main reason for this is that recommendations on effective measures can be made based on qualitative information provided by experts, whereas the statistical significance of the factors of corporate fraud in the retail sector can be detected only using quantitative data. Otherwise, it would be difficult to generalise these factors and apply them to a broader population. The questionnaire contained in Appendix B shows a mix of questions that imply quantitative responses coded using the Likert scale in Part I-III and qualitative responses in Part IV of the questionnaire that is provided in relation to the open-ended questions.

In light of the mixed-methods approach, each method tackles specific research objectives set out in the Introduction chapter. In particular, the research objectives that target the effects of individual elements of the Fraud Triangle on the probability of fraud occurrences, such as pressure, opportunities and rationalisation, are tackled by the survey strategy and the methods of regression analysis and structural equation modelling (SEM) applied to the primary quantitative data retrieved from the questionnaires. These methods are used to test the effectiveness of internal control in predicting the probability of corporate fraud, the effectiveness of the internal audit committee, the effect of external audit on the prevention of fraud in the UK retail sector, the influence of technological factors in facilitating effective fraud detection and prevention in the context of the UK retail industry, the role of monetary incentives in the prevention of corporate fraud in the UK retail sector. The main reason why the survey strategy is considered an optimal strategy to tackle these objectives is that all these objectives deal with the estimation of the effects, which implies establishing a statistical relationship between two or more variables. In order to examine whether the effects are both economically meaningful and statistically significant, it is important to apply formal testing and examine the degree of the effect and whether it deviates from zero consistently.

Qualitative methods, including alternative methods of data collection such as interviews or focus groups, will not be able to establish the significance of the effects, but they are able to address the part of the research aim, which deals with making recommendations for future fraud prevention. If only the qualitative research design was used, the research objectives set out in the Introduction chapter would be difficult to attain. Even if individual respondents provided qualitative information in interviews, this information would be difficult to generalise and apply to other contexts or the rest of the population of retail companies in the UK. However, interviews are useful in the case of this research as support instruments to elaborate on quantitative responses already given. Thus, the survey method helps to test the effects and relationships between the individual elements of the Fraud Triangle and the probability of fraud, whereas interviews facilitate the interpretation of results, as they shed more light and provide more details. Interviews are also useful for addressing the recommendations of this research. Once the objectives have been reached, it is important to make recommendations for practitioners and future researchers. In regards to practitioners, the best advice can come from people that work in the same field and that faced similar problems. Therefore, qualitative data from the interviews can help make the final recommendations in this research study and thus address the second part of the main research aim. The first part of the aim deals with the assessment of the main determinants of corporate fraud, whereas the second part is concerned with recommendations for the prevention of fraud. Thus, the first part of the aim is best to be addressed using the quantitative survey strategy, and the second part of the aim is better tackled through qualitative interviews with experts. It is also valid to note that in the mixed-method approach, the qualitative data and methods are strongly linked to the quantitative data and methods used in the study. The integration of these different types of data and methods is achieved by including qualitative responses as a separate section of the mostly quantitative questionnaire. This ensures that the same respondents who provided quantitative answers also respond to the open-ended questions in Part IV and provide qualitative data. These types of data are also connected since the same respondents provide information on fraud detection mechanisms and then make their recommendations on fraud prevention.

This thesis employs both qualitative and quantitative data as the survey allows for obtaining numerical and textual information from respondents using closed-ended questions. Open-ended questions were also used in the questionnaire design, but they were marked as optional. While open-ended questions may provide more in-depth information, participants in the survey often want to complete it quickly. Thus, many respondents skip open-ended questions

where they need to elaborate. If these questions were not set as optional, many questionnaires might not be turned in. The number and percentage of all respondents who provided answers to the open-ended qualitative questions are summarised in the following table.

Table 1Percentage of Valid Responses to Open-Ended Questions

Question	Responses to Qualitative Open-Ended Questions	Total	Percentage of Valid Open-Ended Responses
32	47	106	44.3%
33	42	106	39.6%
34	40	106	37.7%
35	44	106	41.5%
36	37	106	34.9%
37	37	106	34.9%

As can be seen, 35% to 44% of respondents provided at least one answer to the open-ended questions. The majority of the sample skipped these questions. Nevertheless, since the number of responses for open-ended questions variables from 37 to 47, they can still provide useful and meaningful information to enrich the findings from the survey.

The main reason for choosing data combination of qualitative and quantitative data in this survey is that the elements of the Fraud Triangle, which is used as the main theory that backs up this study, are originally qualitative in nature, but they can also be quantified and measured. Even though some of the studies, such as Lin et al. (2015), attempted to use quantitative proxies such as profitability measures and gearing ratios, these indicators lacked unique applicability to the cases of fraud and were rather general. In other words, these same variables could be, with the same level of success, used in studies not related to fraud. Moreover, according to Yin (2009) and Bryman and Bell (2012), qualitative data allows for greater depth of investigation and allows researchers to generate richer insight into the studied problem. When needed, the qualitative data can be quantified and analysed statistically. Thus, this does not limit the array of potential instruments for studying the factors of fraud.

Data is divided not only into quantitative and qualitative but also into primary and secondary. The primary data are the ones collected exclusively for particular research. This data must be new and have never been used before. Most often, primary data is collected through surveys, interviews and focus groups. However, there are some research types that require experimental data and data collected from action research. The main distinguishing feature of secondary data is that it was compiled originally for purposes other than the particular research which uses the data. The main limitation of secondary data is that such data are less

customised towards particular research needs. Since the data was originally compiled and published for other purposes, researchers have less flexibility and have to accept the data as is. While in some situations, the such universal purpose of secondary data might be alright, in other cases, unique data is required. This is when primary data becomes useful. This uniqueness is the strongest advantage of the primary data. However, primary data also has limitations. The major limitation is the presence of potential bias on the participants' size. Depending on the questions, respondents can provide true answers or misleading answers. It is the duty of the researcher to conduct a reliability analysis to determine the internal consistency of responses and minimize this bias. Another limitation of the primary data is that it may be more difficult to collect as the researcher would have to approach respondents physically. In many cases, the potential respondents would not be willing to participate, and traditionally the response rate is quite low in surveys. On the other hand, the choice of primary data offers many advantages. First, the researcher can devise unique questions that will specifically target the areas required for the study. Second, the researcher can go into more detail and depth, asking for clarifications. This is especially relevant in cases of interviews. Thirdly, the primary data would also be more relevant and up-to-date, considering that the survey is recent. For these reasons, and because there is a lack of appropriate secondary data on the topic, this thesis employs primary data for the investigation of fraud in the retail industry in the UK.

The main research question being asked by this study is how to enhance the prevention of fraudulent financial practices in the UK retail industry. In order to answer this question, it is important to investigate why fraud occurs and what factors are responsible for the occurrence of fraud. Then, it is important to investigate how the fraud is detected and how this detection can be improved. Finally, it is important to provide recommendations on how to devise prevention mechanisms that will help not only detect but to prevent future occurrences of fraud based on the factors investigated in the research.

The research methods chosen for this study, namely the use of the primary data collected by means of a survey, quantification of primary data and application of statistical analysis, help to answer the research question. In particular, statistical analysis based on the deductive approach allows for testing the statistical significance of the factors of fraud. Hence, it helps in assessing the strength of the factors and how well they fit the Fraud Triangle used as the cornerstone of the theoretical framework of this research. Qualitative methods alone would result in a potentially smaller sample size and less effective testing. The choice of the survey is preferred for collecting primary data in this research for several reasons. First, the survey

strategy allows for a more efficient collection of many responses through a single structured questionnaire distributed online. In contrast, in order to collect responses by means of interviews, personal contact needs to be established with each respondent. This is more time-consuming, and many potential respondents do not have sufficient time to participate in an interview, whereas they can agree to spend less time and fill in the questionnaire. Second, questionnaires are structured, and therefore, the data collected through the survey can be quantified and used in statistical analysis, whereas the data collected from interviews is less structured, and it will be much more difficult to align the answers and even more difficult to quantify them. Therefore, the responses from the interviews are best to be analysed using qualitative methods such as thematic analysis, whereas the results from the survey are best to be analysed using statistical methods.

Since interviews are more difficult to arrange and the refusal rate tends to be higher than in the survey, the interview method has been considered an optional method of data collection that can be used to augment the results from the survey. Since it is optional, the research must be self-sufficient with the survey alone, but if respondents agree on an interview, the data collected from the interviews should allow for a greater depth of responses. The same potential respondents who participated in the survey were offered to participate in an interview after completing the survey, but no one agreed on the follow-up interviews due to their busyness. However, personal contacts have been used to find additional participants for the interviews who did not take part in the survey. The procedure for data collection is discussed in the next section.

4.3. Data Collection and Sampling

4.3.1. Data Collection

This research is based on primary data collection. This is because there is not enough secondary data to study all three elements of the fraud triangle in the context of the UK retail industry. Moreover, insights from the retail industry insiders will help to make the study more unique compared to previous literature that used the survey strategy in the context of other industry segments, predominantly the financial sector. In order to get access to primary data, managers from UK retail companies have been contacted with a request to participate in the survey and potentially in a follow-up interview to discuss more details that a questionnaire cannot fully reveal. It is valid to note, at this point, that the target companies were not limited to those that recorded cases of corporate fraud. Since this information is not known in advance and since the dependent variable in the study is represented by a dummy variable

indicator of whether the company committed fraud or not, the sample needs to include both fraud-committing firms and clean firms. The ratio of these firms is not known in advance, and this is a positive factor since this ensures that both types of firms are selected randomly without any prior knowledge in advance. This approach was also chosen by Skousen et al. (2009), who took samples of both fraudulent and clean companies in order to apply the Fraud Triangle framework to fraud detection and prevention in corporations.

The first step of any research that uses the survey method is to design a list of questions for the questionnaire. The next step is to search for a few representative target participants and conduct a pilot study. After this, the questionnaire is amended in line with the feedback and preliminary results. This is followed by searching for a larger target sample and distributing the questionnaire to more participants.

There are two ways to contact the managers. The first one is to search for a list of retail companies, find out the names and contact details of managers of these companies, call them or email them (depending on what contact details have been uncovered) and request to participate in the survey. The second way is to use panel companies that specialise in producing surveys. These companies have a large number of connections to individuals from various countries and from various backgrounds and industries. These individuals voluntarily participate in surveys. Some panel companies provide compensation for this. Other panel companies market this service as a charity. Since the use of panel companies did not allow for narrowing down the target participants to managers from UK retail companies, it has been decided to search for the potential participants manually on LinkedIn.

A downside of using panel companies to do the survey is that they charge for delivering the questionnaire to respondents. Another limitation of this strategy is that it would be impossible to contact some of the respondents for a follow-up interview. However, the benefit of this strategy is that the responses are collected relatively quickly. For example, using a trial version of SurveyMonkey, it was discovered that 200 responses from senior and middle managers in the retail industry in the UK could be collected within three days. This method could be used as a backup strategy for obtaining responses in case a high refusal rate is encountered in the survey. However, there is no way to prove the authenticity of the responses and the contact details of the respondents if they are provided by a panel company. This is another reason why the use of the panel company services was rejected as an option in this research.

If panel companies are not used, managers of retail companies have to be approached individually. It is also important to determine the population and sampling frame from which

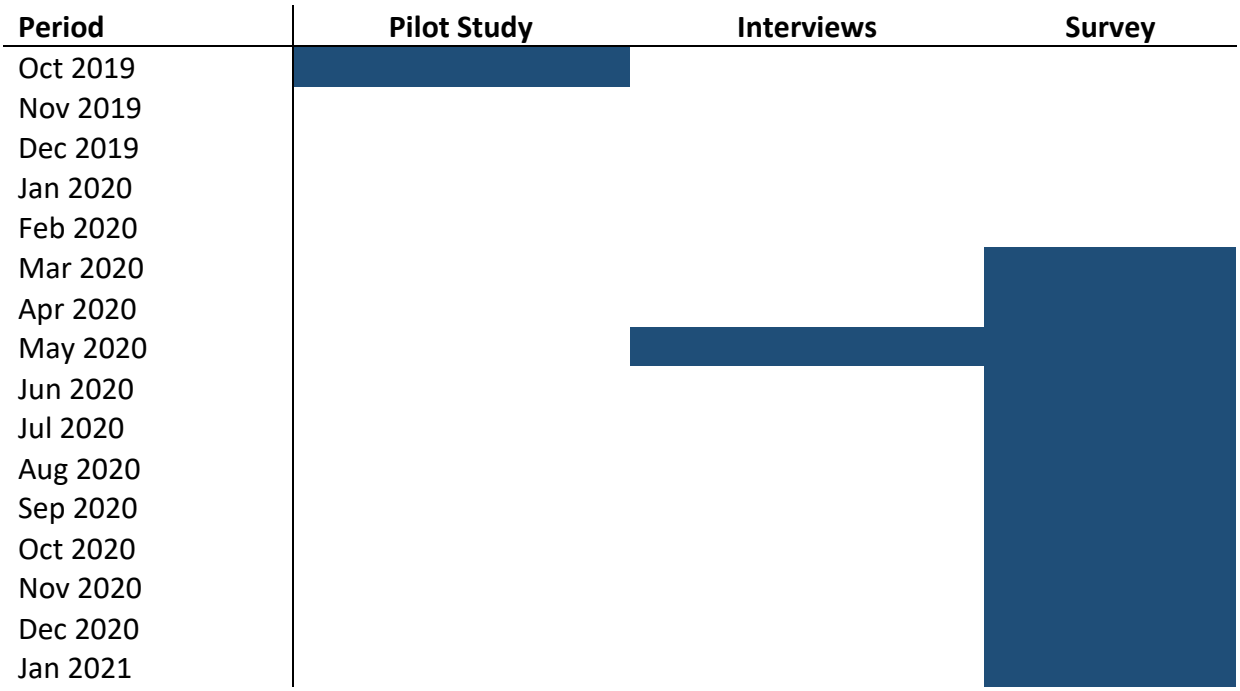
the respondents will be gathered. The sample of companies from which managers have been drawn includes both traditional retailers and online retailers of small, medium and large sizes. According to Rhodes (2018), there were 319,000 retail companies of various sizes in the UK in 2018. Hence, the total population is represented by these 319000 companies. However, due to restrictions such as time and inability to get access, only a relatively small sample out of this population is chosen. This is also explained by such factors as the disclosure of information. Smaller retailers do not disclose the names of their managers and their contact details. Therefore, the sample is skewed towards the medium and large companies where more information is available.

The questionnaires were distributed as a part of the survey strategy first, and interviews were conducted after the pilot study. The distribution of the questionnaires was preceded by the search for potential respondents on LinkedIn and communication with them via invitation and internal messaging. An example of communication with respondents and the search strategy is provided in Appendix C. In the course of the survey, 972 people accepted the invitation to become a part of my network on social media and share their contact details (Appendix C).

Each target respondent was sent a link to the survey questionnaire uploaded to Survey Monkey. Some respondents sent a short confirmation, such as “Done”, when they completed the questionnaire, and others asked additional questions, such as “could you tell me more about your research?”. Others gave me advice on how to attract more people on LinkedIn to take part in the survey. Business owners wanted a favour in return, such as giving a five-star rating to their company on google. This applied only to small firms. In fact, managers of large corporations, such as Tesco, Sainsbury, and Coop, were less willing to take part in the questionnaire. However, respondents from large companies were also present in the study. Some research participants even offered help in collecting responses. For example, one of the contacts suggested that they could send the link to the questionnaire to several friends of his who work in the retail industry. Thus, even though no direct contact with them was established, they contributed with a few responses. However, the majority of the respondents were contacted directly, and a brief communication was arranged on the LinkedIn messaging system.

The survey and interviews were conducted sequentially, as shown in the following Gantt chart.

Figure 8 Stages of Primary Data Collection



First, a pilot study for the questionnaire was arranged and conducted in October 2019. Second, the full-scale survey was started in March 2020 and lasted until January 2021. The survey took such a long time because of the extremely low response rate among the targeted managers. The response rate constituted only 3.5%, and before a respondent agreed to participate, individual communication had to be performed via social media messaging explaining to the respondents why this survey was needed and how the data they provide will be used. While about a third of the survey had been completed and no follow-up arrangements for interviews could be achieved due to the busyness of respondents, five interviews were conducted over the phone with personal contacts recommended by mutual friends in the period from the 14th of May 2020 to the 18th of May 2020. The details of the five interviewees are summarised in the following table.

Table 2 Background of Interviewees

Interview	Length	How was it conducted	Was it recorded	Job position
1	20 minutes	Phone	No	Head of Delivery
2	20 minutes	Phone	No	Regional manager
3	15 minutes	Phone	No	Area manager
4	15 minutes	Phone	No	Supply chain manager
5	20 minutes	Phone	No	Business development manager

Each interview was conducted over the phone and lasted from 15 to 20 minutes. Notes have been taken to demonstrate the themes and questions discussed.

Since the number of interviews was small, and they were not conducted with random respondents but rather with recommended contacts, they are considered a part of the Pilot Study, which preceded the survey. After 11 months of the survey data collection and obtaining 106 respondents on LinkedIn, more attempts were made to arrange follow-up interviews with some of these respondents who filled in the questionnaire. However, none of them agreed, as they were too busy. Therefore, the interviews are limited to those conducted following the Pilot Study during the 14th- 18th May 2020, when the main survey had already begun but not ended, as the final 106 responses were obtained only by January 2021.

This implies that the dominant strategy is the survey, whereas interviews are a supportive method implemented to enhance the results from the survey and make the information obtained in the course of the study more detailed. Structured questionnaires used in the survey provide an opportunity for the researcher to apply statistical models and observe patterns in data. The survey strategy allows for addressing all research objectives set out in the introduction, but the semi-structured interviews with open questions and more elaborated answers allow for examining the depth of responses and obtaining more details from the participants in the research, which is a useful support function that can augment the results.

4.3.2. Sampling

Sampling techniques are generally divided into two broad categories. The first one is known as probability sampling. This group is also known as random sampling. The main characteristic of this technique for data sampling is that each individual observation has the same probability of being taken out of the sampling frame or population as other observations. In other words, the selection of observations happens randomly without any pattern (Pace, 2021). This type of sampling is often useful in social studies, where it is important to make observations for a small group of people and make generalisations about the whole population.

Another type of sampling is called non-probability sampling. This is a broad category of sampling techniques with a common feature that different observations have a different probability of being selected from the population or the sampling frame. Thus, the selection of such samples based on certain features, characteristics, or traits is very common. The main limitation of this type of sampling compared to random sampling is that the former is generally not suited for the effective generalisation of results. However, the main advantage

of non-probability sampling is that it often solves the problem of data availability and data accessibility (Berndt, 2020). In order to produce a random sample, the researcher must be able to have potential access to the whole population or know the features of the whole population. In reality, this is often not feasible and not possible. Therefore, non-probability sampling is often used.

This non-probability sampling method has different sub-types, among which the most popular ones are the snowball sampling and convenience sampling techniques. The snowball sampling method implies that initially, a small set of respondents is targeted. Then, each respondent is asked to bring in more respondents, thus creating a snowball effect. This particular technique has certain advantages for researchers, such as it allows for delegating a part of the task to respondents. This also ensures that the sample size can be potentially larger than would be collected by the researcher on his or her own. However, the main drawback of this technique is that the responses could be potentially biased because some respondents know each other. Moreover, these results are quite difficult to generalise as with all non-probability sampling techniques (Saunders et al., 2018).

The convenience sampling technique, in contrast, is used to describe sampling procedures based on the use of search criteria that are convenient to the researcher (Emerson 2015). For example, these search criteria could include targeting only friends and relatives as they are easier to access. Thus, a distinguishing feature of this type of sampling is a compromise. Whoever is more convenient to approach will be selected for the survey. This technique is therefore associated with a strong limitation that the results of such surveys are impossible to generalise effectively.

In order to allow for the generalisation of results in this research, the sample must be randomly selected. However, the retail industry is broad, and certain criteria need to be used. Moreover, not all stakeholders in retail companies can be approached, as many of them will not have the required information. For this reason, only managers who have accounts on LinkedIn and who disclose their personal information have been targeted. The respondents who have already completed the questionnaire have been divided into three broad groups based on the business model of their company, namely: traditional retailers, online retailers, and mixed retailers, who have a presence both online and in physical shops. This division is possible as one of the survey questions asks the respondents to choose the business model of their company, whether it is based on physical outlets and stores, online sales, or mixed channels of product distribution. Considering a high refusal rate, the final sample is comprised of fewer respondents than planned. In order to obtain a target sample of 100+

managers, over 3,000 potential respondents have been contacted on LinkedIn, and more than 900 people accepted the invitation. Thus, the initial sample comprised 3,000 respondents, but since the response rate was relatively low, this initial sample shrank three times the original size, constituting those respondents who accepted the invitation on LinkedIn. Among these respondents, 106 managers completed the questionnaire that was shared with them via a link to Survey Monkey. Thus, in the course of the study, the target sample was reduced from 3,000 to 106 respondents resulting in a response rate of 3.5%. These respondents constitute a diverse set of business stakeholders ranging from general store managers to executives and business owners. The full list of the respondents' job positions is summarised in the frequencies table in Appendix E. Small retail business owners constitute around 10% of the final sample.

4.3.3. Credibility and Validity of the Sample

The data retrieved from the respondents using the Survey Monkey platform has a high level of credibility and can be used in research for several reasons. First, Survey Monkey is only a tool similar to Google Forms, which does not manipulate the responses but only provides convenient forms that respondents can fill in online. Second, Survey Monkey tracks respondents' IP addresses and allows for verifying the authenticity of individual responses using digital metadata such as the time it took the respondent to answer the questions, the IP address from which the responses were filled and even the location of the respondents, which can be identified by the IP addresses.

The primary data is retrieved from respondents in two stages. In the first stage, potential respondents are contacted and asked if they would be willing to participate in the research. A search using the LinkedIn social network is used to find managers in UK retail companies. Then, they are contacted via the internal messaging system on LinkedIn. Along with the initial message, a brief overview of the research is sent to them, and they are asked if they would be willing to contribute to the research by participating in the survey. Some respondents turned down the offer after seeing the questionnaire. Some of them ignored the request and did not respond. However, 106 managers agreed to participate in the survey. Traditionally, when a survey is arranged, some questionnaires could be usable, whereas others are scrapped because of missing responses or incomplete information or double entries, such as when more than one response is selected in multiple choice questions. All 106 were usable in this survey, and this was arranged by specifically designing the questionnaire on Survey Monkey using conditions that do not allow for submitting

incomplete questionnaires. For example, all close-ended questions were marked as mandatory, and questionnaires with missing values would not be processed by the system. Only open-ended questions were marked as optional in order to retain more responses. Since open-ended questions are not used in quantitative analysis but are only needed for elaboration, it was considered an acceptable sacrifice. Moreover, the questionnaires were not processed if respondents selected more than one entry. All these precautionary measures resulted in the collection of 106 fully usable questionnaires.

This final sample size requires validation. Previous studies tend to use either a rule of thumb suggesting that any sample size below 100 would be considered very poor and insufficient for quantitative analysis or the subject-to-item ratio to determine the optimal sample size (Osbourne and Costello, 2004). The subject-to-item ratio is the ratio of the number of respondents to the number of items on the scales developed for measuring the theoretical constructs. Excluding background and company information, there are 21 items that measure three theoretical constructs from the Fraud Triangle and the probability of fraud as the dependent variable. Hence, the subject-to-item ratio in this study as close to 5:

$$Subject\ to\ Item = \frac{Number\ of\ Respondents}{Number\ of\ Items} = \frac{106}{21} = 5.05$$

According to Hatcher (1994), in order to conduct quantitative analysis using structural equation modelling, the minimum acceptable sample size should be based on the subject-to-item ratio exceeding 5. This criterion has been met in this research. Furthermore, since the subject-to-item ratio is computed for each individual construct, this ratio is actually higher in this thesis. For example, the measurement of the Pressure construct was done using a three-item scale, which resulted in the subject-to-item ratio equal to 35. The Rationalisation construct was measured using a four-item scale, which resulted in a subject-to-item ratio equal to 26.5. The largest number of items was used to describe the Opportunity construct, namely: fourteen items. However, even in this case, the subject-to-response ratio is equal to 106/14 = 7.6, which is above the threshold recommended by Hatcher (1994). The summary statistics of the scale items measuring the three constructs of the Fraud Triangle are reported in the following table.

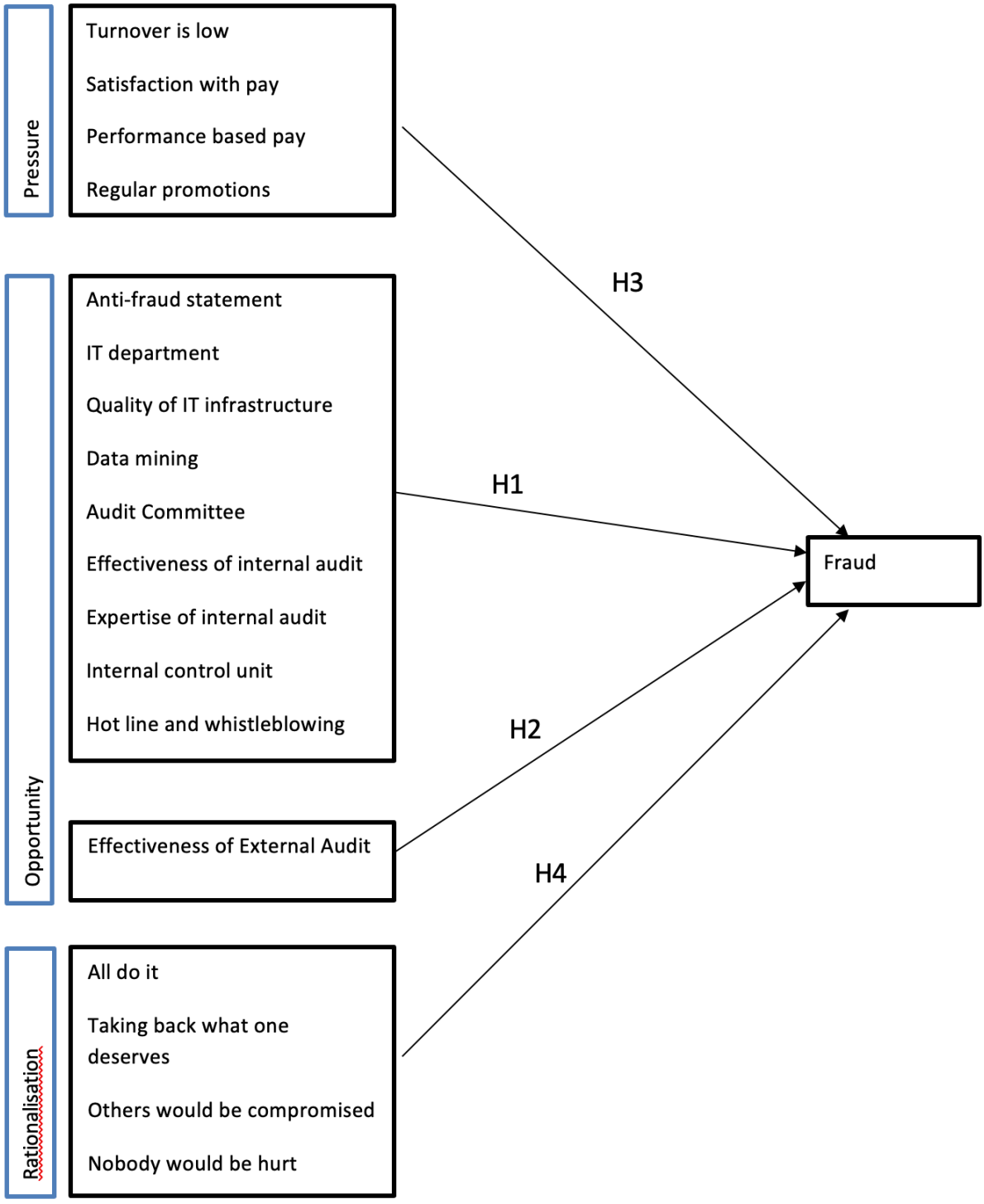
Table 3 Summary Statistics of Items Measuring Pressure, Opportunity and Rationalisation

	N	Minimum	Maximum	Mean	Std. Deviation
Turnover of managers is low	106	1	5	3.821	0.993
Managers do not complain about their pay	106	1	5	3.406	0.859
Share of performance-based bonuses	106	1	7	2.991	1.320
Regular promotions improve loyalty	106	1	5	4.000	1.042
The necessity to sign anti-fraud statements	106	1	3	1.717	0.582
Is there an IT department	106	1	2	1.915	0.280
Quality of IT infrastructure	106	1	5	4.264	0.796
Effectiveness of data mining	106	1	5	3.868	0.937
Presence of an audit committee	106	1	3	1.717	0.530
Effectiveness of internal audit committee	106	2	6	4.670	1.177
Accounting education and expertise in internal audit	106	1	4	2.708	0.915
Presence of internal control unit	106	1	4	1.877	0.658
Quality of the fraud monitoring	106	1	5	4.009	0.867
Effectiveness of external audit	106	1	5	3.943	0.944
Presence of a hot line	106	1	3	1.679	0.641
Monetary incentives for whistle blowing	106	1	3	1.293	0.676
'All people in managerial positions commit fraud; it is just not everyone is caught.'	106	1	5	1.519	0.842
Fraud can be justified if the company is not fair	106	1	5	1.547	0.758
Fraud can be justified if it is committed to protecting others	106	1	4	1.670	0.801
Fraud can be justified if it does not hurt others	106	1	4	1.434	0.704

These scales have been measured using items for which 106 responses were obtained. Since the incomplete questionnaires were discarded, the missing values are not present in the scale items.

The mapping of hypotheses to the theoretical constructs and individual variables is shown in the following figure.

Figure 9 Mapping of Research Hypotheses to Variables



During the process of primary data collection through the survey that lasted from March 2020 to January 2021, no follow-up interviews could be arranged with the same respondents that participated in the questionnaire survey. However, in the period from the 14th of May to the 18th of May 2020, five interviews were conducted over the phone with the managers of retail

stores who were personal contacts of mutual friends. The main reason for adding interviews to the research methods is that they are intended to add qualitative data to the research with deeper personal insights from respondents. These insights could be helpful in interpreting the results of quantitative data analysis. However, there are only five interviews arranged, and since they were conducted with different people than those who participated in the main survey, it was treated as a continuation of the pilot study, and no follow-up interviews were attained after completing the full survey, as the respondents ignored the offer to do a follow-up interview. On the other hand, the findings from the survey have provided quantifiable data that can be analysed statistically using SPSS. In fact, the main reason for choosing the structured questionnaire technique for collecting primary data is that this method allows for faster collection of data and obtaining more responses compared to interviews. The design of the questionnaires used is discussed in the next section.

4.4. Design of Questionnaires

A questionnaire can be designed using close-ended questions, open-ended questions or a combination of both. The questionnaire survey in this research uses both types as each one of them has its own advantages. For example, the main advantage of close-ended questions is that they can be quantified using a dummy variable or the Likert scale. Thus, such questions are used when quantitative analysis is required. The main advantage of open-ended questions is that they allow for deeper insight into the problem, as respondents are given the freedom to express their thoughts in a more elaborate way compared to close-ended questions. Yet, responses to open-ended questions are often difficult to categorise or quantify. One of the challenges faced in the empirical literature on fraud is how to measure the indicators and elements of the Fraud Triangle. Kuang and Lee (2017) suggest that fraud commitment is best represented by a dummy variable that would take the value of 1 for the years when the fraud occurred. In the same way, the variable of fraud detection is recommended to be measured by another dummy variable that takes the value of 1 for the year when the fraud was detected or when specific legal actions were taken (Kuang and Lee, 2017). However, such measures could fit well in longitudinal studies or panel data analysis. If a study is based on a cross-sectional survey of experts in the industry, the use of time dummy variables for representing fraud occurrence and fraud detection does not appear to be feasible or optimal. The only exception is if the sample is comprised of companies where fraud has occurred and companies where fraud has never occurred. Then, the use of a dummy variable in cross-sectional regressions would be feasible.

The questionnaires distributed to research participants follow a strict structure and are divided into several sections. Schematically, the structure of the questionnaire is as follows:

Part I. Background Information

Part II. Company Information

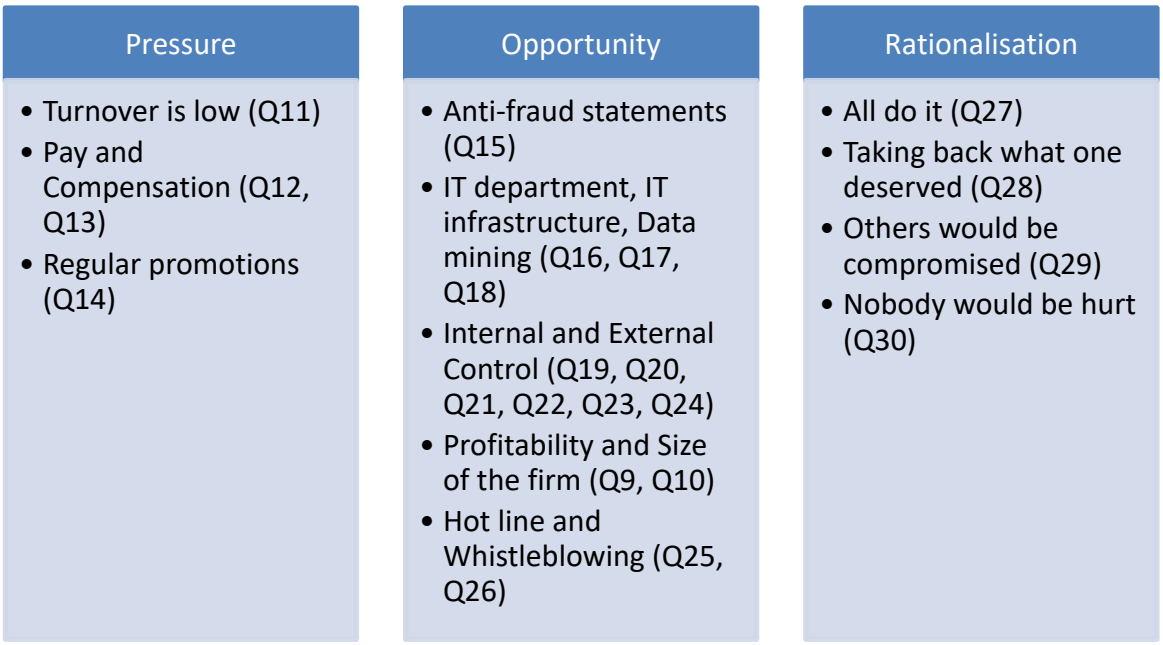
Part III. Fraud Detection and Fraud Prevention Mechanisms

Part IV. Enhancing the Prevention of Fraud

These sections are consistent with the research questions and aims. The background information on respondents, company information and the discussion of the new scale development are provided in Appendix D.

While Part I and Part II present background information on respondents and companies, respectively, starting from Part III, the questionnaire is structured based on the Fraud Triangle. Schematically, the structure of the questionnaire can be illustrated as follows:

Figure 10 Questionnaire Structure based on Fraud Triangle



The choice of the variables to describe pressure, opportunity and rationalisation in financial fraud have been made on the basis of previous empirical studies, which are mentioned in each of the following subsections.

4.4.1. Pressure Factors

Pressure factors represent key independent variables in this research that determine the probability of corporate fraud in the retail sector in the UK. These Pressure factors are broadly divided into several constructs such as "Danger of Job Loss", "Pay and Compensation", and "Glass ceiling; Desire to prove one's power; Competition; Peer

Pressure". The variable of Danger of Job Loss is based on a set of interviews conducted by Dellaportas (2012) with imprisoned accountants who were convicted of fraud. About fifty percent of the interviewees reported that job protection was a driving motive for committing fraud. In the questionnaire survey conducted for this thesis among managers of retail companies in the UK, the construct of "Danger of Job Loss" is represented by the question related to the turnover of managers. The question is formulated as follows: "Do you agree with the statement that managers are committed to their company in the long-term and do not tend to leave it (that is, the turnover of managers is low)?". The more committed the managers are, and the more entrenched they are in their positions, the more likely they are to protect their positions, even at the cost of corporate fraud. For example, poor financial results could threaten the position of the manager who was responsible for the poor performance. Therefore, if the manager is committed to his or her position and does not want to leave, he or she would be motivated to conceal poor performance to stay in their position. Thus, it is expected that there would be a positive association between low turnover of managers and the probability of committing fraud.

The variable of low pay has been chosen based on previous studies made by Albrecht et al. (2004), who found that corporate managers who had fewer monetary incentives to commit fraud due to the specifics of their pay structure were less willing to commit fraud. In contrast, the researchers provided examples of how inadequate pay structure can easily motivate managers to engage in fraud. The construct of "Pay and Compensation" has been represented by two factors in this thesis. The first factor is "Satisfaction with Remuneration". The second factor is the "Proportion of Performance-Based Pay in Total Compensation". The first factor is represented by the responses to Question 12 in Appendix B, namely: "Do you agree with the statement that managers at the company do not complain about their pay?". It is expected that higher satisfaction with remuneration when managers do not complain about their pay will be negatively associated with the probability of fraud in such companies. The second factor of the construct of "Pay and Compensation" is represented by the responses to Question 13 in Appendix B, namely: "What part of the total managerial compensation do performance-based bonuses comprise?". It is expected that a higher proportion of performance-based bonuses will be positively associated with the probability of corporate fraud at the company as such managers whose pay depends on performance will have a greater motivation to demonstrate the superior performance of the company, and sometimes this can be achieved by committing fraud to make figures appear better than they are in real life.

The construct of the "Glass Ceiling" as a motive for corporate fraud was previously reported by Mullen et al. (2012). This is partially related to the pay gap and partially related to gender differences and their tendency to commit a crime. Even though Mullen et al. (2012) found that most of the corporate fraud was committed by men, females also accounted for a large portion of white-collar fraud and this was attributed to the glass ceiling issue. In this thesis, the construct of the "Glass Ceiling" is represented by responses to Question 14 in Appendix, namely: "Regular promotions of managers make them more loyal and less willing to commit fraud in the company. Do you agree with this statement?". It is expected that there will be a negative association between this factor and the probability of corporate fraud, as reduction of the "glass ceiling" problem and consistent promotions will make managers less motivated to commit fraud in pursuing their own personal objectives or attempts to prove one's worth. This construct is related to the factor of "Peer Pressure" based on the previous findings made by Dorminey et al. (2010), who found that family influence and peer pressure played a significant role in the propensity of people to commit financial crimes and fraud. They also related this with the desire of one to prove their power, and for this reason, the factor of regular promotions is taken into consideration to be tested in this thesis. It is also valid to note that regular promotions increase competition between managers for higher positions, and in regards to the factor of competition, even in the 1980s, researchers such as Coleman (1987) argued that the spirit of competition and a competitive business environment worked as a fuel for financial fraud and white-collar crimes. Based on these arguments, it could be predicted that the association between the chosen variable and the probability of fraud could be positive. The presence of mixed evidence from past studies makes it interesting to test this construct in the context of retail firms in the UK and find out whether the relationship will be negative or positive.

4.4.2. Opportunity Factors

The Opportunity factors chosen for this research are also based on previous studies and include the following constructs: "Access to financial resources", "Access to company's technology", "Weak overseeing", "Profitability of the firm", and "Whistleblowing". While the Pressure variables are considered exogenous or independent variables in this thesis, most of the Opportunity variables are considered Mediating variables. A similarity between Independent Variables and Mediating Variables is that they both affect the dependent variable, namely the Probability of Corporate Fraud. However, a key difference between Independent and Mediating variables is that the effect of independent variables is transmitted

through the mediating variables. For example, a manager could have sufficient motivation to commit fraud, and this motivation, such as the desire for enrichment and personal gains, would be the independent variable. However, the fraud will be committed only if the manager gains easy access to financial resources or technologies that can be used to commit the fraud. Therefore, access to financial resources and access to technologies are the mediating variables through which the effect is transmitted. This is further explained in more detail in the discussion of the conceptual framework of this study.

Access to financial resources and access to technologies have been chosen as Opportunity variables in this research based on previous studies conducted by Murdock (2008) and Dickins and Reisch (2012). These studies have shown that more financial fraud happens in companies with weaker control mechanisms and where access to resources and technologies is almost without restrictions. The construct of "Access to Financial Resources" is represented by the responses to Question 15 in Appendix B. This question is the following: "Do employees and managers of companies have to sign anti-fraud statements when gaining access to sensitive information related to the company?". It is expected that there would be a negative association between this construct and the probability of fraud. This can be explained by the mediating effect of anti-fraud statements, which act as a protective mechanism. The more barriers to accessing sensitive information, the lower the probability of corporate fraud. The construct of "Access to Company's Technologies" is represented by responses to Questions 16, 17 and 18. These questions are related to the presence of an IT department, the effectiveness of the IT department and the effectiveness of data mining tools.

Based on the research conducted by Murdock (2008) and Dickins and Reisch (2012), the factors of the quality of overseeing are used to represent the strength of the control mechanisms. The overseeing mechanisms considered in this study are represented by responses to six questions from Question 19 to Question 24 in Appendix B. The questions indicate the presence of absence of the Audit Committee (Q19), the Effectiveness of the Audit Committee in fraud monitoring (Q20), the Expertise of Audit Committee members (Q21), the presence or absence of the internal control unit (Q22), quality of fraud monitoring in the company (Q23) and effectiveness of external audit (Q24).

In addition to the control mechanisms associated with overseeing, this thesis accounts for incentive mechanisms such as monetary rewards for whistleblowing and using hot lines for whistleblowing. These factors are based on Question 25 and Question 26 of the questionnaire survey provided in Appendix B. It is expected that the presence of a hot line for whistleblowing and the monetary rewards for whistleblowing would have a negative

association with the probability of corporate fraud occurrence in retail companies. These factors have been chosen for the research based on previous empirical research conducted by Johansson and Carey (2016), who found that stimulation and encouraging of whistleblowing in companies produced a positive effect on fraud prevention and detection. The measure also reduced the opportunities for committing a financial crime in companies. For this reason, this variable is also used for testing in this thesis.

While the discussed controls and incentives associated with the Opportunity construct are the mediating variables, some company characteristics, such as company size and company profitability, are used in this research as control variables. The difference between mediating and control variables is that the former serves as a channel of transmission of the effect from independent variables to the dependent variable, whereas control variables explain the differences in the occurrence of fraud that cannot be explained by the main independent variables. For example, the same independent variables may have different effects on the probability of fraud in large and small companies. In this case, the company size measured by its total revenue would be used as a control variable. In the same way, the profitability of the business can also be used as a control variable in addition to size. According to Albrecht et al. (2015), an important opportunity factor for fraud was the power of managers and the size of their social interactions and networks. These interactions and networks are larger in bigger companies. Therefore, it is important to account for the factor of size when exploring the determinants of corporate fraud in the retail sector in the UK.

This thesis uses the firm profitability measured by gross profit margin as another control variable, which is a part of the Opportunity construct in the fraud triangle because previous empirical research, such as Skousen et al. (2009), revealed that company characteristics have an influence on the probability of corporate fraud committed by managers. In particular, this research showed that the growth of companies and dependence on external funding, such as debt financing and cash requirements, produced a significant opportunity for financial fraud in the companies.

4.4.3. Rationalisation Factors

The main rationalisation factors have been developed based on the common excuses made by corporate fraudsters as suggested by previous empirical work such as Schuchter and Levi (2015), Dellaportas (2013) and Lokanan (2015). These studies revealed that white-collar corporate fraud was committed with rationalisation such as all do it, nobody would be hurt,

that one deserves this, other people would exploit these opportunities and even altruistic excuses such as this were done to protect others.

The factor of "all do it" has been represented by Question 27 of the questionnaire survey, namely: "'All people in managerial position commit fraud; it is just not everyone is caught.' Do you agree?". This question intends to test whether this rationalisation holds among managers. The factor of "taking back what one's deserve" has been represented by responses to Question 28 of the questionnaire survey, which is the following:

"Do you agree with the statement that fraud can be justified if the company is not fair in its treatment of managers (e.g. low pay, long hours, too much stress)?"

The rationalisation factor of "others would be compromised" is measured using the responses to Question 29 of the survey, namely: "Do you agree with the statement that fraud can be justified if it is committed by managers to protect others (e.g. save somebody from being fired, cover unwanted mistakes somebody has made, etc.)?".

Finally, the last rationalisation factor of "nobody would be hurt" has been represented by the responses to Question 30 in the survey, namely: "Do you agree with the statement that fraud can be justified if it does not hurt other parties (e.g. when a top manager uses his position in the company or company ties to arrange personal deals or benefits with third parties that will not affect the company)?"

4.4.4. Enhancing Prevention of Fraud

The fourth section of the questionnaire is titled "Enhancing Prevention of Fraud". This is the qualitative part of the survey, where respondents are invited to make recommendations as to how fraud prevention can be enhanced in their company. The list of questions asked in this section of the survey is provided below:

- What can the company do to improve ethical training among managers to reduce the instances of fraud?
- What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?
- What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?
- What incentives do you think the company should add to keep managers from being drawn to committing fraud?
- How should the audit committee change its operations in order to make internal fraud control more effective?

- What actions should the company take in order to identify the people who are most likely to be attracted to fraud? What would you recommend to improve fraud detection and fraud prevention in a company?

The respondents who participate in the survey are invited to participate in the second stage of the research conducted via interviews. It was expected that most of the respondents would refuse to take part in interviews even if they completed the survey. This can be explained by the busyness of the research participants. However, a small sample is targeted for interviews. Since statistical generalisations are not an aim of interviews, a sample of 5 participants in the second stage of the research has been obtained and is considered sufficient.

4.5. Methods of Data Analysis

The research employs a mixed-methods approach to data analysis in this thesis. This implies two things. Firstly, different types of data are employed, namely: qualitative and quantitative. Secondly, different methods of data analysis are mixed together before arriving at results and formulating conclusions. These methods include regression analysis, SEM and the qualitative thematic analysis of the interviews.

4.5.1. Data Preparation and Coding

The results of the survey administered using structured questionnaires are attained by employing statistical methods in SPSS. This software allows for working with quantitative or quantified data, including the data coded on the Likert scale. In fact, appropriate coding of the variables represents the preliminary step of data analysis, namely: data preparation.

The primary data collected by a survey can be prepared for analysis using different techniques of coding. These techniques include coding the responses using the Likert scale, Guttman scale and Thurstone scale. The Thurstone scale is one of the oldest scales, and it implies taking individual statements from a questionnaire and putting them into specific categories ranked from the lowest to the highest. These categories could demonstrate the extent of agreement or support of the statements by respondents. The Likert scale implies coding the responses to each question or statement on an interval scale that can range from low agreement to high agreement. While the concepts of the Thurstone and Likert scale could be similar, they are different in the procedure and estimating the ultimate scores. While the Thurstone scale is measured by calculating the average number of responses put into each category, the Likert scale is measured by calculating the average score for each statement. Thus, in order to arrive at statistically meaningful values, a large number of statements is

required for the Thurstone scale, whereas a smaller number of statements would be needed for the Likert scale to achieve the same level of statistical power. For this reason, the Likert scale has been preferred to the Thurstone scale in coding the responses and preparing the data.

A third alternative is the Guttman scale, which implies assigning values to related statements and calculating the total score. However, in contrast to the Likert and Thurstone scale, the Guttman scale is cumulative, and it works best with closely related statements when an agreement with one statement would automatically imply agreement with the next statement. If the statements are less connected, it would be impossible to deduce a cumulative score needed by the Guttman scale. Since the questions and statements used in the questionnaire survey for this thesis are not as related as required by the Guttman scale, the option of the Likert scale appears to be the best fit for this study.

The Likert scale responses are coded from 1 to 5 for the categories ranging from "completely ineffective" to "very effective" or from "strongly disagree" to "strongly agree", depending on the question.

4.5.2. Frequency Tables and Descriptive Statistics

The variables are first analysed using frequency tables and descriptive statistics. Frequency tables allow for capturing what percentage of respondents provided particular answers to a question. This is quite similar to creating a distribution of responses. Descriptive summary statistics are used to assess the characteristics of the distribution of responses. For this purpose, such statistics as the median values, maximum and minimum values, range and standard deviation are employed. The mean values are not used as a part of the descriptive statistics because the data measured on an interval scale such as the Likert scale would not produce representative mean scores of the unequal intervals between the categories such as "agree" and "strongly agree" and "disagree" and "strongly disagree". These unequal intervals emerge due to the subjectivity of the evaluations of the statements by individual respondents. At the same time, for numerical data measured on a ratio scale, the mean values are a good measure of central tendency.

4.5.3. Comparison of Variables

Besides describing the data, the research intends to compare the data. Comparisons between two groups are made using t-tests, whereas comparisons among several groups that are more than two are made using ANOVA analysis. Both tests allow for comparing the results with a theoretical distribution and assessing confidence intervals and probability values. Since the

occurrence of fraud in UK retail companies is assessed using a dummy variable with the values of 1 and 0, ANOVA analysis allows for comparing the factors of the Fraud Triangle in the companies with and without cases of fraud. Another dummy variable used in this research is to distinguish traditional retailers from online retailers. Therefore, ANOVA analysis with this variable is helpful in comparing the differences between the Fraud Triangle elements and factors of detection and prevention of fraud in traditional and online retail companies in the UK.

Since the research deals with primary data collected from human respondents, there is a high probability of obtaining biased responses. In order to detect bias in the data, the responses are checked for internal consistency using Cronbach's alpha. Internally inconsistent observations are dropped from the analysis in order to avoid bias among respondents. This may reduce the final sample size.

4.5.4. Correlation Analysis

In order to examine the strengths of links between responses, a correlation analysis is performed. However, since the data is not continuous and is coded using the Likert scale, alternative measures of correlation, such as Kendall's tau, are used to provide meaningful results. Alternative measures, such as the Pearson correlation, are mostly used for quantitative data measured on a ratio scale rather than an interval scale. After assessing the linear relationships, or correlations, between the variables, a cross-sectional regression analysis is conducted.

4.5.5. Regression Analysis

Since previous studies prefer to use dummy variables as the dependent variables representing fraud occurrence and fraud detection (Rushin et al., 2017; Hussein et al., 2021), the most common method of estimating the contribution of each element of the Fraud Triangle found in literature is logistic regressions (Zaki, 2017). These regressions measure the probabilities of fraud occurrence based on the explanatory variables. These models are superior to the ordinary least squares (OLS) regressions. The main reason for this is that when the dependent variable is represented in the binary form, many assumptions of the OLS regression would be violated. These assumptions include the normality of the distribution of the dependent variable and the homogenous deviation of residuals from their mean value. Therefore, the coefficients estimated with the OLS will not be efficient and consistent with the assumptions of the Gauss-Markov theorem. By contrast, the logistic regressions are estimated using the maximum likelihood method rather than OLS. Therefore, these assumptions for the variable

distribution do not have to hold. The regression model used in this thesis is specified by the following equation:

$$Fraud_i = \alpha + \beta_1 Tr_i + \beta_2 IC_i + \beta_3 Inc_i + \beta_4 AC_i + \beta_5 Tech_i + \beta_6 EA_i + \beta_7 Control_i + \varepsilon_i$$

Where Fraud is a dummy variable representing the occurrence of fraud (1) or non-occurrence of fraud (0) for the last five years; Tr is the effectiveness of training; IC is the effectiveness of internal control; Inc is the effectiveness of monetary incentives; AC is the effectiveness of the audit committee; Tech is the effectiveness of technological solutions; EA is the effectiveness of external audit; Control is a vector of control factors including the company size represented by revenue, company profitability represented by the occurrence of losses for the past five years and net profit margin and the type of company based on the distribution channel (traditional or online retailer) and type of products sold.

The dependent variable is represented by the answer of the respondents to the question, "Was your company ever involved in corporate financial fraud during the past five years?". The "Yes" responses are coded as 1, whereas the "No" responses are coded as zero. The independent variables in the regression include the instruments and mechanisms used by the companies to detect and prevent fraud.

The choice of the factor of the quality of the internal audit committee is based on the previous investigation conducted by Abbott et al. (2000), who studied the relationship between audit committees and corporate fraud occurrence. According to their results, the composition of their committees, namely the presence of independent members and the activity of the internal audit committees, helped reduce fraud occurrence. Thus, this factor plays a preventive mechanism in regard to fraud, and this factor is also rooted in the corporate governance theory, namely the agency theory. According to this theory, the audit committee features represent an element of the control mechanism in companies.

The factor of monetary incentives has been chosen based on the study of Dyck et al. (2010), who found that traditional control mechanisms were not as effective in detecting fraud in US companies, whereas monetary incentives helped improve fraud detection and prevent new fraud from emerging.

The factor of training for managers and employees as a fraud prevention mechanism is selected based on the previous empirical research conducted by Bierstaker et al. (2006). They ran a survey of more than eighty professionals from the field, including auditors, and found that arguably the most effective instruments for fraud detection, such as the use of forensic accounts, training and data mining, were rarely employed in companies while less effective measures prevailed. This can be explained by a lack of knowledge of fraud detection

mechanisms among managers and the unwillingness of many companies to invest in additional measures of fraud prevention and fraud detection.

The effectiveness of internal control in retail companies was selected as an important variable for testing based on the previous empirical study of Rae et al. (2008). These researchers conducted a survey of firms involved in cases of fraud and found that the quality of internal control functions played a significant role in fraud prevention.

The technological factor has been selected based on studies such as Halbouni et al. (2016). The researchers put the importance of IT-related factors in fraud detection and prevention on the same level as corporate governance factors and the quality of external and internal audits. However, while factors such as incentives target the elements of the Fraud Triangle to prevent future fraud and eliminate the Pressure stage, the technological factor does not target any elements of the Fraud Triangle directly. However, it targets these elements indirectly and works similarly to a control mechanism. When managers know that high technology will be used to detect fraud and their schemes could be uncovered, they would be less inclined to commit fraud.

The factor of external audit and its effectiveness is also considered in this thesis as this element was found important in previous studies such as Mohd-Sanusi et al. (2015). These researchers emphasised the role of external auditors in detecting the risks of fraud in organisations, and they recommend the Fraud Triangle as the main framework against which external auditors should assess these risks of fraud.

In order to ensure that the estimated coefficients of the cross-sectional regression are reliable and consistent with the theoretical assumptions, it is important to conduct several diagnostic tests. The first test is concerned with detecting the problem of multicollinearity between the factors used on the right side of the equation. High multicollinearity implies a high correlation between any of these factors. If this happens, their individual coefficients used in the same regression will not be reliable, and the effect of one variable on fraud will be affected by the contribution of the other correlated variable. This problem is easily detected using either the correlation matrix of coefficients or estimating the variance inflation factor (VIF). If VIF shows a value greater than 10, this means that the problem of multicollinearity exists, and it must be dealt with. The most effective way to deal with this problem is to remove these highly correlated variables and run a regression with the factor that interferes with the results.

Another problem that can arise in the regression is the serial correlation in the error term. The error term in the regression represents the deviations of the actual values of the dependent

variable from the ones modelled by the regression. Ideally, these error terms must be random without any cyclical pattern or serial correlation and normally distributed. Serial correlation in the error term implies that one particular value depends on the past values of the same series. This problem can be tested using the LM test or the Durbin-Watson test. The latter, however, is able to capture the first-order serial correlation, which is the serial correlation with only the last lag. The LM test, in contrast, can detect higher-order serial correlation. Yet, it must be noted that the problem of serial correlation usually occurs in longitudinal regressions where observations for several years are used. This problem can also be found in panel regressions when a combination of longitudinal and cross-sectional data is used. However, in cross-sectional regressions, this problem of serial correlation is very rare because the observations are usually independent unless respondents know each other and agree to provide specific responses. Thus, it is not expected to observe this problem in the cross-sectional regression, but it must be tested in order to ensure that this is so.

There is also a problem of a unit root in the input variables when a regression is run. Similar to the problem of serial correlation, the unit root problem, also known as the problem of non-stationarity, is generally found in longitudinal and panel regressions and is rather uncommon for cross-sectional regressions such as the one conducted in this study. However, the testing of the unit root can be done by employing the Augmented Dickey-Fuller (ADF) test or a non-parametric alternatively, namely the Phillips-Perron test. The null hypothesis of both tests is that the initial variables have a unit root. If the p-value of these tests is lower than 0.05, this hypothesis can be rejected, and the variables can be considered stationary, which is an important assumption in a regression analysis.

The next problem that needs to be diagnosed and tested when dealing with regression modelling is the issue of heteroscedasticity. This problem, similar to serial correlation, relates to the residuals of the regression model rather than the variables used or coefficients estimated. The term heteroscedasticity implies unequal variance in the error term. As stated previously, the error term is expected to be randomly changing around the mean value without serial correlation. However, an assumption of the regression model is also that these variations around the mean should be constant, i.e. homoscedastic. If this condition is violated, the regression will provide inefficient coefficients. This means that the coefficients could have substantially high standard errors. In order to detect this problem, the Breusch-Pagan-Godfrey test is employed. While the problem of the unit root and serial correlation is not very common for cross-sectional regressions, the heteroskedasticity problem is most

relevant in cross-sectional models and rarely occurs in longitudinal linear regressions. Therefore, it is important to detect it.

The last problem that needs to be measured and assessed in the regression is the probability distribution of the error terms. According to the assumptions of the regression, the error term is expected to be normally distributed, i.e. it should have a bell-shaped form with a zero mean and symmetrical distribution around the mean value. The normality can be tested graphically using the P-P and Q-Q plots in SPSS. However, this can also be tested using statistical tests, including the Jarque-Bera test and by estimating particular parameters that explain the properties of the probability distribution, such as the measures of skewness and kurtosis. The former indicates the symmetry in the probability distribution, whereas the kurtosis shows how high the peak is and how fat the tails of the distribution are. This testing will allow us not only to detect the issue with residuals but also to find potential outliers in the regression. Outliers are abnormal observations that can greatly affect the estimated results from the model but will, at the same time, lower the predictive power of the model. Since outliers are the observations that happen extremely rarely or even by chance or accident, and the quality of the model is determined by how well it is able to predict the values of the dependent variable, the detected outliers are best to be removed from the model in order to ensure the quality of the estimation. It is also valid to note that if the responses are internally consistent, which is detected by Cronbach's alpha test, it is unlikely that abnormal observations or outliers will be present in the regression.

4.5.6. Structural Equation Modelling (SEM)

A key limitation of the regression analysis in identifying the determinants of corporate fraud in the UK retail industry is that it treats all predictors as independent variables without distinguishing between their roles. Thus, a simple regression model can form a preliminary picture of the relationship between the chosen factors, but when social constructs are not directly observable or if there are complexities in the relationships, such as endogeneity issues, such a model may be limited.

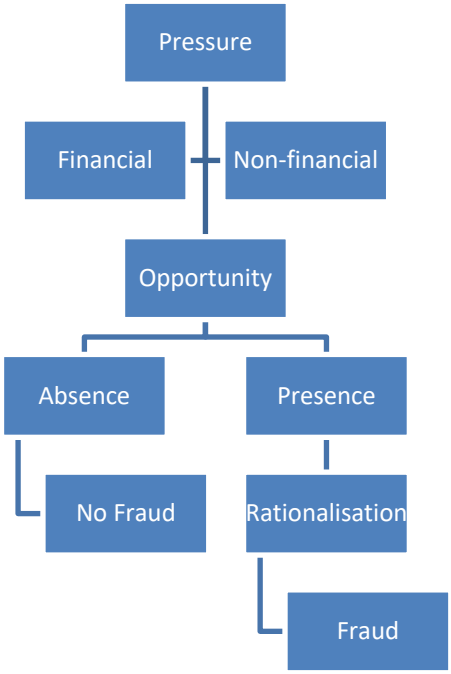
SEM is different from a reduce-form regression analysis in that SEM is heavily based on a theoretical framework to establish and visualise causal relationships between variables using nodes and arrows, and a system of equations is estimated to examine the strength of the associations between the constructed nodes. Since SEM represents a structure of a complex relationship between the variables using a given theoretical framework underlying the model,

SEM is usually divided into two steps, namely: the path analysis and measurement model, such as confirmatory factor analysis. The Path Analysis implies building and establishing the directional relationships between variables. It is graphically represented with boxes that represent variables and arrows that represent directional relationships. The coefficients measuring the strength of the relationships between the variables are estimated using techniques of regression analysis applied to a system of equations. It is valid to note that Path Analysis, as the main part of SEM, can be applied to both directly observed and measurable variables and latent variables. The latter are the constructs that are not observed in reality but are devised theoretically to explain a certain phenomenon. For example, in the context of the Fraud Triangle, it is impossible to directly measure the factor of Pressure, the factor of Opportunity or the factor of Rationalisation because they are theoretical constructs and can be represented by various proxies. Hence, they can be viewed as latent variables. Occurrence or non-occurrence of fraud, in contrast, is the dependent variable that is directly measurable and observable. Thus, based on the Fraud Triangle framework, the Path Analysis of SEM will have three latent variables associated with the factors of Pressure, Opportunity and Rationalisation and one observable dependent variable. The arrows will show the directional relationship running from these three latent variables to the dependent variable.

The second component of SEM is the confirmatory factor analysis. Even though SEM can be estimated using Path Analysis only, this is only possible when all variables are directly observable and measurable. If there are latent variables involved, the step of the confirmatory factor analysis is required. The latter is used to construct the latent variables using directly observed inputs or indicators. The latent variable of Pressure is constructed using the responses to questions 11, 12, 13 and 14 in Appendix B. The latent variable of Opportunity is constructed using the indicators obtained from the answers to questions 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24 in Appendix B. Finally, the latest variable of Rationalisation is constructed using the indicators associated with questions 27, 28, 29 and 30. This process of confirmatory factor analysis can also be referred to as dimension reduction, as it takes many observable variables and creates a smaller list of latent variables to be used in Path Analysis associated with SEM.

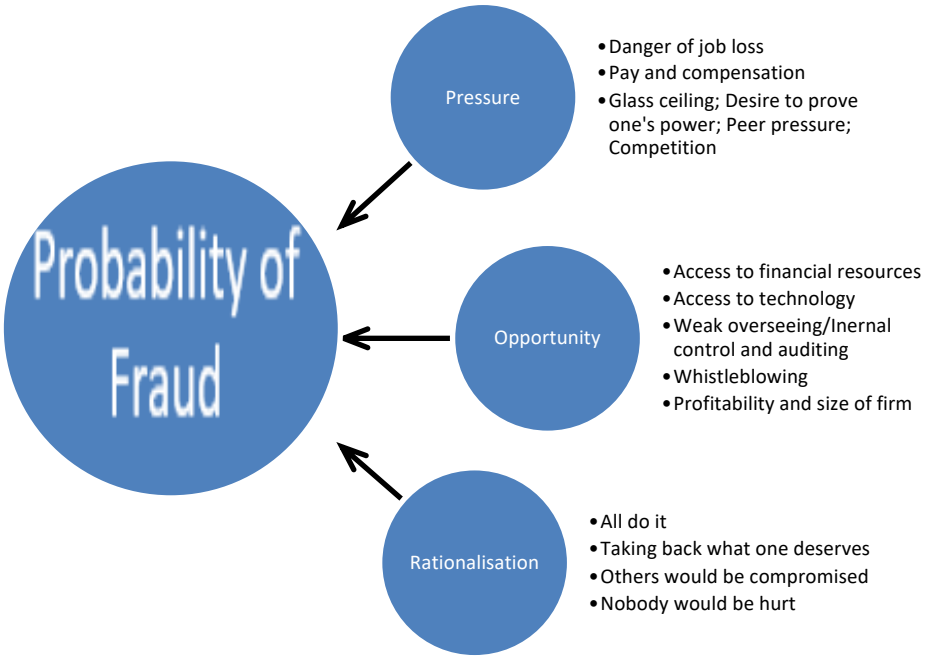
Schematically, the decisions to commit corporate fraud are explained as follows by the Fraud Triangle.

Figure 11 Path of Decision-Making in Committing Corporate Fraud



This analysis employs the structural equation modelling (SEM) method of data analysis as the ultimate step of the quantitative data analysis before resorting to the qualitative methods of analysing the interview notes. The structural equation model is represented by the following diagram:

Figure 12 Structural Equation Model



The coefficients of the model are estimated, and dimension reduction in the measurement model is conducted in SPSS AMOS software.

4.5.7. Thematic Analysis of Interview Notes

In regards to the interviews that were conducted during the period from the 14th May 2020 to the 18th May 2020, five interviews were conducted with managers from the retail industry in the UK who held the following positions: head of delivery and change, regional manager, area manager, supply chain manager, and business development manager. The interviews were conducted over the phone with the respondents recommended by mutual contacts. Thus, they are not a part of random sampling. Since no specific software was used to conduct the interviews, such as Skype or Zoom, no audio recording was made. The notes have been prepared by recalling and reciting the content of the discussions held over the phone. The transcripts are then evaluated using qualitative thematic analysis. The responses are grouped by themes, compared and contrasted. Textual analysis of the interview transcripts is used to enhance the information from quantitative analysis of the survey data. In the interviews, respondents are asked to elaborate on their ideas and recommendations. The interview questions are formulated in open-ended form, and in contrast to the structured questionnaires, the interview questions are semi-structured. In other words, the researcher has the freedom to change the direction of the conversation with respondents if new interesting information arrives and the researcher wants to hear more elaboration. Therefore, respondents are not aware of the questions that will be asked during the interview, which contrasts with the way that questionnaires work. The interviewees were asked the following questions during the phone conversations:

What can the company do to improve the ethical training of managers to reduce the instances of fraud?

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

How should the audit committee change its operations in order to make internal fraud control more effective?

What would you recommend to improve fraud detection and fraud prevention in a company?

The main purpose of the interviews is to provide more in-depth qualitative responses to the questions related to fraud in the retail industry in the UK. The survey questionnaire involved mostly closed-ended questions, as many respondents skipped the open-ended questions of the survey questionnaire. Thus, a combination of interviews that provide qualitative responses and the survey questionnaire that provides mostly quantitative responses helps to understand more depth and details. Another reason for using semi-structured interviews is that they facilitate making more practical recommendations to business managers at the end of the thesis. While each research objective is addressed by the survey method, recommendations of the research are made more practical and realistic using inputs from actual business managers from the retail industry who were contacted over the phone. Yet, the main weakness of the interviews is that they were arranged only as a part of the Pilot Study, and no respondents from the survey agreed on follow-up interviews.

4.6. Ethical Considerations

This research thesis deals with primary data collected from human respondents who are managers at UK-based retail companies. The collection of primary data for the research is associated with ethical issues and considerations that must be made. In order to tackle these issues, the information sheet and consent forms have been developed in order to be distributed to potential respondents along with the questionnaire. This will ensure that they agree on the participation in the survey and the conditions and rules that will apply, including how their personal information will be saved, stored and dealt with in the research.

Among the main ethical issues that have been considered in this study are the anonymity of respondents, confidentiality of their personal information, safety and protection of the data provided by respondents and reliability of the results of this analysis. The issue of anonymity is used to protect the disclosure of personal information on respondents. In particular, such sensitive information as their personal names, the names of companies they represent and the IP addresses of their computers from which the questionnaire and emails were sent is kept private and not disclosed. In order to ensure the safety and protection of the data, the information is kept on an encrypted hard drive and a password-protected computer to which only the researcher has access.

The reliability of the responses in this research is ensured by testing the answers for internal consistency and implementing statistical instruments such as the Cronbach alpha test. If responses are internally consistent, there is a lower probability of having participant bias. Statistical analysis of the responses, in turn, helps to eliminate the researcher bias that could also be serious in qualitative studies (Saunders et al., 2015).

4.7. Summary

This chapter has covered several aspects of the methodology of this research, namely: the design of the study, data collection, and methods of data collection and data analysis. The research design adopted in this thesis is governed by the philosophical position of positivism. Hence, significant attention is paid to the quantification of data, methods of analysis and ensuring that results are unbiased and value-free. Following this philosophical stance, the research adopts the survey strategy administrated using structured questionnaires. Even though there are many alternative strategies covered in this chapter, the main strength of the survey strategy that can complement the other methods is that it allows for the efficient collection of multiple responses from many target participants using the same template of a structured questionnaire. This reduces the time and costs of obtaining primary data. Moreover, a survey allows for retrieving both quantitative and qualitative data from respondents. The former could come in a purely quantitative form, namely numbers, or be quantified using a Likert scale. An experiment would have been more appropriate for scientific studies. Even though there are social experiments, they are not applicable to this topic because experiments imply a comparison of treatment groups with control groups. In the case of fraud, this would have been a comparison of the managers that were involved in fraud and those that were not. However, since the research attempts to reveal what factors contribute to fraud and how fraud detection and prevention can be enhanced, this can be more efficiently achieved with a survey. Qualitative strategies such as a case study have been rejected because they would limit the research to a small sample of companies, usually one company when there is a single case study. This would not allow for making any generalisation of the results, and recommendations would be difficult to apply to other firms in the retail industry.

The questionnaire for the survey has been distributed to target respondents represented by managers of retail companies in the UK. The responses from the questionnaire are coded using the Likert scale and analysed statistically in SPSS software. The research also mixes

the evidence from the survey with personal interviews with a small sample of respondents comprised of five people to provide a more in-depth explanation of fraud factors, detection mechanisms and how fraud can be prevented.

Chapter Five: Results

This chapter reveals the results of the survey in the UK retail industry and provides their interpretation and analysis. The chapter employs statistical tests and procedures to process the data and find patterns and trends. The analysis starts with a pilot study assessment. After this, the presentation of the respondents' profiles using descriptive statistics and frequency tables is done. Then, all responses are evaluated and assessed using the method of regression analysis and SEM. Finally, the findings from the quantitative analysis are augmented by conducting the qualitative thematic analysis of interviews and open-ended questions.

5.1. Pilot Study

Prior to running a full-scale survey, a pilot study was conducted among three managers. The raw data from these responses have been exported to Excel and SPSS for further analysis.

One of the areas that were intended to be tested in a pilot study is how long it takes for an average respondent to finish the questionnaire. In the information sheet, it was stated that the questionnaire should not take more than 10 minutes. The analysis of the results confirmed that the completion of the questionnaire took less than 8 minutes, which is better than expected.

In terms of the distribution of the sample by demographics in the pilot study, there has been little diversity. All three respondents were in the age group of 50 to 59 years old, but some diversity was observed with respect to the gender of the respondents. The pilot study was conducted among two male managers and one female partner. It is interesting to note that the pilot study was not conducted among representatives of the retail industry, but there were respondents from diverse sectors, including manufacturing. This is explained by the fact that respondents have been chosen from the school advisory board. Two of the respondents had a bachelor's degree, and one had a master's degree. No respondent chose the "other" option, which can be explained by a lack of time and the fact that the provided choices of respondents cover mostly all possible types of higher education, and the "other" option would most likely be applied to the respondents without higher education. However, in this case, to make the answering process easier, the "other" option can be replaced with "secondary education or unfinished higher education".

The preliminary analysis of responses has shown survey participants are not ready to elaborate on open-ended questions and prefer to tick answers instead of typing them out. This was explicitly requested by one of the respondents who refused to fill in the questionnaire form in the Word Document and send it by email. They said they could participate only if the

form was available online, and all required was ticking multiple choice answers to save time. With this consideration, the final questionnaire would be more effective if it had fewer or a minimal number of open-ended questions. Where possible, the "other" option should be replaced with a category that respondents can tick off.

Two of the three surveyed respondents in the pilot study worked for large multinational corporations with an average annual turnover of more than £5 billion. The company of the third respondent also had operations overseas, but the annual turnover figure was considerably smaller, namely in the range of £1 million - £49 million. Thus, it is interesting to assess whether the survey is suited equally well for large and smaller companies.

The pilot study has also revealed that question 14, "Which of the following statements regarding managerial promotions do you agree with?" needs to be rephrased or removed. Two out of three respondents decided not to use the default options for answers and specified their own versions in the "Other" category. From their responses, it can be deduced that the question of when or how quickly managers should be promoted is rather irrelevant. The respondents emphasised that promotion must depend on opportunities or merits of the managers, not on timing.

Another observation made from the pilot study is that question 21 requires editing. One of the respondents, whose company did not have an internal audit committee, left the answers blank. This is because the multiple choice included only the following options: "yes", "no", and "I don't know". If a company does not have an internal audit committee, there should be a fourth option in this case, namely: "not applicable". This will ensure that in the full final questionnaire, there will be fewer missing inputs.

The open-ended questions stimulated low activity among respondents. In particular, all respondents provided very short answers. All responses were no longer than one brief sentence. This indicates that respondents are not willing to elaborate. One of the respondents left most of the open-ended questions with blank values. Another respondent filled the responses to the first two open-ended questions with "none" answers. While it would be interesting to analyse the qualitative answers to the open-ended questions, it is not expected that they will be many in the final survey. Moreover, most of them are expected to be in the form of clichés or brief judgements. This undermines the main advantage of qualitative data that it should provide deeper insights. Yet, this could be explained by the fact that qualitative answers are asked using a structured questionnaire, whereas focus groups or interviews could be a more suitable method for collecting such qualitative data. However, given the unwillingness of respondents to answer open-ended questions and their time constraints, it is

unrealistic to expect follow-up interviews. Thus, the final results that will be analysed in this chapter following a full-scale survey will mostly rely on the quantified data provided to close-ended questions.

5.2. Main Survey Findings

The rest of the chapter presents the results of the survey and the outcomes of the analysis. First, the reliability test is conducted. This test assesses the level of internal consistency of respondent answers by means of estimating Cronbach's Alpha. Second, the frequencies of answers are presented. Next, the comparison of the variables between companies that have experienced corporate fraud and those that have not is conducted using independent samples t-tests. A similar comparison is demonstrated for companies with different business models. Since the latter variable is not binary, independent samples t-tests cannot be run, and the ANOVA test is used for the comparison of means instead. After this, the correlation analysis is conducted. This is followed by the main part of the analysis, namely regression analysis, diagnostic tests and SEM. Finally, the attained results are interpreted in the context of research objectives and research hypotheses.

52.1. Reliability Test

The analysis starts with the estimation of Cronbach's Alpha. Statistically, this ratio reflects the average level of correlation between the variables included in the model. In the economic sense, this indicator shows whether respondent answers are internally consistent and not random. Cronbach's Alpha can take values between 0 and 1. The closer it is to 1, the higher the degree of internal consistency. In the reliability test, variables from the first section representing background information of the polled are omitted. The outcomes of the test are demonstrated in Table 1.

Table 4. Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.739	7

Table 1 shows that 7 variables were employed in the test. These variables refer to the evaluation of the effectiveness of fraud prevention mechanisms. Cronbach's Alpha is equal to 0.739. The lesser-than-expected indicator of Cronbach's alpha is explained by the variance

between the respondents in terms of the size of companies they represented, entailing different instruments of control and fraud prevention used in these firms. Therefore, a level of internal consistency equal to 0.7 can be deemed sufficient for the study's aims.

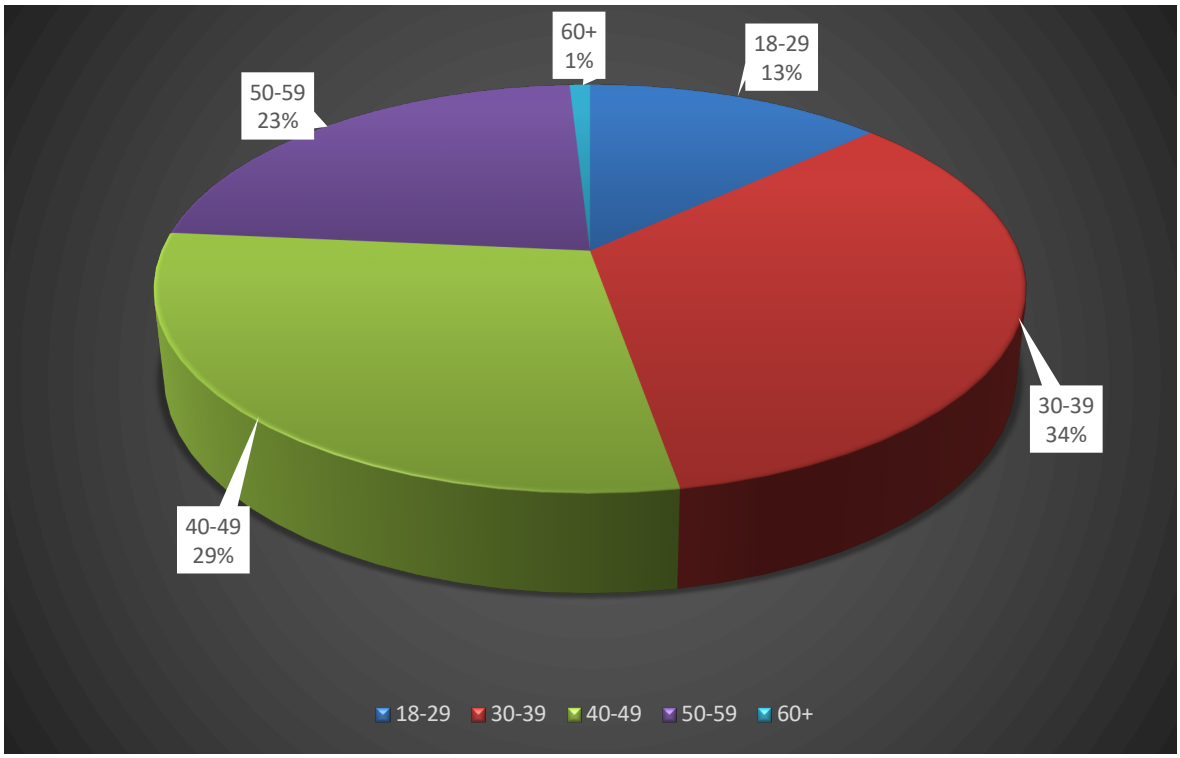
5.2.2. Frequency Tables

After ensuring that the collected data are internally consistent, the analysis of individual responses is conducted using the frequencies tables. Since close-ended questions were coded using the Likert scale or similar interval variables, traditional descriptive statistics with the mean values and standard deviations would be meaningless. Therefore, the frequency tables are an alternative solution to replace descriptive statistics for interval data. Tables of frequencies are examined in order to reveal the most common patterns in respondents' answers. The following section starts with the background profile of the respondents.

5.2.2.1. Background Information

The following figure presents the distribution of the sample by demographics, namely: age.

Figure 13 Respondents' Age

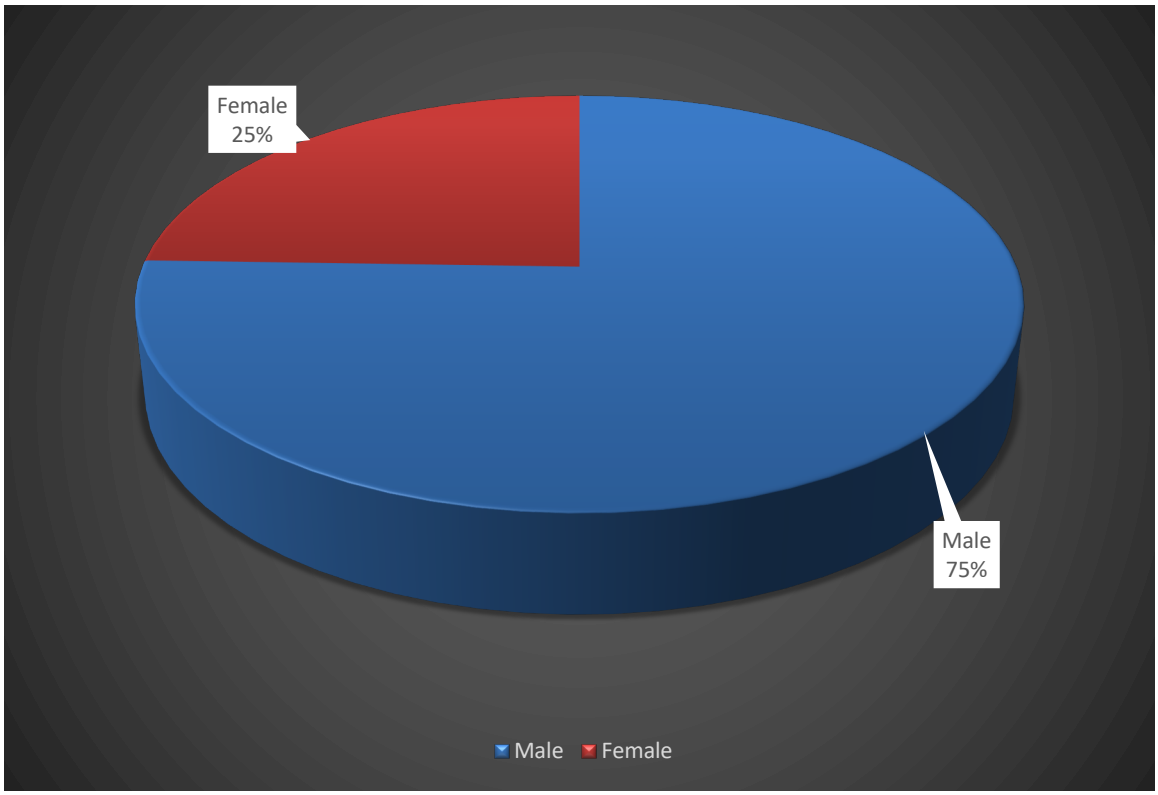


The most frequently met age of the polled was between 30 and 39 years old, namely 34%. Those aged between 40 and 49 comprised 29%, which is another large demographic group.

Other age groups were smaller. In particular, 23% of respondents were aged between 50 and 59 years old, while those aged between 18 and 29 years old comprised 13% of the sample. Finally, only around 1% of the polled appeared to be in the 60+ category. Thus, the sample is heavily skewed towards the mature working population, whereas those who are retired or very young are a minority.

As for the gender distribution, around a quarter of the responses were provided by female respondents.

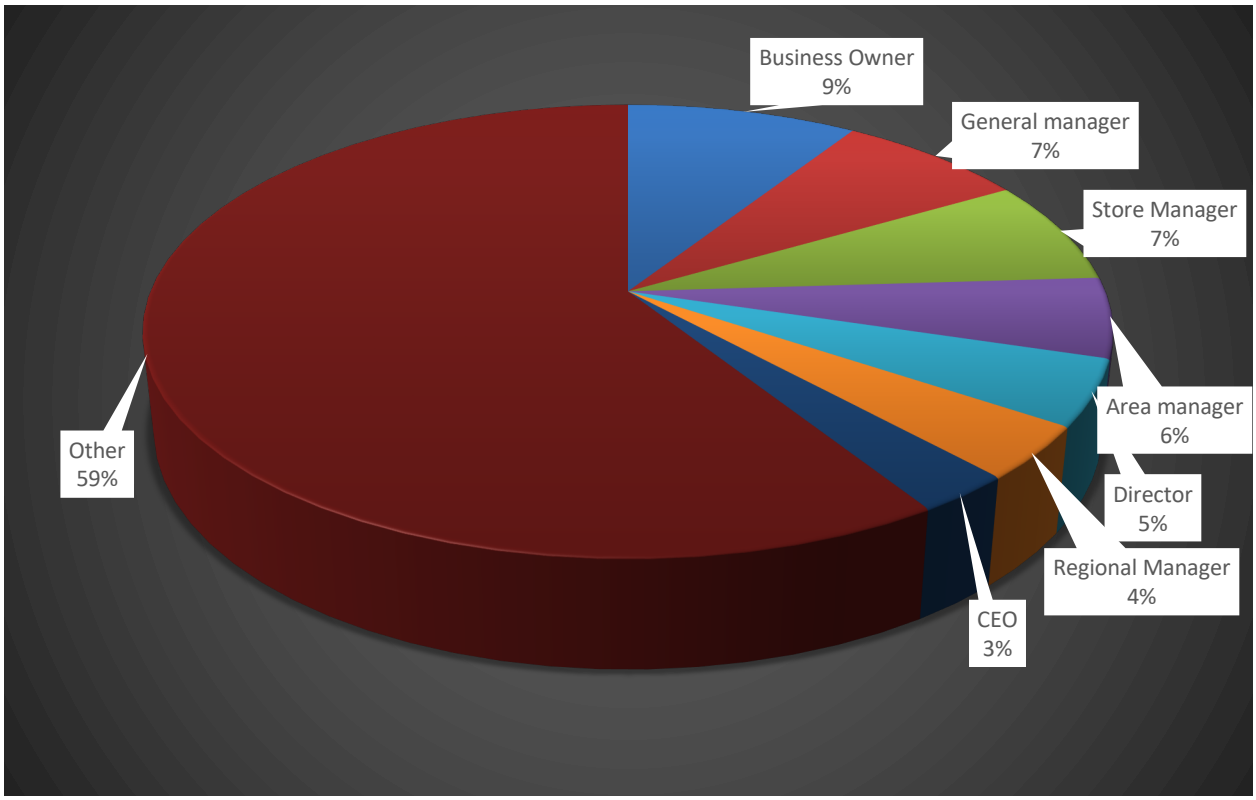
Figure 14 Gender Distribution



The majority of responses came from men, who constituted 75% of the final sample.

The names of positions held by respondents were quite unique, and there are almost 60 categories in the sample comprised of 106 respondents. The following diagram illustrates the most frequent positions held by the respondents, and the rest are grouped into the Other category. A full list of positions can be found in the Appendix to this thesis.

Figure 15 Job Position of Respondents



Business owners comprised the largest group of respondents, namely 9% of the sample. They labelled themselves as owners, business owners, founders or entrepreneurs. All these titles were collectively described as a business owners. The second largest category is general managers and store managers, followed by area managers. CEOs comprised only 3% of the sample.

The tenure of the respondents in the company and in the position they currently hold is depicted in the following table.

Table 5 Tenure of Respondents

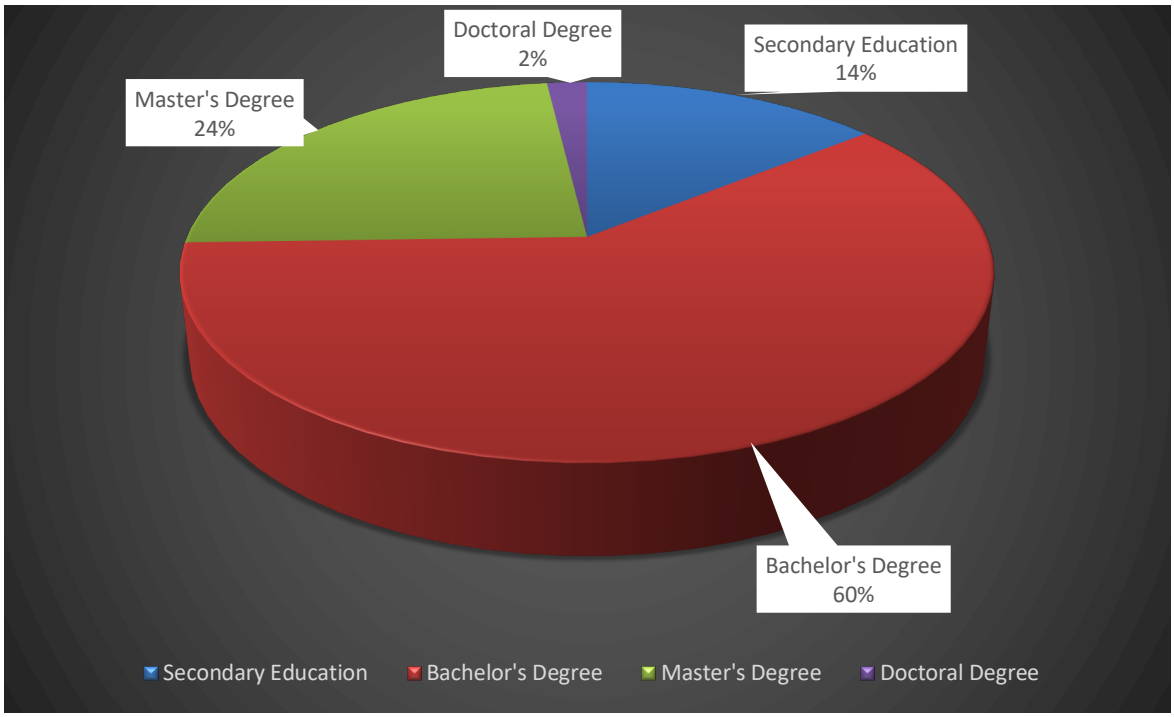
	Tenure in Company	Tenure in the Same Position
Less than a year	6.6	17
1-5 years	44.3	47.2
More than 5 years	49.1	35.8
Total	100	100

Almost half of the respondents, namely 49.1%, worked in their company for a period of more than 5 years, and 44.3% of people worked in their company for 1 to 5 years. Meanwhile, the share of those who worked for less than 1 year was only 6.6%. Along with that, the largest

share of respondents, namely 47.2%, have been working in the same position in their company for a period from 1 to 5 years. In regards to working in the same position, there is a tendency for lower tenure, which is explained by the fact that people could be promoted and moved to a different department in their company. Therefore, up to 17% of respondents worked in their current position for less than a year, and 47.2% of respondents worked in the same position for 1-5 years.

As for the level of education, around 60% of the respondent had a bachelor's degree.

Figure 16 Level of Education

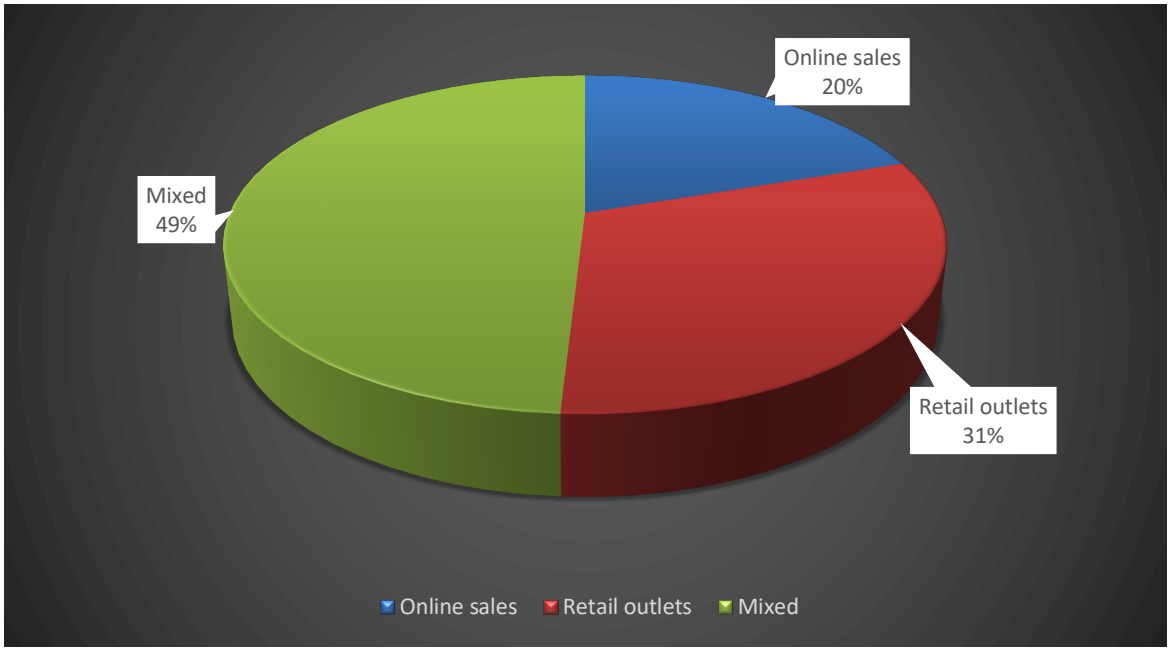


Around a quarter of the people surveyed had a master's degree, and those without higher education constituted 14% of the sample. Only 2% of the polled had a doctoral degree.

5.2.2.2. Information about the Company

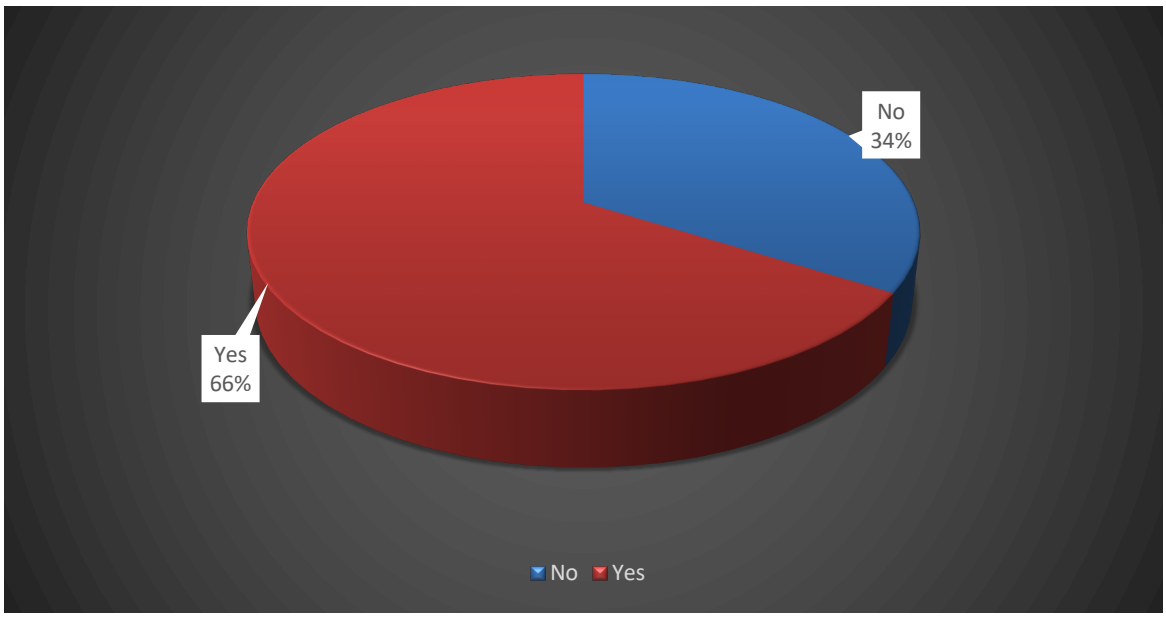
The surveyed respondents came from retail companies with different business models. Some operated physical stores, others worked predominantly online, and yet others had a mixed business model with sales distributed through both offline and online channels.

Figure 17 Business Model



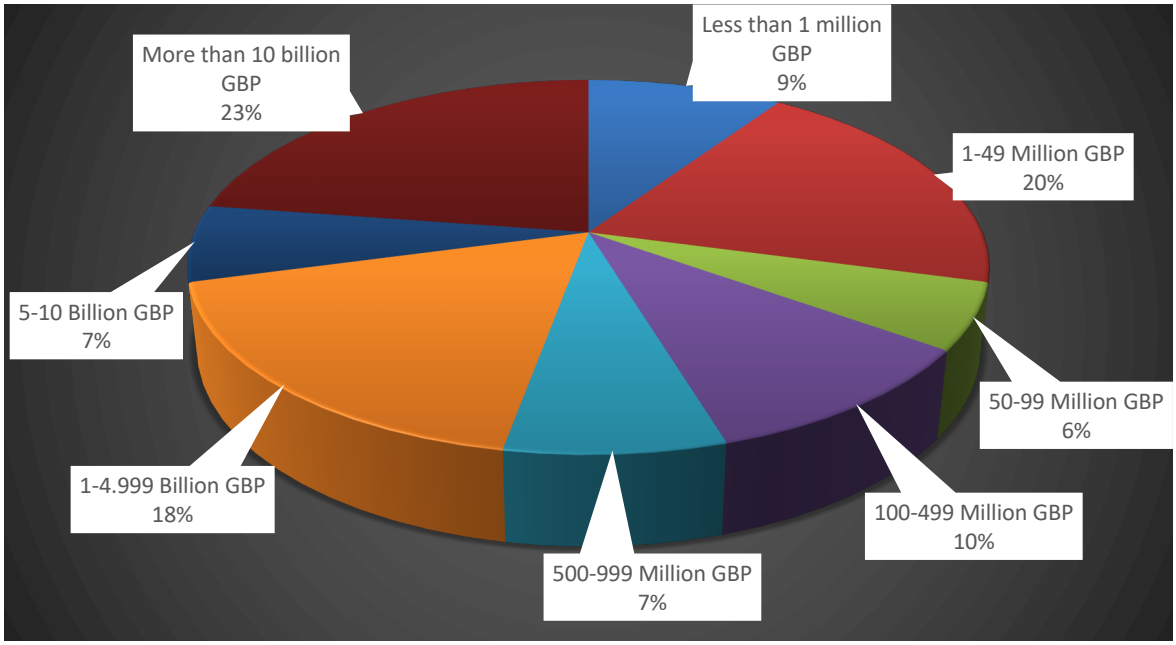
In terms of the company's business model, 49% of firms had a mixed model, which means that they used both online and offline retail channels of sales. Along with that, 31% of respondents reported that their firms were purely retail sellers working through physical stores, whereas 20% of firms used only online sales without having brick-and-mortar stores. Regarding expansion abroad, 66% of companies appeared to have international operations, while 34% of companies conducted sales only in the UK.

Figure 18 Operations Overseas



This section also contains information about respondent firms' size and profitability. The most frequently met annual revenue was more than £10 billion, which means these respondents came from one of the few big retailers such as Asda, Tesco, Sainsbury's and Co-op.

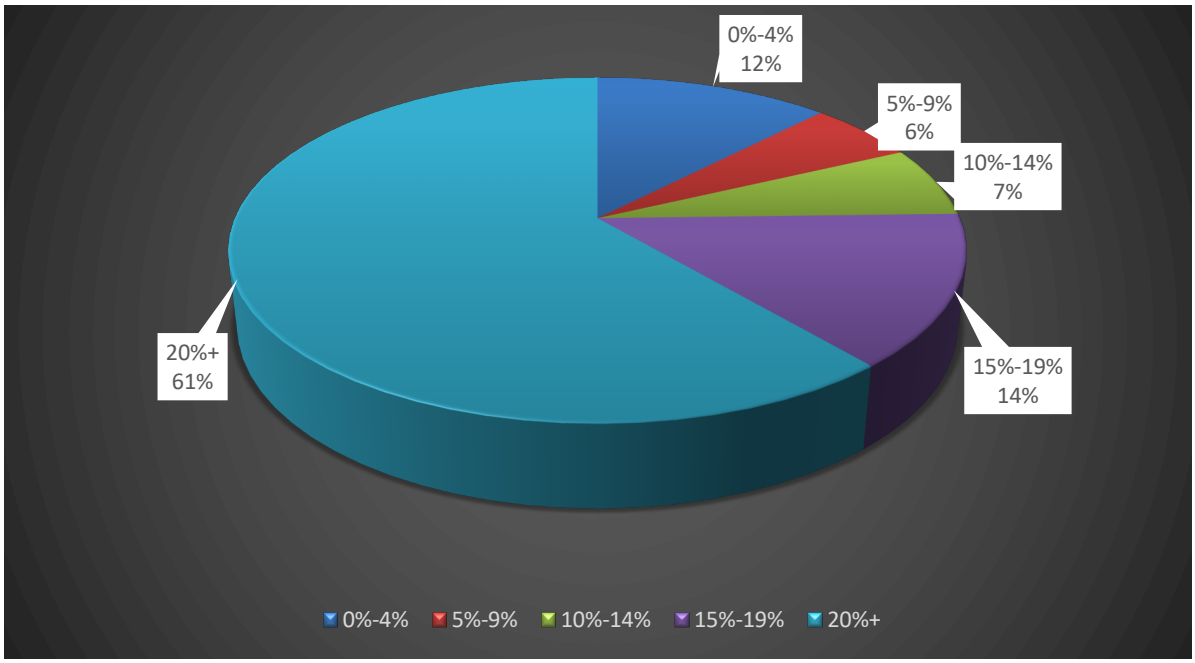
Figure 19 Distribution of Revenue



In addition, the share of companies having revenue between £1 billion - £4.999 billion was 18%, which is the third largest category. Smaller companies with revenue ranging from £1 million to £49 million constituted one-fifth of the sample, whereas extra small companies with revenue of less than a million comprised 9% of the sample. This shows that the sample is rather fairly distributed by company size, and both large, medium and small companies are present in the survey.

As for profitability, the largest share of companies, namely 61%, had gross profitability in excess of 20% of total sales, while 12% of the companies reported very small gross margins.

Figure 20 Gross Profit Margin



Meanwhile, 7% of respondents reported that their company had profitability between 10% and 14%. Profitability between 15% and 19% was observed among 14% of the firms.

5.2.2.3. Fraud Detection and Fraud Prevention Mechanisms

The main of the survey was section III, which reflected whether the companies experienced fraud and how they combated it. More than one-tenth of respondents, namely 10.4%, disagreed with the statement that managers are committed to the company and tend to stay in the firm in the long run, while another 2.8% strongly disagreed with this statement.

Table 6 Turnover, Satisfaction with Pay and Promotion

	No Complaint about Pay	Turnover is Low	Promotion
Strongly disagree	0.9	2.8	1.9
Disagree	17.9	10.4	9.4
Neither agree nor disagree	24.5	11.3	14.2
Agree	52.8	52.8	35.8
Strongly agree	3.8	22.6	38.7
Total	100	100	100

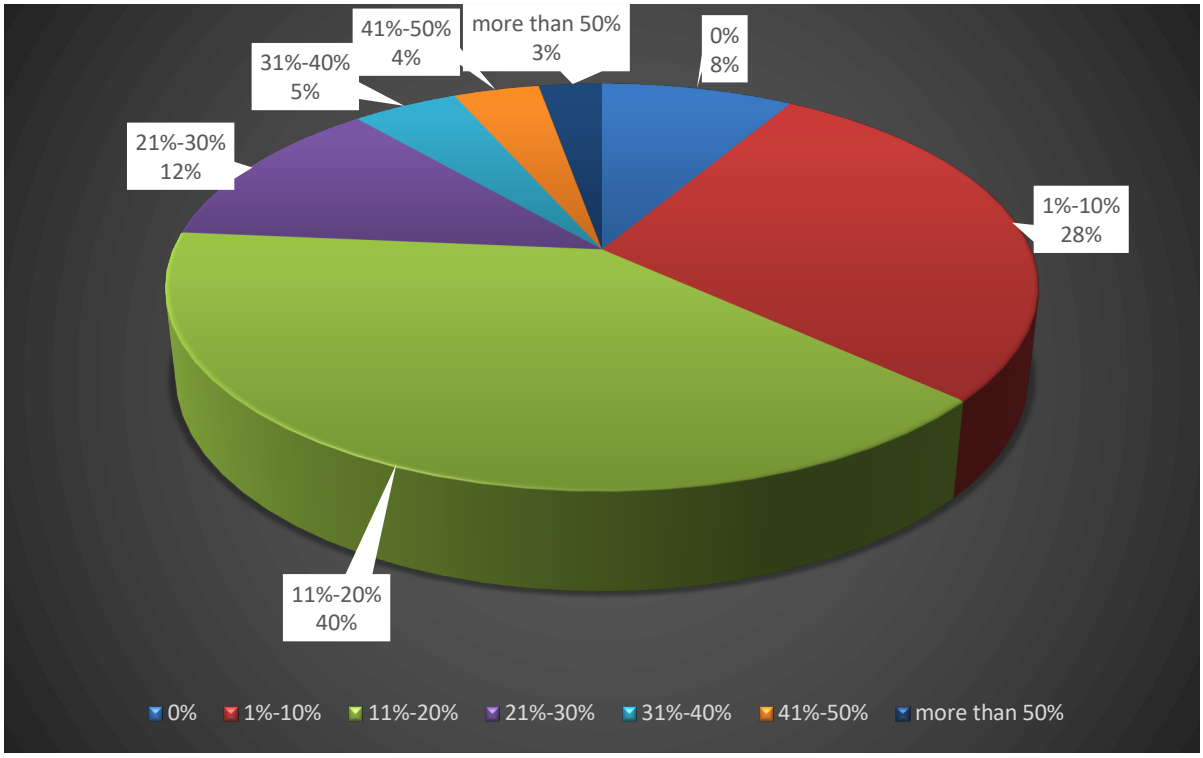
The largest share of respondents, namely 52.8%, agreed that the turnover in their company was low and people did not intend to leave. Strong agreement with this statement was expressed by another 22.6% of the respondents. Around 11% of the people who took part in the survey remained neutral about this issue and neither agreed nor disagreed.

The next question was whether managers complained about their pay. Around a quarter of the respondents, neither agreed not disagreed with this statement. Meanwhile, 17.9% of the polled disagreed, while another 0.9% strongly disagreed, implying that managers tend to complain about how much they are paid. As for those who agreed with this statement, their share was 52.8%, whereas the remaining 3.8% strongly supported this saying. The comparison of these two questions about the turnover of people and their satisfaction with the pay indicates that a larger number of respondents show commitment to the company and loyalty even if they are underpaid. Nevertheless, on average, these responses are highly correlated, and more satisfaction with pay makes people stay longer with the company.

Overall, the majority of the respondents, namely 74.5%, agreed and even strongly agreed that regular promotions of managers would have a positive effect on their loyalty to the company and commitment. The share of those who agreed with this statement was 35.8%, and the share of those who strongly agreed was 38.7% of the total sample. Only a minority of the respondents, namely 9.4% and 1.9%, disagreed and strongly disagreed, respectively. The percentage of those who remained neutral was 14.2%. This shows that incentives in the form of promotions could potentially be an effective instrument for tackling fraud in companies.

Most managers in retail companies receive a part of their compensation as a performance-based bonus. However, the proportion of this bonus in total pay varies depending on the job of respondents. Around 40% of the respondents noted that they received a bonus that amounted, on average, to 11%-20% of total compensation. The second largest category of bonuses comprised 1%-10% of total compensation, according to 28% of respondents.

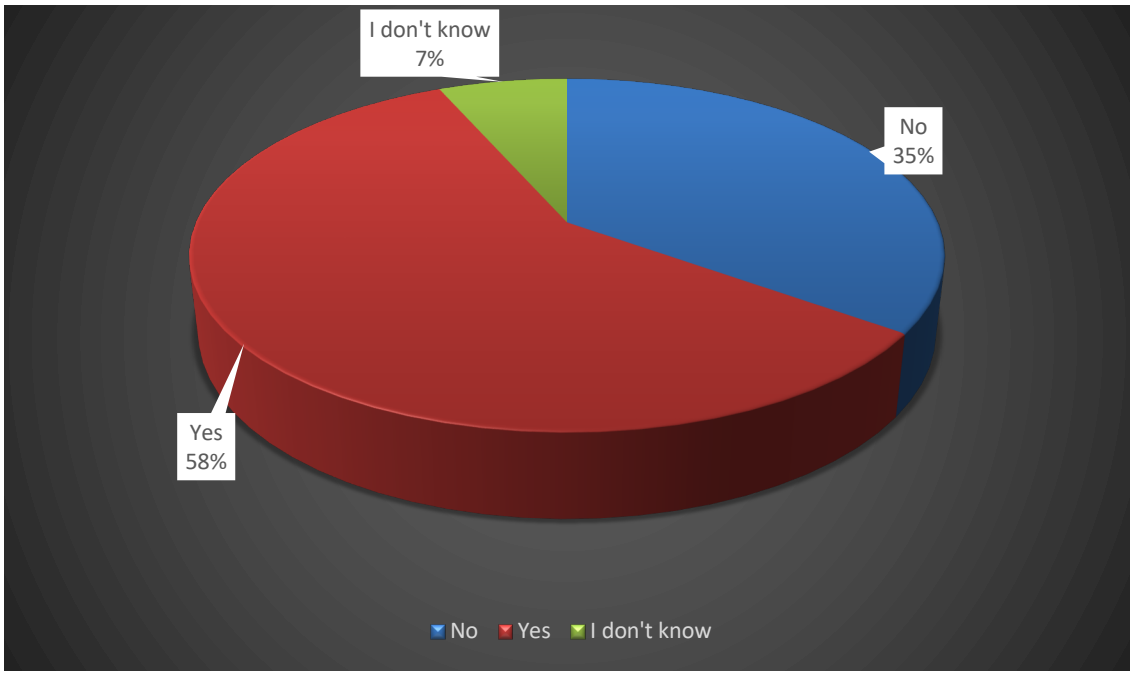
Figure 21 Performance-Based Bonus as Percentage of Total Pay



A moderate share of respondents in the sample, namely 12%, admitted that the performance-based part of the compensation was 21-30%, and 5% of respondents said they were paid bonuses that comprised at least 31%-40%. Only 3% of the people who took part in the survey received more than 50% of their pay as bonuses. At the same time, the companies that paid no bonuses at all were a minority and constituted only 8% of the sample.

Most of the managers who participated in the survey, namely 58%, noted that employees and managers had to sign an anti-fraud statement when gaining access to sensitive information about the company.

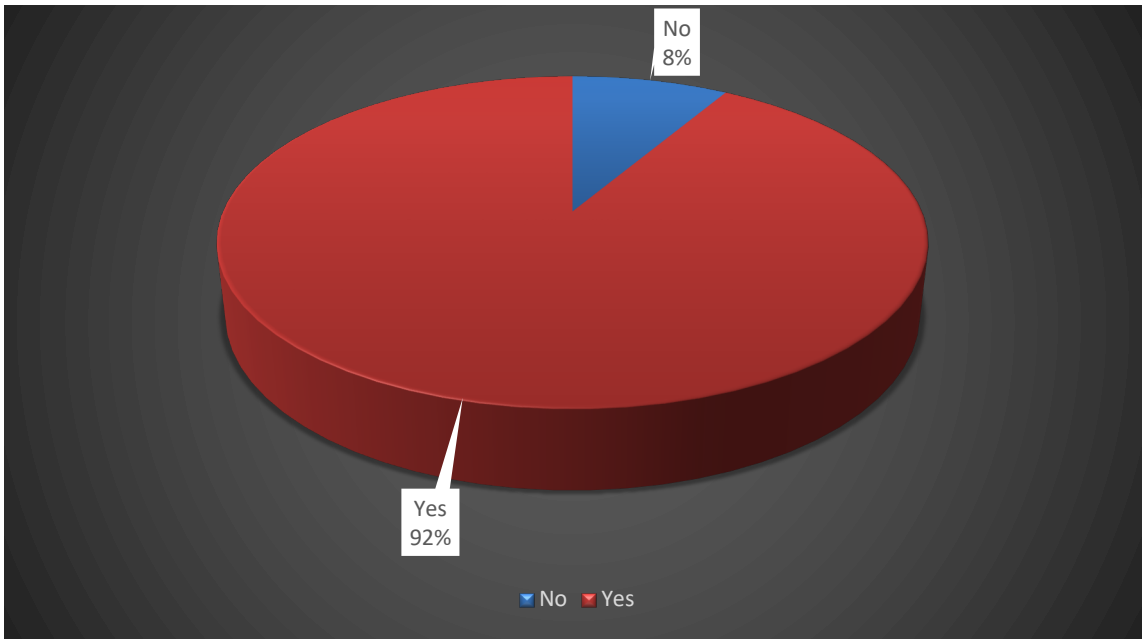
Figure 22 Do Employees Have to Sign Anti-Fraud Statements when Accessing Sensitive Information?



At the same time, 35% of the respondents said they did not have such requirements in their companies, which indicates a rather careless approach to dealing with sensitive information. A minority of the respondents, around 7%, admitted they did not know about this requirement.

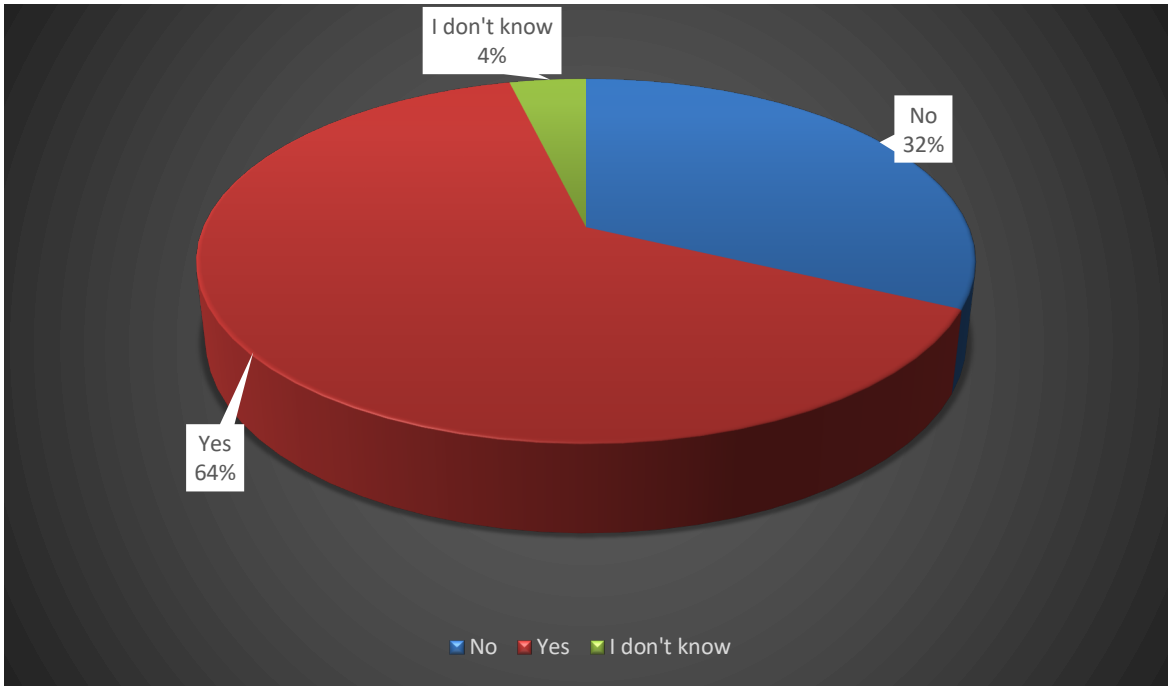
Almost all companies captured by the sample appeared to have a department of information technology.

Figure 23 Is There an IT Department?



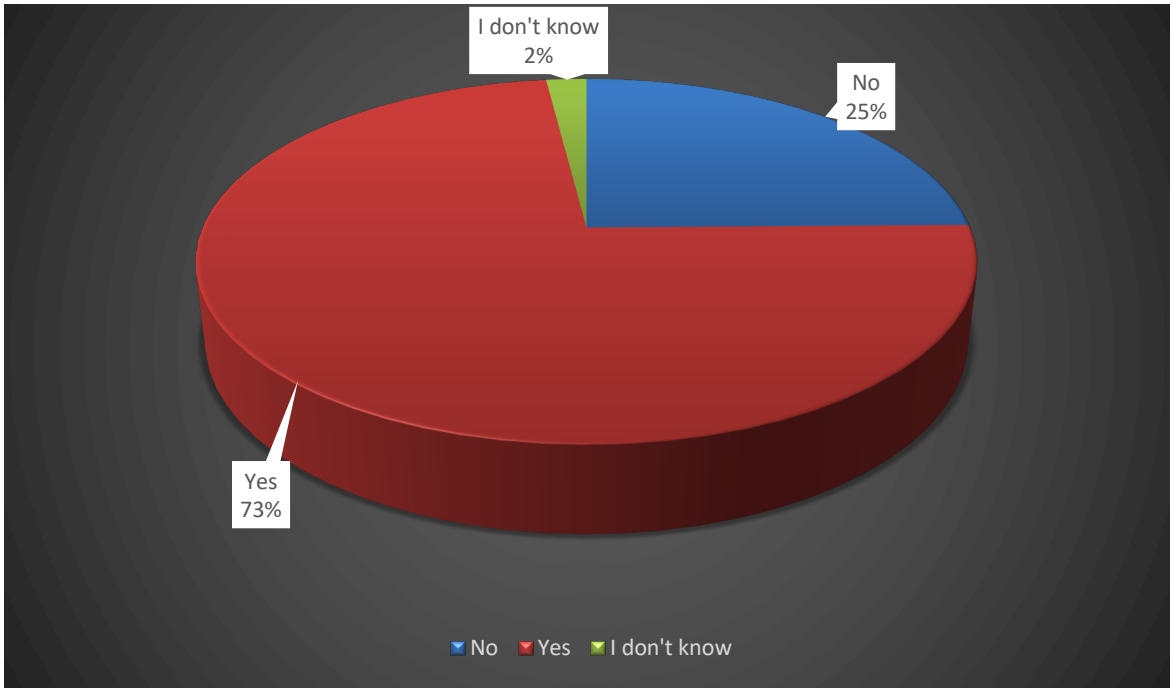
Specifically, 92% of companies had such a department, while several small businesses represented 8% of the overall number of respondents who did not. In addition to the IT department, fraud can be tackled using the expertise and efforts of internal audit and external audits. The share of the companies that had this committee on the board of directors was 64%, whereas the other 32% of firms did not have such a committee.

Figure 24 Is There an Audit Committee?



Some 4% of the respondents did not know if they had an audit committee. The distribution of responses is also similar to the question of whether the companies have an internal control unit. Around 73% of the respondents said their company had an internal control unit, whereas a quarter of respondents said there was no such unit in their company.

Figure 25 Is There an Internal Control Unit?



Around 2% of the respondents did not know whether such a unit existed.

The following table attempts to compare the quality of IT infrastructure in the surveyed companies and the quality of fraud monitoring as perceived by the respondents.

Table 7 Quality of IT Infrastructure and Fraud Monitoring

	Quality of IT Infrastructure	Quality of Fraud Monitoring
Completely inadequate	0.9	0.9
Inadequate	2.8	2.8
Somewhat inadequate	7.5	22.6
Adequate	46.2	41.5
Superior	42.5	32.1

Only 3.7% of respondents estimated the level of IT infrastructure as either "completely inadequate" or "inadequate" for protecting data and financial information. However, the share of those who deemed the IT infrastructure "adequate" or "superior" was 88.7%. Meanwhile, only 7.5% of the respondents perceived it to be "somewhat adequate", which can

be perceived as “efficient to some extent but could be better”. These responses positively correlate with the evaluation of the quality of fraud monitoring in companies. The majority of the respondents, namely 41.5%, agree that their company has an adequate quality of fraud monitoring. Moreover, some 32.1% of the respondents state that the quality of fraud monitoring is superior. Thus, 73.6% of respondents positively evaluate the quality of monitoring, and 88.7% of respondents positively evaluate the IT infrastructure. However, the percentage of those who stated that the quality of fraud monitoring was somewhat adequate was larger than the percentage of those who made the same evaluation in regard to the IT infrastructure. Thus, in spite of the positive correlation, some minor discrepancies are still observed.

The respondents were also asked to evaluate the effectiveness of data mining in fraud prevention, internal audit and external audit. The summary of the responses is reported in the following frequency table.

Table 8 Effectiveness of Data Mining, Internal Audit and External Audit

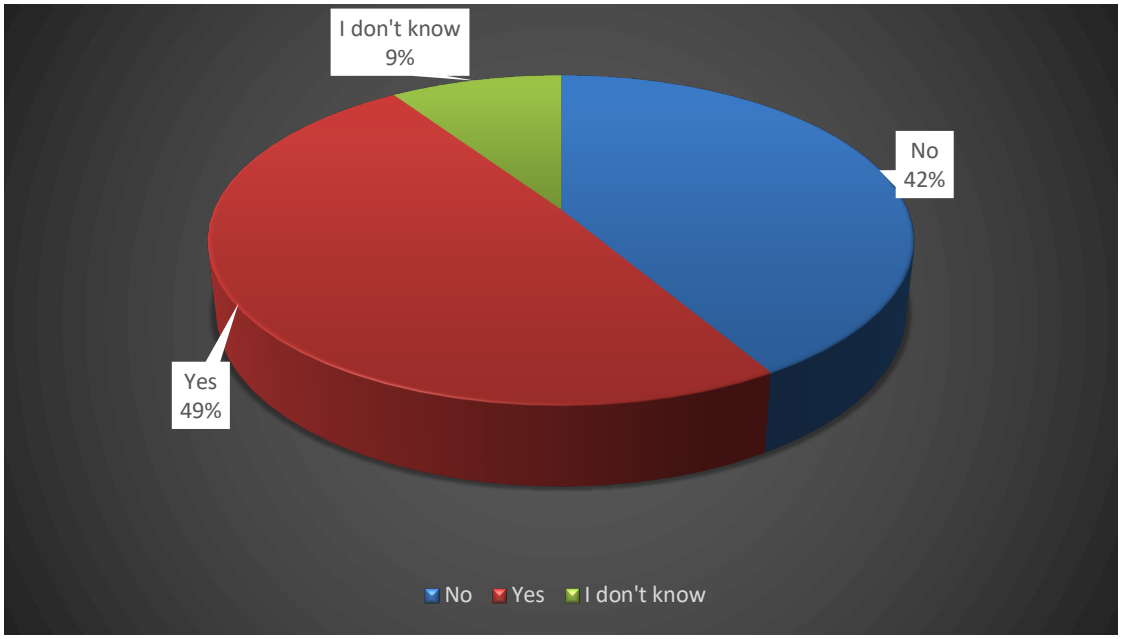
	Data mining	Internal Audit	External Audit
Not at all effective	1.9	0	0.9
Not so effective	2.8	4.7	5.7
Somewhat effective	31.1	11.3	24.5
Very effective	34.9	28.3	35.8
Extremely effective	29.2	23.6	33

Similar to the evaluation of the IT infrastructure, the majority of the respondents, namely 34.9%, evaluated data mining as very effective in tackling fraud in the company. Around 29% of the respondents stated that data mining was even extremely effective, and 31.1% of the respondents stated that it was somewhat effective. Only 4.7% of the people who participated in the survey raised doubts in relation to the effectiveness of data mining in preventing fraud. A similar pattern can be observed in the evaluation of internal audits. Among those respondents who reported that their company had an audit committee, the majority stated that internal audit was very effective in preventing fraud. They constituted 28.3% of all people who took part in the survey. More than 23% of the respondents evaluated the role of the internal audit as extremely effective, which implies that almost 52% of all respondents perceive their internal audit to be very effective or extremely effective. If more companies had audit committees, the percentage could have been higher, given the tendency observed.

The distribution of responses to the question on the effectiveness of external audits was approximately the same. Specifically, the external audit was deemed to be "somewhat effective" in 24.5%, very effective in 35.8% and extremely effective in 33% of companies. Along with that, 6.6% of the respondents reported that external audit was either not so effective or not at all effective for fraud prevention in their firms. Thus, the perceptions of all three factors are positively correlated, which will later be shown using the correlation analysis.

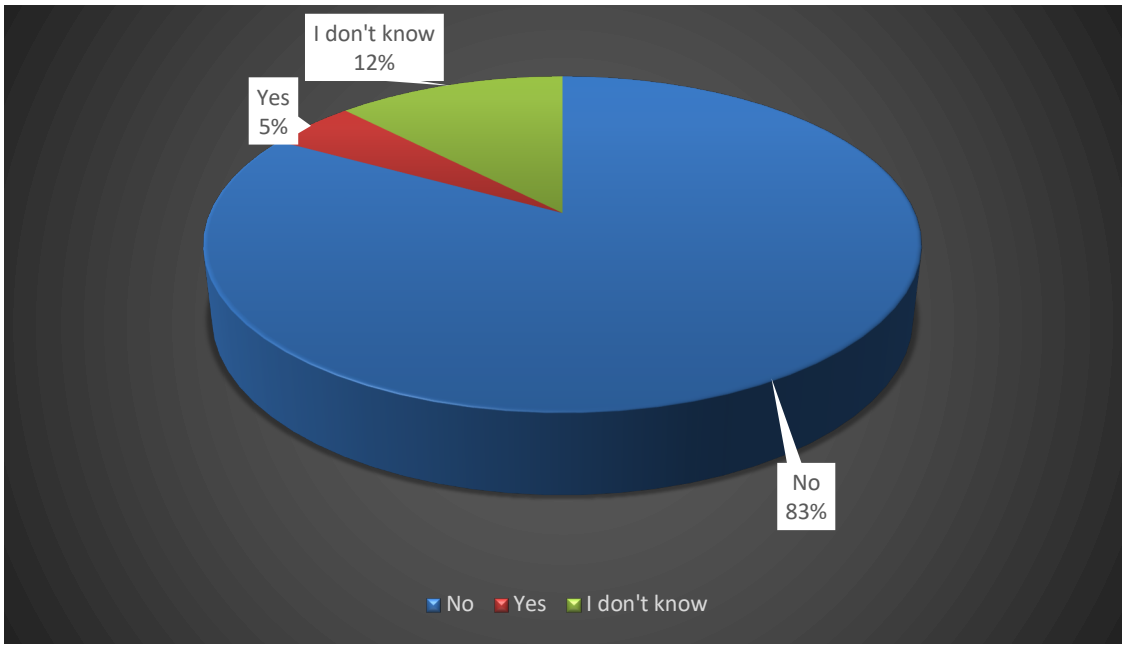
The shares of companies which had a special hotline for anonymous whistle-blowing about cases of fraud is 49% of the sample. Around 42% of the companies did not have a hotline, and 9% of the respondents said they did not know.

Figure 26 Is There a Hot Line for Reporting Fraud?



Along with that, the majority of companies did not stipulate monetary rewards for whistleblowing.

Figure 27 Are There Monetary Incentives for Whistle Blowing?



Only 5% of the respondents said there were such compensations, and 12% of the respondents did not even know. This implies that this method of quickly detecting fraud has not received much interest and has not been practised widely in UK retail companies.

The next four questions were connected with the attitude of respondents to fraud and whether fraud can be justified by different factors.

Table 9 Attitude to Fraud and Whether It Can Be Justified

	All Commit Fraud	Fraud Justified if Company is Unfair	Fraud Justified to Protect Others	Fraud Justified If It Does Not Hurt
Strongly disagree	63.2	57.5	50.9	66
Disagree	27.4	33	34	27.4
Neither agree nor disagree	5.7	7.5	12.3	3.8
Agree	1.9	0.9	2.8	2.8
Strongly agree	1.9	0.9	0	0
Total	100	100	100	100

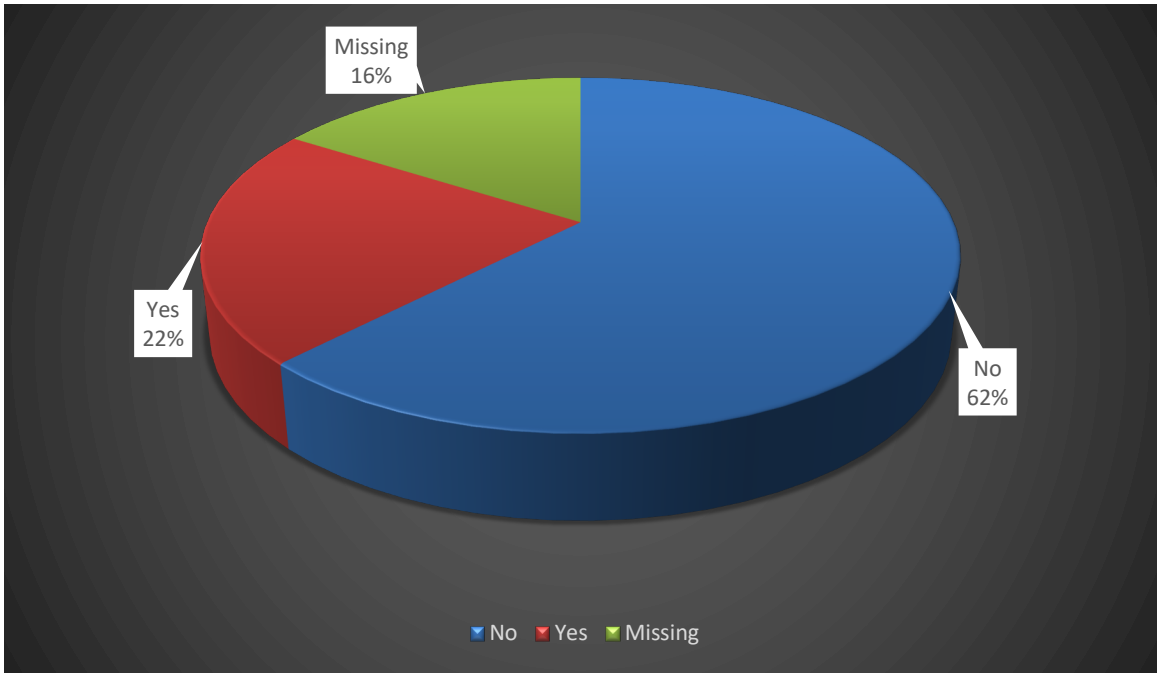
A large number of respondents, namely 63.2%, strongly disagreed with the statement that all managers commit fraud while not all of them are caught and only 1.9% of the polled strongly agreed with it. Meanwhile, those who neither agreed nor disagreed constituted 5.75 of the sample, and the percentage of people who disagreed with the statement amounted to 27.4%.

Rather similar trends and tendencies have been detected in the evaluation of the other attitudes in relation to fraud. In particular, 57.5% of the respondents strongly disagreed, and

33% of the respondents disagreed that fraud could be justified if the company was unfair to the one who committed fraud. Thus, retaliation and revenge were not socially acceptable, according to managers of the companies. In the same way, the majority of the respondents, namely 50.9%, strongly disagreed, and 34% of the respondents disagreed that fraud could be justified if it was used to protect others. However, this question also received a relatively larger share of people, namely 12.3%, who were uncertain. Finally, 66% of the respondents strongly disagreed, and 27.4% of the respondents disagreed with the statement that fraud could be justified if it did not hurt anyone.

The final question of section III represents the dependent variable in the model. Namely, the respondents were asked whether their companies evidenced fraud or had official proceedings on fraud.

Figure 28 Has There Been Public Evidence or Investigation on the Grounds of Fraud?



A larger portion of the polled, namely 62%, reported that their companies were not involved in processes of fraud investigation. Meanwhile, 22% of the respondents answered that their companies were at one point subject to fraud investigation or there was public evidence of fraud. Around 16% of the responses were missing, as the people did not know whether there was evidence of fraud in their companies in the public domain.

5.2.2.4. Recommendations on Fraud Prevention

As for part IV of the survey, very few respondents answered the suggested questions, so it was impossible to form the variables for quantitative analysis. In terms of ethical training for fraud prevention, the respondents answered that the best way to prevent fraud is to explain the potential consequences and harm for the entire company to managers and employees. On the other hand, some respondents complained that their firms literally pushed employees to violate the rules and commit fraud to comply with working requirements.

Overall recommendations for improving mechanisms of fraud prevention can be summarised in the following way. Most of those who answered these questions noted that instructions and algorithms of particular actions are frequently formulated ambiguously so that there is no clear understanding of what a particular employee or manager should do and how. This leads to vagueness and, ultimately, to efforts to conceal previous mistakes by committing fraud. This referred to fraud prevention tools as well.

As for the manager stimulation for preventing fraud, it was suggested that a clear stimulation scheme should be developed so that each employee understands what should be done and how he or she is rewarded for achieving a particular result. Most respondents opined that there is often confusion with duty regulations which entails misunderstanding who should do what. This generates a mess at all organisational levels. This also makes controlling the order much harder but facilitates committing illegal actions for fraudsters.

5.2.3. Comparison of Data

The analysis of answer frequencies was conducted for the whole sample. However, it is interesting to understand whether the answers were homogenous in groups by characteristics such as the type of the company and whether the company was involved in fraud scandals. That is, the aim of such tests is to determine whether the answers of respondents from firms connected with such scandals were, on average, the same as those of respondents from "clean" companies. To test this, the independent-samples t-test and ANOVA methods are employed. The independent samples t-test can be applied to compare the same variable for two categories, whereas ANOVA allows for the comparison of more categories. Hence, the independent samples t-test is used for the variables such as involvement in fraud scandals,

which could be yes or know and the rest are excluded, while ANOVA is used for the variables such as the business model of companies.

Since there are different specifications of the independent samples t-test and it is sensitive to the variance of the variables, the Levene test is conducted as well. The Levene test compares the variance of the variables and determines whether it is different in different subsamples. The null hypothesis of the test is that the variance of the variables does not statistically different across all tested subsamples. That is, the subsamples are randomly taken from the population and homogeneity of variance in subsamples exists. This will be the case if the p-value of Levene's statistic is higher than the threshold value of 0.05. Meanwhile, if the p-value appears to be lower than this cut-off level, then the null hypothesis will have to be rejected. This would imply that the variable variance across subsamples is statistically different.

A similar null hypothesis is formulated for the independent-samples t-test, which compares the means of the variables in different groups. The null hypothesis of the t-test is that the means of variables for the companies do not statistically differ from each other. As in Levene's test, the p-values of the t-test are compared against the threshold level of 0.05 to detect whether the null hypothesis should be accepted or rejected.

The comparison of characteristics between the companies that were involved in fraud and those that were not involved in fraud is reported in the following table.

Table 10 Comparison of Means

	Fraud	N	Mean	Std. Deviation		F	t
What is the latest published annual turnover figure for your company?	No	66	3.894	2.315	Equal variances assumed	14.001***	
	Yes	23	7.000	1.206	Equal variances not assumed		-8.173***
What is the average profit margin (gross profit/sales) of the company over the last five years?	No	66	5.212	1.283	Equal variances assumed	8.573***	
	Yes	23	4.739	1.764	Equal variances not assumed		1.182
What part of the total managerial compensation do performance-based bonuses comprise?	No	66	2.985	1.409	Equal variances assumed	0.129	-0.173
	Yes	23	3.044	1.364	Equal variances not assumed		-0.176
Is there an IT department in your company that deals with data protection and safety?	No	66	1.864	0.346	Equal variances assumed	20.024***	
	Yes	23	2.000	0.000	Equal variances not assumed		-3.204***
Does your company have an audit committee?	No	66	1.561	0.585	Equal variances assumed	159.275***	
	Yes	23	2.000	0.000	Equal variances not assumed		-6.100***
Does the company have an internal control unit responsible for fraud detection and prevention?	No	66	1.833	0.796	Equal variances assumed	22.023***	
	Yes	23	2.000	0.000	Equal variances not assumed		-1.701*
Is there a hotline in the company where employees or managers can anonymously disclose witnessed cases of fraud?	No	66	1.470	0.561	Equal variances assumed	0.556	-4.322***
	Yes	23	2.087	0.668	Equal variances not assumed		
Does the company provide monetary incentives for whistle-blowing?	No	66	1.152	0.472	Equal variances assumed	27.121***	
	Yes	23	1.522	0.898	Equal variances not assumed		-1.888*
How would you rank the quality of the fraud monitoring in your company?	No	66	3.893	0.879	Equal variances assumed	0.110	-1.731*
	Yes	23	4.261	0.864	Equal variances not assumed		

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level

The outcomes of Levene's test show that the variance in the size of companies drawn in fraud scandals statistically differed from that of non-involved companies since the null hypothesis of the test is rejected. Similarly, the variance in the level of profit margin was different for the companies involved in fraud in the past and those not involved. As can be seen, most of the variables analysed had different variances across these groups. Respective results of independent-samples t-tests are analysed for each case.

There is found a statistically significant difference in the company size measured by total revenue. The companies that were subject to fraud investigation in the past tended to have more revenue, whereas smaller companies were less involved in financial fraud and were generally not subject to investigation.

The companies that were previously subject to fraud investigation or with public evidence of financial fraud had a higher probability of having an IT department. However, this may not necessarily be a result of previous financial fraud but because such companies were mostly of larger size and therefore IT department was more essential for such firms. Such companies with previous evidence of financial fraud were also more likely to have an audit committee and internal control unit, according to the results of the t-test. They also had a hot line and monetary incentives for whistleblowing which were rarer in companies that did not have previous evidence of fraud.

In general, these results evidence that the respondents from companies where fraud was recorded and those not involved in fraud had different perceptions of some key factors that might influence the occurrence of fraud. However, a more accurate estimation of the effect of these factors on fraud commitment can be obtained only from the outcomes of the regression analysis that is conducted in the next sections of the analysis chapter. Interestingly, the previous cases of fraud did not seem to have an effect on the performance-based compensation and profitability of the companies.

The second criterion of comparison was the company type, including online sales, retail sales and a mixed model combining both types of sales. Similar to the comparison by the involvement in fraud scandals, the groups by company types are compared by the difference in variance and in mean values. The outcomes of the comparison using ANOVA are reported in the next table.

Table 11 ANOVA Test

		F	p-value
What is the latest published annual turnover figure for your company?	Between Groups	8.57***	0.0000
	Within Groups		
	Total		
What is the average profit margin (gross profit/sales) of the company over the last five years?	Between Groups	3.17**	0.0460
	Within Groups		
	Total		
What part of the total managerial compensation do performance-based bonuses comprise?	Between Groups	0.30	0.7440
	Within Groups		
	Total		
Is there an IT department in your company that deals with data protection and safety?	Between Groups	1.95	0.1470
	Within Groups		
	Total		
Does your company have an audit committee?	Between Groups	6.36***	0.0020
	Within Groups		
	Total		
Does the company have an internal control unit responsible for fraud detection and prevention?	Between Groups	5.27***	0.0070
	Within Groups		
	Total		
Is there a hot line in the company where employees or managers can anonymously disclose witnessed cases of fraud?	Between Groups	2.06	0.1330
	Within Groups		
	Total		
Does the company provide monetarily incentives for whistle-blowing?	Between Groups	1.09	0.3400
	Within Groups		
	Total		
How would you rank the quality of the fraud monitoring in your company?	Between Groups	0.85	0.4320
	Within Groups		
	Total		

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level

Unlike the comparison by the involvement in fraud scandals, the results show a significant difference in the profitability of companies depending on the company type. However, most of the analysed variables show no statistically significant differences across companies with physical stores, online sales and a mixed business model. The exceptions are the revenue of the companies, having an internal control unit, and having an audit committee.

5.2.4. Correlation Matrices

To check whether multicollinearity is present in the sample, pairwise correlations between independent variables are analysed. The Kendall Tau is taken as a measure of the correlation between independent variables since these variables mostly represent ranks. Using ranks implies that all respondents may be of the same opinion on a particular question. Therefore, it is inappropriate to use parametric indicators of correlation such as Pearson's correlation coefficient. Meanwhile, the Kendall Tau is a non-parametric measure and, therefore, better reflects relationships between explanatory variables.

Similar to Pearson's and Spearman's correlation coefficients, the Kendall Tau takes the values between -1 and 1. Its values closer to the edges of this interval, namely those higher than 0.7 in the absolute value, point to a strong correlation between the variables. In this case, two variables behave accordingly and change with a high degree of synchrony. If these variables appear to be a significant determinant of the dependent variable in a regression, it will be difficult to estimate their individual effect. As for values equal to or close to 0, they show a weak correlation, which implies that two particular variables behave independently from each other. The correlation matrix for the variables used in the logistic regression is reported in the following table.

Table 12 Correlation Matrix

	Fraud	Business Model	Overseas	Revenue	Profit	Turnover Low	Pay Complaint	Bonus	Anti Fraud	IT Dept	Audit Committee	Audit Expertise	Internal Control Unit	Hot Line	Monetary Incentive
Fraud	1														
Business Model	0.02	1													
Overseas	0.14	0.001	1												
Revenue	.47**	.27**	.21*	1											
Profit	-0.08	-.23**	.24**	-0.13	1										
Turnover Low	-0.03	0.007	-0.01	0.01	-0.02	1									
Pay Complaint	-0.03	-0.09	0.08	-0.08	0.002	.25**	1								
Bonus	0.01	-0.05	0.10	0.05	0.13	0.07	.18*	1							
Anti Fraud	.33**	0.07	0.01	.33**	-0.12	-0.02	0.02	0.13	1						
IT Dept	0.20	-0.04	.43**	.26**	-0.17	0.13	0.18	0.15	.22*	1					
Audit Committee	.38**	.28**	0.08	.55**	-.22*	-0.08	0.04	0.09	.55**	.31**	1				
Audit Expertise	-.34**	-.21*	-0.10	-.52**	0.10	0.11	0.04	-0.05	-.45**	-.30**	-.66**	1			
Internal Control Unit	.22*	.32**	0.08	.37**	-0.17	-0.02	0.00	0.08	.24**	0.18	.53**	-.34**	1		
Hot Line	.39**	0.15	0.05	.49**	-.22*	-0.02	-0.03	.19*	.45**	.33**	.55**	-.43**	.39**	1	
Monetary Incentive	.21*	0.12	0.06	.24**	-0.01	.20*	0.04	-0.01	.25**	0.06	.29**	-0.15	0.16	.46**	1

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level

The table shows that there are statistically significant correlations between variables. However, none of the pairs of correlated variables causes significant issues with multicollinearity that would interfere with the regression analysis. The highest correlation coefficient observed between variables is almost 0.6, which is still far from perfect multicollinearity or near-perfect multicollinearity. Therefore, these chosen independent variables can be used in the subsequent logistic regression analysis.

Among the correlation coefficients, some of the highest values are observed between the company size measured by revenue and the availability of the audit committee. This association looks to be natural. The larger the company, the more complicated its governance structure and its business transactions. Therefore, the presence of the audit committee is a necessity for maintaining transparency in accounting and financial operations. Similarly, the audit committee's main responsibility is to ensure that accounting in a company is executed in line with standards and regulatory requirements. To provide this, special education or significant practical expertise is required.

5.2.5. Regression Analysis

The main element of the analysis is the logistic regression analysis. This analysis determines the significance of the effects of variables representing the Fraud Triangle constituents on the probability of occurrence of fraud in UK retail companies. A binary regression analysis is conducted since the dependent variable is represented by the dummy variable. This represents the situation when only two possible conditions for the dummy variable are possible. In the context of the current study, a firm can either be drawn in the fraud proceeding or not be drawn. In this case, the impact of explanatory variables on the probability for the dependent variable to take either of these states is estimated.

The output of the logistic regression is provided in the following table.

Table 13 Binary Logistic Regression

	B	S.E.	Wald	Sig.	Exp(B)
Business_model	-0.6030	0.5370	1.2630	0.2610	0.5470
International	0.2500	0.8830	0.0800	0.7770	1.2840
Revenue	0.8410***	0.2890	8.4540	0.0040	2.3190
Profit	-0.1850	0.2620	0.4970	0.4810	0.8310
Managers_Turnover	-0.2950	0.3600	0.6690	0.4130	0.7450
Satisfaction_Pay	-0.2940	0.4320	0.4640	0.4960	0.7450
Bonuses	-0.0170	0.3290	0.0030	0.9580	0.9830
AntiFraud_statement	1.8090*	1.0160	3.1710	0.0750	6.1020
IT_Dept	23.1800	9737.9980	0.0000	0.9980	11667903416.5270
Audit_committee	0.9740	2.0470	0.2260	0.6340	2.6490
Internal_audit_expertise	-0.2400	0.7380	0.1060	0.7450	0.7870
Internal_control	-1.5080	2.2810	0.4370	0.5090	0.2210
Hot_line	-0.3230	0.7750	0.1740	0.6760	0.7240
Whistleblowing_incentives	0.4750	0.6140	0.6000	0.4390	1.6080
Constant	-49.9730	19475.9970	0.0000	0.9980	0.0000

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level
The goodness of fit: R-sq = 0.565

The R-squared of the logistic regression provided above is called the Nagelkerke R-Squared and is equal to 0.565. This means that the model is able to explain about 56.5% of the dependent variable variance. In general, this demonstrates the good explanatory power of the model. Along with that, the remaining percentage of variance is unexplained. As mentioned above, the commitment to fraud can be entailed by other factors, such as managers' desire to enrich themselves illegally or fear of disclosing their previous mistakes, which were not represented in the survey and, accordingly, in the model.

Another significant indicator is the Wald statistic and its p-value, which indicate the model's overall significance. Unlike the R-squared, it does not estimate the explanatory power of the model quantitatively but rather determines whether it contains significant coefficients at a certain level of significance. That is, this indicator also reflects the model's ability to explain the dependent variable variance. The null hypothesis of this test is that the model has no significant coefficients that would statistically differ from zero. This would mean that the explanatory power of the model would not be higher than that of the model, which contains the intercept only. However, the alternative hypothesis is that the model contains at least one significant coefficient and thus explains the behaviour of the dependent variable better than the no-variable model.

The table above indicates that the p-value of the Wald statistic is below the 0.05 level only for the Revenue variable, which means that at the 5% significance level, larger companies have a higher probability of being involved in corporate fraud compared to smaller companies. If the 90% confidence interval is used, the Wald test p-value can be compared to the threshold value of 0.1. In this case, another significant predictor of fraud emerges, namely anti-fraud statements. In particular, it is found that if a company requires that its employees sign anti-fraud statements, such a company has a higher probability of corporate fraud occurrence. While this finding may sound counterintuitive, there are two possible explanations for this phenomenon. The first explanation is that there is simply a correlation between the company size and its requirement to sign anti-fraud statements. In other words, small companies would not impose such requirements, whereas they are much more common in larger companies. In fact, Table 11 confirmed that there was a significant moderate correlation between size and anti-fraud statement requirements, with the coefficient of correlation being 0.33. The second explanation for this finding is that there is an issue of endogeneity, which the logistic regression could not detect and deal with. Due to this issue, the causal relationship could be reversed and run from the occurrence of fraud to the

requirement to sign anti-fraud statements. In other words, those companies that experienced corporate fraud would be more likely to require their employees to sign anti-fraud statements in the future. Since the reduced-form regression fails to capture such complexities, it is required to conduct structural equation modelling for further details and insights.

In regards to the rest of the variables, the coefficients produced by the logistic regression show signs that are consistent with expectations, but the significance of such coefficients is low, which can be explained by the high standard errors produced. In particular, the presence of a hot line for whistleblowing, internal audit expertise and internal control in the company are all negatively associated with the probability of corporate fraud occurrence, but there is not enough evidence to claim that these relationships are statistically significant and can be inferred for the rest of the population. The same conclusion applies to the rest of the factors, which have not been found significant, such as the presence of an IT department, satisfaction of managers with the pay, bonuses, management turnover and the presence of an audit committee. Some of these factors, such as the presence of an audit committee, could be insignificant due to the correlation with the company size, as small companies are not likely to have an audit committee on their board. For such companies, the costs of such control mechanisms of corporate governance would outweigh the benefits, and there are no legal requirements for small firms to have audit committees on their boards.

5.2.6. Robustness Test

The robustness test has been conducted by testing the sensitivity of the results to the choice of proxies for the internal audit effectiveness (Opportunity factor) and employee satisfaction (Pressure factor) and checking whether or not the results remain consistent with the main findings from the total sample. The results are reported in the following table.

Table 14 Sensitivity Analysis

	B	S.E.	Wald	Sig.	Exp(B)
Business_model	-0.5020	0.5420	0.8580	0.3540	0.6050
International	0.0670	0.9240	0.0050	0.9420	1.0690
Revenue	0.8120***	0.2750	8.7010	0.0030	2.2520
Profit	-0.1420	0.2630	0.2890	0.5910	0.8680
Managers_Turnover	-0.3760	0.4040	0.8680	0.3510	0.6860
Satisfaction_Pay	0.3380	0.3990	0.7150	0.3980	1.4020
Bonuses	-0.0710	0.3490	0.0420	0.8380	0.9310
AntiFraud_statement	1.8970*	1.0590	3.2060	0.0730	6.6640
IT_Dept	23.1770	9656.3110	0.0000	0.9980	11633105318.2000
Audit_committee	-0.2860	0.4360	0.4300	0.5120	0.7510
Internal_audit_expertise	1.5840	2.1230	0.5570	0.4560	4.8740
Internal_control	-1.5840	2.4250	0.4270	0.5130	0.2050
Hot_line	-0.2150	0.8280	0.0680	0.7950	0.8060
Whistleblowing_incentives	0.2440	0.6330	0.1490	0.7000	1.2760
Constant	-52.2110	19312.6230	0.0000	0.9980	0.0000

*** significant at the 1% level
** significant at the 5% level
* significant at the 10% level
The goodness of fit: R-sq = 0.571

The goodness of fit of the regression model has slightly improved in the robustness test, but the main effects and their significance remained the same as in the base model. Hence, the results are robust to the choice of the proxies for the independent variables. Now it is important to examine how well the observed independent variables load on the three theoretical constructs of the Fraud Triangle and how these theoretical constructs affect financial fraud in UK retail companies. This is done by means of the structural equation modelling in the next section.

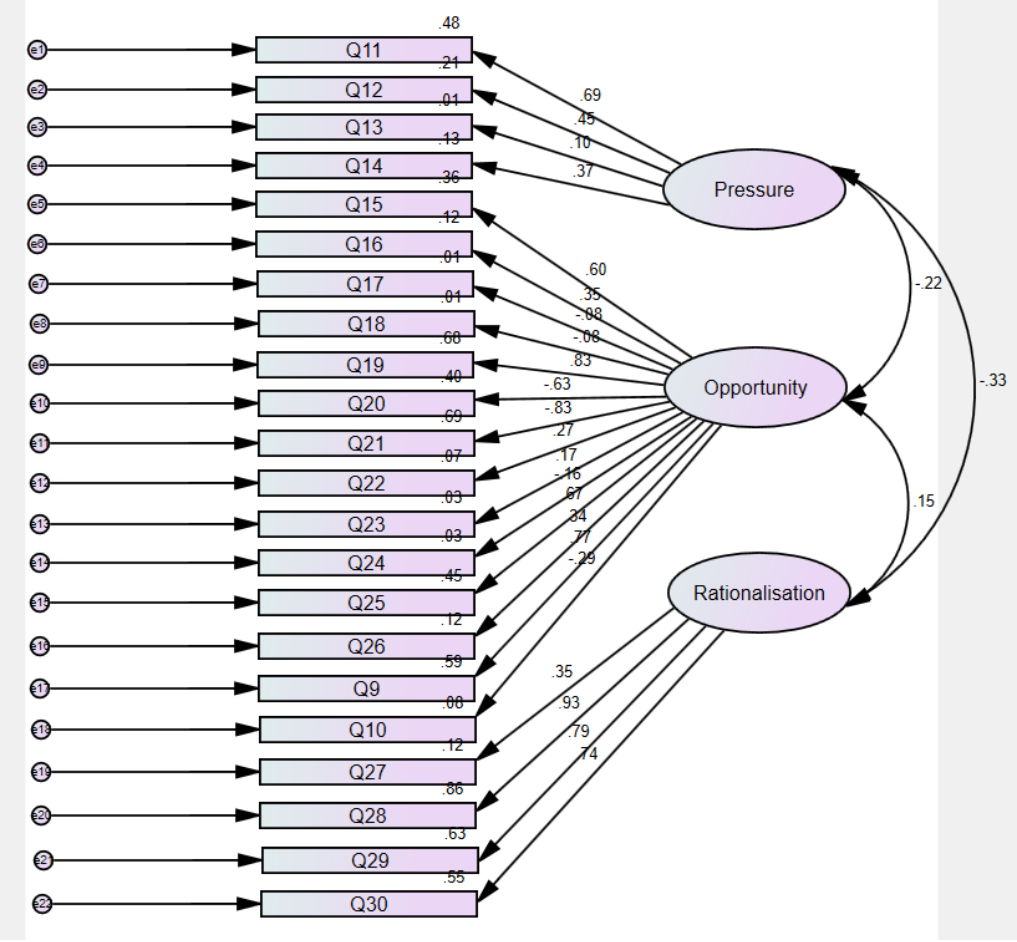
5.2.7. Structural Equation Modelling (SEM)

Structural Equation Modelling was chosen in addition to the regression analysis because the research deals not only with the observed variables that can be measured, such as the presence of an audit committee or an IT department, but also unobserved theoretical constructs that are not directly measurable. These constructs are derived from the Fraud Triangle and are referred to as Pressure, Opportunity and Rationalisation. Since these constructs are not directly measured by a single variable, they are considered latent variables.

In contrast to simple regression analysis, Structural Equation Modelling allows for quantifying these three latent variables based on the factors which load well on each of these constructs. The data fits the structural equation model assumptions as all the observed variables have been coded on a Likert scale, which is easily standardized by the SPSS software in order to address the required assumptions of normality.

The structural equation modelling begins with the confirmatory factor analysis in order to estimate how well the chosen responses to questions in the survey questionnaire explain the theoretical constructs of Pressure, Opportunity and Rationalisation. The following figure presents the output of the confirmatory factor analysis produced in SPSS Amos software. The presented values are the standardised coefficients that range on a scale from -1 to 1. Standardised coefficients are preferred to traditional coefficients as the magnitude of the effects can be easily compared to evaluate which factors have greater explanatory power in relation to the latent variables.

Figure 29 Confirmatory Factor Analysis



The circles on the left side of the graph demonstrate the error terms associated with each of the variables represented by responses to the given questions in the survey questionnaire. These responses are represented by variables Q11-Q30, which are associated with Question 11-Question 30 from Appendix B. Rectangular shape indicates observable variables. The three ovals represent the latent variables associated with Pressure, Opportunity and Rationalisation. As can be seen, the largest number of observed factors is associated with the theoretical construct of Opportunity. Rationalisation and Pressure are associated with four factors each. In order to evaluate the correlations between the latent variables, they have also been connected in the confirmatory factor analysis before estimating the coefficients.

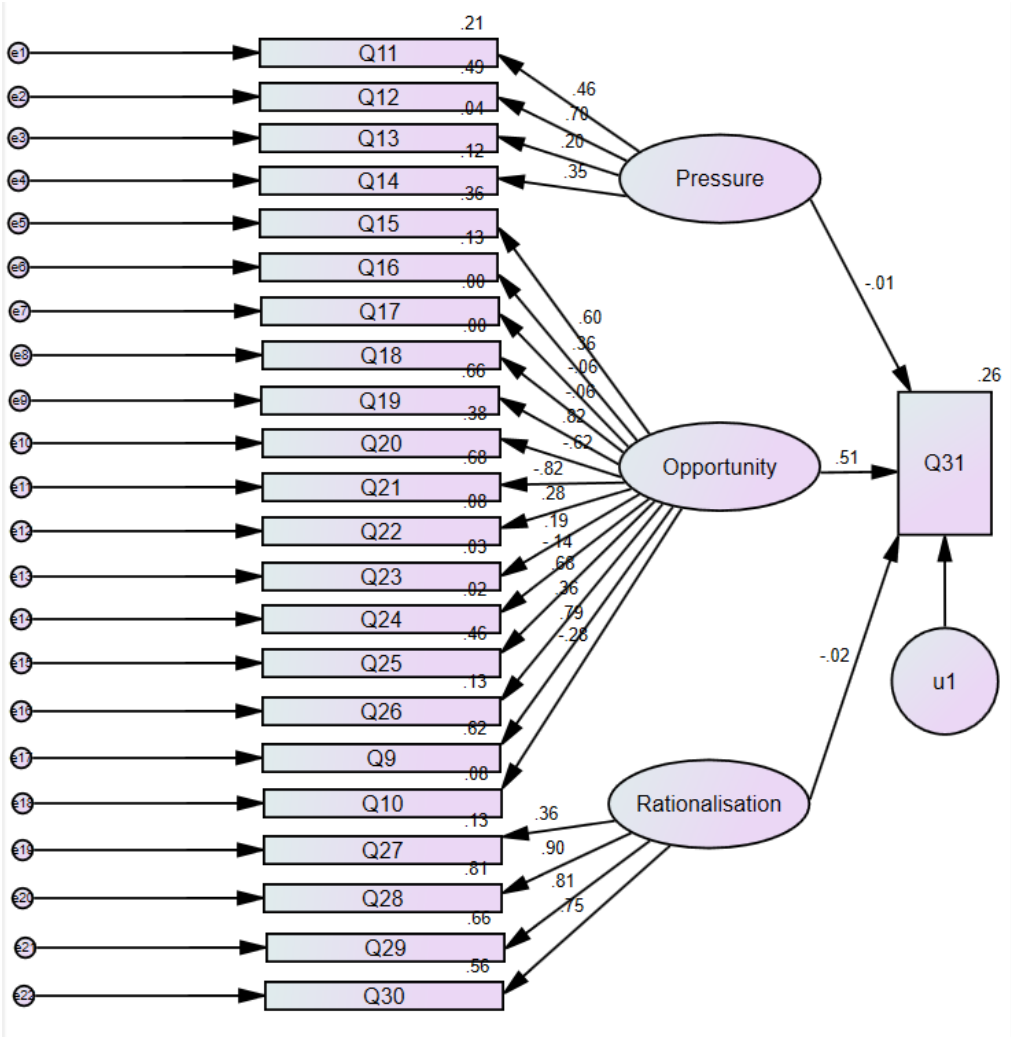
The results reveal that the three theoretical constructs are weakly correlated with correlations ranging from -0.33 to 0.15. This is a good indication for the next step of Structural Equation Modelling, namely: Path Analysis, as this excludes the possibility of strong multicollinearity between the latent variables that could affect the results.

The analysis of factor loadings for each latent variable shows that the best loadings are shown for the Rationalisation construct as the standardised coefficients for its four factors are quite high, ranging from 0.35 to 0.93, with three out of the four factors reporting the coefficients in excess of 0.7. Factor loadings associated with the latent variable of Pressure are somewhat weaker, with Q11 (Turnover among managers is low) showing the highest loading with the standardised coefficient of 0.69.

The factor loadings associated with the Opportunity construct are much more diverse, ranging from negative -0.83 to positive 0.83. The negative factor loadings are explained by the way in which the factors are formulated. In this case, a more important characteristic is the absolute value of the coefficients rather than their sign because the sign could be different if the question in the survey questionnaire was asked slightly differently.

The next step of structural equation modelling is Path Analysis. The paths are built based on the conceptual framework associated with the Fraud Triangle theory. The dependent variable of Fraud occurrence in the past five years has been added (Q31). Its own error term is introduced and is represented by U1 in the circle. Since the variable of fraud is directly measurable and observable, it is illustrated in a rectangular form rather than an oval. The following figure demonstrates the Path Analysis of SEM.

Figure 30 Path Analysis with Standardised Coefficients



Similar to the confirmatory factor analysis, the coefficients estimated for the Path model are presented in the standardised form ranging from -1 to 1 in order to facilitate easier interpretation and demonstrate the magnitude of the effects. It is interesting to find that among the latent variables adopted in this study, Pressure and Rationalisation do not have statistically significant associations with the probability of fraud occurrence. In contrast, the Opportunity construct shares a significant relationship with Fraud. The details of each effect are further provided in the following table showing the estimates of each element of SEM, their standard errors and p-values.

Table 15 SEM with Unstandardised Coefficients

			Estimate	S.E.	C.R.	P	Label
Managers_Turnover	<---	Pressure	1.000				
Satisfaction_Pay	<---	Pressure	1.308	.700	1.869	.062	
Bonuses	<---	Pressure	.571	.396	1.440	.150	
Regular_Promotions	<---	Pressure	.784	.357	2.196	.028	
AntiFraud_statement	<---	Opportunity	1.000				
IT_Dept	<---	Opportunity	.293	.088	3.336	***	
IT_quality	<---	Opportunity	-.138	.237	-.582	.560	
Data_mining	<---	Opportunity	-.153	.279	-.550	.582	
Audit_committee	<---	Opportunity	1.245	.198	6.278	***	
Internal_audit_effectiveness	<---	Opportunity	-2.090	.403	-5.183	***	
Internal_audit_expertise	<---	Opportunity	-2.167	.344	-6.307	***	
Internal_control	<---	Opportunity	.523	.202	2.591	.010	
Fraud_monitoring_quality	<---	Opportunity	.466	.262	1.781	.075	
External_audit_effectiveness	<---	Opportunity	-.374	.283	-1.322	.186	
Hot_line	<---	Opportunity	1.258	.226	5.577	***	
Whistleblowing_incentives	<---	Opportunity	.694	.212	3.282	.001	
Revenue	<---	Opportunity	5.603	.913	6.138	***	
Profit	<---	Opportunity	-1.162	.437	-2.658	.008	
All_committ_fraud	<---	Rationalisation	1.000				
Fraud_justified_company_unfair	<---	Rationalisation	2.240	.617	3.627	***	
Fraud_justified_to_protect	<---	Rationalisation	2.132	.594	3.591	***	
Fraud_justified_not_hurt	<---	Rationalisation	1.728	.489	3.532	***	
Fraud	<---	Pressure	-.008	.116	-.072	.943	
Fraud	<---	Opportunity	.649	.153	4.249	***	
Fraud	<---	Rationalisation	-.034	.142	-.242	.808	

The three bottom lines indicate the relationships between the dependent variable and the latent variables associated with the theoretical constructs of Pressure, Opportunity and Rationalisation. As can be seen from the p-values, Pressure and Rationalisation do not have a statistically significant association with Fraud, whereas Opportunity has a statistically significant positive explanatory power. This agrees with the visual analysis of SEM conducted above.

None of the Pressure factors demonstrates statistically significant loadings on the latent variable. However, nearly all Rationalisation factors demonstrate consistent and significant loadings. The variable "All Commit Fraud" does not show an indicator of statistical significance as, in order to allow for confirmatory factor analysis, at least one factor had to be fixed at the level equal to 1. The rest of the coefficients would be estimated in relation to this

benchmark. For the same reason, there is no evidence of significance for the factor of Anti-Fraud Statements and Managers' Turnover.

The Opportunity construct has the greatest number of factors with which it shares a statistically significant relationship. In particular, the size of the company measured by its Revenue is found to be positively and significantly correlated with Fraud occurrence. This indicates that in larger companies, corporate fraud is more common compared to smaller firms. The main reason for this is that in small companies, it is easier to identify the person who commits fraud. Moreover, the accounts and business model are often simpler in smaller firms, which also facilitates fraud prevention. Finally, in larger companies, there is a larger opportunity for stealing more, whereas, in smaller companies, the potential returns to corporate fraud would be lower, while the price for the risk, if the fraudster is caught, is high.

It was expected, based on the Fraud Triangle Theory, that the presence of a hotline for whistleblowing would help prevent fraud; however, the findings of SEM report that there is a positive association between this factor and fraud occurrence in the sample of UK retail companies. There are a few possible explanations for this phenomenon. In particular, the positive effect could emerge because of potential collinearity with the factor of size, as larger companies tend to have a hotline, whereas smaller companies may not have one. Another explanation is that the companies with a hotline could have adopted this measure after the fraud had been committed as a preventive measure for the future. A lack of time-series data to show dynamics in time limits the interpretation of this phenomenon.

The results of the structural equation modelling demonstrated that there is a statistically significant negative association between the perceived effectiveness of the internal audit committee and the probability of fraud occurring in the company. This agrees with the initial expectation that a more effective internal audit helps prevent fraud and eliminates opportunities for fraud even if pressure among corporate managers exists. The higher the effectiveness of the Internal Audit, as evaluated by the respondents, the lower the probability of fraud in such a company.

Similar evidence is obtained from the assessment of the relationship between Internal Audit Committee expertise and the probability of fraud occurrence. The results of the structural equation modelling reveal that these variables are negatively and significantly related. The negative coefficient implies that with higher expertise in Internal Audit, the probability of corporate fraud in the retail company is lower. At the same time, companies with Internal

Audit that has less expertise are more likely to demonstrate cases of corporate fraud. This finding also confirms the initial expectation that the expertise works as an effective control mechanism that reduces the opportunities for committing corporate fraud in a company. An implication of this finding is that by hiring more experienced internal auditors with greater professional expertise and by introducing training of internal auditors, retail companies in the UK can reduce the instances of fraud as these measures would work as effective protective mechanisms.

However, an interesting finding is made in relation to the effect of the presence of the Audit Committee on the probability of corporate fraud occurrence. While the effectiveness of Internal Audit and expertise of Internal Audit are negatively related to the occurrence of fraud, the presence of the Audit Committee has a significant positive association with the probability of corporate fraud. This abnormal finding can be explained by the issuing of serving the two masters faced by internal auditors. Since internal auditors report to both managers and the Audit Committee, the conflicts of interest between managers and the Audit Committee members could make internal audits ineffective. Audit Committees are often interested in finding flaws with formal compliance, and if such flaws do not exist, when the corporation works diligently, internal auditors who report to the Audit Committee would be pressured and even considered incompetent because they could not find such issues. As a result, in the presence of strong Audit Committees, internal auditors would often of focusing on finding as many small issues as possible to prove their role effective, whereas serious business issues could be overlooked in attempts to please the Audit Committee. Since there are no Audit Committee members in the sample of the surveyed respondents, it is difficult to obtain an alternative view of the problem. Most of the responses were obtained from managers who considered internal audit effective and possessed high expertise. However, if there is a conflict of interests between Audit Committees and the management, their definition of the effectiveness of internal audit would be different. Managers would consider internal audit effective if internal auditors are actively involved in providing managers with relevant advice and consulting services even on strategic issues, whereas the Audit Committee could view such services as interfering with the independence of internal auditors and thus ineffective. . In the same way, the research findings from the structural equation modelling demonstrate a statistically significant positive effect of the presence of an IT department on the probability of corporate fraud occurrence in the UK retail companies. At the same time, the presence of an IT department should not produce a direct effect on corporate fraud as its role is not solely focused on internal controls but on the cyber security

and efficiency of the use of information technologies. However, as in the case of companies with an Audit Committee, most large companies can afford to have a separate IT department if it is a traditional retailers. Therefore, the significant positive effect of IT department presence on corporate fraud could also emerge from the factor of company size.

The magnitude of the effects of each factor on fraud and their relationships to the latent variables can be better assessed by comparing the standardised coefficients. The following table lists the standardised coefficients re-estimated on a scale from -1 to 1 for all variables employed in the structural equation model.

Table 16 Standardised Weights

			Estimate
Managers_Turnover	<---	Pressure	.464
Satisfaction_Pay	<---	Pressure	.701
Bonuses	<---	Pressure	.199
Regular_Promotions	<---	Pressure	.346
AntiFraud_statement	<---	Opportunity	.597
IT_Dept	<---	Opportunity	.363
IT_quality	<---	Opportunity	-.060
Data_mining	<---	Opportunity	-.057
Audit_committee	<---	Opportunity	.815
Internal_audit_effectiveness	<---	Opportunity	-.616
Internal_audit_expertise	<---	Opportunity	-.822
Internal_control	<---	Opportunity	.276
Fraud_monitoring_quality	<---	Opportunity	.186
External_audit_effectiveness	<---	Opportunity	-.137
Hot_line	<---	Opportunity	.681
Whistleblowing_incentives	<---	Opportunity	.357
Revenue	<---	Opportunity	.786
Profit	<---	Opportunity	-.283
All_committ_fraud	<---	Rationalisation	.363
Fraud_justified_company_unfair	<---	Rationalisation	.903
Fraud_justified_to_protect	<---	Rationalisation	.812
Fraud_justified_not_hurt	<---	Rationalisation	.750
Fraud	<---	Pressure	-.009
Fraud	<---	Opportunity	.514
Fraud	<---	Rationalisation	-.024

The highest positive standardised weights are observed for the theoretical construct of rationalisation of fraud, with “fraud justified by company unfairness” having the most

significant relationship with the latest variable with the standardised coefficient of 0.9. The second largest contributor to fraud rationalisation is “fraud justified to protect others”, with a standardised weight of 0.812. The justification that fraud does not hurt anyone shows a weaker effect, but its weight is still relatively high. The only truly weak rationalisation of corporate fraud is the justification that “all commit fraud”. This factor is found to have a low standardised weight of 0.363, suggesting that this rationalisation is not supported by the majority of the respondents. While respondents tended to demonstrate negative attitudes to all factors of fraud rationalisation, as shown by the analysis of the frequency tables, the factor of “all commit fraud” was among the least accepted.

Among the highest positive standardised weights for the other theoretical constructs, it is valid to mention the Opportunity latent variable and its correlation with the presence of the audit committee. The standardised weight is very high, reaching 0.815, which is close to what was observed for the rationalisation factors. However, as argued previously, this could be a result of interference with the factor of company size, which also demonstrated a high standardised weight in explaining fraud. In particular, its weight reached 0.786 as measured by Revenue.

The most extreme negative values of the standardised weights are observed for the effectiveness of internal audit and expertise of the internal audit. These two variables explain the theoretical construct of opportunity through which the effects of corporate fraud are assessed. These negative effects were already discussed in the assessment of the unstandardized coefficients, and it was noted that the finding mostly agrees with the original expectations that both the effectiveness of the internal audit and the expertise of the internal audit would work as strong control mechanisms and help prevent corporate fraud in retail companies in the UK.

Since each relationship between pairs of variables in the structural equation model can be broken down into individual regressions, it is valid to assess the goodness of fit of these components of SEM. The goodness of fit is measured in this case by the squared multiple correlations. The higher the value of the squared multiple correlations for each pair, the better the fit of the regression explaining their relationships. The following table provides the output of the squared multiple correlations for each component of the structural equation model.

Table 17 Squared Multiple Correlations

	Estimate
Fraud	.264
Fraud_justified_not_hurt	.562
Fraud_justified_to_protect	.660
Fraud_justified_company_unfair	.815
All_committ_fraud	.131
Profit	.080
Revenue	.617
Whistleblowing_incentives	.127
Hot_line	.464
External_audit_effectiveness	.019
Fraud_monitoring_quality	.035
Internal_control	.076
Internal_audit_expertise	.675
Internal_audit_effectiveness	.380
Audit_committee	.665
Data_mining	.003
IT_quality	.004
IT_Dept	.132
AntiFraud_statement	.356
Regular_Promotions	.120
Bonuses	.040
Satisfaction_Pay	.491
Managers_Turnover	.215

While the effects of the factors of rationalisation were most closely related to the latent variable, these components of the model also demonstrate the best fit of the regression lines compared to the rest of the constructs. In particular, three out of four components of SEM related to the rationalisation construct have a fit ranging from 0.56 to 0.815, suggesting that the chosen factors explain 56% to 81.5% of the variation in the rationalisation variable. The fourth component related to rationalisation demonstrates a low fit of the regression line measured at 0.131. This variable was not found to be statistically significant, either.

The SEM components associated with the opportunity latent variable demonstrate a diverse fit of the regression lines ranging from as low as 0.003 for data mining to as high as 0.675 for internal audit expertise. Since Internal Audit expertise along with the effectiveness of internal audit were found to be key significant factors related to the Opportunity dimension of the corporate fraud triangle, the high fit of these regression lines is also favourable evidence supporting the significant effects.

The components with the Pressure latent variable also have a relatively wide range of squared multiple correlations representing the fit of the regression lines. In particular, the coefficients ranged from 0.04 for bonuses to 0.491 for satisfaction with pay. The latter shows the highest fit of the regression line associated with the Pressure construct.

The main component of the structural equation modelling demonstrating the relationship between the three latent variables and the dependent variable of fraud occurrence shows a moderate fit indicated by the squared multiple correlations of 0.264. This suggests that the three theoretical constructs represented by the latent variables explain around 26% of the variation in the fraud variable.

In structural equation models, the effects of the latent and observable variables on the dependent variable can be both direct and indirect. The direct effects are observed when a variable directly impacts the dependent variables without any conditions. Indirect effects are observed when there is a mediating variable through which the effect of the independent variable is channelled to the dependent variable. Since the original structural equation model estimated in this thesis did not contain mediating variables, the indirect effects are expected to be zero. In fact, the following figure compares the direct and indirect effects of the variables on the dependent variable in the structural equation model.

Table 18 Standardised Direct and Indirect Effects

Standardized Direct Effects (Group number 1 - Default model)

	Opportunity	Pressure	Rationalisation
Fraud	.514	-.009	-.024
Fraud_justified_not_hurt	.000	.000	.750
Fraud_justified_to_protect	.000	.000	.812
Fraud_justified_company_unfair	.000	.000	.903
All_committ_fraud	.000	.000	.363
Profit	-.283	.000	.000
Revenue	.786	.000	.000
Whistleblowing_incentives	.357	.000	.000
Hot_line	.681	.000	.000
External_audit_effectiveness	-.137	.000	.000
Fraud_monitoring_quality	.186	.000	.000
Internal_control	.276	.000	.000
Internal_audit_expertise	-.822	.000	.000
Internal_audit_effectiveness	-.616	.000	.000
Audit_committee	.815	.000	.000
Data_mining	-.057	.000	.000
IT_quality	-.060	.000	.000
IT_Dept	.363	.000	.000
AntiFraud_statement	.597	.000	.000
Regular_Promotions	.000	.346	.000
Bonuses	.000	.199	.000
Satisfaction_Pay	.000	.701	.000
Managers_Turnover	.000	.464	.000

Standardized Indirect Effects (Group number 1 - Default model)

	Opportunity	Pressure	Rationalisation
Fraud	.000	.000	.000
Fraud_justified_not_hurt	.000	.000	.000
Fraud_justified_to_protect	.000	.000	.000
Fraud_justified_company_unfair	.000	.000	.000
All_committ_fraud	.000	.000	.000
Profit	.000	.000	.000
Revenue	.000	.000	.000
Whistleblowing_incentives	.000	.000	.000
Hot_line	.000	.000	.000
External_audit_effectiveness	.000	.000	.000
Fraud_monitoring_quality	.000	.000	.000
Internal_control	.000	.000	.000
Internal_audit_expertise	.000	.000	.000
Internal_audit_effectiveness	.000	.000	.000
Audit_committee	.000	.000	.000
Data_mining	.000	.000	.000
IT_quality	.000	.000	.000
IT_Dept	.000	.000	.000
AntiFraud_statement	.000	.000	.000
Regular_Promotions	.000	.000	.000
Bonuses	.000	.000	.000
Satisfaction_Pay	.000	.000	.000
Managers_Turnover	.000	.000	.000

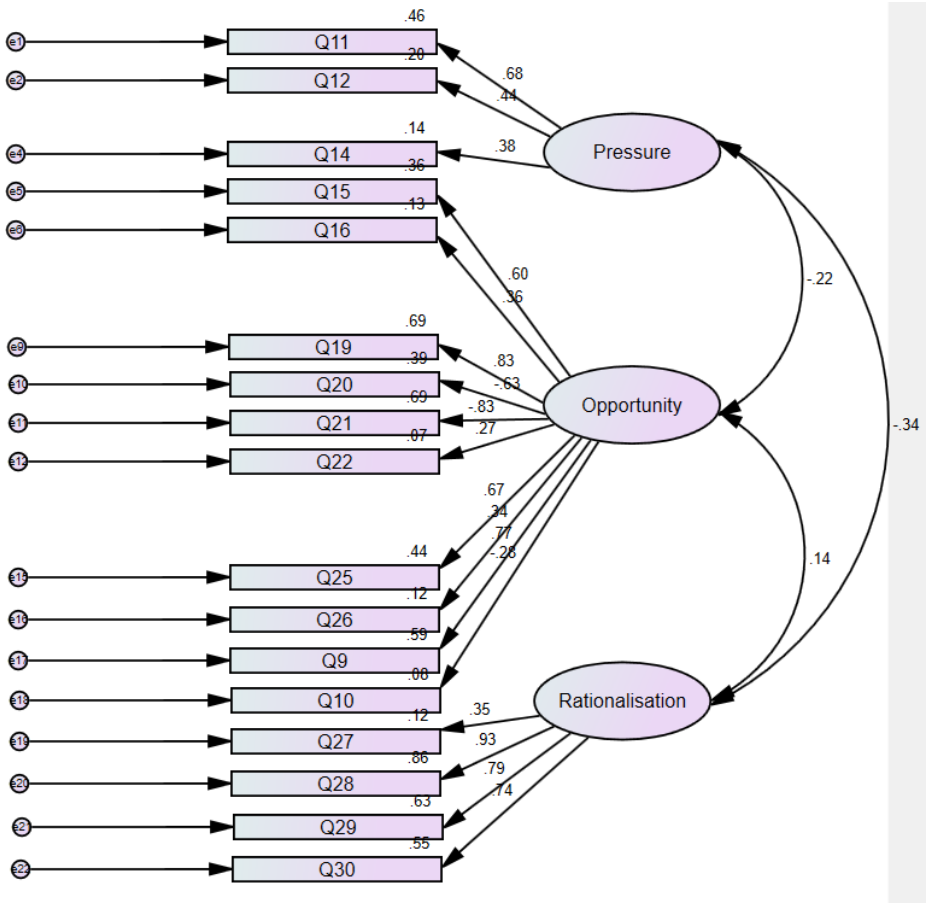
All indirect effects are found to be zero, whereas the total effects are equated to the direct effects of these variables on the dependent variable of fraud occurring in the UK retail industry.

While the main structural equation model based on the conceptual framework of the Fraud Triangle has been estimated, it has been found that some of the factors had low explanatory power. Therefore, it is valid to conduct a robustness check by removing the factors with the least explanatory power to demonstrate whether the results hold in the adjusted structural equation model. The robustness check procedure is reported in the following subsection of the chapter.

5.2.7.1. Robustness Check of SEM

The robustness check of the structural equation model has been conducted by removing the least significant variables that load most poorly on the latent variables. The excluded variables include Bonuses (Q13), quality of IT infrastructure (Q17), the effectiveness of data mining tools (Q18), the general quality of fraud monitoring (Q23) and the effectiveness of external audit in fraud prevention and detection (Q24). The results of the confirmatory factor analysis after removing these observed variables are reported in the following figure.

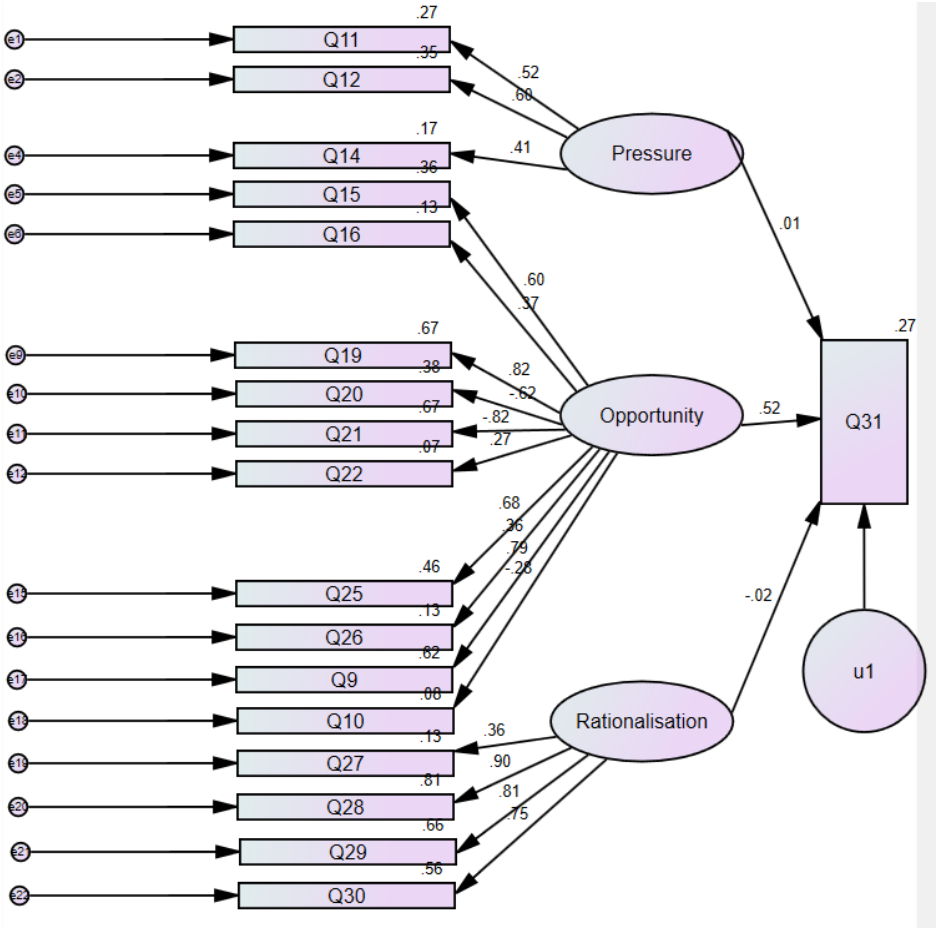
Figure 31 Confirmatory Factor Analysis after Removing Least Significant Factors



The re-estimated standardised coefficients now show a greater average magnitude of the effects, with the parameters ranging from 0.27 to 0.93 in absolute terms, which means that counting both negative and positive values as the sign of the coefficients does not speak of its significance or insignificance.

Using these new inputs, a Path Model has been constructed in SPSS Amos, and its standardised coefficients are provided in the following figure.

Figure 32 Updated Path Model After Excluding Least Significant Variables



The effects of the three latent variables on the dependent variable of fraud occurrence have changed only slightly with the improvement of the standardised coefficient for the Opportunity factor from 0.51 to 0.52. This marginal improvement can be explained by a relatively small number of variables removed and their relative insignificance in explaining the theoretical construct of Opportunity. Among the opportunity factors, the largest effects are expressed by Q19 and Q21, followed by Q20 and Q15. The standardised coefficients for Pressure variables are close to each other ranging from 0.41 to 0.68. The rationalisation construct is associated closely with Q28, Q29 and Q30, while Q27 has a weaker effect.

The statistical significance of the individual variables, including the latent variables, is assessed in the following table.

Table 19 Significance of the Updated Coefficients of SEM

			Estimate	S.E.	C.R.	P	Label
Managers_Turnover	<---	Pressure	1.000				
Satisfaction_Pay	<---	Pressure	.994	.503	1.976	.048	
Regular_Promotions	<---	Pressure	.833	.378	2.207	.027	
AntiFraud_statement	<---	Opportunity	1.000				
IT_Dept	<---	Opportunity	.296	.088	3.369	***	
Audit_committee	<---	Opportunity	1.246	.198	6.281	***	
Internal_audit_effectiveness	<---	Opportunity	-2.085	.403	-5.174	***	
Internal_audit_expertise	<---	Opportunity	-2.157	.343	-6.291	***	
Internal_control	<---	Opportunity	.515	.202	2.557	.011	
Hot_line	<---	Opportunity	1.255	.225	5.569	***	
Whistleblowing_incentives	<---	Opportunity	.696	.212	3.289	.001	
Revenue	<---	Opportunity	5.613	.913	6.146	***	
Profit	<---	Opportunity	-1.154	.437	-2.640	.008	
All_committ_fraud	<---	Rationalisation	1.000				
Fraud_justified_company_unfair	<---	Rationalisation	2.240	.617	3.627	***	
Fraud_justified_to_protect	<---	Rationalisation	2.132	.594	3.591	***	
Fraud_justified_not_hurt	<---	Rationalisation	1.728	.489	3.532	***	
Fraud	<---	Pressure	.009	.109	.080	.936	
Fraud	<---	Opportunity	.653	.153	4.274	***	
Fraud	<---	Rationalisation	-.032	.142	-.224	.823	

Similar to the original structural equation model, fraud is best explained by the Opportunity construct, which is a latent variable from the confirmatory factor analysis. The constructs of Pressure and Rationalisation have a statistically insignificant association with the dependent variable of fraud occurring in the UK retail industry. Thus, among the four hypotheses developed, only the ones associated with the Opportunity construct, namely H1 and H2, can be accepted, whereas H3 and H4 are rejected.

Since the significant factor of Opportunity is a collective representation of several observed variables, it is valid to examine the statistical significance of its components. The Opportunity dimension is most significantly associated with the presence of the IT department, the presence of the audit committee in the company, the effectiveness of the internal audit, the expertise of internal auditors in the company, the presence of a hotline and the size of the company measured by its revenue. Among these variables, Internal Audit effectiveness and Internal Audit expertise have a statistically significant negative association with the Opportunity construct, whereas the rest of the significant components have a negative relationship with the Opportunity dimension. Similar to the original SEM and initial expectations, the companies that hire internal auditors with more expertise tend to show a

lower probability of corporate fraud. In the same way, companies with more effective internal audit functions report a lower rate of occurrence of corporate fraud. It is also valid to argue that the expertise of internal auditors and the effectiveness of the internal audit function can be improved by training.

When comparing the results of Table 11 with the correlation analysis and the results from Table 17 with the structural equation modelling, it is valid to note that the factor of revenue is positively and significantly correlated with the factor of the presence of the Audit Committee and the presence of a hotline. Thus, larger companies are more likely to have both the committee and the technological solution, such as a hotline to tackle the problem of corporate fraud. This high correlation explains why the companies in the structural equation modelling report a significant and positive relationship between the hotline and fraud and between the presence of an audit committee and fraud occurrence. In the same way, larger companies are more likely to have a separate IT department, and in the updated model, the presence of an IT department is significantly associated with the opportunity dimension of the Fraud Triangle.

The next table provides the results of the updated standardised estimates ranging from -1 to 1 to demonstrate the magnitude of the relationships between the variables after excluding the least significant factors.

Table 20 Updated Standardised Estimates of SEM

			Estimate
Managers_Turnover	<---	Pressure	.518
Satisfaction_Pay	<---	Pressure	.595
Regular_Promotions	<---	Pressure	.411
AntiFraud_statement	<---	Opportunity	.597
IT_Dept	<---	Opportunity	.367
Audit_committee	<---	Opportunity	.816
Internal_audit_effectiveness	<---	Opportunity	-.615
Internal_audit_expertise	<---	Opportunity	-.818
Internal_control	<---	Opportunity	.272
Hot_line	<---	Opportunity	.680
Whistleblowing_incentives	<---	Opportunity	.358
Revenue	<---	Opportunity	.788
Profit	<---	Opportunity	-.282
All_committ_fraud	<---	Rationalisation	.363
Fraud_justified_company_unfair	<---	Rationalisation	.903
Fraud_justified_to_protect	<---	Rationalisation	.812
Fraud_justified_not_hurt	<---	Rationalisation	.750
Fraud	<---	Pressure	.010
Fraud	<---	Opportunity	.517
Fraud	<---	Rationalisation	-.022

The findings from the standardised estimates support the previous analysis, but the standardised coefficients are easier for comparing the magnitude of the effects of each variable. Turnover of managers, their satisfaction with the pay and regular promotions have relatively high positive relationships with the pressure dimension of the Fraud Triangle. Even though the least significant variables have been removed from the model in the robustness check, the evidence from the Opportunity construct still shows that some factors, such as profitability, internal control and, to some extent, whistleblowing incentives, have relatively smaller contributions compared to the rest of the factors in this dimension. The highest contribution is demonstrated by the audit committee's presence and internal audit expertise. While the latent variable of Rationalisation is not significantly associated with Fraud, its components were most closely related with coefficients as high as 0.9. The lack of a significant effect of rationalisation on corporate fraud could be explained by the fact that the rationalisation was provided and evaluated by managers who might not be directly involved in fraud even though there were cases of fraud in their companies. Thus, their attitude to fraud and rationalisation of the latter could diverge from the attitude of actual fraudsters and the rationalisation of their actions. This is a limitation of this research, but for ethical reasons, respondents could not be asked whether or not they were personally involved in the actions of fraud in their companies in the past. One of the ways to address this limitation in the future is to choose well-documented cases of fraud in which the fraudster has been detected and convicted. Since such information is publicly known, there will be no ethical barrier to using the information or surveying the fraudsters to find out the rationalisation of their actions.

Lastly, similar to the original SEM, the robustness check examines the squared multiple correlations for each component in order to see to what extent the fit of the model has improved or worsened after the exclusion of the least significant variables based on their p-values. The following table reports the updated values of the squared multiple correlations.

Table 21 Squared Multiple Correlations of Updated SEM

	Estimate
Fraud	.268
Fraud_justified_not_hurt	.562
Fraud_justified_to_protect	.660
Fraud_justified_company_unfair	.815
All_committ_fraud	.131
Profit	.079
Revenue	.620
Whistleblowing_incentives	.128
Hot_line	.462
Internal_control	.074
Internal_audit_expertise	.670
Internal_audit_effectiveness	.378
Audit_committee	.666
IT_Dept	.135
AntiFraud_statement	.356
Regular_Promotions	.169
Satisfaction_Pay	.354
Managers_Turnover	.268

The best fit is reported by the model with the variable of "fraud justified by company unfairness", which agrees with the original structural equation model before the adjustment. This model explains about 81.5% of rationalisation. The other rationalisation components also demonstrated high regression model fit with the squared multiple correlations reaching 0.66 for the variable of "fraud justified to protect others". The lowest fit is reported by the model with the variable. "all commit fraud" among the rationalisation factors.

The overall worst fit is demonstrated by the "internal control" factor from the Opportunity construct followed by the profitability companies. The components of the Pressure construct also demonstrate a moderately weak fit that does not exceed 0.354. In contrast, the Opportunity construct shows the most diverse range of squared multiple correlations, which can be explained by the greater number of factors included in the path analysis associated with the Opportunity dimension of the Fraud Triangle.

The next subsection of this chapter provides an interpretation of the results attained in the course of the analysis.

5.2.8. Interpretation of Findings from Quantitative Analysis

The regression analysis tested the effect of the Fraud Triangle factors, including Pressure, Opportunities and Rationalisation, on the probability of the occurrence of fraud and its detection in the retail sector in the UK. The variables representing Pressure included a commitment of managers to the company (Turnover is Low), complaints about compensation, performance-based bonuses for managers and promotions. The Opportunities dimension was represented by the necessity of signing anti-fraud statements for managers, the presence of IT infrastructure, the presence of the audit committee, the presence of internal control unit, the presence of the hotline for anonymous reporting about fraudulent actions and monetary incentives for whistleblowing. The Rationalisation dimension was proxied by possible justifications of fraudulent actions, including unfair treatment of managers by the company, protection of others, the permissibility of fraud if it does not hurt anyone's interests and the statements that fraud is a common practice for all managers. In addition to this, control variables were employed, including firm size, firm market, business model and profitability.

It is important to note that the dummy variable that was used as the dependent variable in the regression can be understood in two ways. On the one hand, the value 1 of this variable may imply that the fraud occurred in the company, while 0 would imply that there were no fraudulent activities in the firm. On the other hand, it could appear that fraud was committed anyway, but the value 1 showed that these actions were detected, disclosed and became an object of proceedings, while 0 would imply that these actions happened but were not noticed.

The outcomes of the analysis showed that among the Pressure factors, no variable was found to produce a statistically significant effect on the probability of fraud occurrence. This finding is also confirmed by the evidence from the Structural Equation Modelling where the construct of Pressure was not significantly related to the probability of fraud occurrence in UK retail companies. Moreover, none of the components of Pressure, such as managerial pay and promotions, showed evidence of significant loading on Pressure. In this respect, the results of measuring direct associations between untransformed variables in the logistic regression analysis and the results of more complex assessment of relationships with the use of latent variables in SEM are consistent.

The Opportunities dimension was represented by the largest number of variables, but none of them appeared to influence the probability of detecting fraud except for the necessity to sign

anti-fraud statements in the logistic regression modelling. The sign of this association is positive, which implies that signing such documents increases the probability of detecting fraud. One may suggest that if a manager signs this statement, he or she may feel greater responsibility for preventing fraud in the company. On the other hand, this may make his or her actions more transparent, and, on the other hand, such a manager will be more careful about the actions of colleagues. Along with that, potential dissatisfaction of managers with their compensation was shown not to have a significant impact on the occurrence of fraud.

The presence of the audit committee was insignificantly related to fraud detection in the logistic regression analysis, but this factor loaded well on the latent variable of Opportunity in the Structural Equation Modelling. Thus, since the relationship between the latent variable of Opportunity and probability of corporate fraud was significant in SEM, and the factor loading for the audit committee was significant and high, it can be concluded that this variable, in fact, is related to corporate fraud and helps prevent it as a control mechanism. The presence of the audit committee in the firm is likely to be an instrument of fraud detection. At the same time, the results of the analysis reveal that company size is positively and significantly associated with a greater probability of fraud occurrence. Since larger companies are more likely to have audit committees comprised of non-executive directors, such a relationship with fraud detection is predictable.

As for the influence of IT infrastructure on fraud detection and prevention, it was shown to be insignificant during the logistic regression analysis. Similar to the previous variables, based on the results of regression analysis, it remains unclear whether IT facilities contribute to fraud detection or the presence of modern computer infrastructure, which allows for tracing and authorising each action, and prevents, in some cases, fraudulent activities. However, following the Structural Equation Modelling, it can be stated that the factor of IT infrastructure was significantly related to the latent variable of Opportunity, and the latter was significantly related to the probability of fraud occurrence. Hence, the IT infrastructure could, in fact, be influential in detecting corporate fraud according to SEM when more complex relationships between the variables were examined compared to the simple regression analysis.

The latent variable of Rationalisation used in SEM was not found to be significantly related to the probability of fraud. Even though individual components of Rationalisation showed significant loadings on the latent variable, this does not mean that they influence the

probability of fraud in UK retail companies, as the latent variable itself is not related to the dependent variable in the study.

As for control variables, only firm size appeared to influence fraud detection. Meanwhile, the internationalisation of the firm, business model and profitability appeared to have no significant influence on fraud occurrence or prevention in the UK retail sector.

Thus, the findings from SEM have shown partial confirmation of the Fraud Triangle theory in the context of UK retail companies, where only the Opportunity construct was confirmed to be influential in explaining fraud, whereas the evidence for Pressure and Rationalisation factors did not appear to be statistically significant. According to the Fraud Triangle concept, perceived pressure from a problem that an individual cannot share with colleagues or managers generates the motive for the crime or fraudulent actions (Dorminey et al., 2012). This mainly refers to the financial aspect of performance (Albrecht et al., 2008; Wells, 2011). However, the current study did not confirm such suggestions since the Pressure variables, and in particular, those connected with finance appeared to have no influence on fraud occurrence and detection in the UK retail sector. However, not only pressure is important but also the opportunity to commit fraud. This includes an individual's perception that the control is weak or remote so that fraudulent actions would not be detected (Hogan et al., 2008). The outcomes of the current study partly confirmed this statement. Even though logistic regression modelling showed that some mechanisms, such as IT facilities, appeared to have no significant influence on fraud detection, the results from SEM showed a clearer picture and evidenced that most of the factors load well on the latent variable of Opportunity, which in turn is positively related to the probability of fraud occurrence. Thus, mechanisms such as the audit committee, external audit and hotline did have an impact on fraud detection. Therefore, the ability to detect fraud depends on the effectiveness of the performance of these mechanisms in a particular company.

The third element of the Fraud Triangle is Rationalisation, which is the motives of justification of fraudulent activities (Ramamoorti 2008). According to Cressey (1950, 1953), each fraudster considers his or her case as special and tries to explain illegal actions under some circumstances. The attempts to reveal the specific motives of fraud in the current study indicated no significant effect of the proposed suggestions on the occurrence of fraud. On the one hand, this does not support the theory since no motives were found that would be commonly perceived as fraud-forcing. On the other hand, this is in line with the theory since

each particular case of fraud is stimulated by specific motives, and even a common understanding of the most frequent incentives for fraud does not prevent it.

As for the empirical evidence, Said et al. (2017) found that the ethical values of individuals were negatively connected with fraud occurrence. That is, the presence of ethical guidelines impeded fraud. The fact that the potential justification of fraud as being harmless was negatively perceived by respondents in the current study partly confirms the findings of these authors. Moreover, Said et al. (2017) found that opportunity and rationalisation were positively connected with fraud occurrence. A positive association between opportunity and fraud detection was partly confirmed by the current study. Some mechanisms were shown to be ineffective for fraud detection, which means that fraudsters can utilise these loopholes in systems of control and fraud prevention to stay unpunished.

Along with that, the current survey did not capture numerous aspects of fraud occurrence. While the Fraud Triangle was analysed, the Fraud Action was ignored. Meanwhile, the examination of this framework that includes the Act, Concealment, and Conversion dimensions (Albrecht et al. 2006; Kranacher et al. 2011) could also contribute to the understanding of fraud occurrence.

5.3. Thematic Analysis of Interviews and Open-Ended Questions

5.3.1. Ethical Training as a Mechanism to Prevent Fraud

One of the areas that could not be effectively covered by the quantitative analysis using regression modelling or SEM is how companies can improve the ethical training of managers to minimise the chances of corporate fraud occurrence. This question on the training of managers was asked during the interviews. Several themes have emerged from the discussion of ethical training. The first theme is that companies are often reluctant to do ethical training for employees and managers because such training is costly and requires funding. As one of the interviewees noted:

“A lot of businesses limit this to a few posters, presentations or reminders”.

Another respondent who was sceptical about the role of ethical training in preventing fraud argued that ethics and ethical behaviour could not be taught in the workplace. People have different traits and different patterns of behaviour they have been developing since birth. Thus, there is a view held by some corporate managers that instead of doing ethical training,

companies should be more selective during the job hiring process and choose applicants who have integrity and moral values. This puts more responsibility on the Human Resource Department. However, not all respondents agreed with this view of the manager who criticised the effectiveness of ethical training. Some argue that companies are not willing to spend more funds on training not because they do not consider it important or value-adding but because they are not aware of what specific areas should be improved and how training will resolve issues. Thus, a respondent recommended that such companies should identify the areas for improvement by doing the following:

"interviewing managers, checking internal audit reports, assessing risk management and reviewing cases from our industry".

5.3.2. Frequency of Team Meetings as a Mechanism to Prevent Fraud

Another theme that has emerged is the frequency of meetings among the team members and managers of the companies to discuss issues such as organisational culture, ethics of the organisation and improvement in team building. It has been shown that many retail companies ignore such meetings, which is consistent with the first argument covered previously, confirming the scepticism of many retail managers on the need for such training. As one of the interviewees noted:

"People do discuss business and work-related issues. There are also teambuilding meetings, but the focus on ethical training is rare in my view. It needs to be done more often".

The findings from the interviews have shown that even for those companies that do make attempts to conduct ethical training, the efforts are often minimal:

"A lot of businesses limit this to a few posters, presentations or reminders. Having a live conference or in-class teaching would be more effective".

Thus, a suggestion has been expressed that doing live conferences where participants will personally interact will be more effective than investing in a few posters. Respondents also recommended that smaller companies should consider examples of larger businesses that pay more attention to corporate culture and the way they meet with the staff and managers. Even though such activities may be costly, and the cost borne by smaller businesses could be relatively high in comparison to their size, the final outcomes will lead to less fraud, stronger teams and a better reputation for the companies.

Among other recommendations made by the interviewees in relation to the issue of ethical training and how to improve its effectiveness, the respondents emphasised the importance of stressing the consequences of corporate not only for the business but also personally for each manager and employee. This is because personal implications can be understood better, and respondents can more easily relate to them. Using cases and examples were also found to be important themes that should be covered during the ethical training sessions with employees and managers. There could be instances when managers could commit fraudulent actions and not be aware of such. This often happens with the way in which employees and managers treat insider information and data. It is valid to note that managers and employees should not always be aware of such issues, but companies should introduce sufficient internal control that would help prevent data leakages and free information sharing with outsiders. As one of the respondents noted:

"If there are systems of fraud detection used in the company, the procedures and red flags must be articulated so every manager knows what actions should follow in each circumstance".

This leads to the next theme covered during the interviews, namely, what improvements the company should introduce in internal control in order to make it more efficient in tackling corporate fraud. This issue has also been analysed using the structured questionnaire in the quantitative analysis part of this chapter. However, the presence of internal control was not found to be a statistically significant factor in the detection or prevention of corporate fraud. Therefore, it is interesting to compare these results from the survey with the qualitative information revealed during the interviews.

5.3.3. Internal Control, Governance and Prevention of Fraud

One of the themes that have emerged in this respect is that interviewees often distinguished between high-level fraud among the top executives and low-level fraud that could happen among middle or junior managers and employees. One of the recommendations for preventing corporate fraud was that the Audit Committee should become more active or even proactive, which implies that members of the Audit Committee should meet more frequently with internal auditors and ensure that internal controls are strong. Moreover, the rotation of external auditors was considered an important argument for preventing corporate fraud:

“With top-level fraud, rotation of auditors and more active role of internal audit committee could work”.

The respondents also noted the importance of maintaining a power balance in the organisation to prevent instances of corporate fraud. According to their view, when a particular stakeholder or stakeholder group becomes too powerful, the information asymmetry increases, and there is more pressure to abuse this power.

“When we deviate from this democratic model and give too much control to a particular manager or group of managers, this power can be easily abused. On a large scale, governments with unbalanced power tend to be more corrupted. On a smaller company scale, instead of corruption, we would see much more fraud”.

This is also an argument for why independent directors should dominate the boards and why more committees are required to oversee corporate governance and help monitor fraud in companies. However, maintaining such committees is often costly and cannot be afforded by smaller companies.

At the same time, there should be parties responsible for particular operations such as risk management, compliance, etc. For example, the respondents noted that early warning signs and early detection of deviations in figures should be treated seriously, and actions should be taken to prevent small discrepancies from leading to larger accounting problems. If internal controls are strong and internal audits do their job well, such instances should be easily detected as internal auditors, and business stakeholders meet more frequently compared to meetings between internal auditors and board members or Audit Committee members.

An important element of ensuring proper internal control, as was evidenced from the interviews, is that companies should continually monitor the main frameworks they use and ensure these frameworks and technologies are up to date. In particular, there are more general corporate governance frameworks, such as COSO ERM, that can help companies manage corporate governance issues on a high level. At the same time, there are more specific Governance, Risk and Compliance (GRC) frameworks such as COBIT and ITIL that can help internal control units to define controls properly and map them to specific processes to ensure there is adequate risk-taking, proper compliance with regulations and no room for corporate fraud:

“The company ought to make sure the internal control is up to date with all necessary and modern technologies in place. Regular revision of the system is also required. It also helps when professionals are hired from outside the company to install, check and improve information systems and provide insight as to how to make improvements in procedures and tasks”.

Another theme found during the discussion of internal controls that mostly relates to larger organisations is that even if the companies have adopted modern technologies and frameworks, there could still be an issue with coordination between departments. This especially relates to conglomerates or companies working in different industries, not only retail, and working globally in different jurisdictions. In such cases, aligning controls and adopting the same framework of internal controls for the whole organisation is problematic. Therefore, there is a need for more communication between departments and more integration of the available frameworks.

“An important aspect of the internal control procedures and policies is that they should be coordinated between different departments in the company. A systematic approach to internal control and making sure that managers of each department work together in ensuring the effectiveness of internal control is a recipe for more efficiency”.

The implications of such actions would be an increase in the speed of making decisions and the speed of detection of fraudulent actions:

“This improved information flow between departments would be positive for the company. It will make decision-making faster, and fraud can be detected sooner”.

5.3.4. Technological Solutions to Prevent Fraud

The discussion of internal control naturally led to the discussion of technological solutions that would help protect the sensitive information of the companies and prevent corporate fraud.

5.3.4.1. Blockchain Solution

The first theme that has emerged from this discussion can be labelled as “Blockchain”. This technology is associated with the FinTech industry and particularly with cryptocurrencies and Bitcoin. However, it has also been adopted by traditional organisations in is not limited to

digital currencies. Blockchain can be used for smart contracts and for exchanging information between departments in a decentralised way without the risk of losing sensitive information. As one of the interviewees noted:

"If we could move all our information to a block chain, it could hypothetically make financial fraud nearly impossible. But most retailers are not ready for this, and we also have to measure the potential risks of this technology before we make such drastic changes".

It can be added that it is not only the readiness of retailers for the adoption of the new technology that prevents its full implementation but also the limitations of this technology, such as high energy consumption and high computing power requirements, that make it imperfect.

Retailers have demonstrated awareness of alternative uses of blockchain technology such as smart contracts, but due to the size business or the nature of business, it was not common for the companies to use this technology consistently:

"I've heard of smart contracts implemented in some companies, and they are said to be effective. We don't use them, but in our company, we use internally developed software and standard data protection mechanisms. Nothing fancy, but we should be actively monitoring what's going on in the industry and what are competitors implement".

Other respondents offered more traditional solutions, but the main theme that was observed in respect of technological solutions is "sensitive information". Since fraud happens when sensitive information is misused or stolen, technological solutions need to be effective enough to protect sensitive corporate information. Some recommendations provided by the interviewees included actions such as limiting the access to sensitive data to the person directly responsible for it, updating software and security systems on a regular basis, keeping the data encrypted, always using strong passwords, not allowing employees to use personal emails, ensuring that no information is leaked, using big data and business analytics, and implementing forensic accounting and analytics software.

5.3.4.2. Artificial Intelligence Solution

The next thing that emerged during the discussion was the use of artificial intelligence technologies to help detect and prevent corporate fraud. As one of the interviewees noted:

"Very soon, the internet of things and artificial intelligence will be the most effective solutions for fraud detection and prevention. As data is continually accumulated from all departments and all electronic devices, AI mechanisms can be used to send early warning signals in fraud detection. It's nearly impossible for humans to deal with so much information we deal with today. That's why mistakes happen, and fraud happens. With AI and machine-dominated systems, fraud detection will be an easy process".

However, in contrast to the findings from the interviews on the importance of IT, big data, business analytics and data mining, such aspects were not found to be significantly related to the probability of corporate fraud occurrence in the quantitative part of the chapter based on the logistic regression analysis and SEM. On the one hand, this could be viewed as a discrepancy between the results. On the other hand, the interviewees did not say that their companies actually implemented all these technologies but only expressed their views that such implementation would be beneficial for fraud detection and prevention. Therefore, this can be used as an area for future research to check whether the adoption of such technologies actually helps reduce instances of corporate fraud or improve fraud detection.

5.3.4.3. Risk of Using Shared Servers

The final theme from this area of technologies that can be singled out following the interviews relates mostly to retailers with online sales as the dominant business model. An important recommendation has been made for practitioners to avoid shared servers even if having a dedicated server requires larger investments. While this is not always relevant for large businesses that have dedicated servers, it could be a critical issue for smaller retailers:

"Companies with online sales should not trust shared servers or similar cheaper solutions for hosting their websites. All information must be contained on dedicated physical servers to which a limited number of staff have access. Password protection and encryption of servers is a must".

Companies were also recommended to hire IT professionals if they do not have their own IT departments, which is also more common for small and medium companies rather than large businesses.

5.3.5. Managerial Incentives and Fraud

The next theme from the interviews can be contrasted with the results of the survey analysis as it deals with the managerial incentives mechanisms to keep them from being drawn to corporate fraud. These incentives are focused on the agency theory covered in Chapter 2 and were also considered in the logistic regression analysis and SEM by introducing the variable of bonuses and satisfaction with pay as constituents of the Pressure construct from the Fraud Triangle.

The first theme that emerged with respect to these incentives is that the level of compensation received by managers is an important pressure factor, as underpaid managers can rationalise their behaviour by not being treated fairly by the company. This is supported by the following argument from the interviews: "Most people are motivated by money. If managers are paid well enough, they are less likely to engage in fraud. Of course, there could be exceptions as, for some people, money is never enough, but in general, adequate pay is often a good solution. If you are a respectable company and plan to stay in business for the long term, you should be prepared to pay your key staff and managers well. It will help you reduce not only fraud but also talent flow".

This finding from the interviews, however, is not supported by the evidence from the quantitative analysis of the survey, which revealed that bonuses and compensation were not strongly related to the probability of corporate fraud in retail companies. This could imply that managers did not see it as a strong enough Pressure factor in spite of the views that, in theory, monetary motivations could be important.

The findings from the survey are more supported by the next theme from the interviews that different managers can respond differently to monetary incentives, and there is no clear pattern. This argument looks to be more consistent in both the survey and interviews:

"Everyone responds differently to different incentives. What works for one may not work for the other. But there are general things like recognition of achievements, promotion and praise that stimulate most people to work ethically".

Another respondent raised a similar argument:

“People should be able to see career opportunities, fair treatment at work, proper compensation for their work, and a friendly environment. If the company creates an environment where each manager and employee feel at home, there will be little incentive to commit fraud. Of course, people who are paid enough will think less about committing fraud, but this is not a 100% remedy as many cases of fraud involved highly paid individuals”.

These respondents emphasised that regular promotions and corporate achievements stimulate managers to work ethically. On the one hand, this argument is supported by the Stewardship theory as it also claims that managers are good stewards internally motivated to pursue recognition and company interests. On the other hand, the role of regular promotions in the probability of corporate fraud has not been confirmed by the quantitative analysis based on the logistic regression and SEM in the quantitative part of this chapter.

There was also an alternative theme of the ineffectiveness of incentives and pay structure in combatting corporate fraud, which is also not perfectly supported by the evidence from SEM and regression analysis. One of the interviewees noted:

“There should definitely be incentives for reporting fraud. Otherwise, people would not be willing to do that. If you mean incentives for managers who could hypothetically commit fraud, I don’t think it works like that. If the manager sees higher benefits from committing fraud and expects no consequences, incentives like bonuses and pay will have little effect”.

While this claim tends to be more negative compared to previous claims, it still has room for flexibility and does not imply a clear linear relationship between compensation and fraud. This statement expresses the view of the respondent rather than a particular observation from their firm. Moreover, the respondent seemed to be confusing incentives to commit fraud and incentives to report fraud as they started arguing about reporting fraud, which is another theme related to whistleblowing rather than monetary incentives. However, whistleblowing was not found to have a statistically significant predictive power in relation to corporate fraud occurrence based on the results of SEM and logistic regression modelling.

The last theme covered with respect to compensation structure and monetary incentives is the equity-based pay or bonuses paid with share options. While Agency Theory could view them as an important incentive mechanism that can align the interest of shareholders and managers, as the latter will also become owners of a part of the company if they exercise the options, the interviewees reported criticism of such compensation. In contrast to predictions of the

Agency Theory, such compensation could exacerbate corporate fraud and make managers interested in earnings management and manipulating the markets to achieve higher stock price growth:

"Companies overuse equity compensation such as stock options. They make managers chase targets in the stock market, and this often works as an incentive for manipulating financial statements and committing fraud to get a higher return from stock holding. Hired managers with no significant equity in the company usually don't have such incentives, and in my opinion, they are less likely to be caught in financial fraud".

5.3.6. Control Mechanisms and Fraud

The quantitative survey focused not only on incentive mechanisms but also on control mechanisms and their role in preventing corporate fraud. While the internal control and internal audit have been covered, another theme that emerged in the course of the interviews that can be compared to the results from SEM and logistic regression analysis is the features of the Audit Committee that could help combat corporate fraud.

One of the respondents noted that the following conditions should be satisfied to minimising the chances of corporate fraud:

"First of all, we need to have at least someone on the audit committee who would have good experience and expertise with financial fraud. Keeping someone with general accounting knowledge is not enough. Second, the audit function must also be proactive and be involved in discussions more frequently. Third, the internal audit should be active in developing antifraud programmes for the company to follow. Fourth, there must be timely reporting to the committee".

These suggestions are mostly in line with the evidence from SEM and quantitative analysis as the expertise of the audit and Audit Committee were found to be statistically significant factors of the Opportunity construct, which in turn had a significant impact on the probability of corporate fraud in UK retail companies.

While it is agreed by the respondents in the survey and interviewees that Audit Committees play an important role in fraud detection and prevention, there is also a view that these are not the core activities or agenda of the Audit Committee. One of the interviewees noted that

Audit Committee and internal auditors reporting to the committee are mostly focused on compliance with regulations rather than internal monitoring of fraud:

“In some companies, audit committees play a formal role just to comply with the regulation. So, doing more than expected by regulation is key to greater effectiveness in fraud detection. It’s also common for internal auditors to be mostly concerned with compliance, and that’s good; that’s what they’re supposed to do, but there are various risks that require similar overseeing and managing. So, it should be an area to consider for audit committees. Also, studying cases of corporate fraud and previous mechanisms employed in fraud would help the audit committee be more effective in doing its job of preventing or minimising fraud today”.

This finding suggests that even though Audit Committee is important, it should not be relied on as the sole body that helps prevent corporate fraud.

The next theme in relation to the role of Audit Committees observed during the interviews is that they should be more pro-active in communication not only with internal auditors but also with business stakeholders or managers on issues such as risks and fraud:

“They should ensure there are no conflicts of interest among reporting managers. They must be easily available and be more actively involved in the discussion of risks and fraud with executive managers. They should possess sufficient skills and expertise to do their job well. They should be continually improving their competences”.

In line with previous arguments, members of the Audit Committee should have the appropriate expertise and interpersonal relationship skills to be able to perform the functions effectively.

Some respondents emphasised the need for audit plans as a part of the proactive strategy of Audit Committees. Having proper plans and observing to what extent the plans are followed by internal auditors will help improve accountability:

“I’d recommend audit committees should review their actions on a constant basis. They should have a plan and use criteria by which they can determine whether their plan is addressed. Working on past mistakes will help to avoid them in future. If required, the size of

the audit committee should be improved to ensure there is no lack of human resources in addressing the fraud issues".

There was also an argument for expanding the roles of internal auditors and the Audit Committee to make them more effective in fraud monitoring and fraud prevention. While they are mostly focused on compliance, the views were expressed that they should cooperate more actively in the area of risk management, which is the second line of defence in most large corporations, with internal auditors usually taking the third line of defence to maintain independence from business stakeholders:

"The roles and responsibilities of internal audit committee directors should be broader. In addition to routine meetings and overseeing financial reporting, they should be more actively involved in risk management decisions. They should also work closer with all departments of the company".

Thus, according to the responses of the interviewees, the traditional roles and the Three Lines of Defence model in which internal audit is placed in the third line has been challenged and called for revision.

5.3.7. Recommendations from Interviewees

In the last part of the interviews, the respondents were asked to provide their own personal recommendations for improvement of fraud detection and fraud prevention in UK retail companies.

One of the recommendations that were provided addressed both the high-level and low-level measures, such as installing security cameras (low level) and organisation of effective controls (high level):

"I'd go with higher security measures such as installing more cameras and focusing on accountability of each employee and manager. It's much easier to commit fraud when the company is poorly organised or lacks control. If the roles and things every person is responsible for are well defined, and the execution of tasks is well controlled, the cases of fraud can be minimised. They can't be avoided, unfortunately, but they could be made rare. It's just impossible to guarantee that fraud won't happen. There are too many things at play that our beyond our control, and we don't know all the people we work with well enough to predict and guarantee their behaviour".

The next recommendation relates to planning and proactive behaviour based on setting the right goals and objectives, developing a plan and executing the plan effectively to prevent fraud. Even though, as the previous respondent noted, the instances of corporate fraud cannot be eliminated completely, such actions can often lead to the minimisation of the probability of corporate fraud occurrence:

“It all starts with setting the right goals and objectives. They should be specific and measurable, which means that all managers should be on the same page as to what is considered fraud in the company and what the company is doing. Regular training should be conducted. Individual approaches to managers should be adopted as every person responds differently. To detect from, it is important to have clear benchmarks against which performance can be compared. Different types of fraud should be considered, and hence there will be different detection mechanisms. For example, in case of accounting fraud, internal auditors should be the first to notice that and report it. Fraud prevention is a more difficult task as it implies preventive measures, and they may not be all effective”.

Companies should also be open to borrowing the experience of more successful companies in battling corporate fraud. That is why studying such cases and covering such cases during training sessions is important:

“Borrow best practices from companies that are successful at fighting fraud. Study the cases of a major fraud that occurred in your country or your industry to avoid similar mistakes. Allocate a proper budget for fraud detection and prevention. Improve the security of your information systems and ensure that internal control systems work as expected. And monitor the company”.

The quantitative analysis of the survey with SEM also focused on whistleblowing and the presence of a hot line for reporting fraud anonymously. This theme was also covered by the interviewees, who noted the importance of such anonymous instruments in the prevention of corporate fraud:

“A lot of cases of financial fraud can go unnoticed unless someone tips. But in most companies, it is hard to do that anonymously, especially in small companies where everyone knowns everyone. So, I’d recommend building a third-party website not related to the company but which can be accessed anonymously by managers and employees to report instances of fraud or even suspicious activities that may require further investigation. This

system isn't perfect, as it's hard to motivate people to report fraud anonymously. If they are anonymous, any bonuses or rewards for whistleblowing will make them no longer anonymous. However, I think something can be done about it".

In line with the previously mentioned theme of communication and information sharing between departments to prevent fraud, the same theme emerged in recommendations to managers for companies. They emphasised the importance of communication in keeping the information flow between departments and maintaining a culture of openness, which would help keep internal control systems effective:

"There are many things that could be mentioned. Communication is the most important aspect. Company values, consequences of fraud, and details on how internal control systems work must be communicated constantly. Departments and managers should also talk to each other as it's impossible to control all things at once. A lack of communication leads to less information shared and more opportunities for fraud to arise. There should also be strict specialisation in the company. Duties must be delegated properly, and advisers and experts need to be commissioned to get advice on areas related to fraud and how to improve its detection using new technologies or new methods".

5.4. Summary

The purpose of this chapter was to present the findings of the survey and analyse the results. The study has employed statistical instruments and procedures to process the data and analyse the findings from the survey. The presentation of the respondents' profiles has been made with the help of descriptive statistics and frequency tables, which show the patterns of distribution of the quantitative variables coded using the Likert scale. The survey responses have also been subject to the reliability test that employed the Cronbach alpha indicator to examine to what extent the answers of the survey participants are internally consistent. The reliability test was followed by independent samples t-tests and ANOVA, which have been used to compare the mean values of the Likert scale variables in the companies that evidenced cases of corporate fraud and the companies that were not officially detected to have instances of fraud. A similar comparison has been made between companies with different business models. The main analysis has been performed in two stages. The first stage was based on the logistic regression analysis that intended to capture instantaneous

direct relationships between the independent variables and the probability of corporate fraud occurrence in UK retail companies. This part of the analysis showed that only company size and the signing of the anti-fraud statement were significantly related to the probability of fraud, whereas the rest of the variables showed no statistically significant associations with corporate fraud. The factor of company size was significant at the 1% level, whereas the factor of the anti-fraud statement was significant only at the 10% significance level.

The second stage of the analysis was based on Structural Equation Modelling, which first measured how well individual factors loaded on three latent variables representing three theoretical constructs proposed by the Fraud Triangle, namely: Pressure, Opportunity and Rationalisation. The relationship between the Pressure variable and the probability of fraud was found to be statistically insignificant, in contrast to the arguments from the Fraud Triangle theory. In the same way, no statistically significant relationships were detected between the Rationalisation variable and corporate fraud. However, the only factor supported in the Fraud Triangle is the Opportunity construct, which was significantly related to corporate fraud. Since this latent variable was constructed based on linear combinations of additional variables such as the audit committee, internal control, IT infrastructure, hot line, and whistleblowing, among others, individual loadings of these variables on the latent variable were examined. The results revealed that most of the variables had high loadings and explained the Opportunity factor well. In particular, high and statistically significant loadings of the IT department, audit committee, internal audit effectiveness, internal audit expertise, the presence of a hot line and the size of the company were detected. Thus, it is concluded that these variables are most influential in explaining corporate fraud. In order to illustrate whether this finding is in line with the arguments from Chapter 2 attained from reviewing theoretical and empirical literature, a discussion of results is conducted in a separate chapter that follows.

Chapter Six: Analysis and Discussion

The previous chapter has shown the findings of the research and provided their analysis and interpretation. The purpose of this chapter is to discuss the results and demonstrate how well they are aligned with the theories covered in Chapter 2 and the empirical evidence reviewed in Chapter 3. This will prepare the way for making final conclusions and recommendations that will be covered in the next chapter. This chapter begins with the comparison of the results of this thesis with the empirical literature, where individual themes from the literature are broken down into sub-sections that correspond to the main variables used in Chapter 5. After this, the findings are compared to theories.

6.1. Internal Control and Corporate Fraud

The first hypothesis of this study dealt with the opportunity construct of the Fraud Triangle and internal controls that create barriers and reduce the opportunity for managers to commit fraud. Hence, it is worth starting the discussion and comparison of the results of the thesis to previous literature based on the findings in relation to internal control and fraud. Internal control emerged because of the need to evaluate whether the actual results are consistent with planned objectives, whether the company complies with the regulations it is exposed to and whether the risk is managed properly in the company. According to Dimitrijevic et al. (2015), businesses are likely to benefit from internal control units, which lead to better risk evaluation and management of threats. Hence, internal control units are expected to improve fraud detection. Internal control units may allow the firms to better identify the risk factors and prevent fraud. However, even though the presence of internal control was considered a part of the Opportunity construct in the Fraud Triangle, this factor was not found to be influential in terms of predicting corporate fraud based on the results of this thesis. Thus, the results are not fully supportive of the statements made by Dimitrijevic et al. (2015).

Similar to this thesis, Oguda et al. (2015) analysed the impact of internal controls on fraud prevention and detection. However, while this thesis is focused on the UK retail sector, their study was based on Kakamega County in Western Kenya, Africa, and they also investigated the relationship using the questionnaire methodology as was done in this thesis. However, the results attained in this thesis and the results revealed by Oguda et al. (2015) are not fully consistent, as the latter showed a positive relationship between internal control units and

fraud prevention and detection (Oguda et al., 2015). Furthermore, the results are statistically significant. Therefore, the development of an effective internal control system helps to significantly reduce fraud detection. At the same time, this thesis showed no statistically significant relationship between these variables.

Similarly, Collins (2014) studied whether internal control systems positively impact financial performance and fraud detection in micro-financial institutions in Kenya. The authors used the data from seven major micro-finance institutions in the region, which implies that their sample is smaller than the one used in this thesis and is focused on different sectors and different countries. Internal control was used as an independent variable through three characteristics such as control environment, control activities as well as information and communication. Thus, the variable measurement was also different as this thesis represented internal control by the presence or absence of internal control units responsible for fraud monitoring and fraud detection. Even though Collins (2014) mentions that internal control explains 44.7% of variations in the firms' financial performance and helps minimise the chances of fraud occurrence, due to the mentioned differences, the results are not aligned between their research and this thesis.

According to Al Hanini (2015), generally, effective internal control systems can help to detect and prevent fraud in the organisation. The discrepancy between their findings and the results attained in this thesis can be explained by the differences in contexts and samples used. They explored the context of the banking industry in Jordan, whereas this thesis has focused on the context of the retail industry in the UK. Al Hanini (2015) evaluated the reliability of the internal control methods across companies in Jordan. The study used data from 50 respondents from the banks operating in Jordan using the survey methodology. This sample is considerably smaller than the one used in this thesis. In addition to fraud prevention, their results indicate that internal control units reduced the system's downtime and successfully improved the protection of personal computers and networks (Al Hanini, 2015).

It could be argued that the presence of internal control units does not provide a clear picture of the effectiveness or weaknesses of these units, and this could be a reason why the findings from this thesis have not supported much of the previous empirical evidence on the significant relationship between internal controls and fraud detection and prevention. In particular, Widilestariningtyas and Karo Karo (2016) studied the impact of internal controls

on fraud detection and prevention in the context of Indonesia. The authors argue that internal control weaknesses and control structure weaknesses can lead to more fraud. However, the results suggest that the internal control system explains about 8% of fraud prevention, while almost 92% is attributable to other factors (Widilestariningtyas and Karo Karo, 2016). Thus, in spite of the presence of a significant effect, the actual share of corporate fraud that internal control can prevent is relatively small. This means that internal control units have a relatively small impact on fraud detection and prevention, and this finding is closer to what has been detected in the course of the survey in this thesis.

Agyemang (2015) also conducted an assessment of internal controls on fraud prevention. The author used the questionnaire and a combination of sampling techniques to analyse the impact of internal control measures on fraud prevention. In contrast to this dissertation, they focused on the banking industry rather than retail. The results reveal a positive influence of internal control measures on fraud prevention, which is not in line with what has been found in this thesis (Agyemang, 2015). According to their survey, the majority of respondents agree that internal control helps detect and prevent fraudulent behaviour. However, the differences between their results and the results attained in this research can be explained by the way in which the survey questions were formulated. Agyemang (2015) asked a direct question about whether or not internal control helps prevent fraud, whereas the survey conducted as a part of this thesis had a rather indirect question asking respondents whether or not their company had an internal control unit responsible for fraud monitoring and detection, then these responses were linked to the probability of corporate fraud occurrence. These differences in methodologies could explain the discrepancies.

Since this study has used a diverse sample of companies of different sizes, including both large companies and SMEs, it is important to compare the findings in relation to SMEs as a part of the empirical literature has focused specifically on SMEs when studying fraud. For example, Shanmugam et al. (2012) studied the role of internal control in reducing fraud prevention among SMEs. The authors used the data from a sample of Malaysian SMEs. The results indicate that internal control improves the performance of SMEs in terms of fraud occurrence. Furthermore, internal control is expected to increase awareness of fraudulent behaviour and contributes to fraud prevention (Shanmugam et al., 2012). Therefore, internal control is supposed to play a positive role in business. This has not been fully supported by statistical analysis conducted in the previous chapter.

Similarly, Sow et al. (2018) studied fraud prevention in Malaysia. The authors used the questionnaire and multiple regression analysis with a sample of Malaysian SMEs. In terms of the methodology, it is very similar to what has been used in this thesis except for the additional Structural Equation Modelling that this thesis contains. The results of Sow et al. (2018) show that internal control positively affects fraud prevention, which cannot be said about the findings from this thesis. The authors suggest that internal control mechanisms tend to increase fraud detection and increase awareness of the risk among business owners.

There are arguments that the role of internal control has increased in the global business environment since the Global Financial Crisis (Karagiorgos et al., 2010). Growing business complexity and allegations about fraudulent financial reporting resulted in the growing importance of internal audits. The authors indicate that internal control systems are vital for ensuring internal audits and the survival of the business (Karagiorgos et al., 2010). The authors find that all components of internal control systems are highly important for the effective functioning of companies, including their fraud monitoring, but this has not been supported in full by the results of this thesis.

Drogalas et al. (2012) studied the effectiveness of internal control and also used a survey strategy with the 5-point Likert scale similar to the choice made in this thesis. However, they focused not only on fraud but also on wider functions of internal control, including their role in mergers and acquisitions, risk management and the performance of companies. The results indicate that internal audit and internal control play an important role in companies (Drogalas et al., 2012). According to their survey, the majority of respondents mention that risk assessment benefits the firm with a higher quality of strategic management and internal control system and also improves fraud detection and prevention, which is not perfectly in line with what this thesis has shown in Chapter 4.

Internal control relates to internal audit. According to Chang et al. (2019), the internal audit function affects internal control over compliance and reporting as well as operations. The authors examined the relationship between internal audit quality and the firm's operations and reporting. The results suggest a positive impact of internal audits on the quality of internal control over compliance and operations, which minimises the probability of fraud (Chang et al., 2019). This means that internal control adds value beyond financial reporting and can enhance the quality of compliance, thereby contributing to fraud detection. This

conclusion cannot be fully confirmed by the results of this thesis, where the presence of internal control units played a rather insignificant role in corporate fraud.

One of the possible indirect effects of internal control on fraud that has been missed in this thesis is that it could produce influence through the mediating effect of internal audit, which in contrast to internal control units, was found to be significantly related to the latent variable of Opportunity. The latter could significantly predict the probability of fraud occurrence. Karagiorgos et al. (2021) studied the mediating role of internal audit in the relationship between internal control and fraud and found that internal control positively affects internal audit and the firm's performance (Karagiorgos et al., 2011). As there is a growing role of internal audit and internal control in businesses, it is important to consider not only direct but indirect effects through moderating or mediating variables.

Audit committee characteristics also play an important role in fraud prevention, according to the literature reviewed in Chapters 2 and 3 and according to the results of the Structural Equation Modelling performed in Chapter 5. According to Deloitte (2018), fraud prevention is one of the key responsibilities of audit committee members. The committee is involved in the oversight of financial reporting and internal controls. Thus, internal control units and internal audit report to Audit Committees. Deloitte (2018) mentions that dealing with fraud risk is one of the major responsibilities of the audit committee. As suggested by Marsh and Powell (1989), the vast majority of listed companies have audit committees. Furthermore, there is much support for the committee as it is believed to improve the firm's corporate governance. According to Huang and Thiruvadi (2010), audit committee characteristics have been an area of interest for regulators and academics. The authors studied the impact of the audit committee on fraud as a proxy for fraudulent reporting. The study relies on a sample of 218 firms from the S&P 600 for 2013. The study showed mixed results on the impact of different audit committee characteristics. For example, they suggest that the Audit Committee meetings' frequency does not affect the fraud prevention and reporting of fraud. At the same time, financial expertise in the audit committee helps in fraud prevention. The latter finding is consistent with the results of this thesis in which the accounting expertise of the Audit Committee was found to be significantly related to the probability of fraud occurring in the analysed UK companies from the retail sector. In addition, gender diversity and the use of Big-4 auditors are also associated with more fraud prevention, according to Huang and Thiruvadi (2010), but this thesis has not supported this as the effectiveness of external audits

was not found to be significantly related to corporate fraud. Therefore, when comparing the results of Huang and Thiruvadi (2010) with the results from this research, it is possible to note that in spite of certain similarities and consistencies, there is no perfect match. The differences can be explained by the different contexts and time periods covered. These researchers focused on the US market and the year 2013, whereas this thesis is more recent and is focused on the UK. Generally, their study finds that the audit committee has a positive impact on fraud prevention through financial expertise and gender diversity of the committee members, whereas according to this thesis, the accounting expertise is influential, but no research was made into the composition of the Audit Committee by gender.

To some extent, the results from this thesis are consistent with the arguments raised by Turley and Zaman (2004), who analysed the effects of audit quality on corporate governance and fraud prevention. The authors suggest that the audit committee has a profound effect on the firm's financial reporting and the probability of corporate fraud. More independence of audit committees is expected to reduce reporting fraud and enhance compliance with accounting standards. While this thesis has not considered the factor of independence of the Audit Committee but covered only its expertise, there is no direct link between these results, but in general, both studies show that Audit Committee play a significant role in fraud prevention.

Audit structure also can impact the firm's reporting fraud prevention. James (2003) examined whether internal reporting audit structure and audit arrangements impact the perceptions of users of financial information regarding the firm's ability to prevent reporting fraud. The authors surveyed lending officers. The results show that there is no difference between outsourced internal audit teams and in-house audit departments (James, 2003). In addition, the authors mention that the users perceive more auditors reporting to the board of directors rather than those reporting to senior management. The fact that they focused on perceptions of fraud rather than actual cases of fraud is the main difference between their research and this thesis.

Along with the mere presence of the Audit Committee and internal control, this thesis has accounted for characteristics such as the expertise of internal auditors. A similar approach was made in the past by Cohen et al. (2004), who analysed the impact of different audit quality characteristics on the quality of financial reporting and fraud reporting. The authors examined the role of composition, independence, expertise, effectiveness, power and responsibilities of audit committees. Thus, the list of audit characteristics they covered in

their study is more extensive compared to the list of characteristics included in this thesis. Cohen et al. (2004) suggest that the independence of audit is the key characteristic affecting its role in fraud prevention. That is, a more independent audit committee is likely to be more effective at preventing fraud in financial reporting.

Bedard and Gendron (2010) reviewed the literature on the effectiveness of audit committees and examined the impact of the audit committee on fraud and financial reporting quality. The authors identify cross-national differences in the relationship between audit committee characteristics and the effects on fraud prevention. However, the review confirms that the expertise and independence of audit committee members are major characteristics affecting the effectiveness of the committee. This finding is in line with the results attained in the course of SEM analysis in this thesis, which also revealed a statistically significant role of auditor expertise in the probability of corporate fraud occurrence.

The role of corporate governance and audit committees has considerably increased over recent years. Coram et al. (2008) assessed whether firms with internal audit functions are more likely to detect and prevent fraud. The authors used the misappropriation of assets as a measure of fraud and analysed the data from the 2004 KPMG Fraud Survey. The results find that corporations with internal audit functions can more effectively detect and self-report fraud compared to those firms without well-developed internal audit functions (Coram et al., 2008). This result is consistent with the evidence from this thesis, which also showed that internal audit effectiveness is strongly related to the probability of fraud in UK retail companies through the mediating effect of the latent variable constituting Opportunity. Coram et al. (2008) results confirm that an effective audit and monitoring function within the firm is more effective than outsourcing auditing. This evidence also advocates for a higher role of the audit committee within the company.

The outcomes of this thesis in regard to the statistically significant impact of internal audit expertise on fraud in UK retail companies are in line with previous empirical evidence demonstrated by Kamarudin et al. (2014), who analysed the relationship between audit committee attributes and the risk of fraudulent financial reporting. In contrast to this thesis, they focused on more attributes than just expertise. The attributes they covered included the audit committee independence, financial expertise, meeting frequency, gender diversity and ethnic diversity of the committee. The authors used data from Malaysian companies over the period 2005-2010. The results suggest that there is a positive relationship between audit

committee independence and the risk of financial fraud (Kamarudin et al., 2014), which cannot be compared to the results of this thesis as the issue of audit independence was not discussed during the survey or interviews. However, the results of this thesis are more in line with another finding from Kamarudin et al. (2014), who showed that financial expertise was significantly associated with corporate fraud. In addition, the study finds no effect from gender and ethnic diversity as well as the frequency of audit committee meetings. While these results do not contradict the evidence from the survey and SEM, as some of these factors were not even covered, they partially contradict the evidence from the interviews where retail managers argued that a high frequency of meetings was a positive factor for fraud prevention and detection. Nevertheless, the interview results are qualitative and show managers' perceptions rather than actual dependencies based on objective quantitative judgements.

Lee and Fargher (2018) studied the impact of audit committee quality and the oversight of whistle-blowing on fraud. The authors examined whether the quality of audit committees leads to better outcomes using a sample of internal and external cases. The results find that a higher-quality of audit reduces the probability of misconduct reported externally (Lee and Fargher, 2018). In addition, the authors mention that a higher-quality audit committee leads to more efficiency in the whistle-blowing system. Hence, the audit committee is found to play a positive role in fraud detection and prevention. While this finding about the audit committee is consistent with the results of the survey conducted in this thesis, there is mixed evidence for whistleblowing. On the one hand, incentives for whistleblowing were found to be a statistically significant factor of the latent variable Opportunity, which significantly predicted corporate fraud. On the other hand, the presence of a hotline for whistleblowing did not exhibit a statistically significant relationship with corporate fraud.

A number of empirical studies focusing on corporate fraud and corporate governance as a mechanism for fraud prevention use earnings management as a proxy of fraudulent behaviour. For example, this was done by Garcia et al. (2012), who studied the relationship between the audit committee and the internal audit function. The authors studied how audit committee characteristics affect earnings management to test the quality of financial reporting using a sample of 108 Spanish firms. The results indicate that size of the audit committee and the frequency of meeting negatively affect earnings management and financial manipulations (Garcia et al., 2012). Hence, the authors argue that the committee size and

meeting frequency matter. Generally, the evidence confirms that the audit committee plays an important role in financial fraud prevention. However, it is valid to argue that earnings management cannot be equated to corporate fraud because some of the earnings management could be perfectly legal and within the acceptable levels allowed by financial reporting standards. It is excessive and deliberately misleading financial reporting that may constitute fraud. Thus, when researchers use earnings management as a proxy for corporate fraud, they need to clearly distinguish and develop specific criteria for segregating non-fraudulent behaviour through normal earnings management and fraudulent behaviour. The lack of a clearly defined boundary between these concepts was the main reason why earnings management was not selected for this thesis as a potential proxy for corporate fraud. Instead, the dummy variable approach has been chosen where the occurrence or non-occurrence of corporate fraud in the past was used as the key indicator and dependent variable. However, this approach also has limitations, such as the conclusions about past evidence of fraud being made on the basis of the respondents' claims, which could be biased. Furthermore, the respondents did not indicate when exactly the instances of corporate fraud occurred in their companies. More importantly, the participants in the survey did not distinguish between big cases of fraud and relatively small cases of fraud, which could also make a significant difference. Such nuances can be best explored by surveying public evidence, but it is often lacking or not available from a single source.

Lastly, to end the discussion on the relationship between internal audit and corporate fraud, it is important to note that this thesis has produced results that are in line with an international study conducted by Salehi and Shirazi (2016), who studied the impact of audit committee characteristics of the quality of financial reporting, fraud and disclosure. The study was based on the data from the companies listed on the Tehran stock exchange over the period 2013-2014. The results identify the negative impact of audit committee meetings on the quality of financial reporting and find a positive impact of the expertise (Salehi and Shirazi, 2016). Therefore, the financial expertise of the audit committee helps to improve the quality of financial reporting and contribute to fraud prevention, which is in line with what SEM analysis has revealed. The next section switches to the role of external audit, which has also gained attention in this thesis and particularly in the survey part.

6.2. External Control, Audit and Fraud Prevention and Detection

The second hypothesis of this thesis dealt with another dimension of the Opportunity construct of the Fraud Triangle, namely: the external control mechanisms, which have been represented in this study by the quality of external audit. Fraud detection and prevention can be enhanced through more collaboration between internal and external auditors and regulators. According to Delarue (2020), a reassessment of traditional audit procedures for the risk of fraud prevention and detection is needed. Although external auditors play an important role in fraud detection and prevention, it is mostly the responsibility of management and those charged with corporate governance within the firm (Delarue, 2020). That is, external auditors complement internal auditors and the firm's management in fraud detection and prevention. The auditors mostly provide assurances on the firm's financial statements. Thus, the argument made by Delarue (2020) is generally in line with the qualitative analysis outcomes from this thesis, where the interview responses also revealed that a switch from compliance only to more engagement with business stakeholders on risk management issues and fraud-related issues would contribute to better prevention of corporate fraud. However, Delarue (2020) notes that the public demands more from external auditors, despite the fact that fraud firm cases are relatively small compared to the overall number of companies. The role of external auditors in fraud detection and prevention can be increased through more data analysis and forensics. As the world becomes, more digital and complex, more complicated auditing tools can be used to enhance the quality of auditing. According to Delarue (2020), more collaboration can enhance the role of external auditors through changes in auditing standards and more assessment of the firm's internal control and risk management processes by external auditors. This will increase the responsibility of external auditors and provide tools to them to improve fraud detection and fraud prevention.

In contrast to the qualitative results from the thematic analysis of interviews, the results of the logistic regression modelling and SEM did not show any evidence of a statistically significant relationship between eternal audit and corporate fraud occurrence in UK retail companies. One of the key obligations of audits is to monitor whether the client company's reporting complies with existing accounting standards. Thus, a traditional external audit can capture only a part of corporate fraud that relates to accounting reporting and misstatement or incompliance with regulation. It would still be ineffective in tackling other instances of fraud.

In support of what was previously stated in this discussion about the difference between earnings management and corporate fraud, Kassem (2012) reviewed the existing literature to identify the difference between these aspects that will be helpful for auditors. The author used secondary data that is obtained from different databases to propose a new approach for external auditors. The review suggests that audits can contribute to fraud detection and prevention by considering the motives of managers in their financial decision-making (Kassem, 2012). Hence, an external audit could play an important role in combating fraud in financial reporting, but its current role is not broad enough to allow for effective monitoring of fraud and its prevention.

Nevertheless, large corporate scandals and large-scale instances of fraud are able to further change this situation with the role of external audit, as it changed after the cases of Enron and Arthur Anderson. For example, Kassem and Higson (2012) argue that in response to the fraud scandals of large companies such as Enron and WorldCom, the standard setters have issued new requirements that expanded the role of external audits in fraud detection. The authors analysed the role of external auditors in fraud detection as well as the role of auditing standard setters in improving the regulatory framework in the industry. The results indicate that there is still much work to do from external auditors and regulators to improve fraud detection and prevention (Kassem and Higson, 2012). The authors suggest that external auditors play a crucial role in fraud detection, but they are not the key actors in the process, which confirms the findings from the qualitative analysis of interview responses. Nevertheless, external auditors can have a strong impact on the quality of financial reporting. They need more guidance on ranking the fraud risk to improve the detection and prevention of fraudulent behaviour (Kassem and Higson, 2012). In addition, the authors mention that there is much leeway that allows some auditors to change audit procedures and avoid more rigorous procedures. Therefore, effective fraud detection and prevention is dependent on three players and namely: internal auditors, external auditors and standard setters.

External auditors use analytical procedures to detect fraud in financial reporting. However, it is an open question whether external auditors can identify fraud in financial statements. Kaminski et al. (2004) conducted an exploratory study to assess whether the financial ratios of fraudulent companies differ from those of non-fraudulent firms. That is, the authors studied whether external auditors can detect fraud using the analytical procedures from financial reports using the data from US companies over the 1982-1999 period. The results

indicate that only five indicators were significant and could be used for fraud detection (Kaminski et al., 2004). This means that there is a limited ability of external auditors to detect fraud from the financial ratios of the companies, which may explain why this thesis has also reported that there is no statistically significant relationship between external audit and corporate fraud in UK retail companies based on SEM analysis and logistic regression analysis.

Going back to the issue of earnings management and its use as a proxy for corporate fraud, previous studies such as Perols and Lougee (2011) attempted to explore whether previous earnings management could help predict fraud in financial statement reporting. The authors used a sample of 54 fraud and 54 non-fraud firms. Thus, they clearly distinguished between fraud and earnings management. Moreover, their division of companies on fraudulent, i.e. those that had instances of corporate fraud in the past, and non-fraudulent, i.e. companies that are clean and have no public evidence of corporate fraud, is very similar to the method adopted in this research, which also chose this binary technique to make the distinction. The results produced by Perols and Lougee (2011) indicate that fraud firms are characterised by more likely earnings management in the past to inflate revenue and/or beat analyst forecasts (Perols and Lougeem 2011). In addition, fraud firms were found to beat analyst forecasts even without earnings management than non-fraud firms. Thus, to some extent, their research reconciles the view that in some cases, for lack of a better proxy, earnings management could be used to represent corporate fraud when continuous or longitudinal data is required.

The results of the qualitative thematic analysis of interviews in this study have shown that external auditors need to work in tandem with internal auditors to detect and prevent fraud. However, there is a debate on who is more responsible for fraud detection and prevention. Halbouni (2015) studied internal and external audits' perceptions regarding fraud detection, prevention and reporting. The study used data from the UAE and was based on a survey of 53 UAE auditors. The results revealed that fraud detection was mostly the responsibility of internal auditors (Halbouni, 2015). Thus, their findings are in line with the quantitative analysis of this thesis that external audit has a weaker relationship with corporate fraud compared to internal audit and its characteristics. In addition, Halbouni (2015) also finds that external auditors follow more rigorous procedures for fraud detection than external auditors. Furthermore, external auditors are affected by internal audits and rely on internal auditing results. Thus, it can be shown that even though the internal audit is in the third line of defence

and separated from risk management and business stakeholders, it has more access to information and is more effective in tackling the issues of corporate fraud compared to external audits.

Munro and Stewart (2011) analysed the relationship between external auditors and internal auditing and the impact of the firm's business risk environment on the reliance of external auditors on internal auditing. The authors used the data from 66 audit partners, managers and seniors. The results show that both internal auditors' relationship with the audit committee and the risk environment significantly affect the external auditors' reliance on the results from internal audits (Munro and Stewart, 2016). Moreover, external auditors mostly use internal audits for control evaluation. This confirms the discussion from the previous paragraph that internal audit could be more effective in fraud detection in prevention due to access to more information and because external audit often relies on internal audit work when making evaluations.

It is interesting to note that in rare cases, such as in the example of Enron and Arthur Anderson, external auditors could be in collusion with their clients and even contribute to corporate fraud instead of detecting and preventing it. Zager et al. (2016) examined the role of key stakeholders in the prevention and detection of fraud. The authors used a survey methodology to research the role of external auditors in fraud prevention and detection using data from Croatia. The results suggest that overstatement of assets is the most widely observed fraud in financial reporting by external auditors (Zager et al., 2016). The authors mention that management bears the most responsibility over fraudulent financial reporting, but external auditors are also responsible for reliable financial reporting. However, in order to make their work more effective, an appropriate rotation of auditors should be done, and assurance and consulting services should not be provided by the same auditor. The next section discusses the next aspect of corporate governance, which was studied in relation to fraud detection and prevention, namely incentives mechanism based on managerial compensation.

6.3. Pressure, Managerial Compensation and Fraud

The third hypothesis of this study focused on the Pressure construct of the Fraud Triangle represented by monetary incentives such as the compensation of managers. The linkage between CEOs' compensation and the probability of reporting fraud has been broadly explored in the literature, as Chapter 3 has shown, and this is a reason why the analysis in this thesis also considered this factor as a potential predictor of fraud in UK retail companies (Bergstresser and Philippon, 2006; Larcker et al., 2007). The qualitative thematic analysis of the interviews has also revealed a rather negative reaction of the respondents to equity-based compensation, which was argued to be prompting managers to focus on stock market manipulations rather than actual financial performance. Such behaviour and such incentives could make managers choose the path of fraud to enrich themselves. However, a variety of studies provide contradictory evidence on whether equity incentives are connected with a higher probability of fraud and misreporting. A large strand of research, including Cheng and Warfield (2005), Bergstresser and Philippon (2006) and O'Connor et al. (2006), indicates a positive linkage between equity incentives and misreporting.

According to the Agency Theory and previous empirical findings, Ndofor et al. (2015) explained that stock options have served as a tool for aligning top managers' and shareholders' interests to smoothen the principal-agent problem. Since the provision of stock options ensures managers' wealth growth along with the increase of share prices, top managers having sufficient stock option compensation are supposed to pursue the goal of firm value maximisation, which would benefit shareholders as well. On the other hand, the authors warned that excessive stock options might unintendedly push managers to financial misstatement and provide two reasons for that, which is consistent with the fears expressed during the interviews that excessive equity compensation could trigger more corporate fraud. First, while stock options increase, the time horizon of executives decreases, so they will likely be interested in "overconsuming" short-term benefits (Fama, 1980). This implies that management may artificially raise short-term profits to manipulate the stock price, which would allow them to maximise their near-term reward. Second, stock options provide executives with the potential to gain from profitable projects but minimise the potential for their personal losses (Zhang et al., 2008). This stimulates managers to admit excessive risk in project selection. Such projects may be potentially profitable in the short run but destroy value in a longer perspective (Sanders, 2001). This argument is based on the Moral Hazard

issue proposed by Agency Theory, according to which managers engage in risky behaviour for the firm if such behaviour allows for enrichment of the management while most of the risk would be borne by the firm rather than managers. These considerations imply that by being provided with stock options, the manager also receives incentives to misreport the financial performance of their companies to boost their short-term benefits (Harris and Bromiley, 2007). Top executives provided with large stock options will be more likely to undertake practices of reporting fraud when they receive a chance for this due to information asymmetry suggested by agency theory. This asymmetry makes managers less accountable and their actions less transparent which, in turn, increases the likelihood that managers will be engaged in further misstatement practices (Ndofor et al., 2015).

The studies exploring the impact of compensation policy on the quality of financial reporting illustrate this standpoint. O'Connor et al. (2006) examined an "unprincipled agent" approach to stock options used for CG purposes. They revealed that large stock options provided to CEOs raised the likelihood of fraudulent reporting when other directors were allocated stock options as well, and this effect was especially strong in the presence of CEO duality. Meanwhile, the likelihood of fraud was significantly lower if CEO was not a chairman of the board and other directors did not have stock options. While these empirical studies are generally in line with the outcomes of the interview analysis in this thesis, there are some contradictions with the quantitative analysis attained using the method of logistic regression modelling and SEM. According to the quantitative results, managerial incentives and compensation are not strongly related to the Pressure construct and do not exhibit a statistically significant relationship with the probability of corporate fraud in UK retail companies. In turn, Harris and Bromiley (2007) relied on behavioural theories to demonstrate that weak performance in previous periods and negative performance compared to competitors also raised the chance of fraudulent reporting.

Zhang et al. (2008) indicated that CEOs were more prone to earnings misreporting when they were granted more out-of-the-money stock options, which also confirms the fears expressed by the interviewees in the qualitative analysis. However, it is valid to argue that the latter finding from this thesis is opposite to that made by Efendi et al. (2007), who revealed that the probability of financial misstatement was higher when a CEO had large in-the-money options. The differences in results can be explained by the differences in methodologies, data and time period covered in the studies.

It can also be argued that the factor of the industry could be important. This thesis has focused on the retail industry only, whereas other previous studies explored a diverse set of industries but predominantly the financial sector. Ndofor et al. (2015) confirmed that manager incentives to commit fraud increased along with the size of CEO stock options but noted that this probability is higher for industries with higher complexity. They added that the likelihood of reporting fraud decreased if managers' activities were aggressively monitored by the board audit committee, and this linkage was also stronger in high-complexity industries.

While the results of the qualitative thematic analysis of interviews revealed that equity-based compensation could influence fraudulent behaviour among top executives, the quantitative analysis of the survey using the methods of SEM and logistic regression modelling showed no statistically significant relationship between these factors. The results can be compared to Cheng and Warfield (2005), who explored a linkage between equity incentives, including stock ownership and stock-based compensation on the propensity to earnings management. In contrast to this thesis, they did not use the binary variable for fraud but resorted to earnings management, which was previously shown to be a popular proxy in accounting literature. The authors supposed that high equity incentives were associated with a greater likelihood that managers would undertake earnings management, which is in line with the qualitative results from the interviews. This hypothesis was confirmed by the statistical analysis. The authors explained that managers hoped to sell their stock in the near future and thus applied earnings management practices to increase the share price. However, while this argument is consistent with what the interviews have shown, there is no alignment with the results of the survey analysis based on SEM and regression modelling.

Some clarity on the relationship between equity compensation and corporate fraud has been brought by Burns and Kedia (2006), who explored the association between separate components of CEO compensation and the inclination to misreport. They revealed that not all elements stimulated the manager's propensity to misreport. In particular, they indicated that only the CEO option portfolio was positively connected with the likelihood of reporting fraud, whereas the linkage between other elements, including salary and cash bonus, equity, long-term incentive plans and restricted stock and misreporting, was not significant. It is interesting to note that their finding that bonuses are not related to corporate fraud is perfectly consistent with the statistical evidence from the analysis of the survey in this thesis, which

also revealed that bonuses had no statistically significant influence on corporate fraud occurrence in UK companies. The authors explain these findings by a lower the risk of detection fraud in the case of granting managers stock-based options. On the other hand, Johnson et al. (2009) found that it was not stock options that affected fraud reporting. Instead, they showed that the element of CEO compensation positively connected with the likelihood of fraud was unrestricted stockholdings. The authors explained that managers who had insider information on firm affairs were aware of the forthcoming drastic decline in share prices if they reported truthfully. This decline would hit their unrestricted stockholdings stronger than stock options due to distinctions in convexity.

On the other hand, Conyon and He (2016) detected an opposite relationship between CEO compensation and corporate fraud. They examined a sample of Chinese companies for the period 2005-2010 and showed that CEO compensation was lower in firms with a larger number of confirmed cases of fraud. This may imply that boards of firms where fraud was detected penalised CEOs by lowering their total compensation. Thus, in order to shed more light on this complex relationship, future studies can be recommended to examine potential endogeneity issues, which have been ignored in this thesis and in many previous empirical studies covered in Chapter 2. Conyon and He (2016) also demonstrated that other corporate governance mechanisms affected the magnitude of punishment. In particular, they documented that CEOs of privately owned firms, firms where a CEO and a chairman of the board were different persons and firms from more economically developed areas tended to higher financial punishments for misstatements. Besides, firms with a larger number of fraud cases tended to replace their CEOs more frequently. Meanwhile, Armstrong et al. (2009) found no positive association between CEO equity incentives and accounting irregularities, which agrees with the results of the quantitative analysis of the questionnaire in this thesis that yielded similar findings in the context of the UK retail industry. As has been noted by Conyon and He (2016), the relationship between equity compensation and corporate fraud occurrence could be moderated by the CEO duality variable. The latter implies a situation when the CEO also assumes the position of the Chairman. While previous studies such as Conyon and He (2016) accounted for this factor, this thesis has omitted the issue of CEO duality and its moderating effect on the relationship between equity compensation and corporate fraud because CEO duality is very rare in the case of the UK market where most firms tend to have separate positions for the CEO and Chairman. However, this issue of CEO duality is more relevant for the US market, where it is common for the CEO and Chairman to

be represented by the same person. This factor needs to be considered in future studies if they focus on jurisdictions such as the United States.

The findings from the interviews in this thesis and the findings made by Burns and Kedia (2006) were, to some extent, confirmed by Hariss and Bromiley (2007), who found that it was stock-based options that affected the likelihood of financial misstatement. Meanwhile, other components of CEO compensation were revealed to have an insignificant role in financial reporting fraud. However, unlike Cheng and Warfield (2005), Hariss and Bromiley (2007) provide another explanation for these actions. They suggest that managers tended to undertake earnings management when the stock price was below the strike line, and it did not bring income to managers. Thus, they applied aggressive accounting practices to raise the stock price over the strike price level.

The results of this thesis with respect to the potential influence of performance-based compensation on corporate fraud occurrence are generally consistent with empirical research conducted by Armstrong et al. (2013), who did not find a direct association between equity incentives and misstatement, either. However, they considered this potential relationship through the prism of risk by analysing the sensitivity of managers' portfolios to changes in risk or portfolio vega. The researchers came to the conclusion that it was the portfolio vega that affected the likelihood of reporting fraud. Thus, they suggest that it is not managers' wealth depending on stock prices that make them undertake misstatements but rather managers' risk aversion and the acceptable level of risk. This raises another interesting theme for consideration in future research, namely to examine the managers' attitude towards risk based on behavioural theory and link these attitudes to their decision-making and propensity to be involved in corporate fraud.

Another explanation of the potential relationship between CEO compensation and financial fraud was provided by Haß et al. (2015). The authors claimed that firms with strong tournament incentives proxied by the CEO wage gap were associated with a higher probability of fraud. The CEO wage gap implies the difference between the salary of a CEO and the average employee wage in a firm. The authors documented that in firms with a higher CEO wage gap, managers were more inclined to manipulate financial statements and undertake risky activities. This raises an issue of equality in organisations, which has been beyond the scope of this thesis, but it offers an interesting opportunity to expand this research

in future studies by focusing not only on the structure of managers' compensation but also on its relative size compared to the rest of the stakeholders such as employees.

These findings were confirmed by Bao et al. (2021), who also employed the CEO pay gap as a potential determinant of corporate fraud. The authors revealed that the unconditional association between the CEO pay gap and the quality of financial reporting was negative, which means that firms in which the gap between the salary of a CEO and an average employee salary was higher tended to provide financial statements of poorer quality. However, the authors note that the sign of this relationship depended on the CEO's power and expertise. In particular, the mentioned linkage was relevant for firms with experienced and powerful CEOs, whereas reporting in firms in which CEO power was low was of higher quality.

The findings of Tahir et al. (2019) in terms of mediating factors that affect the CEO pay–financial fraud nexus are different from those provided above. The authors documented that when purely financial measures of firm performance were applied in CEO bonus contracts, the propensity to be involved in fraud and misstatements was higher. Meanwhile, when non-financial measures of performance were present in the compensation scheme as well, income-increasing manipulations were lower. In addition, lower accruals were also associated with long-term goals and, accordingly, indicators in the CEO reward plan (Schiehll and Bellavance, 2009). Thus, the relationship between performance-based payments to managers and corporate fraud and fraudulent behaviour could be determined by the KPIs used to determine the performance of companies, to which the compensation figures would be linked.

Zhou et al. (2018) accounted for another factor in the CEO pay–fraud relationship that was ignored by other researchers, including this thesis. This is the factor of delisting pressure. Contrary to the findings by Haß et al. (2015) and Bao et al. (2021), who showed that a greater CEO pay gap was associated with a higher probability of fraud, these researchers indicated that it firmed in which CEO and CFO pay gap was lower tended to commit more fraud in Chinese companies. When accounting for delisting pressure, they demonstrated that it mitigated a negative linkage between CEO remuneration and corporate fraud. In addition, the study controlled for equity incentives as well. In this case, the impact of CEO remuneration on fraud was proportional to delisting pressure. Specifically, higher CEO pay curtailed the likelihood of fraud for firms that faced no delisting pressure. However, for firms that experienced this pressure, the mitigating effect of CEO compensation on fraud disappeared.

The next section of the discussion chapter focuses on another managerial characteristic covered in this study in addition to the factor of compensation, namely the turnover of managers, which was assumed to be strongly related to corporate fraud, but the results showed the opposite.

The research on the relationships between director turnover and corporate fraud is mostly focused on the consequences of fraud for boards and different types of directors. The outcomes of prior studies show that this relationship could be subject to endogeneity issues, which have not been considered during the analysis of the survey in this thesis. The endogeneity issue, in this case, may imply that companies with more cases of fraud may be subject to greater managerial turnover as managers do not want to be associated with a bad reputation borne by fraudulent companies. While executive directors tend to leave the board more actively in the wake of fraud scandals and litigations, independent directors are concerned with their reputation issues (Baum et al., 2016). They are more likely to depart from firms whose reputation has already suffered from scandals or is anticipated to do so after forthcoming litigations (Boivie et al., 2012; Fahlenbrach et al., 2013). Lawsuits may affect the reputation not only of the sued companies (Black et al., 2006) but also of 'interlocking' firms in which director positions are held by the same persons (Kang, 2008). As a result, independent directors are anticipated to leave the boards of sued firms with a higher probability of avoiding being reputationally connected with such companies.

This thesis showed that there are no significant relationships between managerial turnover and corporate fraud, and this finding is supported by previous empirical evidence such as from Fich and Shivdasani (2007), who also found no support for the hypothesis that the turnover of outside directors of firms engaged as defendants in lawsuits was abnormally high compared to companies non-engaged in such cases. However, Baum et al. (2016) found a significant drawback in the methodology applied by those authors. The matter is that Fich and Shivdasani (2007) did not restrain the sample to firms that were punished or really accused of financial fraud. As a result, their sample contained firms that were engaged in fraud litigation, but their fault was not proven. Baum et al. (2016) add that exploring the sample that included all defendants engaged in fraud litigation entails the inclusion of low-merit cases and thus produces a bias in the analysis of managerial turnover in cases when the financial fraud of firms was confirmed. These arguments confirm the importance of choosing

the proxy for corporate fraud with great precision, as different variables have different limitations and biases discussed previously.

The results of the survey analysis from this thesis with respect to the link between managerial turnover and corporate fraud are also in line with Agrawal et al. (1999), who detected little evidence that the board structure of companies changed in companies accused of fraud. On the contrary, Ferris et al. (2007) provided evidence of the statistically significant increase in the number of outsider directors on boards of firms that were named as defendants in derivative lawsuits. While this, in fact, shows a chance in the top directorship structure, the proxy they used is not truly indicative of managerial turnover as it did not show how many directors left the company. It only showed how many independent directors entered the company.

Another finding of those authors was that firms really engaged in fraud scandals tended to increase the level of board independence compared to firms whose fraud cases were considered by the court, but no convictions were issued. The results by Baum et al. (2016) demonstrated no statistically significant relationship between the lawsuit case outcomes and changes in board size in the period following a lawsuit. These results are to some extent opposite to those reported by Ferris et al. (2007), as the latter authors revealed a substantial decrease in board size for firms that were ultimately accused of fraud compared to firms in which the outcomes of lawsuits were in favour of the management.

Meanwhile, Desai et al. (2006) considered the two groups of firms, namely those that were engaged in SEC investigations and a control sample consisting of firms that were not involved in fraud scandals. The authors indicated that firms involved in investigations tended to raise the proportion of independent directors regardless of the outcomes of investigations.

From the perspective of agency theory, a lawsuit that significantly influences firm value may also affect the board's perception of the CEO's ability to continue managing the firm (Jensen and Meckling, 1976). As a result, CEOs may face a greater risk of losing their posts. Besides CEO turnover, firms may undertake further internal restructuring via the turnover of other directors, but such a tendency has not been observed in the sample of UK retail companies covered in this thesis.

When referring back to the previously discussed endogeneity issues, it can be noted that previous studies, such as Hermalin and Weisbach (1998), argued that the probability of departing after lawsuits was higher for executive directors since their actions tended to have a stronger adverse effect on firm performance. This confirms that the causality runs from fraud to turnover rather than vice versa, as was assumed in this thesis. Moreover, board structure depends on the CEO's bargaining power and ability to attract the most appropriate candidate to the board (Boone et al., 2007). Boone et al. (2007) argued that firms with more powerful CEOs had fewer independent boards of directors, which adversely affected the quality of control and monitoring activities by independent directors. Hermalin and Weisbach (1988) claimed that after a poor performance that led to a lawsuit, more external directors tended to be appointed to the board, whereas more executive directors tended to leave the board, reflecting an attempt of a chairman to strengthen control over the CEO and other top managers. This finding is in line with the outcomes received by Desai et al. (2006) but is not supportive of the results of the survey from this thesis. The differences in results may also be explained by the fact that these studies focused on board members and their turnover, whereas this thesis focuses on managers as business stakeholders and their turnover.

Meanwhile, when examining the relationship between managerial turnover and corporate fraud, it is important to account for different types of fraud and litigations. For example, Aharony et al. (2015) examined the consequences of different types of litigations for board structure. The authors revealed that the reaction of companies was different depending on the nature of the accusations. Namely, contractual litigations were followed by a more intensive turnover of CEOs and executive directors, while environmental litigations tended to entail the departure of external directors. Antitrust lawsuits tended to lead to the increased appointment of executive directors to the boards. Along with finding a relationship between the type of litigation and changes in board structure, the authors revealed that litigations tended to affect CEO compensation after lawsuits. In particular, when fraud or other violations were proven and the firm was punished, CEO compensation tended to decline regardless of whether a new CEO was appointed or the extant CEO continued to hold this post. Overall, the authors conclude that the findings of their study demonstrated the effectiveness of the labour market reactions to firm fraud and other wrongdoing.

6.4. Rationalisation and Fraud

The fourth hypothesis of this study focused on the Rationalisation construct of the Fraud Triangle and whether the perception of fraud among stakeholders could explain its instances. Even though the observed variables loaded well on the Rationalisation construct in the confirmatory factor analysis, this construct did not show a statistically significant impact on the probability of fraud occurrence. This implies that not all elements of the Fraud Triangle have received support in the context of the UK retail industry. While this can be attributed to the limitations of this research, covered in more detail in the next chapter, it is also evident that these three constructs of the Fraud Triangle have different weights and power in explaining and predicting fraud. The strongest one was shown by the Opportunity factor, whereas Pressure and Rationalisation showed relatively weak effects compared to Opportunity.

This finding has also challenged behavioural theories, such as the Theory of Perception, which claim that individual and societal perceptions of ethical behaviour and fraud determine the extent to which fraud occurs. On the one hand, the results of this study in relation to the role of Rationalisation in explaining fraud appear to contradict the evidence from Anand et al. (2004), who considered this factor to be important and influential. On the other hand, a number of previous studies also found unequal roles and weight of the elements of the Fraud Triangle in predicting fraud.

In particular, this research is in line with the previous research conducted by Schuchter and Levi (2015), who discovered that the Opportunity construct was the only strong element of the Fraud Triangle framework explaining the financial fraud committed. Rationalisation and Pressure were found to have weaker effects, which is similar to the results from this thesis in the context of the UK retail industry, suggesting that the findings of this research might resemble a more global trend.

The results of this thesis also agree with the previous research conducted by Lokanan (2015), who criticised the Fraud Triangle and its ability to effectively explain corporate fraud due to the asymmetric effects and unequal role of the constructs proposed by this theory. Lokanan (2015) argued that the Fraud Triangle has serious limitations and cannot be applied to all types of fraud. Moreover, all three dimensions of this theory, such as pressure, opportunity and rationalisation, are rarely found to be jointly significant.

Thus, this chapter has discussed the relationship between key variables used in this thesis and compared the results to previous literature to check to what extent they are in line or in contradiction with one another. The last chapter that follows makes final conclusions on the issue and provides limitations and recommendations.

Chapter Seven: Conclusion, Limitations and Recommendations

This chapter aims to discuss the results attained in the course of the primary data analysis and compare them to the evidence from reviewed empirical and theoretical literature on factors of fraud, fraud detection and fraud prevention. First, the chapter restates the aim and objectives of the research thesis. Then, the evidence for each objective and research hypothesis is provided based on the results from the primary data analysis. The discussion of results is associated with the inclusion of evidence from secondary sources, namely the literature review in the previous chapter. This chapter also lists limitations that have been dealt with in this research and provides recommendations for both future researchers and company managers who want to reduce the probability of fraud in their organisations.

7.1. Conclusions

The main purpose of this research thesis has been to identify the main factors that predict corporate fraud in the context of the UK retail industry and suggest effective measures that could help detect and prevent corporate financial fraud. This purpose has been attained in this study by adopting a mixed-methods approach based on primary data analysis. The primary data have been collected by two different methods, namely: the structured questionnaires as a part of the survey strategy and semi-structured interviews. The sample of people participating in the survey was 203, whereas only 5 respondents participated in semi-structured interviews conducted via Skype.

The mixed methods used in the analysis of the data included correlation analysis, logistic regression analysis, structural equation modelling and qualitative thematic analysis. In the course of this research, all research objectives have been addressed and attained.

Objective 1 has been to investigate the role of opportunities, pressure and rationalisation in corporate fraud committed in the UK retail industry. The research thesis has shown that some of the pressure elements in the Fraud Triangle include the fear of losing one's job, low pay in the company, gender ceiling and inability to achieve further growth in career development, peer pressure, desire to prove one's power and importance, and competition. This list is not

exhaustive, but these are the main factors that have been considered in this research thesis. The opportunity dimension has been represented by factors such as ease of access to financial resources of the company, ease of access to the company's information technologies, weak overseeing in the company, financial performance of the company measured by profitability, whistleblowing practices, and social network and collusions. These are the things that attract or turn away potential fraudsters. For example, large and rich companies can lure fraudsters by possible potential gains of fraud. Weak barriers to access to sensitive information and technology can attract fraudsters as minimum efforts are required to use the information in one's favour. The rationalisation dimension of the Fraud Triangle has been represented by the following list of reasoning in this research thesis: everyone does it; if one deserves something, it could be taken back from the company even if it is illegal; if nobody is getting hurt in the process, it is perfectly normal to be involved in fraud; if one person does not steal the money, there will be many others who will attempt to do that; since peers are often more successful, it is justified to commit fraud in order to get rich momentarily and prove one's worth; it is acceptable to do illegal activities to save others from being compromised. All these motives or excuses are not ethical and not justified by society. In fact, there are negative implications of financial fraud for society members. Financial fraud is associated with a misstatement of earnings and, therefore, not paying corporate taxes to a full extent, which hurts the public finances and government budget. As a result, the social spending of the government is lower than it could be, and the welfare of society is hurt. However, in the eyes of fraudsters, these excuses could play a vital role in whether they commit fraud or not.

The regression analysis conducted in this research thesis has revealed that not all of these factors played a significant role in the probability of financial fraud occurring in UK retail companies. In particular, the regression analysis demonstrated that the necessity for managers to sign an anti-fraud statement, the perceived higher quality of external audit, and the existence of an anonymous hotline for reporting fraudulent activities had a significant impact on the probability of fraud occurrence. All these factors helped prevent fraud or minimise its probability. At the same time, the regression analysis also evidenced that the accounting education or expertise of the audit committee members is a significant factor in detecting fraud. The probability of fraud occurrence is also found to be correlated with the size of the company, which is consistent with the Opportunity dimension of the Fraud Triangle.

In another specification of the regression model, a positive relationship between the quality of the audit committee performance and the probability of detecting fraud was detected. It has also been revealed that monetary rewards for anonymous reporting of fraud cases produced a positive impact on fraud detection in UK retail companies. Thus, even though not all factors within each dimension of the Fraud Triangle were proved to be statistically significant predictors of fraud, on the aggregate level, all three components produced significant factors. This finding speaks of the validity of the model and its confirmation by empirical investigation in this research thesis.

As per the literature review, the Fraud Triangle has received great support based on previous literature. In particular, the employment of the Fraud Triangle was often done in studies that adopted a case study design (Choo and Tan, 2007). In contrast to the survey, case studies are usually concerned with the investigation of a single fraud case or, more rarely, with multiple cases, but their number is still rather limited. When considering the methods by which the Fraud Triangle model was tested in the past, it is interesting to note that some of the studies, such as Suh et al. (2019), used similar binary regression modelling as was done in this thesis. However, it is important to note that not all studies from the past relied solely on primary data analysis, even though primary data is more common in studies on fraud. There have been notable examples of secondary research adopting the same Fraud Triangle framework (Skousen et al., 2009) and mixed-methods approach using a combination of secondary and primary data in the analysis (Lin et al., 2015). A common idea in both primary and secondary studies is to divide companies into those where the fraud occurred and those where it did not occur and use this indicator as a dependent variable. The same idea was followed in this research thesis when analysing the results of the survey of managers from UK retail companies.

While most of the reviewed studies employed the Fraud Triangle framework in full, there were limited cases of previous research where only specific elements of the Fraud Triangle were considered. Such a narrow focus was adopted by Hogan et al. (2008), who analysed only the rationalisation element of the framework, and Abbott et al. (2004), who investigated mostly the opportunity element of the Fraud Triangle, putting it to empirical testing.

Objective 2 has been to test the effectiveness of internal control in predicting the probability of corporate fraud occurring in the retail industry. The internal control has been proxied by

the variable that represents the presence of an internal control unit in the company. In contrast to expectations, this variable was not found to have a significant influence on the probability of fraud occurring in UK retail companies based on the regression analysis. However, the results of the qualitative analysis in which the interview responses were assessed have revealed that internal control, in fact, was important in the detection and prevention of fraud in UK retail companies. These differences between the quantitative and qualitative methods emphasise the limitation of using a single-method approach. In a quantitative study, it is often easy to miss an important relationship because of the imperfections of proxies used or the flaws in statistical methods or the violation of their underlying assumptions. At the same time, in qualitative studies, it is easier to explain why certain relationships exist, but such evidence usually tends to be biased and unsupported by a large sample.

When considering previously reviewed studies on the usefulness of internal control in detecting and preventing financial fraud in organisations, the evidence also remains mixed. In particular, Baker et al. (2017) have shown that internal control functions can often be ignored or even overridden by managers. They illustrated this by a case study of fraud at Societe Generale that took place in 2008. In spite of the presence of internal control, speculative trading was done, violating internal control mechanisms and putting the bank at very high risk. Similarly, there is evidence that internal control can be overridden when criteria set by the control unit are flexible rather than strict. This was shown by Wu and Wang (2018), who found that when internal control allowed for the flexible use of criteria for determining the materiality of specific transactions, managers manipulated and changed these criteria at their convenience, making financial fraud nearly impossible to identify. Thus, when managers have a choice between using one or another measure, such companies will be more prone to financial fraud as this provides an opportunity for fraud based on the Fraud Triangle. At the same time, in other empirical studies, such as Manurung et al. (2015) moderate role of internal control in preventing fraud was detected, whereas Spatacean (2012) argued that effective internal control leads to a lower risk of financial reporting fraud.

Objective 3 has been to examine the effectiveness of the internal audit committee in preventing corporate fraud in the retail industry in the UK. Internal audit committees are a must if the company is listed on a stock exchange. In small companies, internal audit committees may not be present. In this research thesis, several proxies were used for representing the internal audit committee. The first proxy was the presence or absence of

such a committee, as the sample is diverse, and some companies may not even have one. The second proxy used in the research is the measure of the effectiveness of the internal audit committee as evaluated by the respondents. The last proxy for the internal audit committee is whether at least one member of the committee has accounting education or expertise. The effects of these variables on the probability of financial fraud occurrence have been assessed by the regression analysis. The results have shown that the effectiveness of the internal audit committee and the expertise of its members had a significant association with the occurrence of fraud at UK retail companies. However, the positive signs of the estimated coefficients indicate the potential endogeneity issue in the regression, namely that the cases of previous fraud prompted companies to improve the expertise of the internal audit committees. An alternative interpretation of this result could be that the subjective evaluation of the effectiveness of the audit committees at UK retail companies could be biased.

The significant relationship between the internal audit committee and fraud occurrence supports earlier evidence from Abbott et al. (2000), who explained the role of strong corporate governance and the particular independence of boards and internal audit committee in preventing fraud in corporations. The agency theory, in general, views internal audit committees as control mechanisms through which corporate governance ensures that companies work in the shareholders' interests. However, this alignment of interests is achieved not only through greater control but also through appropriate incentives, including monetary incentives, as is further discussed in this chapter. When it comes to internal audits in companies, one of the most significant challenges that can make such committees less effective in fighting corporate fraud is the prejudice of managers towards auditors. Managers often view internal auditors as rivals rather than partners of the company, and this prevents them from effective communication and sharing of information, making the work of internal auditors more difficult (Petraşcu and Tieanu, 2014). For this reason, one of the recommendations revealed in the analysis of interviews in this research thesis is that more communication between departments and between managers and internal auditors is needed in order to ensure greater effectiveness in fighting against fraud and preventing fraud.

Objective 4 has been to evaluate the effect of external audits on the prevention of fraud in the UK retail sector. This objective has been addressed by running the frequencies analysis, correlation analysis and inclusion of a proxy for external audit in the regression models. This proxy was represented by a subjective evaluation of the effectiveness of external audits by the

surveyed managers in UK companies. According to the regression analysis, the external audit has a statistically significant relationship with fraud detection in retail companies. Since the estimated coefficient has a positive sign, it is interpreted as evidence that external audit effectiveness helps to improve the detection of fraud. If fraud was detected in the past, the dependent variable takes the value of one, and the positive coefficient indicates a positive contribution of the external audit to the detection of fraud.

These results from the research thesis can be compared to previous evidence on external audit and their role in financial fraud prevention. In particular, Hung and Cheng (2018) found that larger companies with more complex accounting and transactions had a higher chance of corporate fraud and the failure of audits to prevent this fraud from occurring. Thus, the quality of external audits does not depend only on the auditor's competence but also on the internal structure and complexity of transactions found in the firm. A direct negative association between the quality of external audits and the probability of financial fraud occurring in companies was evidenced by Lisic et al. (2015). However, in contrast to this research thesis, they did not use a subjective measure of the effectiveness of external audits based on respondents' perceptions but determined the quality of external audits by the size of the audit firm. According to their findings, in companies audited by larger audit firms, the chance of financial fraud occurring was much lower compared to the firms audited by smaller auditors. On the one hand, this measure could be more objective, but on the other hand, an assumption has to be made that large companies, by default, are able to employ more competent auditors as they want to maintain their good reputation. If these assumptions break down, the findings of Lisic et al. (2015) would not be sufficiently justified.

The results are also consistent with Chen et al. (2013), who found that even in countries with poor protection of investor rights and high corruption, the work of external auditors has a significant positive effect on corporate financial fraud detection and prevention. In the companies where external audit quality was greater, fewer cases of fraud were observed. In addition to this, even in the companies that historically had a higher propensity to financial fraud, the work of external audit facilitated fraud prevention and reduction. This suggests that external control mechanisms of corporate governance represented by the external audit are also effective in combating financial fraud in companies. Yet, this effectiveness is, to a large extent, dependent on the expertise and experience of external auditors (Mohd-Sanusi et al., 2015). The use of the Fraud Triangle framework was found to be an effective instrument for

the detection of fraud by external auditors, as evidenced by Mohd-Sanusi et al. (2015); however, in order to be the effect, external auditors must not only improve their expertise and train but also adopt new technologies including data mining that could help detect cases of fraud more easily and effectively (Gray and Debreceny, 2014).

Objective 5 has been to study the influence of technological factors in facilitating effective fraud detection and prevention in the context of the UK retail industry. The use of technologies in fraud detection and prevention has been discussed in both the interviews and the analysis of the survey results. In the survey and regression analysis, the technologies factors have been represented by three proxies. The first proxy was represented by the variable indicating whether the company has an IT department that ensures the protection of sensitive information. The second proxy was represented by the variable measuring effectiveness of the IT department based on the respondents' evaluation. The last proxy for technological factors was represented by the effectiveness of the data mining tools employed by the company to detect fraud. At the 10% significance level, the presence of the IT department responsible for the protection of corporate information produced a significant positive effect on fraud detection. However, the evidence from the other proxies was not detected to be statistically significant.

Interestingly, the results of the interviews and review of previous literature have been more supportive of the effectiveness of the implementation of new technologies in fraud detection and fraud prevention. However, this slight discrepancy in results can be explained by different types of fraud covered in previous literature. Most of the previous studies emphasised the important role of technological solutions in dealing with customer fraud, including credit card fraud (Ryman-Tubb et al., 2018; Carneiro et al., 2017) and retail and e-commerce fraud (Chen et al., 2015; Patil et al., 2018). In contrast to this, the research thesis has focused on corporate financial fraud, and previous empirical evidence on the use of technology in the field of corporate financial fraud is less abundant. For example, Vanhoeyveld et al. (2019) have shown how unsupervised methods of machine learning applied to big data can improve the detection of financial fraud in relation to taxes. Taxes are one of the areas in which corporations commit fraud. This is motivated by the pursuit of earnings and the personal motives of top managers. Another study, namely Hajek and Henriques (2017), also provided evidence of the successful implementation of machine learning technologies in the context of corporate financial fraud linked to financial statement

manipulations. It is argued that fraud related to financial statements hurts more stakeholders than other types of fraud, as regulators, shareholders, employees, and even external auditors are greatly affected by such cases of fraud. However, Hajek and Henriques (2017) emphasised that not all machine learning instruments produced similar effects. Some were more effective than others. Moreover, they distinguished between the methods that worked better for detecting non-fraudulent companies and those design to detect risky companies. In the latter case, additional information besides the data from annual reports was often required. Such additional information was normally gathered from analyst predictions of accounting figures and the comments of managers.

Objective 6 has been to research the effect of training on the ability of UK retail companies to prevent corporate fraud. The analysis of interviews revealed mixed results in regard to the role of training in fraud prevention. Some respondents were sceptical about this, whereas other respondents considered this factor to be important. However, previous literature, such as Kaptein (2015), argues that ethical training had a significant influence on the reduction of fraud occurrence. Yet, this evidence was obtained from the US context, where more than five thousand people were surveyed, whereas this research thesis is based on the UK context. Suh et al. (2019) also emphasised the important role of training in fraud prevention, but in contrast to Kaptein (2015), the former focused on anti-fraud training rather than ethical training.

Previous studies such as Peltier-Rivest and Lanoue (2015) emphasised the significant role of ethical training in the reduction of cases of fraud in corporations. This has been done by employing multivariate regression modelling. However, in spite of this evidence, Peltier-Rivest and Lanoue (2015) argue that ethical training is not the most significant variable in their model. While it is important for fraud detection and prevention, the biggest role was played by hotlines and whistleblowing, as well as unexpected audits. While the factor of both internal and external audits has been considered in this research thesis, there was no appropriate proxy to represent surprise audits. Thus, this finding cannot be verified with the evidence from the UK retail sector. According to Button and Brooks (2009), training could help companies build organisational anti-fraud culture, which would make training a proactive mechanism of fraud prevention. However, their evidence was obtained only in the context of public organisations rather than commercial companies. Moreover, it was based on

a survey, and it was found that in realist only a small number of organisations have a strong fraud-related culture.

Objective 7 has been to assess the role of monetary incentives in the prevention of corporate fraud in the UK retail sector. These monetary incentives have been represented by the satisfaction of the respondents with their salaries and the ratio of performance-based compensation in total pay at UK retail companies. The objective has been addressed by the method of binary regression analysis, where the occurrence of fraud has been employed as the dependent variable. If the dependent variable takes the value of one, this means that fraud in the past could not be avoided. It was detected, but it was not prevented. Thus, a negative sign of the coefficients for the chosen independent variables would speak of the fraud-preventive ability of the monetary incentive measures, whereas positive coefficients would demonstrate the opposite effect, namely that the monetary incentives were associated with a higher frequency of fraud occurrence. The results of the regression analysis revealed that a higher share of bonuses based on performance in total compensation produced a statistically significant negative effect on the dependent variable. Therefore, it has been found that monetary incentives, in fact, are effective instruments for preventing financial fraud in corporations, specifically in the UK retail industry.

Among previous empirical studies that explored the contribution of monetary incentives to fraud detection and prevention, Boyle et al. (2015) argued that the structure of compensation had a statistically significant effect. Moreover, this factor was presented as one of the Pressure factors in the Fraud Triangle framework. Managers who receive most of their compensation from performance-based metrics such as revenue growth, profit growth or market share performance are more inclined to engage in earnings manipulation or presenting information in a light that would favourably affect the company's share price movements. This is considered unethical and often illegal manipulation and fraud as it allows one stakeholder to enrich himself or herself at the cost of other stakeholders in the company. According to Nurlaeliyah and Anisykurlillah (2017), the factor of compensation and structure of compensation can be interpreted not only as a pressure element in the Fraud Triangle framework but also as an element of the attribution theory. In particular, based on this theory, managers and employees justify specific causes that trigger their activities. In this respect, a lack of satisfaction with the pay or the structure of pay in the company could be treated as a

cause, motivating stakeholders to engage in financial fraud. Thus, the same finding can be viewed from the lens of both the Fraud Triangle and the Attribution Theory.

The finding of this research thesis that only compensation structure had a statistically significant influence on fraud does not agree with the previous evidence provided by Zhou et al. (2018), who found that not the structure but the absolute value of total compensation produced a significant impact on the occurrence of fraud in corporations. These differences in the results may be attributed to the differences in samples and countries of investigation. This research thesis has been conducted in the context of the UK, whereas Zhou et al. (2018) explored the same problem in the context of Chinese corporations. China is very different from the UK in both the regulation of the markets and companies and the cultural environment.

In light of these findings, corporations that want to reduce fraud or even prevent it are recommended to design compensation packages appropriately. This can be done by a balanced approach. On the one hand, companies need to motivate managers and employees to work in the interests of the company, and this can be done by paying performance-based bonuses and providing stock options if the company is traded on the stock market. On the other hand, the remuneration committee must be aware of the potential pitfall that lies in performance-based compensation. While the low absolute value of the pay could be a pressure element of the Fraud Triangle that could cause managers or employees to commit fraud, the structure of the compensation could be an opposite pressure factor, as people with a high share of performance-based compensation will be interested in manipulating the company's accounts if they have access to such information to boost their earnings. In the same way, such managers would be personally interested in boosting the share prices of the company by designing the narrative part of annual reports in a positive or misleading manner. This can also be done by making announcements or spreading rumours.

Thus, these objectives have been met by running both the quantitative statistical analysis techniques such as t-tests, ANOVA, correlation analysis and regression analysis in SPSS using the primary data from the structured questionnaires and qualitative methods based on the analysis of interview questions.

In addition to the listed objectives that have been tested and addressed in this research thesis, several more findings have been obtained. One such finding shows that most companies in the retail sector nowadays practice a mixed model where they combine traditional retail sales using physical shops and outlets and online sales through e-commerce platforms. The results of the descriptive analysis demonstrated that such companies comprised more than seventy percent of the total sample used in this study. This has strong implications for fraud issues. In particular, in addition to corporate financial fraud, such companies are more sensitive to other types of fraud, including cyber-attacks, credit card fraud, fraud associated with the use of alternative payment systems and customer-related fraud. This provides a large opportunity for future studies to extend this research.

Another interesting observation from this research is that around three-quarters of the surveyed companies in the UK retail sector had international sales in their portfolio of operations. While in the past, this was most common for large firms, today, even small and medium companies have international operations, predominantly through online channels. This is a sign of both globalisation affecting the whole retail industry and the rapid technological development that makes it critical for companies to pursue high technologies in order to compete successfully and keep their share of the market.

The analysis of frequency distributions of responses has shown a tendency to avoid extreme answers to the questions that were asked to evaluate the effectiveness of particular fraud detection and prevention mechanisms. Most of the responses were found at the centre of the frequency distributions, which corresponds to what is often found in a theoretical normal distribution. In future studies, this avoidance of extreme values could be addressed by offering fewer options to respondents. For example, the yes and no responses are more categorical, and they will prompt respondents to choose one side or the other instead of preferring values in between that are less conclusive and less meaningful for analysis. Yet, in spite of this central tendency in responses, the regression analysis was able to reveal statistically significant associations between variables, and this discussion was possible.

The regression analysis has also revealed interesting findings from the rationalisation element of the Fraud Triangle. In particular, a statistically significant negative coefficient has been obtained for Question 30, which states that fraud could be justified if it does not hurt anyone. This negative coefficient implies that for companies that experienced fraud in the past, the

respondents did not agree that such instances of corporate fraud could be justified even if they did not directly hurt other parties.

The presence of a hot line for anonymous whistleblowing and reporting of fraud in companies was also found to be statistically significant in the regression modelling adopted in this research thesis. This variable was represented by a binary variable with yes and no options rather than a five or seven point Likert scale. In general, the responses with fewer options produced more significant coefficients, which confirms the previous argument that reducing the options for answers leads to more concrete responses and solves the problem of avoiding extremes. The next section of this research lists the main limitations faced in the study. This is then followed by recommendations for the expansion of the research and recommendations for managers of companies that seek to reduce or eliminate corporate financial fraud.

7.1. Contributions to Academic Literature and Practice

The results of this thesis will be of value to both academics and practitioners. This section delineates the contributions of this study to the available disciplinary knowledge and practice in the retail industry. Beginning with the contributions to literature, this research has made several important theoretical, empirical and methodological contributions. Theoretical contributions imply the extension or validation of the available theories or the generation of new theories (Cornelissen and Durand, 2014). This thesis has used the Fraud Triangle Theory as the core of the conceptual framework, but it was augmented by a number of behavioural theories, which helped to explain the individual constructs of the Fraud Triangle, namely: the Pressure, Opportunity and Rationalisation factors.

Previous studies tended to focus either on behavioural theories (Norris et al., 2019; Maulidi, 2020) or more positivist neoclassical theories such as Agency Theory (Anan, 2021; Putri and Irwandi, 2017). Behavioural theories were often investigated qualitatively, whereas previous research on fraud involving Agency Theory was mostly quantitative. A combination of these theories under the framework of the Fraud Triangle represents a clash between interpretivist and positivist paradigms, but this thesis has attempted to use these differences in approaches in order to build a richer and more holistic picture that may depict and explain the occurrence of fraud. This would allow for the more effective deduction of practical fraud detection and

fraud prevention mechanisms. In light of this combination of the theories and paradigms, this thesis has made a contribution to academic knowledge by proposing a new scale for testing determinants of fraud, which was validated in the context of the UK retail industry. Thus, this thesis can motivate future researchers to embrace the idea of implementing a holistic approach to fraud investigation instead of being limited by the conventional paradigms of knowledge attainment.

This thesis has made a significant empirical contribution to the available knowledge in the academic literature by testing the Fraud Triangle in the context of not only public listed companies but also small retail firms for which the data is not easily available. The data availability issue has been resolved by conducting the survey among stakeholders of retail companies in the UK using semi-structured questionnaires. These responses enrich the available knowledge on factors of fraud and fraud prevention and detection mechanisms. Another way in which this study has made an empirical contribution to literature is by examining the Fraud Triangle not only in the context of the traditional retail sector but also in the context of e-commerce and mixed retail business models, thus accounting for the increasing role of technological developments in the retail industry. Further empirical contribution of this thesis is that it has provided opinions on factors of fraud as well as detection and prevention mechanisms from both managers and business owners. The diversity of the stakeholders surveyed and interviewed allows for taking into account multiple view points and perceptions of different groups rather than top executives alone. An important advantage of including small retail firms in the sample is that it allowed for revealing cases of fraud that were not highly publicised. Large-scale scandals such as the one associated with Tesco can be found in the news, but individual instances of financial fraud in small retailers are less noticed and could be ignored by the public. Thus, this thesis has made an empirical contribution by helping collect such cases and study them in combination with large case scandals.

There is also a methodological contribution to academic knowledge provided by this study. In particular, it has combined the elements of qualitative and quantitative research in a mixed-methods research design. At the same time, it is common for academic studies to adhere to only positivism or only interpretivism as the dominant paradigm that determines how knowledge is attained, what constitutes true knowledge and how data should be analysed. However, there has also been observed growth in the popularity of the mixed-method

research design with the combination of interpretivist and positivist paradigms and a switch to a more pragmatic stance when approaching a theoretical inquiry (McChesney and Aldridge, 2019; Dawadi et al., 2021). This research thesis has contributed to this stream of literature by applying the mixed-method research design in the context of the UK retail sector.

In terms of the contributions of this research to practice and to resolve the practical problem in business, it can be noted that the results of this study will be of value to regulators, business managers, and business owners. Regulators will benefit from this research as it shows that some of the internal control mechanisms enforced for large corporations can also help reduce the instances of fraud in smaller retailers. While the costs of requiring an audit committee in small companies, similar to large organisations, could outweigh the benefits, regulators are stimulated to introduce stricter requirements for the composition of the audit committee in large companies. Since expertise and accounting education were found to be influential in fraud detection, regulators should ensure that listed companies hire competent internal auditors and directors in the audit committee.

Business managers and business owners will benefit from the results of this study as it has shown that fraud can be substantially reduced if managers adopt relatively simple and not-too-costly solutions. In particular, business managers should require all employees to sign anti-fraud statements. This will address the Rationalisation factor of fraud, which suggests that some managers and employees may not view a certain action as fraudulent, or they could even justify fraud. The anti-fraud statements will clearly delineate the actions that the company will view as unethical and fraudulent from what is acceptable. Thus, without the knowledge of the Fraud Triangle and the importance of the rationalisation factor as a factor of fraud, business managers may not see the value in anti-fraud statements. This thesis has proven their importance and even effectiveness in reducing fraud.

Similarly, the results of this thesis clearly show that business managers and owners will benefit from the results if they implement anonymous hotlines in their companies. The latter was significantly associated with fraud, and by introducing such innovations, businesses may offer monetary incentives for whistleblowing to further increase the effectiveness of this mechanism, which has proven to be valuable in the context of the UK retail industry, and

there is no reason to assume that the result will be different in other contexts assuming there is the same cultural, political and institutions environment.

Business managers and owners can also substantially reduce the fraud cases in their companies by hiring more experience internal auditors and working with Big 4 external audit firms. While it could be difficult to properly select internal auditors, business managers and owners should increase human capital in their companies by conducting training of not only regular employees but also internal auditors whose growth in competence will imply a lower probability of financial fraud in the future.

7.2. Limitations

Limitations are found in all studies regardless of the field of research or the level of complexity. This is because each researcher cannot have access to unlimited data. Moreover, practically all methods of data analysis have limitations as they are based on particular assumptions. Thus, having limitations is an essential part of a thesis. This subsection accounts for the key limitations found in this research thesis during the investigation of fraud in retail companies.

This study is associated with limitations that arise from the use of primary data and from using imperfect methods for data analysis. The main issues related to primary data are the high probability of getting biased answers, imprecision of certain measurements, subjectivity in responses of different parties and loss of quality when coding data or limiting responses to a predetermined set of multiple-choice answers. Another set of limitations arises from the use of statistical methods and their combination with primary data. All statistical methods provide results with errors. The aim of the researcher is to minimise the error to maximise the quality of the attained results. Standard errors can be minimised by employing a greater number of observations, removing outliers, and making sure that observations are drawn randomly from the sampling frame. In order to deal with the limitations of the research, reliability analysis is conducted using Cronbach's alpha. In addition to this, appropriate statistical methods are chosen for dealing with particular types of data. For example, the Pearson correlation is one of the most popular measures of linear association between variables, but it works poorly with interval data. Since the Likert scale coding provides

interval data, alternative statistical methods to measure correlations between variables are employed. In particular, the Kendall tau measures rank coefficient for interval variables such as the ones measured on the Likert scale. The interpretation of the Kendall tau correlation is similar to conventional measures of correlation where negative values indicate an inverse relationship between variables and positive values indicate a strong association between two variables.

The first and foremost limitation of this research thesis is that it was impossible to survey all retailers in the country. Some managers of retail companies refused to take part in the survey. Other retail companies were inaccessible. Moreover, surveying all retailers would have taken a considerable time that would not be efficient. Fortunately, in order to make inferences about particular relationships between responses or variables, it is not required by statistical methods to have access to the whole population. It is often sufficient to have a representative sample, ideally a random sample. In this case, the coefficients estimated for the sample, including descriptive statistics, would be indicative of the patterns in the total population, and generalisation would be possible. However, it is important to note that there is no agreement as to what to consider the total population, and therefore, there is a limit to the generalisation of the research findings.

In the broadest sense, the total population is represented by all retail companies in the world where fraud can potentially occur. However, since the focus of this research thesis is narrowed and aimed at the UK market only, the total population is represented by all retailers in the UK. They can also be referred to as the sampling frame because the final sample is taken only from these companies and not from other countries. Therefore, once the sample is representative, it is possible to generalise the findings only on the UK retail companies but not the global retail companies. The generalisation for the global retail industry would have been possible if a stratified random sampling technique had been employed when random samples from each country were drawn for this study. Furthermore, it would be difficult to generalize the present results in the global context due to the differences in the institutional environments, cultural environments, and political contexts between countries. Thus, this is another limitation of the research that generalisation is possible only to the UK market, but it is impossible to speak of the global implications of the results. On the global scale, country-specific factors, including different cultural dimensions, political regimes, corporate culture and even traditions, would have affected the results.

The next limitation is the small sample size for the interviews. While the survey was conducted among more than two hundred managers from UK retail companies, the interviews were conducted only with five managers. For the purpose of generalisation, this sample of interviewees is insufficient. However, on the other hand, interviews as a method of primary data collection do not set aim to generate many observations. This makes them different from surveys. In contrast, interviews are more concerned with the depth of the discussion and open questions being asked. Open-ended questions are rarely answered in surveys and are less common. Therefore, a combination of the survey and interviews allows for both statistical inference and depth of qualitative discussion.

Another limitation of this thesis is that the formulation of the research questions was limited by ethical norms and political correctness. Even if the researcher wanted to explore more private, sensitive or insider information, some questions could not be asked because it would pose a threat to confidentiality or make respondents uncomfortable. Thus, a balance had to be attained. In particular, given the limitations of the ethical norms and following the information sheet and consent form, the respondents were asked only safe questions, but out of these safe questions, the maximum of useful information was attempted to be retrieved.

Since this research has dealt with primary data collected from managers of retail companies, an unavoidable limitation is the presence of participant bias (Saunders et al., 2016). The notion of participant bias implies that the answers provided by the surveyed managers may not be objective. Subjectivity in the responses can be determined by the previous experience of the managers, their expectations from the survey, their intentions to hide or reveal particular information and their system of values that they cannot abandon. There is little that can be done to remove the participant bias, as all human beings are subject to it. However, it can partially be dealt with by assessing the internal consistency of responses. This has been done in this research thesis by running the Cronbach Alpha test. Satisfactory results have been obtained even though the score was not perfect, indicating that participant biases did exist.

A limitation similar to the one discussed above that could also be seen in this study is the researcher bias. Unlike participant bias, researcher bias implies a subjective interpretation of particular findings depending on the researcher's values and previous experience. While the

researcher bias is less evident in the actual interpretation of the results and respondent answers since statistics were used to reduce this subjectivity, it is still present in the design of the questionnaire. If the study were conducted by someone else, it is very likely that somewhat different answers would be asked. This choice of answers stems from the researcher's goals and personal experience. By designing the questionnaire in this way rather than the other, the researcher expresses what is important to them personally. A researcher biased towards technologies will include more questions about IT and technologies. A researcher biased towards human relationships and psychology will compose more questions from this area in the survey. Hence, a hundred percent elimination of either participant or researcher bias does not seem to be possible in such a study.

Among the limitations associated with the data used in the research, it is valid to mention the asymmetries in the final sample of respondents. In particular, it was planned to achieve a high representation of top managers as they have access to a wider set of company information. However, the actual survey has revealed that less than 5% of the respondents held top management positions. This lack of access to top managers is a serious limitation of this research thesis that should be addressed in future studies. In the same way, asymmetry has been observed in the distribution of the companies by size. The largest companies with annual revenue in excess of five billion pounds constituted less than 3% of the total sample, which is a minority. Most of the surveyed respondents worked at either small or medium companies. While this also produces interesting results since more implications can be made for smaller companies, a lack of the top largest firms in the sample limited the generalisability of the findings to the total population of UK firms in the retail industry.

It is important to note that in addition to the limitations associated with the data used and how it has been interpreted, there are limitations connected to the methods used. Every method in research studies has limitations. This thesis employs correlations, t-tests, frequency tables and regression analysis, but all these tests have certain limitations that should be briefly covered and accounted for. Correlation analysis can be performed with several alternative measures of correlations, namely the Pearson, Spearman and Kendall Tau coefficients. However, all three measures of correlation suffer a limitation associated with the ability of these tests to measure the links between two variables that have only a monotonic relationship. If the relationship is not monotonic, these statistics will be less efficient. A monotonic relationship is one where an increase in one variable is associated with an increase or decrease in the other variable during

the whole period. If, at some point, the two variables grow together, but at another period, one of them grows and the other falls, such a relationship is no longer monotonic.

When choosing the correlation coefficients, the limitations of each individual test had to be considered. In particular, the Pearson correlation is applicable only to continuous quantitative variables measured on a ratio scale. These variables should also be normally distributed. Considering so many assumptions, there is a limited number of variables that can be analysed with the Pearson correlation. The Spearman correlation, in contrast to the Pearson correlation, is estimated using ranks and therefore, it does not require that the variables should be normally distributed or even linearly associated. Moreover, it can be applied to discrete variables as well. However, this research has used the Kendall tau correlation, which is also a non-parametric measure that does not require the data to be normally distributed and can be applied to ranked variables rather than purely numerical data. This makes it a good statistical instrument for working with the survey data, which is most of the time ranked. It has been preferred to the Spearman correlation as the Kendall Tau measure is more conservative, and it has a lower probability of showing a high correlation between variables that, in reality, are not so much correlated. Nevertheless, it will also fail to work with non-monotonic relationships and similar to the Pearson and Spearman correlations, it would show zero or close to zero correlations in such cases. Yet, in reality, the presence of a U shape relationship, for example, should not mean that the correlation is zero. It should mean that the correlation is complex, but most traditional measures of correlation will demonstrate a zero association. Hence, there are significant information losses associated with the correlation analysis.

T-tests and ANOVA methods also have limitations similar to correlation analysis. In particular, these tests are parametric, and therefore they are sensitive to the probability distribution of the variables. The regression analysis applied in this study also has limitations. It requires that the independent variables must not be correlated with each other as this could produce coefficients with inflated t-statistics, which could be wrongly interpreted as significant. There are also limitations associated with the properties of residuals, which must satisfy the Gauss-Markov criteria. In particular, the residuals from regressions must be free from serial correlation. This means the previous values of residuals should not influence current values. Moreover, the regression residuals should be homoscedastic, which means that they should have constant variance around the mean.

The study is also subject to another limitation, namely the difficulty of establishing causality and testing the problem of potential endogeneity. In fact, neither correlations nor regressions are able to prove causality. Furthermore, even the structural equation model does not address the endogeneity problem because the causal relationships between the variables and the direction of causality are inferred from the Fraud Triangle Theory. The endogeneity problem is an issue faced by researchers when the dependent variable in the study may not be truly endogenous, i.e. affected by the independent variables without exercising a feedback effect on these variables. In order to deal with this problem, several approaches can be used. One of the approaches is to use instrumental variables and to justify the endogeneity of the dependent variable by a strong theoretical framework. Another approach is to use atheoretical models that model each variable in the system as endogenous. This is, for example, done in vector autoregressions (VARs). However, VARs are only applied to time series, whereas this research thesis has employed cross-sectional data retrieved from surveys. Therefore, the problem of endogeneity remains unsolved. Since the dependent variable was represented by a binary variable indicating whether fraud occurred in the past five years or not, its relationship with independent variables such as the internal audit committee, internal control unit, whistleblowing and other factors may capture not only the probability of fraud explained by these factors but also changes in monitoring and detection of fraud following previous cases of fraud. It is logical that companies that had cases of fraud would implement stricter measures and more prudent approaches to fraud monitoring, detection and prevention. As a result, positive coefficients would be observed, which was actually the case in this research thesis. Thus, based on the discrepancy between the expectation of the sign of the coefficients and their actual values, it can be concluded that the problem of endogeneity was present in the regression analysis. Therefore, additional qualitative research was necessary to back up the findings and deal with the limitations of the quantitative methods. The presence of limitations in the research study provides a basis for making recommendations for the extension of this research in future studies.

In summary, this thesis is limited to the analysis of insider financial fraud in the retail sector. Alternatively, outsider and individual fraud can take many forms, and a separate study would be needed to examine it. The research does not involve retail organisations with a small number of employees or with no employees, which make up to 60% of all retail companies in the UK (Office for National Statistics, 2021), because these companies do not offer sufficient opportunities for corporate fraud. Neither do they possess substantial corporate resources for

potential misuse and creating security infrastructure (Hutton, 2021). This thesis is also limited in terms of corporate information access. Genuine and first-hand data representing corporate fraud tendencies and statistics would be valuable for the investigation, but retail corporations will not always share it. Additionally, the data analysis process dealt with respondent bias as managers and employees are usually inclined to tell positive facts about their employer to a third party, especially given that the thesis may be published in the future. The respondent bias has been reduced by managing to include several managers from the same company in the sample, which would allow for testing the internal consistency of their responses. However, it was not possible for all companies in the sample, only for a few larger ones. The generalisability of findings from this thesis is also limited due to the sample size issues associated with the reluctance of many managers targeted to provide their responses. Even though the final sample size is sufficient for the regression analysis and structural equation modelling, a larger sample would be beneficial for reducing standard errors as most of the tests applied to regression coefficients are asymptotic, and their power improves with the increase in the sample size. Indeed, corporate fraud occurrence may vary from organisation to organisation depending on many environmental factors such as firm size, position along the supply or retail chain, organisational structure, preferred leadership styles, and inclusion of financial audit professionals on the board (Akyol, 2020).

7.3. Recommendations for Future Researchers

There are many ways in which future researchers can expand the study. The first recommendation is to compare the determinants of fraud and mechanisms for fraud detection and prevention across industries in the UK. Broadly, these industries can be divided into financial and non-financial. Since peculiarities exist in each industry, it can be expected that there will be differences in results. For example, the financial industry and banking, in particular, are subject to regulations such as minimum capital requirements and reserve requirements, among others. These regulations do not apply to non-financial companies, and therefore differences in fraud patterns and mechanisms can exist, and it would be interesting to detect them in future studies.

Another recommendation for future studies is to conduct a cross-country analysis of fraud determinants and mechanisms for fraud detection and prevention. Different countries have different cultures and behavioural patterns, which implies that the Fraud Triangle components may reveal significant differences. Moreover, what works in one country to fight fraud

maybe ineffective in another country. These differences can be explored in future by conducting international surveys.

This research thesis has employed the methods of surveys and interviews to analyse fraud detection and prevention mechanisms. Future researchers are recommended to diversify the methods and attempt action research. This can be done by doing an internship at an audit firm or helping investigate ongoing cases of financial fraud. Such action research would provide new insights into the problem of fraud and help to uncover the process of fraud investigation in addition to fraud prevention and detection.

Most of the previous studies on fraud and this research thesis were heavily based on the Fraud Triangle framework. However, this framework has undergone some changes and was even extended to the Fraud Diamond Framework. By adopting an inductive approach, future studies are recommended to explore alternative dimensions of factors of fraud that are not currently considered by the Fraud Triangle and Fraud Diamond frameworks.

A further way to expand the research is to analyse not only corporate financial fraud but also other forms of fraud. It would be interesting to differentiate between the fraud committed by employees and fraud committed by top managers. In the context of the retail industry, there is also fraud committed by customers and cyber attacks done by outsiders or competitors. Even though cyber attacks are not the same as financial fraud, they are also associated with the use of sensitive information. In addition to this, money laundering through business is also an interesting area of research and future studies are recommended to explore the connections between different types of illegal activities and their respective determinants.

The world has seen some notable examples of corporate financial fraud, such as the accounting scandal with Enron and Arthur Anderson, and there are more cases of renown fraud incidents. This opens an opportunity for future studies to adopt a case study approach and investigate the most influential cases of fraud in the 21st century. These results can then be compared to cases of minor fraud issues that did not receive as much publicity in the past.

An interesting area of research for future studies would be to explore a potential link between the spread of corruption in the political regime of a country and the occurrence of fraud in companies. These two phenomena could be interrelated and have an effect on each other. One

of the ways to look at this connection is to compare the fraud in private companies and companies with a share of the government or the private companies for which the government is a major client. This would show whether the interactions between the public and private sectors prompt the growth of fraud and corruption.

Since this research was based on a survey of managers of UK retail companies, and this survey was undertaken at a single time, namely in 2019, future studies are recommended to expand this study and conduct a series of surveys in each year following 2019 and preferably using the same companies in the sample. This would allow for tracing dynamics in the fraud statistics and the factors that affect fraud detection and prevention. If such an approach results in a consistent sample with the same companies and no missing years, the responses generated in the course of such a primary study could be analysed by means of panel regressions, estimate with the Generalised Method of Moments (GMM) and instrumental variables to address the discussed endogeneity issues with the dependent variable.

Lastly, it can be recommended that future researchers should specifically focus on the implementation of information technologies and especially machine learning and artificial intelligence, in detecting and preventing corporate financial fraud. In this study, these areas have been touched on briefly, but as technology and AI develop rapidly, they will have an even more important role in fraud detection mechanisms, and it will be interesting to compare whether AI-driven solutions are more effective compared to mechanisms managed by humans.

7.4. Recommendations for Managers

This research thesis has implications for managers of UK companies who are faced with the probability of corporate financial fraud. Therefore, several recommendations for these managers are provided to help them improve their control and fraud detection mechanisms implemented in companies.

The first recommendation for managers is to introduce periodic ethical training for both employees and managers working in the company. The purpose of such formal training is not only to discuss the issues of fraud and the importance of behaving ethically but also to send a signal to the stakeholders of the company that the company is always on the lookout and

monitors potential vulnerabilities in control and will act quickly to prevent fraud from occurring. Another benefit of such ethical training is that employees and managers will be able to interact in an environment that is different from their daily routines. This, in turn, will assist in building the team. Stronger relationships between the stakeholders in the company will make them less likely to commit fraud. Thus, ethical training will tackle at least two sides of the Fraud Triangle, namely Opportunity and Rationalisation.

For larger companies that have internal audit committees, several recommendations can be provided. Firstly, the audit committee must be comprised of directors with sufficient financial expertise, and among the specialists working in the audit committee, there should be professionals that have dealt with fraud detection techniques or forensic accounting. The competence of the audit committee members will ensure that the probability of early detection of corporate financial fraud will rise. This competence can be raised in several ways. One of the ways is to hire more qualified professionals from the labour market or use recommendations. Another way is to enhance the human capital and competence internally by arranging professional training of internal auditors and managers. Secondly, the members of the audit committee are recommended to meet more frequently in order to discuss fraud prevention and potential weak areas in the company's accounting that could lead to fraud. This action can also be enforced by voting. Thirdly, the audit committee members are also recommended to be involved not only in technical and professional training to increase human capital but also in ethical training, as made in the first recommendation. Finally, the internal audit committee members should communicate more actively with managers from other departments. This will help them to know the company's operations better and see vulnerabilities more easily. These recommendations for internal audit committees apply strongly to listed companies where audit committee composition could be a formality to meet the requirements of the exchanges. However, the composition of the audit committee should be treated as a risk management process. The best human capital employed in the audit committee will help prevent huge potential losses arising in cases of financial fraud.

It is also important to make a recommendation to small companies. In fact, the size of the company matters with respect to the probability of financial fraud and the consequences of such fraud. If the company is very small, it is not very likely that too many cases of financial fraud will be observed. This is because the financial gains based on the Pressure element of the Fraud Triangle are relatively small compared to what could be obtained from financial

fraud in large corporations. Since the incentives for engaging in fraud vary, companies should also consider their budget with these in mind. Larger companies are recommended to make larger allocations of resources to fight against financial fraud and mechanisms for fraud detection and prevention. Smaller companies, in contrast, are recommended to balance their budget for fraud detection and prevention based on their expected losses from cases of potential fraud and, in most cases, it would not be optimal for them to invest in expensive programmes that would help them in the fight against fraud. However, both small and large companies should enforce the introduction of mandatory anti-fraud statements, as the thesis results revealed that they were an effective instrument in preventing financial fraud. The effectiveness of the anti-fraud statement can be explained by the Rationalisation construct of the Fraud Triangle, based on which the anti-fraud statements would draw clear lines between what is acceptable by the firm and what is not, thus reducing any discrepancies in perceptions.

A recommendation that applies to all companies, both large and small, is that each manager should be allocated specific limited responsibilities. When one person is responsible for the activities of many departments or has access to most of the company's information, the probability of fraud occurring will rise. This is also supported by the Opportunity segment of the Fraud Triangle. Too much access provides an opportunity for committing fraud. If other elements of the Fraud Triangle come into play, it will not be long before such a company starts losing money due to its negligence of who gets access and how much control each party has in the company. In this respect, it is valid to note that the risk for small and medium companies where a single manager could oversee different operations is higher compared to larger companies where the roles and responsibilities are more segregated and strictly divided.

Managers are also recommended to make better use of artificial intelligence and machine learning technologies for fraud detection. Companies have access to big data, especially in the retail industry. This would allow managers to use AI instead of only human capital to make early predictions of fraud. There are machine learning algorithms that can help reveal early warning signals by simply analysing big data and establishing patterns. Once the AI is trained in how to detect normal operations, any suspicious or abnormal activities will be considered as triggers and potential evidence of financial fraud. This would help managers to act proactively and detect fraud before it has actually happened.

While having early detection mechanisms is important for corporations, it is also important to make recommendations for the prevention of fraud. One such recommendation is that all computers and gadgets used in the company should be password-protected or encrypted, or even both. In addition to this, companies should always have anti-viruses, firewalls and similar security software installed and regularly updated to prevent intrusion that could result in financial fraud. Companies should protect their accounting and sensitive data by not allowing employees to take it from the office or have access to it outside of the work environment. This can be achieved by providing temporary passwords or assets to employees that would expire by the end of each working day. A number of applications, such as LastPass, allow for this functionality. Companies should also monitor that no memory sticks or hard drives leave the office. Installing these limits for employees and managers will keep the data safe.

If a company operates through a website and has a business online, additional security measures are recommended to be implemented in relation to protecting the servers on which the website is hosted. There are different ways to host a website, and smaller companies sometimes choose shared servers, which could be cheap, but they are not secure, and any sensitive data stored on such servers could be easily lost. Therefore, if the company has vital operations online, it is not recommended to save on security, and it should invest in a dedicated server where only the company's files will be located.

For companies embracing new technologies, it can be recommended to adopt blockchain in their organisation for storing and transmitting data. Blockchain technology is used not only in cryptocurrencies but also in spheres such as smart contracts. It is one of the most secure methods to keep the data or make transactions, as no party will be able to steal the data without a trace. All history is forever recorded and is kept on devices of all segments of the blockchain. Thus, popular techniques of financial fraud, including accounting manipulations or recording misstated transaction values, will be simply impossible with blockchain technology. However, it is valid to note that even this technology can occasionally break, and therefore a combination of tools and a combination of technologies, and human capital should be used for such complex activities as fraud detection and fraud prevention.

While recommendations such as more active use of technologies, having an internal audit committee with good expertise and knowledge of the fraud issues, and using good quality external audit could be seen as measures for fraud detection, there are recommendations designed for preventing rather than detecting corporate financial fraud. One such recommendation was related to the training of employees and managers, as suggested at the beginning of this section. More frequent and quality training could potentially tackle the very causes of corporate financial fraud, namely the pressure factors on employees and managers. Another recommendation for prevention rather than detection of financial fraud is to design well-balanced remuneration or compensation structures for key employees and managers. In particular, large companies with shares listed on the equity market are not recommended to overuse stock option schemes. Even though these measures could stimulate managers to improve the performance of the company and make investors richer, this could also stimulate managers to pursue these goals not only in legal and ethical ways, which could result in eventual fraud that would hurt other stakeholders while making shareholders better off.

For smaller companies that do not provide stock options as a part of their compensation packages, it is recommended to adopt a balanced approach to using a combination of base salary and performance-based bonuses. The latter can be expected to work in the same way as share option schemes. In pursuit of higher bonuses, managers with access to sensitive financial information or transactions of the company could manipulate the values to either avoid or minimise taxes or misstate the values of the transactions to make it appear that the company is performance better than it really does. This shows that the problem of financial fraud is explained not only by the Fraud Triangle but also by corporate governance mechanisms used in companies.

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Appendices

Appendix A: Interview Transcripts

Interview 1: (the interview was held on 14th May. It was conducted over the phone and took around 20 minutes. It was not recorded. Only notes were taken and typed in a word document. The interviewee is employed as Regional Manager at the Coop Group.

What can the company do to improve the ethical training of managers to reduce the instances of fraud?

I don't think ethics is something that can be taught or trained. People grow up and develop a certain type of character and habits. If a manager or employer was not behaving ethically before they were hired, the company could do little to change that. The company is not a parent, and we work with grown-ups. I think HR should be doing a more selective job when hiring new people. This can be done by offering different personality tests in addition to interviews and checks of skills and competencies. This can minimise the chance that the person would resort to fraud. When it comes to managers who have built a career with the company and who are in control of particular resources, training is not going to be effective.

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

Well, it depends on whether we are dealing with fraud on a high level among top managers or corporate fraud among employees. With top-level fraud, rotation of auditors and a more active role of the internal audit committee could work. As for employee-related fraud, many things can be done to improve fraud detection, starting from installing cameras everywhere to increasing accountability.

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

Blockchains offer a solution to the security of sensitive information, and this is the area that should be researched by companies. If we could move all our information to a blockchain, it could hypothetically make financial fraud nearly impossible. But most retailers are not ready for this, and we also have to measure the potential risks of this technology before we make such drastic changes.

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

Pay structure. Most people are motivated by money. If managers are paid well enough, they are less likely to engage in fraud. Of course, there could be exceptions as, for some people, money is never enough, but in general, adequate pay is often a good solution. If you are a respectable company and plan to stay in business long-term, you should be prepared to pay your key staff and managers well. It will help you reduce not only fraud but also talent flow.

How should the audit committee change its operations in order to make internal fraud control more effective?

First of all, we need to have at least someone on the audit committee who would have good experience and expertise with financial fraud. Keeping someone with general accounting knowledge is not enough. Second, the audit function must also be proactive and be involved in discussions more frequently. Third, the internal audit should be active in developing antifraud programmes for the company to follow. Fourth, there must be timely reporting to the committee.

What would you recommend to improve fraud detection and fraud prevention in a company?

Like I said before, I'd go with higher security measures, such as installing more cameras and focusing on the accountability of each employee and manager. It's much easier to commit fraud when the company is poorly organised or lacks control. If the roles and things every person is responsible for are well defined, and the execution of tasks is well controlled, the cases of fraud can be minimised. They can't be avoided, unfortunately, but they could be made rare. It's just impossible to guarantee that fraud won't happen. There are too many things at play that are beyond our control, and we don't know all the people we work with well enough to predict and guarantee their behaviour.

Interview 2: the interview was held on the 16th of May. It was conducted over the phone and took around 20 minutes. It was not recorded. Only notes were taken and typed in a word document. The interviewee is employed as Regional Manager at Asda.

What can the company do to improve the ethical training of managers to reduce the instances of fraud?

We should first identify in what particular areas more training is required. Most companies do not want to spend resources on training without particular aims and details. Identifying these areas for training would require interviewing managers, checking internal audit reports, assessing risk management and reviewing cases from our industry. Once we determine what specific areas need to be improved, training can start.

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

Internal control systems used in companies need to ensure that control functions are spread optimally between managers. In other words, no person should have too much control where their responsibility would be abused. This is similar to how balances work in the political system. A company could be seen as a miniature version of a democratic government. When we deviate from this democratic model and give too much control to a particular manager or group of managers, this power can be easily abused. On a large scale, governments with unbalanced power tend to be more corrupted. On a smaller company scale, instead of corruption, we would see much more fraud.

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

A few simple steps:

- limit access to sensitive data to the person directly responsible for it

- update software and security systems regularly

- keep the data encrypted

- use passwords

- do not allow employees to use personal emails. Only work emails

- make sure no data leaks after the business day is over

- use big data analytics; a lot of forensic analytics software will not only help predict the probability of corporate fraud occurring in a particular company but also the ways how this can be avoided or tackled

- oversea IT.

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

Well, everyone responds differently to different incentives. What works for one may not work for the other. But there are general things like recognition of achievements, promotion and praise that stimulate most people to work ethically.

How should the audit committee change its operations in order to make internal fraud control more effective?

In some companies, audit committees play a formal role just to comply with the regulation. So, doing more than expected by regulation is key to greater effectiveness in fraud detection. It's also common for internal auditors to be mostly concerned with compliance, and that's good; that's what they're supposed to do, but there are various risks that require similar overseeing and managing. So, it should be an area to consider for audit committees. Also, studying cases of corporate fraud and previous mechanisms employed in fraud would help the audit committee be more effective in doing its job of preventing or minimising fraud today.

What would you recommend to improve fraud detection and fraud prevention in a company?

It all starts with setting the right goals and objectives. They should be specific and measurable, which means that all managers should be on the same page as to what is considered fraud in the company and what the company is doing. Regular training should be conducted. Individual approaches to managers should be adopted as every person responds differently. To detect from, it is important to have clear benchmarks against which performance can be compared. Different types of fraud should be considered, and hence there will be different detection mechanisms. For example, in case of accounting fraud, internal auditors should be the first to notice that and report it. Fraud prevention is a more difficult task as it implies preventive measures, and they may not be all effective.

Interview 3: the interview was held on the 17th of May. It was conducted over the phone and took around 15 minutes. It was not recorded. Only notes were taken and typed in a word document. The interviewee is employed as Area Manager at the Coop Group.
What can the company do to improve the ethical training of managers to reduce the instances of fraud?

Such training needs to be done more often. The frequency of meetings of team members and managers to discuss ethical issues and culture within the company is essential for cutting the instances of fraud. In most companies, such meetings are ignored or not done very often. People do discuss business and work-related issues. There are also teambuilding meetings, but the focus on ethical training is rare in my view. It needs to be done more often.

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

If we talk about financial fraud, then internal control should ensure that budgets and actual expenditures of the company are checked as often as possible. When deviations occur, the parties responsible should be required to provide explanations. Early detection of such variances will ensure that, overall, there will be less financial fraud as there will be fewer opportunities to commit fraud in such an environment.

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

Very soon, the internet of things and artificial intelligence will be the most effective solutions for fraud detection and prevention. As data is continually accumulated from all departments and all electronic devices, AI mechanisms can be used to send early warning signals in fraud detection. It's nearly impossible for humans to deal with so much information we deal with today. That's why mistakes happen, and fraud happens. With AI and machine-dominated systems, fraud detection will be an easy process.

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

People should be able to see career opportunities, fair treatment at work, proper compensation for their work, and a friendly environment. If the company creates an environment where each manager and employee feel at home, there will be little incentive to commit fraud. Of course, people who are paid enough will think less about committing fraud, but this is not a 100% remedy, as many cases of fraud involve highly paid individuals.

How should the audit committee change its operations in order to make internal fraud control more effective?

They should ensure there are no conflicts of interest among reporting managers. They must be easily available and be more actively involved in the discussion of risks and fraud with executive managers. They should possess sufficient skills and expertise to do their job well. They should be continually improving their competencies.

What would you recommend to improve fraud detection and fraud prevention in a company?

Borrow best practices from companies that are successful at fighting fraud. Study the cases of a major fraud that occurred in your country or your industry to avoid similar mistakes. Allocate a proper budget for fraud detection and prevention. Improve the security of your information systems and ensure that internal control systems work as expected. And monitor the company.

Interview 4: the interview was held on the 18th of May. It was conducted over the phone and took around 15 minutes. It was not recorded. Only notes were taken and typed in a word document. The interviewee is employed as Supply Chain Manager at the Coop Group.

What can the company do to improve the ethical training of managers to reduce the instances of fraud?

One way to do that is to find the most effective means of doing ethical training. A lot of businesses limit this to a few posters, presentations or reminders. Having a live conference or in-class teaching would be more effective. Most large companies have a well-developed corporate culture with specific values shared by managers. This approach should be adopted by smaller companies too. It may lead to higher costs for small businesses, but long-term rewards will be huge if the company intends to grow and be a leader in its industry.

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

The company ought to make sure the internal control is up to date with all necessary and modern technologies in place. Regular revision of the system is also required. It also helps when professionals are hired from outside the company to install, check and improve

information systems and provide insight as to how to make improvements in procedures and tasks.

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

I've heard of smart contracts implemented in some companies, and they are said to be effective. We don't use them, but in our company, we use internally developed software and standard data protection mechanisms. Nothing fancy, but we should be actively monitoring what's going on in the industry and what competitors implement.

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

There should definitely be incentives for reporting fraud. Otherwise, people would not be willing to do that. If you mean incentives for managers who could hypothetically commit fraud, I don't think it works like that. If the manager sees higher benefits from committing fraud and expects no consequences, incentives like bonuses and pay will have little effect.

How should the audit committee change its operations in order to make internal fraud control more effective?

I'd recommend audit committees should review their actions on a constant basis. They should have a plan and use criteria by which they can determine whether their plan is addressed. Working on past mistakes will help to avoid them in future. If required, the size of the audit committee should be improved to ensure there is no lack of human resources in addressing the fraud issues.

What would you recommend to improve fraud detection and fraud prevention in a company?

A lot of cases of financial fraud can go unnoticed unless someone tips. But in most companies, it is hard to do that anonymously, especially in small companies where everyone knows everyone. So, I'd recommend building a third-party website not related to the company but which can be accessed anonymously by managers and employees to report instances of fraud or even suspicious activities that may require further investigation. This system isn't perfect, as it's hard to motivate people to report fraud anonymously. If they are

anonymous, any bonuses or rewards for whistleblowing will make them no longer anonymous. However, I think something can be done about it.

Interview 5: the interview was held on the 18th of May. It was conducted over the phone and took around 20 minutes. It was not recorded. Only notes were taken and typed in a word document. The interviewee is employed as an Operations Manager at the Coop Group.

What can the company do to improve the ethical training of managers to reduce the instances of fraud?

First, the consequences of fraud, not only for the company but also for the managers and employees involved, must be stressed at such training. People are more sensitive to the information that relates to them personally. Second, all employees and managers should be well aware of what the company considers fraud with cases and examples. The thing is, some people may not even know that some of their actions, such as telling insider information to a friend, could even be considered unethical at best or illegal at worst action. If there are systems of fraud detection used in the company, the procedures and red flags must be articulated so every manager knows what actions should follow in each circumstance.

What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

An important aspect of the internal control procedures and policies is that they should be coordinated between different departments in the company. A systematic approach to internal control and making sure that managers of each department work together to ensure the effectiveness of internal control is a recipe for more efficiency. This coordination can be achieved by assigning new responsibilities to managers that would require them to discuss particular problems with managers from other departments. This improved information flow between departments would be positive for the company. It will make decision-making faster, and fraud can be detected sooner.

What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

Companies with online sales should not trust shared servers or similar cheaper solutions for hosting their websites. All information must be contained on dedicated physical servers to which a limited number of staff have access. Password protection and encryption of servers

are a must. Hiring IT professionals specialising in data security and cyber security will help to make the right decisions in regard to protecting sensitive information. I'm not an IT professional. So, it's hard to name the exact solutions. That's why I'm saying that external professional help is always the best option when your knowledge is limited.

What incentives do you think the company should add to keep managers from being drawn to committing fraud?

I can say what type of incentives should be reduced, not added, to keep companies safer. Companies overuse equity compensation, such as stock options. They make managers chase targets in the stock market, and this often works as an incentive for manipulating financial statements and committing fraud to get a higher return from stock holding. Hired managers with no significant equity in the company usually don't have such incentives, and in my opinion, they are less likely to be caught in financial fraud.

How should the audit committee change its operations in order to make internal fraud control more effective?

The roles and responsibilities of internal audit committee directors should be broader. In addition to routine meetings and overseeing financial reporting, they should be more actively involved in risk management decisions. They should also work closer with all departments of the company.

What would you recommend to improve fraud detection and fraud prevention in a company?

There are many things that could be mentioned. Communication is the most important aspect. Company values, consequences of fraud, and details on how internal control systems work must be communicated constantly. Departments and managers should also talk to each other as it's impossible to control all things at once. A lack of communication leads to less information shared and more opportunities for fraud to arise. There should also be strict specialisation in the company. Duties must be properly delegated, and advisers and experts need to be commissioned to get advice on areas related to fraud and how to improve its detection using new technologies or new methods.

Appendix B: Survey Questionnaire

Dear Participant,

The purpose of this research is to explore the factors determining fraud in retail companies in the UK and the mechanisms for enhancing fraud detection and fraud prevention. The study examines the common characteristics of retail firms that make them vulnerable to fraud. It also assesses the mechanisms and systems employed by companies to detect fraud and prevent it. The research will have an impact on the community by providing recommendations on how to improve fraud prevention and detection in future. Please, fill in your responses to the questions outlined below and thank you for your participation. Should you wish to comment on any of the questions (including where you had difficulty completing answers), there is space at the end to comment. You can withdraw from this survey at any time. You do not have to answer all questions. Your personal details and information will be kept confidential, and your identity will remain anonymous to readers. The responses you provide will be kept safe on a password-protected computer and will not be sold to third parties. Your information will be only for academic purposes. By filling in the following questionnaire, you are giving consent to participate in the research. Thank you for your time.

Part I.

1. How old are you?
    - 18-29 years old
    - 30-39 years old
    - 40-49 years old
    - 50-59 years old
    - 60+ years old

2. What is your gender?
    - Male
    - Female

3. What is your position in the company?

_____

4. For how many years have you worked in the company?

- Less than a year
- 1-5 years
- More than 5 years

5. For how many years have you worked in the same position?

- Less than a year
- 1-5 years
- More than 5 years

6. What is your highest level of education?

- Secondary education or unfinished higher education
- Bachelor's Degree
- Masters Degree
- Doctoral Degree

Part II.

7. What is the business model of your company?

- Online Sales
- Retail outlets
- Mixed
- Other (please clarify)

8. Does your company have operations overseas?

- No
- Yes
- I don't know

9. What is the latest published annual turnover figure for your company?

- Less than £1 million
- £1 million - £49 million
- £50 million - £99 million
- £100 million - £499 million
- £500 million - £999 million
- £1 billion - £4.999 billion
- £5 billion - £10 billion
- More than £10 billion

10. What is the average profit margin (gross profit/sales) of the company over the last five years?

- Negative
- 0-4%
- 5%-9%
- 10%-14%
- 15%-19%
- 20%+

Part III.

11. Do you agree with the statement that managers are committed to their company in the long term and do not tend to leave it (that is, the turnover of managers is low)?

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

12. Managers at the company do not complain about their pay.

- Strongly disagree
- Disagree

- Neither agree nor disagree
- Agree
- Strongly agree

13. What part of the total managerial compensation do performance-based bonuses comprise?

- zero
- 1%-10%
- 11%-20%
- 21%-30%
- 31%-40%
- 41%-50%
- More than 50%

14. Regular promotions of managers make them more loyal and less willing to commit fraud in the company. Do you agree with this statement?

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

15. Do employees and managers of companies have to sign anti-fraud statements when gaining access to sensitive information related to the company?

- No
- Yes
- I don’t know

16. Is there an IT department in your company that deals with data protection and safety?

- No
- Yes
- I don’t know

17. How would you rank the quality of IT infrastructure and the protection of financial information and sensitive data in your company?

- Completely inadequate
- Inadequate
- Somewhat adequate
- Adequate
- Superior

18. In your opinion, how effective are the data mining tools used by the company to detect fraud?

- Not at all effective
- Not so effective
- Somewhat effective
- Very effective
- Extremely effective

19. Does your company have an audit committee?

- No
- Yes
- I don’t know

20. How effective is the work of the internal audit committee in fraud detection and fraud prevention?

- Not at all effective
- Not so effective
- Somewhat effective

- Very effective
- Extremely effective
- Not applicable

21. Does at least one member of the audit committee have accounting education and expertise?

- No
- Yes
- I don't know
- Not applicable

22. Does the company have an internal control unit responsible for fraud detection and prevention?

- No
- Yes
- I don't know

23. How would you rank the quality of fraud monitoring in your company?

- Completely inadequate
- Inadequate
- Somewhat adequate
- Adequate
- Superior

24. How effective is external audit in detecting instances of fraud in your company?

- Completely ineffective
- Ineffective
- Somewhat effective
- Effective

- Very effective

25. Is there a hotline in the company where employees or managers can anonymously disclose witnessed cases of fraud?

- No
- Yes
- I don't know

26. Does the company provide monetary incentives for whistle-blowing?

- No
- Yes
- I don't know

27. 'All people in managerial positions commit fraud; it is just not everyone is caught.' Do you agree?

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

28. Do you agree with the statement that fraud can be justified if the company is not fair in its treatment of managers (e.g. low pay, long hours, too much stress)?

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

29. Do you agree with the statement that fraud can be justified if it is committed by managers to protect others (e.g. save somebody from being fired, cover unwanted mistakes somebody has made, etc.)?

- Strongly disagree
- Disagree

- Neither agree nor disagree
- Agree
- Strongly agree

30. Do you agree with the statement that fraud can be justified if it does not hurt other parties (e.g. when a top manager uses his position in the company or company ties to arrange personal deals or benefits with third parties that will not affect the company)?

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

31. Has there ever been any public evidence or formal investigation of your company on the grounds of financial fraud in the past five years?

- No
- Yes
- I don't know

Any comments on any of the previous questions:

_____

_____

_____

_____

_____

Part IV.

In this section, could you please provide as detailed answers as possible to the following open-ended questions:

32. What can the company do to improve the ethical training of managers to reduce the instances of fraud?

33. What improvements should the company introduce in the internal control of fraudulent activities in order to make them more efficient?

34. What particular technological solutions, in your opinion, would be required to help protect sensitive company information more effectively to prevent fraud?

35. What incentives do you think the company should add to keep managers from being drawn to committing fraud?

36. How should the audit committee change its operations in order to make internal fraud control more effective?

_____

_____

_____

37. What would you recommend to improve fraud detection and fraud prevention in a company?

_____

_____

_____

_____

_____

Thank you for taking the time to fill in this questionnaire!

If you agree to participate in a follow-up interview, please, email me at

Thank you very much!

Appendix C: Communication and Search Strategy

The first message used to initiate the communication with the potential respondents was the following:

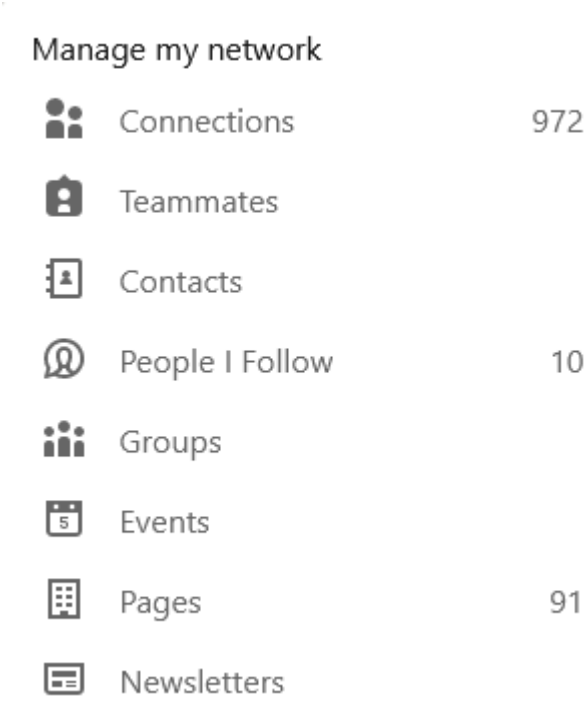
"Hi,

I'm from the University of Sheffield. I'm conducting a survey for my thesis on mechanisms of fraud prevention in the UK retail industry. The questionnaire is available at:

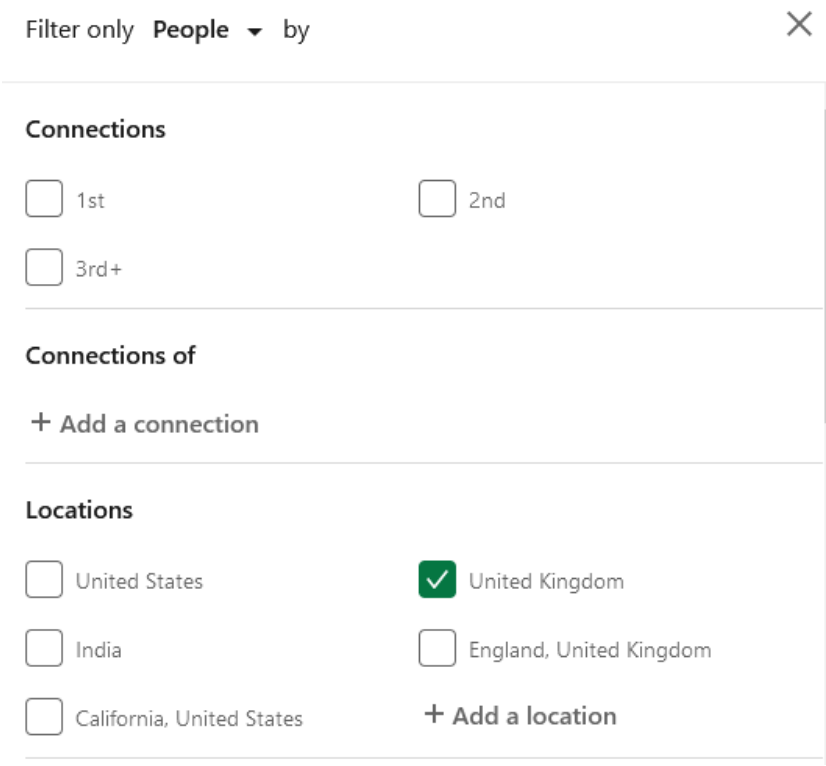
https://www.surveymonkey.co.uk/r/DS3JVM5

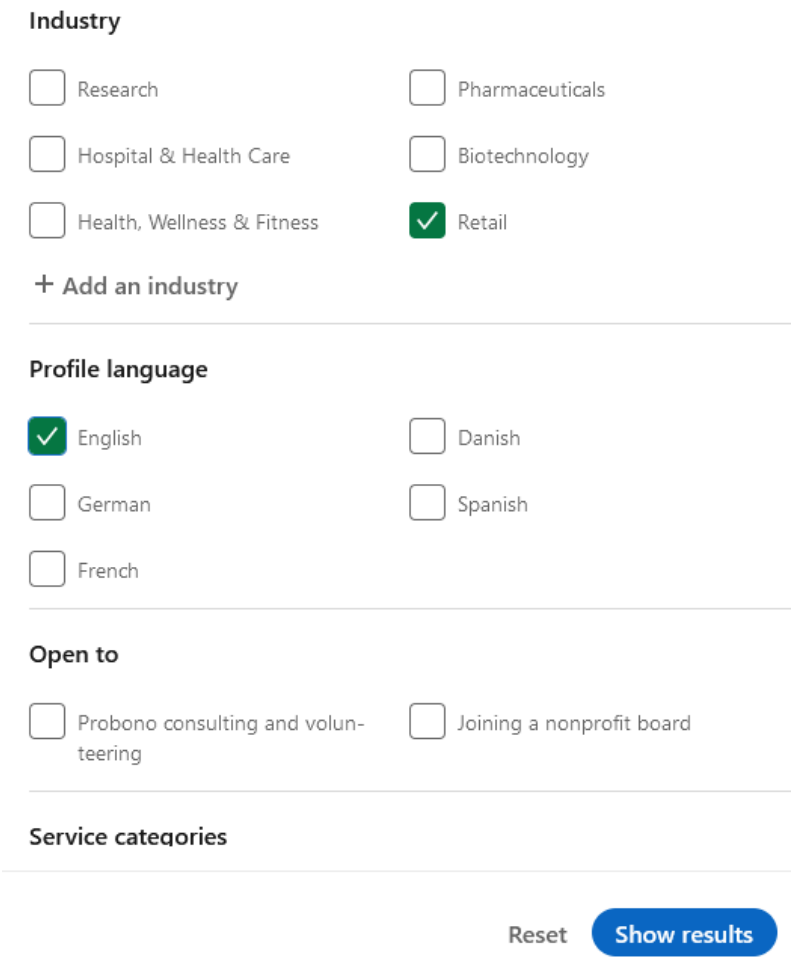
Would you be able to answer a few questions? Thank you so much. Khalid"

In the course of the survey, 972 people accepted the invitation to become a part of my network on social media and share their contact details:



The search strategy for finding target respondents and their personal details is depicted in the following figure.





Once the filter from the search strategy is applied, a list of target respondents shows up in the results section of LinkedIn. Clicking on each respondent reveals personal information, such as their name, company, and position at the company where they work. It is possible to send internal messages to them.

Appendix D: Background Information and Scale Development

The first section of the questionnaire is titled "Background Information" and deals with the general characteristics of respondents. Personal data on respondents, such as their names, are not disclosed, but the background information reveals the current occupation of the respondents, their age, sex, level of education, and work experience in the company in which they currently work. Therefore, the key questions asked in the first part of the questionnaire are the following:

- How old are you?
- What is your gender?
- What is your position in the company?

- For how many years have you worked in the company?
- For how many years have you worked in the same position?
- What is your highest level of education?

Background information is important in surveys for several reasons. First of all, since respondents express their perceptions rather than true factors, these perceptions may have particular patterns depending on the status of the respondents, their gender, age, the place where they live, the education they attained and the type of job they do. Factor such as experience with the company or tenure also affects the quality of the information provided by respondents. Those who have worked in a company for longer are expected to know more about its business. These respondents will also have different perceptions compared to the people who have less experience. Thus, the background information is useful not only for the sake of descriptive statistics but also assessing the reliability and internal consistency of responses.

The second section of the questionnaire is titled "Company Information", and it deals with the characteristics of the retailers being analysed. This section provides information on the specialisation of the company in terms of products sold, predominant distribution channels used by the company, and the most recent annual revenue generated by the company to account for the factor of the size of retailers and profitability of the company. The profitability of the company is assessed by asking questions about whether the company had net losses over the past five years and the size of the current net profit margin. This section is filled in by the managers surveyed. The list of questions in this section is the following:

- What is the business model of your company?
- Does your company have operations overseas?
- What is the latest published annual turnover figure for your company?
- What is the average profit margin (gross profit/sales) of the company over the last five years?

The third section of the questionnaire is titled "Fraud Detection and Fraud Prevention Mechanisms". In this section, it is attempted to discuss why instances of fraud happened and what factors contributed to fraudulent behaviour. As discussed in the theoretical framework section, the research explores all three stages of the fraud triangle and elaborates on them by using additional theories from the field of psychology, namely Cognitive Evaluation Theory

and Perceptive Theory, and corporate governance, namely Agency Theory. The research participants are asked questions related to assessing vulnerabilities in retail companies that could create opportunities for fraud. Such vulnerabilities include a lack of control and a lack of technologies to protect data and information. In addition to vulnerabilities, questions are asked about the motivation of employees and managers who work in the company. These will include questions about satisfaction with their salaries, the presence of bonuses, and the linking between company performance and the remuneration of managers and employees. A full list of questions used to construct the scale for measuring the Pressure construct of the Fraud Triangle is as follows. The respondents are asked to agree or disagree with the following statements:

- Do you agree with the statement that managers are committed to their company in the long term and do not tend to leave it (that is, the turnover of managers is low)?
- Managers at the company do not complain about their pay.
- What part of the total managerial compensation do performance-based bonuses comprise?
- Regular promotions of managers make them more loyal and less willing to commit fraud in the company. Do you agree with this statement?

In the Opportunity section of the third part of the questionnaire, respondents are asked to agree or disagree with the statements that indicate to what extent it is hard or easy for managers to commit fraud in their companies. A full list of the items on the scale describing the Opportunity construct is as follows:

- Do employees and managers of companies have to sign anti-fraud statements when gaining access to sensitive information related to the company?
- Is there an IT department in your company that deals with data protection and safety?
- How would you rank the quality of IT infrastructure and the protection of financial information and sensitive data in your company?
- In your opinion, how effective are the data mining tools used by the company to detect fraud?
- Does your company have an audit committee?
- How effective are the work of the internal audit committee in fraud detection and fraud prevention?
- Does at least one member of the audit committee have accounting education and expertise?

- Does the company have an internal control unit responsible for fraud detection and prevention?
- How would you rank the quality of the fraud monitoring in your company?
- How effective is external audit in detecting instances of fraud in your company?
- Is there a hotline in the company where employees or managers can anonymously disclose witnessed cases of fraud?
- Does the company provide monetary incentives for whistleblowing?

The rationalisation part of the questionnaire aims to get insight into how respondents agree or disagree with the common arguments for the justification of fraud and whether they sympathise with the managers committing fraud. The four-item scale developed to represent the Rationalisation construct is as follows:

- 'All people in managerial positions commit fraud; it is just not everyone is caught.' Do you agree?
- Do you agree with the statement that fraud can be justified if the company is not fair in its treatment of managers (e.g. low pay, long hours, too much stress)?
- Do you agree with the statement that fraud can be justified if it is committed by managers to protect others (e.g. save somebody from being fired, cover unwanted mistakes somebody has made, etc.)?
- Do you agree with the statement that fraud can be justified if it does not hurt other parties (e.g. when a top manager uses his position in the company or company ties to arrange personal deals or benefits with third parties that will not affect the company)?

The question used to measure the dependent variable in the study is as follows:
"Was there any public evidence or formal investigation of your company on the grounds of financial fraud?"

Appendix E: Types of Respondents (by their occupation

Position	Frequency	Percent	Valid Percent	Cumulative Percent
Account Manager	1	0.9	0.9	0.9
Area Manager	6	5.7	5.7	6.6
Area Risk Manager	1	0.9	0.9	7.5
Assistant Manager	1	0.9	0.9	8.5
Audit Associate	1	0.9	0.9	9.4
Auditor	1	0.9	0.9	10.4
Business development manager	1	0.9	0.9	11.3
Business Owner	10	9.4	9.4	20.8
Category Controller	1	0.9	0.9	21.7
CEO	3	2.8	2.8	24.5
Chief Information Security Officer	1	0.9	0.9	25.5
Colleague Experience Manager	1	0.9	0.9	26.4
Commercial Finance Director	1	0.9	0.9	27.4
Commercial Manager	1	0.9	0.9	28.3
Consultant - Director	1	0.9	0.9	29.2
Consulting Manager	1	0.9	0.9	30.2
Customer Relationship manager	1	0.9	0.9	31.1
Digital Marketing Manager	1	0.9	0.9	32.1
Director	5	4.7	4.7	36.8
Director of Risk	1	0.9	0.9	37.7
Ecommerce Consultant	1	0.9	0.9	38.7
Finance Director	1	0.9	0.9	39.6
Finance Manager	1	0.9	0.9	40.6
Financial Controller	2	1.9	1.9	42.5
Founder/Managing Director	1	0.9	0.9	43.4
General Manager	1	0.9	0.9	44.3
Head of Delivery and Change	1	0.9	0.9	45.3
Head of HR	1	0.9	0.9	46.2
Head of IT department	1	0.9	0.9	47.2
Head of Logistics	1	0.9	0.9	48.1
Head of Region	1	0.9	0.9	49.1
Head of Retail	1	0.9	0.9	50
Head of Risk	1	0.9	0.9	50.9
HR Director	1	0.9	0.9	51.9
HR Manager	3	2.8	2.8	54.7
Innovation Manager	1	0.9	0.9	55.7
Inventory Manager	1	0.9	0.9	56.6
IT Director	2	1.9	1.9	58.5
Junior Product Owner	1	0.9	0.9	59.4

Leadership Resourcing Partner	1	0.9	0.9	60.4
Loss Prevention Manager	1	0.9	0.9	61.3
Loss Prevention Operations Manager	1	0.9	0.9	62.3
Manager	7	6.6	6.6	68.9
Managing Director	2	1.9	1.9	70.8
Marketing Director	2	1.9	1.9	72.6
Operations Director	1	0.9	0.9	73.6
Product Owner	1	0.9	0.9	74.5
Project Delivery Manager	1	0.9	0.9	75.5
Project Manager	1	0.9	0.9	76.4
Regional Manager	4	3.8	3.8	80.2
Safety Manager	1	0.9	0.9	81.1
Senior	1	0.9	0.9	82.1
Senior Director	1	0.9	0.9	83
Senior Manager	1	0.9	0.9	84
Senior Project Manager	2	1.9	1.9	85.8
Service Desk Team Lead	1	0.9	0.9	86.8
Site research analyst	1	0.9	0.9	87.7
Store Manager	7	6.6	6.6	94.3
Stote Manager	1	0.9	0.9	95.3
Supply Chain Manager	1	0.9	0.9	96.2
Technical Director	1	0.9	0.9	97.2
Trading Director	1	0.9	0.9	98.1
vp	1	0.9	0.9	99.1
Wholesale Controller	1	0.9	0.9	100
Total	106	100	100	