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The Impact of Target Audit Quality on the Likelihood of Future Goodwill Impairment

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Abstract

US Generally Accepted Accounting Principles (GAAP) require that in an acquisition, the purchaser must record a premium when the purchase price exceeds the fair value of the target's identifiable net assets (both tangible and intangible). This premium lives on the balance sheet as an intangible asset called goodwill. Goodwill has an indefinite life, but over time it may become impaired due to overpayment of the original acquisition, unrealized synergies, changes in the business, legal issues, etc., and as a result, require a write-down. This impairment not only impacts the acquirer's balance sheet but can also impact the market value of the entity's shares. Both recorded goodwill and impairments are material amounts on the financial statements of publicly traded companies, and as a result, receive attention from companies, audit firms, investors, and regulators. Given the importance of goodwill impairment, insights into factors that may increase their likelihood warrant exploration. In the context of US publicly traded companies, this study reviews how audit quality proxies of a target company at the time of acquisition impact the likelihood of the acquirer's future impairment related to the transaction. Results suggest that the goodwill related to an acquisition of a target who used a Big 4 audit firm at the time of acquisition is less likely to be impaired. Alternatively, goodwill from purchases of targets with higher non-audit non-tax service fees and longer tenure had an increased likelihood of impairment.

Keywords: Target audit quality, goodwill impairment, goodwill, Big 4 audit firm, auditor industry specialist, non-audit service fees, auditor tenure, M&A

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Chapter 1: Introduction

In 2018, goodwill impairments among publicly traded US companies reached \$78.9 billion (Duff and Phelps, 2019). Although five individual impairments drove more than half of this amount, it is unlikely that there will be a downward trend in the near term. US merger and acquisition (M&A) activity continues to grow, hitting \$1.7 trillion in 2019 (Burnett, 2020). In 2018 alone, \$386 billion of new goodwill was recorded on US balance sheets (Duff and Phelps, 2019). Goodwill impairments not only impact balance sheets, but they also impact the market value of the entity's shares. For example, in 2018, the Kraft Heinz Company impaired \$7.0 billion of goodwill and concurrently lost 27% of its market capitalization (Root, 2019).

Goodwill is generated through the acquisition process. Under US Generally Accepted Accounting Principles (GAAP), when one company buys another for a purchase price that exceeds the fair value of the target's identifiable net assets (both tangible and intangible), the purchaser records the incremental difference or "premium" as an intangible asset called goodwill. This premium is driven by various elements of the target company, such as customer loyalty and brand reputation. These premiums continue to increase as higher market valuations are driving larger purchase prices. At the end of 2018, companies within the S&P 500 had \$3.3 trillion of goodwill on their balance sheets, representing 10% of total assets (Root, 2019).

Current accounting practice suggests that goodwill can have an indefinite life, but over time it may become impaired due to overpayment of the original acquisition, unrealized synergies, changes in the business, legal issues, etc., and as a result, it requires a write-down. As seen in the case of Kraft Heinz Company, impairments can have a significant impact on stock prices, as they provide meaningful information to investors about future performance (e.g., Jarva, 2009; Z. Li, Shroff, Venkataraman, & Zhang, 2011). Due to the importance of fairness, conservatism, and the need for timely

financial statements, under US GAAP, public companies are required to test goodwill for impairment annually. The impairment test requires companies to estimate the reporting unit's fair value, and if the book value exceeds the fair value, the goodwill must be written down (Financial Accounting Standards Board, 2017).

Due to the magnitude of goodwill on balance sheets, the importance to investors, the high degree of judgment involved in its valuation, and the cumbersome reporting requirements, methods for accounting for goodwill and subsequent impairments receive significant attention. As a result, the accounting treatment of goodwill, including impairment, has evolved rapidly over the last two decades and continues to be a critical topic. As recently as July 2019, the "Financial Accounting Standards Board (FASB) issued an Invitation to Comment (ITC) on Identifiable Intangible Assets and Subsequent Accounting for Goodwill" (Duff and Phelps, 2019, p. 1). The ITC was intended to discover if accounting changes were warranted and which, if any, solutions were feasible to improve decision usefulness (Financial Accounting Standards Board, 2019).

Although fair reporting is required, studies find that managers use significant judgment and discretion when preparing financial statements (e.g., Chambers & Finger, 2011; Jarva, 2009; K. Li & Sloan, 2017; Ramanna & Watts, 2012). These financial statements are relied upon when acquirers determine the value and premium of a target during the acquisition. External auditors, which are engaged to opine on the financials of publicly held companies, provide a mechanism to control manager discretion and ensure fairness in financial reporting. However, audit quality can vary across audit partners and teams within firms and across firms. As a result, Albersmann and Quick (2020) find that "the degree to which financial statement users can rely on an audit opinion depends on the quality of the audit performed" (p.66). Audit quality has been measured through various proxies for inputs (e.g., audit firm size, industry specialization) and outcomes

(e.g., earnings quality, restatements). Studies find that high audit quality can reduce opportunistic earnings management (DeFond & Zhang, 2014).

This managerial discretion can impact the timeliness of goodwill impairments. Timeliness reflects the impairment recognition lag – “i.e., whether accounting is contemporaneous with recognition returns” (C. Chen, Kohlbeck, & Warfield, 2008, p. 72). Auditors dedicate significant attention to goodwill because of its materiality and the high risk associated with the asset. Chambers and Finger (2011) emphasize the importance of the auditor evaluation of the fair value measures used for goodwill impairments and the consideration of how these impairments could impact the company and stakeholders (e.g., CEO compensation, bond covenants), as these judgments provide incentives to employ biased managerial discretion.

An increase in audit quality has been found to de-bias the over or under-reporting of goodwill impairments (Ferramosca et al., 2017), decrease forecast dispersion (L. H. Chen, Krishnan, & Sami, 2015), improve compliance (Bepari & Mollik, 2015), and give greater assurance that financial statements reflect the “underlying economic value of goodwill” (Stokes & Webster, 2010, p. 7). A recent study of German firms found that higher audit quality can increase the market’s perceived timeliness of goodwill impairments (Albersmann & Quick, 2020). In other words, audit quality impacts the fairness with which the financials reflect the true state of the firm.

While prior studies have attempted to link audit quality with the timeliness of goodwill impairment, the purpose of this study is to understand how audit quality (as measured by various proxies described later) impacts the likelihood of goodwill impairments. This study will review how the audit quality of a target firm at the time of acquisition impacts the likelihood of a future goodwill impairment related to the transaction. This information can be used by investors in performing their valuations, but equally important, it can impact the acquirer’s due diligence efforts.

Research Question

This study seeks to understand how the target firm's audit quality in an acquisition impacts the likelihood of subsequent goodwill impairment. In acquisitions, the purchaser effectively absorbs the target's balance sheet and the incremental premium and becomes the purchaser's goodwill. If the target company had poor audit quality and, as a result, potentially poor financial statement quality, it is reasonable to believe that there is a higher likelihood that the acquirer will at some point impair goodwill related to the transaction. This is driven by the belief an acquirer may pay an additional premium unbeknownst to them due to the lower quality financials of the target. This study seeks to understand if audit quality is an antecedent to impairment of goodwill by answering the following question:

In M&A transactions between US publicly traded companies, does the target's audit quality at the time of acquisition impact the likelihood of the acquirer's future impairment related to the transaction?

Contributions

This study contributes to both the goodwill and audit quality literature. To the best of the author's knowledge, the question of target audit quality impacting the likelihood of impairment has not been addressed in academic research. Insights into this question are essential to corporations during the performance of due diligence and to investors who value the impact of an acquisition as well as react to goodwill impairments. This is especially true in the case where audit quality is mismatched with the purchaser having high quality and the target having low quality, which could possibly drive a rapid and material impairment after the acquisition.

Chapter 2: Literature Review

This literature review will focus on two streams of research: goodwill and audit quality. Goodwill measurement and impairment have evolved rapidly over the last 20 years, which has caught the attention of researchers (e.g., El-Gazzar, Jacob, & Shalaby, 2004; K. Li & Sloan, 2017; Wen & Moehrle, 2016). Studies have explored the significant drivers of goodwill impairment. They have tested the impact of managerial discretion in reporting financial statements, including the valuation of goodwill (e.g., Jarva, 2009; Z. Li et al., 2011; Ramanna & Watts, 2012). The literature supports the fact that US GAAP allows for managerial discretion and provides evidence that managers use this discretion to their benefit (Christensen, Glover, Omer, & Shelley, 2016; DeFond & Zhang, 2014; Francis, 2011)

The audit quality literature has proliferated over the last two decades, driven in part by the Sarbanes Oxley (SOX) Act of 2002. Researchers have presented an array of definitions and proxy measures of audit quality. They have demonstrated that audit quality impacts manager discretion and a spectrum of outcomes, including earnings quality and restatements (e.g., Knechel, Krishnan, Pevzner, Shefchik, & Velury, 2013). This literature on audit quality sets the stage for hypotheses that certain audit quality proxies will be associated with the likelihood that the goodwill recorded in a purchase transaction will need to be impaired.

Goodwill

Goodwill Measurement and Impairment

Goodwill is “an economic asset with expected future value, just like tangible assets such as patents, inventory, and property, plant, and equipment” (Wen & Moehrle, 2016, p. 12). Internally generated goodwill can result from aggressive research and development programs, promotional and advertising campaigns, and long-term

customer care and satisfaction, which give the firm a competitive advantage (El-Gazzar et al., 2004). Under US GAAP, internally generated goodwill cannot be recorded on financial statements. Goodwill can only be recognized through M&A activity and is equal to the amount paid above the “fair value of the net assets (tangible and intangible) of the acquired company” (Wen & Moehrle, 2016, p. 13).

The treatment of goodwill has evolved. Initially, goodwill was considered to have a finite life and was amortized over that useful life, not to exceed 40 years (Accounting Principles Board, 1970b). There have also been different methods for recording goodwill. Under the currently used Purchase Method, the acquirer records the assets and liabilities of the target at fair value. Alternatively, in the past, the Pooling Method could be used in acquisitions primarily executed through voting shares. This method allowed the acquirer to combine its recorded book values with those of the target, resulting in no goodwill. In 2001, FASB issued Statement of Financial Accounting Standards (SFAS) No. 141 and 142. SFAS 141 required the use of the Purchase Method, eliminating the Pooling Method. Another significant change came with SFAS 142, which eliminated amortization and took the stance that goodwill has an indefinite life and must be tested annually for impairment. SFAS 142 was intended to “improve financial reporting because the financial statements of entities that acquire goodwill and other intangible assets will [now] better reflect the underlying economics of those assets” (Financial Accounting Standards Board, 2001b, p. 7).

Under SFAS 142, acquired goodwill is allocated to the operating segments or reporting units of the firm. The annual impairment requirement mandates that the goodwill is tested at the reporting unit level using a two-step process (see Appendix 1 for process overview). Step 1 requires firms to estimate the reporting unit’s fair value and compare it to its book value. If the fair value exceeds the book value, no further action or

impairment is required. However, if the fair value is less than the book value, the firm must complete a second step. In step 2, the firm calculates the impairment by comparing the implied fair value of goodwill with its book value. The implied fair value of goodwill is the difference between the unit's total fair value calculated in step 1 and the total fair value of the unit's non-goodwill net assets. Then the goodwill's fair and book values are compared. If the book value exceeds the fair value, then the difference is an impairment and written off. If the fair value exceeds the book value, no further action is taken. This second step is time-intensive and costly.

In September 2011, FASB issued Accounting Standards Update (ASU) 2011-08, which began relaxing the provisions of SFAS 142. The update requires that goodwill impairment testing needs to be performed only "when events and circumstances indicate that it is more likely than not that the fair value of a reporting unit is less than its carrying value" (K. Li & Sloan, 2017, p. 965). Then in January 2017, FASB issued ASU 2017-04, which eliminates step 2 of the impairment test requiring firms to calculate the implied fair value of goodwill (Financial Accounting Standards Board, 2017). The new standard allows firms to record goodwill impairment based on the excess of the reporting unit's book value over its fair value, not to exceed the book value of goodwill (i.e., step 1). This standard is required for public SEC filers for periods beginning after December 15, 2019. While this change removes the cumbersome step 2, it also has the potential to increase the occurrence of goodwill impairments, as previously firms could fail step 1 and still not impair goodwill depending on the outcome of step 2.

Antecedents of Goodwill Impairment

Wen and Moehrle (2016) conducted a literature review of goodwill and identified three economic factors that lead to impairment "(1) overpayment for the original acquisition (Z. Li et al., 2011); (2) overpriced shares of the acquiring firm (Gu & Lev,

2011); and (3) investment opportunities of the acquirer (Godfrey & Koh, 2009)” (p. 16). Of interest to this study is the first economic driver, overpayment, because it relates to attributes of the target at the time of acquisition as well as decisions of the acquirer. Z. Li et al. (2011) mapped goodwill impairments back to the original acquisition and used proxies to determine if there was an overpayment for the target. These proxies included “the premium relative to target’s price, premium relative to target’s book value, stock payments by overvalued bidders, unrelated acquisitions, and the existence of termination fees”(Z. Li et al., 2011, p. 748). The study concluded that the excess overpayment for the target could predict future goodwill impairment. Also seeking to understand the antecedents to goodwill impairment, El-Gazzar et al. (2004) studied a sample of mergers and acquisitions from 1996 to 2000. They sought to uncover how the attributes of the target at the time of acquisition may have subsequent impairment implications. They, too, found that goodwill impairment is significantly associated with a additional premium paid for the target. Additionally, they documented evidence that purchases made using the acquirer’s stock are associated with a higher likelihood of future impairment.

To the author’s best knowledge, research has not explored the target’s audit quality as a predictor of future goodwill impairments. It is plausible to believe that a target with poor quality may receive a purchase price beyond what would be justified under conditions with higher quality and more conservative financial reporting (i.e., lower audit quality in the case of the target could result in the overvaluation of the target’s assets). This poor quality, in turn, may increase the likelihood of future impairments once the target has been consolidated into the acquirer.

Impairments and Manager Discretion

It is essential that firms recognize goodwill impairments fairly and in a timely manner, as the write-offs send an important signal to the market. Z. Li et al. (2011) examined how analysts interpret goodwill impairment announcement as new information. To calculate an impairment loss, management must use projections of future cash flows. Therefore, unless the market has already incorporated a possible goodwill impairment into their valuations, the announcement is new information. The study found, on average, the market revised expectations downward after an impairment announcement, therefore concluding the information is new to the market, and the impairment is an indicator of a decline in future profitability (Z. Li et al., 2011). A separate study by Jarva (2009) also found that goodwill impairments under SFAS 142 were predictive of reduced future cash flows.

Recognizing that the reporting of impairments provides valuable information to investors, it is essential that management reports write-offs promptly. SFAS 142, using impairment rather than amortization, was intended to improve the reliability of financial statements. Studies have found that the market perceived an improvement in goodwill impairment timeliness, i.e., recognition lag, under SFAS 142; however, there is still a lag (e.g., C. Chen et al., 2008). This continued lag may result from managers exploiting the subjectivity allowed by SFAS 142 and using it opportunistically (e.g., Chambers & Finger, 2011; K. Li & Sloan, 2017; Ramanna & Watts, 2012; Watts, 2003). Critics point out that goodwill's fair value is more subjective than other assets, like accounts receivable or inventory. Ramanna and Watts (2012) found evidence that the calculation of "fair values, when extended to assets with unauditible valuations, are likely to compromise financial reporting's role as a management control system" (p.753). This subjectivity is more likely to be exploited when considering agency theory, which predicts

that managers will use discretion in circumstances where they have incentives to do so (Ramanna & Watts, 2012; Watts, 2003). With the elimination of amortization under SFAS 142, it is even more critical that write-offs are recorded in a timely manner, as this is the only way management is held accountable for excessive acquisition premiums.

Research has found that the discretion allowed by SFAS 142 may enable managers to delay or avoid impairment recognition, validating critics' concerns regarding SFAS 142's subjectivity and allowance for manager discretion. Jarva (2009) reviewed a sample of firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ markets from 2002 to 2006 and found evidence that "SFAS 142 goodwill write-offs lag behind the economic impairment of goodwill" (p.1060). Li and Sloan's (2017) observation of firms from 2000 to 2007 found that some managers use the discretion allowed by SFAS 142 to delay goodwill impairments, which in turn temporarily inflates earnings and stock prices. An article by Chambers and Finger (2011) outlines evidence that impairments are not recorded on a timely basis. The researchers also uncovered evidence that firms avoid impairments when recognition would cause negative or decreased company earnings (Chambers & Finger, 2011). Furthermore, Ramanna and Watts' (2012) reviewed 124 firms between 2003 to 2006 with a high likelihood of goodwill impairment based on a large goodwill asset and a high book-to-market ratio. They found some evidence of non-impairments when it may decrease CEO compensation, damage CEO reputation, or violate bond covenants. Consistent with Ramanna & Watts, Z. Li et al. (2011) found indirect evidence that a firm may act opportunistically and use managerial discretion to avoid taking impairment losses.

One study did not find compelling evidence that manager discretion is used in SFAS 142 (Lee, 2011). The study reviewed firms from 1995 to 2006 and focused on goodwill's mapping into future cash flows. It found that the predictive value of goodwill

improved after SFAS 142 and that firms were no more likely to use managerial discretion in the post SFAS 142 world than they were previously. However, the author did note that the study has limitations due to “difficulty of disentangling the financial reporting effect from the influence of macro-economics on the mapping of goodwill into future cash flows” (Lee, 2011, p. 238).

Fairness of financial reporting, including timeliness of goodwill impairments, is critical to market stakeholders, and management’s ability to use discretion could mislead investors about the true state of the firm. The literature provides clear evidence that managers use discretion allowed by SFAS 142 to manage earnings and reputation. However, recent studies have found that higher audit quality can improve the fairness of financial reporting and serve as a mechanism against discretion (Albersmann & Quick, 2020). While this study seeks to understand how a target’s audit quality impacts the likelihood of goodwill impairment, the analysis relies on the assumption that the acquirer will accurately report the impairment, if required.

Audit Quality

Earnings management, defined by Schipper (1989) as “purposeful intervention in the external financial reporting process with the intent of obtaining private gain,” (p.92), as well as other aspects of broader manager discretion, lead to agency problems. These issues are a great concern to corporate stakeholders, especially investors, and create a demand for external audits. External auditors must plan and perform audits to obtain reasonable assurance that the financial statements conform with GAAP and give reasonable assurance that the financial statements are fairly stated. While auditing plays a critical role in ensuring fair financial statement reporting, all audits are not created equal. Audits and auditors are distinguished by their quality, which impacts the degree to which users can rely on the financial statements.

Audit quality has been the subject of much debate over the years, and although frameworks have begun to form, there is no consensus on the definition. Furthermore, as audit quality cannot be directly observed, it must be measured using proxies. Different stakeholders perceive audit quality from various lenses, which impacts their choice of proxy.

Audit Quality Defined

The most widely cited definition of audit quality comes from DeAngelo (1981), who describes it as “the market assessed joint probability that a given auditor will both discover a breach in a client’s accounting system, and report the breach” (p.186). However, this definition is limited in that it focuses on an outcome that is partly dependent on the failure to detect GAAP violations. In addition, the definition does not consider that auditors are responsible for “the quality, not just the acceptability” of the client’s financial statements (American Institute of Certified Public Accountants, 1992). It is also critical, especially in the context of goodwill impairments, that there is faithful representation of the firm’s underlying economics (FASB, 1980). These reasons led DeFond and Zhang (2014) to create a new description that defines higher quality as “greater assurance of high financial reporting quality” (p.275). My study will rely upon this definition and the focus on increasing the quality and credibility of financial reporting.

Audit Quality Measurement

Audit quality is not directly observable and, therefore, must be measured using proxies. This study supports the view that audit quality is not a single construct and embraces the framework, or balanced scorecard, that researchers have created to measure overall quality (e.g., DeFond & Zhang, 2014; Francis, 2011; Knechel et al., 2013). Using these frameworks, audit quality is described in terms of audit inputs, audit processes, outcomes, and context. Explanations and examples of these terms are

provided below. However, it is important to note that various parts of the framework carry different weights with stakeholders. Christensen et al. (2016) interviewed 93 audit professionals and 102 investors to understand perspectives on audit quality. They found that investors are focused on audit process inputs and view the number of Public Company Accounting Oversight Board (PCAOB) deficiencies noted in inspections as an indicator of overall firm quality. They also found alignment between investors and auditors, who both view auditor characteristics as the most critical determinant of audit quality and restatements as a sign of low quality (Christensen et al., 2016).

The first category, audit inputs, relates to the characteristics of the audit team performing the audit. Inputs include auditor traits like professional skepticism, knowledge, etc. To measure inputs, researchers use proxies of industry expertise, firm size, and fees. The quality of the audit, especially in terms of outcomes, should increase as the inputs improve (Knechel et al., 2013).

Second, audit quality is influenced by the characteristics of the audit process. While there is a largely defined systematic audit process, variations occur to account for the differences in clients (e.g., risks, structure, business plans). These variations require judgment in the audit process, and biases or deficiencies should be, but are not always mitigated in the review and quality control process. The result of a high-quality audit process is a well-planned audit and the issuance of the appropriate audit opinion. Proxies used to measure the audit process include the timeliness of audit procedures and consultations (Christensen et al., 2016).

The outcomes of audit quality are often measured in terms of restatements, financial reporting quality, appropriateness of audit reports, and results of regulatory reviews (Knechel et al., 2013). Many researchers focus on financial reporting quality. For example, audit quality has been measured by the level of abnormal accruals, the

propensity to miss analysts' forecasts, and earnings response coefficients (i.e., how much new information shared in the earnings impacts the stock price) (e.g., Balsam, Krishnan, & Yang, 2003; Lim & Tan, 2008).

Finally, audit quality can be measured in terms of context. The contextual factors include audit tenure, audit partner compensation, abnormal audit fees, non-audit fees, and audit fee premiums. These factors could directly "influence audit inputs (e.g., incentives and pressures) and/or the audit process (e.g., judgments and evidence evaluation), which indirectly influence audit outcomes (e.g., accuracy of audit reports and financial reporting quality)" (Knechel et al., 2013, p. 403).

DeFond and Zhang's (2014) review of audit research concludes that no single category fully encompasses audit quality, and they recommend that "when possible, researchers use multiple proxies from different categories to take advantage of their strengths and attenuate their weaknesses. However, because the proxies in each category reflect different dimensions of audit quality, we do not necessarily expect agreement across categories" (p.276). This study will use multiple proxies to understand how a target's audit quality impacts the likelihood of goodwill impairment. The study will focus on the inputs of audit firm size and industry specialization, as well as audit context in the form of non-audit service fees and tenure. The outcomes will be measured by the likelihood of goodwill impairments as a signal of financial reporting quality (as it relates to audit quality) in acquisition targets.

Audit Quality and Goodwill Impairments

Goodwill is a material asset on the balance sheets of US publicly traded companies. Goodwill impairments are growing in volume and magnitude, and investors carefully follow them as indicators of future financial performance. Under SFAS 142, manager discretion plays a role in the recognition of goodwill impairments. Ramanna

and Watts (2012) argue that the “value of goodwill is a function of management’s future actions, including managers’ conceptualization and implementation of firm strategy. As such, it is difficult to verify and audit.” (p.750). External audit is designed to control for manager discretion and ensure the fairness and quality of financial statements. “Auditors can increase the quality of impairment testing by ensuring the appropriateness and reasonableness of goodwill allocation and impairment test models, which particularly include the valuation technique, business and valuation assumptions, and the carrying amount” (Albersmann & Quick, 2020, p. 77). However, audit quality varies across the dimensions of inputs, processes, outcomes, and context. This study explores how the audit quality of a target firm impacts the likelihood that the acquirer will need to impair the goodwill from the transaction.

The relationship between audit quality and goodwill impairment has been studied in various forms and with mixed results. However, to the best of the author’s knowledge, no studies have focused on the likelihood of impairment stemming from the audit quality at the time of acquisition. Moreover, many of these studies have focused on other reporting regimes, and the US market can benefit from further review.

There are studies that have found no association between audit quality and goodwill reporting. For example, Al Dabbous, Ghazaleh, and Al-Hares (2015) reviewed the effect of audit quality and audit committee (AC) characteristics (e.g., size, independence, meeting cadence, and financial expertise) on goodwill impairment losses (measured by size) using observations from the top 500 UK listed firms and found no significant effects. However, there are questions about the study’s design as the absolute size of the goodwill impairment would likely be linked more to the economics and size of the firm, as opposed to the audit quality. Contrary to this finding, most studies on the topic have found a connection. A study of US firms from 2003 to 2007 focused on how audit quality in terms of inputs (e.g., auditor size and fees) and context

(e.g., non-audit service fees and tenure) impact the over or under-reporting of goodwill impairments (Ferramosca et al., 2017). To measure this, the researchers partitioned goodwill impairments into an expected portion and then measured the over or under impairment. The study found that consistent with conservatism, Big 4 auditors were more likely to limit underestimated impairments. Also, auditors tend to charge based on the level of risk, with lower fees required for firms that overestimate write-offs and higher fees for those who underestimate. Ferramosca et al. (2017) did not identify a relationship between goodwill impairments and non-audit fees and tenure. These studies contained important insights into the relationship between audit quality and goodwill but do not address the issue of impairment likelihood, nor do they consider the target's attributes.

L. H. Chen et al. (2015) offer a relevant study to inform this research. They tested a sample of US firm-quarters with and without goodwill impairments from 2003 to 2007 to examine how the size and the industry specialization of the audit firm impacts analyst forecast accuracy. They found goodwill impairments lead to greater dispersion and less accuracy; however, these impacts were reduced by auditor industry specialization.

Studies have also been conducted outside the US and focus on audit quality in the context of International Financial Reporting Standards (IFRS) goodwill accounting regulations, which also require that management test goodwill for impairment. While these studies cannot be applied directly to the US context, they offer valuable insights. The results of these studies have been mixed. For example, Stokes and Webster (2010) studied Australian firms and found that using a Big 4 auditor gives the greatest assurance that goodwill reflects the underlying economic value of goodwill. In another study of Australian firms, Bepari and Mollik (2015) found that using a Big N audit firm and including a member with financial expertise on the audit committee leads to improved compliance with IFRS goodwill impairment testing. Contrary to these findings, a study of French firms, which are required to engage two independent auditors, found

that use of two Big 4 auditors led to less impairment disclosure transparency than the use of one Big 4 and one non-Big 4 auditor (Lobo, Paugam, Zhang, & Casta, 2017).

Finally, a recent study of German firms from 2006 to 2013 has addressed the issue of goodwill impairment timeliness with the use of multiple audit quality proxies (e.g., audit firm size, audit fees, industry specialization, non-audit fees, auditor tenure). Albersmann and Quick (2020) explore the question: “is managerial discretion over accounting numbers (accounting choice) good or bad for stakeholders and does audit quality have an impact on this relationship?” (p.66). The study found evidence that, in general, goodwill impairments are not recognized promptly and are delayed by at least one to two years. They also found that impairments were timelier when engaging a Big 4 auditor and paying higher audit fees, and timeliness decreased with higher non-audit fee ratios and longer auditor tenure. While this study directly addresses audit quality, it focuses on timeliness and does not address the likelihood of impairment. Furthermore, this study, along with those previously mentioned, does not seek to understand the impact of the target’s audit quality at the time of acquisition.

Audit Quality Proxies and Hypotheses Development

Audit Firm Size, Big N/Big 4

Audit firm size is one of the most studied proxies for audit quality and has relatively high construct validity (DeFond & Zhang, 2014). Both investors and audit professionals support researchers’ use of firm size as a proxy for audit quality (Christensen et al., 2016). Academics cite that Big N, or as known today as Big 4, auditors provide higher quality for multiple reasons. Big 4 auditors have more independence and thus provide higher quality audits because they do not need to rely on any single client and therefore are less willing to risk their reputation in exchange for misreporting (DeAngelo, 1981; Francis, 2004). Big 4 auditors are also expected to

provide higher quality audits to larger clients because they can scale and cover multiple jurisdictions (Christensen et al., 2016; DeFond & Zhang, 2014).

Additionally, larger firms have more robust internal quality controls, which may lead to increased audit quality (Albersmann & Quick, 2020). However, it is essential to note that this proxy is not engagement-specific, nor is it foolproof. Big 4 auditors do fail; however, on average, larger audit firms are expected to provide higher quality.

Another topic of interest to researchers is the potential issue of endogeneity, given that firms and auditors select one another, and audit firms may prefer less risky clients or firms with high earnings quality may hire high-quality auditors (Francis, 2004). Empirical evidence is mixed but typically supports that Big 4 auditors provide higher quality.

Big 4 auditors have been associated with higher quality client financial statements. In the context of goodwill, Big 4 auditors are more likely to limit underestimated impairment and give the greatest assurance that goodwill reflects the underlying economic value (Bepari & Mollik, 2015; Ferramosca et al., 2017; Stokes & Webster, 2010).

Beyond the goodwill-related literature, Big 4 auditors have been associated with higher quality in the form of less earnings management (Francis, 2004), even when controlling for endogeneity (Eshleman & Guo, 2014). Many studies have also found a strong relationship between firm size and audit quality measured in the context of accruals. Using a large sample of US audit client firms from 2000 to 2005, Choi, Kim, Kim, and Zang (2010), found that office size, measured by the number of clients, had a significantly positive relationship with audit quality, measured by unsigned (i.e., absolute value) abnormal accruals. Francis and Wang (2008) explored how Big 4 audit firms play

a “mediating role in how investor protection regimes affect earnings quality” (p. 157). They used a large sample of firms from 42 countries over the period 1994 to 2004 and documented earnings quality, measured by abnormal accruals, and found that the likelihood of recording a loss is higher as the country’s investor protection regime becomes more robust, but only for firms with Big 4 auditors. Krishnan’s (2003) sample of firms from 1989 to 1998 uncovered that the association between discretionary accruals and both stock returns and future profitability are the greatest for firms audited by Big 4 auditors.

Finally, researchers have also used firm size to proxy audit quality when reviewing fraud and restatements. Lennox and Pittman (2010) controlled for endogeneity and conducted a study of firms from 1981 to 2001. They found that even during the more relaxed pre-Sarbanes-Oxley Act of 2002 (SOX) era, Big N firms had higher audit quality, evidenced by a lower incidence of revealed fraud. There is also evidence that Big 4 audit clients are “less likely to issue accounting restatement than are clients of other auditors” (Eshleman & Guo, 2014, p. 197). The literature is robust in supporting the premise that Big 4 firms lead to higher audit quality, which should ensure the economics of the target are fairly presented and the acquirer has full knowledge when determining the premium to pay. Therefore, the following hypotheses are presented:

H1: An acquirer is less likely to impair the goodwill related to a transaction if the target was audited by a Big 4 auditor at the time of acquisition (i.e., Target Big 4 Audit Firm has a significant negative effect on Likelihood of Goodwill Impairment)

Audit Firm Industry Specialization

Big 4 auditors are anticipated to have more expertise than their smaller peers, but the proxy of industry specialization provides a quality variation within large firms

(DeFond & Zhang, 2014). Audit firms with industry specialization will train teams and invest in resources to meet the accounting challenges unique to that industry (Francis, 2011). Given the complexity of goodwill impairment testing, this expertise allows auditors to make higher quality judgments and should ensure the economics are appropriately reflected in the accounts, and that write-offs are recorded on a timely basis. Additionally, the impact of industry specialization can multiply as the audit firm takes on more clients in the industry and continues to grow the depth of its expertise. It is not uncommon that Big 4 firms specialize by industry. Using SIC industry codes and audit fee disclosures, Francis, Reichelt, and Wang (2005) document that on average, industry leaders had 50% of the industry, with the runner up only having 22%. Auditor market share is commonly used to measure industry specialization (Balsam et al., 2003; L. H. Chen et al., 2015; Francis et al., 2005; G. V. Krishnan, 2005; Reichelt & Wang, 2010; Rose-Green, Huang, & Lee, 2011) and it has been modeled against several different outcomes (e.g., abnormal accruals, internal control weaknesses) to measure audit quality.

When observing the implications on accruals, researchers find that clients of audit firms who are industry specialists have the lowest abnormal accruals and highest earnings response coefficients suggesting less manager discretion and higher earnings quality (Balsam et al., 2003; Lim & Tan, 2008; Reichelt & Wang, 2010). Not all studies support the hypothesis that industry specialization leads to better audit quality. Minutti-Meza (2013) did not find evidence that the use of industry specialists led to increased audit quality in the form of “discretionary accruals, the auditor’s propensity to issue a going-concern opinion, or the client’s propensity to meet or beat analysts’ earnings forecasts” (p.781). In the context of goodwill, L. H. Chen et al. (2015) found that

impairments lead to greater dispersion and less accuracy in investor forecasts; however, these impacts are reduced by auditor industry specialization.

G. V. Krishnan (2005) finds that the “speed with which publicly available bad news about future cash flows is recognized in earnings” is the highest with industry specialists, indicating the earnings of firms using specialists are timelier (p.209). A study by Knechel et al. (2013) of audit firm switches from 2000 to 2003 confirms that the market views specialists as offering higher quality. The study reviewed 318 switches and found switching between Big 4 auditors “causes significant positive abnormal returns when the successor is an industry specialist” and negative abnormal returns when they are not (p.19). Turning to other signals of audit quality, Rose-Green et al. (2011) find that first-time filers of SEC Section 404 reports are more likely to disclose internal control weaknesses when audited by an industry specialist, supporting the position that the use of specialists leads to differentiated outcomes.

Using the existing empirical audit research Audoussert-Coulier, Jeny, and Jiang (2016) examine the validity of auditor industry specialization and conclude that the proxy has a low level of internal and external construct validity. However, the researchers recognize that auditor industry specialization has more validity when used in studies with audit quality than with other measures such as audit pricing. While most studies indicate that industry specialization leads to higher audit quality, there is a lack of consensus on industry specialization measurement, which may suggest that “specialization captures audit quality with relatively large measurement error” (DeFond & Zhang, 2014). Despite this debate, this study embraces the view that specialization leads to high quality financial statements, and posits:

H2: An acquirer is less likely to impair the goodwill related to an acquisition if an industry specialist audited the target at the time of acquisition (i.e.,

Target Auditor's Industry Specialization has a significant negative effect on the Likelihood of Goodwill Impairment)

Non-Audit Service Fees

The SOX Act of 2002 bars an audit firm from providing most, but not all, non-audit services (NAS) to an audit client. For example, audit firms can provide tax compliance services but not bookkeeping services. The EU also has a regulation limiting "NAS fees to 70% of the average of the prior three year's audit fees" (EU Parliament, 2014, Art. 4 Par. 2). These regulations are supported by the view that the non-audit services impair independence due to the strong economic bond between the client and audit firm, and therefore decrease audit quality. There is robust evidence to support this view. In a study of Australian firms, researchers observed an inverse relationship between non-audit services and the value relevance of earnings (Gul, Tsui, & Dhaliwal, 2006). There are also findings that non-audit services can negatively impact investors' perceptions of financial reporting credibility (G. V. Krishnan, 2005). Lim and Tan (2008) document that higher non-audit services led to lower audit quality in the form of an "increased propensity to issue going-concern opinions, increased propensity to miss analysts' forecasts, as well as higher earnings-response coefficients" (p.199). Other studies find an association with lower accrual quality (Frankel, Johnson, Nelson, William, & Libby, 2002). Researchers also find positive associations between non-audit service fees and restatements (Kinney, Palmrose, & Scholz, 2004), sanctions from the SEC for fraud (Markelevich & Rosner, 2013), and the likelihood that a restatement results in audit litigation (Schmidt, 2012). In the context of goodwill, a study of German firms found that the timeliness of goodwill impairment decreased with higher non-audit service fees (Albersmann & Quick, 2020). These findings indicate that audit quality may be compromised with higher non-audit services.

Alternatively, some evidence exists that non-audit services allow the audit firm to gain additional knowledge of the client, which will subsequently aid and improve quality in the audit process. This has been proven widely for tax services, the provision of which results in higher financial reporting and audit quality (Kinney et al., 2004; G. V. Krishnan & Visvanathan, 2011; Robinson, 2008; Seetharaman, Sun, & Wang, 2011). Other studies find that providing non-audit services creates efficiencies demonstrated by shorter audit lags (Knechel & Sharma, 2012) and lower information risks through more predictable cashflows (Nam & Ronen, 2012). Furthermore, researchers also believe that the threat of litigation and alternative governance mechanisms limit the threat to independence (Ruddock, Taylor, & Taylor, 2006).

A handful of studies and metanalysis also find no relation between non-audit services and audit quality (Bedard, Deis, Curtis, & Jenkins, 2008; DeFond, Raghunandan, & Subramanyam, 2002; Ghosh & Moon, 2005; Ruddock et al., 2006). Therefore, with mixed findings, it is incumbent upon this study to search for evidence that the provision of non-audit services may negatively impact audit quality, and therefore I hypothesize:

H3.1: An acquirer is more likely to impair the goodwill related to a transaction if the target exhibited a higher non-audit and non-tax service fee to total fee ratio at the time of acquisition (i.e., Target NANTS Fee Ratio has a significant positive effect on the Likelihood of Goodwill Impairment)

H3.2: An acquirer is more likely to impair the goodwill related to a transaction if the target exhibited a higher non-audit service fee to total fee ratio at the time of acquisition (i.e., Target NAS Fee Ratio has a significant positive effect on the Likelihood of Goodwill Impairment)

Audit Firm Tenure

The impact of audit tenure on audit quality has multiple viewpoints. For example, longer tenure may create increased reliance on the client's business or create a relationship that is too familiar to be objective, leading to lower audit quality. On the other hand, longer tenure may lead to increased expertise and therefore improve audit quality. Furthermore, regulations that mandate partner rotation help to ensure independence.

Although many studies provide evidence on tenure, it is important to note that the regulatory environment plays a significant role based on the country of study. The US professional requirements under Section 203 of the SOX Act of 2002 state that audit partner rotation is required at least once every five years (Sarbanes, 2002). Whereas the US requires partner rotation, the European Union (EU) requires firm rotation. In the EU, public companies must rotate audit firms after ten years (Parliament, 2014).

Several US studies support that tenure increases audit quality, or at a minimum, does not impair it. Meyers et al. (2003) were unable to find evidence that audit quality diminishes due to increased tenure. They also find weak evidence that longer tenure may improve quality as measured by smaller and more predictive accruals. Johnson et al. (2002) document evidence of lower audit quality, measured by larger abnormal accruals, in the first three years of a new firm relationship when compared to engagements of 4 or more years. Jenkins and Velury (2012) review audit tenure's relationship to audit quality in both the pre-and post-SOX eras. They find that while a pre-SOX relationship was present with higher quality in the earlier years and decreased quality in the later years, there was no significant relationship post-SOX. They attribute this to the fact that audit tenure weakened in importance once the more rigorous SOX regulations began.

International studies of periods without mandatory rotation report a mixture of results. Ghosh and Moon (2005) use earnings response coefficients to measure investor

perceptions of earnings quality. They find a positive relationship with audit tenure, indicating that the market views tenure as improving audit quality. Garcia-Blandon, Argilés-Bosch, and Ravenda (2020) conducted a cross-European study and find that “discretionary accruals, differences between reported earnings and earnings benchmarks, and accounting restatements” all improve with tenure, once again indicating tenure may improve audit quality (p. 35). Finally, a study of German listed firms between 2006 to 2013, before mandatory rotation, finds a nonlinear relationship (Hohenfels, 2016). The study also presents “evidence that investors perceive lower earnings quality during the early and later years of an auditor–client relationship”, with perceived earnings quality at the highest in years 8-9 (Hohenfels, 2016, p. 224). Other international studies report results are not consistent with the notion that audit quality increases with tenure. Carey and Simnett (2006) reviewed Australian firms and found that longer tenure led to a “lower propensity to issue a going-concern opinion and some evidence of just beating (missing) earnings benchmarks” (p. 653). C. Y. Chen, Lin, and Lin (2008) review a sample of Taiwanese companies and document that the magnitude of discretionary accruals decreases significantly with audit partner tenure.

Due to the multiple views found in the literature, I posit that a relationship exists, but I do not hypothesize the direction:

H4: The tenure of a target’s auditor at the time of acquisition will influence the likelihood of the acquirer’s goodwill impairment related to the transaction (i.e., Target Auditor Tenure has a significant effect on the Likelihood of Goodwill Impairment)

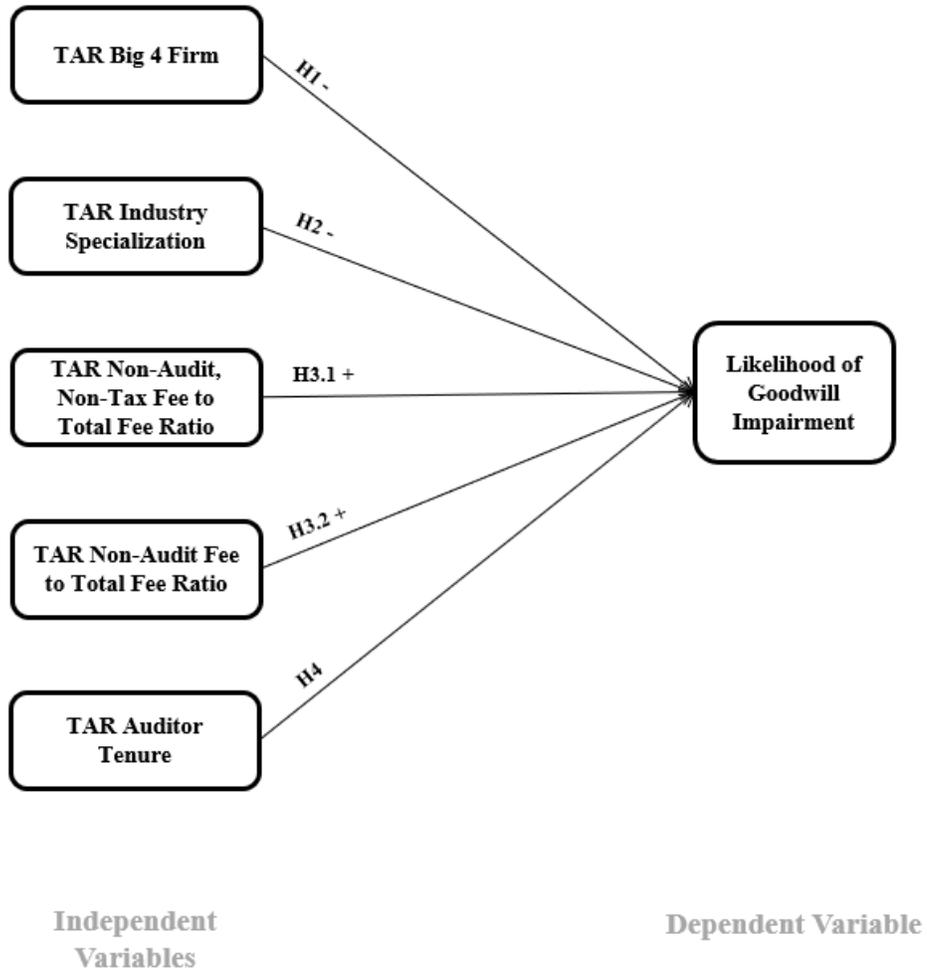
Table 2-1
Summary of Hypotheses

Motivation	No.	Hypothesis
In M&A transactions between US publicly traded companies, does the target's audit quality at the time of acquisition impact the likelihood of the acquirer's future impairment related to the transaction?	H1	An acquirer is less likely to impair the goodwill related to a transaction if the target was audited by used a Big 4 auditor at the time of acquisition.
	H2	An acquirer is less likely to impair the goodwill related to an acquisition if an industry specialist audited the target at the time of acquisition
	H3.1	An acquirer is more likely to impair the goodwill related to a transaction if the target exhibited a higher non-audit and non-tax service fee to total fee ratio at the time of acquisition.
	H3.2	An acquirer is more likely to impair the goodwill related to a transaction if the target exhibited a higher non-audit service fee to total fee ratio at the time of acquisition.
	H4	The tenure of a target's auditor at the time of acquisition will influence the likelihood of the acquirer's goodwill impairment related to the transaction

Research Model

A research model (see Figure 2-1) was developed to test the hypothesized direct effects from Target (TAR) audit quality proxies of Big 4 Firm, Industry Specialization, NANTS Fee Ratio, NAS Fee Ratio, and Auditor Tenure as independent variables (IVs) on Likelihood of Goodwill Impairment as the dependent variable (DV).

Figure 2-1
Research Model



Chapter 3: Methodology

This study seeks to answer the question, does the audit quality of the target firm at the time of acquisition impact the likelihood that goodwill associated with the transaction will be impaired by the acquiring firm (H1-H4)?

The Sample

This sample includes U.S. publicly traded firms (NYSE and NASDAQ) that recorded goodwill related to acquisition of a publicly-traded company during a fiscal year that ended 2012 – 2014. This information was pulled from Compustat and FactSet. First, Compustat was used to identify all publicly traded companies that recorded new goodwill due to an acquisition (n=2,398). Next, these observations were then reviewed against a FactSet M&A report that only included public to public acquisitions. Any Compustat goodwill recording that did not have a corresponding acquisition in the FactSet M&A report was assumed to be goodwill recorded because of a private company acquisition.

Finally, the public-to-public acquisitions (n=112) were mapped for five subsequent years to identify if and when an impairment was recorded¹. To map the goodwill, the details of the original acquisition were reviewed to understand which acquirer business segments/reporting units absorbed the target's business and, as a result, recorded the goodwill. Each subsequent year of the acquirer was reviewed to identify goodwill impairments. If an impairment did occur, the details of the financial statements were examined to determine if the previously identified business segment was impacted.

Although goodwill impairments have been an area of interest for some time, the sample begins with the year 2012. This is when Accounting Standards Update (ASU)

¹ For example, if an acquisition occurred in June 2012, the current fiscal year (2012) and the following five fiscal years (2013-2017) would be reviewed

2011-08 went in to place, relaxing the provisions of SFAS 142 and requiring that impairment testing needs to be performed only “when events and circumstances indicate that it is more likely than not that the fair value of a reporting unit is less than its carrying value” (K. Li & Sloan, 2017, p. 965). The sample was mapped through fiscal 2019, aligning with the full implementation of ASU 2017-04, which eliminates step 2 of the impairment test, requiring firms to calculate the implied fair value of goodwill. The new standard allows firms to record goodwill impairment based on the excess of the reporting unit’s book value over its fair value, not to exceed the book value of goodwill (i.e., step 1). While this change removes the cumbersome step 2, it also has the potential to increase the occurrence of goodwill impairments, as previously firms could fail step 1 and still not impair goodwill depending on the outcome of step 2.

Additionally, impairments will only be mapped through 2019 to eliminate the impact of Act of God impairments recorded due to COVID-19 related business implications. Finally, the five-year cap on mapping assumes that impairments after this time frame were likely due to factors other than the original acquisition audit quality. To the author’s knowledge, there is no literature on the average life of goodwill. The lack of literature may result from the highly manual mapping process required to link recorded goodwill with an impairment.

Consistent with the Albersmann & Quick 2020 study of goodwill impairment timeliness, the following will be excluded from the samples using Standard Industry Codes (SIC): “Banks, insurance companies, and other financial service firms are excluded since these firms are subject to financial reporting requirements that lead to a different structure of balance sheets and income statements” (p.82) as well as mining companies.

Table 3-1
Summary of Sample

Observations of NYSE & NASDAQ listed firms for the periods 2012 to 2014		21,215
Less		
Banking, Insurance, Financial, and Real-estate Firms	8,846	
Mining	1,014	
Observations without new goodwill	8,957	
Total Observations with New Goodwill		2,398
Less		
Observations with new goodwill related to acquisition of a private company	2,245	
Observations of acquirers who were subsequently acquired	28	
Observations without auditor data in Audit Analytics	19	
Total Firm Year Observations		106
Plus		
Observations with two public acquisitions in the same year	6	
Final Sample Observations New Goodwill (No. of firms = 92)		112

Audit Quality Proxies

The research focuses on five audit quality proxies: Big 4 Firm (H1), industry specialization (H2), Non-Audit and Non-Tax Service (NANTS) Fees, Non-Audit Service (NAS) Fees (H3.1 and H3.2), and Auditor Tenure (H4). This data is obtained from the Audit Analytics database.

Big 4 Firm (H1) is a binary measure assuming the value “1” if the acquiring firm engaged a Big 4 audit firm (i.e., EY, KPMG, Deloitte, PwC) or “0” otherwise. Industry specialization (H2) is a binary measure assuming the value “1” if the target firm engaged an auditor deemed to be the market leader in terms of auditing in the sector. The market leader is the audit firm with the highest audit fees earned in that industry. To account for NANTS and NAS (H3.1 and H3.2), two ratios of total non-audit service fees to total audit fees are used: one including tax as a non-audit service fee and one excluding tax^{2,3}. The use of all fees as the denominator follows the approach used by other studies reviewing

² While studies have found tax related fees to be linked to increased audit quality due to increased expertise, other NAS fees have been found to decrease audit quality due to compromised independence. Once tax fees are removed, I expect an overall negative relationship between NAS and audit quality.

³ Several categories of fees (e.g., Audit, Audit-Related, Tax) are disclosed when paid to the audit firm. Upon review of the proxy disclosures, I discovered that companies used great freedom when classifying fees as audit related. For example, these fees included due diligence, convertible note comfort letters, enterprise risk management assessments. Companies have discretion in engaging firms to provide these services and it is reasonable to believe these additional fees increase the audit firm’s reliance on the client (H3’s), therefore, audit-related fees not considered audit fees and were included in the numerator.

non-audit service fees (e.g., DeFond et al., 2002; Lim & Tan, 2008; Nam & Ronen, 2012). Finally, auditor tenure (H4) is measured as the number of consecutive years the acquiring firm has engaged the current auditor⁴. Consistent with Jenkins and Velury (2012) and Myers, Myers, and Omer (2003), instances with audit-firm mergers were treated as a continuation of the prior auditor.

Target Audit Quality and Likelihood of Goodwill Impairment

The research question investigates if the target's audit quality, as measured by proxies, at the time of acquisition impacts the likelihood that the acquirer will impair the goodwill associated with the transaction. Logistic regression was used to test the impacts:

Model: Impact of Target Audit Quality on the Likelihood of Goodwill Impairment

$$\text{Likelihood (IMP)} = \beta_0 + \beta_1 \text{Big4} + \beta_2 \text{Specialist} + \beta_3 \text{NANTS} + \beta_4 \text{NAS} + \beta_5 \text{Tenure} + \epsilon$$

where:

IMP = Impairment, variable is assigned a value of 1 if the goodwill related to the acquisition was impaired, and a 0 if it was not impaired

Big4 = Big 4 Audit Firm, variable is assigned a value of 1 if the target was audited by a Big 4 Firm, and a 0 if the target was not audited by a Big 4 Firm

Specialist = Industry Specialist, variable is assigned a value of 1 if the target was audited by the specialist (i.e., audit firm with highest audit fees) for the industry, and a 0 if the target was not audited by the industry specialist

NANTS = Non-audit service fee ratio, defined as non-audit and non-tax fees divided by total fees

NAS = Non-audit service fee ratio, defined as non-audit fees divided by total fees

Tenure = Auditor tenure, is the number years the target has used its current auditor (instances with audit-firm mergers were treated as a continuation of the prior auditor)

⁴ Longer tenure may create increased reliance on the client's business or create a relationship that is too familiar to be objective, leading to lower audit quality. On the other hand, longer tenure may lead to increased expertise and therefore improved audit quality. Given the mixed results for this proxy, the direction of the relationship is not hypothesized.

Chapter 4: Results

A quantitative analysis was performed to answer whether the audit quality of the target firm at the time of acquisition impacts the likelihood that goodwill associated with the transaction will be impaired by the acquiring firm (H1-H4). The hypotheses developed to explore these questions are found in Table 2-1 and represented here in Table 4-1.

Hypotheses

Table 4-1
Research Hypotheses Codes and Descriptions

Code	Description
H1	TAR Big 4 Firm has a significant negative effect on the Likelihood of Goodwill Impairment
H2	TAR Industry Specialization has a significant negative effect on the Likelihood of Goodwill Impairment
H3.1	TAR Non-Audit and Non-Tax Service (NANTS) Fee to Total Fee Ratio has a significant positive effect on the Likelihood of Goodwill Impairment
H3.2	TAR Non-Audit Service (NAS) Fee to Total Fee Ratio has a significant positive effect on the Likelihood of Goodwill Impairment
H4	TAR Auditor Tenure a has significant effect on the Likelihood of Goodwill Impairment

Variables

The following table lists the variables in this study with their relative scale:

Table 4-2
List of Variables

Code	Name	Scale
DV	Likelihood of Goodwill Impairment	Dichotomous: <ul style="list-style-type: none"> • 0 = Not Impaired • 1 = Impaired
IV1_TAR	TAR Big 4 Firm	Dichotomous: <ul style="list-style-type: none"> • 0 = No • 1 = Yes
IV2_TAR	TAR Industry Specialization	Dichotomous: <ul style="list-style-type: none"> • 0 = No • 1 = Yes
IV3.1_TAR	TAR NANTS Ratio	Scale
IV3.2_TAR	TAR NAS Ratio	Scale
IV4_TAR	TAR Auditor Tenure	Scale

Data Screening

Prior to the analysis, the data was screened not only for accuracy but also for normality. First, the data was screened for missing values, and none were detected. Next, the data was reviewed for outliers. Outliers can take the form of an extreme or unusual value of a variable and can distort statistical results (Hair, Anderson, Babin, & Black, 2010; Hair, Anderson, Tatham, & William, 1998; Meyers, Gamst, & Guarino, 2017; Tabachnick & Fidell, 2013).

These outliers can be detected in various ways, including the use of standardized z-scores, box plots, and histograms. For dichotomous variables, lack of variability or an extreme split may indicate a need for deletion (Tabachnick & Fidell, 2013). For continuous or scaled variables, z-scores can be reviewed for outliers. According to Tabachnick and Fidell (2013) a z-score $> \pm 3.29$ is evidence of an outlying value. The review identified 12 out of 112 observations had variables that fell outside this threshold and were therefore classified as outliers (nine related to tenure and three related to NANTS). As a result, these observations were removed from the sample. The z-scores of the variables for the remaining 100 samples, are summarized in Table 4-3.

Table 4-3
Standardized Values for Independent Variables

Code	Name	Standardized value (z-score)	
		Lower Bound	Upper Bound
IV1_TAR	TAR Big 4 Firm	-1.930	0.513
IV2_TAR	TAR Industry Specialization	-0.528	1.874
IV3.1_TAR	TAR NANTS Fee Ratio	-0.731	2.895
IV3.2_TAR	TAR NAS Fee Ratio	-1.032	2.920
IV4_TAR	TAR Auditor Tenure	-1.500	2.528

N = 100

Normality is an assumption of binary logistic regression; therefore, a review of this assumption was performed using the Kolmogorov-Smirnov (K.S.) test. A significant K.S. p-value “suggests that distributions are significantly different than would be

expected on the basis of normal distribution” (Meyers et al., 2017, p. 101). However, the combination of the test with a skewness and kurtosis assessment is the optimal review for normality. Meyers et al. (2017) describe skewness values as a “reflection of the symmetry of the distribution” (p.53). If a variable is skewed, then the majority of data points are at the tails rather than the center (Meyers et al., 2017). Alternatively, kurtosis describes the clustering of scores around the center of the distribution. The distribution can be peaked with scores drawn to the center or flat with scores dispersed across the entire continuum (Meyers et al., 2017). Statisticians have varying views on the acceptable values of skewness and kurtosis, and the acceptable threshold has been described as within the range of -1 to +1, or -2 to +2 or even 3 (Hair et al., 2010; Meyers et al., 2017; Schumacker & Lomax, 2004). Table 4-4 contains the indicators of normality test results for the dependent and independent variables.

Table 4-4
Normality Test Results

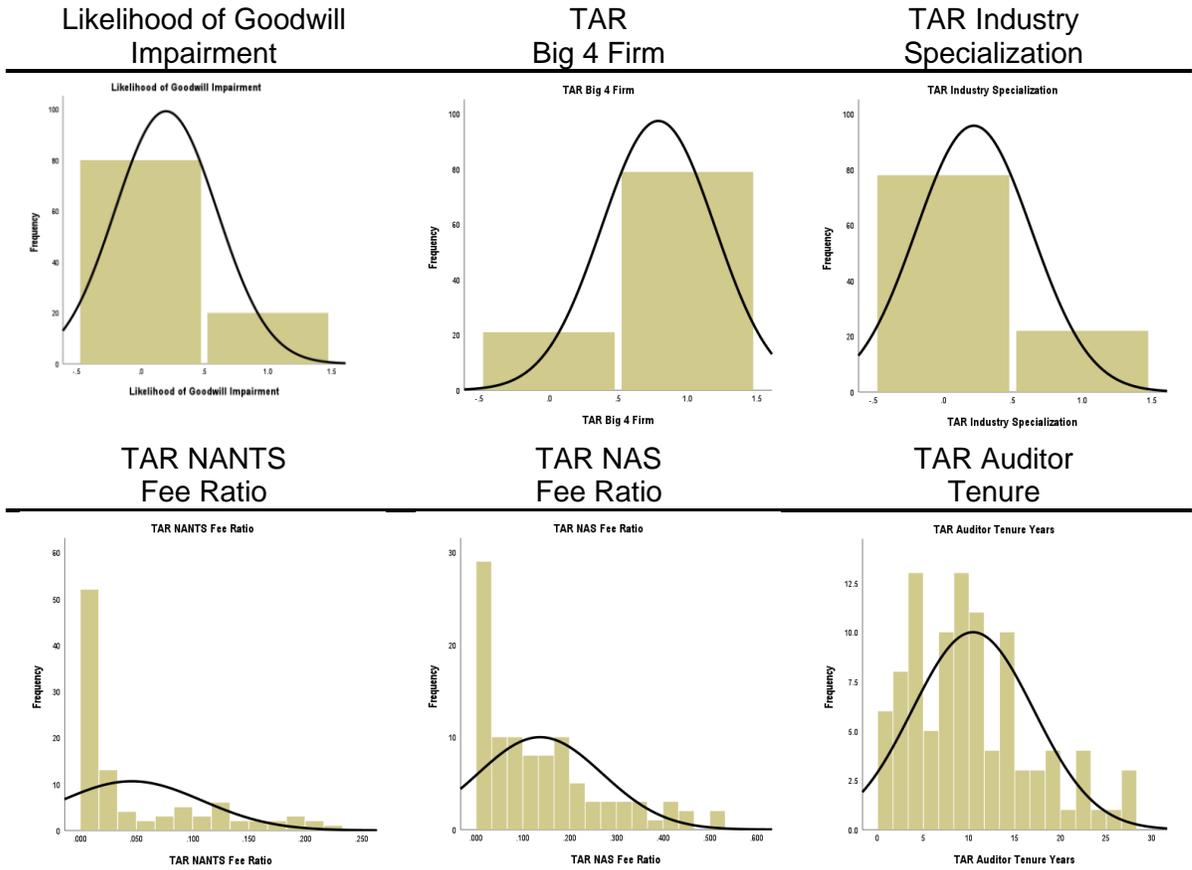
Code	Name	Kolmogorov-Smirnov		Skewness ($\leq \pm 2$)	Kurtosis ($\leq \pm 2$)
		Statistic	P-value		
DV	Likelihood of Goodwill Impairment	0.491***	0.000	1.523	0.325
IV1_TAR	TAR Big 4 Firm	0.486***	0.000	-1.446	0.092
IV2_TAR	TAR Industry Specialization	0.481***	0.000	1.373	-0.119
IV3.1_TAR	TAR NANTS Fee Ratio	0.254***	0.000	1.313	0.575
IV3.2_TAR	TAR NAS Fee Ratio	0.151***	0.000	1.016	0.331
IV4_TAR	TAR Auditor Tenure	0.101*	0.014	0.733	-0.020

N=100; *p< 0.05, **p< 0.01, ***p< 0.001

As shown in Table 4-4, the K.S. test of normality indicates that the variables in the data set are not normally distributed, as evidenced by a nonsignificant p-values. However, review of the skewness and kurtosis values indicated an acceptable distribution of the data. The skewness and kurtosis values for the variables ranged from -1.446 to 1.523 and -0.119 to 0.575, respectively. All within the acceptable range of ± 2 .

Figure 4-1 provides a histogram and normal curve of each independent variable, as well as the dependent variable.⁵

Figure 4-1
Histograms for the Dependent and Independent Variables



⁵ Although Likelihood of Goodwill Impairment, TAR Big 4 Firm, and TAR Industry Specialization are dummy variables, they have been included for visualization purposes.

Frequency Analysis for Dichotomous and Categorical Variables

Table 4-5 provides the frequencies and percentages of the dichotomous variables.

Table 4-5

Frequency Analysis for Dichotomous Variables

Variable	Frequency	Percentage
Likelihood of Goodwill Impairment		
Not Impaired	80	80
Impaired	20	20
TAR Big 4 Firm		
No	21	21
Yes	79	79
TAR Industry Specialization		
No	22	22
Yes	78	78

N = 100

Frequency Analysis of Industries

Table 4-6 represents the frequencies of the target company industries included in the final sample.

Table 4-6

Frequency Analysis for Sample Industries

Target Industry Group	Frequency	Percentage
Mining	2	2
Manufacturing	54	54
Transportation & Public Utilities	7	7
Wholesale Trade	3	3
Retail Trade	4	4
Finance, Insurance, Real-estate	2	2
Services	27	27

N = 100

Descriptive Statistics for Scaled Variables

The descriptive statistics of each scaled variable were examined (see Table 4-7).

The mean represents the average value of the variable and the standard deviation gives information about the spread of the population around the variable mean.

Table 4-7
Descriptive Statistics

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
TAR NANTS Fee Ratio	0.046	0.012	0.063	0.000	0.227
TAR NAS Fee Ratio	0.137	0.106	0.133	0.000	0.525
TAR Auditor Tenure	10.437	9.668	6.645	0.469	27.236

N = 100

Correlation Analysis

Table 4-8 shows the results of the correlation analysis. NANTS and NAS Fees were expected to be positively correlated, given the only difference in their calculation is the inclusion vs. exclusion of tax-related fees in the numerator. Therefore, only the NANTS fee is used in the final model. It is also not surprising that Big 4 Firm and Industry Specialist dummy variables are positively correlated. There are very few instances where an Industry Specialist is not a Big 4 Firm.

Table 4-8
Pearson's (Below Diagonal) And Spearman's (Above Diagonal) Correlation Matrix

Variable	TAR Big 4 Firm	TAR Industry Specialization	TAR NANTS Fee Ratio	TAR NAS Fee Ratio	TAR Auditor Tenure
TAR Big 4 Firm		0.274**	0.023	0.163	0.376**
TAR Ind. Specialization	0.274**		-0.123	-0.059	0.320**
TAR NANTS Fee Ratio	-0.011	-0.174		0.577**	-0.086
TAR NAS Fee Ratio	0.121	-0.086	0.546**		0.003
TAR Auditor Tenure	0.362**	0.291**	-0.107	-0.068	

*p<0.1, **p<0.05, ***p<0.01

Binary Logistic Regression

This study seeks to understand the impact of target audit quality on the likelihood of goodwill impairment. To support this study, binary logistic regression was used to examine the effects of five Target (TAR) audit quality proxies (i.e., TAR Big 4 Firm, TAR Industry Specialization, TAR NANTS Fee Ratio, TAR NAS Fee Ratio, and TAR Auditor Tenure) as independent variables (IVs) on the presence of Goodwill Impairment as dependent variable (DV).

I leveraged binary logistic regression using the backward method to construct my model. The significance of each predictors' regression coefficient was evaluated using the Wald statistic and change in -2 log-likelihood (-2LL) using a 95% confidence interval. This means that any predictor with a p-value of less than .05 was considered a significant contributor to the model. The Wald statistic tests if the unique contribution of a coefficient is significant. In contrast, the -2LL evaluates if the set of IVs creates a prediction of the DV that is superior to chance (Meyers, Gamst, & Guarino, 2016). Several authors note weaknesses in the Wald test, and if there is a disagreement between the Wald and -2LL, they recommend the use of -2LL (Meyers et al., 2016)

Table 4-9 summarizes the logistic regression results used to determine the significant factors affecting the Likelihood of Goodwill Impairment.

Table 4-9
Logistic Regression & Hypothesis Results⁶

Predictor		Wald Statistic		-2 Log-Likelihood		B ⁽¹⁾	S.E.	Exp(B) ⁽²⁾ Odds Ratio	Hypothesis Result
Code	Name	Wald	P-value	-2LL	P-value				
IV1_TAR	TAR Big 4 Firm	6.386	0.012	7.141	0.008	-1.943**	0.769	0.143	H1) Supported
IV2_TAR	TAR Industry Specialization	3.568	0.059	3.701	0.054	1.299*	0.688	3.666	H2) Rejected
IV3.1_TAR	TAR NANTS Fee Ratio	4.393	0.036	4.483	0.034	0.091**	0.043	1.095	H3.1) Supported
IV3.2_TAR	TAR NAS Fee Ratio	0.070	0.791	0.069	0.793	0.007	0.027	1.007	H3.2) Rejected
IV4_TAR	TAR Auditor Tenure	6.721	0.010	7.471	0.006	0.117***	0.045	1.124	H4) Supported

⁽¹⁾ Unstandardized Regression Coefficient (B); ⁽²⁾ Exponentiation of the B coefficient; *p<0.1, **p<0.05, ***p<0.01

As shown in Table 4-9, both p-values of Wald and -2 log-likelihood for the effect of TAR Big 4 Firm on Likelihood of Goodwill Impairment are below the standardized significance level of 0.05 (Wald = 6.386, p < 0.05; -2LL = 7.141, p < 0.01). The unstandardized regression coefficient (B) value is 1.943, and the direction is negative,

⁶ In order to meaningfully interpret the odds ratio, the NAS and NANTS fee ratios were converted to whole numbers for the logistic regression.

indicating TAR Big 4 Firm has a significant negative effect on the Likelihood of Goodwill Impairment. The odds ratio (Exp (B)) is 0.143, therefore, the odds of a goodwill impairment are decreased by a factor of 0.143 when the target using a Big 4 Audit Firm. In other words, the likelihood of impairment decreased by 85.7% $((\text{Exp}(\text{B})-1)*100)$ when the auditor is a Big 4 firm. These results support hypothesis H1.

Similarly, both Wald and -2 log-likelihood results for the effect of TAR NANTS Fee Ratio on Likelihood of Goodwill Impairment show a significant positive relationship supporting hypothesis H3.1 (Wald = 4.393, $p < 0.05$; -2LL = 4.483, $p < 0.05$). The odds ratio indicates that each additional unit of NANTS Fee Ratio, results in 1.095 greater odds of goodwill impairment.⁷

Finally, both p-values of Wald and -2 log-likelihood for the effect of TAR Auditor Tenure on Likelihood of Goodwill Impairment are below the standardized significance level of 0.05 (Wald = 6.721, $p < 0.01$; -2LL = 7.471, $p < 0.01$). The value of unstandardized regression coefficient (B) was 0.117, and the direction is positive, indicating TAR Auditor Tenure has a significant positive effect on the Likelihood of Goodwill Impairment. The odds ratio is 1.124, which indicates that for each additional unit of TAR Auditor Tenure, the odds of goodwill impairment are 1.124 higher. In other words, an additional unit increases the likelihood of goodwill impairment by 12.4% $((\text{Exp}(\text{B})-1)*100)$. These results support hypothesis H4.

Prediction Model

The final logistic regression model included three audit proxies. To understand if the proposed model is an improvement over the null model, prediction models were

⁷ TAR NAS is not included in the final model of regression, removing the issue of multicollinearity.

reviewed. The below Table 4-10 compares the prediction accuracy of the null and regression model.

Table 4-10
Prediction Model Results

Prediction Model	Impairment Status	Impairment Prediction		Percentage Correct
		Not Impaired	Impaired	
Null Model	Not Impaired	80	0	100.0
	Impaired	20	0	0.0
	Overall Percentage			80.0
Regression Model	Not Impaired	77	3	96.3
	Impaired	15	5	25.0
	Overall Percentage			82.0
Difference				2

As shown in above, the null model predicts that no goodwill observations would be impaired. As a result, the null model is 100% and 0% accurate in predicting not impaired and impaired goodwill, respectively. The overall accuracy of the null model is 80%.

Out of 80 observations that were not impaired, the binary logistic regression model predicted 77 correctly and 3 wrongly. Thus, the model is 96.3% accurate in the prediction of nonimpaired observations. Meanwhile, the model forecasted 5 of 20 goodwill impairment observations. In other words, the model could correctly predict 25% of goodwill impairments. Overall, the model predicted 82% of the goodwill impairment statuses correctly, an improvement of 2% over the original prediction from the null model.

Goodness of Fit

In logistic regression, we can accept that the model is not perfect, but it is still incumbent upon us to measure the fit of the model. This measure can be done using Hosmer and Lemeshow tests, logistic regression R^2 , and omnibus chi-square goodness

of fit test. These tests determine “the adequacy of the fitted model for describing the relationship between the explanatory variables and the response variables” (Qiu, Liu, Lai, & Qiu, 2019, p. 107180). Table 4-11 provides information about the goodness of fit measures used to evaluate the logistic regression model.

Table 4-11
Goodness of Fit Measures

	Values	p-value
Hosmer and Lemeshow's Test	8.501	0.386
Cox and Snell R ²	0.147	
Nagelkerke R ²	0.232	
-2LLnull model	100.080	
-2LLresearch model	84.238	
Change in -2LL	15.842	0.003

The Hosmer and Lemeshow test of the model fit assesses whether the predicted probabilities match the observed probabilities (Meyers, 2017). The goal of this test is to have a non-significant p-value. As shown above, the Hosmer and Lemeshow's value was 8.501 ($p=0.386$). The p-value exceeded the standard significance level of 0.1, indicating the logistic regression model fits.

Cox and Snell and Nagelkerke are pseudo R²-values that estimate the percentage of variance in the dependent variable that is explained by the independent variables. I have focused on the results of the Nagelkerke R² as the Cox and Snell R² is downwardly biased (Meyers, 2017). The Nagelkerke R² indicates that target audit proxies explain 23.2% of the goodwill impairment status.

The third goodness of fit test examined is the omnibus test of model coefficients. This test examines the chi-square tests of the null and regression model to if there is a significant change in the -2 log-likelihood (-2LL), with an overall goal of it decreasing. The -2LL of the null model and regression model were 100.080 and 84.238,

respectively, showing a decline. Furthermore, the change was statistically significant at 0.01 level, indicating the regression model is an improvement over the null model.

Supplemental Analysis

Supplemental analysis was performed using moderators; however, reviewers raised the issue that while interpretation of the interaction term coefficient (in a nonlinear model) is prevalent in top journals, it is incorrectly interpreted by most applied researchers (Ai & Norton, 2003). To conduct an analysis to support adequate interpretation, different software must be used (e.g., STATA). For purposes of this study, the sample was split by industry and a supplemental analysis was performed so that the interaction variables were not required. No additional relevant findings were uncovered.

Chapter 5: Discussion

Goodwill impairments can be detrimental to a company's balance sheet and its market valuation. No company completes an acquisition with a plan to subsequently impair the goodwill. No investor wants their investment to lose value due to what may be considered a failed acquisition. That being said, companies and investors should be interested in any indicator that may impact the likelihood of goodwill impairment. This study identified three audit quality proxies of the target company that provide insight into a future impairment: Big 4 Firm, NANTS Fee Ratio, and Tenure.

H1: Big 4 Audit Firm

Audit firm size is one of the most studied and supported proxies for audit quality. There is a consensus that Big 4 auditors provide higher audit quality for multiple reasons. They should have a heightened sense of independence since they are not overly reliant on any one client to maintain their business. They can also scale more easily based on their size and can cover multiple jurisdictions (Christensen et al., 2016; DeFond & Zhang, 2014). Larger firms also have more robust internal quality controls, which may lead to increased audit quality (Albersmann & Quick, 2020)

The premise is that this proxy improves audit quality and, as a result, impacts the likelihood of goodwill impairment. For example, if the target were audited by a Big 4 firm, the target's financial statements would be higher quality. To some extent, the acquirer bases the valuation and purchase price on these higher quality financial statements, making an impairment less likely.

This study supports the notion that audit firm size impacts audit quality (H1). I found that an acquirer is less likely to impair the goodwill related to a transaction if the target was audited by a Big 4 auditor at the time of acquisition. This does not necessarily mean that the goodwill related to a target that used a non-Big 4 auditor would require

impairment, but it does increase the odds. For this particular proxy, the implication would be to place higher scrutiny on a target with a non-Big 4 auditor and to review any other audit factors that may compensate for this proxy.

H2: Industry Specialization

The study hypothesized that the industry specialization of the target's auditor would decrease the likelihood of the acquirer impairing the goodwill related to the transaction. This proposition was based on the idea that audit firms with industry specialization will train teams and invest in resources to meet the accounting challenges unique to that industry (Francis, 2011). However, the study did not find support for this hypothesis (H2).

This proxy's overlap with Big 4 audit firm is an interesting area for discussion. The analysis that I completed to identify the audit firm that was the specialist for each industry (i.e., audit firm with the highest audit fees for the industry) revealed very few instances where the industry specialist is not a Big 4 firm. This also explains the correlation between the two variables. Given the prior discussion on the vast resources of Big 4 firms, it is plausible to believe that these firms have enough expertise (and volume of clientele) to be considered a specialist in almost any industry. For these reasons, the proxy of industry specialist would appear to lose strength unless non-Big 4 audit firms start taking more market share of particular industries.

H3.1 and H3.2: Non-Audit Service Fees

The view that non-audit service fees impair auditor independence is so strong that the SOX Act of 2002 set forth official guardrails against them by prohibiting most non-audit services. While researchers support this view (e.g., Kinney et al., 2004; J. Krishnan, Sami, & Zhang, 2005; Lim & Tan, 2008), there is evidence that tax service fees result in higher financial reporting and audit quality (Kinney et al., 2004; G. V.

Krishnan & Visvanathan, 2011; Robinson, 2008; Seetharaman et al., 2011). Because this subset of fees may improve quality, the study reviewed two different ratios 1) non-audit and non-tax service (NANTS) fee to total fee ratio and 2) non-audit service fee to total fee ratio.

The results indicated that an acquirer is more likely to impair the goodwill related to a transaction if the target exhibited a higher NANTS to total fee ratio at the time of acquisition (H3.1). There was no support for a relationship with the NAS fee (H3.2). This is an important finding because it supports that removing tax fees as non-audit creates a clearer picture of fees that may impact independence and audit quality. It would be prudent for an acquirer to review the target's NANTS fees to determine if they provide further information about audit quality.

H4: Audit Firm Tenure

The impact of audit tenure on audit quality has multiple viewpoints. One view is that longer tenure creates increased reliance on the client's business that is too familiar to be objective, leading to lower audit quality. Alternatively, longer tenure may lead to increased expertise and therefore improve audit quality. The study hypothesized that a relationship existed between tenure and goodwill impairment but did not designate a direction. The results supported that tenure of a target's auditor at the time of acquisition impacts the likelihood of the acquirer's goodwill impairment related to the transaction and provided insight into the behavior (H4). In the context of goodwill, as tenure increased, so did the likelihood of impairment.

While this direction is useful, more research is needed to understand if thresholds of tenure have different implications. The target auditor tenure in this sample ranged from a half year to twenty-seven years. There is likely a point in time where incremental years no longer drive impact to the audit quality.

Implications for Research

This study contributes to the audit quality and goodwill literature in multiple ways. In relation to audit quality, this is the first study, to the author's knowledge, that focuses on an M&A target's audit quality. The results support that the audit environment of a target may impact outcomes and that target audit quality proxies should be considered in M&A research.

The results also add validity to the use of specific audit proxies. Not only does it support Big 4, NANTS Fees, and Tenure as proxies, it also provides insight into their behavior. The results strengthen the consensus that Big 4 audit firms lead to higher quality (e.g., Christensen et al., 2016; DeFond & Zhang, 2014) and higher non-audit fees reduce audit and financial statement quality (e.g., Frankel et al., 2002; Lim & Tan, 2008). Furthermore, the result that as tenure increases, audit quality decreases, as evidenced by the increased likelihood of goodwill impairment, adds to the ongoing debate of whether tenure improves or diminishes audit quality (Ghosh & Moon, 2005; Jenkins & Velury, 2012; Myers et al., 2003). The study also establishes alternative ways to measure the proxy (i.e., excluding audit-related and tax fees from the traditional measure of NAS). Finally, the existing literature has minimal support for a framework to trace goodwill from the original acquisition to impairment. This methodology can be used to study factors outside of audit quality that may be antecedents to goodwill impairment.

Implications for Practice

The magnitude of goodwill on public company balance sheets continues to grow in size and, as a result, importance. Due to the massive market implications of goodwill impairments, any factor increasing their likelihood should be a critical consideration for both investors and companies engaging in M&A. The insights into audit proxies that increase the likelihood of goodwill impairment have implications for stakeholders. First, acquirers should consider these findings during due diligence. If a target's audit

environment signals potential low quality in the form of a non-Big 4 audit, high NANTS fee ratio, or long auditor tenure, the acquirer should scrutinize the target's financials and the premium they are willing to pay/goodwill they will record. Investors should also consider the results of this study when valuing M&A activity and when analyzing companies with significant goodwill balances.

Limitations and Future Directions

While this study has results that may be insightful to practitioners and researchers, it is not without limitations. First and foremost, the model assumes that the acquirer will recognize and record impairments in a timely manner. Unfortunately, the literature tells us that the managers use discretion, and this assumption may fail at times (e.g., Z. Li et al., 2011; Ramanna & Watts, 2012). While this study seeks to understand how a target's audit quality impacts the likelihood of goodwill impairment, the analysis relies on the assumption that the acquirer will accurately report the impairment, if required.

A second limitation is that the data is restricted to a review of public-to-public acquisitions and excludes goodwill recorded and possibly impaired as a result of a private company acquisition. The goodwill recorded as a result of public companies acquiring private companies is substantial. In this study's sample from 2012 – 2014, over 2,000 of this type of acquisition occurred (see Table 3-1). Unfortunately, the audit information of the private target companies is not consistently available and was not reviewed. It is reasonable to believe that the audit quality of private target companies could be lower due to fewer regulations and less scrutiny. As a result of this lower quality, it is plausible that the likelihood of goodwill impairment would increase. Further research is needed to understand the implications of audit quality on nonpublic acquisitions.

This study establishes a framework to analyze goodwill impairments by mapping them from the original acquisition. Using this mapping approach, researchers can expound on audit quality and impairments by studying how proxies may impact the average years until impairment. Furthermore, the framework could be used to identify factors outside of audit quality that may be antecedents to goodwill impairment.

More research is needed to understand which proxies have the most validity to support audit quality in the context of goodwill impairment. For example, this study could be replicated using other audit proxies (e.g., restatements, firm size, financial reporting quality). Additionally, more research is needed to understand how the different categories of fees impact audit quality. Several types of fees (e.g., Audit, Audit-Related, Tax) are disclosed when paid to the audit firm. Upon reviewing the proxy disclosures, I noted that companies use great freedom when classifying fees as audit-related. For example, these fees included due diligence, convertible note comfort letters, and enterprise risk management assessments. Moreover, I encountered instances where these fees had been reclassified and restated on more than one occasion. Companies have discretion in engaging firms to provide these services, and it is reasonable to believe these additional fees increase the audit firm's reliance on the client. Researchers can focus on audit-related fees to determine if they impact outcomes (e.g., restatements, impairments) and overall audit quality.

Finally, while the impact of the acquirer's audit quality on the likelihood of goodwill impairment was considered when developing this study, it was not included in the final model. It is possible that an acquirer with poor audit quality may overpay for a target due to poor internal controls and due diligence (especially given the number of companies that disclose that they used their auditor for due diligence). Conversely, if the acquirer has high audit quality, the initial recording of goodwill may be more conservative and less likely to require impairment in the future. In other words, "Does a high audit

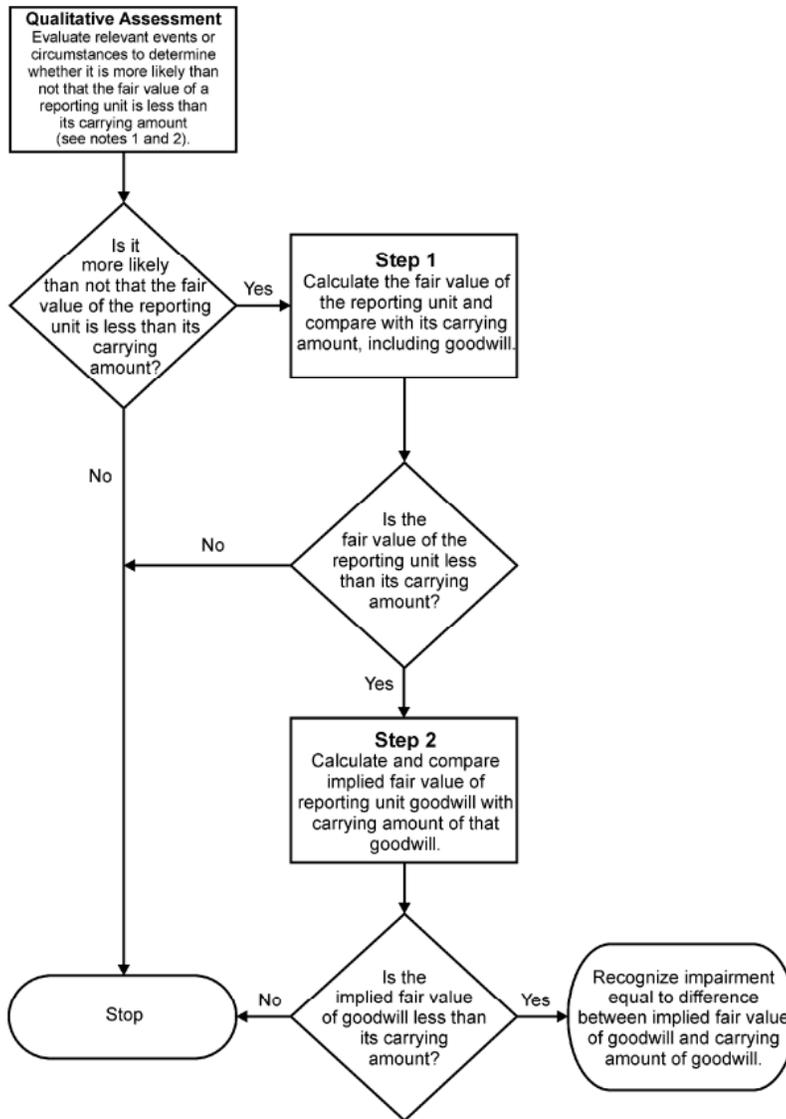
quality acquirer lessen the likelihood of a future impairment (especially of a low audit quality target)?” Researchers can explore if an acquirer's audit quality impacts the likelihood of impairment. Additionally, they can investigate if high acquirer audit quality limits the misuse of managerial discretion and results in recognition of more timely impairments.

General Conclusions

Due to the materiality of goodwill impairments, any insight to potential drivers is beneficial to stakeholders. This study finds that “Big 4 Firm”, the “NANTS fee ratio”, and “Tenure” information should be considered in valuation of M&A activity as these play into the likelihood of a future goodwill impairment. While these proxies alone do not drive the impairment, they do have predictive power and can draw attention to M&A targets that may require more due diligence from the acquirer or extra scrutiny from an investor's perspective.

Appendix 1

Flowchart and Notes taken from ASC 350-20-55-25



Notes:

1. An entity has the unconditional option to skip the qualitative assessment and proceed directly to performing Step 1, except in the circumstance where a reporting unit has a carrying amount that is zero or negative.

2. An entity having a reporting unit with a carrying amount that is zero or negative would proceed directly to Step 2 if it determines, as a result of performing its required qualitative assessment, that it is more likely than not that a goodwill impairment exists. To perform Step 2, an entity must calculate the fair value of a reporting unit.

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