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THE MEDIATING ROLE OF PERCEPTIONS OF AUDITOR INDEPENDENCE

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ABSTRACT

Public users expressed concerns about auditor independence after a series of accounting scandals. In response to their concerns, since 2002, the Sarbanes–Oxley Act of 2002 (SOX), U.S. Securities and Exchange Commission (SEC) and Public Company Accounting Oversight Board (PCAOB) have issued additional requirements designed to strengthen auditor independence. Because auditor independence in fact, is unobservable, the public’s decisions only rely on auditor independence in appearance, i.e., their perceptions of auditor independence. This study aims to examine whether public users’ perceptions of auditor independence impact their decisions, which are associated with their opinions on internal control over financial reporting (ICFR). This study also explores the effects of a new auditor independence clarification requirement on perceptions of auditor independence. The results indicate that an ICFR opinion affects the loan officers’ decisions via the mediating effects of their perceptions of auditor independence as well as perceptions of financial reporting reliability and lending risk assessments. The findings provide empirical evidence to support the importance of the perceptions of auditor independence as well as an ICFR opinion.

INTRODUCTION

This study establishes a model to examine the mediating role of public users’ perceptions of auditor independence in the relationship between opinion on internal control over financial reporting (ICFR) and their lending decisions. This model is based on a series of prior research (e.g., DeAngelo, 1981; Lowe et al., 1999; Hodge, 2003; Brandon et al., 2004; Ruiz-Barbadillo et al., 2004; Khurana and Raman, 2006; Schneider and Church, 2008; Holt and DeZoort, 2009; Lopez et al., 2009; PCAOB, 2017). Auditor independence is the bedrock of audit quality (EC, 2010). Public users expressed concerns about auditor independence after they were confronted by a wave of accounting scandals such as WorldCom and Enron in the early 2000s and AIG and Lehman Brothers during the financial crisis of 2008. In response to their concerns, a series of auditor independence requirements were issued. The Sarbanes-Oxley Act of 2002 (SOX) set stricter rules on auditor independence, such as prohibiting some non-audit services and requiring partner rotation. In 2008, the Public Company Accounting Oversight Board (PCAOB) adopted Ethics and Independence Rule 3526 to require auditors to confirm, in writing, their independence to audit committees before the audit engagement. Later, in 2017, the PCAOB issued a new standard to require that an auditor explicitly clarify auditor independence in an integrated auditor’s report. In summary, more and more importance has been attached to auditor independence since 2002.

The increasing importance of auditor independence and public concerns motivate us to investigate the effect of auditor independence on public users' decisions. The U.S. Securities and Exchange Commission (SEC), Independence Standards Board (ISB), and American Institute of Certified Public Accountants (AICPA) define auditor independence on two levels: independence *in fact* and independence *in appearance*. Independence *in fact* means an auditor possesses an independent mind and attitude to perform an audit, while independence *in appearance* means the auditor's behavior is perceived to be independent of management by public users. Because auditor independence *in fact* is unobservable, public users' decisions are only based on auditor independence *in appearance* (Dopuch et al., 2003), i.e., public users' perceptions of auditor independence determine their public users' decisions. If public users perceive an auditor to be independent, they believe the auditor provides unbiased and fair opinions on financial statements. This belief leads public users to perceive financial reporting as truthful and reliable (Hodge, 2003), which lowers their risk assessments. Ultimately, these factors affect public users' decisions (Firth, 1980; Dykxhoorn, 1982; Schneider and Church, 2008; Holt and DeZoort, 2009). This causal chain suggests mediating auditor independence, perceptions of reliability, and lending risk assessments. Most of the previous studies focus on the effects of different factors on public users' perceptions of auditor independence (e.g., Ghosh et al., 2009; Church and Zhang, 2011). Few studies have examined the effects of public users' perceptions of auditor independence on their decisions, associated explicitly with an ICFR opinion. Moreover, whether the new auditor independence clarification requirement issued by PCAOB in 2017 affects loan officers' perceptions of auditor independence needs to be examined.

The research on an ICFR opinion is driven by the current importance of an ICFR opinion on mid-size companies, which is evidenced by increased debates on exempting mid-size companies from section 404 (b) by many regulators such as the SEC, U.S. Congress, the AICPA, and the Center for Audit Quality (CAQ) (Dodd-Frank Act, 2010; JOBS Act, 2012; AICPA, 2012; CAQ, 2014). On one side, several regulatory rollbacks, such as the Dodd-Frank Act (Dodd-Frank Act, 2010) and the Jumpstart Our Business Startups (JOBS) Act (JOBS Act, 2012), exempted small companies from Section 404(b). Furthermore, the Dodd-Frank Act proposed that the exemption should be applied to mid-term firms with a market capitalization between \$75 million and \$250 million. On the other side, the AICPA and CAQ are fighting any legislation that would exempt the mid-size companies from internal control reporting of SOX Section 404(b) (AICPA, 2012; CAQ, 2014). They believe that eroding Section 404(b) will substantially impact the quality of financial disclosures and thus destroy public confidence about the integrity of financial reporting. The study aims to provide empirical evidence to support the opinions of AICPA and CAQ.

We establish a model based on the template of Hayes (2013) and employ an experimental approach to test this model. The participants are 98 experienced bank loan officers recruited from the Hugo Dunhill Mailing Lists, Inc. (HDML). Three reasons drive the choice of loan officers as participants. First, loan officers are significant providers of external financing. They have consistently determined more than 50 percent of total debt financing in American debt markets over the last three decades (Graham et al., 2008; Costello and Wittenberg-Moerman, 2011). Specifically, loan officers often include an internal control provision in their loan contracts. This provision is an affirmative covenant and requires a firm to report the internal control events (Costello and Wittenberg-Moerman, 2011). Therefore, loan officers' confidence about an ICFR opinion has economic significance. Second, loan officers are sophisticated primary users of an auditor's report and their perceptions represent public users' long-term

experience in internal control reporting quality and auditor independence (Schneider and Church, 2008). These perceptions may be generalized to other sophisticated user groups and are important references for general public users.

This study finds that after the 2008 financial crisis, an adverse ICFR opinion on the mid-size company significantly decreased loan officers' intent to lend to the company. Loan officers' perceptions of auditor independence mediate the effect of an ICFR opinion on their decisions. Perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments are serial multiple mediators in the relationship between an ICFR opinion and decisions of the loan officers. In terms of loan officers' decision process, the results of serial mediation analysis revealed that an adverse ICFR opinion significantly decreases loan officers' intent to lend via significantly decreasing their perceptions of auditor independence, decreasing their perceptions of financial reporting reliability, and increasing their lending risk assessments. Also, the results indicate that although the new auditor independence clarification requirement by PCAOB (2017) slightly enhances loan officers' perceptions of auditor independence, this effect is not significant.

This study has three contributions. The first contribution of this study is that it provides first-hand evidence on the importance of loan officers' auditor independence clarification. This study investigates how loan officers' perceptions of auditor independence affect their decision process. The results reveal that loan officers' perceptions of auditor independence mediate the effects of an ICFR opinion on their lending decisions, as well as their perceptions of financial reporting reliability and lending risk assessments. The findings support the long-term effects of the PCAOB to strengthen auditor independence to enhance audit quality.

Secondly, the findings contribute to the prior literature related to the informative value of an ICFR opinion. Although loan officers are one of the primary users of an auditor's report, except Schneider and Church (2008), few studies have focused on the effects of their perceptions on their decisions. However, Schneider and Church (2008) conducted the study before the 2008 financial crisis and did not specify the nature of the material weakness for the adverse ICFR opinion. To make the experimental design more representative of the current real-world issues, this study specifies the most frequently identified internal control material weakness. Consistent with the prior literature, the results indicate that an ICFR opinion significantly affects loan officers' lending decisions. The findings provide empirical evidence in support of the AICPA and CAQ's opposition to the internal control reporting exemption of section 404(b) for mid-sized companies.

Finally, this study explores the effect of the new auditor dependence clarification requirement on the loan officers' perceptions of auditor independence. The insignificant result suggests that this new standard fails to achieve the PCAOB's expectation of enhancing public users' understanding of the auditor independence obligations (PCAOB, 2017). During the public hearing for the proposed standard, some people argued that it is redundant and unnecessary because it was already embedded in the auditor's report's current title. The finding of this study supports their opinion. Nevertheless, this study justifies the significant effects of perceptions of auditor independence on users' decisions. In practice, auditors are liable for the consequences if they lack auditor independence. This implies that auditors should strictly comply with the auditor independence rules and regulations of PCAOB and SEC, including the new clarification statement that clarifies the nature and scope of auditors' existing responsibilities regarding auditor independence.

The remainder of this paper is organized as follows. The next section gives a review of the literature and develops the hypotheses based on the model established by this study. The third section describes the research method. The fourth section presents the results, and the final section concludes with a discussion of the results.

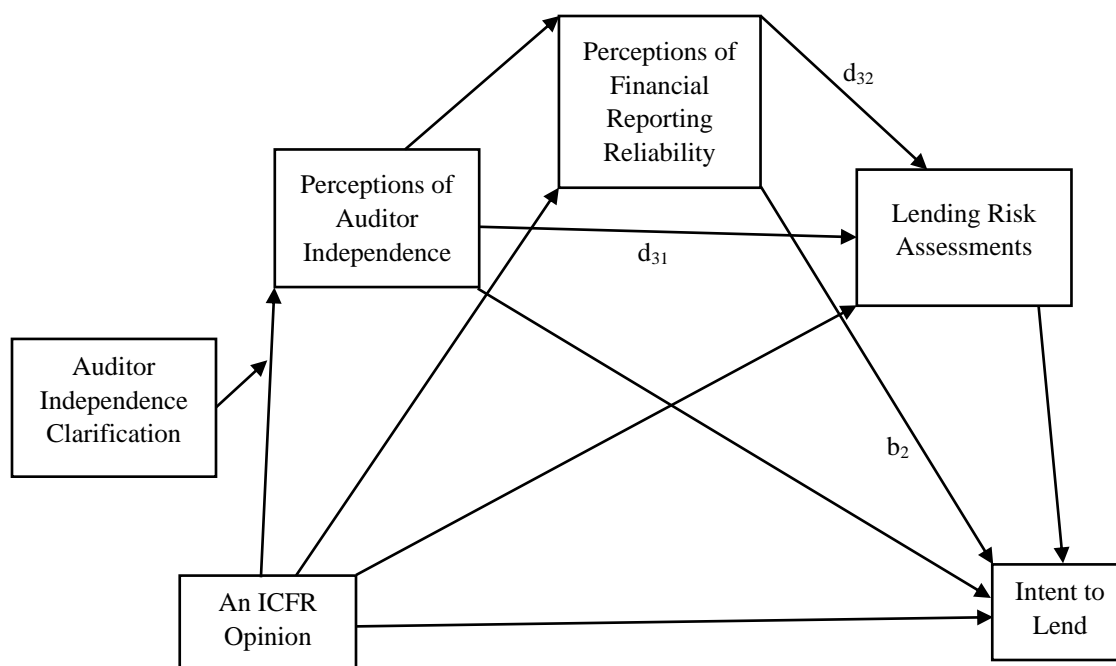
LITERATURE REVIEW

This study develops and tests a theoretical mediation model, as illustrated in Figure 1. This model is based on prior research reviewed in the latter part of this section. It is categorized as the Model 6 of the template of Hayes (2013). As Hayes (2012) indicates, using process or mediation analysis typically solves questions of “how,” whereas using moderation analysis often answers questions of “when.” Accordingly, we use process and mediation analysis to explore how loan officers’ perceptions of auditor independence affect their decisions associated with an ICFR opinion. Also, we use moderation analysis to answer whether the new auditor independence clarification enhances loan officers’ perceptions of auditor independence.

In this model, loan officers’ perceptions of auditor independence are our focus. Their perceptions of auditor independence may mediate the relationship between an ICFR opinion and loan officers’ decisions. This relationship might also be mediated by loan officers’ perceptions of financial reporting reliability and lending risk assessments. Loan officers’ perceptions of auditor independence, perceptions of financial reporting liability, and lending risk assessments are serial multiple mediators. They produce six different causal order models. Also, this study tests whether the new auditor independence clarification requirement moderates loan officers’ perceptions of auditor independence associated with an ICFR opinion. The four topics for review using this model are:

1. The effect of an ICFR opinion on loan officers’ decisions;
2. The importance of perceptions of auditor independence and its mediating role;
3. Perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessment are serial multiple mediators; and
4. The role of an auditor independence clarification on perceptions of auditor independence associated with an ICFR opinion.

Figure 1
Serial Mediation and Moderation Model



Effect of an ICFR Opinion on Lending Decisions

Research related to ICFR opinions continues to be of vital importance to companies, regulators, legislators and auditors because the compliance of Section 404(b) of SOX has become a controversial issue. On the one hand, the Dodd-Frank Act and the JOBS Act were issued and legally exempted small firms from Section 404(b) in recent years. The Dodd-Frank Act further proposed to exempt mid-size firms with a market capitalization between \$75 million and \$250 million. On the other hand, AICPA and CAQ strongly oppose any legislation that erodes section 404(b) (AICPA, 2012; CAQ, 2014). They believe this exemption will reduce the integrity and quality of financial reporting and destroy public users' confidence about capital markets.

Compared to several studies that examine the effects of an ICFR opinion on equity markets (e.g., Beneish et al., 2008; Ashbaugh-Skaife et al., 2009; Lopez et al., 2009; Asare and Wright, 2012a, 2012b), only a few studies investigate the effects of an ICFR opinion on debt markets. Costello and Wittenberg-Moerman (2011) find that internal control material weakness negatively influences lenders' use of financial covenants and financial-ratio-based performance pricing provisions, while Dhaliwal et al. (2011) report that internal control material weakness marginally increases a firm's credit spread and thus marginally increases a firm's cost of debt. Kim et al. (2011) examine the loan contracts with firms that report internal control weaknesses. They obtain evidence that lenders do not intend to sign loan contracts with the firms that report internal control weaknesses.

To date, Schneider and Church (2008) is the only one experimental study to examine the effects of an ICFR opinion on individual loan officers' decisions. Specifically, this ICFR opinion is for a mid-size company. They conclude that an adverse ICFR opinion significantly increases

lenders' risk assessments and decreases their willingness to lend. However, they do not "specify the nature of the material weakness for the adverse internal control opinions" (Schneider and Church, 2008, p. 12). Moreover, their study was conducted before the 2008 financial crisis. To make the experimental design reflect the real-world issues, this study addresses this limitation by specifying the internal control material weakness listed in PCAOB Auditing Standard No. 2. The type of material weakness is "sales personnel frequently contract modification of revenue to manipulate revenue recognition and gross margin" (PCAOB, 2004, p. 256). It is categorized as revenue recognition violations in accounting documentation and procedure. Based on the University of Pennsylvania Wharton Database, from 2004-2011, among all ineffective internal control accounting rule violations reported by auditors, revenue recognition violation is one of the major violations, which has 676 reports and occupies 9.98 percent. (Chao and Foote, 2012). Accordingly, it is reasonable that the current study employs a revenue recognition violation to represent internal control material weakness.

Based on the findings of Schneider and Church (2008) and other studies related to debt markets (e.g., Costello and Wittenberg-Moerman, 2011; Dhaliwal et al., 2011; Kim et al., 2011), this study posits the following hypothesis specifically related to loan officers' lending decisions for the mid-size companies after the 2008 financial crisis :

H1: An adverse ICFR opinion negatively affects loan officers' intent to lend to the client as compared to an unqualified ICFR opinion.

Importance of Perceptions of Auditor Independence and its Mediating Role

Auditor independence is very important to public users because it is a determinant of auditors' responsibility to the public and thus affects audit quality (DeAngelo, 1981). Auditors' intent to report the misstatements in their clients' financial reporting depends on auditor independence (Ruiz-Barbadillo et al., 2004). In other words, auditor independence determines whether auditors are willing to provide negative information on financial reporting to public users. It helps public users establish confidence about auditors' reports so that they can rely on the management's financial report to make decisions (PCAOB IAG, 2011).

Public users expressed serious concerns about auditor independence when they were confronted with a series of accounting scandals. In response to their concerns and to restore their confidence, a series of rules and regulations on auditor independence have been established. In 2002, SOX set stricter rules on auditor independence, which were adopted by SEC in 2003. These rules include prohibiting nine types of non-audit services such as bookkeeping, appraisal or valuation services; investment advising services; pre-approval non-audit services by the audit committee; prohibiting some relationships between management and auditors; and auditor rotation. In 2008, to increase the communications between the audit committees and the auditors, the PCAOB adopted Ethics Rules and Independence Rule 3526 to require that auditors confirm, in writing, their independence to the audit committees before the audit engagement. In 2017, PCAOB issued a new standard to require that an auditor explicitly clarifies auditor independence in an integrated auditor's report.

In recent years, a new threat to auditor independence emerges due to the rise in consulting and advisory services by the Big Four firms. Compared with auditing services, the Big Four firms pay more attention to consulting and advisory services. The revenue for these services has exceeded audit revenue. Providing both consulting services and auditing services

result in more auditor independence violations (Harris, 2016). This phenomenon results in the fact that it currently becomes more important to enhance the auditors' independence - both auditor independence *in fact* and independence *in appearance*. are important for public users. Because auditor independence *in fact* is unobservable, public users' judgments and decisions only depend on auditor independence *in appearance* (Dopuch et al., 2003), or perceptions of auditor independence.

In earlier studies, both Firth (1980) and Dykxhoorn (1982) have found that if perceived auditor independence improves the lending and investment decisions, whereas non-independence impair these decisions. Recent studies identify that some non-audit services are one of the most important threats to auditor independence. Higher non-audit fees impair perceptions of auditor independence and result in negative equity market reactions (e.g., Frankel et al., 2002; Francis and Ke, 2006). For the debt market, Brandon et al. (2004) reveal that non-audit service fees affect bond raters' perceptions of auditor independence. A significant negative relationship exists between non-audit service fees and bond ratings - the higher the non-audit fees, the lower a firm's bond rating. Similarly, non-audit fees weaken auditor independence, which significantly increases cost of debt.

These findings imply that whether an auditor is perceived to be independent or not determines the informative value of an auditor's report. Only when public users perceive that an auditor is independent, are they likely to rely on the auditor's opinion to make their decisions. If the public perceives that an auditor is not independent, his/her opinion will be of no value (Firth 1980). In terms of the effect of an ICFR opinion, even though there is a significant positive relationship between an ICFR opinion and loan officers' decisions, without loan officers' confidence about auditor independence, the strong relationship is questioned. Accordingly, this study posits the following hypothesis:

H2: Loan officers' perceptions of auditor independence mediate the relationship between an ICFR opinion and loan officers' intent to lend to the client.

Perceptions of Auditor Independence, Perceptions of Financial Reporting Reliability, and Lending Risk Assessment are Serial Multiple Mediators

In this study, we also consider loan officers' perceptions of financial reporting reliability and lending risk assessments as mediators of the above relationship according to previous studies. Several studies examine the mediation effect of investors' confidence in the relationship between an ICFR opinion and investors' decisions. Schneider and Church (2008) infer that an adverse ICFR opinion reduces loan officers' confidence about financial reporting reliability. Holt and DeZoort (2009) find that investors' perceptions of financial reporting reliability mediate the relationship between an ICFR opinion and investment decisions. Lopez et al. (2009) examine a series of price-relevant factors that mediate the relationship between an ICFR opinion and investors' decisions. These factors include investors' perceptions of risk of financial statement misstatement, the risk of a future financial statement restatement, and risk premium. The current study generalizes the results to loan officers and proposes the following hypotheses:

H3: Loan officers' perceptions of financial reporting reliability mediate the relationship between an ICFR opinion and loan officers' intent to lend to the client.

H4: Loan officers' lending risk assessments mediate the relationship between an ICFR opinion and loan officers' intent to lend to the client.

Perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments have causal relationships. Prior literature indicates that impaired perceptions of auditor independence significantly reduce perceptions of financial reporting reliability. Hodge (2003) reveals that the correlation between auditor independence and financial reporting reliability is positive and significant, which suggests that perceived decline in auditor independence decreases the investors' perceived reliability of audited financial information. Khurana and Raman (2006) find that the higher audit fees are the implied threat to auditor independence, which lower the investors' perceptions of financial reporting credibility of a Big Five audit. Moreover, Lowe et al. (1999) find a serial causal relationship that internal audit outsourcing impairs loan officers' perceptions of auditor independence, which reduces their perceptions of financial statement reliability and hence lowers the percentage of loan approvals.

Hayes (2013) indicates in a multiple mediator model, more than one mediator has indirect effect on the relationship between independent variable X and dependent variable Y. If these mediators have causal associations with each other, they are defined as serial multiple mediators (M₁, M₂, and so on). That is, "X causes M₁, which in turn causes M₂, and so forth, concluding with Y as the final consequent" (Hayes, 2013, p. 167).

Based on the prior literature, when public users perceive auditors to be independent of management, they also perceive auditors as serving public users such as loan officers instead of their clients. In other words, auditors are perceived to have neither mutual nor conflicting interests with clients and fairly judge and report on what they discover, which leads loan officers to perceive the management's financial reporting as trustworthy and reliable. These perceptions lower their lending risk assessments. Otherwise, if loan officers doubt the auditor's independence, the doubtfulness will significantly reduce loan officers' confidence about financial reporting reliability. Loan officers perceive higher risks if they decide to lend to the client because the information provided in the financial statements is likely to be highly uncertain.

Accordingly, this study considers perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments as serial multiple mediators. Loan officers' perceptions of auditor independence positively affect their perceptions of financial reporting reliability, which in turn negatively affect their lending risk assessments. A hypothesis is posited as follows:

H5: Loan officers' perceptions of auditor independence, financial reporting reliability, and lending risk assessments serially mediate the effect of an ICFR opinion on their lending decisions.

Moderating Effect of an Auditor Independence Clarification

This study also examines the moderating effect of an auditor independence clarification on the relationship between an ICFR opinion and loan officers' perceptions of auditor independence. An auditor independence clarification in an integrated auditor's report is a new requirement by PCAOB (2017). The 2008 financial crisis shook the public's confidence about auditor independence. To restore their confidence, in 2017, after a 6-year effort, the PCAOB issued a standard to require that an auditor clarify auditor independence for the public in an

integrated auditor's report. As PCAOB (2011) and PCAOB (2017) request, except for the title "Report of Independent Registered Public Accounting Firm," an auditor should explicitly clarify auditor independence by stating that the auditor has a responsibility to be independent of the client and has complied with applicable independence requirements of PCAOB and SEC. Through this statement, the PCAOB expects to enhance public users' understanding of the auditor independence obligations (PCAOB 2017).

Nonetheless, during the public hearing for the proposed standard, some commenters question whether the statement will improve this understanding and increase any benefits or insight to public users. They argue that auditor independence, i.e., "Report of Independent Registered Public Accounting Firm" is already embedded in the current title of an auditor's report and a new independence clarification statement is redundant and unnecessary. Although the standard has been finally issued, it is necessary to provide some empirical evidence to answer the question of whether an auditor independence clarification enhances loan officers' understanding of the auditor independence clarification, i.e., perceptions of auditor independence. Accordingly, this study proposes the following research question:

Q: Does an auditor independence clarification enhance loan officers' perceptions of auditor independence associated with an ICFR opinion?

METHODOLOGY

Participants

We recruit loan officers from the Hugo Dunhill Mailing Lists, Inc. (HDML)¹ to serve as participants. This study randomly selects 1,500 loan officers from HDML's national loan officers' mailing list and mails the experimental instrument to them. Through two rounds of mailings, 98 participants provide completed and usable data, for a 6.6 percent response rate. The characteristics and responses of the first and second round respondents have no significant difference. Although the response rate is relatively low, it is consistent with mail and online surveys in accounting studies regarding auditing and financial reporting issues (e.g., Graham and Harvey, 2001; Graham et al., 2005; Anderson and Lillis, 2011; Burton et al., 2012; Dichev et al., 2013). Every response rate of these studies is below 10 percent.

Experimental Design and Variables

To test the model, this study conducts a 2×2 between-subject experiment, as illustrated in Table 1. The audit client is a hypothetical book wholesale company, Abookware. The financial statements are adapted from Schneider and Church (2008). The experiment presents a proposed integrated audit report including auditor independence clarification (if present), a financial statements audit opinion, and an internal control opinion. Two independent variables are manipulated: auditor independence clarification (clarification vs. no clarification) and an internal control opinion (unqualified vs. adverse). To emphasize the importance of an ICFR opinion, in an integrated audit report, the financial statements audit opinion is unqualified and identical in all four scenarios. Also, the auditor and its report title "Independent Registered Public Accounting Firm" are identical. Participants are randomly provided with experimental cases describing one of four scenarios.

¹ The experiment was approved by the IRB office at Jackson State university.

Table 1 Experimental Design		
	Unqualified ICFR	Adverse ICFR
Clarification	Unqualified financial statements audit opinion & Unqualified ICFR & auditor independence clarifications	Unqualified financial statements audit opinion & Adverse ICFR & auditor independence clarifications
No Clarification	Unqualified financial statements audit opinion & Unqualified ICFR	Unqualified financial statements audit opinion & Adverse ICFR

To express an adverse ICFR opinion, the hypothetical auditor in this study specifies the internal control material weakness is related to revenue recognition manipulation, which is listed as an example in PCAOB (2004). The revenue recognition manipulation is listed as one of the top two internal control violations amongst all ineffective internal controls that auditors reported for public companies during 2004-2011 (Chao and Foote, 2012). In addition, this study manipulates auditor independence clarification (clarification vs. no clarification) as a moderating variable of the relationship between an ICFR opinion and loan officers' perceptions of auditor independence. The clarification is based on the proposal of PCAOB (2011), which was formally issued in PCAOB (2017). As PCAOB (2011) requests, except for the title "Report of Independent Registered Public Accounting Firm," an auditor explicitly clarifies auditor independence by stating that the auditor has a responsibility to be independent of the client and has complied with applicable independence requirements of PCAOB and SEC.

This study measures four dependent variables: loan officers' perceptions of auditor independence, perceptions of financial reporting reliability, lending risk assessments, and intent to lend. Similar to Jennings et al. (2006), both perceptions of auditor independence and perceptions of financial reporting reliability are measured on an 11-point Likert scale ranging from "0 = no confidence" to "10 = extreme confidence." The measurement of loan officers' lending risk assessments and their intent to lend is based on the designs of Schneider and Church (2008) and Lopez et al. (2009). Lending risk assessments is measured on an 11-point Likert scale anchored at "0 = very low risk" and "10 = very high risk;" whereas intent to lend is measured on an 11-point Likert scale anchored at "0 = definitely not lend" and "10 = definitely lend."

Case Materials

This study uses a hypothetical book wholesale company, Abookware, as the audit client. Abookware is a mid-size publicly traded company with a market capitalization between \$75 million and \$250 million, which is perceived as being neither very strong nor very weak. The company size is in response to the current dispute between AICPA and the Dodd-Frank Act about the exemption of internal control reporting for the mid-size company. The case information consists of two parts: background information and an integrated auditor's report. The background information is adapted from Schneider and Church (2008). It includes a brief introduction of the company and its financial statements such as balance sheet, income statement, and statement of cash flow. The background information in all scenarios is identical. The second part of an integrated auditor's report contains two manipulated variables – an ICFR opinion and an auditor independence clarification that creates four scenarios as previously

described. This report is issued by a hypothetical auditor, K&D, Big Four CPA firm. It includes the title “Independent Registered Public Accounting Firm,” an auditor independence clarification (if present), a financial statements audit opinion, and an ICFR opinion.

Experimental Procedures

This study mails participant’s experimental instruments in booklet form. The instrument includes seven sections: (1) a cover letter and a business reply envelope; (2) background information of Abookware; (3) an integrated auditor’s report with two manipulated variables; (4) questions on loan officers’ perceptions of auditor independence, perceptions of financial reporting reliability, lending risk assessments and intent to lend; (5) manipulation check questions about an ICFR opinion and auditor independence clarification; (6) supplemental questions on the factors included in the experimental case; and (7) demographic information. The participants are encouraged to complete the experimental instrument in thirty days. After thirty days, a second round of requests is mailed out.

Manipulation Checks

Two questions that serve as manipulation checks are included in the experimental instrument. To assess the effectiveness of an auditor independence clarification, the participants are asked to identify whether the auditor’s report explicitly indicates that the audit firm (K&D) is independent. The participants choose to answer “Yes” or “No.” 70 out of 98 respondents correctly answer the question. The pass rate is 71.4 percent. To assess the effectiveness of an ICFR opinion, the participants are asked to indicate the type of audit opinion on ICFR issued by the external auditor. The participants select answers from “Unqualified clean opinion: internal control is effective” or “Adverse unclear opinion: a material internal control weakness exists”. 87 out of 98 respondents correctly respond. The pass rate is 88.8 percent. No significant differences exist in correct response rates across two conditions for either manipulation checks. Because including or excluding the respondents who fail the manipulation checks does not affect the results for the hypotheses tests, this study includes all 98 responses in its statistical analysis as well as the presentation of results. This method is consistent with the recent literature on auditing issues (e.g., Asare and Wright, 2012b; Burton et al., 2012; Kadous and Mercer, 2012; Yen, 2012; Taylor and Curtis, 2013).

Data Analysis Technique

To test the serial mediation model, this study employs SPSS macro PROCESS developed by Hayes (2012). Based on Hayes (2012), PROCESS first provides a coefficient estimation of a model using ordinary least squares (OLS) regression (for continuous outcomes) or maximum likelihood logistic regression (for dichotomous dependent variables). According to the results, PROCESS generates direct and indirect effects with one or more mediators (for model 4 or model 6, the total effect is also included). A bias-corrected bootstrap technique is used to determine the significance of direct and indirect effects. If the bootstrap confidence intervals do not include/cross zero, the effect is considered significant. The bootstrap technique will be helpful if the experimental sample size is limited and may not satisfy the distribution of the assumption of normality.

The current serial mediation model fits the Model 6 of Hayes (2013), which allows us to estimate serial multiple mediators such as perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments. For serial mediation analysis, PROCESS tests the above serial multiple mediators as well as all their possible combinations. With these three mediators, there are seven causal possibilities. In this study, total, direct, and indirect effects are based on 5,000 bootstrap samples with one-sided 95% confidence intervals. In addition, this study uses General Linear Model-Univariate to test the moderating effect of an auditor independence clarification on the relationship between an ICFR opinion and loan officers' perceptions of auditor independence.

RESULTS

Demographic Analysis

A majority of 98 respondents are male (92 percent), have over 10 years work experience (92 percent), and frequently use financial statements (86 percent). In terms of audit experience, 92 percent of the respondents “fully” or “averagely” understand the auditors' opinions, 79 percent “frequently” or “averagely” use auditor's reports, and 97 percent have “positive” or “neutral” prior experience with auditor's report use and auditors. Thus, the 98 respondents are eligible to serve as a representation of experienced loan officers. Furthermore, this study uses the chi-square test to analyze the demographic characteristics of respondents. The result indicates that there is no significant difference among the four groups for each demographic variable.

Descriptive Statistics and Correlations

Table 2 presents descriptive statistics for the dependent measures in this study as well as bivariate correlations between all independent and dependent variables. As hypothesized, an ICFR opinion is negatively related to perceptions of auditor independence, perceptions of financial reporting reliability, and intent to lend but positively related to lending risk assessments ($r = -0.250$, $p < 0.05$; $r = -0.556$, $p < 0.01$; $r = -0.409$, $p < 0.01$; $r = 0.411$, $p < 0.01$, respectively). Moreover, perceptions of auditor independence and perceptions of financial reporting reliability are positively related to intent to lend ($r = 0.363$, $p < 0.01$; $r = 0.541$, $p < 0.01$, respectively); whereas lending risk assessments are inversely related to intent to lend ($r = -0.620$, $p < 0.01$). Finally, the results reveal that perceptions of auditor independence are positively related to perceptions of financial reporting reliability ($r = 0.603$, $p < 0.01$), which are inversely related to lending risk assessments ($r = -0.369$, $p < 0.01$).

Table 2									
Descriptive statistics and correlation matrix									
Panel A: Descriptive Statistics (n=98)									
Variable	Mean	Median	SD	Min	Max	Quartiles			
						25%	50%	75%	
Perception of Auditor Independence	6.81	8	2.451	0	10	5	8		8
Perception of Financial Reporting Reliability	5.66	6	2.769	0	10	4	6		8
Lending Risk Assessment	6.99	7	2.135	2	10	5	7		9
Intent to Lend	3.57	3	2.38	0	8	2	3		5.5
Panel B: Pearson Correlation between Variables									
Variable	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>			
1 ICFR ^a	1								
2 Clarification ^b	-0.219*	1							
3 Perception of Auditor Independence	-.250*	0.015	1						
4 Perception of Financial Reporting Reliability	-.556**	0.113	0.603**	1					
5 Lending Risk Assessment	.411**	0.015	-0.134	-0.369**	1				
6 Intent to Lend	-.409**	0.035	0.363**	0.541**	-0.620**	1			
* p < 0.05, two-tailed									
** p < 0.01, two-tailed									
^a Internal Control = 0 for an unqualified ICFR opinion and =1 for an adverse ICFR opinion									
^b Clarification = 0 for no independence clarification and =1 for an independence clarification									

The above significant correlation coefficients reveal several path relationships: 1) an ICFR opinion → lending decisions; 2) an ICFR opinion → perceptions of auditor independence → lending decisions; 3) an ICFR opinion → perceptions of financial reporting reliability → lending decisions; 4) an ICFR opinion → lending risk assessments → lending decisions; 5) an ICFR opinion → perceptions of auditor independence → perceptions of financial reporting reliability → lending decisions; 6) an ICFR opinion → perceptions of auditor independence → perceptions of financial reporting reliability → lending risk assessments → lending decisions. These correlation coefficients are in the expected directions of the model. Based on Cohen (1988), considering both the significance (for every correlation, $p < 0.05$) and effect size (for every correlation, $r > 0.2$) of the correlation coefficients, the above correlations are strong.

Specifically, the six path reveals the serial mediating role of perceptions of auditor independence, perceptions of financial reporting reliability and lending risk assessments. Because the correlation coefficient of perceptions of auditor independence and perceptions of financial reporting reliability is significant and large ($r = 0.603$, $p < 0.01$), this study considers these two perceptions together. Furthermore, because the correlation coefficient of perceptions of auditor independence and lending risk assessments is not significant and small ($r = -0.134$) but the correlation coefficient of perceptions of financial reporting reliability and lending risk assessment is strong ($r = -0.369$, $p < 0.01$), perceptions of financial reporting reliability is a bridge between perceptions of auditor independence and lending risk assessments. Thus, the

result of the correlation analysis provides preliminary support for the model. In terms of an auditor independence clarification, although its relationship with an ICFR opinion exists ($r = -0.219$, $p < 0.05$), it has no significant relationship with perceptions of auditor independence ($r = -0.015$). The moderating effect of an auditor independence clarification on the relationship between an ICFR opinion and perceptions of auditor independence is questioned.

Tests of the Serial Mediation Model

As mentioned above, this study employs SPSS macro PROCESS Model 6 (Hayes, 2013) to test the serial mediation model. The bootstrap sample size is 5,000 with one-sided 95% confidence intervals. The result is presented in Table 3. In Model 6, independent variable X = ICFR represents an ICFR opinion, while dependent variable Y = decision represents loan officers' intent to lend to the client. The three serial multiple mediators are M_1 = independence representing loan officers' perceptions of auditor independence, M_2 = reliability representing their perceptions of financial reporting reliability, and M_3 = risk representing their lending risk assessments. Panel A shows the regression results with estimation coefficients of the model. The results indicate that loan officers' perceptions of auditor independence significantly increase their perceptions of financial reporting reliability ($d_{21} = 0.5483$, $p < 0.0001$, one-tailed) and their intent to lend ($d_{31} = 0.1498$, $p = 0.0487$, one-tailed). However, their perceptions of auditor independence have no significant effect on lending risk assessments ($b_1 = 0.0635$, $p = 0.2709$, one-tailed).

In terms of the total effect of an ICFR opinion on the intent to lend decision, the result in Panel A reveals that an adverse ICFR opinion significantly decreases loan officers' intent to lend ($c = -2.0072$, $p < 0.0001$, one-tailed). In the presence of multiple mediators, this total effect is decomposed into a direct effect and indirect effects. The total effect is not influenced by the three mediators. This result supports hypothesis H1. The result in Panel A also indicates that the direct effect of an opinion on the intent to lend decision is not significant ($c' = -0.2502$, $p = 0.2855$, one-tailed). Based on Panel B of Table 3, the direct effect is intervened by five significant indirect effects, which are the indirect effect through perceptions of auditor independence ($a_1b_1 = -0.1780$, 95% CI = $[-0.4533, -0.0236]$, one-sided), the indirect effect through perceptions of financial reporting reliability ($a_2b_2 = -0.5249$, 95% CI = $[-1.0120, -0.1445]$, one-sided), the indirect effect through lending risk assessments ($a_3b_3 = -0.6614$, 95% CI = $[-1.2962, -0.2204]$, one-sided), the indirect effect through perceptions of auditor independence and perceptions of financial reporting reliability in serial ($a_1d_{21}b_2 = -0.1395$, 95% CI = $[-0.3583, -0.0414]$, one-sided), and the indirect effect through perceptions of auditor independence, perceptions of financial reporting reliability and lending risk assessments in serial ($a_1d_{21}d_{32}b_3 = -0.0616$, 95% CI = $[-0.1958, -0.0051]$, one-sided).

The first three indirect effects show that an adverse ICFR opinion significantly decreases loan officers' intent to lend through respectively decreasing their perceptions of auditor independence, decreasing their perceptions of financial reporting reliability, and increasing their lending risk assessments. Hypotheses H2, H3, H4 are respectively supported. The fourth indirect effect shows perceptions of auditor independence and perceptions of financial reporting reliability are serial multiple mediators. An adverse ICFR opinion significantly decreases loan officers' perceptions of auditor independence, which in turn significantly decreases their perceptions of financial reporting reliability. The decreased perceptions of financial reporting

reliability significantly decrease loan officers' intent to lend to the client. The fifth indirect effect shows

Table 3					
Mediation effects on the relationship between ICFR and decisions					
Panel A: Regression Results					
		Coefficient	Standard Error	t	p^a
Independence regressed on:	<i>Constant</i>	7.4524	0.3693	20.1798	0.0000
($R^2 = 5.85\%$, $p = 0.0091$)	<i>ICFR</i>	$a_1 = -1.1882$	0.4944	-2.4032	0.0091
Reliability regressed on:	<i>Constant</i>	3.3186	0.6602	5.0265	0.0000
($R^2 = 55.19\%$, $p < 0.0001$)	<i>Independence</i>	$d_{21} = 0.5483$	0.0799	6.8594	0.0000
	<i>ICFR</i>	$a_2 = -2.4514$	0.3928	-6.2410	0.0000
Risk regressed on:	<i>Constant</i>	6.8414	0.7859	8.7057	0.0000
($R^2 = 18.77\%$, $p = 0.0003$)	<i>Independence</i>	$d_{31} = 0.0635$	0.1036	0.6125	0.2709
	<i>Reliability</i>	$d_{32} = -0.1775$	0.1099	-1.6148	0.0549
	<i>ICFR</i>	$a_3 = 1.2416$	0.4941	2.5132	0.0069
Decision regressed on:	<i>Constant</i>	5.2558	0.9163	5.7358	0.0000
($R^2 = 51.22\%$, $p < 0.0001$)	<i>Independence</i>	$b_1 = 0.1498$	0.0894	1.6755	0.0487
	<i>Reliability</i>	$b_2 = 0.2141$	0.0960	2.2300	0.0141
	<i>Risk</i>	$b_3 = -0.5326$	0.0903	-5.8995	0.0000
	<i>ICFR</i>	$c' = -0.2502$	0.4400	-0.5687	0.2855
Decision regressed on: (Total Effect Model)					
($R^2 = 18.23\%$, $p < 0.0001$)	<i>Constant</i>	4.7619	0.3292	14.4629	0.0000
	<i>ICFR</i>	$c = -2.0072$	0.4408	-4.5534	0.0000
Panel B: Summary of Total, Direct and Indirect Effects and One-sided 95% Confidence Intervals^b					
Model Pathways		Estimated Effect	Standard Error	One-sided 95% CI	
				Lower	Upper
Total Effect:					
ICFR → Decision ^c		$c = -2.0072$	0.4408	-2.8825	-1.1318
Direct Effect:					
ICFR → Decision		$c' = -0.2502$	0.4400	-.9816	0.4811
Indirect Effect:					
ICFR → Independence → Decision ^c		$a_1b_1 = -0.178$	0.1226	-0.4533	-0.0236
ICFR → Reliability → Decision ^c		$a_2b_2 = -0.5249$	0.2631	-1.0120	-0.1445
ICFR → Risk → Decision ^c		$a_3b_3 = -0.6614$	0.3212	-1.2962	-0.2204
ICFR → Independence → Reliability → Decision ^c		$a_1d_{21}b_2 = -0.1395$	0.0876	-0.3583	-0.0414
ICFR → Reliability → Risk → Decision		$a_2d_{32}b_3 = -0.2318$	0.1834	-0.5948	0.0116
ICFR → Independence → Risk → Decision		$a_1d_{31}b_3 = 0.0402$	0.0669	-0.0443	0.1767
ICFR → Independence → Reliability → Risk → Decision		$a_1d_{21}d_{32}b_3 = -0.0616$	0.0540	-0.1958	-0.0051
^a One-tailed for variables, two-tailed for constant; ^b 5,000 bootstrap samples; ^c Empirical one-sided 95 % CI did not overlap with zero Note: ICFR = Internal control over financial reporting; independence = Perception of auditor independence; Reliability = Perception of financial reporting reliability; Risk = Lending risk assessment; Decision = Intent to lend decision.					

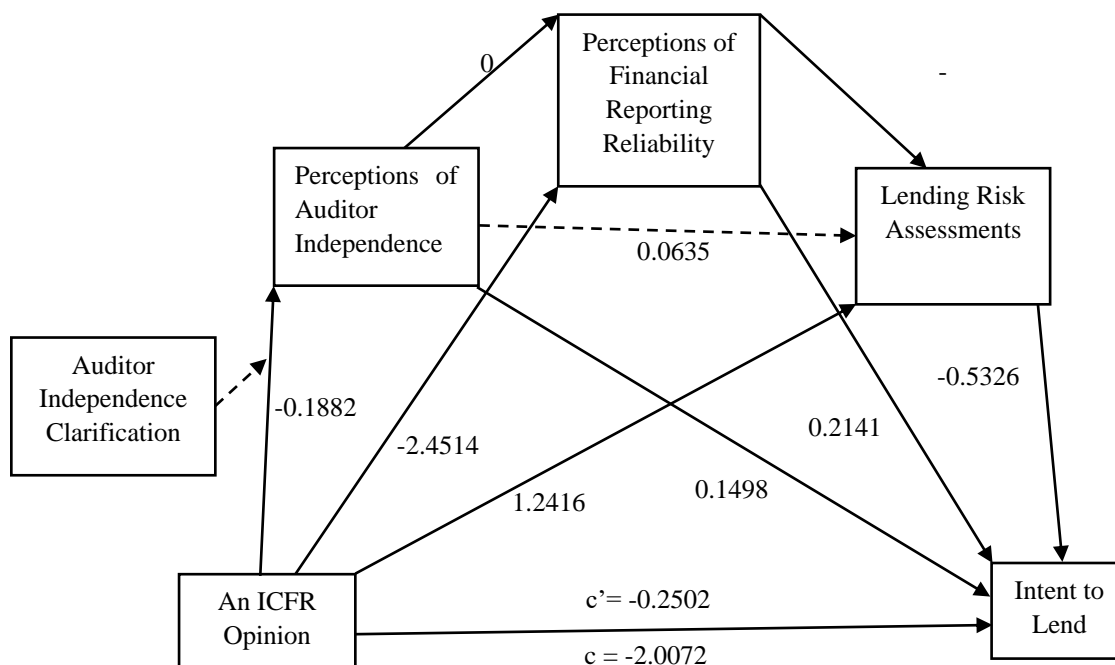
perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments are serial multiple mediators that sequentially affect loan officers' intent to lend. An

adverse ICFR opinion significantly decreases loan officers' perceptions of auditor independence, which in turn significantly decreases their perceptions of financial reporting reliability, resulting in decreases of their lending risk assessments. The decreased lending risk assessments reduce loan officers' intent to lend. Thus, all three mediators are in a causal chain. Hypotheses H5 is supported by the fourth and fifth indirect effects.

Based on the above discussions, the results support hypotheses H2, H3, and H4. Perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments mediate the relationship between ICFR opinion and lending decisions, respectively. Moreover, the results support hypothesis H5. Perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments are serial multiple mediators. The results support the proposed serial mediation model except the effect of an auditor independence clarification, which will be discussed in the next subsection. The model is depicted in Figure 2.

Except that an adverse ICFR opinion significantly decreases loan officers' perceptions of financial reporting reliability ($a_2 = -2.4514$, $p < 0.0001$, one-tailed) and increases their lending risk assessments ($a_3 = 1.2416$, $p = 0.0069$, one-tailed), here it is worth noting that an adverse ICFR opinion with an unqualified financial statements audit opinion significantly decreases loan officers' perceptions of auditor independence ($a_1 = -0.1882$, $p = 0.0091$). Although this finding seems somewhat counterintuitive, it is consistent with prior literature and loan officers' conservative attitudes towards an integrated auditor's report. PCAOB (2007) indicates that an

Figure 2
Serial Mediation and Moderation Model



ICFR opinion and a financial statements audit opinion are closely interrelated in an integrated report, or an ICFR opinion has effects on a financial statement audit opinion. An adverse ICFR opinion reflects that there are material weaknesses in internal control and thus increases the possibility that material misstatements in the financial statements are not detected (Goh et al., 2013; Myllymäki, 2014). Therefore, the assurance of an unqualified financial statements audit opinion in the same auditor's report is doubtful.

Moreover, after a series of business scandals and financial crises, loan officers have lower confidence in auditors and auditors' reports. If an auditor issues an adverse ICFR opinion simultaneously with an unqualified financial audit opinion, loan officers may believe that both clients' internal control and financial statements have some material weaknesses. However, because of economic bonding between an auditor and the client, they believe that an auditor has a motivation to "avoid the important and dwell on the trivial" in the audit report. The auditor would rather issue an adverse ICFR opinion only than issue an adverse ICFR opinion together with an adverse financial statements audit opinion. Thus, issuing an adverse ICFR opinion with an unqualified financial statements audit opinion decreases loan officers' perceptions of auditor independence.

Test of the Moderating Effect of an Auditor Independence Clarification

Table 4 presents the results of a General Linear Model-Univariate test for perceptions of auditor independence. Consistent with Table 3, an adverse ICFR opinion has a negative significant effect on the loan officer's perceptions of auditor independence (Panel A, $F_{1, 92} = 7.238$, $p = 0.004$, one-tailed). However, although an auditor independence clarification increases the loan officers' perceptions of auditor independence (Panel B, Mean = 6.77, SD = 2.727 for no clarification vs. Mean = 6.85, SD = 2.217 for clarification), the increase is not significant (Panel A, $F_{1, 92} = 0.429$, $p = 0.257$, one-tailed). The result also reveals that the interaction of an ICFR opinion and auditor independence clarification does not enhance loan officers' perceptions of auditor independence (Panel A, $F_{1, 92} = 1.552$, $p = 0.108$, one-tailed). These findings indicate that an auditor independence clarification has no significant moderating effect on loan officers' perceptions of auditor independence associated with an ICFR opinion. Although the effect of an auditor independence clarification is consistent with the expectation of PCAOB (2017), this effect is not significant. Accordingly, the answer to research question Q is that an auditor independence clarification does not enhance loan officers' perceptions of auditor independence associated with an ICFR opinion.

CONCLUSIONS

Since 2002, the SOX, SEC, and PCAOB have issued a series of requirements to regulate auditor independence. Their aims are to protect public users such as investors and loan officers. To better specify how public users' understanding, or perceptions of auditor independence affect their decisions, this study establishes and tests a multiple-mediation model to examine the effect of loan officers' perceptions of auditor independence on their lending decisions associated with an ICFR opinion. In this model, the relationship between an ICFR opinion and loan officers' decisions are mediated by loan officers' perceptions of auditor independence as well as perceptions of financial reporting reliability and lending risk assessments. Using 98 loan officers as participants, this study provides evidence to support this model. First, the results support the

proposed process of loan officers' decision making related to auditor independence. Loan officers' perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments

Table 4						
Effect of an auditor independence clarification on perception of auditor independence ^a						
Panel A: Analysis of Variance						
Source ^b	Question	Sum of Squares	df	Mean Square	F	Significance ^c
<i>Test Variables</i>						
ICFR		41.302	1	41.302	7.238	0.004
Clarification		2.449	1	2.449	1.552	0.257
ICFR*Clarification	Q1	8.853	1	8.853	0.429	0.108
Error		524.971	92	5.706		
*R ² =0.111						
Panel B: Descriptive Statistics (Mean, Standard Deviation, and N)						
		Non-Clarification		Clarification		Total
ICFR-Unqualified	Mean	8.14		7.17		7.49
	SD	2.507		1.929		2.153
	N	14		29		43
ICFR-Adverse	Mean	6.13		6.43		6.26
	SD	2.623		2.519		2.558
	N	30		23		53
Total	Mean	6.77		6.85		6.98
	SD	2.727		2.217		2.33
	N	44		52		96

^a Perceptions of auditor independence are measured on a 11-point Likert scale anchored at 0 (No Confidence) and 10 (Extreme Confidence)

^bVariable coding:
Clarification=0 for no independence clarification and =1 for independence clarification
ICFR=0 for an unqualified ICFR opinion and =1 for an adverse ICFR opinion

^cOne-tailed p-Value for main effects; two-tailed p-value for interaction.

are three mediators on the relationship between an ICFR opinion and loan officers' decisions. Through indirectly decreasing their perceptions of auditor independence, decreasing their perceptions of financial reporting reliability, and increasing their lending risk assessments, an adverse ICFR opinion significantly decreases loan officers' intent to lend. Moreover, perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments are serial multiple mediators, which are included in a causal chain: an adverse ICFR opinion, decreased perceptions of auditor independence, decreased perceptions of financial reporting reliability, increased lending risk assessments, and lower intent to lend to the client. In addition, the results indicate the new auditor independence requirement by PCAOB (2017) slightly increases the loan officers' perceptions of auditor independence. However, this effect is not significant.

Specifically, this study finds the negative effect of an adverse ICFR opinion integrated with an unqualified financial statements audit opinion on loan officers' perceptions of auditor independence. Although the finding seems somewhat counterintuitive, it is consistent with prior literature and loan officers' conservative attitudes towards an integrated auditor's report. After the

financial crisis, loan officers have low confidence in an ICFR opinion integrated in an auditor's report (Wittenberg-Moerman, 2011; Dhaliwal et al., 2011; Kim et al., 2011). If an auditor issues an adverse ICFR opinion simultaneously with an unqualified financial statements audit opinion, they believe that the material weakness in internal control increases the undetected risk of material misstatements in the financial statements and thus decreases the reliability of unqualified financial statements (Goh et al., 2013; Myllymäki, 2014). However, because of economic bonding between auditors and the clients (DeAngelo, 1981), the auditors may have a motivation to "avoid the important and dwell on the trivial." Therefore, they may only issue an adverse ICFR opinion rather than issue an adverse financial statements audit opinion and an adverse ICFR opinion together.

This study contributes to prior accounting literature regarding auditor independence by investigating the mediating effect of loan officers' perceptions of auditor independence on their lending decisions associated with an ICFR opinion. The findings suggest the importance of public users' perceptions of auditor independence and provide evidence to support the continuing efforts of PCAOB to strengthen auditor independence. In terms of public users' decision process, Lopez et al. (2009) find the relationship of an ICFR opinion and investors' decisions is mediated by the investors' assessments of risk of financial statement misstatement, risk of a future financial statement restatement, information asymmetry, financial statement transparency, risk premium, cost of capital, sustainability of earnings, and earnings predictability. This study adds three more mediators for this relationship such as loan officers' perceptions of auditor independence, perceptions of financial reporting reliability, and lending risk assessments.

The second contribution is that this study provides evidence to support the informative value of an ICFR opinion for the mid-size company on loan officers' decisions. An ICFR opinion continues to be of vital importance to public users. Some businesses petition regulators to provide more exemptions from SOX Section 404(b) because they believe ICFR attestation by auditors is costly and invaluable to public users. However, AICPA and CAQ are fighting with any legislation that would exempt the mid-size company from internal control reporting of SOX Section 404(b) (AICPA 2012; CAQ 2014). They insist that the exemption will substantially impact the quality of financial disclosures and public confidence about financial reporting integrity. The SEC recommends no new exemptions for a mid-size company based on its study of Section 404(b) (SEC 2011). The findings of this study support the persistence of the AICPA, CAQ and the recommendations of the SEC.

Finally, this study preliminarily explores whether the new auditor independence clarification statement enhances loan officers' perceptions of auditor independence, as PCAOB (2017) expects. Although the effect is insignificant, the new statement clarifies the nature and scope of auditors' existing reliability with respect to auditor independence. In practice, PCAOB requires that auditors should comply with this new auditor independence regulations.

LIMITATIONS AND RECOMMENDATIONS

This study has several limitations, which may provide promising directions for future research. The first limitation is the usual limitation of experimental research. Considering the length of the experimental instrument, the instrument does not provide the participants all information that loan officers collect from financial reporting in the real word. The information may be insufficient for some participants. Future research can provide participants with more information such as two years of balance sheet, three years of income statement and statement of

cash flow. Because the experimental instrument becomes longer, future research would better choose face-to-face experimental methods to collect data. Second, this study does not investigate why an adverse ICFR opinion significantly reduces loan officers' perceptions of auditor independence. Instead, this study only presents a possible explanation that loan officers strongly doubt auditors' unqualified financial statements audit opinion with an adverse ICFR opinion. The explanation of why an adverse ICFR opinion significantly reduces loan officers' perceptions of auditor independence needs to be verified by future experimental research. Additionally, future research can explore whether there are any possible or reasonable alternative explanations. Due to the lack of related literature, open-ended survey methods may be appropriate for future research.

The third limitation is the generalization of the findings to other groups. Except for loan officers, investors are another primary representative of public users. However, investors have different characteristics than loan officers. While loan officers focus more on statements of cash flows due to their short-term perspective, investors pay more attention to accruals. Future research can use investors as participants to investigate whether the results can be mapped to them. Finally, because of the complexity of loan officers' decision process, there may be some other factors such as perceptions of audit quality and perceptions of audit information transparency to mediate the relationship. Future research can add more factors to the model and explore their mediation effects.

REFERENCES

- American Institute of CPAs (AICPA). (2012), "Letter to the United States Senate", March 19, 2012. Available at: http://www.aicpa.org/Advocacy/Issues/DownloadableDocuments/404b/3-19-12_Senate_Letter_re_accounting_and_auditing.pdf.
- Anderson, S. W., and Lillis, A. M. (2011), "Corporate frugality: Theory, measurement and practice", *Contemporary Accounting Research*, Vol. 28 No. 4, pp. 1349-1387.
- Asare, S. K., and Wright, A. M. (2012a), "The Effect of Change in the Reporting Threshold and Type of Control Deficiency on Equity Analysts' Evaluation of the Reliability of Future Financial Statements", *Auditing: A Journal of Practice and Theory*, Vol. 31 No. 2, pp. 1-17.
- _____. (2012b), "The effect of type of internal control report on users' confidence in the accompanying financial statement audit report", *Contemporary Accounting Research*, Vol. 29 No. 1, pp. 152-175.
- Ashbaugh-Skaife, H., Collins, D., Kinney, W., and LaFond, R. (2009), "The effect of internal control deficiencies on firm risk and cost of equity", *Journal of Accounting Research*, Vol. 47 No. 1, pp. 1-43.
- Beneish, M. D., Billings, M. B., and Hodder, L. D. (2008), "Internal Control Weaknesses and Information Uncertainty", *The Accounting Review*, Vol. 83 No. 3, pp. 665-703.
- Brandon, D. M., Crabtree, A. D., and Maher, J. J. (2004), "Nonaudit fees, auditor independence, and bond ratings", *Auditing: A Journal of Practice & Theory*, Vol. 23 No. 2, pp. 89-103.
- Burton, F. G., Emmett, S. A., Simon, C. A., and Wood, D. A. (2012), "Corporate Managers' Reliance on Internal Auditor Recommendations", *Auditing: A Journal of Practice and Theory*, Vol. 31 No. 2, pp. 151-166.
- Center for Audit Quality (CAQ). (2014), "CAQ and CII Oppose Any Legislation Eroding SOX Section 404(b) or Revising Definition of Accelerated Filer", March 6, 2014. Available at: [http://www.thecaq.org/docs/caq-letters---sox-404\(b\)/caq-cii-hfsc-letter-5-6-14.pdf?sfvrsn=2](http://www.thecaq.org/docs/caq-letters---sox-404(b)/caq-cii-hfsc-letter-5-6-14.pdf?sfvrsn=2).
- Chao, H., and Foote, P. (2012), "Material Weaknesses in Internal Controls a Decade after Sarbanes-Oxley", *Accounting TODAY*. July 23, 2012. Available at: <http://www.accountingtoday.com/news/material-weaknesses-internal-controls-sarbanes-oxley-63369-1.html?pg=1>.
- Church, B. K., and Zhang, P. (2011), "Nonaudit Services and Independence in Appearance: Decision Context Matters", *Behavioral Research in Accounting*, Vol. 23 No. 2, pp. 51-67.
- Costello, A., and Wittenberg-Moerman, R. (2011), "The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports", *Journal of Accounting Research*, Vol. 49 No. 1, pp. 97-136.

- DeAngelo, L. (1981), "Auditor size and audit quality", *Journal of Accounting and Economics*, Vol. 3 (December), pp. 183-199.
- Dhaliwal, D. S., Gleason, C. A., Heitzman, S., and Melendrez, K. D. (2008), "Auditor fees and cost of debt", *Journal of Accounting, Auditing & Finance*, Vol. 23, pp. 1-22.
- Dhaliwal, D., Hogan, C., Trezevant, R., and Wilkins, M. (2011), "Internal Control Disclosures, Monitoring, and the Cost of Debt", *The Accounting Review*, Vol. 86 No. 4, pp. 1131-1156.
- Dichev, I. D., Graham, J. R., Harvey, C. R., and Rajgopal, S. (2013), "Earnings quality: Evidence from the field", *Journal of Accounting and Economics*, Vol. 56 No. 2, pp. 1-33.
- Dodd-Frank Wall Street Reform and Consumer Protection (Dodd-Frank) Act. (2010), July 21, 2010. Available at: https://www.cftc.gov/sites/default/files/idc/groups/public/@swaps/documents/file/hr4173_enrolledbill.pdf.
- Dopuch, N., King, R., and Schwartz, R. (2003), "Independence in Appearance and In Fact: An Experimental Investigation", *Contemporary Accounting Research*, Vol. 20 No. 1, pp. 279-114.
- Dyxhoorn, H. J., and Sinning, K. E. (1982), "Perceptions of auditor independence: Its perceived effect on the loan and investment decisions of German financial statement users," *Accounting, Organizations and Society*, Vol. 7 No. 4, pp. 337-347.
- European Commission (EC). (2010), "Green Paper: Audit Policy: Lessons from the Crisis", COM(2010) 561 final. Brussels, 13.10.2010. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0561:FIN:EN:PDF>.
- Firth, M. (1980), "Perceptions of Auditor Independence and Official Ethical Guidelines", *The Accounting Review* Vol. 55 No. 3, pp. 451-66.
- Francis, J. R., and Ke, B. (2006), "Disclosure of fees paid to auditors and the market valuation of earnings surprises", *Review of Accounting Studies*, Vol. 11, pp. 495-523.
- Frankel, R. M., Johnson, M. F., and Nelson, K. K. (2002), "The relation between auditors' fees for nonaudit services and earnings management", *The Accounting Review*, Vol. 77(Suppl.), pp. 71-105.
- Ghosh, A. A., Kallapur, S., and Moon, D. (2009), "Audit and non-audit fees and capital market perceptions of auditor independence", *Journal of Accounting and Public Policy*, Vol. 28, pp. 369-385.
- Goh, B. W., Krishnan, J., and Li, D. (2013), "Auditor Reporting under Section 404: The Association between the Internal Control and Going Concern Audit Opinions", *Contemporary Accounting Research*, Vol. 30 No. 3, pp. 970-995.
- Graham, J. R., and Harvey, C. (2001), "The Theory and Practice of Corporate Finance: Evidence from the Field", *Journal of Financial Economics*, Vol. 60 No. 2-3, pp. 187-243.
- Graham, J. R., Harvey, C. R., and Rajgopal, S. (2005), "The Economic Implications of Corporate Financial Reporting", *Journal of Accounting and Economics*, Vol. 40 No. 1-3, pp. 3-73.
- Graham, J., Li, S., and Qiu, J. (2008), "Corporate misreporting and bank loan contracting", *Journal of Financial Economics*, Vol. 89, pp. 44-61.
- Harris, S. B. (2016), "Auditor Independence and the Role of the PCAOB in Investor Protection", International Corporate Governance Network (ICGN) Annual Conference, June 28, 2016. San Francisco, CA. Available at: <https://pcaobus.org/News/Speech/Pages/Harris-speech-ICGN-06-28-2016.aspx>.
- Hayes, J. A. (2012), "PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]", Available at: <http://www.afhayes.com/public/process2012.pdf>.
- Hayes, A. F. (2013), "Introduction to mediation. A regression-based approach", New York: Guilford Publications; 2013. Available at: <http://dm.darden.virginia.edu/ResearchMethods/Templates.pdf>.
- Hodge, F. (2003), "Investors' Perceptions of Earnings Quality, Auditor Independence, and the Usefulness of Audited Financial Information", *Accounting Horizons*, Vol. 17, s-1, pp. 37-48.
- Holt, T. P., and DeZoort, T. (2009), "The Effects of Internal Audit Report Disclosure on Investor Confidence and Investment Decisions", *International Journal of Auditing*, Vol. 13 No. 1, pp. 61-77.
- Jennings, M. M., Pany, K. J., and Reckers, P. M. J. (2006), "Strong corporate governance and audit firm rotation: Effects on judges' independence perceptions and litigation judgments", *Accounting Horizons*, Vol. 20 (September), pp. 253-270.
- Jumpstart Our Business Startups (JOBS) Act. (2012), April 5, 2012. Available at: <https://www.congress.gov/112/plaws/publ106/PLAW-112publ106.pdf>.
- Kadous, K., and Mercer, M. (2012), "Can reporting norms create a safe harbor? Jury verdicts against auditors under precise and imprecise accounting standards", *The Accounting Review*, Vol. 87 No. 2, pp. 565-87.
- Khurana, I. K., and Raman, K. K. (2006), "Do investors care about the auditor's economic dependence on the client?", *Contemporary Accounting Research*, Vol. 23, pp. 977-1016.

- Kim, J., Song, B. Y., and Zhang, L. (2011), "Internal control weakness and bank loan contracting: Evidence from SOX Section 404 disclosures", *The Accounting Review*, Vol. 86 No. 4, pp. 1157-1188.
- Lopez, T. J., Vandervelde, S. D., and Wu, Y. (2009), "Investor perceptions of an auditor's adverse internal control opinion", *Journal of Accounting and Public Policy*, Vol. 28 No. 3, pp. 231-250.
- Lowe, D. J., Geiger, M. A., and Pany, K. (1999), "The effects of internal audit outsourcing on perceived external auditor independence", *Auditing: A Journal of Practice & Theory*, Vol. 18(Suppl.), pp. 7-26.
- Myllymäki, E. (2014), "The Persistence in the Association between Section 404 Material Weaknesses and Financial Reporting Quality", *Auditing: A Journal of Practice and Theory*, Vol. 33 No. 1, pp. 93-116.
- PCAOB Investor Advisory Group Subcommittee on Global Networks and Audit Firm Governance (PCAOB IAG). (2011), "Memorandum", March 16, 2011. Available at: http://pcaobus.org/News/Events/Pages/03162011_IAGMeeting.aspx.
- Public Company Accounting Oversight Board (PCAOB). (2004), "Auditing Standard No. 2: An audit of internal control over financial reporting performed in conjunction with an audit of financial statements", Washington, DC: Author.
- Public Company Accounting Oversight Board (PCAOB). (2007), "Auditing Standard No. 5: An audit of internal control over financial reporting that is integrated with an audit of financial statements", Washington, DC: Author.
- Public Company Accounting Oversight board (PCAOB). (2011), "Concept Release on Possible Revisions to PCAOB Standards Related to Reports on Audited Financial Statements and Related Amendments to PCAOB Standards", PCAOB Release No. 2011-003, June 21, 2011. Available at: <http://pcaobus.org/Rules/Rulemaking/Pages/Docket034.aspx>.
- Public Company Accounting Oversight Board (PCAOB). (2017), "The Auditor's Report on an Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion and Related Amendments to PCAOB Standards", PCAOB Release No. 2017-001, June 1, 2017. Available at: <https://pcaobus.org/Rulemaking/Docket034/2017-001-auditors-report-final-rule.pdf>.
- Ruiz-Barbadillo, E., Gomez-Aguilar, N., Fuentes-Barbera, C., and Garcia-Benau, M. A. (2004), "Audit Quality and the Going Concern Decision Making Process: Spanish Evidence", *European Accounting Review*, Vol. 13 No. 4, pp. 597-620.
- Schneider, A., and Church, B. K. (2008), "The effect of auditors' internal control opinions on loan decisions", *Journal of Accounting and Public Policy*, Vol. 27 No. 1, pp. 1-18.
- Securities and Exchange Commission (SEC). (2011), "Study and Recommendations on Section 404(b) of the Sarbanes-Oxley Act of 2002 For Issuers With Public Float Between \$75 and \$250 Million", Available at: <https://www.sec.gov/news/studies/2011/404bfloat-study.pdf>.
- Taylor, E. Z., and Curtis, M. B. (2013), "Whistleblowing in Audit Firms: Organizational Response and Power Distance", *Behavioral Research in Accounting*, Vol. 25 No. 2, pp. 21-43.
- Yen, A. C. (2012), "The Effect of Early Career Experience on Auditors' Assessments of Error Explanations in Analytical Review", *Behavioral Research in Accounting*, Vol. 24 No. 2, pp. 211-229.

PINOCCHIO'S NOSE MAY BE GROWING: MISSTATEMENT RISK AT DISNEY

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ABSTRACT

Disney has been the investors dream company for decades with its impressive revenue growth and profits to match. Recently, however, there have been media reports concerning the quality of the firm's financial statements. In this study, we apply the work of Dechow et al. (2011) to evaluate the likelihood that Disney may be manipulating its financial results. We found that Disney's accruals have been increasing and various performance measures have been deteriorating in recent years. The evidence has been consistent with the general finding that accruals are rising during misstatement years and manipulation is being used to mask deteriorating performance. We then applied Beneish (1999a) to calculate the likelihood of earnings manipulation. We found that Disney's probability of misstatement jumped significantly in 2019 and has passed the threshold to be identified as a manipulator for investors who face relative costs of Type I to Type II errors at around 20:1 or higher. Our results sound the alarm that further scrutiny by authorities of Disney's financial statements may be warranted.

INTRODUCTION

On August 19, 2019, MarketWatch first reported that a former Disney accountant tipped the SEC that the company has materially overstated revenue for years. The whistleblower's filings included allegations such as recording fictitious revenue, double recording revenue, and flaws in accounting software that make tracing manipulation difficult. For example, the revenue from the parks-and-resorts business could have been inflated by as much as \$6 billion for fiscal year 2008-2009 while the reported total was only \$10.6 billion from the segment. Disney has dismissed the allegations and fired the whistleblower.

On February 26, 2020, CNBC reported that long-tenured Disney CEO Bob Iger made a stunning announcement that he would step down as Disney's CEO, effective immediately. Iger implied a desire to concentrate on the creative pipeline of the company as the reason for the move. Iger is still the executive chair of the company. However, as a February 2020 Vanity Fair article noted, "For an industry used to forcibly jettisoning executives amid a cascade of failures, it was strange and disorienting to see one leave when all was seemingly well."

In this paper, we evaluate the risk of a Disney misstatement of financial statements. It is impractical for us to conduct an SEC style investigation. However, the accounting research literature has identified several measures that can be used to evaluate earnings quality and detect misstatement risk. Most of these measures can be calculated using information from publicly

disclosed financial statements. We examine many of these measures to evaluate the risk of a Disney misstatement of its financial reports.

Our approach to testing the existence of accounting misstatement by Disney targets three groups of related factors. The first group is accruals. Accounting items such as receivables, inventories or depreciations, etc. are used to adjust or shift the recognition of cash flows over time. These items are examples of working capital or capital accruals which can be employed to adjust earnings or revenue numbers to better reflect a firm's business. However, estimation of accruals relies on assumptions on future cash flows, which leaves the door open to earnings management. When managers manipulate reported earnings, they typically do so through accruals management.

We examined unadjusted accrual measures (Dechow, Ge, Larson and Sloan, 2011) and discretionary accruals derived from various models including the cross-sectional modified Jones model (Dechow, Sloan and Sweeney, 1995), the performance-matched discretionary accruals model (Kothari, Leone, and Wasley, 2005), and the earnings quality metric (Dechow and Dichev, 2002). We then compare these accrual measures to those of Disney's industry peers.

The second group includes performance measures. It is argued that manipulations occur in order to hide declining firm performance (Dechow, Sloan, and Sweeney (1996), Beneish (1997, 1999b)). We thus calculate four performance measures that are found to be deteriorating prior to and during suspected misstatement years (Dechow et al., 2011).

Finally, we used Beneish eight-factor model to assess the likelihood of fraudulent reporting. We examined the time-series probability of misstatement for Disney over the past decade. We also calculated the time-series values of several individual factors that may suggest the possible source of misstatement.

LITERATURE REVIEW

Analyzing firms' earnings quality and identifying potential conditions that could enable (or possibly signal the likelihood of) fraudulent reporting is an extensive area in accounting research. Dechow, Ge and Schrand (2010) provide a comprehensive review of this literature. Here, we review key literature from which we apply methodology to evaluate Disney's misstatement risk.

Accruals are associated with various proxies for earnings quality. Various attempts have been made to model the accrual process and distinguish 'abnormal' from 'normal' accruals. The normal accruals are meant to capture adjustments that reflect fundamental performance, while the abnormal accruals are meant to capture distortions induced by the application of the accounting rules or earnings management. There have been numerous papers published using abnormal accruals to measure earnings quality (e.g. Jones, 1991; Dechow et al., 1995; Xie, 2001). Starting with Healy (1985), a large body of literature hypothesizes that earnings are primarily misstated via the accruals. Dechow, Ge, Larson and Sloan (2011) examine a large collection of data on the SEC's Accounting and Auditing Enforcement Releases (AAERs) and find that misstatement years are associated with unusually high accruals. Given that issues of earnings manipulation and quality of earnings do appear to cluster by industry, following

Dechow et al. (2011), we calculate a panel of accrual measures for Disney and compare them with industry distributions.

Additionally, researchers have conjectured that weak performance provides incentives to firms to engage in earnings management (Doyle, Ge, and McVay, 2007). Firms may employ accounting tactics to mask deteriorating performance. Therefore, we calculate a set of performance variables investigated in Dechow et al (2011) for Disney and compare them with its industry distribution.

Two pioneering papers that analyzed misstating firms are Beneish (1997) and Beneish (1999a). Beneish (1997) found that accruals, days sales in receivables, and prior performance are important to explain the difference between manipulators and non-manipulators. Beneish (1999a) used financial statement ratios to calculate an index to analyze the probability of misstatement risk. We apply Beneish's model to examine Disney's misstatement risk.

We contribute to the literature by applying findings from accounting research to scrutinize a prominent firm. As part of this review, we noted several areas that are worthy of future exploration.

First, our assessment of Disney's misstatement risk largely relies on the results of its reported accruals. Preliminary evidence from the literature has suggested that earnings management activities using accruals declined following Sarbanes Oxley Act (SOX). It also appears that firms increased the use of other mechanisms such as real earnings management activities and "expectation management" (Cohen, Dey and Lys, 2008; Koh Matsumoto and Rajgopal, 2008).

Regardless, it is still the general consensus that *ceteris paribus*, accruals management still impairs earnings quality, though it represents only one choice within the firm's portfolio of financial reporting options. Most importantly, Disney's accruals are rising relative to its own industry peers. SOX should have significant impact on firms' internal controls (Section 404 and Section 302), and internal control weakness is a documented proxy for earnings misstatement (e.g. Doyle et al., 2007; Ashbaugh-Skaife et al., 2008). If this is the case, future studies might investigate the SOX impact on Disney's internal control efficiency.

Second, another important tool used in this paper is the Beneish misstatement risk model. As far as we know, the model is still widely used and taught in business schools as a tool for detecting misstatement risk. We believe that the inclusion of the model in this study, along with other models, provides for a more robust assessment of the risks examined. However, it has to be pointed out that the model was developed based on violations prior to the mid-1990s. The business environment since that time has changed dramatically, particularly for technology-based companies. At this time, however, it is our view that the assessment of earnings manipulation risk should not be limited to the construction of financial ratios.

ANALYSIS

Data and Sample

The data is from the COMPUSTAT U.S. firms. The sample firms chosen had to have positive assets, sales, and shares outstanding data available. We also required firms to have positive fiscal year-ending closing prices for them to be included in the sample. Table 1 reports statistics of the calculated measures in this paper for fiscal year 2018².

Methods and Results

To assess the risk of misstatement by Disney, we first apply the work of Dechow et al. (2011) who examined accrual accounts and performance measures that help identify manipulation risk. We then calculated the Beneish manipulation index to assess the likelihood of earnings manipulation. Beneish (1997) developed an eight-factor model which uses financial characteristics of firms to evaluate the risk of fraudulent reporting.

² In accrual and performance examinations, we follow the convention, contrasting Disney's results with its own industry. Mis-statement probability is not industry specific; we contrast Disney's number with COMPUSTAT U.S. firms' universe. Most our examinations are focusing on Disney's recent fiscal years (2016-2019). About two-third firms in the universe have reported 2019 fiscal year results. The distribution of the variables is similar in recent fiscal years. We select listing distributions of 2018 which is the most recent fiscal year with complete reporting.

Table 1: Statistics of Calculated Values Used for Fiscal Year 2018

	COMPUSTAT Universe						
	N	Min	Q1	Median	Q3	Std.	Max
WC_Accrual	4106	-0.748	-0.020	0.003	0.030	0.128	0.480
RSST_Accrual	4106	-1.599	-0.037	0.013	0.069	0.288	1.040
Change in Receivables	4077	-0.226	-0.003	0.007	0.034	0.066	0.298
Change in Inventory	4049	-0.146	0.000	0.000	0.005	0.038	0.204
% of Soft Assets	4140	2.27%	36.76%	67.51%	88.27%	29.39%	98.94%
Change in Cash Margin	3437	-2121.41%	-4.57%	0.24%	5.42%	308.10%	1504.45%
Change in ROA	4106	-116.40%	-2.50%	0.28%	3.54%	40.13%	297.98%
Change in Free Cash Flow	3904	-143.20%	-2.10%	0.41%	3.37%	30.56%	184.23%
Abnormal Change in Employees	3739	-213.73%	-10.38%	-1.39%	6.77%	37.70%	100.06%
Probability of Manipulation	4307	0.00%	0.14%	0.56%	1.84%	19.43%	100.00%
	Non-Financial Firms						
	N	Min	Q1	Median	Q3	Std.	Max
WC_Accrual	2991	-1.096	-0.019	0.004	0.032	0.173	0.731
RSST_Accrual	2991	-2.141	-0.052	0.017	0.082	0.361	1.143
Change in Receivables	2977	-0.251	-0.005	0.005	0.024	0.058	0.246
Change in Inventory	2948	-0.170	-0.001	0.000	0.011	0.044	0.227
% of Soft Assets	3155	2.20%	30.52%	57.24%	77.67%	27.58%	97.78%
Change in Cash Margin	2796	-2121.41%	-3.69%	0.27%	4.62%	339.40%	2196.36%
Change in ROA	2991	-149.54%	-4.13%	0.63%	5.05%	80.04%	686.34%
Change in Free Cash Flow	2844	-232.37%	-3.82%	0.69%	4.53%	53.30%	380.18%
Abnormal Change in Employees	2839	-239.43%	-10.90%	-0.46%	8.50%	41.72%	109.54%
Probability of Manipulation	3158	0.00%	0.09%	0.40%	1.04%	20.06%	100.00%
	Communication Industry (2-Digit SIC=48)						
	N	Min	Q1	Median	Q3	Std.	Max
WC_Accrual	81	-0.535	-0.007	0.005	0.019	0.746	6.667
RSST_Accrual	81	-66.000	-0.035	0.005	0.056	7.343	1.332
Change in Receivables	81	-0.440	-0.001	0.002	0.017	0.057	0.143
Change in Inventory	79	-0.052	0.000	0.000	0.000	0.015	0.111
% of Soft Assets	82	1.27%	50.39%	70.17%	84.82%	24.70%	100.00%
Change in Cash Margin	79	-70.04%	-2.04%	0.75%	3.99%	24.49%	173.12%
Change in ROA	81	-487.61%	-5.68%	-1.25%	3.37%	179.39%	1513.67%
Change in Free Cash Flow	79	-447.03%	-4.91%	-0.92%	3.36%	3019.58%	26802.80%
Abnormal Change in Employees	77	-413.29%	-10.30%	-2.90%	5.03%	70.94%	174.73%
Probability of Manipulation	82	0.00%	0.15%	0.39%	0.95%	21.73%	100.00%

Notes: The definitions of variables are provided in Appendix.

Accruals and Earnings Quality

Earnings are usually not equal to the actual realization of cash flows. Accruals are the adjustments that reconcile earnings to cash flows from operations. Earnings are supposed to reflect the underlying economics of business activities. Procedures, such as allocating depreciation over the periods during which equipment and other assets are utilized, are attempts

to capture the underlying economics for any given period. By the same token, firms recognize sales when they are entitled to payment rather than receiving payment. These procedures require judgement and estimation to implement. As it turns out, managers introduce bias into their discretionary estimates with respect to accounting choices, such as recognition of accounts receivable (and revenues), depreciation expenses, inventory (and cost of goods sold), and various accrued liabilities (and expenses). A large body of accounting literature has found that earnings are misstated primarily via the accrual component of earnings. (e.g. Healy, 1985; Dechow, Sloan and Sweeney, 1995; Dechow and Dichev, 2002)

Large positive accruals are generally regarded as bad. Large earnings could be driven by earning increasing accruals which are not persistent and will be reversed. Similarly, large negative accruals should be appreciated since lower earnings could be driven by earning decreasing accruals which are also less persistent and will be reversed.

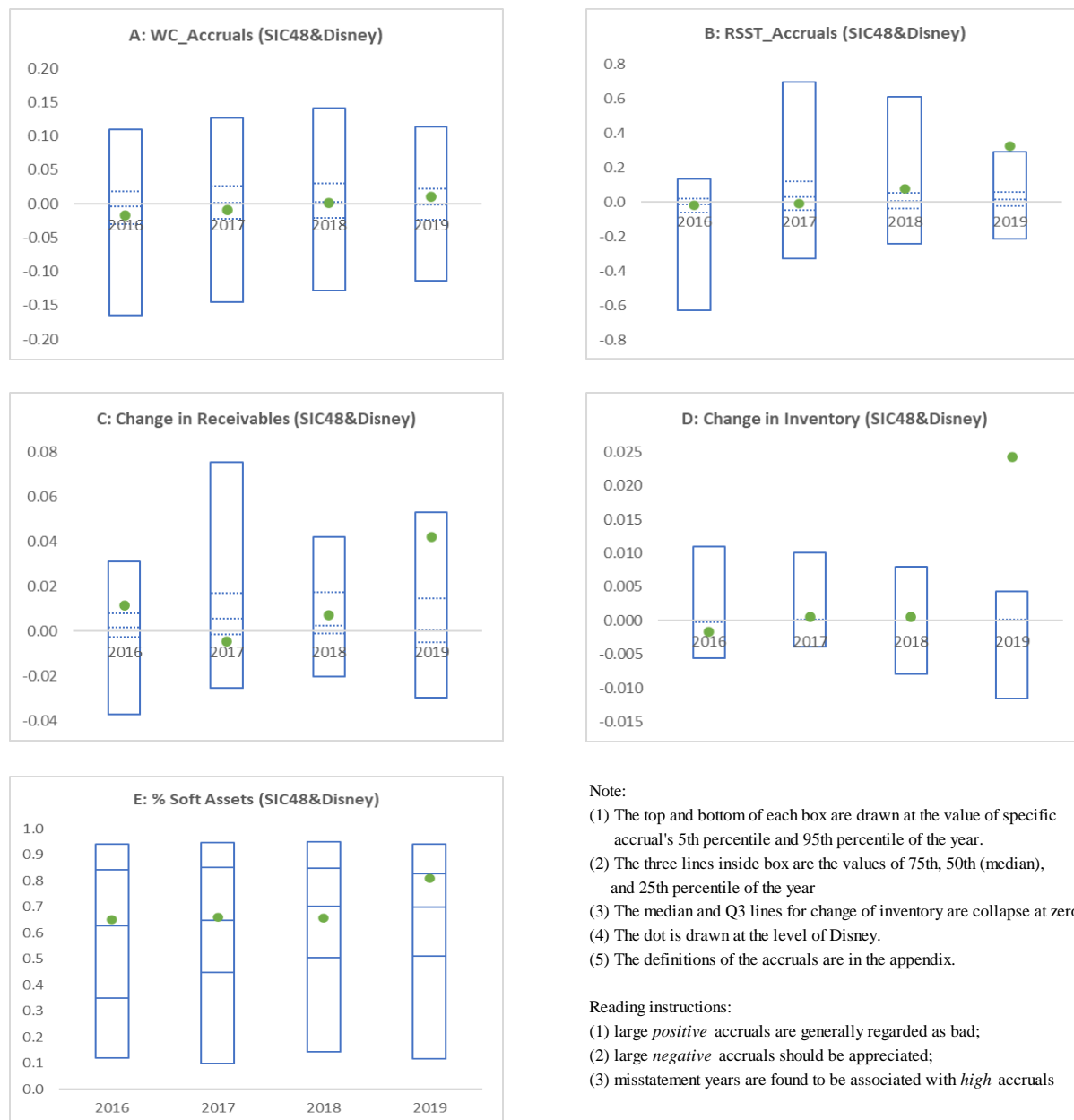
Dechow, Ge, Larson and Sloan (2011) examine a large collection of data from the SEC's Accounting and Auditing Enforcement Releases (AAERs) and found that misstatement years are associated with unusually high accruals. We calculate all but one accrual quality measure investigated in Dechow et al. (2011)³. We found that in recent years, all the examined accrual measures have been increasing for Disney. Our findings are suggestive of increasing risk of Disney misstatement in recent years.

Following the practice of earnings manipulation research that contrasts manipulators with non-manipulators in the same 2-digit SIC industry, we contrasted Disney's accrual measures to those of its industry peers (the communication industry, 2-digit SIC is 48).

In Figures 1-3, we report accrual and performance measures in a box-style format. The bottom of each box is the fifth percentile value of the communication industry. The top of the box is the 95th percentile. The three lines in the middle are the first, median and third quartiles of the industry distribution. The Disney position in the industry distribution is represented by a green dot⁴. We use the same notation of reported measure as in Dechow et al. (2011).

³ We did not use the studentized DD residuals as it is not often used in the literature.

⁴ We repeated the same exercises using non-financial firms or COMPUSTAT U.S. firms as contrasts. The results are qualitatively the same. The Disney's position is more extreme within the industry, followed by U.S. firms' universe and then non-financial firms.

Figure 1: Communications Industry (2-digit SIC: 48) Accruals Comparison and Disney's Value

Unadjusted Accruals

1. Working Capital Accruals (WC accruals)

We first focused on working capital accruals. Dechow et al. (2011) excluded depreciation because Barton and Simko (2002) argue that managing earnings through depreciation is more transparent due to the required disclosure of the effects of changes in depreciation policies.

Figure 1A shows working capital accrual of Disney and its position in the communication industry for the period of 2016-2019⁵. Disney's WC accrual has been increasing over the period. More importantly, the value has turned from negative to positive in 2019. Its relative position in the industry has also changed from the first quartile in 2016 to the third quartile in 2019. If it is true that misstatement years are associated with high accruals, Figure 1-A indicates that earnings quality may have worsened in recent years for Disney.

2. RSST Accruals

This measure is from Richardson, Sloan, Soliman, and Tuna (2005). Non-current accruals such as capitalized expenditures on long-term assets and long-term operating liabilities are included in this measure.

Figure 1B shows that RSST accruals have been increasing for Disney over the period of 2016-2019. Even more dramatically, its level is above the 95th industry percentile in 2019. RSST accruals show the trend consistent with our WC accruals findings.

3. Changes in Receivables and Inventory

Dechow et al. (2011) examined two other accrual components: changes in receivables and changes in inventory. Misstatements of receivables have the effect of boosting sales growth, a metric closely followed by investors. Misstatements of inventory could improve gross margins, another metric followed by investors. Both measures mirror the pattern of RSST accrual: Disney's level has been increasing in recent years and the level is close to or above the top 95th percentile in the industry (See Figure 1C&D).

4. Percent of Soft Assets

Assets that are neither cash nor PP&E (property, plant & equipment) are classified as soft assets. Barton and Simko (2002) provide evidence that firms with greater proportion of soft assets have more accounting flexibility to report positive earnings surprises. Figure 1E shows that Disney's portion of soft assets has increased slightly during 2016-2017 (65.27% to 66.13%) but took a large jump in 2019 to 81% of total assets. Its relative position in the industry has also moved from around the median level to close to the third quartile. The trend in soft asset proportions further supports our concern noted in our assessment of accrual measures.

Some may argue that Disney is a company that has a relatively larger proportion of intellectual property than peers. This interpretation is not strongly supported for the following reasons. First, under U.S. GAAP, firms expense the cost of internally developed intangibles in the period they occur. Thus, while Disney spends millions of dollars each year promoting its brand, it is not permitted to recognize its brand as an asset. Disney's intangible assets or goodwill largely result from acquisitions in the industry. Second, since our comparison is done within industry, firms have relatively homogenous asset structures. Third, we emphasize that the soft asset proportionality trend is alarming not so much the absolute level for Disney.

⁵ About two-thirds of companies (either in COMPUSTAT U.S. universe or the communication industry) have reported 2019 fiscal-year statements.

5. Summary on Unadjusted Accruals' Results

To sum up, all the unadjusted accrual measures for Disney have increased in recent years. Their relative positions in the industry have also risen. The trend is concerning since rising accruals are regarded as a sign that management is increasingly engaging in earnings-related activities that will not persist in the future.

In 2019, all the measures have either almost reached or exceeded the third quartile (Q3) level in the industry. To get an idea on the likelihood that a firm's unadjusted accruals moving above the Q3 level in the industry in any year, we calculated the average proportion of firms with such changes over the past decade. Specifically, for each year, we calculated the percentage of firms in the industry that have a certain accrual measure jumping over its industry Q3 level and then we averaged the fraction over the past decade⁶ for the industry. We report the summary results for all the non-financial industries that have more than fifty eligible observations each year in Table 2. The list of such industries can be found in Table 4.

By and large, the average percentage of firms with such jumps is no more than 17% among the examined industries for the period 2010-2018. For example, the range for WC accruals' over-Q3 jump is 13.70% to 17.62%. That is, among the examined industries, on average, there will be no more than 17.62% of firms whose WC accruals will move above its industry third quartile level in any given year. For the communications industry in which Disney resides, on average, 16.84% of firms in the industry have their WC accrual crossing its industry third quartile level in any given year. The range for percentage soft assets measure is much narrower, ranging from 2.38% to 6.92%. That is, on average, there will be no more than 6.92% of firms in the industry who experience this measure passing its industry third quartile level in any given year. For the communications industry, 5.71% of firms will have the measure passing the industry's Q3 level in any given year.

Taken together, the statistics reveal that Disney-style accrual position changes would not be expected to occur in 80-90% of the cases.

Dichev, Graham, Harvey and Rajgopal (2013) survey results indicated that about 20% of firms manage earnings so as to misrepresent economic performance. If the earnings are misstated via accruals, then Disney's accrual trend makes earnings look questionable.

⁶ Fiscal year 2019 is separately listed since there are only two-thirds of firms reporting for 2019.

Table 2: Proportion of Firms with Calculated Accrual Measures Moving Above Q3 Level In The Two-Digit SIC Industry

Accrual Name	2010-2018 Avg. Range	2019 Range	SIC2=48 2019	SIC2=48 2010-2018 Avg.
WC_accrual	13.70% - 17.62%	10.67% - 21.21%	21.21%	16.84%
Rsst_accrual	11.52% - 16.34%	7.03% - 21.15%	16.67%	16.09%
Change in receivables	12.58% - 17.45%	8.62% - 18.18%	16.92%	15.13%
Change in inventory	6.77% - 17.01%	1.72% - 17.17%	7.94%	11.27%
%Soft Assets	2.38% - 6.92%	1.64% - 9.52%	5.97%	5.71%

Note:

The industries are non-financial and are selected if there are more than 50 eligible firms each year.

The definition of each accrual measure is provided in Appendix. Disney belongs to communication industry which has 2-digit SIC=48.

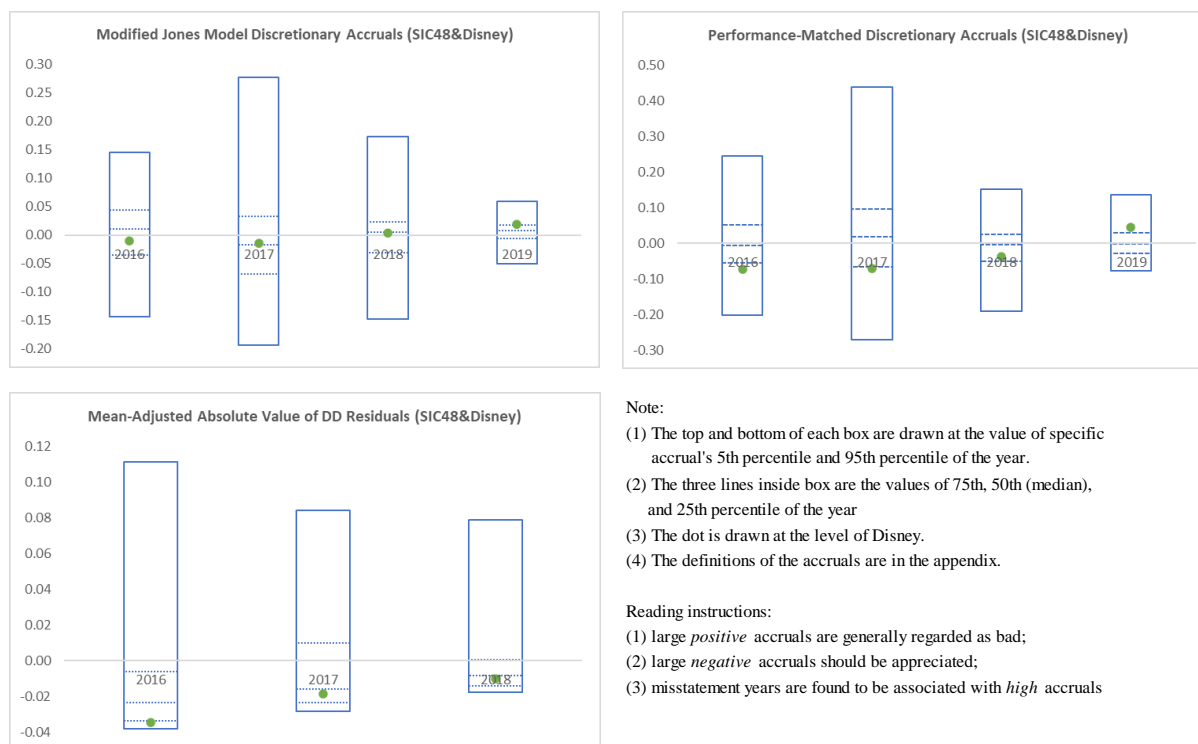
Discretionary Accruals

We report three out of four discretionary accruals from models used in Dechow et al. (2011): (1) modified Jones model discretionary accruals, (2) performance-matched discretionary accruals, and (3) mean-adjusted value of DD⁷ residuals. The approach and related definitions are detailed in the appendix.

Figure 2, panels A-C, show the box-style results. Disney's discretionary accruals have been increasing in recent years. Its position in the industry has been close to or beyond the third quartile level in two out of three measures. If as argued in numerous literatures, the abnormal accruals represent the distortion or management of earnings, revealing lower quality of earnings for Disney.

⁷ Dechow and Dichev (2002).

Figure 2: Communication Industry (2-Digit SIC: 48) Regression of Discretionary Accruals Comparison and Disney's Value



Performance

It has been documented that managers misstate their financial statements to mask deteriorating performance (Dechow, Sloan and Sweeney, 1996; Beneish, 1999). We calculated four performance variables examined in Dechow et al. (2011). These variables can be calculated using information from publicly-disclosed financials.

The first variable we calculate is the change in cash margin. Cash margin is equal to cash sales less cash cost of goods sold. This measures performance purged of receivable and inventory misstatements. Dechow et al. (2011) predicted that when cash margins decline, managers are more likely to make up for the decline by boosting accruals. Figure 3, panel A, indicates that Disney's cash margin has been declining in recent years. In 2017, the level was at the third quartile level in the communications industry, while in 2019, it had dropped to the level of the 5th percentile.

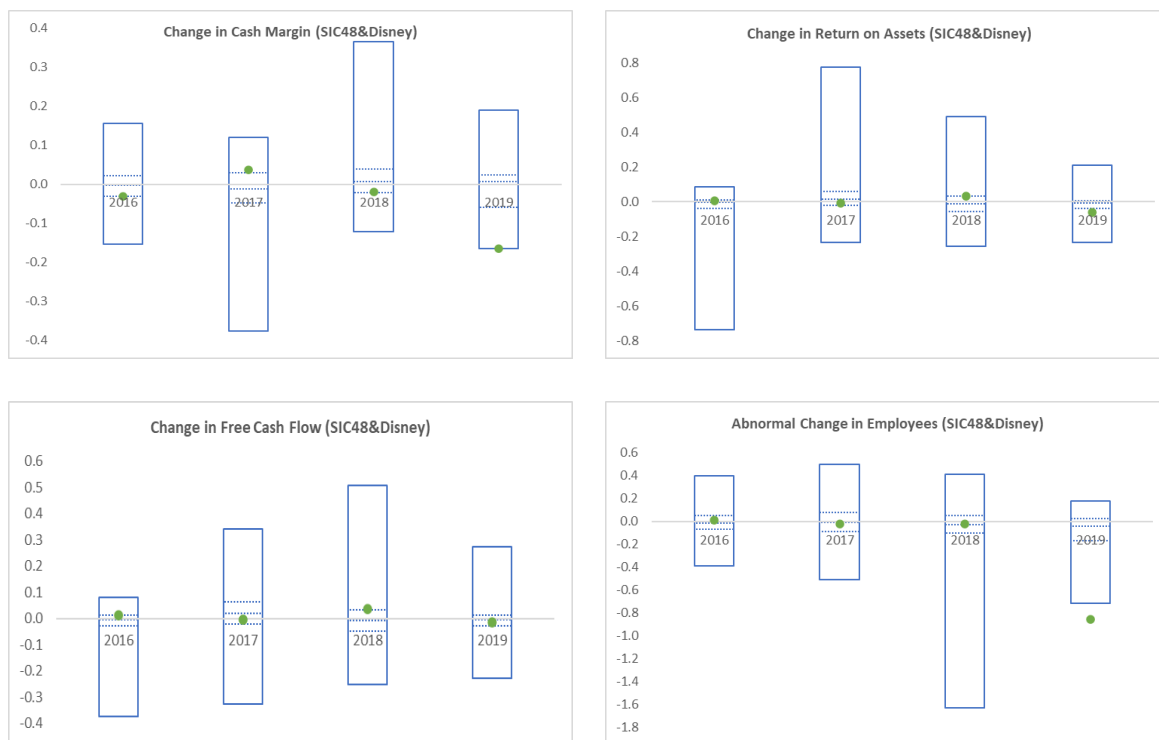
The second performance measure is the change in return on assets (ROA). Graham, Harvey, and Rajgopal (2005) report that managers appear to prefer to show positive growth in earnings. Our calculation shows that Disney's ROA change has moved from the relatively high end of the industry (at the third quartile in 2016) to the low end (below the first quartile in 2019). In 2018, the change in ROA was about 3.4% from 2017. Taking a negative turn, it becomes -5.8% in 2019.

The third performance measure is Disney's change of free cash flow, which generally hovers around zero percent in 2016-2017. In 2018-2019, the measure has been declining from positive to negative and from at third quartile to below the industry median.

Finally, we calculate one of the non-financial measures examined in Dechow et al. (2011). It has been argued that managers attempting to mask deteriorating financial performance will reduce employee headcount in order to boost the bottom line. The reason is that, unlike capital expenditures, most expenditures on labor must be expensed as incurred. Following Dechow et al. (2011), we calculated the abnormal change in the number of employees as the percentage change in the number of employees less the percentage change in total assets. It has been predicted that there is a negative association between abnormal change in employees and misstatements. The result of this measure is very alarming. Disney's abnormal change of employees has declined from positive in 2016 to slightly negative in 2017-2018 and then a dramatic drop to below -85% in 2019⁸.

⁸ We ruled out this extremity as being caused by the acquisition of 21st Century Fox by Disney. The acquisition took place on March 20, 2019. However, both companies reported their 2019 fiscal year results separately.

Figure 3: Communication Industry (2-Digit SIC: 48) Performance Comparison and Disney's Value



Note:

- (1) The top and bottom of each box are drawn at the value of specific accrual's 5th percentile and 95th percentile of the year.
- (2) The three lines inside box are the values of 75th, 50th (median), and 25th percentile of the year.
- (3) The dot is drawn at the level of Disney.
- (4) The definitions of the performance are in the appendix.

Reading instruction: deterioration of performance provides incentive in earnings manipulation.

Taken together, accrual measures calculated directly using financial variables or models indicate not only a rising trend but also, in some cases, a disturbingly high level of accruals for Disney. The finding is in line with the literature that misstatement years are associated with unusually high accruals. Furthermore, the financial performance measures for Disney has been declining and, in some cases, stand at the lowest level in its industry. This puts Disney in a very suspicious situation given the research to date which indicates that managers tend to misstate their financial statements in order to mask deteriorating performance. These findings suggest Disney maybe using accruals to manipulate its increasingly disappointing earnings. Next, we apply the Beneish model to assess the probability that Disney maybe engaging in earnings manipulation.

Beneish Model

Beneish's model is an empirical approach to identify the financial characteristics of firms that are likely to engage in earnings manipulation. The eight-factor version of the model uses only financial statement items.

Beneish's Eight Factors and Rationale for Inclusion⁹

1. Days Sales in Receivable Index (DSRI)

This index relates the ratio of accounts receivable at the end of the current year as a percentage of sales for the current year to the corresponding amounts for the preceding year. A large increase in accounts receivable as a percentage of sales might indicate an overstatement of accounts receivable and sales during the current year to boost earnings. Such an increase also might result from a change in the firm's credit policy (for example, liberalizing credit terms).

2. Gross Margin Index (GMI)

This index relates gross margin (that is, sales minus cost of goods sold) as a percentage of sales from the previous year to the gross margin as a percentage of sales for the current year. A decline in the gross margin percentage will result in an index greater than 1.0. Firms with weaker profitability the current year are more likely to engage in earnings manipulation.

3. Asset Quality Index (AQI)

Asset quality refers to the proportion of total assets comprising assets other than (1) current assets; (2) property, plant, and equipment; and (3) investments in securities. The remaining assets include intangibles for which future benefits are less certain than for current assets and property, plant, and equipment. The AQI equals the proportion of these potentially lower-quality assets during the current year relative to the preceding year. An increase in the proportion might suggest an increased effort to capitalize and defer costs the firm should have expensed.

4. Sales Growth Index (SGI)

This index equals sales of the current year relative to sales of the preceding year. Growth does not necessarily imply manipulation. However, growing companies usually rely on external financing. The need for low-cost external financing might motivate managers to manipulate sales and earnings.

5. Depreciation Index (DEPI)

This index equals depreciation expense as a percentage of net property, plant, and equipment before depreciation for the preceding year relative to the corresponding percentage for the current year. A ratio greater than 1.0 indicates that the firm has slowed the rate of depreciation, perhaps by lengthening depreciable lives, thereby increasing earnings.

⁹ We quote the textbook (p.388-389), 'Financial Reporting, Financial Statement Analysis, and Valuation' 9th edition, by Wahlen, Baginski and Bradshaw (2017).

6. Selling and Administrative Expense Index (SAI)

This index equals selling and administrative expenses as a percentage of sales for the current year to the corresponding percentage for the preceding year. Firms attempting to manipulate earnings would defer costs, and the index value would be less than 1.0.

7. Leverage Index (LVGI)

This index equals the proportion of total financing comprising current liabilities and long-term debt for the current year relative to the proportion for the preceding year. An increase in the proportion of debt likely subjects a firm to a greater risk of violating debt covenants and the need to manipulate earnings to avoid the violation.

8. Total Accruals to Total Assets (TATA)

Total accruals equal the difference between income from continuing operations and cash flow from operations. Beneish used this variable as an indicator of the extent to which earnings result from accruals instead of from cash flows. A large excess of income from continuing operations over cash flow from operations indicates that accruals play a large part in measuring income. Accruals can serve as a means of manipulating earnings.

The value to calculate Beneish's probability of earnings manipulation is as follows:

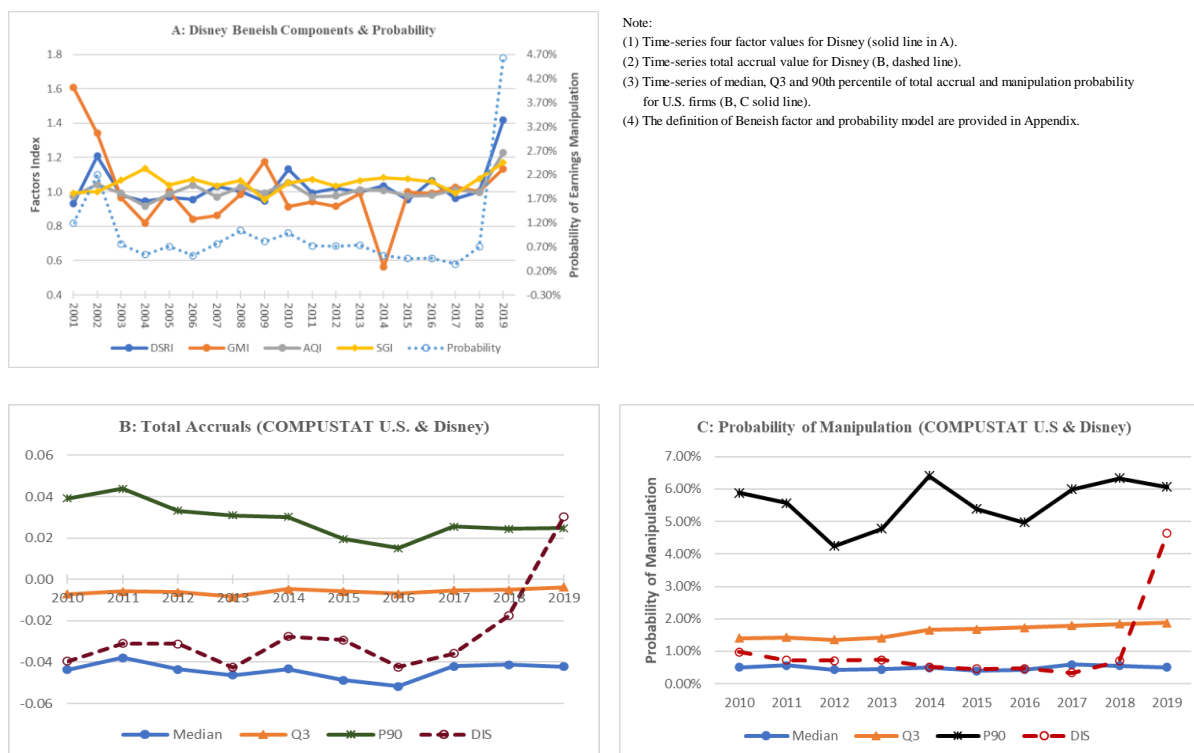
$$y = -4.840 + 0.920(DSRI) + 0.528(GMI) + 0.404(AQI) + 0.892(SGI) + 0.115(DEPI) - 0.172(SAI) - 0.327(LVGI) + 4.670(TATA)$$

We have calculated the eight factors and corresponding Beneish probability of earnings manipulation for Disney for the past 10 years. We found that five of eight factors provide evidence of manipulation in recent years.

Figure 4, panel A, shows DSRI has increased and passed the 1.0 threshold, indicating overstatement of account receivables in recent years. The change of GMI indicates weaker profitability. The increase to over 1.0 of AQI indicates an increase in proportion of lower quality assets. The rise to over 1.0 of SGI suggests growing sales, which may imply the need for manipulation to acquire the low-cost external financing to sustain the sales growth trend.

Panel B shows the total accrual factor in the Beneish model. As a contrast, we also show the median, Q3 and 90th percentile level for the COMPUSTAT Universe of U.S. firms. Over the past decade, before 2016, Disney's total accrual has generally been slightly above the median level. Starting from 2016, however, total accruals have been on the rise. In 2019, Disney's total accruals were positive and reached the 90th percentile level. In contrast, the median and third quartile level for all U.S. COMPUSTAT firms have been relatively stable over the past decade. The 90th percentile has declined from 0.04 at the beginning of the decade to around 0.02 at the end, a nearly 50% drop. This suggest that as the universe of U.S. firms reduce the total accrual level, Disney has done the opposite.

Figure 4: Time-Series of Beneish Eight-Factor Manipulation Probability for Disney (dashed line in A and C)



Beneish's probability calculation indicates a sharp increase in risk of earnings manipulation for Disney in 2019. The probability of manipulation has risen from below 0.7% to 4.63%. The absolute value is still less than 90th percentile for the U.S. COMPUSTAT Universe. However, we provide two pieces of evidence to show that this change is alarming.

First, with a 4.63% probability, can we classify Disney as earnings manipulator? In attempts to distinguish manipulations, Beneish (1999) calculates the cutoff probabilities associated with different costs of making classification errors. There are two types of errors: (1) classifying a company as a non-manipulator when it manipulates (a Type I error), or (2) classifying a company as a manipulator when it does not manipulate (a Type II error). The probability cutoffs that minimize the expected costs of misclassification depend on costs associated with the relative cost of making an error of either type.

The cutoff probabilities for various relative mixtures of Type I and Type II error costs from Beneish (1999)¹⁰:

¹⁰ The long version of the table is from Beneish (1999) (p.32). The short version here is exhibited in 'Financial Reporting, Financial Statement Analysis and Valuation', 9th edition by Wahlen, Baginski and Bradshaw (2017) (p.391). Since we did not create the table, it is not included in our table numbering.

Cost of Type I Error Relative to Type II Error	Cutoff Probability
10:1	6.85%
20:1	3.76%
30:1	3.76%
40:1 or higher	2.94%

Investors are likely to have high Type I error costs because the investment loss associated with the discovery of the manipulation is dramatic, whereas their Type II error costs would be low because of the availability of substitute investments. A regulator's objective function, however, requires balancing the protection of the investing public against the costs of falsely accusing a company. Their relative costs cannot be measured, but it is likely that their Type II error costs are higher than those of investors which is consistent with the fact that companies that are subject to accounting enforcement actions by SEC are actually rare¹¹. According to the above cutoffs, investors would conclude that Disney is a manipulator under the assumption of the cost of Type I to Type II errors is around 20:1 or higher.

Second, from the distribution of year-over-year probability change for the universe of U.S firms, the magnitude of change is beyond the 90th percentile level in recent years. Statistically, the chance for Disney's type of magnitude change is less than 10%. Consistent with this finding, we report the proportion of firms in major industries that have a 3% or above change each year is also generally less than 10% over the past decade. Results are reported in Tables 3 and 4.

¹¹ According to Beneish (1999) data, Accounting and Auditing Enforcement Releases (AAERs) from 1987 – 1993, the fraction of manipulators is only 0.0069 out of the whole population.

**Table 3: Manipulation Probability Distribution
(COMPUSTAT U.S. firms) for Fiscal Years 2016-2019)**

Year	Firms	P5	Q1	Median	Q3	P90	P95
2016	4584	0.00%	0.09%	0.43%	1.73%	4.98%	31.19%
2017	4435	0.00%	0.14%	0.59%	1.79%	6.00%	33.86%
2018	4307	0.00%	0.14%	0.56%	1.84%	6.33%	35.15%
2019	3744	0.00%	0.13%	0.51%	1.87%	6.07%	30.62%

Year	Firms	P5	Q1	Median	Q3	P90	P95
2016	4400	-21.24%	-0.32%	0.00%	0.40%	2.99%	19.58%
2017	4213	-14.54%	-0.27%	0.05%	0.60%	3.69%	21.38%
2018	4106	-17.56%	-0.46%	0.00%	0.48%	3.57%	20.57%
2019	3610	-19.44%	-0.45%	0.00%	0.44%	3.67%	19.75%

Note:

- (1) Top panel is the manipulation probability distribution for COMPUSTAT U.S. firms for the fiscal years 2016-2019.
- (2) The bottom panel is the distribution for annual manipulation probability *change* for COMPUSTAT U.S. firms for the fiscal years 2016-2019.
- (3) The probability is calculated using Beneish eight-factor model.
- (4) The detail of the model is provided in Appendix.

Table 4: Proportion of Firms Manipulation Probability Moving by 3% in Two-Digit SIC Industry.

SIC2	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2010-2018 Average	Industry
13	0.0833	0.0850	0.0986	0.0900	0.1388	0.0565	0.1737	0.1856	0.1056	0.0385	11.30%	Oil Gas & Extraction
20	0.0594	0.0792	0.0583	0.1121	0.0816	0.0404	0.0957	0.0602	0.0800	0.0351	7.41%	Food & Kindred Products
28	0.1711	0.1617	0.1693	0.1261	0.1850	0.1911	0.1758	0.1856	0.1836	0.2339	17.21%	Chemical & Allied Product
34	0.0545	0.0545	0.0000	0.0784	0.0577	0.0377	0.0577	0.0392	0.0800	0.0476	5.11%	Fabricated Metal Products
35	0.1194	0.0746	0.0402	0.0881	0.0521	0.0398	0.0549	0.0881	0.0588	0.0530	6.84%	Industrial Machinery & Equipment
36	0.1186	0.0811	0.0705	0.0792	0.0667	0.0865	0.0524	0.1157	0.1000	0.0963	8.56%	Electronic & Other Electric Equipment
37	0.0909	0.1485	0.0505	0.0404	0.1122	0.0306	0.0645	0.0345	0.0581	0.0400	7.00%	Transportation Equipment
38	0.0698	0.0637	0.0528	0.0741	0.0709	0.1084	0.0868	0.0809	0.0812	0.1268	7.65%	Instrument & Related Products
48	0.0551	0.1000	0.0268	0.0885	0.0288	0.0594	0.0326	0.1011	0.0610	0.1029	6.15%	Communications
49	0.0467	0.0350	0.0563	0.0625	0.0473	0.0588	0.0647	0.0677	0.0252	0.0727	5.16%	Electric, Gas & Sanitary Service
50	0.1163	0.1364	0.0595	0.0864	0.0482	0.0253	0.0676	0.1233	0.0423	0.0492	7.84%	Wholesale Trade - Durable Goods
51	0.1754	0.1552	0.0526	0.0702	0.0345	0.0690	0.1000	0.0893	0.0182	0.0952	8.49%	Wholesale Trade - Nondurable Goods
58	0.1111	0.0769	0.0755	0.0556	0.0645	0.0938	0.0484	0.0167	0.0727	0.0233	6.83%	Eating & Drinking Places
59	0.0400	0.1324	0.0597	0.0857	0.0286	0.0606	0.0984	0.0820	0.0877	0.0698	7.50%	Miscellaneous Retail
73	0.0966	0.0751	0.0614	0.0802	0.0835	0.0481	0.0543	0.0591	0.0819	0.0653	7.11%	Business Services
80	0.0581	0.1013	0.0380	0.1071	0.0759	0.1125	0.0541	0.0857	0.0645	0.0357	7.75%	Health Services
87	0.0548	0.0625	0.0484	0.0615	0.1014	0.1406	0.0938	0.1167	0.0000	0.1087	7.55%	Engineering & Management Services

Note:

- (1) The industries are non-financial and are selected if there are more than 50 eligible firms each year.
- (2) The calculation of manipulation probability using Beneish model is provided in Appendix.
- (3) Disney belongs communication industry which has a two-digit SIC 48.

Window of Dramatic Probability

What is the window between the showing of significant level of manipulation risk and needing of enforcement correction? We do not know of enough incidences to evaluate this with more certainty nor of a model to predict this. However, to give some sense of the potential

violation, we conclude this section with three anecdotal examples from the 9th edition of “Financial Reporting, Financial Statement Analysis, and Valuation” by Wahlen, Baginski and Bradshaw (2017).

Micro-Strategy (Ticker: MSTR) founded in 1989 and became a public company via an IPO in June 1998. The company is a provider of software that enables businesses to conduct transaction data through various channels and to examine information about customers, partners, and supply chains. In the latter part of the 1990s, the company aggressively recognized revenue upon signing a contract with customers (and often before that). The company had to restate 1998 financial statements. It announced this in 2000.

In 1997, the calculated Beneish probability was 0.58% and total accrual was -0.224. In 1998, the Beneish probability jumped to 22.03% and total accrual rose to 0.155, a value that was remarkably high.

The second example is Enron. In 2001, Enron had to restate its financial statements for early years, because it reported several items beyond the limits of U.S. GAAP. According to Wahlen et al. (2017) calculations, the Beneish probability for Enron in 1998, 1999 and 2000 were 0.9%, 2.4% and 29.5%, respectively. The corresponding total accruals for those three years are -0.032, -0.006 and -0.058.

The third example is Sunbeam Corporation which is a private company. Sunbeam manufactures countertop kitchen appliances and barbecue grills. Its sales growth and profitability slowed considerably in the mid-1990s. According to the originally reported numbers, the probability of manipulation was 0.143% in 1996 and 3.386% in 1997. The SEC instituted a formal investigation into the possibility of manipulation. Sunbeam responded in October 1998 by restating its financial statements from the fourth quarter of 1996 to the first quarter of 1998. The restatements revealed that Sunbeam had engaged in various actions that boosted earnings for the period.

CONCLUSION

Inspired by the MarketWatch news item about the whistle-blower’s accusation of Disney’s inflation of earnings and revenue, this research examined several measures commonly regarded as indicators of earnings misstatement.

We found that Disney’s accrual measures have been increasing in recent years, indicating a deterioration of earnings quality. The relative position of accruals of Disney to its industry has also worsened. The probability for these types of changes occurring in normal business operations are typically less than 10%. Disney’s performance measures indicate deteriorating performance. The situation suggests that incentives are in place for earnings manipulation by Disney management.

Beneish factor dynamics provided a similar picture reflected by using accrual measures. Beneish probability calculations indicate a sudden jump in manipulation risk. The calculated probability for Disney in 2019 has passed the cutoff with a mild or higher mixture of Type I to Type II error cost. This implies investors who face investment loss with the discovery of manipulation would conclude Disney is a manipulator.

Given these findings, we have reasons for concern regarding the quality of Disney's earnings in recent years. We believe further investigation is warranted. Pinocchio's nose knows.

REFERENCES

- Ashbaugh-Skaife, H., Collins, D., Kinney, W. & LaFond, R. (2008). The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review*, 83, 217-250.
- Barton, J. & Simko, P. (2002). The balance sheet as an earnings management constraint. *The Accounting Review*, 77 (Supplement), 1-27.
- Beneish, M. D. (1997). Detecting GAAP violations: Implications for assessing earnings management among firms with extreme financial performance. *Journal of Accounting and Public Policy*, 16(3), 271-309.
- Beneish, M. D. (1999a). Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review*, 74(4), 425-57.
- Beneish, M. D. (1999b). The Detection of Earnings Manipulation. *The Financial Analyst Journal*, September/October, 24-35.
- Cohen, D., Dey, A. & Lys, T. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review*, 83, 757-787.
- Dechow, P. M. & Dichev, I. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, 77 (Supplement), 35-59.
- Dechow, P. M., Ge, W., Larson, C. R. & Sloan, R. G. (2011). Predicting Material Accounting Misstatements. *Contemporary Accounting Research*, 28(1), 17-82.
- Dechow, P., Ge, W. & Schrand, C. (2011). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50, 344-401.
- Dechow, P. M., Sloan, R. G. & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-226.
- Dechow, P. M., Sloan, R. G. & Sweeney, A. P. (1996). Causes and consequences of earnings misstatement: An analysis of firms subject to enforcement actions by the SEC. *Contemporary Accounting Research*, 13(1), 1-36.
- Dichev, I. D., Graham, J. R., Harvey, C. R. & Rajgopal, S. (2013). Earnings quality: Evidence from the field. *Journal of Accounting and Economics*, 56, 1-33.
- Doyle, J., Ge, W. & McVay, S. (2007). Accruals quality and internal control over financial reporting. *The Accounting Review*, 82, 1141-1170.
- Graham, J., Harvey, C. & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1-3), 3-73.
- Healy, P. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(1), 85-107.
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29, 193-228.
- Koh, K., Matsumoto, D. & Rajgopal, S. (2008). Meeting or beating analyst expectations in the post-scandals world: changes in stock market rewards and managerial actions. *Contemporary Accounting Research*, 25, 1067-1098.
- Wahlen, J. M., Baginski, S.P. & Bradshaw, M. T. (2017). Financial Reporting, Financial Statement Analysis, and Valuation, 9th edition. Cengage Learning.
- Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review*, 76, 357-373.

APPENDIX

Accrual quality variables from Dechow et al. (2011)

WC accruals: $[(\Delta \text{current assets} - \Delta \text{cash and short-term investments}) - (\Delta \text{current liabilities} - \Delta \text{debt in current liabilities} - \Delta \text{taxes payable})] / \text{Average total assets}$

RSST accruals: $(\Delta \text{WC} + \Delta \text{NCO} + \Delta \text{FIN}) / \text{Average total assets}$. WC = [current assets – cash and short-term investments] – [current liabilities – debt in current liabilities]; NCO = [total assets – current assets – investment and advances] – [total liabilities – current liabilities – long-term debt]; FIN = [short-term investments + long-term investments] – [long-term debt + debt in current liabilities + preferred stock]

Change in receivables: $\Delta \text{Account receivables} / \text{Average total assets}$

Change in inventory: $\Delta \text{Inventory} / \text{Average total assets}$

% soft assets: $(\text{total assets} - \text{PP\&E} - \text{cash and cash equivalent}) / \text{Total assets}$

Dechow et al. (2011) performance variables

Change in cash margin: percentage change in cash margin. Cash margin: $1 - [(\text{cost of good sold} - \Delta \text{inventory} + \Delta \text{accounts payable}) / (\text{sales} - \Delta \text{accounts receivable})]$

Change in return on assets: $[\text{Earnings}_t / \text{Average total asset}_t] - [\text{Earnings}_{t-1} / \text{Average total asset}_{t-1}]$

Change in free cash flows: $\Delta [\text{Earnings} - \text{RSST accruals}] / \text{Average total assets}$

Abnormal change in employees: percentage change in the number of employees – percentage change in assets

Discretionary accruals from industry cross-sectional regressions:

Modified Jones discretionary accruals:
$$WC \text{ Accruals} = \alpha + \beta \left(\frac{1}{\text{Beginning Assets}} \right) + \gamma \left(\frac{\Delta \text{Sales} - \Delta \text{Receivables}}{\text{Beginning Assets}} \right) + \rho \left(\text{Gross PPE} \frac{\text{PPE}}{\text{Beginning Assets}} \right) + \varepsilon$$
 The model is estimated cross-sectionally each year using all firm-year observations in the same two-digit SIC code. The residuals are used as the modified Jones model discretionary accruals.

Performance-matched discretionary accruals: the difference between the modified Jones discretionary accruals for firm i in year t and the modified Jones discretionary accruals for the matched firm in year t , following Kothari et al. 2005; each firm-year observation is matched with another firm from the same two-digit SIC code and year with the closest return on assets.

Mean-adjusted absolute value of DD residuals: the following regression is estimated for each two-digit SIC industry: $\Delta \text{WC} = b_0 + b_1 \text{CFO}_{t-1} + b_2 \text{CFO}_t + b_3 \text{CFO}_{t+1} + \varepsilon$. The mean absolute value of the residual is calculated for each industry and is then subtracted from the absolute value of each firm's observed residual. All variables scaled by average of total assets. ΔWC is – sum of (change of accounts receivable, change of inventory, change of accounts payable, change of income taxes, change of other assets and liabilities). CFO is the cash flow from operation.

Beneish eight factors and value for probability of manipulations at year t

DSRI: $(\text{Account Receivable}/\text{Sales})_t / (\text{Account Receivable}/\text{Sales})_{t-1}$

GMI: $[(\text{Sales} - \text{Cost of Goods Sold})/\text{Sales}]_{t-1} / [(\text{Sales} - \text{Cost of Goods Sold})/\text{Sales}]_t$

AQI: $[(\text{Total Assets} - \text{Cash and Short-term Investments} - \text{PP\&E})/\text{Total Assets}]_t / [(\text{Total Assets} - \text{Cash and Short-term Investments} - \text{PP\&E})/\text{Total Assets}]_{t-1}$

SGI: $\text{Sales}_t / \text{Sales}_{t-1}$

DEPI: $[\text{Depreciation}/(\text{Depreciation} + \text{PP\&E})]_{t-1} / [\text{Depreciation}/(\text{Depreciation} + \text{PP\&E})]_t$

SAI: $(\text{SGA}/\text{Sales})_t / (\text{SGA}/\text{Sales})_{t-1}$; SGA: Selling, General & Administration

LVGI: $[(\text{Current Liability} + \text{Long-term Debt})/\text{Total Assets}]_t / [(\text{Current Liability} + \text{Long-term Debt})/\text{Total Assets}]_{t-1}$

TATA: $(\text{Net Income} - \text{Cash Flows from Operation})_t / \text{Average of Total Assets}$

All the financial data in calculation are from COMPUSTAT annual. The sample are limited in U.S. firms only. To be included in the sample, the firm must have positive total assets, sales, fiscal year-end closing stock price and number of shares outstanding. Each 2-digit SIC industry are winsorized at 1st and 99th percentile for the 10-year period.

DIGITAL LITERACY AND ACCOUNTING STUDENTS: IMPLICATIONS FOR THE PROFESSION

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ABSTRACT

Digital literacy is required for all university students to thrive in today's online environment and is especially important for Accounting Students who, as professionals, must apply critical evaluation techniques to digital information. This study looks at how university Accounting Students perceive their digital literacy abilities against the perceptions of students in other disciplines. Researchers used a ten-item survey based on the digital framework of Hobbs to measure differences in perceived digital literacy across students. Research subjects included students of multiple disciplines across three schools at a large urban university. Research results indicate that all students outside of the accounting discipline perceived themselves to be significantly better at being able to: a) analyze messages in a variety of forms; b) evaluate the quality and credibility of content in a message; c) use powerful search strategies; and d) develop multimedia creations. On the other hand, our research results indicate that Accounting Students perceive themselves as significantly better than Finance Students in their ability to a) use the Internet to connect with others with shared interests; b) use the power of communication as a tool for advocacy; c) understand the meaning of copyright; and, d) apply social responsibility and ethical principles to communication behavior. In addition, Computer Science Students perceive themselves as significantly better than Accounting Students in their ability to a) use powerful search strategies; b) develop multimedia creations; c) use the Internet to connect with others with shared interests; d) reflect on online conduct and online social responsibilities; e) use the power of communication as a tool for advocacy; and f) apply social responsibility and ethical principles to communication behavior. Lastly, younger students perceived themselves as better than older students in their ability to a) use the Internet to connect with others with shared interests and b) to use the power of communication as a tool for advocacy. This research concludes that there is a pressing need to focus on and include digital literacy skills into curriculum for Accounting Students.

INTRODUCTION

Digital literacy is no longer an optional skill for Accounting Students. In fact, it is important for accounting professionals because it enables them to better collect, analyze and synthesize digital information. Accounting professionals must be able to find and use evidence to

evaluate the credibility of digital information, and be able to conduct sophisticated digital searches to uncover information relevant to their clients. Therefore, digital literacy expands the boundaries to achieve solutions for all kinds of accounting engagements.

The global economy is driven by the Internet and its vast source of knowledge. It is practically impossible to function professionally today without digital literacy and fluency. Current students are native speakers of the digital language of computers, video games and the Internet (Meyerson, 2016). As of March 2018 one in four Americans – and 39% of those ages 18 to 29 – are online “almost constantly” (Perrin & Jiang, 2018). This online engagement in global networks has created a need for all students to become responsible global digital users.

In addition, the Association to Advance Collegiate Schools of Business (AACSB), an international accreditation body for accounting programs, recognizes the need for high technology skills in its 2020 accreditation standards. AACSB suggests that:

“The currency and relevancy of curriculum will focus on competencies and what students will be expected to be able to demonstrate upon completion of their program of study. Technology will be ever important, and all AACSB-accredited schools will be expected to have processes in place to ensure that both learners and faculty are competent with current and emerging technologies” (AACSB, 2020, page 10).

Our research was guided by our attempt to assure that our programs were in compliance with AACSB guidelines. In addition, for a number of years, as we coached accounting students through competitions that involved accessing and searching databases to solve complex accounting problems, we noted that they were actively involved in Internet data sourcing and analysis. We therefore assumed that accounting students had better digital literacy capabilities than most other college students. We conducted this research to determine if our assumption was correct.

Knowing that technical competency is important, we explored past literature and found that there was only one study involving accountants and level of digital literacy (Mohammadyari & Singh, 2015). Further exploration led to The Hobbs Model of digital literacy and we decided that this was an appropriate framework to capture competency with technology.

Our research paper explores the current status of Accounting Students with regard to their perceived digital literacy and compares that literacy with other disciplines.

Digital literacy is defined by Cornell University’s Digital Literacy Resource as “the ability to find, evaluate, utilize, share and create content using information technologies and the Internet.” As Friedman (2015) elaborates, digital literacy involves having a working knowledge of current technology and how it can best be used. It is about understanding how information can be found and communicated through computer hardware and software, the Internet, smartphones, tablets, and other digital devices, and knowing how to use these digital outlets to interact with society in a morally responsible way.

Accounting Students need to be able to use technology and think in technical terms, embracing technology on all levels (Cunningham et al., 2016). They need to be equipped and skill-ready for the workplace (Lestari & Santos, 2019; Caballero & Walker, 2010). Research by Becker et al. (2017) indicates that college students who excel in digital literacy have higher promotion rates and find it easier to adapt to diverse work environments than students who do not excel in digital literacy. Yet a pilot study by Calloway et al. (2016) found that Accounting students were lacking in many areas of digital literacy. Therefore, educators must ensure that

students are not only ready for their future careers in accounting, but must be ready to enter the workforce, digitally prepared. (Casner-Lotto et al., 2006; Goldin, 2015).

Accounting Students must be efficient and effective in all aspects of digital literacy to have successful business careers. Students must be able to analyze Internet messages including the identification of the author, purpose and point of view of the message. This ability allows them to better evaluate alternatives in decision making. Students must also be able to evaluate the quality and credibility of the content of information they find on the Internet. This will help them develop products and services that have quality and are credible. Students must also be able to develop powerful search strategies that allow them to better identify information that can be useful in their audit, tax, consulting, valuation, analyses and reporting products. With more well-rounded digital literacy skills, Accounting Students will be able to share interests with others and attract business opportunities that might not otherwise be available to them. Wide use of online venues requires students to understand and conduct themselves in a socially responsible way. They must be able to practice social responsibility and ethical principles throughout their Internet interactions. Accounting Students must also understand the meaning of “copyright.” This can enhance protection of their own future creative products and those of their clients and create a better awareness of legal and ethical responsibilities toward intellectual property. With powerful Internet communication skills, future accountants can use the power of advocacy to communicate their needs to regulators, future customers, stock analysts, potential investors, and readers of their reports. Digital literacy skills include the ability to successfully collaborate and accountants must be able to do this to achieve better business results. Being able to develop and use multimedia creations will also enhance all aspects of students’ visual and audio reports. This skill enhances the quality of their products and services.

What follows in this paper is a literature review exploring prior research involving digital literacy; the methodology used; results and discussion; conclusions; and limitations of this research.

LITERATURE REVIEW OF DIGITAL LITERACY MODELS AND RESEARCH

Digital literacy models encompass competencies necessary to function effectively in a digitally enabled society. In 1997, Paul Gilster, a computer scientist, first introduced the term ‘digital literacy’ (Gilster, 1997). He defined digital literacy as “the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.” Gilster’s original model described two digital literacy layers: the first layer was composed of computers that capture and store data and the second layer was composed of software that formatted the data into information.

Later digital literacy models included the basic skills required of people to use computer technology, including Internet skills needed to consume digital information, such as a familiarity with browsers. Martin’s comprehensive description of a digital literate person was someone with the ability to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources (Martin, 2008).

Renee Hobbs authored one of the most comprehensive contemporary conceptual descriptions of digital literacy competencies in *Digital and Media Literacy: A Plan of Action* [White Paper] (Hobbs, 2010). This white paper explicated the plan developed by a premier group of scholars at the Aspen Institute and the *Knight Commission on the Information Needs of Communities in a Democracy* [White Paper]. Hobbs subsequently enumerated a list of ten

generic competencies: abilities that are required of a digitally literate citizen. This Model is still relevant today as these same concepts are now being pushed further down into the educational system as important skills for K through 12 students to develop (Loveless, 2020).

A study by Mohammadyari & Singh (2015) examined the role of digital literacy on individual performance by examining how accountants use Web 2.0 e-learning platforms that have tools such as podcasts, blogs and wikis. This study found a relationship between accountants' level of digital literacy and their performance. The findings of Mohammadyari & Singh (2015) informed our research in the following way: these results motivated us to clearly focus on the importance of digital literacy for Accounting students because they will be expected to evaluate digital information throughout their careers. While the research by Mohammadyari & Singh (2015) showed that digital literacy is important to accountants because they will need to use e-learning tools to update their skills, we believe digital literacy is more broadly important to accountants because everything they do relates to evaluating information, and most information is now in a digital form.

The authors believe it is important for all university students to be highly functional in digital literacy as they enter the global economy. We also believe that the digital literacies described in the Hobbs Model are important to facilitate that functioning. There is little research available as to the status of digital literacy of Accounting students. Therefore, this study uses the Hobbs Model to explore the perceptions of these students in their own digital abilities. This knowledge will provide universities valuable information as to the current status of perceived digital literacy in accounting programs and allow them to develop new strategies for increasing the ever-needed digital literacy of our students.

The next section presents the methodology, subjects, research instrument, discussion of self-perception and hypotheses.

METHODOLOGY

Digital literacy is an essential ability to measure and describe the various understanding and skills, based on norms, that leads to successful practices that would enhance productivity.

Our research hypothesis is that accounting students are better equipped in their digital literacy usage than finance students, computer science students and other liberal arts and business students. Stated in the null, our research hypothesis is: "There is no significant difference in perceptions between accounting students and other university students with regard to ten questions that measure digital literacy defined by the Hobbs Digital Literacy Model."

The Hobbs Digital Literacy Model suggests the following ten characteristics of a digitally literate person:

1. *The ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.*
2. *The ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).*
3. *Knowledge of and the ability to use powerful search strategies.*
4. *The ability to develop multimedia creations.*
5. *The ability to use the Internet to connect with others with shared interests.*
6. *The ability to reflect on online conduct and online social responsibilities.*
7. *The ability to use the power of communication as a tool for advocacy.*
8. *Understanding of "copyright".*
9. *The ability to apply social responsibility and ethical principles to communication behavior.*

10. *The ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.*

We analyzed the perceived digital literacy of Accounting students by examining their responses to the ten characteristics listed above and also by comparing their perceived digital literacy competencies with students in other disciplines.

Subjects

The sample for this study was taken from the population of undergraduate and graduate students at a large northeastern private university. These students were in three schools: computing, business, and liberal arts. According to our university research procedures, in accordance with the Code of Federal Regulations concerning the Protection of Human Subjects, no IRB was required for the administered survey (45 CFR 46.102(e)(1)), since no identifying private information was collected.

The following information describes these subjects (See Table 1). Three hundred ninety-nine students were surveyed. (A convenience sample was obtained.) One hundred and ninety were Accounting students; 34 were finance students; 78 were computing students; and 97 came from all other students. Fifty-eight percent of these subjects were under 25 years of age, and 42% were 25 years of age or older. By language, 52% spoke English as their primary language; 48% did not have English as their first language. (These non-native English speakers represented 29 other languages, with 61% of these non-native speakers, using Chinese dialects). Fifty-four percent were female and 46% were male.

Table 1	
Distribution of Students	
Accounting Students (190)	48%
Finance Students (34)	9%
Computing Students (78)	19%
Other Students (97)	24%
Age Demographics	
Under 25 years old	58%
25 or older	42%
Language Demographics	
English Speaking	52%
Non English Speaking	48%
Gender Demographics	
Female	54%
Male	46%

Research Instrument

The survey instrument used items from the Hobbs Digital Literacy Model (Hobbs, 2010). This Model represents ten generic abilities that represent digital literacy. The survey relies on self-perceptions and is measured by: a) very low ability (-2); b) low ability (-1); c) neither low

nor high ability (0); high ability (1); and very high ability (2). (See Appendix A for the Survey Instrument.) (See Appendix B for the Demographics Instrument).

Self-Perception and Actual Ability

Our survey instrument requested respondents to rank their perceived ability and understanding of the ten aspects of digital literacy from Appendix A. The underlying assumption was that these self-perceptions and assessments are correlated with objective measures of actual ability and understanding. There are convincing precedents for making this assumption. For example, Hargittai's (2009) research on survey measures of web-oriented digital literacy compared perceived behaviors and objective measures of skill levels. This study found that people's self-rated level of understanding of various computer and Internet-related terms on a 5-point scale was a relatively good predictor of how well they were able to navigate online content. In 2014, Zelt & Krizan published a meta-synthesis of 22 meta-analyses of research investigating the correspondence between self-evaluation of ability and objective performance measures. The 22 meta-analyses covered a variety of fields including academic ability, intelligence, language competence, medical skills, sports ability, and vocational skills. Although the overall correlation reported by Zelt & Krizan (2014) is moderate, the small standard deviation over the wide breadth of 22 studies supports our assumption that the results we report in this research reflect not only the self-perceptions of the respondents, but also their corresponding objective abilities and understandings.

Hypotheses

To test our hypotheses, we categorized 399 subjects into the following groups for analysis:

Hypotheses Testing Groups	
Group 1	190 Accounting Students against 209 other disciplines [other disciplines included finance, computing, communications, English, biology, economics, public relations, business management, marketing, bio-medical, special education; in total, 31 disciplines some too small to group separately]
Group 2	190 Accounting Students against 34 Finance students
Group 3	190 Accounting Students against 78 Computing Students

We hypothesized that there is no difference in digital literacy attributes between Accounting Students and all other disciplines (group 1); there is no difference in digital literacy attributes between Accounting Students and Finance Students (group 2); and there is no difference in digital literacy attributes between Accounting Students and Computing Students (group 3).

The ten individual hypotheses from the Hobbs Model follows:

H1₀: There is no significant difference between Accounting Students and Other Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.

H2₀: There is no significant difference between Accounting Students and Other Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between “a marketing ploy for nutritional supplements and solid information based on scientific evidence” or quality content and junk journalism).

H3₀: There is no significant difference between Accounting Students and Other Students in their knowledge of and ability to use powerful search strategies.

H4₀: There is no significant difference between Accounting Students and Other Students in their ability to develop multimedia creations.

H5₀: There is no significant difference between Accounting Students and Other Students in their ability to use the Internet to connect with others with shared interests.

H6₀: There is no significant difference between Accounting Students and Other Students in their ability to reflect on online conduct and online social responsibilities.

H7₀: There is no significant difference between Accounting Students and Other Students in their ability to use the power of communication as a tool for advocacy.

H8₀: There is no significant difference between Accounting Students and Other Students in their understanding of “Copyright.”

H9₀: There is no significant difference between Accounting Students and Other Students in their ability to apply social responsibility and ethical principles to communication behavior.

H10₀: There is no significant difference between Accounting Students and Other Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.

We analyzed the results of this survey using an independent samples t-test for Equality of Means, using SPSS. A confidence level of 95% with a p-score of less than .05 was used.

In the next two sections we present research results and discussion.

RESULTS

Table 2 compares Accounting students to all other college students (group 1). Table 3 compares Accounting students to finance students (group 2); and Table 4 compares Accounting students to computing students (group 3.) The subjects were distributed among 31 different disciplines and the numbers were not large enough to show means for students other than Accounting, finance, and computing.

Table 2 indicates that all other college students perceive themselves as significantly better than Accounting students on four of the Hobbs Model questions:

Question 1: In their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message

Question 2: In their ability to evaluate the quality and credibility of content in a message

Question 3: In their knowledge of and ability to use powerful search strategies

Question 4: In their ability to develop multimedia creations

On the other hand, Table 3 indicates that Accounting students have higher self-perceptions of their digital literacy than Finance students in four of the Hobbs Model questions:

Question 5: In their ability to use the Internet to connect with others with shared interests

Question 7: In their ability to use the power of communication as a tool for advocacy

Question 8: In their understanding of “Copyright”

Question 9: In their ability to apply social responsibility and ethical principles to communication behavior

TABLE 2 – Group 1 Identification of Significant Differences in Digital Literacy between Accounting Students and Other College Students on the Hobbs Digital Literacy Model [Mean from -2 to +2]				
	Null Hypotheses	Accounting Students' mean n = 190	Other College Students' mean n = 209	P value .05 ** significant
H1 ₀ :	<i>There is no significant difference between Accounting Students and Other College Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.</i>	.82	1.01	.010**
H2 ₀ :	<i>There is no significant difference between Accounting Students and Other College Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between “a marketing ploy for nutritional supplements and solid information based on scientific evidence” or quality content and junk journalism).</i>	.75	.94	.019**
H3 ₀ :	<i>There is no significant difference between Accounting Students and Other College Students in their knowledge of and ability to use powerful search strategies.</i>	.69	.94	.001**
H4 ₀ :	<i>There is no significant difference between Accounting Students and Other College Students in their ability to develop multimedia creations.</i>	.22	.41	.035**
H5 ₀ :	There is no significant difference between Accounting Students and Other College Students in their ability to use the Internet to connect with others with shared interests.	1.29	1.39	.220
H6 ₀ :	There is no significant difference between Accounting Students and Other College Students in their ability to reflect on online conduct and online social responsibilities.	.93	1.09	.059
H7 ₀ :	There is no significance difference between Accounting Students and Other College Students in their ability to use the power of communication as a tool for advocacy.	.74	.81	.412
H8 ₀ :	There is no significant difference between Accounting Students and Other College Students in their understanding of “Copyright.”	1.06	.97	.292
H9 ₀ :	There is no significant difference between Accounting Students and Other College Students in their ability to apply social responsibility and ethical principles to communication behavior.	1.06	1.12	.362
H10 ₀ :	There is no significant difference between Accounting Students and Other College Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.87	.813

TABLE 3 – Group 2 Identification of Significant Differences in Digital Literacy between Accounting Students and Finance Students on the Hobbs Digital Literacy Model [Mean from -2 to +2]				
	Null Hypotheses	Accounting students' mean n = 190	Finance students' mean n = 34	P value .05 ** significant
H1 ₀ :	There is no significant difference between Accounting Students and Finance Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.	.82	.85	.811
H2 ₀ :	There is no significant difference between Accounting Students and Finance Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between “a marketing ploy for nutritional supplements and solid information based on scientific evidence” or quality content and junk journalism).	.75	.62	.471
H3 ₀ :	There is no significant difference between Accounting Students and Finance Students in their knowledge of and ability to use powerful search strategies.	.69	.62	.633
H4 ₀ :	There is no significant difference between Accounting Students and Finance Students in their ability to develop multimedia creations.	.22	.06	.304
H5₀:	<i>There is no significant difference between Accounting Students and Finance Students in their ability to use the Internet to connect with others with shared interests.</i>	1.29	.82	.011 **
H6 ₀ :	There is no significant difference between Accounting Students and Finance Students in their ability to reflect on online conduct and online social responsibilities.	.93	.76	.354
H7₀:	<i>There is no significance difference between Accounting Students and Finance Students in their ability to use the power of communication as a tool for advocacy.</i>	.74	.15	.001 **
H8₀:	<i>There is no significant difference between Accounting Students and Finance Students in their understanding of “Copyright.”</i>	1.06	.68	.021 **
H9₀:	<i>There is no significant difference between Accounting Students and Finance Students in their ability to apply social responsibility and ethical principles to communication behavior.</i>	1.06	.74	.045 **
H10 ₀ :	There is no significant difference between Accounting Students and Finance Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.82	.797

Table 4 indicates that Computing students perceive themselves as significantly better than Accounting students in six of the Hobbs Model questions:

Question 3: In their knowledge of and ability to use powerful search strategies

Question 4: In their ability to develop multimedia creations

Question 5: In their ability to use the Internet to connect with others with shared interests

Question 6: In their ability to reflect on online conduct and online social responsibilities

Question 7: In their ability to use the power of communication as a tool for advocacy

Question 9: In their ability to apply social responsibility and ethical principles to communication behavior

Lastly, we wanted to examine the ranking of each of the ten digital literacies to see where Accounting students perceived themselves as less proficient than non-Accounting students. Table 5 presents that ranking (with 100% representing very high perceived ability or very high understanding.) Table 5 helps highlight the lowest levels of perceived ability or understanding on the part of Accounting students that include:

Question 2: The ability to evaluate the content in messages (68.75%)

Question 7: Using technology as a tool for advocacy (68.5%)

Question 3: Using powerful search strategies (67.25%)

Question 4: The ability to develop multimedia creations (55.5%)

TABLE 4 – Group 3 Identification of Significant Differences in Digital Literacy between Accounting Students and Computing Students on the Hobbs Digital Literacy Model [Mean from -2 to +2]				
	Null Hypotheses	Accounting students' mean n = 190	Computing students' mean n = 78	P value .05 ** significant
H1 ₀ :	There is no significant difference between Accounting Students and Computing Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.	.82	.94	.239
H2 ₀ :	There is no significant difference between Accounting Students and Computing Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between “a marketing ploy for nutritional supplements and solid information based on scientific evidence” or quality content and junk journalism).	.75	.94	.084
H3 ₀ :	<i>There is no significant difference between Accounting Students and Computing Students in their knowledge of and ability to use powerful search strategies.</i>	.69	1.10	.000 **
H4 ₀ :	<i>There is no significant difference between Accounting Students and Computing Students in their ability to develop multimedia creations.</i>	.22	.64	.001 **
H5 ₀ :	There is no significant difference between Accounting Students and Computing Students in their ability to use the Internet to connect with others with shared interests.	1.29	1.62	.000 **
H6 ₀ :	<i>There is no significant difference between Accounting Students and Computing Students in their ability to reflect on online conduct and online social responsibilities.</i>	.93	1.23	.011 **
H7 ₀ :	<i>There is no significance difference between Accounting Students and Computing Students in their ability to use the power of communication as a tool for advocacy.</i>	.74	.97	.036 **
H8 ₀ :	There is no significant difference between Accounting Students and Computing Students in their understanding of “Copyright.”	1.06	1.01	.665
H9 ₀ :	<i>There is no significant difference between Accounting Students and Computing Students in their ability to apply social responsibility and ethical principles to communication behavior.</i>	1.06	1.28	.011 **
H10 ₀ :	There is no significant difference between Accounting Students and Computing Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.96	.302

Table 5 Percentage Ability on Ten Hobbs' Questions for Non-Accounting Students and Accounting Subjects (100% represents high perceived ability or understanding)			
Non-Accounting Students [Questions]	Non-Accounting Students (n=209) [Means]	Accounting Students [Questions]	Accounting Students [Means] (n=190)
Q5	84.75%	Q5	82.25%
Q9	78.00%	Q9	76.50%
Q6	77.25%	Q8	76.50%
Q1	75.25%	Q6	73.25%
Q8	74.25%	Q10	71.25%
Q2	73.50%	Q1	70.50%
Q3	73.50%	Q2	68.75%
Q10	71.75%	Q7	68.50%
Q7	70.25%	Q3	67.25%
Q4	60.25%	Q4	55.50%

TABLE 6 – Age Identification of Significant Differences in Digital Literacy between Students Under 25 Years of Age and Students 25 Years of Age and Older on the Hobbs Digital Literacy Model [Mean from -2 to +2]				
	Null Hypotheses	Students under 25 years of age mean n=231	Students 25 years of age and older mean n = 171	P value .05 ** significant
H5₀:	<i>There is no significant difference between Students under 25 years of age and Students 25 years of age and older in their ability to use the Internet to connect with others with shared interests.</i>	1.47	1.16	.000
H7₀:	<i>There is no significance difference between Students under 25 years of age and Students 25 years of age and older in their ability to use the power of communication as a tool for advocacy.</i>	.88	.64	.008

To evaluate the impact of age on perceptions of digital literacy, we conducted a T-Test, dividing the subjects into those under 25 years of age and 25 years of age and older. As noted in Table 6, there are significant differences between age groups on two of the measures: Question 5, the ability to use the Internet to connect with others with shared interests, and Question 7, the ability to use the power of communication for advocacy. On both abilities, younger students perceived higher abilities for themselves.

DISCUSSION OF THE RESULTS

The results of the above research lead to interesting findings for the Accounting profession. We have learned that Accounting students, compared to all other students, are significantly lacking in several digital literacy skills that are necessary for their ongoing success. As noted by Taylor (2019), faculty must develop initiatives that incorporate digital literacy skills into today's curriculum. He insists that "enhancing a student's digital literacy will endow them with readily transferable skills that will prepare them for a workplace that is fast being augmented by technology." To help Accounting students increase their decision-making skills, we must help them better analyze messages received through the Internet, including the point of view of the message and the credibility of the content. We also need to provide opportunities for Accounting students to broaden their ability to analyze information through better search strategies. Lastly, Accounting students must be encouraged to incorporate the many aspects of multimedia into their deliverables and presentations to develop transferable skills to the workplace. Research by Becker et al. (2017) suggests that college students who can create original work using digital tools, can adapt to a wider range of work environments, have better career advancement opportunities and have higher promotion rates after college.

Research results also reveal a lack of ability by all students to use technology as a tool for advocacy. Accounting professionals advocate for clients on many different levels. For example, accounting professionals might be asked to help clients with the 2020 coronavirus relief options offered by the government and other organizations.

These are aspects of digital literacy that Accounting students need and should be discussed in accounting classes and incorporated into assignments in a purposeful way to increase digital literacy skills necessary in the practice of accounting.

Research by Riddle (2015), in a report by the Committee for Economic Development of Australia, indicates that approximately 40% of the Australian workforce (five million) will be replaced by computers in the next 10 to 15 years. The report indicates jobs most at risk of being automated to be: office administration staff, sales assistants, checkout operators, accounting clerks, personal assistants and secretaries. He cites arguments by PwC that three-quarters of the fastest-growing jobs in accounting and consulting require digital literacy skills.

Digital literacy skills empower the accountant to address the non-repetitive issues that occur with clients on a regular basis, that have not been automated yet or are too burdensome to automate economically. Accounting faculty should seriously consider how to integrate methods for addressing and increasing Accounting students' digital literacy attributes into the curriculum.

The next sections discuss conclusions of our study, limitations, and potential future research.

CONCLUSIONS OF STUDY

The digital literacy definition has evolved from being technology fluent to being able to apply information literacy skills in everyday life (Chase & Laufenberg, 2011; Meyers et al., 2013). It is important for successful accounting professionals to use digital literacy skills in most of their day-to-day activities. It enables them to better collect, analyze and synthesize digital information. Accounting students need to start preparing for their professional careers. Enhanced digital literacy would encourage this readiness.

Exploring ways in which students are already using mobile and web-based technologies, we realized that digital transformation impacts their lives personally and professionally. It not only creates opportunities for them, but also implies risks (Hobbs, 2013; OECD, 2019 a, b).

The Internet today is inextricably woven into the fabric of their social, economic and societal lives. In addition, the AACSB standards have laid out what they expect our business students to be learning. In this study, we wanted to examine the extent of digital literacy attributes of Accounting Students and wanted to compare their perceived abilities to other college disciplines. We found that Accounting Students lack important digital literacy skills when compared to all other college disciplines. We also found that Accounting Students have higher self-perceptions of ability on several items of digital literacy than do Finance Students. However, Computing Students perceived themselves as better on more digital literacy attributes than did Accounting Students.

LIMITATIONS OF STUDY

This research has face validity, as the subject respondents anticipate that questions asked in the survey do measure what they are intended to measure. The research has content validity as the survey questions cover all aspects of the construct of digital literacy, as designed by experts in this field (Hobbs, 2010).

The external validity of this research is limited as the subjects were obtained from one academic institution. While a large sample was involved, it was a convenience sample. Still the study does offer some insight into the self-perceptions of all university students and their digital literacy skills. However, generalization to the external population cannot be made due to this limitation.

FUTURE RESEARCH

Digital literacy and use of the Internet are global issues. This study indicates great potential for continued research in this area. In general, future research can study the digital literacy abilities between cultures, gender and life/work experiences and level of study around the world. In addition, the issue of language and acculturation as a handicap to enhancing digital literacy should be studied. We also note that there are a large number of military veterans attending colleges today. Although we did not study this subject group, we believe this is an area for study of digital literacy research. For example, research by Lugar et al. (2016) suggests that older veterans have less experience with digital literacy.

Additionally, our research shows that, although there is not a significant difference between subjects in their use of multimedia, all subjects are woefully lacking in their ability to create and use multimedia. This is another area for future research.

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APPENDIX A
RESEARCH INSTRUMENT: DIGITAL LITERACY

The Internet is quickly becoming the critical gateway for addressing jobs, education, health care, government services, and civic participation.

This research studies the life skills needed for digital literacy.

Requirement One: Please CIRCLE a response to the following 10 questions.

Requirement Two: Please fill in the demographic survey.

Question 1: Rate your ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 2: Rate your ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between “a marketing ploy for nutritional supplements and solid information based on scientific evidence” or quality content and junk journalism).

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 3: Rate your knowledge of and ability to use powerful search strategies.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 4: Rate your ability to develop multimedia creations.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 5: Rate your ability to use the Internet to connect with others with shared interests.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 6: Rate your ability to reflect on your online conduct and your online social responsibilities.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 7: Rate your ability to use the power of communication as a tool for advocacy.

Very Low Ability	Low Ability	Neither Low High Ability	Nor	High Ability	Very High Ability
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Question 8: Rate your understanding of “copyright”.

Very Understanding	Low Understanding	Low	Neither Nor	Low High	High Understanding	Very Understanding	High
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Question 9: Rate your ability to apply social responsibility and ethical principles to communication behavior.

Very Low Ability Low Ability Neither Low Nor High Ability Very High Ability
High Ability

Question 10: Rate your ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.

Very Low Ability Low Ability Neither Low Nor High Ability Very High Ability
High Ability

APPENDIX B**DEMOGRAPHICS: (DIGITAL LITERACY) PLEASE CIRCLE YOUR RESPONSES**

1. Are You a: Female Male
2. How Old Are You: Under 25 years old Between 25 and 35
 Between 36 and 50 Over 50 years old
3. What is Your Primary Native Language? _____
4. What is your cultural background by continent?
 - a. North America
 - b. South America
 - c. Europe
 - d. Asia
 - e. Africa
 - f. Australia
 - g. Antarctica
5. What was (or is) your student area of study?

6. How many years have you lived in the United States?

7. Comments: e.g., favorite digital equipment, websites, daily digital routine, etc.

REFERENCES

- AACSB (2013, Revised 2018, Revised 2020). The Association to Advance Collegiate Schools of Business, 2013 Eligibility Procedures and Accreditation Standards for Business Accreditation Engagement. Retrieved October, 2019 from <https://www.aacsb.edu/-/media/aacsb/docs/accreditation/business/standards-and-tables/2018-business-standards.ashx?la=en>
- Becker, S., Pasquini, L., & Zentner, A., (2017). 2017 Digital literacy impact study: An NMC horizon project strategic brief, *The New Media Consortium*, Retrieved June 18, 2020, from <https://www.learntechlib.org/p/182080/>
- Cabellero, C. & Walker, A. (2010). Work readiness in graduate recruitment and selection: A review of current assessment methods. *Journal of Teaching and Learning for Graduate Employability*, 1, 13–25.
- Calloway, L.J., Dwyer, C., Elson, R., O’Callaghan, S. & Walker, J. (2016). Digital literacy: A pilot study of the difference in digital literacy between Accounting students and other college students. Proceedings of the Allied Academies International Conference, 18(1), 39
- Casner-Lotto, J. & Barrington, L. (2006). Are they really ready to work? Employers’ perspectives on the basic knowledge and applied skills of new entrants to the 21st century US workforce. *Partnership for 21st Century Skills*. Accessed on September 27, 2019 from <https://files.eric.ed.gov/fulltext/ED519465.pdf>.
- Chase, Z., & Laufenberg, D. (2011). Embracing the squishiness of digital literacy. *Journal of Adolescent & Adult Literacy*, 54 (7), 535–537.
- Cornell University, (2018, December 6). The 5th literacy: Digital literacy. *Digital Literacy Resource*, Retrieved October 9, 2019 from <https://www.poorrichardsdigitalclassroom.com/spotlight-1/2018/12/6/the-5th-literacy-digital-literacy>
- Cunningham, S., Gahan, P., Callan, V. & Rainnie, A. (2016). Skills and capabilities for Australian enterprise innovation. *Australian Council of Learning Academics (ACOLA)*. Retrieved September 27, 2019 from <https://acola.org.au/wp/PDF/SAF10/Full%20report.pdf>
- Friedman, E., Testing digital literacy skills (blog), n.d., Retrieved October 9, 2019 from <http://blog.eskill.com/testing-digital-literacy-skills/>
- Gilster, P. (1997). *Digital Literacy*. New York: Wiley and Computer Publishing, 1997.
- Goldin, N. (2015). Key considerations in youth workforce development. A report of the CSIS project on prosperity and development. *Center for Strategic and International Studies*, Washington. Retrieved September 27, 2019 from https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/150129_Goldin_YouthWorkforce_Web.pdf.
- Hargittai, E. (2009). An update on survey measures of web-oriented digital literacy. *Social Science Computer Review*, 27(1), 130-137.
- Hobbs, R. (2010) Digital and media literacy: A plan of action. *The Aspen Institute Communications and Society Program*. A project of the Aspen Institute Communications and Society Program and the John S. and James L. Knight Foundation. Retrieved October 9, 2019 from <https://www.aspeninstitute.org/programs/communications-and-society-program/the-knight-commission-on-information-needs-of-communities-in-a-democracy/>
- Hobbs R. (2013). Improvization and strategic risk-taking in informal learning with digital media literacy. *Learning, Media and Technology*, 38(2), 82-197.
- Lestari, S & Santoso, A. (2019). The roles of digital literacy, technology literacy, and human literacy to encourage work readiness of Accounting education students in the fourth industrial revolution era. *KnE Social Sciences*, 3(11), 513–527.
- Loveless, B. (2020). The Importance of Digital Literacy in K-12. Retrieved May 31, 2020 from <https://www.educationcorner.com/importance-digital-literacy-k-12.html>
- Luger, T.M., Hogan, T.P., Richardson, L.M., Cioffari-Bailiff, L., Harvey, K., & Houston, T.K. (2016) Older Veteran Digital Disparities: Examining the Potential for Solutions Within Social Networks. *Journal of Medical Internet Research* 18(11). Retrieved November 22, 2020 from <https://www.jmir.org/2016/11/e296>
- Martin, A. (2008). Digital literacy and the digital society. In C. Lankshear & M. Knobel (Eds.), *Digital Literacies: Concepts, Policies and Practices* (pp. 151-176). New York: Peter Lang.
- Meyers, E. M., Erickson, I. & Small, R. V. (2013). Digital literacy and informal learning environments: an introduction. *Learning, Media and Technology*, 38:4, pp. 355-367.
- Meyerson, K. (2016, April 10). Young adults/millennials as web users (ages 18–25). *Neilson Norman Group*. Retrieved October 9, 2019 from <https://www.nngroup.com/articles/young-adults-ux/>.

- Mohammadyari, S. & Singh, H. (2015). Understanding the effect of e-learning on individual performance: The role of digital literacy. *Computers & Education*, 82,11-25.
- OECD (2019a). How's life in the digital age?: Opportunities and risks of the digital transformation for people's well-being. OECD Publishing, Paris.
- OECD (2019b). Measuring the digital transformation: A roadmap for the future. OECD Publishing, Paris.
- Perrin, A. & Jiang, J. (2018, March 14). U.S. adults say they are 'almost constantly' online. Retrieved October 9, 2019 from http://www.pewresearch.org/fact-tank/2018/03/14/about-a-quarter-of-americans-report-going-online-almost-constantly/ft_18-03-15_constantusers_oneinfour/.
- Riddle, S. (2015). The robots are coming for your job! Why digital literacy is so important for the jobs of the future. Retrieved October 9, 2019 from <http://theconversation.com/the-robots-are-coming-for-your-job-why-digital-literacy-is-so-important-for-the-jobs-of-the-future-46730>.
- Taylor, T. (2019, August 21). Digital literacy initiatives are required for teaching today's student. The World University Rankings. Retrieved October 9, 2019 from <https://www.timeshighereducation.com/hub/adobe/p/digital-literacy-initiatives-are-required-teaching-todays>
- Zelt, E. & Krizan, Z. (2014). Do people have insight into their abilities? A metasynthesis: Perspectives on psychological science, 9(2), 111-125.

WHAT DRIVES THE LIKELIHOOD OF OBTAINING CAPITAL IN ONLINE CROWDFUNDING? A LOOK AT INDIEGOGO

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ABSTRACT

This study explored the various factors that affect the likelihood of obtaining required capital (LORC) for the online crowdfunding platform Indiegogo. Based on a dataset sample of 19,243 projects for Indiegogo with complete information since 2010, a binary logistic regression was conducted to assess what factors are statistically significant in predicting campaign success. The analysis revealed that the following variables are statistically significant predictors of campaign success: amount of capital required, campaign length, currency, and extension through the InDemand program. This study is significant for both small businesses and big corporations. For small businesses, crowdfunding offers a way to access capital given the difficulties of transacting with traditional sources. For big companies, crowdfunding offers another funding source aside from debt and equity financing, especially for those aspiring to test new product concepts and push for more lean and entrepreneurial means to financial and product management.

INTRODUCTION

Crowdfunding is the “financing of a project by a group of individuals (collectively, ‘the crowd’) instead of professional ‘accredited’ entities or individuals such as banks, venture capitalists or business angels” (Mitra, 2012, p. 67). As globalization accelerates the e-commerce industry, it is becoming easier to access countless resources online. The most common methods of attaining capital funding have been through equity and debt, but online crowdfunding has made its niche by providing unique attributes that traditional methods do not have (Beier & Wagner, 2015). Many entrepreneurs are unable to access traditional methods due to a lack of credit rating, relatively low starting capital, the need for collateral, and stringent requirements. Furthermore, it is often difficult to convince a few investors to invest, especially for novel and innovative ideas. In the Philippines, these issues are very apparent, compounded by the fact that the economy is predominantly impoverished.

Online crowdfunding has the potential to address all these issues and to help both small businesses and big companies. The avenue does not have stringent requirements. It is easily accessible through the internet. It can rely not only on a few large investors, but also on small investments made by hundreds or even thousands of investors (or in crowdfunding parlance, ‘backers’). It has a free and convenient marketing system, and promotes novel and innovative

ideas. It also encourages the promotion of social causes, allowing marginalized members to benefit from the contributions of many in an effort similar to social enterprises and big companies' social responsibility initiatives. For example, Indiegogo has encouraged big brands to explore crowdfunding as means to finance concept tests—blurring the lines between product development, marketing, and financing (Kastrenakes, 2016; Nixon, 2016; PricewaterhouseCoopers, 2016; Robles, 2017)

Nonetheless, online crowdfunding is not perfect, and projects are prone to fail if they are not managed correctly. As such, this study seeks to gain a better understanding of how factors (*length of campaign, capital required, InDemand, category, and currency*) impact a project's likelihood of obtaining the capital amount it needs.

In the Philippines, entrepreneurs face multiple barriers and challenges to receiving the funding they need from traditional financial methods. Because of this, many great ideas and profitable ventures fall short even before they have a chance to begin. This hampers the innovative environment of the Filipino nation, and makes it harder to alleviate the situations, hopes, and dreams of the common enterprising Filipino. On the other hand, big companies are compelled to innovate amidst limited financing and budgeting concerns (Kastrenakes, 2016; Nixon, 2016; PricewaterhouseCoopers, 2016; Robles, 2017). In line with these trends, crowdfunding has a strong potential to socially uplift both entrepreneurial ecosystems and established industries in the Philippines. Online crowdfunding is a recent phenomenon wherein entities (i.e. project creators) seek for funding for their projects by appealing to large groups of people (i.e. potential backers) who provide smaller contributions in order to arrive at the desired capital amount within a given period of time. Due to its open and accessible nature, even the most marginalized members of society can benefit from this avenue. Crowdfunding is a way democratize financing for both businesses and investors.

RESEARCH QUESTION, OBJECTIVES, AND HYPOTHESES

The research question of this article is as follows: Which factors (length of campaign, capital required, InDemand, category, and currency) best predict crowdfunding campaign success? Aligned with this question, the following are the research objectives:

1. To assess which factors are statistically significant predictors of campaign success;
2. To offer recommendations on how small businesses and big companies can utilize crowdfunding for both financial and marketing management purposes;

Therefore, the hypotheses of this research, which is anchored on literature review and logical a priori expectations, are detailed below:

Table 1
Hypotheses of the study

Variable	Hypothesis
Amount of Capital Required	Each variable has as significant effect on campaign success
Campaign Length	
Currency	
InDemand	
Product Market Category	

LITERATURE REVIEW

In the review of related literature, research has shown that financing in the Philippines has proven to be difficult, especially for small and medium-sized (SME) businesses. In the United States, the electronic Code of Federal Regulations (eCFR) lists the criteria for enterprises to be classified as “small”: it can range from annual sales of \$1 Million to as high as \$41.5 Million (in a few industries, the criteria is set at \$600 Million in assets, not sales); or, in terms of employees that can be less than 10 to as high as 1,500, although the typical ceiling would be at 500 employees (www.ecfr.gov). On medium-sized firms, one source (gartner.com) claims that these are firms that have at least \$50 Million but no more than \$ 1 Billion in revenue. SMEs become risky and costly as they face the following challenges and limitations that make it difficult for them to even reach banking standards: poor credit history, limited track record, lack of credit info, limited acceptable collateral, unstable business type/environment, limitations in financial and management capabilities, and lack of familiarity with SME business environment (Aldaba, 2012). The Philippines has enough resources to assist in funding SMEs but difficult processes, requirements and regulations make it difficult to do so. Therefore, the lack of access to financing is observed to be the most difficult constraint to SME growth (Aldaba, 2012; Ibrahim, 2015). For big companies, budget constraints and competitiveness of industries juxtaposed with the need for innovation make it difficult to find other financing sources.

With these problems, the concept of crowdfunding has become ever-more significant. Schwiendbacher & Larralde (2010) described crowdfunding as an innovative and relatively new method for funding a variety of new ventures whether for-profit, cultural, or social projects through the financial support of many individuals, usually in exchange for future products or equity. Projects range greatly in terms of goals & magnitude from small artistic ones to large-scale businesses. Further studies also show the benefits of the model of crowdfunding in various forms such as traditional approach streamlines with acquiring capital made is made easier by providing the economy more opportunities to grow at a faster rate. Moreover, larger audiences are reaches as through the internet, online crowdfunding becomes an internal hub for entrepreneurs and potential investors to interact. Startup creation is also made efficient, from the introduction of a product or service to the PR and Marketing, and to its payment processing scheme. And with its unique model, it not only holistically prepares startups by looking at every

angle of the business, but also crowdfunding has ingenuity at its score. It provides excellent opportunities for refinement of products/services; its success largely boils down to its purpose, innovation, and demand in the market (Garecht, n.d.; Jenik et al., 2017; Kraus et al., 2016; Mollick, 2014; The World Bank, 2013)

Table 2
Review of Related Literature – Main Findings and Insights

Main Author/s (Year)	Topic/Variable considered	Relevant Insights and Findings
Mollick (2014)	Amount of Capital Required	Likely backers lean towards projects that provide them a higher sense of security in terms of investments.
Pappaioannou, 2006; Patnaik, et. al., 2015	Currency	Crowdfunding projects can reap potential hedge benefits but also face risks that come because of fluctuations in the foreign exchange market.
Canada Media Fund (2015)	Campaign Length	The right length of time is essential to the success of a campaign. The optimal length for a campaign is 45 days.
Liu, et al. (2010); Canada Media Fund (2017)	Demand and Product Market Category	Product market categorization allows the segregation of a “heterogeneous market” into a group of “smaller homogeneous markets”. This addresses different demands and product preferences that may positively affect campaign’s promotion under certain circumstances. The Canada Media Fund reveals the following findings in terms of success rates at Kickstarter: Games (35%), Film (40%), Dance (71%), Theater (64%), and Music (55%). These suggest that certain market categories are more successful than other market categories and could suggest a correlation.

RESEARCH DESIGN AND METHODOLOGY

The researchers based their assumptions on *Shul Vun Thun’s Theory of Communication* aka the Four-Sides Model (Kraus, 2016), which Kraus (2016) adapted in his own theory of crowdfunding. The theory suggests that any message sent from a sender to a receiver comprises of four types of information: facts, self-revealing, relationship, and appeal. In relation to crowdfunding, these four types can be likened to the features of a crowdfunding page. In line with this theory, this paper’s proposed conceptual framework is to relate the five aforementioned factors to crowdfunding success. For this study, Indiegogo was selected as the crowdfunding

platform because of its global reach and its emphasis on including both small businesses and big companies in its platform.

The dataset was retrieved from latest list of WebRobots (<https://webrobots.io/indiegogo-dataset/>) as of September 14, 2018. The dataset was then cleaned and recoded to fit a *logistic regression* model, which tests the statistical significance of the five factors to the LORC of the projects, based on the datasets used. Note that the choice of variables are based on the released dataset of Indiegogo. To aid logistic regression, each dataset's crowdfunding success rate was coded as 1 for successful, or those that have acquired at least 100% of their target capital and 0 for failure, or those that have acquired less than 100% of the target capital. It is essential to treat data in this manner because of the highly skewed nature of success rate.

The results from both quantitative and qualitative analyses were then compared in a cross-analysis that focuses on the endogenous factors that most affect LORC, as well as identifying variables for future studies to look into.

Results and discussion

Table 3 shows that around 30% of projects included in the sample have been successful in attaining the target capital acquired. Table 4 and 5 details the results of the logistic regression and model fit measures to show the explanatory power of the logit model.

Table 3
Successful and failed Indiegogo projects from 2010-2018

Year	Failure (Less than 100% target capital acquired)	Successful (At least 100% target capital acquired)	Grand Total
2010	20	4	24
2011	146	79	225
2012	696	341	1037
2013	1209	596	1805
2014	1594	725	2319
2015	1574	687	2261
2016	1242	447	1689
2017	2698	1062	3760
2018	4304	1819	6123
Grand Total	13483	5760	19243

Table 4
Results of logistic regression

Predictor	Estimate	SE	Z	p	Odds ratio
Intercept	-10.3685	119.4682	-0.0868	0.931	3.14e-5
length of campaign (days)	-4.46e-5	1.74e-5	-2.5589	0.011	1.000
log cap req	-0.0719	0.0291	-2.4713	0.013	0.931
is_InDemand:					
1 – 0	5.1622	0.1920	26.8891	< .001	174.552
category:					
Art – Animal Rights	9.2540	119.4681	0.0775	0.938	10446.575
Audio – Animal Rights	9.1875	119.4681	0.0769	0.939	9774.190
Camera Gear – Animal Rights	9.0177	119.4681	0.0755	0.940	8247.630
Comics – Animal Rights	9.2821	119.4681	0.0777	0.938	10743.835
Culture – Animal Rights	9.4109	119.4681	0.0788	0.937	12220.288
Dance & Theater – Animal Rights	9.4089	119.4681	0.0788	0.937	12196.873
Energy & Green Tech – Animal Rights	9.0200	119.4682	0.0755	0.940	8267.168
Environment – Animal Rights	9.3543	119.4681	0.0783	0.938	11548.276
Fashion & Wearables – Animal Rights	9.0317	119.4681	0.0756	0.940	8364.147
Film – Animal Rights	9.2759	119.4681	0.0776	0.938	10677.583
Food & Beverages – Animal Rights	9.2522	119.4681	0.0774	0.938	10427.640
Health & Fitness – Animal Rights	9.4391	119.4681	0.0790	0.937	12569.913
Home – Animal Rights	9.2612	119.4681	0.0775	0.938	10522.068
Human Rights – Animal Rights	9.4836	119.4681	0.0794	0.937	13141.914
Local Businesses – Animal Rights	9.3080	119.4681	0.0779	0.938	11025.332
Music – Animal Rights	9.3962	119.4681	0.0787	0.937	12042.724
Phones & Accessories – Animal Rights	9.0204	119.4681	0.0755	0.940	8270.422
Photography – Animal Rights	9.2251	119.4681	0.0772	0.938	10149.173
Podcasts, Blogs & Vlogs – Animal Rights	9.5438	119.4682	0.0799	0.936	13957.848
Productivity – Animal Rights	9.1329	119.4681	0.0764	0.939	9254.627
Tabletop Games – Animal Rights	9.0735	119.4681	0.0759	0.939	8720.698
Transportation – Animal Rights	9.2632	119.4681	0.0775	0.938	10542.502
Travel & Outdoors – Animal Rights	9.1334	119.4681	0.0765	0.939	9259.233
Video Games – Animal Rights	8.9788	119.4681	0.0752	0.940	7933.183
Web Series & TV Shows – Animal Rights	9.4507	119.4681	0.0791	0.937	12717.341
Wellness – Animal Rights	9.2087	119.4681	0.0771	0.939	9983.504

Predictor	Estimate	SE	Z	p	Odds ratio
Writing & Publishing – Animal Rights currency:	9.3294	119.4681	0.0781	0.938	11264.749
CAD – AUD	0.3330	0.1943	1.7141	0.087	1.395
EUR – AUD	0.2094	0.1905	1.0990	0.272	1.233
GBP – AUD	0.2759	0.1903	1.4500	0.147	1.318
USD – AUD	0.2278	0.1780	1.2799	0.201	1.256

Note. Estimates represent the log odds of "SUCCESS = 1" vs. "SUCCESS = 0"

Table 5
Model fit measures of logistic regression

Deviance	AIC	BIC	McFadden's R-squared	Cox & Snell's R- squared	Nagelkerke's R-squared	Overall Model Test		
						χ^2	df	p
19516	19586	19861	0.169	0.186	0.265	3972	34	<.001

Table 6
Tests of multicollinearity

Predictors	VIF	Tolerance
length of campaign (days)	1.15	0.869
log cap req	1.11	0.897
is_InDemand	1.00	0.998
category	1.01	0.993
currency	1.01	0.992

The results of the analysis show relatively acceptable r-squared values for the logit model, wherein the threshold is at least 0.200. Although McFadden's and Cox & Snell's r-squared values are less than the recommended threshold, Nagelkerke's values shown an acceptable amount. The overall p-value of the model is highly significant. An assumption test of multicollinearity shows that all variables have variance inflation factors less than 10, which means that there is no statistically significant multicollinearity in the logit model. The next paragraphs interpret the effects of the independent variables to the dependent variables.

Amount of Capital Required. Based on the quantitative the *amount of capital required* was shown to be *statistically significant* ($p\text{-value} = <0.05$). The negative coefficient means that targeting a very high required capital affects the LORC in negatively. From the study of Barcelon et al. (2018), their interviews of crowdfunding experts revealed that that one should be realistic in terms of the amount of capital one is requiring. As a rule of thumb, one should look at: (a) the amount needed, and (b) the amount one thinks he can make. Reaching either of the two standards can be construed as a having achieved a successful campaign. This means that for small businesses, targets must be set in a realistic manner and should be grounded on initial understanding of customer needs. For big companies, this means that crowdfunding may not be an avenue for getting capital for funding product development, but rather, it can be a venue to test the market and get target capital to fund prototypes.

Campaign Length. The results of the statistical analysis show that Campaign Length is *statistically significant* ($p\text{-value} < 0.05$) with a negative coefficient. The study of Barcelon et al. (2018) revealed that experts believed that 30 to 45 days is the ideal campaign length. As such, a longer lengthening of a campaign is not necessarily beneficial. For small businesses and big companies, this finding is double-edged—a shorter campaign length means they only have a limited time to gather the necessary capital targeted, while on the other hand, this means that they can get their funding in a relatively short manner.

Currency. For Indiegogo, currency is only marginally statistically significant. The only effect of note is that Canadian Dollars, compared to Australian Dollars, are more likely to have successful campaigns ($p < .10$). On the other hand, EUR, GBP, and USD do not have statistically significant different effects on campaign success compared to AUD. This may mean that perhaps Canadians, compared to Australians, are more active in supporting their local homegrown campaigns. For small businesses and big companies, this provides insights on how to target Canadians versus Australian customers.

InDemand. For Indiegogo, campaign extension through the InDemand program is a great predictor of crowdfunding success with very high statistical significance ($p < .001$). This is expected, since an extension has the effect of both sending the market signals that the platform has confidence in the business idea/concept, as well giving more time for funders to think and decide to invest. For small businesses and big companies, this means a second chance, so to speak, and this time can be used to build up the communication, the branding, and the concept.,

Product Market Category. In Indiegogo, *product market category* is not a statistically significant predictor of campaign success. This means that any company or small business in various industries can attempt crowdfunding. This can encourage small businesses and big companies to not be limited by certain trendy categories, but rather, they can focus on funding prototypes that solve real customer needs.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, crowdfunding provides an innovative financing opportunity for both small businesses and big companies. Crowdfunding merges the strengths of product development, prototyping, marketing, and financing. Given the imperative for big companies to pursue innovations, adopt lean thinking, and practice corporate entrepreneurship or intrapreneurship, the strategy of Indiegogo to expand its activities is timely and relevant. However, crowdfunding is best suited for companies looking to fund new ventures, projects, or prototypes, and not existing products. Hence, crowdfunding should not be viewed as a silver bullet, but rather, an alternative that enables big companies to frugally test their products' beta versions. The most statistically significant predictors of the crowdfunding success in Indiegogo (relatively smaller amount of capital, shorter length of campaigns, and InDemand) show that crowdfunding is not useful for big companies and businesses looking to 'cash in', but rather, it is useful for funding initial iterations of products.

As such, to advance scholarship and practice, the following recommendations are offered:

1. Crowdfunding practitioners and Indiegogo may explore tracking more metrics to explore what best predicts crowdfunding success. Although the explanatory power of the logit models are quite acceptable already, exploring other variables might help project creators increase the chances of acquiring their target capital.
2. The study of Barcelon et al. (2018) have looked at Kickstarter (Global) and The Spark Project (Philippine-based) already; other researchers may test different crowdfunding platforms such as GoFundMe to validate results. Consistent with the findings of Barcelon et al. (2018), Indiegogo's projects are predicted to be more successful if they have a smaller target of required capital and shorter or optimal campaign length.
3. Researchers should continuously track the successes and failures of Indiegogo's campaign to further increase the sample size of projects.

REFERENCES

- Aldaba, R. M. (2012). *Small and Medium Enterprises' (SMEs) Access to Finance: Philippines*. Retrieved from Philippine Institute of Development Studies website: <https://dirp4.pids.gov.ph/ris/dps/pidsdps1205.pdf>
- An, J., Quercia, D., & Crowcroft, J. (2014). Recommending Investors for Crowdfunding Projects. Retrieved from <https://arxiv.org/abs/1409.7489>
- Andersson, S. (2015). *Crowdfunding as a financial strategy and a marketing campaign*. (Degree Thesis). Retrieved from https://www.theseus.fi/bitstream/handle/10024/96184/Andersson_Siri.pdf.pdf?sequence=1
- Barcelón, J. C., Dulay, J. G., Rustia, J., Yu, D. C., & Aure, P. H. (2018). *Go Fund Yourself! Predicting the Likelihood of Obtaining Capital through Online Crowdfunding*. Unpublished manuscript, De La Salle University, Manila, Philippines.
- Beier, M. & Wagner, K. (2015). *Crowdfunding Success: A Perspective from Social Media and E-Commerce*. Retrieved from

- https://www.researchgate.net/publication/286779944_Crowdfunding_Success_A_Perspective_from_Social_Media_and_E-Commerce
- Canada Media Fund. (2017). *How likely is your crowdfunding campaign to succeed?* Retrieved From http://crowdfunding.cmf-fmc.ca/facts_and_stats/how-likely-is-your-crowdfunding-campaign-to-succeed
- Chen, S., Thomas, S., & Kohli, C. (2016). What Really Makes a Promotional Campaign Succeed on a Crowdfunding Platform?: Guilt, Utilitarian Products, Emotional Messaging, And Fewer But Meaningful Rewards Drive Donations. *Journal of Advertising Research*, 56(1), 81-94.
- Constine, Josh. (2018) *Indiegogo Tries "Forever Funding" Campaigns Without End Dates*. TechCrunch. Retrieved from <https://techcrunch.com/2014/09/17/indiegogo-forever-funding>
- Coveyou, J. (2017). *Kickstarter stats 101: Does the month I launch matter?*. Retrieved from <https://www.geniushgames.org/blogs/news/kickstarter-stats-101-does-the-month-i-launch-matte>
- Creswell, J. W. (2014). *Research Design: Qualitative, quantitative, and mixed method approaches*. United States of America: SAGE Publications, Inc.
- Crosetto, P. & Regner, T. (2014). *Crowdfunding: Determinants of success and funding dynamics*. Retrieved from <https://econpapers.repec.org/paper/jrjrpwrp/2014-035.htm>
- Cumming, D. J., & Johan, S. (2015). Crowdfunding and entrepreneurial internationalization. *Singapore: The World Scientific Publishers*
- Daniele, L. & Gangi, F. (2017). *Success Drivers of Reward-based Crowdfunding: Conceptual Framework and Empirical Evidence* *Success Drivers of Rewards-Based Crowdfunding: Conceptual Framework and Empirical Evidence*. Retrieved from https://www.researchgate.net/publication/320947524_SUCCESS_DRIVERS_OF_REWARD-BASED_CROWDFUNDING_CONCEPTUAL_FRAMEWORK_AND_EMPIRICAL_EVIDENCE_SUCCESS_DRIVERS_OF_REWARD-BASED_CROWDFUNDING_CONCEPTUAL_FRAMEWORK_AND_EMPIRICAL_EVIDENCE
- Electronic Code of Federal Regulation. (2020). Size standards used to define small business concerns. Retrieved from https://www.ecfr.gov/cgi-bin/text-idx?SID=2bc121da45c0391fd67748859167d6f3&node=pt13.1.121&rgn=div5#sg13.1.121_1110.sg1
- Garecht, J. (2015). Major donor fundraising 101. The Fundraising Authority.
- Gartner Research. (2020). *Small and Midsize Business*. The Gartner Glossary. Retrieved from <https://www.gartner.com/en/information-technology/glossary/smbs-small-and-midsize-businesses>
- Ibrahim, M. (2015). *Philippine Roadmap for Digital Startups: 2015 and Beyond*. Retrieved from http://www.dict.gov.ph/wp-content/uploads/2016/08/StartupRoadmap_Final.pdf
- Indiegogo (2017). *Explore projects*. Retrieved from https://www.indiegogo.com/explore#/browse/all?quick_filter=trending&location=everywhere&project_type=all&percent_funded=all&goal_type=all&more_options=false&status=all
- Jenik, I., Lyman, T., & Nava, A. (2017). *Crowdfunding and Financial Inclusion*. CGAP.
- Jiang, Z., & Benbasat, I. (2007). The effects of presentation formats and task complexity on online consumers' product understanding. *Mis Quarterly*, 475-500.
- Jastrenakes, J. (2016, January 6). *Indiegogo wants huge companies to crowdfund their next big products*. Retrieved from <https://www.theverge.com/2016/1/6/10691100/indiegogo-enterprise-crowdfunding-announced-ces-2016>
- Kerkhof, J. (2016). The influence of a social network and social interaction on the success of a crowdfunding campaign, 7th IBA Bachelor thesis Conference, July 1, 2016. The Netherlands: University of Twente.
- Koch, J., & Siering, M. (2015). Crowdfunding success factors: The characteristics of successfully funded projects on crowdfunding platforms. *Germany: European Conference on Information Systems*. Retrieved from https://www.researchgate.net/publication/277016908_Crowdfunding_Success_Factors_The_Characteristics_of_Successfully_Funded_Projects_on_Crowdfunding_Platforms
- Kraus, S., Richter, C., Brem, A., Cheng, C. F., & Chang, M.L. (2016). Strategies for reward-based crowdfunding campaigns. *Journal of Innovation & Knowledge*, 1 (1), 13-23. Retrieved from <https://doi.org/10.1016/j.jik.2016.01.010>

- Liu, Y., Ram, S., Lusch, R., & Brusco, M. (2010). Multicriterion Market Segmentation: A New Model, Implementation, and Evaluation. *Marketing Science*, 29(5), 880-894. Retrieved from <http://0-www.jstor.org.lib1000.dlsu.edu.ph/stable/40864671>
- McFadden, D., Hensher, D. A., & Stopher, P. R. (1979). Behavioural travel modelling. Croom Helm, London, 279-318.
- Mitra, D. (2012). The Role of Crowdfunding in Entrepreneurial Finance. *Delhi Business Review*, 13 (2). 67-72. Retrieved from: http://www.delhibusinessreview.org/v_13n2/v13n2g.pdf
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1-16.
- Nixon, A. (2016, August 13). *Companies large and small tapping into crowdfunding*. Retrieved from <https://triblive.com/business/headlines/10906982-74/company-crowdfunding-companies>
- PricewaterhouseCoopers (2016, March 29). *Big business steps into crowdfunding*. Retrieved from <https://www.digitalpulse.pwc.com.au/enterprise-crowdfunding-big-business/>
- Papaioannu, M. (2006). *Exchange Rate Risk Measurement and Management: Issues and Approaches for Firms*. International Monetary Fund.
- Patnaik, I., Shah, A., & Singh, N. (2015). *Foreign Currency Borrowing by Indian Firms: Towards a New Policy Framework*. Retrieved from <https://www.theigc.org/wp-content/uploads/2015/10/Singh-et-al-2015-Working-paper.pdf>
- Robles, P. (2017, February 17). *Big brands embrace crowdfunding for marketing purposes*. Retrieved from <https://econsultancy.com/big-brands-embrace-crowdfunding-for-marketing-purposes/>
- Schwienbacher, A., and B. Larralde. 2010. *Crowdfunding of Small Entrepreneurial Ventures*. *Handbook of Entrepreneurial Finance*. Oxford: Oxford University Press.
- Shane, S. & Cable, D. (2002). *Network Ties, Reputation, and the Financing of New Ventures*, *Management Science*. Retrieved from https://www.researchgate.net/publication/227447495_Network_Ties_Reputation_and_the_Financing_of_New_Ventures_Management_Science_Jg_48_3_S_364-381
- The World Bank. (2013). *Crowdfunding's Potential for the Developing World*. The World Bank. Retrieved from https://funginstitute.berkeley.edu/wp-content/uploads/2013/11/Crowdfundings_Potential_for_the_Developing_World.pdf

INCORPORATING EXPERIENTIAL LEARNING INTO THE ACCOUNTING CURRICULUM: BEST PRACTICES AND LESSONS LEARNED FROM A RECENTLY IMPLEMENTED CURRICULUM

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ABSTRACT

This paper offers best practices for implementing an experiential learning component into an accounting curriculum in order to provide multiple experiential learning opportunities that are “for credit.” Sometimes employers may not be able to provide internship opportunities to students, or students may not be able to dedicate the required amount of time to obtain an internship in accounting. Recognizing this reality, we recommend implementing an on-campus alternative that would provide students the experiential learning opportunity they need through the Volunteer Income Tax Assistance Program (VITA) for course credit. For students transitioning into the job market, this experiential learning opportunity provides participation incentives, offers practical experience that aligns with the AICPA framework, and focuses on the development of communication skills.

Keywords: experiential learning, accounting curriculum, accounting internship, VITA programs

INTRODUCTION

The purpose of this manuscript is to offer best practices for structuring experiential learning components into an accounting curriculum so as to provide accounting students with practical experience to complement traditional classroom instruction. The Association to Advance Collegiate Schools of Business (AACSB, 2019) and the American Accounting Association’s (AAA) Pathway Commission (2012) both express the importance of experiential learning in business education. As such, using a recently developed accounting program curricula as a guide, this manuscript offers guidance for structuring experiential learning components that are “for credit” and which incentivize students to participate and gain experience that aligns with the pre-certification, core competency framework established by the American Institute of Certified Public Accountants (AICPA).

Experiential learning is explicitly encouraged in business school curricula by AACSB, the primary business accreditation agency in the world. Specifically, in the 2018 revised standards, the AACSB provides “Guidance for Documentation” in Standard 13 that includes the need to document “experiential learning activities that provide business students with knowledge of and experience in the local and global practice of business and management across program

types and teaching/learning models employed” (AACSB, 2019, p. 41). The guidance extends the types of activities that are considered experiential learning as “field trips, internships, consulting projects, field research, interdisciplinary projects, extracurricular activities, etc.” (p. 41). Likewise, the AAA Pathways Commission (2012) stresses the importance of implementing experiential learning into accounting programs. Though funding at the high school level has decreased to provide these opportunities (McKnight, 2009), the importance of integration of applied learning at the university level has never been greater.

The AAA Pathways Commission (2012) concludes that experiential learning, where accounting students combine their technical knowledge and skills with understanding the profession’s role in society, should be a required element in an accounting program. Bryan & McKnight (2021) found that early adopters of these recommendations come from more experienced faculty, who are more engaged in the profession.

That committee stratifies accounting curricula into four levels (AAA, 2012). That is, financial literacy, income tax preparation programs, business advisory services, and internships. Business advisory services, tax preparation programs, and internships are three levels related to experiential learning. Internships and the Voluntary Income Tax Assistance (VITA) program, in particular, offer robust experiential learning opportunities for students and will thus be the focus of this manuscript.

In their reviews of the accounting education literature, Apostolou, Dorminey, Hassell, & Watson (2013, 2010, and 2001) and Watson, Apostolou, Hassell, & Webber (2007), state that internships, or experiences that offer students professional interaction, in general, are valuable with respect to developing core competencies, positive learning perceptions, ethical decision-making, and opportunities for job placement. In regards to core competencies, Maletta, Anderson, and Angelini (1999) find that experienced interns are more capable of managing unstructured tax assignments than those who have not participated in an internship. Similarly, Knechel and Snowball (1987) provide evidence that students with intern experience outperform those without experience on auditing coursework. On developing positive learning perceptions, Beck and Halim’s (2008) questionnaire indicates that students’ self-perceptions regarding their adaptability, interpersonal skills, and ability to work under pressure were strengthened as a result of their internships. Martin and Wilkerson’s (2006) questionnaire suggests internships aid in developing positive self-perceptions related to accounting and business knowledge, confidence, and the value of an internship. Brown-Liburd and Porco (2011), with respect to ethical decision-making, show a positive relationship between internships and student moral development. Finally, Mauldin, Zachry, and Morris’ (2006) results indicate that a student’s accounting internship is a more important factor than other types of job experiences in terms of placement at a CPA firm.

Sponsored by the Internal Revenue Service (IRS), VITA is a program that offers free tax preparation to targeted taxpayers. The program also seeks to serve elderly individuals and non-residents (IRS, 2018). For a volunteer to participate, the IRS requires multiple certification examinations to be completed. These include the Volunteer Standards of Conduct and the Intake/Interview and Quality Review exams.

Blanthorne and Westin’s (2016) review of the literature related to the VITA program concludes that the service provides students with an experiential learning opportunity that reinforces their academic knowledge with real-life work experience. Furthermore, they state that the benefits of participating in VITA are noted in essentially all of the research within this stream. Similar to internship experiences, the benefits of the program include the development of

core competencies, positive perceptions of the self, and ethical decision-making. In terms of core competencies, the results from Christensen and Woodland (2016) indicate that VITA experience is positively correlated with students' problem-solving abilities. With respect to self-perceptions, students have reported improvements in their confidence related to practical skills, interpersonal skills, citizenship, personal responsibility, and school pride (Quinn, Garner, Marshall, & Smith, 1995; Carr 1998; Christensen, Schmidt, & Wisner, 2010). In addition, research suggests that participating in VITA enhances the students' perceptions of their knowledge through its application to real-world situations, provides the students with a rewarding experience of helping the less-fortunate members of the community, and is considered the best part of their accounting education (Carr 1998; Weis 1998; Strupeck and Whitten 2004; Doyle, Matt, and Owens 2005; Hulsart 2007; Christensen et al. 2010; Fischer, Anders, Brown, and Vilasi 2011). Finally, Christensen and Woodland (2018) find that the program can be effective in promoting ethical development in students. Despite the benefits of VITA, however, Blanthorne and Westin (2016) observe that the program is underutilized in accounting education.

The ultimate goal of an accounting educator is to develop the skills, judgment, knowledge, and values that are required to be successful in the profession, which includes providing students opportunities to advance learning that cannot be captured in an academic environment. As such, using a recently developed accounting program curricula as a guide, this manuscript contributes to the literature on experiential learning by establishing a model for implementing such components that are in alignment with the AICPA framework. This manuscript also responds to Apostolou et al.'s (2013) call for essays by scholars "who are able and willing to share experiences and ideas for the future" (p. 147). The unique combination of multiple experiential learning opportunities for students – either through internships that are outside the university or through the VITA program, which is internal to the university – is a significant contribution this manuscript makes to the growing applied learning literature in the accounting discipline.

The remainder of the manuscript is organized as follows. The second section briefly discusses the profession's expectations with respect to experiential learning in addition to outlining the AICPA framework. The third and fourth sections discuss structuring two experiential learning components, internships and the VITA program, respectively, in an accounting curriculum. Finally, the fifth and final section concludes the manuscript.

THE ACCOUNTING PROFESSION AND THE AICPA FRAMEWORK

Many professions require or encourage vocational experience so that one may learn the knowledge, skills, judgment, and values demanded by his or her respective work. Physicians accomplish this through clinicals. Lawyers do so through case dialogues and moot courts. Engineers utilize design labs. Similarly, accounting demands such experiential learning for students entering the profession.

Accounting, which has been defined as a more vocational than academic discipline (Demski, 2007), is an area with significant expectations for students to engage in experiential learning via internships and applied learning activities. Survey data from Accountemps indicate that 83% of 2,100 CEOs felt that experience was necessary prior to beginning entry-level accounting and finance jobs (Tysiac, 2014). As such, accounting students should have pervasive educational activities cutting across topics; they should also be active in their learning experiences. Additionally, accounting students should be held accountable for their work to

peers, faculty, and even clients with whom they may interact. These processes incorporated with the body of knowledge and interaction with the profession can lead to an accounting graduate with the ability to apply professional judgment to make good decisions (Pathways, 2015).

Rakow (2019) asserts that the primary role of accounting educators is to prepare students for success in their chosen fields. The AICPA (2018a) has identified competencies needed that will align students for that success. These include (1) Accounting competencies, (2) Business competencies and (3) Professional competencies. Accounting competencies are defined as technical competencies of the profession that add value to business and contribute to a prosperous society. Business competencies are defined as broad business environment in which accounting professionals work. Finally, Professional competencies are those that relate to skills, attributes, and behaviors of accounting professionals. *Table 1*, below, presents core competencies that are needed prior to certification.

Table 1: AICPA Pre-certification Core Competency Framework		
<i>Accounting Competencies</i>	<i>Business Competencies</i>	<i>Professional Competencies</i>
1. Risk assessment, analysis, and management 2. Measurement analysis and interpretation 3. Reporting 4. Research 5. System and process management 6. Technology and tools	1. Strategic perspective 2. Global and industry perspectives 3. Process and research management 4. Governance perspective 5. Customer perspective	1. Ethical conduct 2. Professional behavior 3. Decision-making 4. Collaboration 5. Leadership 6. Communication 7. Project management

Internships and the VITA program can help develop those AICPA-established competencies that are difficult to attain through academic coursework alone. By combining the traditional internship and VITA experiences, the program is better able to offer experiential learning opportunities for students to develop these competencies.

STRUCTURING AN ACCOUNTING INTERNSHIP

In their “internship program quick start guide” the AICPA argues that internships are beneficial for all involved, especially students. Accounting internships

“are a great way for accounting firms to build a pipeline of talent and get ahead of the competition in the process of recruiting new graduates. For students, there is no better way to learn the skills they will need in public accounting, evaluate if they fit with a firm’s culture, and determine whether it is the right career path” (AICPA, 2018b, pg. 1).

Any accounting curriculum that seeks an experiential learning component must have an internship experience as a primary element of the program. Palatnik and Previti (2019) define experiential learning as the “development and application of knowledge, skills and values from direct experiences outside of a traditional academic setting.” They argue that this type of learning

helps relate course content to “real-world opportunities.” Kaenzig and Keller (2011) have linked the presence of internships to successful recruiting and retention of accounting majors as well. Others have noted the importance placed on work experience for entry level positions in accounting, including experience gained via internships (Normand and Cummings, 2005).

One of the initial considerations related to implementing an accounting-specific internship experience is its alignment with State Board of Accountancy regulations and guidance. For example, in the state of Indiana, courses “with substantial duplication of content may be counted only one time toward the education requirements” but notes that “this subsection shall not apply to internships” (Indiana Board of Accountancy, 2014, pg. 63). Generally, this allows for an internship experience to count for more than one course in the program. In order to allow students to explore various accounting experiences, the internship experience implemented included a range of 1-6 credit hours. To align with various external stakeholder’s perspectives for the number of contact hours that are equivalent to one credit hour, it is recommended that the ratio be no less than 50 clock hours per each credit hour of internship. As an example, an accounting internship that represents three credit hours of course credit should involve a minimum of 150 clock hours in the internship.

The authors recommend meeting with the student prior to the beginning of the actual internship. The faculty advisor and student establish the learning outcome of the internship. This is also coordinated with the supervisor at the internship location. Ideally, students should keep a weekly journal and various evaluation forms to track and log activity. The onsite supervisor provides performance evaluations at approximately halfway through the internship and at the conclusion of the internship. Lastly, the student writes an analysis based on the journal of how the internship fulfilled the learning objectives established earlier. This analysis is designed to establish a linkage of the knowledge and skills learned in the classroom with the engagement in the profession.

Accounting internships should align with the curriculum’s learning goals and objectives, as well as the mission of the program and/or college or school of business. In the present example, internships are categorized according to their respective primary area of focus, and in alignment with the content related learning goals for the accounting program. These focus areas include (1) financial accounting, (2) managerial accounting, (3) taxation or (4) audit. While internships might include skills from more than one of these categories, the overall function of the intern within the internship organization must fit within one of these areas.

More specifically, organizing and cataloguing the competencies gained and experiences of students assists the program in aligning the learning outcomes with the AICPA Pre-certification Core Competency Framework. *Table 2*, below, illustrates the competencies addressed through the initial two years of the internship program (bolded). While all students did not achieve these competencies, the reach of the program allowed for significant opportunities to develop various competencies. Documenting these experiences is based on student self-reported evaluations as well as job descriptions from the internship experiences. Additionally, internships have been shown to have a significant association with the ethical development of future accountants (Brown-Liburd and Porco, 2011).

An accounting internship coordinator (or lead faculty member) should maintain records related to internship placements. The ideal records to retain will vary by institution but should contain sufficient information to be able to categorize the “type” of internship experience, as well as to provide details that will be relevant for various stakeholder reports, including internal

program reviews, regional accreditation agencies, business and accounting accreditation agencies and others.

Table 2: AICPA Pre-certification Core Competency Framework		
<i>Accounting Competencies</i>	<i>Business Competencies</i>	<i>Professional Competencies</i>
1. Risk assessment, analysis, and management 2. Measurement analysis and interpretation 3. Reporting 4. Research 5. System and process management 6. Technology and tools	1. Strategic perspective 2. Global and industry perspectives 3. Process and research management 4. Governance perspective 5. Customer perspective	1. Ethical conduct 2. Professional behavior 3. Decision-making 4. Collaboration 5. Leadership 6. Communication 7. Project management

In the present example, records indicated student name, gender, year and semester of internship, company name, job title, hourly pay rate, number of credit hours for each internship, job classification (focus area) and a full job description. These records should be kept in a database program that allows for easy extraction for reporting purposes. Such records can be queried to produce summary results for various stakeholders and reporting periods.

Tracking internship and other experiential learning activities is essential. Not only is information about job placement, career options, and other experiential learning activities useful for accreditation and other reporting, the information can have impacts in terms of student recruitment and retention. *Table 3*, below, provides an example of how number of internships have been tracked (and organized) in the subject curriculum.

Table 3: Annual Number of Internships by Focus Area		
	2018	2019
Number of Internships	15	18
(Financial Accounting)	6	6
(Managerial Accounting)	2	1
(Taxation)	5	10
(Audit)	2	1

Universities, schools, and programs must also track information related to gender and other demographic characteristics. As a second example, information on the ratio of male to female internship participants is provided in *Table 4*, below.

Table 4: Internships by Gender & Year		
Internships	2018	2019
Total	15	18
Female	12	11
Male	3	7

In the subject curriculum, data is also collected and retained related to intern pay. While this is helpful in recruiting students and external reporting, it is also instructive to help future students negotiate fair wages for their work. *Table 5*, below, provides information related to hourly pay (by year and gender). This information can also be used to close gender wage gaps in the placement of interns.

Table 5: Hourly Intern Pay by Gender & Year		
Internships	2018	2019
Overall	\$15.10	\$18.21
Female	\$15.71	\$18.41
Male	\$12.67	\$17.92

STRUCTURING AND IMPLEMENTING A VITA PROGRAM

While it would be ideal for all students to find internship opportunities on their own to satisfy the experiential learning opportunity component of the accounting curriculum, this is not always a workable situation. Sometimes employers may not be able to provide these opportunities to students or students may not be able to dedicate the required amount of time to obtain an internship. The proximity of some accounting programs to locations that provide experiential learning opportunities could be prohibitive. Recognizing this reality, we recommend implementing an on-campus alternative that would provide students the experiential learning opportunity they need through the VITA Program for course credit.

The VITA is a program sponsored by the Internal Revenue Service (IRS) that offers free tax preparation to mid-to-low income taxpayers. The program also seeks to serve elderly individuals and non-residents (IRS, 2019). To become a volunteer preparer in the VITA Program, the IRS requires certification examinations to be completed. All preparers must complete the Volunteer Standards of Conduct Exam and the Intake/Interview and Quality Review Exam. The Volunteer Standards of Conduct ensures that the preparers know the confidentiality requirements of sensitive taxpayer information and know the code of conduct for VITA preparers. The Intake/Interview and Quality Review exam tests students on their knowledge of the return preparation process and the review process. The examinations ensure that all VITA volunteers will remain ethical throughout the entire preparation process. In addition to the initial examinations, preparers must complete additional examinations based on the returns they are preparing such as Basic, Advanced, HSA and Foreign Student. The Basic and Advanced examinations cover general tax law knowledge. The HSA and Foreign Student cover more specific areas of tax law.

Once a preparer completes the certification examinations, the preparer may begin volunteering in the VITA Program. The preparation process is generally as follows: (1) greet the client and assist in filling out the interview/intake form, (2) review intake form with client before preparation, (3) prepare tax return using tax software, (4) another volunteer does a quality review of the return, (5) volunteer reviews final return with client, (6) return is filed electronically with the IRS and applicable state revenue department. With multiple volunteers interacting with clients, the VITA Program truly requires a team effort.

Turning VITA into an educational opportunity through a for-credit accounting course

Many universities offer the VITA program as a volunteer activity for students but, as a best practice, an accounting program should consider offering the VITA program as a directed elective for credit in the accounting curriculum. Blanthorne and Westin (2016) identify four “best practices” for VITA programs, which include administrative guidance, student-based

management, reflection, and student comportment. The VITA program presented in the following paragraphs adopts elements of all of these best practices.

By offering VITA as an accounting course (“VITA Course”), the subject program expands on the competencies of the VITA Program and develops a more holistic experiential learning opportunity for students. In the VITA Course, student learning outcomes may include:

- engage in ethical decision making
- analyze tax issues and apply tax law to facts to come to solutions
- research tax law issues effectively and efficiently
- prepare state and federal tax law utilizing tax preparation software; and
- communicate orally and interact with clients

Each of these learning objectives provides the student a practical application of what they learn in the classroom while expanding their knowledge of the accounting profession. The VITA Course learning objectives also align with many of the competencies listed in the AICPA Pre-certification Core Competency Framework, as demonstrated in *Table 6*, below (core competencies satisfied by the VITA course/program are bolded).

Table 6: AICPA Pre-certification Core Competency Framework		
<i>Accounting Competencies</i>	<i>Business Competencies</i>	<i>Professional Competencies</i>
1. Risk assessment, analysis, and management 2. Measurement analysis and interpretation 3. Reporting 4. Research 5. System and process management 6. Technology and tools	1. Strategic perspective 2. Global and industry perspectives 3. Process and research management 4. Governance perspective 5. Customer perspective	1. Ethical conduct 2. Professional behavior 3. Decision-making 4. Collaboration 5. Leadership 6. Communication 7. Project management

While the VITA Program ensures students know the ethical requirements by completing a certification exam, the VITA Course will expand on this concept by promoting discussion of ethical dilemmas that students encountered with clients. During the VITA Course, students will be confronted with ethical decisions regarding taxpayer compliance and confidentiality. As a class, students can see that the ethical principles they learned in prior accounting classes has real life application with clients.

Students also develop analytical skills and research skills to assist in their professional decision-making to ensure they are reporting the correct information on a client’s tax return. These students are given different factual scenarios with each client and will need to learn to navigate tax law to come to make decisions and conclusions. Students learn to utilize tax preparation software that assists them in return preparation while also developing their own professional judgments on certain tax situations. In some situations, students must research issues through tax research software or other applicable legal sources, and often must deal with incomplete information and identify what other information is necessary to find the answer to a tax issue to best service the client.

Somewhat unique to the VITA Program - opposed to most other accounting internships - is the students’ interaction with the clients. Developing effective communication skills is

extremely important for accounting graduates, especially to advance in their careers (Camacho, 2015). Through the course of the program, students learn to communicate by (1) asking questions to obtain the needed information for return preparation, (2) interacting with the client in a professional manner to ensure the client has the best experience possible, (3) clarifying any questions the client may have in return preparation, and (4) working with other volunteers to ensure the entire return preparation and review process is executed smoothly. Students develop confidence in communicating complex subject matter to clients in a way that is easy to understand. Focusing on the development of communication skills will benefit the students greatly as they transition into the job market. The unique nature of the interaction with clients in the VITA program meet several of the best practices identified by Blanthorne and Westin (2016). These include administrative guidance, student-based management, reflection, and student comportment.

Students in the VITA Course also complete a reflection paper to summarize their experience in the course. In this reflection paper, students describe (1) a memorable experience where they developed either professionally or as a student, (2) a challenging experience and how they overcame it, (3) how their participation in the VITA Program has impacted them as they transition into the workplace, and (4) a specific concept, process, or theory from a prior accounting course that they applied as a VITA Student Tax Preparer. Through this reflection, students identify the tangible connection between what they learn in the classroom and how it is applied to a real-world situation. This reflection also helps students reflect on the skills they developed in the program and how the experiences through the program impacted them. Through this activity, students will be able to transfer these reflections into skills for their resume and experiences to discuss in future job interviews as they begin their transition into the business world after graduation. This reflective exercise mirrors the activity that is generally adopted and used in internship and co-op experiences for other students.

Since the VITA program is volunteer in nature, pay is a non-issue for this learning experience. However, reviewing participation by gender can help to make sure that opportunities are available for both male and female students. *Table 7*, below, provides information related to VITA participation over a three-year span.

Table 7: VITA Participation by Gender & Year			
Internships	2018	2019	2020
Total	10	16	26
Female	3	8	9
Male	7	8	17

With the internship program, because of the varied types of experience available to students, it was necessary to categorize each as either financial, managerial, audit, or tax. In terms of total reporting for the program's student experiences, all VITA participation is categorized as tax related.

CONCLUSION

The purpose of this manuscript is to offer a guide for structuring experiential learning components into accounting curricula. Organizations such as AACSB and the AAA have both expressed the importance of such learning in business and accounting education. Furthermore, the accounting profession has significant expectations that students engage in experiential

learning to develop the skills, knowledge, judgment, and values necessary for one to be successful in that profession. Research suggests that the benefits related to internships and the VITA program, in particular, make them robust learning opportunities for students. That is, the development of core competencies, positive learning perceptions, and ethical decision-making, provided by these “real world” experiences make them valuable complements to the student’s classroom experience. Thus, this manuscript focuses on the best practices for establishing internships and VITA programs that are “for credit” and which incentivize students to participate and gain experience that aligns with the pre-certification, core competency framework established by AICPA.

As accounting educators, our duty is to develop the students’ skills, judgment, knowledge, and values that are necessary for them to succeed in the profession. This includes providing students opportunities to advance learning that cannot be captured in an academic environment. As such, using a recently developed accounting program curricula as a guide, this manuscript contributes to the literature on experiential learning by establishing a model for implementing such components that are in alignment with the AICPA framework. This manuscript also responds to Apostolou et al.’s (2013) call for essays by scholars “who are able and willing to share experiences and ideas for the future” (p. 147).

While the designs of the internship and VITA programs outlined in this manuscript can be mapped to the competencies established in the AICPA framework, empirical research is still needed regarding the effectiveness of these experiences in terms of their effects on core competencies, student perceptions, ethical decision-making, and other learning outcomes. Future research should also focus on whether offering these two experiential learning opportunities, together, are redundant. Of course, as the business environment changes, so may what are considered best practices for instituting internship and VITA programs within accounting curricula. As such, research will need to periodically “fine-tune” these programs by examining new, potential practices (*e.g.*, what type of reflection is the most effective at achieving learning outcomes) and their interaction with those that have been established.

REFERENCES

- Apostolou, B., Dorminey, J. W., Hassell, J. M., & Watson, S. F. (2013). Accounting education literature review (2010–2012). *Journal of Accounting Education*, 31(2), 107-161.
- Apostolou, B., Hassell, J. M., Rebele, J. E., & Watson, S. F. (2010). Accounting education literature review (2006–2009). *Journal of Accounting Education*, 28(3-4), 145-197.
- Apostolou, B., Watson, S. F., Hassell, J. M., & Webber, S. A. (2001). Accounting education literature review (1997–1999). *Journal of Accounting Education*, 19(1), 1-61.
- American Accounting Association, *The Pathways Commission on Higher Education: Chartering a National Strategy for the Next Generation of Accountants*, 2012.
- American Accounting Association, *The Pathways Commission on Higher Education: In Pursuit of Accounting’s Curricula of the Future*, 2015.
- American Institute of Certified Public Accountants. (2018a). *The AICPA pre-certification core competency framework*. Retrieved online August 6, 2019 from www.aicpa.org.
- American Institute of Certified Public Accountants. (2018b). Internship program quick start guide. Retrieved online October 7, 2019 from www.aicpa.org.
- Association to Advance College Schools of Business. (2019). *Eligibility Procedures and Accreditation Standards for Business Accreditation*. Retrieved online August 7, 2019 from www.aacsb.edu.
- Beck, J. E., & Halim, H. (2008). Undergraduate internships in accounting: What and how do Singapore interns learn from experience? *Accounting Education*, 17(2)151-172.
- Blanthorne, C., & Westin, S. (2016). VITA: A comprehensive review of the literature and an analysis of the program in accounting education in the US. *Issues in Accounting Education*, 31(1), 51-69.

- Brown-Liburd, H. L., & Porco, B. M. (2011). It's what's outside that counts: Do extracurricular experiences affect the cognitive moral development of undergraduate accounting students? *Issues in Accounting Education*, 26(2), 439–454.
- Bryan, T. G., & McKnight, M. A. (2021). *Implementing the Pathways Commission recommended first accounting course: A profile of early adopters*. *International Journal of Accounting & Finance Review*, 6(1), pp 41-52. Available online at <https://www.cribfb.com/journal/index.php/ijafr/article/view/998>. DOI: <https://doi.org/10.46281/ijafr.v6i1.998>
- Camacho, L. (2015). The Communication Skills Accounting Firms Desire in New Hires. *Journal of Business & Finance Librarianship*. Vol. 20, Issue 4, 318-329.
- Carr, J. (1998). Service-learning in accounting: A role for VITA tax programs. *Learning by doing: Concepts and models for service-learning in accounting*, 101-116.
- Christensen, A. L., D. Schmidt, and P. S. Wisner. (2010). Assessing service-learning outcomes for students participating in VITA programs. *Advances in Accounting Education* 11, 171–195.
- Christensen, A.L. and A.M. Woodland (2016). Is Participation in the Volunteer Income Tax Assistance (VITA) Program Associated with Students' Problem-Solving Skills and Professional Commitment? *Issues in Accounting Education*, 31(1), 71-90.
- Christensen, A. L., & Woodland, A. (2018). An investigation of the relationships among volunteer income tax assistance (VITA) participation and ethical judgment and decision making. *Journal of Business Ethics*, 147(3), 529-543.
- Demski, J. S. (2007). Is accounting an academic discipline? *Accounting Horizons*, 21(2), 153-157.
- Doyle, P. E., M. W. Matt, and B. T. Owens. (2005). A student perspective on the IRS's VITA program. *The CPA Journal* 75 (2), 44–47.
- Fischer, C. M., S. B. Anders, L. L. Brown, and M. P. Vilasi. (2011). The reach of service learning: A profile of VITA volunteers and clients. *Business Education Digest Foundation* (18), 1–11.
- Hulsart, R. W. (2007). Small numbers, large returns: College students helping community members prepare income tax returns. *College Teaching* (5)(2), 48–50.
- Indiana State Board of Accountancy. (2014). *Laws and regulations: A compilation of the Indiana Code and Indiana Administrative Code*. Retrieved online October 1, 2019 from www.in.gov.
- Internal Revenue Service. (2018). *Free Tax Return Preparation for Qualifying Taxpayers*. IRS.gov. Retrieved online September 21, 2019 from <https://www.irs.gov/individuals/free-tax-return-preparation-for-you-by-volunteers>
- Kaenzig, R., & Keller, R. (2011). A comprehensive effort to recruit and retain accounting students. *Journal of Accounting Education*, 29(4), 315-323.
- Knechel, W. R., & Snowball, D. (1987). Accounting internships and subsequent academic performance: An empirical study. *Accounting Review*, 62(4), 799-807.
- Maletta, M. J., Anderson, B. H., & Angelini, J. P. (1999). Experience, instruction and knowledge acquisition: a study in taxation. *Journal of Accounting Education*, 17(4), 351-366.
- Martin, D. R., & Wilkerson Jr, J. E. (2006). An examination of the impact of accounting internships. *The Accounting Educators' Journal*, 16, 129-138.
- Mauldin, S., Zachry, B., & Morris, J. L. (2006). Does student work experience affect CPA firm recruiting decisions? *The Accounting Educators' Journal*, 16, 41-51.
- McKnight, M.A. (2009). *Career orientation decisions of rural high school students: A case study*. *Journal of Human Resource and Adult Learning*, 5 (2), 1-11.
- Normand, C.J., & Cummings, R. (2005). Screening criteria for accounting positions: An update of the Johnson and Johnson study. *Advances in Accounting Education*, 7, 149-169.
- Palatnik, B., & Previti, L. (2019). Experiential learning: Linking the classroom with real-world practice. Retrieved October 2, 2019 from www.njcpa.org.
- Quinn, J. D., Garner, R. M., Marshall, P. D., & Smith, K. J. (1995). Revitalizing VITA to address AECC position statement No. 1 objectives. *Journal of Accounting Education*, 13(4), 479-497.
- Rakow, K. C. (2019). Incorporating financial literacy into the accounting curriculum. *Accounting Education*, 28(4), 383-400.
- Strupeck, C., and D. Whitten. (2004). Accounting service-learning experiences and the IRS Volunteer Income Tax Assistance program: A teaching note. *Accounting Education* 13 (1), 101–112.
- Tysiac, K. (2014). How real work experience can help students, businesses. *Journal of Accountancy*. Retrieved August 7, 2019, from www.journalofaccountancy.com/news.

- Watson, S. F., Apostolou, B., Hassell, J. M., & Webber, S. A. (2007). Accounting education literature review (2003–2005). *Journal of Accounting Education*, 25(1-2), 1-58.
- Weis, W. L. (1998). “What I do, I understand”: Service-learning in accounting curricula. In *Learning by Doing: Concepts and Models for Service-Learning in Accounting*. Washington, DC: American Association for Higher Education.

CORPORATE BANKRUPTCY PREDICTION MODEL FOR INTERNET STARTUP COMPANIES

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ABSTRACT

The purpose of this paper is to present a new approach to developing a financial distress prediction model that analyzes factors affecting success or failure of dot-com companies. In a new model, both demand side and supply side categories account for the performance of firms following IPOs. Huyghebaert et al. (2000) and Lewis et al. (2000) serve as a framework for the new model. This research uses a logistic regression analysis to build the proposed model. The demand side category includes a market condition factor, while the supply side category includes a funds flow factor. The statistical results show that independent variables such as Gross Profit Margins, Cash Flows, Accounts Receivables, Accounts Payables, and Market Value are significant whereas Stockholders' Equities, Dividends, Capital Expenditures, and Inventories are insignificant.

INTRODUCTION

In 2001, many Internet start-up companies, so called Dot-Com companies went bankrupt, yet many of Internet-related start-ups are managing to get funded. McGee and Edmonston (2001) reports that about \$5 billion will be invested in dot-com companies in 2001, which is not as big as \$17 billion in 2000 but almost the same as in 1999. In other words, dot-com companies are not extinct, but will continue to exist. To avoid the same mistakes that they made during 1999 and 2000, venture-capital firms should be more cautious when they make investments in dot-com companies. Stock investors wonder how to distinguish a successful dot-com company from a bad one. A reliable corporate bankruptcy model is needed for investors and venture capitalists in order to evaluate the financial performance of dot-com companies. In addition, recent boom of social media companies which have similar characteristics as those Internet start-up companies in the 2001 dot-com crisis seems to warrant to learn from the past experiences.

Much research has been done on financial distress prediction models in the last three decades, and a few studies have investigated start-up firms' financial performance. Recently, a few studies have attempted to analyze financial distress of dot-com companies. Most of these studies employ explanatory variables in the supply side category such as financial measurements such as financial ratios for determining an Internet startup company's bankruptcy likelihood. According to Lewis et al. (2000), variables in the demand side category such as a market condition, an underwriter reputation affect a firm's financial performance significantly.

A survey of prior literature reveals that there is no study that accommodates both supply side category variables and demand side category variables in financial distress prediction modeling for dot-com companies. A lack of literature in this important field and a strong demand for a reliable model motivates this study. Huyghebaert et al. (2000) and Lewis et al. (2000) serve a framework for developing a new approach.

A logistic regression analysis is employed for the model development. Therefore, the purpose of this paper is to develop a financial distress prediction model that analyzes both supply side category factors and demand side factors affecting success or failure of dot-com companies, using a logistic regression analysis.

It is expected that the new approach makes a significant contribution to the financial literature and the E-Business community, and help investors make proper decisions on Internet start-up companies. Furthermore, considering many social media companies and cloud-based enterprises emerging and prospering these days, our new model can help investors make better investment decisions on the Internet-based companies. In the next section, a review of literatures on the financial distress is given. Section 3 explains a methodology for the proposed model. Statistical results are reported in Section 4, followed by discussion in Section 5. Section 6 summarizes and concludes this study.

LITERATURE REVIEW

There is considerable literature on financial distress prediction models which have focused on mature listed firms. On the other hand, research on newly established firms' survival process in the post entry period is very limited.

Literature on the long-term performance of firms following initial public offerings (IPOs) can be divided into two main categories: the demand side and the supply side categories. The demand side category studies suggest that investors are periodically overoptimistic about the potential of newly established firms (Ritter 1991; Loughran and Ritter 1995). This is especially true when young growth firms go public in high-volume years. An application of the demand side theory is Lewis et al. (2000), which reports the quality of underwriters and the market status (high vs. low volume) have significant impacts on prediction of financial distress.

The supply side category studies identify earnings-based performance measures, cash flow factors, and non-financial factors as representatives of issuers' long-term performance. Earnings-based performance measures have been employed in numerous studies (Altman 1968; Zmijewski 1984; Gilbert, Menon and Schwartz 1990; Hopwood, McKeown and Mutchler 1994; Ward and Foster 1996). Cash flows factors have been often reported in prior studies (Huyghebaert et al. 2000; Aziz and Lawson 1989; Aziz et al. 1988; Gentry et al. 1987; Casey and Bartczak 1985). Recently, non-financial factors are drawing more attention (Ueng and Lee 1996; Gartner, Starr and Bhat 1991; Flamholtz and Aksehirli 2000). Existing literature in the supply side category suggests that funds flow measures may be better than traditional financial ratios for earlier prediction of financial distress (Huyghebaert et al. 2000; Laitinen 1992; and Aziz et al. 1988).

In summary, literature shows both demand and supply side category studies are significant. This new approach of including both side factors is especially appropriate for studying the subject of this paper because most dot-com firms are established and gone public in a hot issue market. Accounting data is also very limited due to the short lives of these companies. Therefore, it is expected the prediction reliability may increase if both demand side factors and supply side factors are included in a corporate bankruptcy prediction model. However, no study has been done on developing such model. As a result, this study hypothesizes that a new model including both demand side and supply side factors shows statistical significance in predicting financial distress of Internet start-up companies.

RESEARCH METHODS

As discussed in the previous section, this study develops a statistical model that includes both demand and supply side factors, to account for the long-term performance of Internet start-up firms following IPO. In the logistic regression model, a dependent variable is a binary variable which codes 1 for a bankrupt firm and 0 for a non-bankrupt firm. Independent variables are the demand side and supply side factors.

Lewis et al (2000) and Huyghebaert et al (2000) serve as a framework for a new model. Huyghebaert et al (2000) consists of 823 Belgian start-up firms over a five-year period. Their sample includes various the industries in Belgium. In contrast to them, this study focuses on Internet start-up firms in the USA. Dot-com companies used in this study have some unique characteristics compared to the sample of Huyghebaert et al. (2000). In general, Dot-com companies are based on the Internet and information technology. This implies that these companies may not be so capital and facility intensive since dot.com companies tend to rely on a relatively small number of talented entrepreneurs.

Regarding the demand side, this paper includes market condition factor in a new model, based on the findings from Lewis et al (2000). For the supply side, a funds flow factor is employed in the proposed model, based on the findings from Huyghebaert et al. (2000). Therefore, two main factors are proposed as explanatory variables for a financial distress prediction model in this study: Market Condition Factor, Funds Flow Factor.

Statement of Cash Flows and Funds Flow Factors

As financial analysts and investor have been less valued earnings-based metrics in big accounting scandals such as Enron, WorldCom, and others, many financial statement users have leaned toward the cash flow statement. Investors have also tended to pay more attention to cash flow statement. Unlike accrual-based statements such as balance sheet and income statement, statement of cash flows provides useful information about cash inflows and outflows in detail.

Basically, companies need cash to buy inventories, raw materials, equipment, and many other items for their business operation, and to pay wages and salaries, debts, and dividends. Insufficient cash balance can lead to default on payables due and ultimate bankruptcy. In order for a company to survive or prosper should operate profitably and generate enough cash to meet

its obligations. Cash flows could be more useful to creditors in predicting financially distressed firms (Ward, 1994).

Considering the importance of cash flows in predicting financial distress and bankruptcy, three measures are developed for variables describing funds flow factors: Operating Cash Flow, Financing & Investing Fund Flow and Working Capital. These measures are defined similar to Gentry, Newblood and Whitford (1987).

First, operating cash flow variable is included in a new model as a funds flow factor. It is widely accepted that liquidity constraints play an important role in business survival, especially at the start-up stage. Accordingly, firms, which are able to generate more operating cash flow during their earlier years, have higher chances of survival. To capture operating cash flows, two measures are used: Gross Margin (GM) and Residual Cash Flow (RCF). Residual cash flow is calculated by subtracting the cost of capital from the net adjusted cash flows for the accounting period. Residual cash flow is used as a proxy for cash inflow since it is a measurement that provides cash value as a key indicator of the business performance. It is expected that the higher the gross margin and the larger the cash residual, the better the chances of survival.

Second, a new model also includes financing and investing funds flow variables for the funds flow factor. The choice between equity and debt financing and the selection of the optimum capital structure is thoroughly discussed in the finance literature. Firms that choose equity financing are less vulnerable and hence are less likely to fail. To the contrary, debt financing increases the obligations and commitments of start-up firms. Monetary obligations are of more importance and greater influence when the operating cash flows are not enough to cover the operating activities. To capture the impact of financing and investing activities, Equity Financing (EQ), Dividends (DVD), and Capital Expenditures (CAP) variables are used.

In addition, working capital variables are considered for the fund flow factor. Consistent with the operating cash flow variables, firms have greater incentive to control their working capital in order to enhance the survival chances. To capture the working capital variables, Inventories (INV), Accounts Receivables (AR), and Accounts Payables (AP) are used.

In general, capital expenditures take big amounts of investment which is usually made either by debt financing or equity financing. In addition, capital expenditures decrease cash flows which may add a chance of bankruptcy which leads to Hypothesis 4.

It is hypothesized that the higher the current assets and the lower the current liabilities, the higher the chances of survival of start-up firms. A high dependence on current liabilities to finance operating activities increases the dependence of start-up firms on external sources and increases vulnerability to failure. Hence, the following hypotheses are tested in this paper.

H₁ The higher gross margin is, the higher the chances of survival of start-up firms are likely.

H₂ The higher cash inflows are, the higher the chances of survival of start-up firms are likely.

H₃ The higher equity financing is, the higher the chances of survival of start-up firms are likely.

H₄ The higher capital expenditures are, the lower chances of survival of start-up firms are likely.

H₅ The higher current assets are, the higher the chances of survival of start-up firms are likely.

H₆ The higher current liabilities are, the lower the chances of survival of start-up firms are likely.

Capital Market Condition Factor

Bayless and Chaplinsky (1996) reports that investors are less fearful of buying overvalued equity in high-volume issue markets. They attribute that to either the herding theory or reduced levels of information asymmetry between issuers and investors during such periods. The Herding theory suggests that investors become overly optimistic and more receptive to investing in poor-quality firms in bull markets. Accordingly, investors are expected to be less astute during hot markets. The information asymmetry interpretation assumes that busted IPOs are more likely when market conditions are poor, while the herding theory assumes that busted IPOs are more likely when market conditions are favorable (Lewis et al. 2000).

To measure the market condition, this paper uses market values of the firm as proxy for marker condition. It is hypothesized that the higher the firm's market value, the higher the chances of survivals of start-up firms. Accordingly, the third hypothesis is as follows:

H₇ The higher the market value, the higher chances of survival of start-up firms.

LOGISTIC REGRESSION MODEL

Logistic regression models are based on the logistic distributions function and are usually estimated with maximum likelihood. Logistic regression models take a binary (dichotomous) dependent variable and offer probabilities and odds for the interpretation of parameters. A binary dependent variable, probabilistic interpretation, and maximum likelihood estimation are major differences between linear regression analysis and logistic regression analysis. Probabilistic interpretation and maximum likelihood estimation are attributes differentiating logistic regression models from discriminant. Several studies in the finance area have used logistic regression models (Ueng and Lee 1996; Huyghebaert et al 2000).

Many researchers prefer logistic regression approach to discriminant model for several reasons. Logistic regression models require less vigorous assumptions in a model building process than discriminant analysis. As a result, results from logistic analysis are more robust than those from discriminant model. Second, the odd ratios from logistic model can be used as policy guidelines in investment planning in hospitals. Therefore, the use of logistic analysis seems to be an ideal tool for this study.

For this research, a logistic regression model can be written as Kleinbaum (1994):

$$\begin{aligned}
 P(X_k) &= P(Y = k \mid X_1, X_2, \dots, X_p) \\
 &= \frac{1}{1 + e^{-z}} \quad (1)
 \end{aligned}$$

$$\text{where } z = \alpha + \sum_{j=1}^p \beta_j X_j \quad (2)$$

Y = a dichotomous dependent variable (Bankruptcy),

k = value of Y (1 = Bankruptcy, 0 = Non-bankruptcy),

X_j = independent variables ($j = 1$ through p),

$P(X)$ = conditional probability of an event k occurring, and

X = a vector of independent variables.

The logistic regression model (Equation 1) can be rewritten in terms of the odds of an event occurring. The odds of an event 'k' occurring ($Y = k$) are then estimated as:

$$\text{Odds} = \frac{P(X_k)}{1 - P(X_k)} \quad (3)$$

With odds for each k (Equation 3), odds ratio can be determined as:

$$\text{Odds Ratio } (X_1, X_0) = \frac{\text{Odds for } X_1}{\text{Odds for } X_0} \quad (4)$$

A logit also can be computed by the odds (Equation 3) as:

$$\text{logit } P(X) = \text{Log (Odds)} \quad (5)$$

Chi-square value of model improvement will be used as a measure of model reliability.

To test the seven hypotheses developed above, the following equation is employed in the logistic regression analysis.

$$\begin{aligned} \text{STATUS}_{it} = & a_0 + a_1 \text{GPM}_{it} + a_2 \text{CF}_{it} + a_3 \text{SHE}_{it} + a_4 \text{DIV}_{it} \\ & + a_5 \text{CAPEXP}_{it} + a_6 \text{INV}_{it} + a_5 \text{REC}_{it} + a_6 \text{AP}_{it} \\ & + a_7 \text{MV}_{it} \end{aligned} \quad (6)$$

where:

STATUS_{it} = 1 for a bankrupt firm and 0 for a non-bankrupt firm.

GPM_{it} = Gross Profit Margins (predicted sign: -)

CF_{it} = Cash Flows (predicted sign: -)

SHE_{it} = Stock Holders' Equities (predicted sign: -)

Div_{it} = Dividends (predicted sign: ?)

CapExp_{it} = Capital Expenditures (predicted sign: +)

Inv_{it} = Inventories (predicted sign: -)

Rec_{it} = Receivables (predicted sign: +)

AP_{it} = Accounts Payables (predicted sign: +)

MV_{it} = Market Value (predicted sign: -)

The dependent variable, $STATUS_{it}$, is a discrete number. It will be 1 for a bankrupt firm and 0 for a non-bankrupt firm. The firm's bankruptcy status is identified in the Research Insight database. Gross Profit Margins (GPM_{it}) are defined as net sales minus costs of goods sold to proxy for the chance of survival as they provide resources. Cash flows are a proxy for the firm's capability to generate operating cash flows. The total stockholders' equity, dividends paid, and capital expenditures are used to proxy for the firm's financing and investing activities. Three other measures such as inventories (Inv_{it}), receivables (Rec_{it}), and accounts payables (AP_{it}) are used to proxy for working capital. Another measure, Market Value (MV_{it}) is also used as proxy for the capital market condition.

EMPIRICAL RESULTS

Descriptive Statistics

Panel A in Table 1 presents the sample selection procedures which resulted in a final sample of 374 firms based on the bankruptcy and financial data availability. Initially, a list of Initial Public Offering (IPO) firms was obtained from the Research Insight database. There are 2,741 companies listed during the time period of 1998 to 2003. Among the listed IPO firms, there are 667 Internet and high-tech related firms.

During the analysis time period, 127 firms were bankrupt while the remaining 540 firms stay in business. Unavailability of firms' data regarding their financial measures on the Research Insight (formerly COMPUSTAT) database reduces the sample to 322 non-bankruptcy firms and 52 bankruptcy firms resulting in the total of 2244 firm/year observations.

Table 1		
Sample Selection		
SELECTION CRITERION	Panel A: Non-bankrupt Firms	Panel B: Bankrupt Firms
Total number of IPO firms between 1998 & 2003	2741	2741
Internet and high-tech related firms	667	667
Non-bankrupt firms	540	127
Availability of COMPUSTAT data	322	52
Total Observations	322	52

Table 2a and Table 2b show descriptive statistics for the dependent and independent variables used in the logistic regression analysis for hypotheses.

Table 2a						
Descriptive Statistics - Panel A: Non-bankrupt Firms						
Variable	N	Mean	Median	Std Dev	Minimum	Maximum
GPM	1932	49.61	43.31	22.51	0.15	100.00
CF	1932	161.71	4.62	487.51	0	4422.28
SHE	1932	331.91	38.07	1348.83	0	26945.00
Div	1932	1.86	0.00	70.61	0	838.80
CapExp	1932	75.06	2.89	449.94	0	11146.37
Inv	1932	17.21	0.04	88.26	0	1853.00
Rec	1932	50.16	6.06	242.32	0	7346.89
AP	1932	37.71	2.87	190.21	0	5653.03
MV	1932	84.36	190.60	299.81	0	6867.12

Overall, Descriptive Statistics in Table 2a and 2b indicate that bankrupt firms tend to have much lower mean values in all the variables. This could be interpreted that in the first place bankrupt firms had much less resources than non-bankrupt firms. For example, the mean score for GPM is \$49.61 million for non-bankrupt firms whereas it is \$39.59 million for bankrupt firms. All other variables show the similar patterns.

Table 2b						
Descriptive Statistics for Panel B: Bankrupt Firms						
Variable		Mean	Median	Std Dev	Minimum	Maximum
GPM	312	39.59	28.13	22.04	0.25	98.10
CF	312	76.30	11.20	345.37	0.01	2449.00
SHE	312	179.45	23.18	505.60	0.01	4149.15
Div	312	9.02	0.00	195.93	0	3402.08
CapExp	312	54.65	4.01	161.79	0	1309.88
Inv	312	8.88	0.00	38.63	0	341.32
Rec	312	32.45	4.21	143.13	0	1835.00
AP	312	33.08	3.78	182.56	0	2438.00
MV	312	65.50	69.86	162.40	0	1261.00

The Pearson correlation coefficients for the variables in the proposed model are reported in Table 3a and Table 3b. Panel A presents correlation matrix for non-bankrupt firms in Table 3a.

Table 3a									
Correlation Matrix for Panel A: Non-bankrupt Firms									
	GPM	CF	SHE	Div	CapExp	Inv	Rec	AP	MV
GPM	1.0000	-0.0247	-0.0106	-0.0363	-0.0348	-0.0733	-0.0569	0.0700	-0.0294
		0.5361	0.6776	0.1356	0.1532	0.0025	0.0189	0.0037	0.2236
CF		1.0000	0.7471	0.0063	0.6734	0.3328	0.6392	0.6486	0.5705
			<0.0001	0.8751	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
SHE			1.0000	0.0185	0.6811	0.3872	0.6470	0.6026	0.5463
				0.4303	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Div				1.0000	0.0144	0.0130	-0.0099	-0.0156	0.0045
					0.5181	0.5572	0.6559	0.4789	0.8398
CapExp					1.0000	0.2577	0.5229	0.6295	0.5904
						<0.0001	<0.0001	<0.0001	<0.0001
Inv						1.0000	0.5747	0.4215	0.2913
							<0.0001	<0.0001	<0.0001
Rec							1.0000	0.9018	0.6484
								<0.0001	<0.0001
AP								1.0000	0.6853
									<0.0001
MV									1.0000

Table 3b shows correlation matrix for the bankrupt firms. The coefficient values range from -0.0733 to 0.9018. This indicates that multicollinearity is not a problem.

Table 3b									
Correlation Matrix - Panel B: Bankrupt Firms									
	GPM	CF	SHE	Div	CapExp	Inv	Rec	AP	MV
GPM	1.0000	-0.0255	-0.0123	-0.0372	-0.0357	-0.0749	-0.0573	0.0711	-0.0291
		0.5432	0.6681	0.1401	0.1546	0.0023	0.0192	0.0035	0.2458
CF		1.0000	0.7582	0.0074	0.7458	0.3477	0.6532	0.6672	0.5841
			<0.0002	0.6843	<0.0003	<0.0001	<0.0001	<0.0001	<0.0001
SHE			1.0000	0.0173	0.6824	0.4322	0.6582	0.6548	0.5533
				0.4505	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Div1				1.0000	0.0237	0.0144	-0.0128	-0.0246	0.0058
					0.6211	0.4727	0.5659	0.5789	0.8574
CapExp					1.0000	0.3662	0.4512	0.6445	0.5977
						<0.0001	<0.0001	<0.0001	<0.0001
Inv						1.0000	0.5856	0.5225	0.2503
							<0.0001	<0.0001	<0.0001
Rec							1.0000	0.9001	0.6024
								<0.0001	<0.0001
AP								1.0000	0.6301
									<0.0001
MV									1.0000

Logistic Regression Analysis Results

The relationship between firm's bankruptcy status and its characteristics is examined using logistical regression analysis which analyzes a binary response variable.

Huyghebaert et al. (2000) hypothesized the direction of the flow of the fund. Following their prediction, we expect that in general there are negative relationships between cash inflows and bankruptcy whereas there are positive relationships between cash outflows and business failure. Accordingly, Table 4 shows the expected signs as used in Huyghebaert et al. (2000).

The coefficient for the bankruptcy status (STATUSit) and Gross Profit Margins (GPM) is significant at $p = 0.0113$ (H1). The coefficient for Cash Flows (CF) is marginally significant at $p = 0.0692$ (H2). The coefficient for Stockholders' Equities (SHE) and Dividends (Div) are not significant (H3). The coefficient for Capital Expenditures (CapExp) is not significant (H4). The Inventories variable is insignificant while the Receivables variable (Rec) is significant at $p = 0.0069$ (H5). The Account Payables variable (AP) is significant with its coefficient sign ($p = 0.0032$) although it is not in the proper direction (H6). The market condition variable, Market Value (MV) is marginally significant at $p = 0.0618$ (H7). Also, it is noted that in Table 4, the intercept term is non-zero and statistically significant. This may suggest possible omitted variables or measurement error in the regressors. Table 4 presents the results of estimating equation (6) where the dependent variable, STATUSit, is a binary (dichotomous) variable and offer probabilities and odds for the interpretation of parameters. The coefficient for Gross Profit Margin (GPM) is significant at $p = 0.01$ and in the proper direction (H1). The coefficient for Cash flow (CF) is significant at $p = 0.06$ and in the proper direction (H2). The coefficient for Receivables (rec) is also significant at $p = 0.10$ and has the positive sign as predicted (H5). The coefficient for Accounts Payable (AP) is significant at $p = 0.003$ and has a negative sign as expected (H6). The coefficient for Market Value (MV) is significant at $p = 0.06$ which suggests incremental explanatory power. All other coefficients are insignificant.

The results suggest that hypotheses H1 and H2 are supported. It indicates that financially healthy firms with higher operating cash flows are more likely to survive than financially unhealthy firms. However, hypotheses H3 and H4 are not supported as indicated with insignificant results. Thus, financing and investing funds flow variables are not significantly related to the firm's survival. Table 4 provide mixed results on H5. Account receivables is significant, yet inventory is not. Results on H5 and H6 suggest that current assets and liabilities play vital roles in the start-up company survival.

Table 4			
Logistic Regression Analysis Results			
Pseudo R ² = 0.028, χ^2 (d.f. = 6) = 15.654 (p < 0.001)			
YEAR	Expected Sign	Estimated Parameter	p-value
INTERCEPT		0.154	0.0001
GPM	-	0.0001	0.0113
CF	-	0.0004	0.0692
SHE	+	0.0001	0.8761
Div	?	-0.0007	0.2280
CapExp	+	-0.0004	0.3253
Inv	+	-0.0011	0.5558
Rec	+	0.0059	0.0069
AP	+	-0.0027	0.0032
MV	+	0.0001	0.0618

Sensitivity Analysis

The robustness of the results in Table 4 is also checked by alternative measures of the independent variable, GPM (Gross Profit Margins) and the market condition factor, MV (Market Value). Net income instead of gross profit margin and total sales rather than market value are included in the logistic regression model equation 1 and the same analyses are repeated. Table 5 shows the results. The results are basically similar to those reported in Table 4.

In addition, to further check the robustness of the results we used working capital and other current assets instead of cash flows and receivables, respectively. The results are basically similar to those reported in Table 4 and 5.

Table 5			
Robustness Check – Panel A			
Pseudo R ² = 0.025; χ^2 (d.f. = 6) = 14.727; p < 0.001			
Year	Expected Sign	Estimated Parameter	p-value
Intercept		0.175	0.0001
NI	-	0.0001	0.0125
CF	-	0.0003	0.0752
SHE	+	0.0001	0.8945
Div	?	-0.0006	0.2462
CapExp	+	-0.0004	0.3277
Inv	+	-0.0012	0.5577
Rec	+	0.0055	0.0071
AP	+	-0.0025	0.0035
Sales	+	0.0001	0.0654
Note: NI = Net Income; CF = Cash Flows; SHE = Stockholders' Equities; Div = Dividends; CapExp = Capital Expenditures; Inv = Inventories; Rec = Receivables; AP = Accounts Payables;			

CONCLUSION

In summary, this paper proposes a new approach to predict a corporate bankruptcy for Internet startup companies, by accommodating both demand side and supply side variables. The proposed logistic regression model includes a funds flow factor for the supply side and a market condition factor for the demand side.

There are a lot of areas for improvement for further studies on this topic. Due to the data availability and time constraint, this paper has not included most recent data. Therefore, a future study is suggested to generate empirical evidence from data analysis by collecting recent data from the stock markets and other data warehouses. In addition, the demand side category can add a new factor such as underwriter reputation. A funds flow factor in the supply side category also can add new variables.

In conclusion, this study makes a contribution to the financial literature and the E-business community by providing a new approach that help investors make proper decisions on Internet start-up companies. Furthermore, considering many social media companies and cloud-based enterprises emerging and prospering these days, our new model can help investors make better investment decisions on the Internet-based companies. It is also expected that the e-business community as well as investors can benefit from the empirical evidence from this paper by enhancing efficiency and effectiveness in equity investment.

REFERENCES

- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4), 589-609.
- Altman, E. I. & Levallee, M. Y. (1980). Business failure classification in Canada. *Journal of Business Administration*, 12(1), 147-164.
- Aziz, A., Emanuel, D. C. & Lawson, G. H. (1988). Bankruptcy prediction - an investigation of cash flow based models. *Journal of Management Studies*, 25(5), 419-435.
- Aziz, A. & Lawson, G. H. (1989) Cash flow reporting and financial distress models: Testing of hypotheses. *Financial Management*, 18(1), 55-63.
- Casey, G. & Bartczak, N. (1985). Using operating cash flow data to predict financial distress: Some extensions. *Journal of Accounting Research*, 23(1), 385-401.
- Flamholtz, E. G. & Aksehirli, Z. (2000). Organizational success and failure: An empirical test of a holistic model. *European Management Journal*, 18(5), 488-498.
- Gartner, W. B., Starr, J. A. & Bhat, S. (1999). Predicting new venture survival: An analysis of anatomy of a startup cases from Inc. magazine. *Journal of Business Venturing*, 14(2), 215-232.
- Gentry, J. A., NewBold, P. & Whitford, D. T. (1985). Classifying bankrupt firms with funds flow components. *Journal of Accounting Research*, 23(1), 146-160.
- Gentry, J. A., Newbold, P. & Whitford, D. T. (1987). Funds flow components, financial ratios, and bankruptcy. *Journal of Industrial Economics*, 14(4), 595-606.
- Gilbert, L. R., Menon, K. & Schwartz, K. B. (1990). Predicting bankruptcy for firms in financial distress. *Journal of Business Finance & Accounting*, 17(1), 161-171.
- Hopwood, W., McKeown, J. C. & Mutchler, J. F. (1994). A reexamination of auditor versus model accuracy within the context of the going-concern opinion decision. *Contemporary Accounting Research*, 10(2), 409-431.
- Huyghebaert, N., Gaeremynck, A., Roodhooft F & Van De Gucht, L. M. (2000). New firm survival: The effects of start-up characteristics. *Journal of Business Finance & Accounting*, 27(5-6), 627-651.

- Laitinen, E. K. & Laitinen, T. (2000). Bankruptcy prediction: Application of the Taylor's expansion in logistic regression. *International Review of Financial Analysis*, 9(4), 327-349.
- Lewis, C. M., Seward, J. K. & Foster-Johnson, L. (2000). Busted IPOs and windows of misopportunity. *Dartmouth College Amos Tuck School of Business Administration Working Paper*, No. 00-06.
- Loughran, T. & Ritter, J. (1995). The new issues puzzle. *Journal of Finance*, 50(3), 23-51.
- McGee, S. & Edmonston, P. (2001). Deals & deal makers: Internet start-ups still manage to find funding, though venture capitalists are far more choosy. *Wall Street Journal, Eastern Edition*, August 24, 2001: C.1.
- Ritter, J., The long-run performance of initial public offerings. *Journal of Finance*, 46(1), 3-27.
- Ueng, C. J. & Lee, C. C. (1996). Predicting corporate bankruptcy in the 1990s: An investment opportunity model. *Midwest Review of Finance & Investment*, 10(1), 287-293.
- Ward, T. J. (1994). Cash flow information and the prediction of financially distressed mining, oil and gas firms: A comparative study. *Journal of Applied Business Research*, 10(3), 78-86.
- Ward, T. J. & Foster, B. P. (1996). An empirical analysis of Thomas's financial accounting allocation fallacy theory in a financial distress context. *Accounting and Business Research*, 26(2), 137-152.
- Zmijewski, M. E. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research*. 22, 59-82. doi:10.2307/2490859

DOES SERVICES SECTOR GROWTH INFLUENCE ECONOMIC GROWTH? EVIDENCE FROM ASEAN ECONOMIES

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ABSTRACT

In the global economy, the service sector plays a dynamic role, contributing to various facets of the economy. It is the largest contributor to the gross domestic product (GDP) of the Association of Southeast Asian Nations (ASEAN) member states, and its contribution to GDP in ASEAN countries is on the rise. Given the growing contribution of the sector in the ASEAN countries, this study explores the role of the growth of the services sector in their economies' economic growth. Using panel cointegration (long-run) tests and pooled mean group Autoregressive Distributed-lag (ARDL) model on yearly data from 1970 to 2017, the findings support both short- and long-run association between growth in the services sector and economic growth of the ASEAN economies. This cross-country analysis also provides insight into the impact of services-sector growth to per capita economic growth of each of the ASEAN countries. The results support the notion that growth in the services sector in ASEAN economies should be given significant support for the economic growth of the region.

Keywords: Services Sector, Economic Growth, ARDL, Cointegration, ASEAN

INTRODUCTION

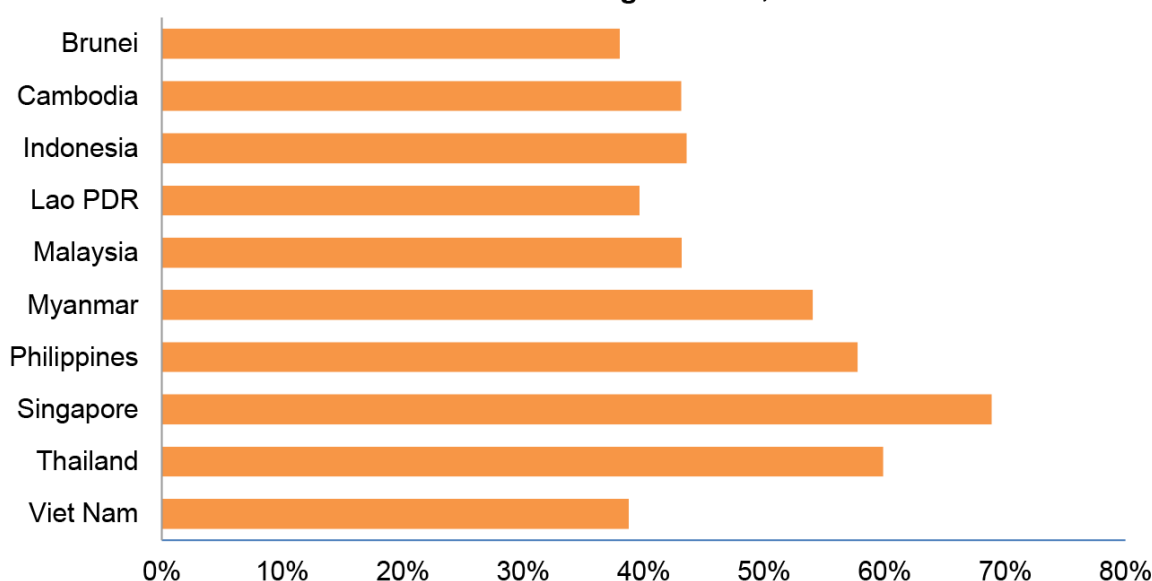
The Association of Southeast Asian Nations (ASEAN) was set up as a regional intergovernmental organisation with the primary objective of accelerating economic growth amongst the South East Asian Nations. As services-sector(SS) became a major growth driver in developed countries, emerging and developing countries started to recognise the value of the benefits of SS growth. While ASEAN countries allocate the bulk of their resource expenditure to infrastructural facilities, they have not been able to generate accelerated economic growth. Except for some ASEAN countries, the governments were protective of their nation's service sector. Governments have gradually envisaged their role in creating an ecosystem that is sustainable and capable of providing an effective and competitive service sector. In December 2008, the ASEAN Charter approved the establishment of a single free trade area for the region by the member states and transformed ASEAN into a legal entity. With the realisation of the ASEAN Economic Community (AEC), trade and services sector reforms are experiencing more liberalisation. AEC looks for the integration of the member states into a single market facilitating free movement of goods, services (The ASEAN Charter, 2020).

The need for better financial intermediation facilities, banking and other financial services in the ASEAN region to serve the larger intra-ASEAN market was realised with the

establishment of the AEC. The ASEAN economies agreed on a list of modalities and adopted milestones to promote negotiations on the free movement of services, commodities, investment, labour (skilled workers) and resources, among other items, in order to achieve the objectives of SS liberalisation. As a growth driver for the ASEAN economies, modern services such as wholesale, retail trade, restaurants & hotels, transport, communication & storage, financial intermediation and business services are likely to play a significant role in promoting economic growth. The SS contribution to GDP in 2017 was greatest in the case of Singapore (75.2%) followed by the Philippines (59.8%), Thailand (55.6%) and Malaysia (54.7%). The SS contribution to GDP in 2017 was about 46% in the case of Lao and Indonesia. The ten ASEAN countries have a collective GDP of US\$2.4 trillion as on 2019 with 630 million people, and the economy is ranked just after China and India as the fastest-growing economy. (Figure 1)

Tables and Figures

Figure 1- Services as a % of GDP, 2016 (Source: ASEANStats, 2019)



ASEAN's economies have witnessed the global financial crisis triggered by the US subprime crisis of 2008. With the majority of the nations in this cohort being open economies, the recession in the US and Eurozone badly impacted its exports and its economic growth. For policymakers, it is imperative to understand what impacts the country's economic growth and services sector have both direct and indirect effects on economic growth. A policy shift towards services could lead to an increase in aggregate productivity. For example, the cost of production and the productivity of companies in all sectors of the economy will benefit to a large degree from efficient transport and logistics services or even telecommunications services.

The objective of the paper is to examine the services sector growth (SSG) and economic growth nexus, both in short-run and long-run, for the ASEAN economies. We discuss whether

the growth of the service sector influences economic growth or vice versa and whether the relationship is long-term or even short-term. While the present study examines the relationship between SSG and economic growth, the findings can contribute and aid the policymakers in understanding the short- and long-run equilibrium relationship between the two and the role of the services sector in delivering economic growth through different channels. In view of the COVID-19 crisis, the findings are critical as the crisis-hit nations' policymakers can take a clue from the services sector – the economic growth nexus during and after the global financial crisis era.

LITERATURE REVIEW

Early studies (Chenery, 1960; Clark, 1957) supported a favourable contribution of the share of services in GDP (or total employment) and GDPpc (gross domestic product per capita). Yeung (1996) noticed that many service-oriented firms were entering the Asia-Pacific region since the 1980s. The author argued that increased globalisation of economic and financial activities along with widespread overseas network and improved links between global and world-renowned corporations are the driving forces to bring the service-oriented firms in the region. Eichengreen and Gupta (2012) argue that the association between the share of services in GDP and GDP per capita is not always linear because the SSG has different wave patterns in different countries. Along with economic growth, the services sector can become larger, while overall economic growth depends on the output of the services sector. Market services like producer services (banking and finances), distribution services (transport and storage), personal services (hotels and restaurants) and communication services (internet) have a significant influence on the SS of the ASEAN economies.

Hill (1977), Riddle (1986), and Bhagwati (1987) have unambiguously defined the scope of the SS with Bhagwati (1987) arguing that developed nations have an advantage in the export of services. The SS has been often termed as the tertiary sector (residual) following primary and secondary sector (Toh and Low, 1989). Gershung & Miles (1983) and Park & Chan (1989) have, in general, branded service activities into the market and non-market activities. Pang & Sunderberg (1988), Arndt (1989), Yeung (1996) and Gani and Clemes (2002) have given particular importance to the role of growth in the SS in building ASEAN economies. However, in a cross-sectional country-level study, Dutt and Lee (1993) suggest that SSG hurts economic growth in general. Eschenbach and Hoekman (2006) showed that services make a major contribution to nations' economic growth and policy changes that help the service sector are important in understanding the economic success of transition economies. Singh (2009) reports both short-term and long-term nexus between SS and economic growth and between services and nonservices sectors in India. Suryadarma et al. (2013) note that the SS contributes to Indonesia's economic growth through employment creation. Zhao and Tang (2015) showed that the growth in China's post-2000 economy could be largely attributed to its dependency on the service sector, although the export of high-technology products made a major contribution to GDP. Lee and McKibbin (2018) argued for the prominent role of SSG in bringing balanced growth of Asian

economies. The supportive role of the SS in driving economies of Asian nations is also reported by Bosworth and Maertens (2010) and Kim and Wood (2020).

DATA AND METHODOLOGY

Yearly data of SS contribution to GDP (in USD) comprising of wholesale and retail trade; restaurants and hotels; transport; storage and communication; and other activities from 1970 - 2017 for the ten ASEAN countries (Vietnam, Thailand, Singapore, Philippines, Myanmar, Laos, Malaysia, Indonesia, Brunei and Cambodia) are obtained from World Bank website (<https://data.worldbank.org/>). The SS contribution to GDP measures SSG. GDP per capita (GDPpc) is the economic growth proxy calculated as the gross domestic product converted to US dollars using purchasing power parity rates and divided by the total population (Gani and Clemes, 2002; Aye and Edoja, 2017).

A multivariate model is employed, and the panel sort of the equation is given below:

$$LnGDPpc_{it} = \alpha_{0,i} + \alpha_{1,i}LnSSG_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

The i in equation 1 above represents the ten ASEAN economies in panel form.

The panel data have been checked for stationarity, cointegration, causality and cross-section dependence. Unit Root Tests (URT) or the Stationarity tests, as proposed by Shin et al. (2003), Breitung t-statistics (2000), Maddala and Wu (1999), Levin et al. (2002). Fisher (PP and ADF) tests are conducted to understand the presence of unit root in the data.

3.1 Cointegration test for Panel data

The panel cointegration test of Kao (1999) and Johansen Fisher Panel (JFP) Test (Maddala and Wu, 1999) follows URTs. It is performed under the null hypothesis of no cointegration to understand the long-term association between SSG and economic growth.

3.2 Pooled Mean Group ARDL Model

The ARDL model of Pesaran et al. (PSS, 1999) assumes that both intercepts and slopes differ across ASEAN countries and thus allows us to recognise both short- and long-run behaviour between SSG and economic growth of the ASEAN economies. We examine the following equation here:

$$\Delta LnGDPpc_{i,t} = \phi_i ECT_{i,t} + \sum_{j=0}^{q-1} \beta_{i,j} \Delta LnSSG_{i,t-j} + \sum_{j=0}^{p-1} \beta_{i,j} \Delta LnGDPpc_{i,t-j} + \varepsilon_{i,t} \dots (3)$$

when $ECT_{i,t}$ is the error correction term, p and q are the lag lengths, Δ is the first difference operator. The adjustment coefficient ϕ_i is the feedback effect that shows how much of the disequilibrium is being corrected and calculates the rate of adjustment towards long-run equilibrium. The intercepts, short-run coefficients and cointegrating terms vary across cross-

sections. For notational convenience, the study assumes the regressors have an identical number of lags in each cross-section.

3.3 Ordinary Least Square (OLS) Models

As the variables LnSSG and LnGDPpc are cointegrated, we employ two estimation methods in the presence of panel cointegration: Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) for an unbiased estimate of the long-run relationship. According to Hamit-Hagggar (2012), FMOLS is the most suitable technique for the panel which includes heterogeneous cointegration. Dynamic OLS estimator had the same asymptotic distribution as that of the panel FMOLS estimation and helps us to overcome endogeneity bias and serial correlation. Both the DOLS and FMOLS estimates were carried out to confirm the consistency of the result and to calculate the long-run elasticity. Both pooled, and group mean estimators for both FMOLS and DOLS are obtained as a robustness test

RESULTS AND INTERPRETATION

The empirical analysis begins with a summary of the descriptive statistics, as reported in Table 1. The standard deviation highlights the variation of variables from their mean. The GDP per capita and growth in the services-sector is normally distributed for all the ASEAN nations except for Brunei Darussalam and Myanmar. Next, we report in Table 2, the panel type URT results. The evidence of UR is observed at level (logarithmic) for all the two variables in three out of the five tests. Findings of panel URT done at the first difference of LnGDPpc and LnSSG supports the rejection of the null hypothesis of unit root at 1% level of significance indicating that they are stationary at first difference form for ASEAN countries.

Table 1: Descriptive Statistics								
	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
LnGDPpc								
Brunei Darussalam	9.75	9.83	10.77	7.45	0.75	-1.46	5.33	27.84 (0.00)
Cambodia	5.59	5.53	7.23	4.46	0.84	0.41	1.95	3.53 (0.17)
Indonesia	6.74	6.68	8.26	4.50	0.97	-0.36	2.88	1.06 (0.59)
Laos	5.66	5.64	7.81	3.79	1.13	0.27	2.20	1.86 (0.39)
Malaysia	7.98	8.12	9.32	5.87	0.93	-0.45	2.51	2.16 (0.33)
Myanmar	5.44	5.15	7.15	4.52	0.81	1.20	2.97	11.59 (0.00)
Philippines	6.83	6.83	8.00	5.33	0.68	-0.16	2.71	0.38 (0.83)
Singapore	9.46	9.91	10.95	6.83	1.18	-0.56	2.26	3.64 (0.16)

Thailand	7.33	7.57	8.79	5.29	1.01	-0.37	2.13	2.66 (0.26)
Vietnam	5.52	5.29	7.75	3.52	1.28	0.34	1.78	3.89 (0.14)
LnSSG								
Brunei Darussalam	20.81	21.39	22.45	16.59	1.56	-1.31	3.94	15.65 (0.00)
Cambodia	20.78	20.74	22.89	19.39	1.12	0.36	1.86	3.67 (0.16)
Indonesia	24.92	24.99	26.81	22.09	1.24	-0.46	2.72	1.86 (0.39)
Laos	20.10	20.13	22.67	17.76	1.40	0.26	2.12	1.90 (0.39)
Malaysia	23.92	24.24	25.85	21.17	1.36	-0.34	2.10	2.55 (0.27)
Myanmar	21.95	21.60	24.01	20.86	0.97	1.13	2.83	10.31 (0.01)
Philippines	24.04	24.12	25.95	21.77	1.17	-0.13	2.19	1.42 (0.49)
Singapore	24.05	24.44	26.15	20.94	1.52	-0.34	2.01	2.91 (0.23)
Thailand	24.49	24.87	26.26	22.00	1.24	-0.46	2.12	3.22 (0.19)
Vietnam	22.75	22.76	25.24	20.53	1.47	0.18	1.62	4.04 (0.13)

Table 2: Panel type URT of LnGDPpc and LnSSG

Procedure	Variable	Lag	Stats	Variable	Lag	Stats
L. and L. & Chu t stat Null: Presence of Unit root (UR)	LnGDPpc	1	-2.1270 (0.0167)	D(LnGDPpc)	0	-12.4556 (0.0000)
	LnSSG	2	-3.2788 (0.0000)	D(LnSSG)	0	-12.1458 (0.0000)
Im et al. 2003 Null: Presence of UR	LnGDPpc	1	-1.3490 (0.0887)	D(LnGDPpc)	0	(0.0000)
	LnSSG	2	-1.6823 (0.0463)	D(LnSSG)	0	-10.8325 (0.0000)
Fisher Chi-square - ADF Null: Presence of UR	LnGDPpc	1	27.5032 (0.1217)	D(LnGDPpc)	0	137.508 (0.0000)
	LnSSG	2	23.0663 (0.1120)	D(LnSSG)	0	127.768 (0.0000)
Fisher Chi-square- PP Null: Presence of UR	LnGDPpc	1	17.1947 (0.6403)	D(LnGDPpc)	0	144.405 (0.0000)
	LnSSG	2	16.0131 (0.4520)	D(LnSSG)	0	134.242 (0.0000)
Breitung t-stat Null: Presence of UR	LnGDPpc	1	0.74648 (0.7723)	D(LnGDPpc)	0	-12.5883 (0.0000)

	LnSSG	2	1.65077 (0.9506)	D(LnSSG)	0	-11.3794 (0.0000)
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- Probability values are in brackets.

4.1 Cointegration Test for Panel Data

Findings from the residual cointegration test of Kao is presented in Table 3. The null hypothesis of no long-run relationship, i.e., no cointegration, cannot be accepted at 1% level of significance for the ASEAN countries. The JFP Cointegration (Table 4) Test rejects the null hypothesis of no cointegrating vector at 1% level of significance. The findings suggest that LnSSG and LnGDPpc have a long-term relationship, i.e., they are cointegrated with at most one cointegrating vectors.

Table 3: Residual Cointegration Test (Kao) Results

$H_0 = \text{no cointegration}$

	Statistic(t)	Pro.
ADF	-2.587692	0.0048
RV (Residual Variance)	0.004088	
HAC Variance	0.005703	

Table 4: JFP (ASEAN Countries) Test Results

Hypothesised No. of CE(s)	Fisher Stat.* (trace test)	Pro.	Fisher Stat.* (max-eigen test)	Pro.
None	55.39	0.000	44.87	0.0001
1(At most)	38.05	0.000	38.05	0.0015

*p-values of MacKinnon-Haug-Michelis (1999)

4.2 Pooled Mean Group ARDL

The long-run estimates using the pooled mean group ARDL model is presented in Table 5, and short-run estimates are in Table 6. They are based on the lowest Akaike Information Criterion (AIC). The long-run coefficient is significant at 1% level of significance, indicating that LnSSG has a long-term relationship with LnGDPpc. The estimates from Table 6 shows that the coefficient of the first difference term of LnSSG is positive (+) and statistically significant in explaining economic growth at 1% level of significance indicating that SSG certainly influences economic growth in the short-term. The coefficient of lagged error correction term ECT_{t-1} is significant at 1% level of significance. It is negative as per our a priori expectation indicating the

speed of adjustment towards long-run equilibrium when the system is exposed to a small shock. Error correction coefficient reveals that the short-run deviations in economic growth from long-run equilibrium are adjusted by 16% every year (Table 6). The significant individual country's short-run coefficients are shown in Table 6 (a) to Table 6(j). The estimates from Table 6(a) to Table 6(j) shows that the coefficient of the first difference term of LnSSG is positive (+) and statistically significant in explaining economic growth at 1% level of significance indicating that SSG certainly influences economic growth in the short-term. The coefficient of lagged error correction term ECT_{t-1} is significant at 1% level of significance. As per our a priori expectation, it is negative, indicating the speed of adjustment is towards long-run equilibrium.

Table 5: Long-term estimates ASEAN Countries

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
LnSSG	0.7034***	0.0466	15.0635

*** represents significance at 1% level, SE is standard Error.

Table 6: Short-run estimates ASEAN Countries

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.116885	0.103356	1.130893
D(SSG)	0.784627***	0.093598	8.382908
D(SSG(-1))	-0.041543	0.0089871	-0.462257
ECT_{t-1}	-0.162928***	0.034420	-4.733576

*** represents statistical significance at 1 percent level.

Table 6(a): Short-run estimates (Brunei)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	-0.008660	0.018773	-0.461287
D(LnSSG)	1.160753***	0.016434	70.63215
D(LnSSG(-1))	-0.087470	0.041551	2.105141
ECT_{t-1}	-0.153820***	0.0030406	-50.50209

*** represents statistical significance at 1 percent level.

Table 6(b): Short run estimates (Cambodia)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.495216	0.016365	30.26025
D(LnSSG)	0.582717***	0.004858	119.9474

D(LnSSG(-1))	-0.407931***	0.011184	-36.47456
ECT_{t-1}	-0.233033***	0.005400	-43.15819

*** represents statistical significance at 1 percent level.

Table 6(c): Short-run estimates (Indonesia)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.2432***	0.01894	12.8388
D(LnSSG)	0.86540***	0.00150	574.8219
D(LnSSG(-1))	-0.23994***	0.01776	-13.5083
ECT_{t-1}	-0.0952***	0.00154	-61.4421

*** represents statistical significance at 1 percent level.

Table 6(d): Short-run estimates (Lao)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.597769***	0.059609	10.02820
D(LnSSG)	0.298533***	0.013988	21.34138
D(LnSSG(-1))	-0.355296***	0.023681	-15.00328
ECT_{t-1}	-0.227399***	0.012862	-17.67972

*** represents statistical significance at 1 percent level.

Table 6(e): Short-run estimates (Malaysia)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	-0.057216**	0.014174	-4.036762
D(LnSSG)	0.669966***	0.005975	112.1219
D(LnSSG(-1))	0.231079***	0.015622	14.79187
ECT_{t-1}	-0.297424***	0.004449	-66.84933

*** represents statistical significance at 1 percent level.

Table 6(f): Short-run estimates (Singapore)

The dependent variable = natural logarithm GDP (per capita)

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	-0.12856***	0.019901	-6.459932
D(LnSSG)	0.959440***	0.002291	418.7565
D(LnSSG(-1))	0.087789**	0.020038	4.381102
ECT_{t-1}	-0.05804***	0.000739	-78.52357

*** represents statistical significance at 1 percent level.

Table 6(g): Short-run estimates (Thailand)*The dependent variable = natural logarithm GDP (per capita)*

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	-0.150855***	0.018843	-8.005814
D(LnSSG)	0.809970***	0.005037	160.8067
D(LnSSG(-1))	0.210125***	0.018323	11.46797
ECT_{t-1}	-0.218501***	0.004322	-50.55259

*** represents statistical significance at 1 percent level.

Table 6(h): Short-run estimates (Vietnam)*The dependent variable = natural logarithm GDP (per capita)*

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	-0.055904	0.022554	-2.478687
D(LnSSG)	0.930209***	0.002355	395.0315
D(LnSSG(-1))	0.054410	0.020898	2.603614
ECT_{t-1}	-0.020018***	0.001424	-14.05439

*** represents statistical significance at 1 percent level.

Table 6(i): Short-run estimates (Philippines)*The dependent variable = natural logarithm GDP (per capita)*

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.2181143***	0.020737	10.51941
D(LnSSG)	1.0643363***	0.001664	639.7062
D(LnSSG(-1))	-0.243263***	0.023086	-10.53744
ECT_{t-1}	0.022299***	0.00000	481.3847

*** represents statistical significance at 1 percent level.

Table 6(j): Short-run estimates (Myanmar)*The dependent variable = natural logarithm GDP (per capita)*

<i>Regressor</i>	<i>Coefficient</i>	<i>SE</i>	<i>Statistic(t)</i>
D(LnGDP(-1))	0.148327***	0.019749	7.510768
D(LnSSG)	0.977247***	0.000962	1015.930
D(LnSSG(-1))	-0.203326***	0.018829	-10.79831
ECT_{t-1}	0.002443***	0.0000	407.7998

*** represents statistical significance at 1 percent level.

4.3 Ordinary Least Square (OLS) Model (FMOLS/ DOLS) Results

After the long-run relationship between the variables is recognised, the long-run elasticity of the effect of LnSSG on LnGDPpc is examined. The long-run estimators from FMOLS and DOLS models are reported in Table 7 for the ASEAN countries. We observe that a 1% rise in LnSSG increases LnGDPpc by around 0.74% according to FMOLS. We also observe that a 1% increase in LnSSG increases LnGDPpc by 0.75 - 0.78% according to DOLS.

Table 7: Panel (long- run) estimators for ASEAN Countries

Dependent variable:	FMOLS (Pooled)	FMOLS (Grouped)	DOLS (Pooled)	DOLS (Grouped)
LnGDPpc				
LnSSG	0.7341 (0.0004)	0.7399 (0.0009)	0.7754 (0.0000)	0.7493 (0.0000)

(.) are the respective p-values.

The above results highlight that in the case of ASEAN economies, service-sector growth does play a prominent role in explaining economic growth.

CONCLUSIONS

The results of the panel cointegration(long-run) tests and pooled mean group ARDL model supports a long-run association amongst SSG and economic growth of the ASEAN economies. The above results reveal that SSG affects economic growth both in the long- and short-run at 1% level of significance in ASEAN. Any disequilibrium caused by shock to SSG of any ASEAN economy adjusts to maintain long-term equilibrium relationship. It may however be noted that the findings could be sensitive to the selection of the measure of economic growth (GDPpc in USD in this case) used in the analysis

The short-run coefficients confirm the role of SSG in contributing to the ASEAN economies' economic growth. This cross-country study also provides useful insights into the role of SS growth in ASEAN countries' per capita economic growth. The results support the notion that superior support should be given to SSG in ASEAN in terms of policy reforms and infrastructure investment. Efforts should be directed to identify the drivers of such growth. The growing financial services market, which has shown tremendous success by increasing the usage of banking services, fintech and ongoing ASEAN integration, is one such growth engine.

Overall results show that growth in the services sector led to GDP growth in ASEAN in the past. Services are likely to play an even bigger role in the future as the rapidly growing region grows wealthier, and services begin to become more important as income levels increase. Regional integration has increased over the years through trade in goods and services under the AEC idea. Additional benefits under such integration can be accomplished by combining such policy fields, including tourism, infrastructure and consumer protection, in order to facilitate inclusive and sustainable growth throughout the region. To mitigate the risks posed by the liberalisation of financial services, ASEAN members should set preconditions for easing market entry. Findings provide support for measures like the integration of ASEAN financial systems, reduction of the trading cost, removing barriers to cross border trade to enhance services growth.

The AEC is a major step in this direction, but much more is required for ASEAN to cope with future challenges. Even during the COVID 19 recovery period, the contribution of the service sector to economic growth is expected to be important, as growth in the service sector plays a key role in increasing productivity, efficiency and effectiveness in the overall economy. Its relationship with economic growth has been consistent through similar recovery phases, such as recovery from the global financial crisis.

REFERENCES

- Arndt, H.W. (1989). Trade in Services. *ASEAN Economic Bulletin*, 6(1), 1-7.
- Aye, G.C. & Edoja, P.E. (2017). Effect of economic growth on CO2 emission in developing countries: evidence from a dynamic panel threshold model. *Cogent Economics & Finance*, 5(1), DOI: 10.1080/23322039.2017.1379239
- Bhagwati, J. N. (1987). Trade in Services and Multilateral Trade Negotiations. *The World Bank Economic Review*, 1(4), 58-68.
- Breitung, J. (2000). The Local Power of Some Unit Root Tests for Panel Data. *Advances in Econometrics*, 15, 161-177.
- Bosworth, B. & Maertens, A. (2010). Economic Growth and Job Generation: The Role of the Service Sector. In E. Ghani (Ed.), *The Service Revolution in South Asia*, New York: Oxford University Press.
- Chenery, H. B. (1960). Patterns of Industrial Growth. *American Economic Review*, 57, 415-26.
- Clark, C. (1957). *The Conditions of Economic Progress*. London: Macmillan.
- Dutt, A. K. & Lee, K. Y. (1993). The Service Sector and Economic Growth: Some Cross-Section Evidence. *International Review of Applied Economics*, 7 (3), 311-329.
- Eschenbach, F. & Hoekman, B. (2006). Services Policy Reform and Economic Growth in Transition Economies. *Review of World Economy*, 142, 746-764.
- Eichengreen, B. & Gupta, P. (2012). Exports of Services: Indian Experience in Perspective. Working Papers 12/102, National Institute of Public Finance and Policy.
- Gani, A. & Clemes, M. (2002). Services and Economic Growth in ASEAN Economies. *ASEAN Economic Bulletin*, 19(2), 155-169.
- Gershung, J. I. & Miles, I. (1983). *The New Service Economy: The Transformation of Employment in Industrial societies*. London: Frances Pinter.
- Hamit-Hagggar, M. (2012). Greenhouse Gas Emissions, Energy Consumption and Economic Growth: A Panel Cointegration Analysis from Canadian Industrial Sector Perspective, *Energy Economics*, 34(1), 358-364.
- Hill, T. (1977). On Goods and Services, *Review of Income and Wealth*, 23, 186-99.
- Im, K.S., Pesaran, M.H. & Shin, Y. (2003). Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, 115(1), 53-74.
- Kao, C. (1999). Spurious Regression and Residual Based Tests for Cointegration in Panel Data. *Journal of Econometrics*, 90(1), 1 - 44.
- Kim, J. & Wood, J. (2020). Service Sector Development in Asia: An Important Instrument of Growth. *Asian-Pacific Economic Literature*, 34 (1), 12-25.
- Lee, J. W. & McKibbin, W. J. (2018). Service Sector Productivity and Economic Growth in Asia. *Economic Modelling*, 74, 247-63.
- Levin, A., Lin, C.F. & Chu, C. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite Sample Properties. *Journal of Econometrics*, 108(1), 1-24.
- Maddala, G. S. & Wu, S. (1999). A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics*, 61, 631-652.
- Park, S. H. & Chan, K. S. (1989). A Cross Country Input Output Analysis of Intersectoral Relationships between Manufacturing and Services and the Employment Implications. *World Development*, 17(2), 199-212.
- Pang, E. F. & Sunderberg, M. (1988). ASEAN EEC Trade in Services: An Overview. In J. Waelbroeck (Ed.) *ASEAN EEC Trade in Services*, Singapore: ISEAS, 19-54.

- Riddle, D. I. (1986). *Service Led Growth*, New York: Prager Publishers.
- Suryadarma, D., Suryahadi, A. & Sumarto, S. (2013). Sectoral Growth and Job Creation: Evidence from Indonesia. *Journal of International Development*, 25, 549-561.
- Toh, M. H. & Low, L. (1989). Singapore's Service Sector: Development in the ASEAN Context. *ASEAN Economic Bulletin*, 6(1), 8-31.
- Zhao, J. & Tang, J. (2015). Industrial Structural Change and Economic Growth in China, 1987–2008. *China & World Economy*, 23(2), 1-21
- Yeung, H. W. (1996). Sectoral Specialization and Competitive Advantage. *ASEAN Economic Bulletin*, 13(1), 74-94.

HOW DIFFICULT IS IT TO FILL MANUFACTURING POSITIONS? A CROSS-SECTIONAL ASSESSMENT OF SURVEY RESULTS

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ABSTRACT

For many communities, the manufacturing sector is still an important source of employment and economic vitality. However, the traditional manufacturing sector, where many of the jobs were low-skilled but high-paying, has been replaced by the advanced manufacturing operations, which create occupations that require a mix of experience and education. National and local surveys suggest that many human resource managers have difficulty filling open positions that require a blend of education, skill, and expertise. This study explores the relationship between the difficulty of filling certain manufacturing positions and the position, company, and location characteristics using survey data from human resource managers representing about 300 manufacturing organizations in the Southeast. A comprehensive survey was conducted in 2019, targeting nearly 1,300 manufacturing operations. The findings can help organizations and human resource managers prioritize their resources by focusing on the areas of concerns in filling the targeted jobs.

INTRODUCTION

A simple description of the manufacturing sector is that it “takes the raw or in-process materials and creates a new product from them” (U.S. Bureau of Economic Analysis (BEA.gov), 2020). According to the latest data (3rd quarter of 2019), the manufacturing sector accounts for a little over 11 percent of the U.S. gross domestic product (GDP) (BEA.gov, 2020). This sector has experienced dramatic ups and downs, as the U.S. economy has transformed itself over the years. For example, the manufacturing sector lost 5.832 million jobs between February 2000 and February 2010. Between February 2010 and February 2020, it gradually added nearly 1.5 million jobs in the U.S. (U.S. Bureau of Labor Statistics (BLS.gov), 2020).

As the manufacturing sector has started adding jobs, many companies experienced the difficulty of finding qualified individuals to fill the positions. For example, a survey conducted by the Society for Human Resource Management (SHRM) in 2016 shows that 68 percent of human resource managers report difficulty recruiting for full-time positions (SHRM, 2016). A recent survey in Minnesota indicates that 62 percent of the job vacancies in skilled production jobs in the manufacturing sector were difficult to fill (Leibert, 2019). Similarly, a Utah survey highlights major challenges employers face in filling some of the skilled occupations (Knold, 2015).

Empirical evidence suggests that the difficulty of filling positions is a real challenge for human resource managers. When the unemployment rate is record low across communities, finding a qualified person for certain jobs may be a challenge for businesses because of the intense competition for the labor. The low unemployment rate alone changes the nature of the difficulty of recruiting, especially in rural communities. What are the reasons for the difficulty? Why do some managers or companies have a difficult time filling certain positions?

The motivation for this study comes from our efforts to understand the workforce dynamics in the manufacturing sector and to help communities address workforce challenges they may be facing. This study is an empirical investigation of difficulties the human resource managers are confronting in recruiting for full-time positions in the manufacturing sector. By shedding light on the factors affecting the difficulty in recruitment, this empirical work contributes to the scholarly conversation on not only the narrow topic of difficulty in recruitment but also broader workforce supply and demand issues as well as both the spatial and sectoral skill-mismatch.

LITERATURE SUPPORT

Manufacturing is likely to continue to be one of the critical legs of the U.S. economy. Any recruiting difficulty in this sector may have significant implications for the economic development across the regions. There have been many scholarly works on different aspects of the supply and demand of workers and their associated issues (e.g., Barnow, Trutko, and Piatak, 2013). However, recent empirical works focus more on the difficulty of recruitment and its causes rather than broader supply and demand issues (SHRM, 2016).

The review of recent empirical studies suggests three broader reasons for the difficulty of recruitment: job-related factors, company-related factors, and regional/location-related factors (Knold, 2015; SHRM, 2016; Liebert, 2019). This research builds on those findings and further explores the relationship between the difficulty of filling positions and occupational-, wage-, company-, and location-specific factors.

Occupational characteristics. As the U.S. manufacturing industry continues to grow, the search for skilled talent is becoming the number one driver for manufacturing companies. According to Craft and Schake (2019), about 48 percent of manufacturers said that attracting and retaining a qualified applicant is on top of the two challenges manufacturing companies are currently facing. These recruitment challenges were associated with multiple compounding issues, including the awareness gap of vacant positions, difficulty of acquiring interested workers, low unemployment levels nationwide and industrywide, negative perception of the manufacturing industry among younger generations, lack of STEM skills among the workforce, and lack of technical education programs in K12 schools. The relationship between the difficulty of recruiting and the manufacturing job characteristics may be related to the applicant's skill to fulfill the job requirements. Generally, the more the job requires higher professional skills of the job seeker, the harder it is for the employer to recruit for the position.

The U.S. Manufacturing Institute, in cooperation with Deloitte Consulting, launched a survey in 2011. It found that while hiring skilled or highly skilled production positions, nearly 70

percent of manufacturing companies faced a “moderate to severe shortage” of qualified workers and showed that 600,000 U.S. manufacturing jobs were waiting to be filled (Lowe, 2015). According to Giffi (2015), executives determined that a majority of manufacturing employees are lacking the necessary knowledge, including computer skills (70%), problem-solving skills (69%), basic training (67%), and math skills (60%). Further, 14 percent of hiring difficulties are affected by skill mismatch, and 28 percent of them are caused by a lower work ethic or a passion for a manufacturing career. Another factor for having difficulty attracting skilled workers to production positions is the lack of interest in the manufacturing career track. Van Ours and Ridder (1993) found that vacancy duration is higher if that position requires a high education and experience level. These requirements would slow worker response time to adjust and meet the needs of the position. Barnow, Trutko and Piatak (2013) suggested that training time is the most significant factor in slowing worker response time. It takes four years to produce new engineers, and the lag might be more extended if the mathematics course load needs to be adjusted in high school. They also found that many occupations, requiring less than a college education, still need several years of training, and the interested job seeker would have a significant lag before qualifying for the occupation. Institutional barriers of some occupations could be another factor causing the difficulty of recruiting. Institutional barriers, such as occupational entry, licensing and certification requirements, and restrictions on immigration, could slow down the adjustment process of job seekers (Barnow et al., 2013).

Wage rate and benefits. In many cases, the wage rate and employee benefits package are considered as some of the primary reasons for the difficulty of recruiting. Barnow, Trutko, and Piatak (2013) believed that increasing wages is an obvious way to increase the number of laborers who are willing to work in a particular occupation based on the supply and demand curve of labor. Monk (2007) suggested that teachers’ salaries are one of the most critical features of rural schools, directly affecting the recruitment of teachers. Today’s regenerated interest in the role of skill improvement in the economic recovery has caused similarly powerful counterclaims that the reason for those unfilled jobs in manufacturing is not the skill mismatch, but rather the wages that are below the market level (Boston Consulting Group 2012; Cappelli 2011, 2012). Employment benefits are another vital part of the overall reward structure that may be used to attract applicants. Landry, Schweyer, and Whillans (2017) reported that employers across industries who included more benefits and details about them in the job advertisements gained more significant job applicants. In a study involving accounting majors’ perceptions of sustainability reporting priorities, James (2017) found that employee benefits were the most crucial labor-related sustainability factor followed by work-related injuries, compensation/wages, and working conditions/training. It’s plausible that reporting transparency regarding compensation was rated lower than benefits because pay secrecy and confidentiality regarding wage rates are still prevalent values in the United States.

Company characteristics. The company’s industry is one of the vital parts of the recruitment process. Manufacturing jobs face a higher level of safety risks compared to other industries. Thus, while in the recruitment process, applicants need to know the safety rules and procedures used by organizations. As James (2017) reported, work-related injuries and working conditions/training were rated as 1 or 2 on a 5-point scale, with 1 being most important, by 63%

and 56% of respondents, respectively, when considering labor-related sustainability reporting requirements. Injury rates and safety training could impact an organization's image among stakeholders. Likewise, reputation could be one of the company characteristics to influence the attractiveness of vacancies to job seekers. Studies in the U.S. have shown that it is hard for companies with a low reputation to attract applicants (Fombrun & Shanley, 1990; Gatewood et al., 1993). Consequently, during the recruitment process, HR managers organize a tour around the manufacturing facility to help applicants understand the position requirements, the risk associated with the job, and safety procedures in manufacturing plants. The size of the company may also affect the recruitment process. The survey results of Monk's (2007) indicated that the smallest schools face the most significant recruiting challenges as the share of inexperienced teachers is high in the smallest schools. Additionally, in Chapman, Uggerslev, Carroll, Piasentin, and Jones's (2005) study, work environment, and organizational image were the strongest predictors of job-organization attraction among the organizational characteristics predictor category. Behling, Labovitz, and Gainer (1968) also mentioned that the characteristics of the company were significant determinants of hiring results.

Location-specific. As shown by Goffette-Nagot and Schmitt (1999), jobs are more separated in rural places than in urban areas, which increases the cost of the job search process and reduces the possibility of job opportunities acceptable to rural workers. The population density of the area affects recruitment. According to the results of a survey conducted in the French Midi-Pyrénées region, Blanc, Cahuzac, and Tahar (2008) found that in the case of comparable size and departments, companies in low-density areas will encounter more difficulties in the recruitment process because they are usually far away from large city clusters, which leads to less attractive to potential job seekers. Additionally, their research findings proposed four reasons for recruiting difficulties that companies located in low-density local labor markets put forward more frequently: lack of appropriate qualification on the labor markets, the candidates' lack of motivation, area's lack of attractiveness, and wage problems. They also found that small manufacturing companies with less than ten employees are more frequent in the low-density market.

In contrast, companies in the service sectors have a large proportion of high-density areas (Blanc et al., 2008). In the process of recruitment, being located in a low-density place would have two opposite effects for companies looking for employees: on the one hand, it increases the recruiting difficulties because of a mismatch between job requirements and job seekers' skills; on the other hand, it reduces the challenges of the competition between companies on the local labor market (Blanc et al., 2008). The place where the manufacturing plant located has inadequately skilled graduates generated by local colleges also would be a factor for the difficulty in recruitment. Looker and Dwyer (1998) suggested that compared to urban teenagers, the transition from school to work for rural teenagers are different both in the process of decision-making and the cost involved. Research has indicated that educational, occupational, and social chances for rural teenagers tend to be more restricted than their urban counterparts (Wallace et al., 1990; Pavis et al., 2000, 2001; Glendinning et al., 2003). Additionally, in rural areas, the size of the social networks of the company can affect the process of recruitment. The

research finding shows that rural companies in Cumbria rely almost entirely on local formal and informal networks to recruit local labor (Canny, 2004).

Another location-specific element is the impact of turnover rates for manufacturers located in rural versus urban areas. If the recruitment is more challenging in rural areas, then turnover in those areas would have a more severe impact on companies. Abston, Arik, and Graves (2019) found that rurality was positively correlated with the problem of turnover and proposed that this result could be related to institutional differences in rural versus urban manufacturers or due to worker dissatisfaction with commuting distances associated with rural living.

RESEARCH QUESTIONS

The first wave of major wage and benefits study was conducted in 2017. The second wave started in May 2019 and was completed in December 2019, with over 300 manufacturing companies participating. The broader survey includes a general segment on the benefits that the company offers to employees and an occupation-specific questionnaire allowing companies to profile as many occupations as they have. The survey itself takes nearly 90 minutes to complete. This part of the questionnaire was designed to get answers to the following four research questions:

RQ1: What is the relationship between the difficulty of recruiting and job characteristics?

RQ2: Is the wage rate the primary reason for the difficulty of recruiting?

RQ3: Do the company characteristics make a difference in the recruitment process?

RQ4: Is the location of the manufacturing plant a factor for the difficulty in recruitment?

We address these research questions by first reviewing the data and methodology. Under the method, we will introduce a conceptual framework informed by the empirical research conducted by the Society of Human Resource Management (SHRM, 2016), among others. We will then discuss the study findings.

DATA AND METHODOLOGY

Data

There are two sources of data used in this empirical research: the first source of data is the 2019 Wage and Benefits Survey, conducted by the Business and Economic Research Center at Middle Tennessee State University in partnership with the Middle Tennessee Industrial Development Association. This is the second annual survey of its kind for Middle Tennessee manufacturing. As a survey platform, we used Survey Monkey software. As discussed in the previous section, the survey included two sections: (1) company demographics and pay practices, and (2) job-specific questions. We contacted a little over 1,300 human resource managers, resulting in about 300 useable surveys. The second source of the data includes O*Net online (<https://www.onetonline.org/>) and BLS.gov.

The paper uses both demographic and job-related indicators, as well as spatial indicators. The dependent variable is “difficulty of filling” an occupation. We asked human resource managers to rate each occupation they introduce between 1 and 10; 1 being “easy to fill” and 10 being “extremely difficult to fill.” A total of a little over 130 occupations were rated by about 300 human resource managers resulting in 2,209 ratings.

Although the survey asked the companies to report educational requirements, licensing, and other job qualities, we decided to use O*NET’s “job zone” conceptual framework for each occupation (Table 2). The “job zone” framework classifies each occupational titles into one of five major categories, each of which represents a unique mix of “education,” “experience,” “skill set,” and “license requirement.” Table 1 below shows the variables of interest and sources of the indicators and a short description of each indicator.

Table 1: Variables, Sources, and Definitions

ID	Description	Source	Cluster
DIFF19	Difficulty of Filling	Survey	Dependent Variable
JZONE	Job Zone (Rated from 1 to 5) 1= Less Sophisticated 5= Highly Sophisticated (Education + Experience)	Onetonline.org	Independent Variable/ Occupation-Related
BENEF19	Benefits as percent of total compensation	Survey	Independent Variable/ Company-Related
POS2019	Number of Positions in a Given Occupations	Survey	Independent Variable/ Occupation-Related
AWAGE19	Average Wage for a Given Occupation	Survey	Independent Variable/ Occupation-Related
UNEMP19	Unemployment Rate	BLS.Gov	Independent Variable/ Region-Related
LFORCE19	Labor Force - County (Available Workers)	BLS.Gov	Independent Variable/ Region-Related
GROWTH19	Employment Growth - County	BLS.Gov	Independent Variable/ Region-Related
EMPSIZE19	Company Employees (Size - 2019)	Survey	Independent Variable/ Company-Related
SALES2019	Company Sales (Size - 2019)	Survey	Independent Variable/ Company-Related
Job Training	A few days to months A few months to one year one to two years of training	work-related experience	on-the-job training
SVP Range*	Below 4.0 4.0 to < 6.0 6.0 to < 7.0 7.0 to < 8.0 8.0 and above		

* SVP = Specific Vocational Preparation

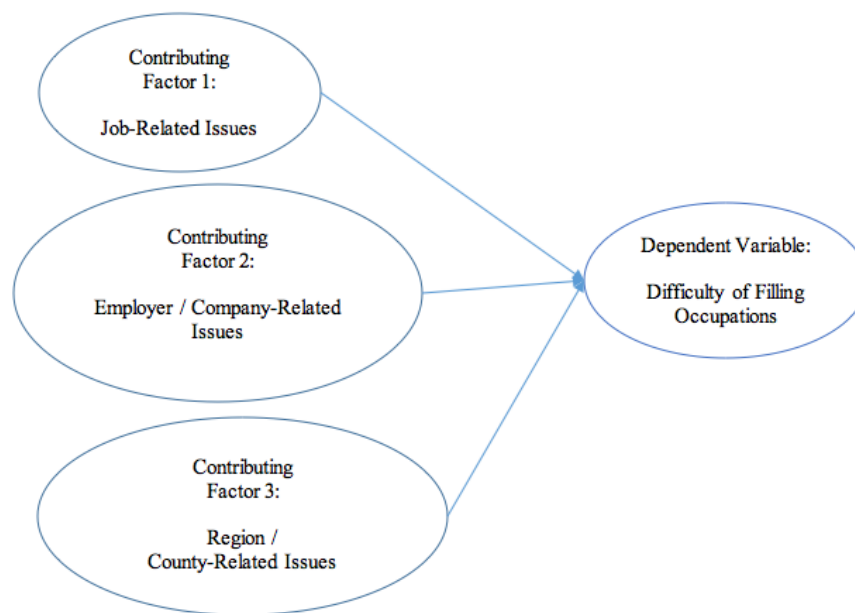
Source: O*NET (NETONLINE.ORG) & the Authors

Note: The complete list of surveyed occupations with the job zone classification is included in the appendix.

Conceptual Framework

A review of empirical research (Knold, 2015; SHRM, 2016; and Leibert, 2019) suggests several factors play critical roles in hiring difficulties. The top six reasons are (in the order of importance): (1) lack of applicants, (2) local market not producing enough, (3) competition from other employers, (4) lack of skill-set, work experience, and training, (5) soft skill, (6) low wages. Based on these findings, Chart 1 outlines the basic conceptual framework for the study. Chart 1 summarizes the empirical findings under the three major clusters of factors accounting for the difficulty of filling the positions: (1) job-specific factors, (2) employer/company-specific factors, and (3) spatial factors.

Chart 1: A Conceptual Framework of Factors Affecting the Difficulty of Filling Occupations



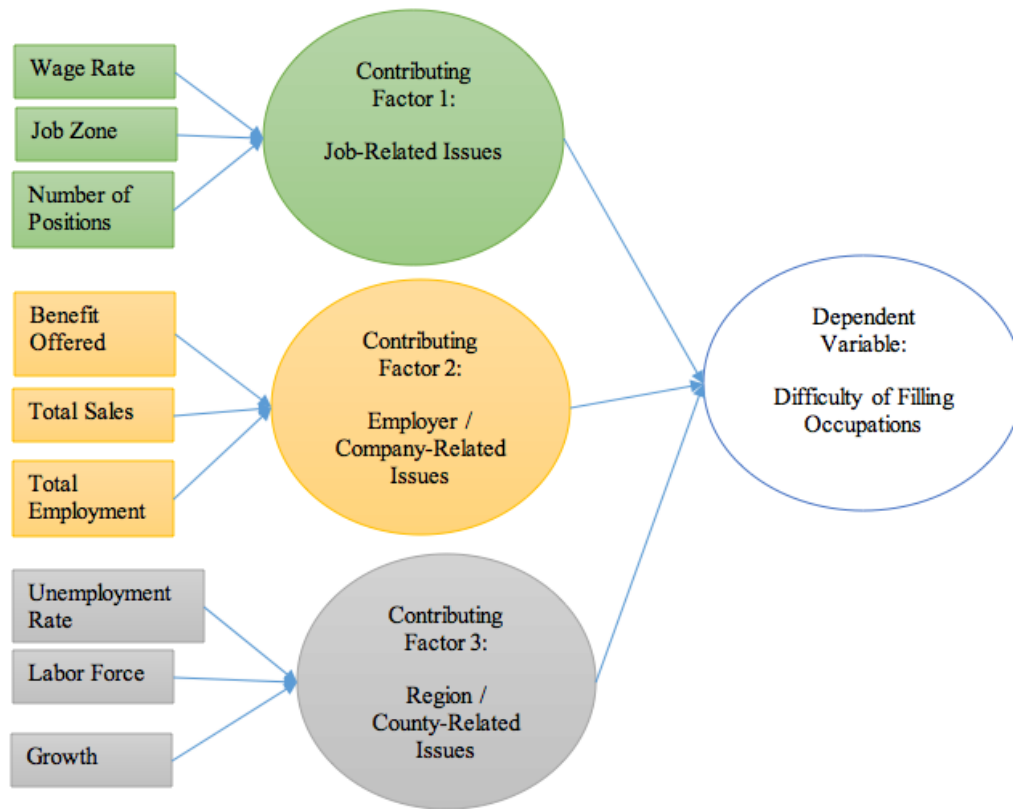
Source: Authors

The second step in the process is operationalizing these three major factors by identifying available proxy indicators to accurately measure the major cluster of factors identified in Chart 1. Chart 2 clearly identifies three indicators for each cluster of factors that will be used in the regression analysis. For the job-related issues, we used the average wage rate reported by the companies for that given occupation, job zone classification showing the complexity of the tasks to be completed, and the number of positions in that given occupation at the company to show the competitive nature of the position.

For the employer/company-related issues, we identified several survey-based indicators including (1) benefits as a percent of the total compensation, (2) total company sales to measure the size of the company, and (3) total employment as a measure of the size and labor-intensive nature of the companies. Since the companies we surveyed were in the manufacturing sector (96 percent of them), we did not introduce the sectoral control variable.

Finally, for the spatial variables, we used three indicators to measure the level of economic activity in the county where the companies are located: (1) unemployment rate – measuring the number of people currently looking for job, (2) labor force – measuring the size of the labor market, and (3) growth – measuring the employment growth from the previous year to show the vibrancy of the local economies.

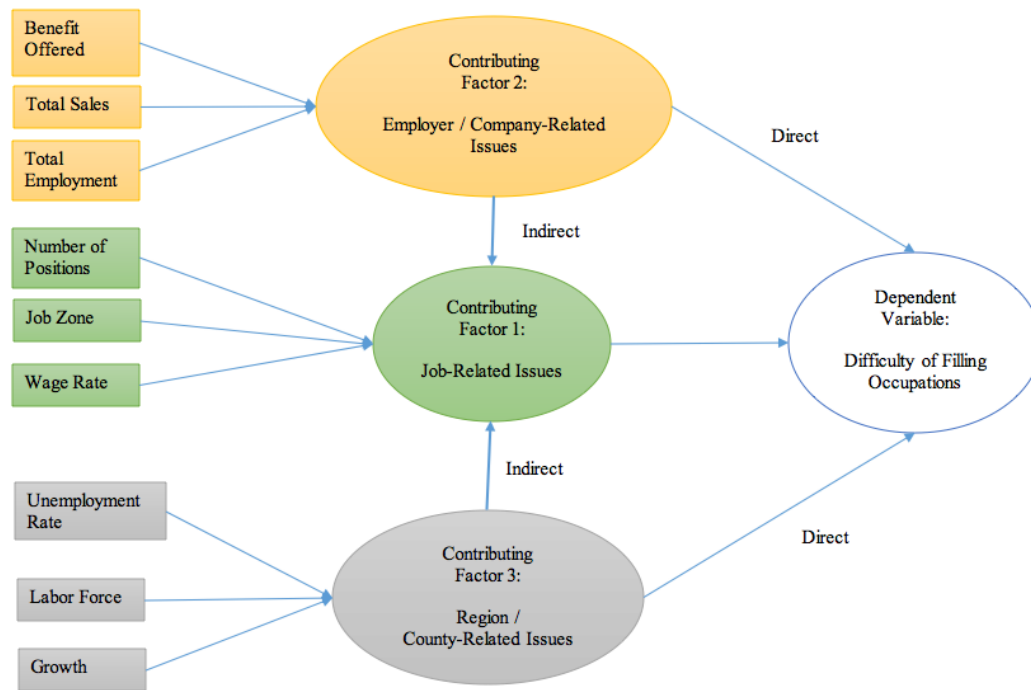
Chart 2: Operationalizing the Factors Affecting the Difficulty of Filling Occupations



Source: Authors

As a final step in the conceptualization process, Chart 3 shows a full model that introduces company-related and spatial factors as the control factors. According to Chart 3, the difficulty of filling a position is primarily related to the job-specific factors. However, both the company-specific indicators and spatial factors, directly and indirectly, affect the outcome.

Chart 3: Direct and Intervening Variables Affecting the Difficulty of Filling Occupations



Source: Authors

Methods

In this paper, we used a simple OLS regression analysis, using standard econometric software to test the following models:

Model 1: Job-related factors: the difficulty of filling positions is a function of the job-related issues:

$$Diff19 = \alpha_1 + \beta_1 AWage19 + \beta_2 JZone + \beta_3 POS2019 + \varepsilon_i \quad (1)$$

Model 2: Employer / company-related factors: the difficulty of filling positions is a function of the employer / company-related issues:

$$Diff19 = \alpha_1 + \beta_1 BENEf19 + \beta_2 EMPSIZE19 + \beta_3 SALES2019 + \varepsilon_i \quad (2)$$

Model 3: Spatial factors: the difficulty of filling positions is a function of the location (county) where the company/position is located:

$$Diff19 = \alpha_1 + \beta_1 UNEMP19 + \beta_2 Growth19 + \beta_3 LFORCE19 + \varepsilon_i \quad (3)$$

Model 4: Combined model: job-related factors controlled by the company and spatial factors account for the difficulty of filling positions:

$$Diff19 = \alpha_1 + \beta X_i + \varepsilon_i \quad (4)$$

where X_i represents the independent variables, including indicators for job-related issues, company / employer-related issues, and spatial factors as control variables.

Multicollinearity and Outliers

Some of the independent variables are likely strongly correlated with each other. To control multicollinearity, we first check the Pearson correlation tables to exclude any indicator that may strongly correlate with other indicators. As a rule of thumb, we excluded one of the indicators with a correlation ratio over 0.8.

Furthermore, regional labor force, company employment, and company sales data include both small and large indicators suggesting that some of the observations may have an outsized impact on the regression results. For example, Davidson County has a labor force of more than 400,000. At the other end of the spectrum, Moore County's labor force is 3,753. To control the impact of those indicators on the regression results, we transformed those indicators into the natural logarithmic form. Table 3 summarizes the indicators by model.

Table 3: Models and Indicators Used					
ID	Description	Model 1	Model 2	Model 3	Model 4
<i>DIFF19</i>	<i>Difficulty of Filling</i>	<i>Dependent Variable</i>			
JZONE	Job Zone (Rated from 1 to 5) 1= Less Sophisticated 5= Highly Sophisticated (Education + Experience)	Yes			Yes
BENEF19	Benefits as percent of total compensation		Yes		Yes
POS2019	Number of Positions in a Given Occupations	Yes			Yes
AWAGE19	Average Wage for a Given Occupation	Yes			Yes
UNEMP19	Unemployment Rate			Yes	Yes
LFORCE19	Labor Force - County (Available Workers) (ln)			Yes	Yes
GROWTH19	Employment Growth - County (%)			Yes	Yes
EMPSIZE19	Company Employees (Size - 2019) (ln)		Yes		Yes
SALES2019	Company Sales (Size - 2019) (ln)		Yes		Yes

RESULTS AND DISCUSSION

Job-Related Factors

For research questions 1 and 2, we explored the relationships between job-related factors and the difficulty of filling a position. Table 4 presents the Pearson correlation matrix among the indicators, and Table 5 shows the results of the Ordinary Least Square (OLS) regression. Table 4 suggests that none of the indicators have any significant correlations with each other.

Table 4: Descriptive Statistics of Model Variables and Correlation Matrix

Variables	Means	SD	DIFF19	JZONE	AWAGE19	POS2019
DIFF19	5.7338	2.2691	1			
JZONE	3.2553	0.98221	0.2204	1		
AWAGE19	30.9	17.92	0.21542	0.56231	1	
POS2019	10.657	64.094	-0.03168	-0.12339	-0.08478	1

Table 5 presents the regression results in equation form and the table format with basic diagnostic information. The total number of observations was 2,201. After 367 observations dropped because of the missing values, 1,833 observations were used in the model. Table 5 suggests that the model is significant (F), and t-values (Heteroscedasticity-corrected robust t-values(HACSE)) for Job Zone and Wage Rate are statistically significant, suggesting that job-related factors have important implications for the difficulty of filling certain occupations. The findings indicate that the availability of similar job positions (POS2019) has no impact on the difficulty of filling.

Table 5: Model 1: Job Equation: OLS Regression Results

DIFF19 = +4.122 + 0.337*JZONE + 0.0167*AWAGE19 – 9.23E-05*POS2019					
(SE)	(0.181)	(0.0643)	(0.00365)	(0.000808)	
	Coefficient	HACSE	t-HACSE	t-prob	Part.R^2
Constant	4.1233	0.2695	15.3	0.0000	0.1134
JZONE	0.33663	0.08789	3.83	0.0001	0.0080
AWAGE19	0.016737	0.004835	3.46	0.0005	0.0065
POS2019	-9.2258e-05	0.0005787	-0.159	0.8734	0.0000
sigma	2.20201	RSS 8868.52			
R^2	0.059	F(3,1833) = 38.09 [0.000]**			
Adj . R^2	0.057	log-likelihood -4045.83			
no. of observations	1833	no. of parameters 4			
mean(DIFF19)	5.73322	se(DIFF19) 2.26789			
When the log-likelihood constant is NOT included:					
AIC	1.558092	SC 1.59295			
HQ	1.58536	FPE 4.85942			
When the log-likelihood constant is included:					
AIC	4.41880	SC 4.43083			
HQ	4.42323	FPE 82.9963			

Company / Employer-Related Factors

Our third research question was about the role of company characteristics in recruiting for certain occupations. To test the impact of company-related factors, we use three different measures: benefits as a percent of total compensation (BENE19), company sales (SALES2019), and company employment size (EMPSIZE19). As Table 6 indicates, instead of log form, we used non-transformed indicators in the equation. None of the regressors have strong correlations with each other. The direction of correlations suggests that the difficulty of hiring is negatively associated with the benefits and company size. The sign of correlation suggests that large companies do not have a problem with finding people.

Table 6: Descriptive Statistics of Model Variables and Correlation Matrix
Model 2: Company Characteristics

Variables	Mean	SD	DIFF19	BENEF19	EMPSIZE19	SALES2019
DIFF19	5.7793	2.314	1			
BENEF19	0.3131	0.18618	-0.0344	1		
EMPSIZE19	327.59	561.46	-0.1071	0.01336	1	
SALES2019	2.13E+08	7.94E+08	-0.2068	0.00933	0.22818	1

Table 7 further clarifies several issues regarding company characteristics and hiring difficulty. As Table 7 shows, 630 observations were dropped because of the missing values. Overall, F-value suggests the model is significant. Table 7 shows that, contrary to some survey data, benefits are not a statistically significant predictor of the hiring difficulty. The company size does matter, especially the sales volume. Table 7 suggests (Heteroscedasticity-corrected robust t-values (HACSE)) that large companies do not have a problem finding a skilled workforce, as the relationship between the sales volume and hiring difficulty is negative.

Table 7: Model 2: Company / Employer Equation: OLS Regression Results

DIFF19 = + 6.117 – 0.3947*BENEF19 – 0.000259*EMPSIZE19 – 5.602e-10*SALES2019					
(SE)	(0.116)	(0.306)	(0.000104)	(7.38e-11)	
The estimation sample is: 1...2202					
Dropped 630 observation(s) with missing values form the sample					
	Coefficient	HACSE	t-HACSE	t-prob	Part.R^2
Constant	6.11736	0.2116	28.9	0.0000	0.3478
BENEF19	-0.394721	0.6146	-0.642	0.5208	0.0003
EMPSIZE19	-0.000259016	0.0001143	-2.27	0.0235	0.0033
SALES2019	-5.60241e-10	8.800e-11	-6.37	0.0000	0.0252
sigma	2.2605	RSS		8012.24903	
R^2	0.0475672	F(3,1568) =		26.1 [0.000]**	
Adj. R^2	0.045745	log-likelihood		-3510.67	
no. of observations	1572	no. of parameters		4	
mean(DIFF19)	5.77926	se(DIFF19)		2.31405	
When the log-likelihood constant is NOT included:					
AIC	1.63371	SC		1.64735	
HQ	1.63878	FPE		5.12285	
When the log-likelihood constant is NOT included:					
AIC	4.47159	SC		4.48523	
HQ	4.47666	FPE		87.4956	

Spatial Factors

Our fourth research question was about the impact of locations on the difficulty of hiring. To measure the impact of location, we used three indicators: unemployment rate (UNEMP19), the labor force (LNFORCE19) in the logarithmic form, and employment growth (GROWTH19). Tables 8 and 9 present the regression results. Table 8 shows the correlation matrix and descriptive statistics for the spatial factors model. Table 8 shows that the labor force and unemployment rate has a strong negative correlation, suggesting that the regions with a large labor force have a low unemployment rate.

Table 8: Descriptive Statistics of Model Variables and Correlation Matrix
Model 3: Spatial Characteristics

Variables	Mean	SD	DIFF19	UNEMP19	GROWTH 19	LNLFOR CE19
DIFF19	5.7071	2.3009	1			
UNEMP19	3.174	0.53371	-0.0355	1		
GROWTH 19	3.3776	1.263	0.00764	-0.4234	1	
LNLFOR CE19	10.575	1.1047	0.05511	-0.6593	0.30287	1

Table 9 presents the findings for Model 3, which shows that the model itself is not a significant model to predict the difficulty of hiring. Both Model 3 as a general and t-values (Heteroscedasticity-corrected robust t-values (HACSE)) for regressors are not statistically significant.

Table 9: Model 3: Spatial Factors Equation: OLS Regression Results

DIFF19 = + 4.562 – 0.01141*UNEMP19 – 0.01935*GROWTH19 + 0.1178*LNLFORCE19					
(SE)	(0.959)	(0.128)	(0.0428)	(0.0589)	
The estimation sample is: 1...2209					
	Coefficient	HACSE	t-HACSE	t-prob	Part.R^2
Constant	4.56247	2.139	2.13	0.0330	0.0021
UNEMP19	-0.0114102	0.2581	-0.0442	0.9647	0.0000
GROWTH19	-0.0193475	0.08568	-0.226	0.8214	0.0000
LNLFORCE19	0.117842	0.1333	0.884	0.3768	0.0004
sigma					
R^2	2.29886	RSS		11652.9022	
Adj.R^2	0.00313069	F(3,2205) =		2.308 [0.075]	
no. of observations	0.00177441	log-likelihood		-4971.24	
mean(DIFF19)	2209	no. of parameters		4	
	5.70711	se(DIFF19)		2.3009	
When the log-likelihood constant is NOT included:					
AIC	1.66664	SC		1.67696	
HQ	1.67041	FPE		5.29433	
When the log-likelihood constant is included:					
AIC	4.50451	SC		4.51484	
HQ	4.50828	FPE		90.42444	

Combined Model

Model 4: Job-related factors controlled by the company and spatial factors

The combined model (Model 4) tests the impact of job characteristics on the difficulty of filling, controlled by factors associated with the company and spatial characteristics. Table 10

shows the regression results for Model 4. The combined model does not include the growth indicator as it was dropped by the model to improve the regression fit. Table 10 shows a very robust model (F-value) with several indicators that are statistically (t-values (Heteroscedasticity-corrected robust t-values (HACSE))) significant.

When we look at the job-related indicators controlled by the company, and spatial characteristics, the impact of wage rate and job zone classification is significant. This finding confirms empirical surveys that suggest the wage rate is a factor. However, the sign of wage rate is positive, suggesting that most of the difficulty of hiring is occurring at the high-wage level occupations.

Table 10: Model 4: Combined Model: OLS Regression Results

DIFF19 = + 10.7 – 0.504*BENEF19 + 0.0264*AWAGE19 – 0.000401*POS2019					
(SE)	(1.21)	(0.307)	(0.00444)	(0.0017)	
+ 0.262*JZONE – 0.677*UNEMP19 – 8.92e-10*SALES2019					
	(0.0731)	(0.146)	(8.64e-11)		
– 0.000282*EMPSIZE19 – 0.37*LNLFORCE19					
	(0.000108)	(0.0785)			
The estimation sample is: 2...2201					
Dropped 868 observation(s) with missing values from the sample					
	Coefficient	HACSE	t-HACSE	t-prob	Part.R^2
Constant	10.7334	2.153	4.98	0.0000	0.0184
BENEF19	-0.503733	0.6316	-0.798	0.4253	0.0005
AWAGE19	0.02640	0.006492	4.07	0.0001	0.0123
POS2019	-0.0004012	0.001865	-0.215	0.8297	0.0000
JZONE	0.261730	0.09778	2.68	0.0075	0.0054
UNEMP19	-0.67739	0.2660	-2.55	0.0110	0.0049
SALES2019	-8.92259e-10	1.074e-10	-8.31	0.0000	0.0496
EMPSIZE19	-0.000281573	0.0001426	-1.97	0.0486	0.0029
LNLFORCE19	-0.370405	0.1345	-2.75	0.0060	0.0057
sigma	2.1212	RSS		5952.79602	
R^2	0.146512	F(8,1326) =		28.39 [0.000]**	
Adj.R^2	0.141351	log-likelihood		-2887.15	
no. of observations	1332	no. of parameters		9	
mean(DIFF19)	5.81757	se(DIFF19)		2.28914	
When the log-likelihood constant is NOT included:					
AIC	1.51069	SC		1.54579	
HQ	1.52385	FPE		4.52987	
When the log-likelihood constant is included:					
AIC	4.34857	SC		4.38367	
HQ	4.36172	FPE		77.3678	

Job zone classification also shows a similar type of relationship: those occupations that are difficult to fill are also the ones that require a sophisticated mixed skill set of education and

experience. This finding confirms the human resource managers' view on improving the pipeline through education and training.

Another finding that deserves close attention is that sales volume and employment size account for the difficulty of hiring. However, this problem seems relegated to the smaller firms rather than large ones as the strong statistically significant relations between sales volume and difficulty of hiring suggests.

In terms of the spatial effect, both labor force and unemployment indicators are statistically significant, suggesting that, controlled by other factors, they do have a substantial impact on the difficulty of hiring. The negative relationship between the labor force and the difficulty of hiring suggests that large labor markets do not have a problem in finding people, whereas small areas have difficulties in finding people. In Model 4, the unemployment rate becomes statistically significant, and its sign is negative, suggesting that when the labor market is tight, the recruiters have a difficult time finding the right people.

CONCLUSIONS, IMPLICATIONS, AND FUTURE RESEARCH

Strategic recruitment and staffing are always high on the priority list for human resource managers. Yet, finding the right people for jobs that require complex skill sets is an important emerging problem for human resource managers. The findings from our study suggest that some occupations, especially those occupations that pay high wages and require a sophisticated combination of education and experience, are not getting enough hits from the labor market. The spatial features and company characteristics are further affecting the outcome as smaller labor markets, and smaller companies are impacted more than larger markets and larger companies.

One critical implication of this study is that human resource managers in smaller companies need to be even more creative in their efforts to source and recruit applicants with the desired combination of education and experience. For example, smaller companies must drill into the metrics that identify which sources have produced the best, long-term employees and explore how to maximize those sources. Smaller companies typically cannot afford to offer the same array of benefits as larger companies; however, our findings indicate that benefit as a percent of the compensation is not a significant incentive for candidates to consider a job. Therefore, smaller companies may see more significant gains in their recruitment efforts by focusing on the company culture and investing in the education and training pipeline. The difficulty of hiring does not seem to be a pressing problem for larger companies.

For future research, the third wave of the survey may include a battery of questions informed by the literature to get more precise details on the difficulty of hiring from the human resource managers' perspective in the manufacturing sector. Additional information regarding turnover by positions and total rewards strategies might bolster this research and explain more about the difficulties of hiring in the manufacturing sector.

LIMITATIONS AND FUTURE RESEARCH

This study has several limitations that can be addressed in future studies. First, this study focuses on the manufacturing sector. Thus, these results may not generalize to other sectors, even though most types of organizations would be impacted by the factors studied here. Second, spatial units included in the sample are limited to Middle Tennessee, including 40 counties. These findings may not be generalizable to other geographic areas. Expanding geographical coverage may have an impact on the magnitude and directions of spatial indicators. Third, the authors acknowledge that there may be a reverse causality between the difficulty of hiring and the average hourly wage in the study. To test the reverse causality assumptions, we need to get additional survey data from the third wave of the study and test for the direction of causality. Finally, future research can use the findings as a benchmark to evaluate the impact of the pandemic on employees' recruiting.

REFERENCES

- Abston, K. A., Arik, M., & Graves, B. C. (2019). WORKFORCE TURNOVER AND ABSENTEEISM IN THE MANUFACTURING SECTOR. *Global Journal of Business Disciplines*, 3(1), 57-79.
- Adams, J., Greig, M., & McQuaid, R. W. (2000). Mismatch unemployment and local labour-market efficiency: the role of employer and vacancy characteristics. *Environment & Planning A*, 10, 1841.
- Barnow, B. S., Trutko, J., & Piatak, J. S. (2013). Conceptual Basis for Identifying and Measuring Occupational Labor Shortages.
- Barnow, B. S., Trutko, J., & Piatak, J. S. (2013, January). Occupational Labor Shortages: Concepts, Causes, Consequences, and Cures. Kalamazoo, MI: Upjohn Institute for Employment Research, 2013. ISBN: 9780880994125.
- Behling, O., Labovitz, G., & Gainer, M. (1968). College recruiting: A theoretical basis. *Personnel Journal*, 47, 13–19.
- Blanc, M., Cahuzac, E., & Tahar, G. (2008). Hiring Difficulties and Manpower Flows: Does Labour Market Density Matter? *Environment and Planning A: Economy and Space*, 40(5), 1090–1108. <https://doi.org/10.1068/a3939>
- Boston Consulting Group. 2012. *Skills gap in U.S. manufacturing is less pervasive than many believe*. Boston: Boston Consulting Group.
- Bureau of Economic Analysis. U.S Department of Commerce. <https://www.bea.gov/>
- Canny, A. (2004). What employers want and what employers do: Cumbrian employers' recruitment, assessment and provision of education/learning opportunities for their young workers. *Journal of Education and Work*, 17(4), 495-513.
- Cappelli, P. 2011. Why companies aren't getting the employees they need. *The Wall Street Journal*, October 24.
- Cappelli, P. 2012. *Why good people can't get jobs*. Philadelphia: Wharton Digital Press.
- Chapman, D. S., Uggerslev, K. L., Carroll, S. A., Piasentin, K. A., & Jones, D. A. (2005). Applicant attraction to organizations and job choice: a meta-analytic review of the correlates of recruiting outcomes. *Journal of applied psychology*, 90(5), 928.
- Craft, J., & Schake, S. (2019). Job Applicants as the New Customer: Strategies for Successful Recruiting in Midwest Manufacturers. *International Journal of Managerial Studies and Research (IJMSR)*. Volume 7, Issue 4, April 2019, PP 1-14.
- Gatewood R D, Gowan M A, Lautenshlager G J, 1993, Corporate image, recruitment image, and initial job choice decisions. *Academy of Management Journal* 36, 414–427
- Glendinning, A., Nuttall, M., Hendry, L., Kloeppel, M., & Wood, S. (2003). Rural communities and well-being: a good place to grow up? *The Sociological Review*, 51(1), 129-156.

- Goffette-Nagot, F., & Schmitt, B. (1999). Agglomeration economies and spatial configurations in rural areas. *Environment and Planning A*, 31(7), 1239-1257.
- Fabling, R., & Mare, D. C. (2016). Firm-Level Hiring Difficulties: Persistence, Business Cycle and Local Labour Market Influences. *Journal of Labor Research*, 37(2), 179–210. <https://doi.org/ezproxy.mtsu.edu/https://link.springer.com/journal/volumesAndIssues/12122>
- Fombrun C., & Shanley M. (1990) What's in a name? Reputation building and corporate strategy. *Academy of Management Journal* 33, 233–258
- Giffi, C., Rodriguez, M. D., & Mondal, S. (2017). How modern manufacturers can create positive perceptions with the US public. *Deloitte Insights. National Association of Manufacturers. Manufacturing Institute*.
- Giffi, C., Wellener, P., Dollar, B., Manolian, H. A., Monck, L., & Moutray, C. (2018). Deloitte and The Manufacturing Institute skills gap and future of work study. *Deloitte Insights*
- James, M. L. (2017). SUSTAINABILITY REPORTING PRIORITIES—A STUDY EXPLORING ACCOUNTING MAJORS' PERCEPTIONS. *Global Journal of Accounting and Finance Volume*, 1(2), 48-65.
- Knold, M. (2015, July). Difficult-to-Fill Jobs Study. Brief Report. *Department of Workforce Services. Economic Research and Analysis Unit*.
- Landry, A. T., Schweyer, A., & Whillans, A. (2017). Winning the war for talent: Modern motivational methods for attracting and retaining employees. *Compensation & Benefits Review*, 49(4), 230-246.
- Leibert, A. (2019, September). Hiring Difficulties in Manufacturing. *Minnesota Economic Trends*.
- Looker, E. D., & Dwyer, P. (1998). Education and negotiated reality: Complexities facing rural youth in the 1990s. *Journal of youth studies*, 1(1), 5-22.
- Lowe, N. J. (2015). From skill mismatch to reinterpretation: Challenges and solutions for manufacturing worker retention and recruitment. In *Handbook of manufacturing industries in the world economy*. Edward Elgar Publishing.
- Meinhert, D. (2015). HR Gets Creative to Hire Manufacturing Workers. *Society for Human Resource Management (SHRM)*
- Monk, D. H. (2007). Recruiting and Retaining High-Quality Teachers in Rural Areas. 17(1), 155–174. <https://doi-org.ezproxy.mtsu.edu/10.1353/foc.2007.0009>
- Nordlof, H., Wiitavaara, B., Winblad, U., Wijk, K., & Westerling, R. (2014). Safety culture and reasons for risk-taking at a large steel-manufacturing company: Investigating the worker perspective. *Safety Science*
- ONET OnLine. U.S Department of Labor. <https://www.onetonline.org/>
- Orr, J., & Biu, O. (2017, October 10). Projecting Supply and Demand for Middle-Skill Occupations in US States and Metro Areas. *Metropolitics*.
- Pavis, S., Hubbard, G., & Platt, S. (2001). Young people in rural areas: socially excluded or not? *Work, employment and society*, 15(2), 291-309.
- Pavis, S., Platt, S., & Hubbard, G. (2000). Young people in rural Scotland. *Pathways to social inclusion and exclusion*. York: York Publishing Services Ltd.
- Society for Human Resource Management. The New Talent Landscape. Recruiting Difficulty and Skills Shortages (2016, June). 16-0156
- U.S Bureau of Labor Statistics. U.S Department of Labor. <https://www.bls.gov/>
- Van Ours J C., & Ridder G. (1993) Vacancy durations: search or selection? *Oxford Bulletin of Economics and Statistics* 55, 187–198
- Wallace, C., Boyle, F., Cheal, B., & Dunkerley, D. (1993). The employment and training of young people in rural south west England. *British Journal of Education and Work*, 6(3), 25-44.

Appendix A: Surveyed Occupational Titles and Job Characteristics				
Title of Occupations	Average Wage (\$)	Difficulty of Filling (1-10)	Number of Jobs Reported	Job Complexity Zone
Chief Executives	\$80.40	6.72	124	5
General and Operations Managers	\$52.40	6.31	330	4
Marketing Managers	\$39.25	5.97	49	4
Sales Managers	\$51.75	5.94	127	4
Administrative Services Managers	\$28.77	5.33	88	3
Facilities Manager	\$41.16	6.33	62	3
Computer and Information Systems Managers	\$39.15	5.94	45	4
Treasurers and Controllers	\$44.49	6.46	98	5
Industrial Production Managers	\$38.64	5.96	620	4
Purchasing Managers	\$32.73	5.59	59	4
Transportation Managers	\$34.67	6.06	108	4
Human Resources Managers	\$39.36	5.89	88	4
Training and Development Managers	\$35.71	5.86	6	4
Construction Managers	\$34.59	7.75	9	4
Architectural and Engineering Managers	\$49.86	6.67	37	5
Funeral Service Managers	\$52.89	6.50	3	4
Regulatory Affairs Managers	\$42.66	5.80	298	4
Buyers and Purchasing Agents, Farm Products	\$25.20	5.41	127	4
Claims Examiners, Property and Casualty Insurance	\$24.99	5.00	8	4
Environmental Compliance Inspectors	\$45.07	6.00	4	4
Human Resources Specialists	\$24.64	5.20	129	4
Logisticians	\$29.82	5.82	85	4
Management Analysts	\$28.18	3.88	82	5
Compensation, Benefits, and Job Analysis Specialists	\$39.47	6.86	9	4
Training and Development Specialists	\$24.13	5.67	12	4
Market Research Analysts and Marketing Specialists	\$21.59	5.89	44	4
Energy Auditors	\$35.14	6.50	19	3
Accountants	\$29.76	5.75	121	4
Assessors	\$24.81	6.00	14	4
Budget Analysts	\$29.50	3.50	2	4
Financial Analysts	\$33.01	5.57	46	4
Computer Systems Analysts	\$28.30	5.83	38	4
Information Security Analysts	\$27.00	6.50	3	4
Computer Programmers	\$43.10	7.40	49	4
Software Developers, Applications	\$39.93	10.00	2	4
Web Developers	\$25.41	5.67	19	3
Database Administrators	\$31.50	5.33	5	4
Network and Computer Systems Administrators	\$30.28	6.40	23	4
Computer Network Architects	\$42.83	6.00	4	4
Computer User Support Specialists	\$24.71	4.92	24	3
Computer Network Support Specialists	\$23.04	5.00	8	4
Software Quality Assurance Engineers and Testers	\$24.74	5.44	88	4
Aerospace Engineers	\$46.09	7.75	16	4
Chemical Engineers	\$39.70	5.00	20	4
Civil Engineers		8.00		4
Electrical Engineers	\$37.51	6.58	68	4

Appendix A (Continued)

Title of Occupations	Average Wage (\$)	Difficulty of Filling (1-10)	Number of Jobs Reported	Job Complexity Zone
Industrial Safety and Health Engineers	\$38.30	6.71	168	4
Mechanical Engineers	\$37.17	6.72	146	4
Biochemical Engineers	\$35.07	6.14	128	4
Architectural Drafters	\$24.86	5.38	41	4
Aerospace Engineering and Operations Technicians	\$31.04	6.13	43	3
Chemists	\$38.67	6.00	66	4
Chemical Technicians	\$17.95	7.00	22	3
Quality Control Analysts	\$24.59	5.43	130	3
Occupational Health and Safety	\$27.95	5.88	20	3
Commercial and Industrial Designers	\$31.44	7.00	5	4
Graphic Designers	\$22.81	5.57	47	4
Editors	\$40.72	5.00	78	4
Registered Nurses	\$36.66	6.67	3	3
Occupational Health and Safety Specialists	\$25.72	8.67	9	4
Security Guards	\$14.39	4.67	25	2
First-Line Supervisors of Housekeeping and Janitorial Workers	\$18.90	5.00	22	2
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	\$27.00	3.00	3	3
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	\$13.63	4.11	49	2
Landscaping and Groundskeeping Workers	\$17.80	3.64	34	1
First-Line Supervisors of Retail Sales Workers	\$35.49	4.89	37	2
First-Line Supervisors of Non-Retail Sales Workers	\$30.82	5.29	253	4
Door-To-Door Sales Workers, News and Street Vendors, and Related Workers	\$31.12	6.13	105	2
First-Line Supervisors of Office and Administrative Support Workers	\$23.83	5.22	137	3
Switchboard Operators, Including Answering Service	\$14.46	3.44	10	2
Bill and Account Collectors	\$19.31	4.78	25	2
Statement Clerks	\$16.71	5.00	18	2
Bookkeeping, Accounting, and Auditing Clerks	\$20.19	4.77	68	3
Payroll and Timekeeping Clerks	\$21.34	4.87	19	2
Procurement Clerks	\$15.91	3.14	11	3
Customer Service Representatives	\$18.25	4.88	167	2
File Clerks	\$17.33	3.33	5	2
Order Clerks	\$17.04	2.50	12	2
Human Resources Assistants, Except Payroll and Timekeeping	\$19.85	5.82	18	3
Receptionists and Information Clerks	\$15.46	2.94	43	2
Cargo and Freight Agents	\$20.31	3.20	6	2
Dispatchers, Except Police, Fire, and Ambulance	\$23.12	4.00	7	2
Production, Planning, and Expediting Clerks	\$23.83	5.57	81	3
Shipping, Receiving, and Traffic Clerks	\$17.63	4.38	235	2
Executive Secretaries and Executive Administrative Assistants	\$24.56	5.00	15	3
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	\$17.81	4.00	79	2
Data Entry Keyers	\$15.89	2.33	7	2
Office Clerks, General	\$18.19	5.50	26	2
Construction Carpenters	\$18.75	6.50	5	2
Construction Laborers	\$19.20	2.50	164	2
Electricians	\$27.49	5.78	58	3

Appendix A (Continued)

Title of Occupations	Average Wage (\$)	Difficulty of Filling (1-10)	Number of Jobs Reported	Job Complexity Zone
Painters, Construction and Maintenance	\$16.08	4.00	13	2
Sheet Metal Workers	\$23.33	5.33	8	2
Structural Iron and Steel Workers	\$18.33	7.33	72	2
First-Line Supervisors of Mechanics, Installers, and Repairers	\$33.18	6.55	73	3
Computer, Automated Teller, and Office Machine Repairers	\$25.96	7.29	133	3
Aircraft Mechanics and Service Technicians	\$23.56	5.57	178	3
Industrial Machinery Mechanics	\$25.05	7.13	494	3
Maintenance and Repair Workers, General	\$22.90	6.51	613	3
First-Line Supervisors of Production and Operating Workers	\$26.06	5.75	627	2
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	\$15.67	4.71	3,719	2
Bakers	\$13.68	6.60	447	2
Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	\$17.16	4.65	535	2
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$17.97	5.56	168	2
Machinists	\$21.37	6.50	344	3
Metal-Refining Furnace Operators and Tenders	\$18.20	6.00	10	2
Model Makers, Metal and Plastic	\$19.05	7.00	71	3
Foundry Mold and Coremakers	\$17.86	6.40	173	2
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$22.18	9.50	13	2
Tool and Die Makers	\$26.88	8.07	121	3
Welders, Cutters, and Welder Fitters	\$19.49	6.32	519	3
Sewing Machine Operators	\$13.82	8.25	80	1
Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	\$20.49	5.50	42	2
Upholsterers	\$14.79	6.67	74	2
Woodworking Machine Setters, Operators, and Tenders, Except Sawing	\$16.30	6.50	27	2
Chemical Equipment Operators and Tenders	\$17.31	4.00	2	2
Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	\$16.60	5.25	115	2
Cutters and Trimmers, Hand	\$16.36	6.00	107	1
Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	\$15.60	2.00	25	2
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	\$14.13	5.00	17	2
Inspectors, Testers, Sorters, Samplers, and Weighers	\$17.52	4.73	471	2
Packaging and Filling Machine Operators and Tenders	\$19.05	4.67	335	2
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	\$17.63	4.00	36	2
Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	\$16.47	4.00	5	2
Paper Goods Machine Setters, Operators, and Tenders	\$16.33	5.50	185	2
Helpers--Production Workers	\$13.46	4.67	297	2
Recycling and Reclamation Workers	\$16.70	4.45	3,411	2
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	\$25.99	5.63	103	2
Heavy and Tractor-Trailer Truck Drivers	\$21.34	4.91	133	2
Light Truck or Delivery Services Drivers	\$25.00	5.00	1	2
Industrial Truck and Tractor Operators	\$16.31	6.29	114	2
Laborers and Freight, Stock, and Material Movers, Hand	\$15.30	4.52	1,021	2
Packers and Packagers, Hand	\$15.27	4.56	135	2
Tank Car, Truck, and Ship Loaders	\$15.51	2.67	45	2

Appendix B: Specific Survey Questions Associated with the Current Paper			
Q1. What is your company's annual sales (recent year)?			
Q2. How many people does your company employ (recent year)?			
Q3. Please calculate total employee benefits as percent of total wages.			
Q4. For each occupation below, please input (a) average hourly wage, (b) total employees, and (c) difficulty of filling:			
Occupation title	Average Hourly Wage (\$)	Difficulty of Filling (1= easy; 10= difficult)	Number of employees
Occupation 1			
Occupation 2			
...			
Occupation 200			

EXHAUSTION AND JOB PERFORMANCE IN PUBLIC ACCOUNTING: THE MEDIATING ROLE OF JOB SATISFACTION

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ABSTRACT

This study seeks to determine if job satisfaction mediates the relationship between exhaustion (the core dimension of job burnout) and job performance in public accounting. Both job satisfaction and job performance are regarded as separate, negative consequences of burnout in the most widely accepted accounting burnout model. However, based on Conservation of Resources theory, and the job satisfaction-job performance literature in industrial and organizational psychology, this study posits that job satisfaction and job performance are interrelated. More specifically, the authors hypothesize that job satisfaction functions as a mediator such that exhaustion negatively affects employee job performance through job satisfaction. The relationship between job satisfaction and job performance is potentially very important as the public accounting profession serves to protect and assure the public in regard to firms' reported financial information, and decreased job performance here may limit these protections and assurances. Should job satisfaction be found to mediate the relationship between exhaustion and job performance, the implication is that efforts to increase job satisfaction may help mitigate exhaustion's negative influence on job performance.

Survey responses were analyzed from 208 accountants from six public accounting firms. The results indicate that exhaustion influences job performance through the mediator of job satisfaction. In addition to extending accounting burnout research by adding valuable context to the existing accountant burnout model, this result indicates that firm management may be able to help mitigate exhaustion's negative effects on job performance by focusing on improving job satisfaction.

INTRODUCTION

"The accounting profession has wide reach in society and in global capital markets. In the most basic way, confidence in the financial data produced by professions in businesses forms the core of public trust and public value" (Jui & Wong, 2013). This view of the accounting profession, as expressed in an International Federation of Accountants publication, is widely held. In a similar statement, a report from the United States General Accounting Office (US GAO) opened with the acknowledgement that, "[t]he accounting profession's services are critical

to the effectiveness and efficiency of our nation's commerce and capital markets as well as international markets" (US GAO, 1996).

Given the reliance that investors and other stakeholders place on public accounting professionals, it is imperative that these professionals perform well on the job. For example, investors and creditors rely heavily on audited financial statements and opinions when evaluating firms' performance and potential. It is alarming that public accountants work in a profession characterized with extreme levels of exhaustion (the core component of job burnout), and exhaustion has been shown to negatively impact job performance (Fogarty, Singh, Rhoads, & Moore, 2000; Jones, Norman, & Wier, 2010). While exhaustion is a significant issue in public accounting with several negative consequences, the focus in this study is the negative consequence of poor job performance and how an enhanced understanding of job satisfaction's role in the accounting burnout model may help firms mitigate the deleterious effects of burnout on job performance.

In accounting burnout literature, decreased job satisfaction, decreased job performance, and increased turnover intentions are empirically acknowledged negative outcomes of burnout (Fogarty et al., 2000; Jones et al., 2010; Chong & Monroe, 2015), and the accounting burnout model found in Fogarty et al. (2000) is the most frequently cited. In that study, the authors conceptualized a burnout model specific to the accounting profession where burnout is regarded as the key mediating variable between role stressors and three job outcomes (job satisfaction, job performance, and turnover intentions). This study is focused specifically on two of these outcomes – job satisfaction and job performance, and how job satisfaction may play a role in mediating the relationship between exhaustion and job performance. In other words, the negative effect that exhaustion has on job performance in public accounting may be at least partially attributed to lower job satisfaction. This result would suggest an important extension to the accounting burnout model as it implies that job satisfaction may mitigate the extent to which exhaustion negatively effects job performance. Further, as the public interest relative to financial reporting is largely safeguarded to the extent that accountants perform their work well, understanding ways to mitigate negative effects on their job performance is crucial.

This study utilizes Conservation of Resources (COR) theory to provide support for the potential mediating role of job satisfaction between exhaustion and job performance. COR theory emphasizes the importance of employee resources and indicates that individuals are likely to experience exhaustion when these resources are absent or depleted (Hobfoll, 2001). Further, COR theory has been employed to explain how burnout can negatively affect job performance (Cordes & Dougherty, 1993; Janssen, Lam, & Huang, 2010). In the context of burnout, COR theory suggests that the negative outcome of job satisfaction occurs *first*, and that once initial resource loss occurs, individuals become increasingly vulnerable to additional resource loss. This continued and accelerated resource loss is referred to as a loss spiral (Hobfoll, 2001). Relative to loss spirals, it is expected that reduced job satisfaction will result in reduced feelings of commitment towards work, reduced investments of resources into work, and ultimately reduced job performance. This is consistent with a prominent theme in the job satisfaction-job performance literature indicating the attitudes lead to behaviors (Judge, Thoresen, Bono, & Patton, 2001). Thus, instead of simply being identified as an outcome to exhaustion in public

accounting, job satisfaction may potentially act as a mediator between exhaustion and job performance in the profession. The hypothesized placement of job satisfaction as a mediator in this study is critical because it implies that accounting firms who make efforts to improve employee job satisfaction may, in turn, improve job performance by mitigating the effects of exhaustion.

Based on an analysis of survey responses from 208 accounting professionals in six public accounting firms in New York, this study does find that job satisfaction mediates the relationship between exhaustion and job performance in public accounting. This finding has both theoretical and practical implications. From a theoretical perspective, the results extend accounting burnout research by showing that job satisfaction is not merely an outcome of exhaustion; it acts as a mediator between exhaustion and the negative outcome of job performance. From a practical standpoint, this finding suggests that firms who make efforts to increase employee job satisfaction may, as a result, improve job performance by mitigating the effects of exhaustion.

The next section presents extant literature and hypothesis development. This is followed by a discussion of the study's methodology, a presentation of data analysis, and the results of the hypothesis test. The final section is a discussion of the study's results, including limitations and opportunities for future research.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Burnout and Accounting

The phenomenon of job burnout has been explored extensively in a variety of literatures (e.g. Cordes & Dougherty, 1993; Lee & Ashforth, 1996; Fogarty et al., 2000; Maslach, Schaufeli, & Leiter, 2001), and has recently been added as an occupational phenomenon in the World Health Organization's International Classification of Diseases handbook (2019). The most widely accepted definition of job burnout describes it as a complex psychological syndrome that occurs in response to chronic emotional and interpersonal stressors on the job (Maslach, 1982; Maslach et al., 2001). In its conceptualization, job burnout has been shown to consist of three separate dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment (Cordes & Dougherty, 1993; Lee & Ashforth, 1996; Maslach et al., 2001). Emotional exhaustion is described as a lack of energy and a feeling that one's emotional resources are drained or used up (Cordes & Dougherty, 1993). Exhaustion has developed as the core variable for understanding burnout (Cropanzano, Rupp, & Byrne, 2003; Law, Sweeney, & Summers, 2008; Herda & Lavelle, 2012), and in extant literature is regarded as the dimension that best captures the central quality of burnout (Shirom, 1989; Lee & Ashforth, 1996; Wright & Bonett, 1997). It is also the dimension most frequently reported and analyzed (Maslach et al., 2001; Tuithof et al., 2017; Cooper, Knight, Frazier, & Law, 2019). For these reasons, this study will focus on the exhaustion dimension of burnout.

Due to its prevalence and severity in the profession, the study of burnout in accountants has expanded over the last twenty years (e.g. Sweeney & Summers, 2002; Law et al., 2008;

Jones et al., 2010; Guthrie & Jones, 2012; Herda & Lavelle, 2012; Chong & Monroe, 2015; Cooper et al., 2019). The accounting burnout model most frequently cited is from Fogarty and colleagues (2000). This model conceptualizes burnout as the key mediating variable between three role stressors (role conflict, role ambiguity, and role overload), and three critical job outcomes. These three negative job outcomes, which are widely recognized in accounting burnout research (e.g. Fogarty et al., 2000; Law et al., 2008; Jones et al., 2010; Chong & Monroe, 2015), are lower job satisfaction, poor job performance, and higher turnover intentions. This study employs COR theory to explain why the relationship between job satisfaction and job performance in this context warrants further examination.

Burnout and COR Theory: Impacts on Job Performance and Job Satisfaction

Job Performance. COR theory is widely recognized as the leading theory for understanding how stress leads to burnout (e.g., Hobfoll & Freedy, 1993; Lee & Ashforth, 1996; Hobfoll, 1989, 2001; Halbesleben, 2006). COR theory asserts that individuals strive to obtain and maintain what they value, namely resources. When resources are unavailable, individuals are likely to experience exhaustion (Hobfoll, 2001), as they do not feel that they have the necessary physical, social, emotional, or status resources to handle job-related demands (Lee & Ashforth, 1996). In a service workplace setting, resource loss occurs from the constant need to assist clients and address their problems, often under considerable time constraints, with limited resources (Wright & Hobfoll, 2004).

Related to the relationship between resource loss and exhaustion, COR theory has been further employed to clarify how feelings of burnout can influence job performance in non-accounting studies (Cordes & Dougherty, 1993; Janssen et al., 2010). Janssen and colleagues (2010) state that resource-depleted individuals withdraw from their overwhelming work demands and reduce efforts as a burnout coping strategy. In turn, less effort by exhausted employees results in reduced quantity and quality of job performance (Cordes & Dougherty, 1993; Wright & Bonett, 1997; Wright & Cropanzano, 1998). In studies utilizing accounting professionals, researchers have found similar results linking burnout to reduced job performance (Fogarty et al., 2000; Jones et al., 2010).

Job Satisfaction. Job satisfaction is the degree of pleasure an employee derives from their job (Muchinsky, 2006). The global approach to understanding job satisfaction focuses on an individual's overall positive (or negative) evaluation of the job or job situation (Spector, 1997). Lower job satisfaction has been examined as a potential antecedent to negative work-related outcomes including reduced job performance, absenteeism, reduced citizenship behavior, and increased turnover intentions (Saxton, Phillips, & Blakeney, 1991; Judge et al., 2001; Cropanzano et al., 2003; Bowling & Hammond, 2008). Particularly salient to this study, several prior studies have linked job satisfaction with productivity (Schleicher, Watt, & Greguras, 2004; Ng, Sorensen, & Yim, 2009; Spagnoli, Caetano, & Santos, 2012).

In the burnout literature, decreased job satisfaction is widely regarded as a negative consequence of burnout (Jackson, Schwab, & Schuler, 1986; Cordes & Dougherty, 1993; Maslach et al., 2001). Individuals experiencing burnout tend to develop an adversarial attitude

toward their employer and then to withdraw psychologically from the organization (Maslach, 1982). This inverse relationship between burnout and job satisfaction has been found in both non-accounting studies (e.g. Lee & Ashforth, 1996; Wright & Cropanzano, 1998; Brewer & Clippard, 2002; Swider & Zimmerman, 2010) and research examining accounting professionals (e.g. Fogarty et al., 2000; Jones et al., 2010; Chong & Monroe, 2015; Al Shbail, Salleh, & Mohd Nor, 2018).

Mediating Role of Job Satisfaction. While both reduced job satisfaction and reduced job performance are established negative outcomes of burnout, evidence exists, supported by COR theory, that decreased job satisfaction occurs first. Judge et al. (2001) distilled prior job performance-job satisfaction research into seven models conceptualizing the relationship between these two constructs. Although the researchers noted no single model conclusively defined this relationship, one of the models they extracted from extant research indicates a causal effect of job satisfaction on job performance. The premise is that attitudes have behavioral implications and, accordingly, higher morale leads to higher productivity while lower morale leads to lower productivity (Strauss, 1968; Fishbein, 1973). Further, Judge and colleagues' (2001) synthesis of the job satisfaction-job performance studies revealed that the relationship between these two constructs is stronger in jobs with higher complexity. Relative to the current study, this appears to be consistent with the results from recent research utilizing internal auditors (accounting professionals arguably performing complex tasks), which found that job burnout directly decreased levels of job satisfaction, and as a result, dissatisfied internal auditors were more likely to engage in premature sign-off practices (Al Shbail et al., 2018). Such practices could be indicative of reduced job performance. There are also recent studies demonstrating that career satisfaction mediates the relationship between occupation stress and performance in police employees (Nisar & Rasheed, 2020), and that emotional exhaustion affects performance through job satisfaction in telecommunications workers outside of the United States (Simanjuntak, 2020).

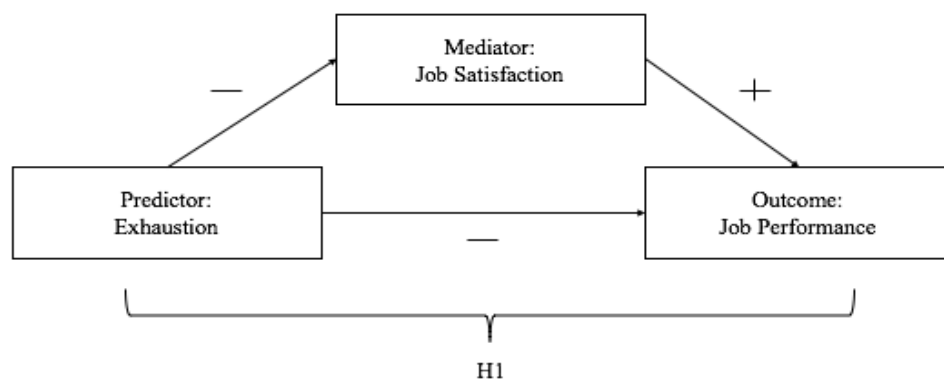
Due to the stress associated with resource loss, along with the investment of resources required to offset additional losses, COR theory suggests that individuals become increasingly vulnerable to further, ongoing resource loss, and these accelerated negative effects are referred to as loss spirals (Hobfoll, 2001). In the context of accounting burnout, resource loss (i.e. increased workload, role overload) results in exhaustion (Fogarty et al., 2000, Sweeney & Summers, 2002; Law et al., 2008; Jones et al., 2010; Guthrie & Jones, 2012; Herda & Lavelle, 2012; Chong & Monroe, 2015; Cooper et al., 2019). Next, exhaustion leads to reduced job satisfaction (Fogarty et al., 2000), and thus begins the loss spiral.

When experiencing a loss spiral, individuals often resort to conserving remaining resources by reducing commitment to their employer, eventually decreasing job performance efforts (Wright & Hobfoll, 2004). The current study suggests that as accountants experience reduced job satisfaction resulting from exhaustion, they *then* reduce their feelings of commitment to their work and accordingly reduce their investment of resources into work. This perpetuates the loss cycle and ultimately results in decreased job performance. Stated simply, in accountants, job satisfaction may be functioning as a conduit through which exhaustion impacts job performance. Individuals with a favorable attitude towards an object (in this case a job)

engage in behaviors that foster and support it, while individuals with unfavorable attitudes towards an object engage in behaviors that hinder or oppose it (Judge et al., 2001; see also Eagly & Chaiken, 1993). Accordingly, job satisfaction may be more appropriately placed as a mediator between exhaustion and job performance in the accounting burnout model. As such, the following is proposed:

H1: *Job satisfaction will mediate the relationship between exhaustion and job performance in public accountants (see Figure I below).*

Figure I: MODEL



METHODOLOGY

Participants and Survey Instrument

Survey data was collected electronically from professional staff at six public accounting firms (five local and one regional). The firms are located in upstate New York, and data was collected during the months of July and August, which are outside of the typical busy season in public accounting. Given the increased workload during busy season and its established effect on exhaustion in public accounting (Sweeney & Summers, 2002), it is probable that the exhaustion levels reported in this study are understated. A total of 496 professionals received the email with the survey link, and 219 of these responded. Of those respondents, 208 individuals completed a usable portion of the survey and, therefore, were included in the analysis. The resulting response rate of 42 percent is similar to, and in several cases better than, other rates examining exhaustion in public accountants (Fogarty et al., 2000; Guthrie & Jones, 2012; Herda & Lavelle, 2012; Jones et al., 2012).

Following Podsakoff, MacKenzie, Lee, & Podsakoff (2003), several techniques were employed to reduce the possibility of common method bias. Potential respondents were informed that their participation was voluntary and that responses would remain anonymous.

Previously validated scales were used for all variables, reverse coded questions were used in the survey, and the survey instrument included questions that were unrelated to this study. Further, since dependent and independent variables were collected at the same time, Harman's single-factor test was performed to examine the number of factors that were needed to account for the variance in the study variables. This test indicated that eight factors were present in the data, which is consistent with the study's design. The percentage of variation explained by the study variables ranged from 4.08 percent to 29.75 percent.

Table 1 provides participant demographics. Fifty-six percent of respondents were female, and the respondents were equally divided regarding marital status. Grouped Role describes professional rank, and, as some firms use slightly different naming conventions, the firms' assistance was necessary to properly standardize job titles into ranks of staff, senior, and manager. Most respondents were managers (42 percent), and, in terms of functional area, 50 percent were audit professionals, 38 percent were tax professionals, and 10 percent were advisory professionals.

Table 1		
PARTICIPANT DEMOGRAPHICS		
	Number	Percentage
Gender:		
Male	91	44%
Female	117	56%
Total	208	100%
Marital Status:		
Single	104	50%
Married	104	50%
Total	208	100%
Grouped Role:		
Staff	73	35%
Senior	31	15%
Manager	88	42%
Unreported	16	8%
Total	208	100%
Department:		
Audit	105	51%
Tax	79	38%
Advisory	21	10%
Unreported	3	1%
Total	208	100%

Variables and Measures

Exhaustion. Exhaustion was measured using the emotional exhaustion subscale of the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1986; Maslach, Jackson, & Leiter, 1996). The MBI is a proprietary instrument, and permission was granted by the copyright holder to use it for this study. The reproduction of the instrument is prohibited in any publication. As such, whereas the other instrument items are found in Appendix A, the MBI is not included.

The MBI is the most accepted and widely used measure of burnout (Cordes & Dougherty, 1993). Maslach and Jackson (1981 and 1986) demonstrated MBI test-retest reliability and convergent and discriminant validity. In the current study, the Cronbach alpha coefficient for exhaustion was 0.93, demonstrating internal consistency. The five items were answered using a seven-point Likert scale reflecting frequency of exhaustion conditions.

Job Satisfaction. The survey included the Michigan Organizational Assessment Questionnaire Job Satisfaction Subscale, as tested by Bowling and Hammond (2008). They performed a meta-analysis to examine the psychometric properties of this job satisfaction scale. Their results indicated sufficient construct validity, and the mean sample-weighted internal reliability in their meta-analysis sample was 0.84. The Cronbach alpha coefficient in the current study was 0.95, which also indicates scale reliability. The three questions measuring job satisfaction were answered using a seven-point Likert scale. An example item is: “All in all I am satisfied with my job” (1=strongly disagree, 7=strongly agree).

Job Performance. Job performance was measured using a twelve-item scale adapted from Choo (1986). This modified scale was developed with the assistance of partners from five national accounting firms (Fisher, 2001), and it has been used in other accounting burnout studies (Jones et al., 2010; Jones, Guthrie, & Iyer, 2012). In those studies, researchers measured a Cronbach alpha coefficient of 0.83; the Cronbach alpha coefficient in the current study was 0.86, which also indicates internal consistency. An example item from this scale is: “I am satisfied with the quality of my work product” (1=strongly disagree, 7=strongly agree).

Control Variables. The following were included as control variables in the analysis: firm, gender, marital status, department, and grouped role (staff, senior, manager).

ANALYSIS AND RESULTS

Descriptive Statistics and Reliabilities

Descriptive statistics are displayed in Table 2. The mean exhaustion score of 3.51 is consistent with high exhaustion scores (relative to other professions) reported in other accounting burnout studies (e.g., Guthrie & Jones, 2012; Herda & Lavelle, 2012; Hsieh & Wang, 2012; Chong & Monroe, 2015). Also important to note is that the survey was administered outside the traditional public accounting busy season, and this reaffirms that professionals continue to suffer from elevated burnout and its negative outcomes in periods of business slowdown (Sweeney & Summers, 2002).

Table 2 below also reports correlations among variables and Cronbach alpha measures of reliability. Not surprisingly, exhaustion is negatively correlated to both job satisfaction and job performance, and job satisfaction and job performance were positively correlated (0.45). Results from a meta-analysis conducted by Judge et al. (2001) reported the estimated population value for the correlation between overall job satisfaction and general job performance at 0.30. The results in the current study indicate a slightly higher correlation, which may be a consequence of focusing on public accountants. As previously mentioned, Judge and colleagues (2001) did find stronger correlation between job satisfaction and job performance in jobs with higher

complexity. Public accountants are engaged in arguably complex tasks; however, additional research is required to examine whether this correlation is consistently higher in public accounting relative to other professions. Cronbach alpha reliability coefficients are included along the diagonal in Table 2. Each of these coefficients is above 0.80 suggesting high internal reliability (Gliner & Morgan, 2000).

Table 2										
DESCRIPTIVE STATISTICS AND CORRELATION COEFFICIENT ANALYSIS										
Variable	Mean	S.D.	1	2	3	4	5	6	7	8
1. Exhaustion	3.51	1.45	(0.93)	-0.62**	-0.31**	0.07	0.08	-0.05	-0.09	-0.13
2. Job Satisfaction	5.73	1.20	-0.62**	(0.95)	0.45**	-0.04	-0.04	0.15*	-0.01	0.14
3. Job Performance	5.83	0.61	-0.31**	0.45**	(0.86)	0.14	0.06	0.13	0.08	0.23**
4. Firm			0.07	-0.04	0.14	-	0.06	-0.03	0.07	0.07
5. Gender			0.08	-0.04	0.06	0.06	-	0.01	-0.04	-0.07
6. Marital Status			-0.05	0.15*	0.13	-0.03	0.01	-	0.14	0.47**
7. Department			-0.09	-0.01	0.08	0.07	-0.04	0.14	-	0.06
8. Grouped Role			-0.13	0.14	0.23**	0.07	-0.07	0.47**	0.06	-

*p<.05; **p<.01

Amounts in parentheses on the diagonal represent Cronbach alpha reliability coefficients.

Confirmatory Factor Analysis and Hypothesis Testing

A confirmatory factor analysis (CFA) was performed prior to hypothesis testing. The results indicated that the measurement model was a good fit to the data (GFI = 0.864; CFI = 0.926; IFI = 0.927; RMSEA = 0.076). Generally, values larger than 0.90 for GFI, CFI, and IFI indicate good model fit (Byrne, 1998; Diamantopoulos & Siguaw, 2000; Kline, 1998), and values less than 0.10 (Byrne, 1998; Kline, 1998), or more stringently, less than 0.08 (Browne & Cudeck, 1993), suggest good model fit for RMSEA. Additionally, all of the factor loadings of the measured variables onto the latent variables were statistically significant ($p < 0.001$; untabulated results).

Hayes's PROCESS Procedure (release 2.16.3) was utilized to test the hypothesis. This PROCESS macro is a path analysis modeling tool developed by Hayes in 2009 and allows indirect effects to be measured and explicitly tested. While Baron and Kenny (1986) is the most widely used method for mediation analysis, it does not allow for direct testing of the significance of the hypothesized indirect effect (Preacher & Hayes, 2004, 2008). Based on extensive simulations, MacKinnon and colleagues (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004) recommended testing mediation by measuring bootstrapped indirect effects or using the distribution of the product approach, as these

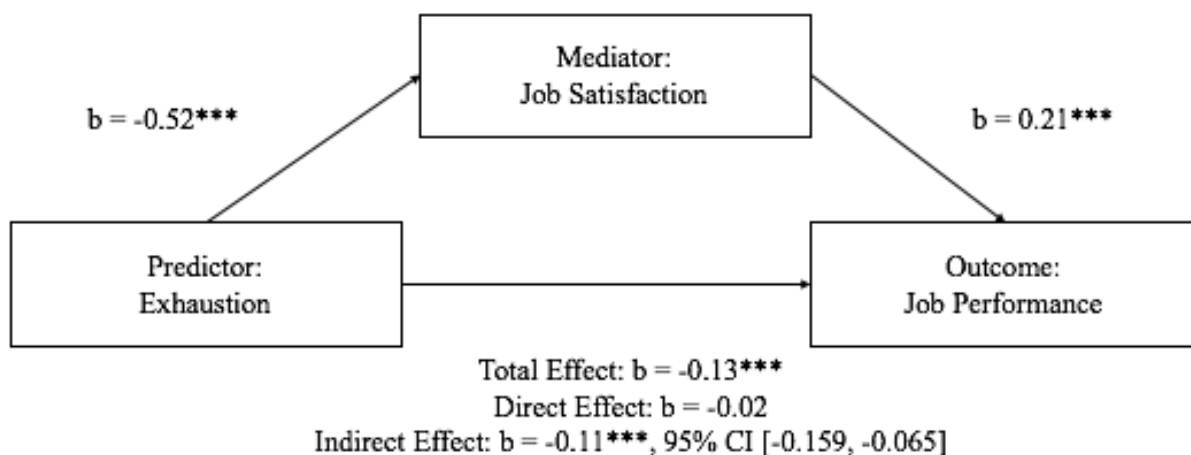
approaches have high power and minimize the Type I error rate relative to other approaches (Preacher & Hayes, 2008). Accordingly, bootstrapped confidence intervals were used to test the mediation hypothesis.

The results from the hypothesis test are presented in Figure II. The total effect that exhaustion had on job performance was negative and significant (coefficient = -0.13, $p < 0.001$). Exhaustion was also negatively and significantly related to job satisfaction (coefficient = -0.52, $p < 0.001$), and job satisfaction was positively and significantly related to job performance (coefficient: 0.21, $p < 0.001$).

H1 evaluates the mediating effect of job satisfaction in public accountants as it relates to exhaustion and job performance. The first indication that mediation has occurred comes from examining the total effect and direct effect of exhaustion on job performance in Figure II. Notably, exhaustion was no longer a significant predictor of job performance after controlling for the anticipated mediator, job satisfaction (total effect coefficient: -0.13, $p < 0.001$; direct effect coefficient: -0.02, $p = 0.55$). While this implies mediation, a more robust test is to examine the significance of the indirect effect of exhaustion on job performance through job satisfaction. The indirect effect was estimated using a bootstrap estimation approach with 5,000 bootstrapped samples, and results indicated that the indirect effect was significant (coefficient: -0.11, CI = -0.159, -0.065). A Sobel test also indicated the significance of this indirect effect at $p < 0.001$. Thus, H1 is supported.

Relative to the study's control variables, results indicated that firm and grouped role were significant predictors of job performance, but did not impact the mediating effect of job satisfaction. This was evidenced by the significance of both the direct effects (firm coefficient: 0.05, $p < 0.05$; grouped role coefficient: 0.11, $p < 0.05$) and the total effects (firm coefficient: 0.05, $p < 0.05$; grouped role coefficient: 0.11, $p < 0.05$).

Figure II: HYPOTHESIS TESTING AND INDIRECT EFFECT ESTIMATE



DISCUSSION

Utilizing COR theory, this study examines job satisfaction as a mediator between exhaustion and job performance in public accounting burnout. Given the extreme levels of exhaustion found in public accountants (e.g. Law et al., 2008; Jones et al., 2010; Chong & Monroe, 2015; Cooper et al., 2019), further study of the negative outcomes of this phenomenon and how to minimize these is an important research focus. The inherent nature of public accounting, with its long hours and inflexible client deadlines, can make it difficult for firms to positively affect the role stressors that lead to exhaustion. For this reason, this study focuses on exhaustion's outcomes rather than its antecedents. While the most cited accounting burnout model (Fogarty et al., 2001) specifies job satisfaction and job performance as separate, negative consequences of burnout, this study finds that job satisfaction mediates the relationship between exhaustion and job performance in public accountants.

The results of this study have both theoretical and practical implications. From a theoretical perspective, this is the first accounting burnout study that examines job satisfaction as a mediator between exhaustion and job performance. The result adds to the accounting burnout literature by offering an alternative specification for job satisfaction in the accounting burnout model. While the study of the relationship between job satisfaction and job performance is regarded as one of the most "venerable research traditions in industrial-organizational psychology" (Judge et al., 2001, p. 376), the interrelatedness of these two constructs has not garnered significant attention in the accounting burnout literature. This study addresses this lack of attention and, by utilizing COR theory and the job satisfaction-job performance literature, broadens research in accounting burnout by specifically examining the order and relationship among exhaustion's negative consequences. This highlights the importance of assimilating relevant theories from other academic disciplines into accounting burnout research to promote a better understanding of how address the phenomenon in the profession.

From a practical perspective, the study offers potentially important insights for accounting firm management. Given the need for consistently high job performance in public accounting as a public service, research identifying strategies to minimize exhaustion's impact on decreased job performance is critical. The result that job satisfaction mitigates exhaustion's effect on job performance suggests that accounting firms should make efforts to increase job satisfaction in their employees.

Extant literature provides several recommendations for improving job satisfaction. First, job satisfaction can be increased in accounting firms with robust mentoring programs (Reinstein, Sinason, & Fogarty, 2012). Mentoring has both interpersonal and psychological benefits and results in employees that are more satisfied than non-mentored employees (Ensher, Thomas, & Murphy, 2001). Mentoring also combats turnover, which is another established negative consequence of exhaustion (Fogarty et al., 2000; Reinstein et al., 2012). Second, firms can improve job satisfaction through the use of equitable promotion systems and positive styles of management (Moyes, Shao, & Newsome, 2008). The influence of management style in the accounting burnout model is corroborated by findings that a supervisor's collaborative management style can influence the way the role stressors that cause exhaustion are experienced

by employees (Cooper et al., 2019). Thus, the reasons to focus on management style to mitigate the negative consequences of burnout are multi-faceted. Third, firms can focus on providing employees work that is interesting and challenging. Job satisfaction improves when employees can fully utilize their abilities to accomplish tasks and declines when employees are subjected to monotonous work (Kovach, 1995). This is congruent with research indicating that job satisfaction is improved when employees believe their work is significant and meaningful (Peppercorn, 2019). For this and other reasons (i.e. promoting ethical behavior), firms should continually educate employees about the importance of their work in the proper functioning of capital markets and the reliance placed upon their services by investors and other stakeholders. Fourth, job satisfaction can be improved by minimizing inter-role conflict in the accounting setting (Lui, Ngo, & Tsang, 2001). For example, job satisfaction can suffer when there is conflict related to incompatible role requirements such as competing client deadlines for two different supervisors. Accounting firm supervisors can collaborate in the scheduling of staff and seniors and carefully monitor competing deadlines to minimize inter-role conflict.

Through increasing job satisfaction, firm management may be able to combat the deleterious job performance effects of exhaustion. This is key in a profession that protects the public interest and is heavily relied upon by investors and creditors. Further, given meta-analytic research indicating that job satisfaction is predictor of turnover (Hom & Griffeth, 1995), accounting firms may also reap retention benefits from their job satisfaction efforts.

LIMITATIONS AND FUTURE RESEARCH

The results of this study should be examined in conjunction with certain inherent limitations. The study uses self-reported data from voluntary survey participants. While the authors took measures to reduce the likelihood of common method bias, there is risk of such bias when utilizing self-reported survey data. Further, given voluntary survey participation, the responses of the participating individuals may not represent those of the larger population in these firms. Finally, the firms surveyed in this study are small and regional public accounting firms from the same geographic region, which means generalizability may be limited.

Future research could examine the mediating role of job satisfaction in the relationship between exhaustion and job performance in larger firms and in other geographic regions. Also, as the current study looked at this relationship outside the traditional busy season, researchers could collect data during the first quarter of the calendar year to determine whether the stressors unique to that period significantly alter the mitigating role of job satisfaction on the relationship between exhaustion and job performance. Further, this study provides a basis for examining the mediating effects of job satisfaction in the exhaustion-job performance relationship in other professions, particularly jobs with higher complexity where the causal effect of job satisfaction on job performance is stronger (Judge et al., 2001).

Future research could also explore the relationship between job satisfaction and psychological well-being in the context of the accounting burnout model. In one public accounting burnout study, Jones and colleagues (2010) reported that the impact of job burnout on

job satisfaction, job performance, and turnover intentions, occurred through psychological well-being. While it is not as common to see the psychological well-being construct in accounting burnout studies, psychological well-being is widely regarded as a related, but broader, construct than job satisfaction that encompasses the effectiveness of an individual's overall psychological functioning (e.g., Wright & Cropanzano, 2000; Wright & Bonett, 2007) and has been linked to job performance (Wright & Cropanzano, 2000). Future studies could seek to determine the specification of psychological well-being within the accounting burnout model in light of this study's finding about the mediating role of job satisfaction between exhaustion and job performance.

Another opportunity for future research relates to the motivation construct, which is regarded as a resource in COR theory and has also been shown to act as a mediator between exhaustion and job performance in the industrial and organizational psychology literature (see Halbesleben & Bowler, 2007). Motivation has not yet been explored as a mediator between exhaustion and job performance in the context of accounting burnout. If this mediating relationship was also found in public accounting, this would offer firm management another focus area (efforts to improve motivation) that could mitigate the effects of exhaustion on job performance.

As noted by the American Institute of Certified Public Accountants (AICPA, 2019), "a CPA, or Certified Public Accountant, is a trusted financial advisor who helps individuals, businesses, and other organizations plan and reach their financial goals." Public accountants cannot, however, be as effective in helping businesses reach their financial goals if exhaustion is negatively impacting job performance. As the long hours and client demands make it challenging for firms to affect the role stressors that lead to exhaustion, it is important for accounting burnout researchers to investigate practical mechanisms to mitigate exhaustion's impact on decreased job performance. The current study accomplishes this by extending accounting burnout research and offering accounting firm management insights on how efforts to improve job satisfaction may help them preserve the high levels of job performance that both the profession and the public demand.

REFERENCES

- Al Shbail, M., Salleh, Z., & Mohd Nor, M. N. (2018). Antecedents of burnout and its relationship to internal audit quality. *Business & Economic Horizons*, 14(4): 789–817.
- American Institute of Certified Public Accountants. (2019). Frequently Asked Questions FAQs - Become a CPA. Retrieved from <https://www.aicpa.org/becomeaicpa/gettingstarted/frequentlyaskedquestions.html>.
- Baron, R. M., & Kenny, D. A. (1986). The moderator- mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6): 1173-1182.
- Bowling, N. A., & Hammond, G. D. (2008). A meta-analytic examination of the construct validity of the Michigan organizational assessment questionnaire job satisfaction subscale. *Journal of Vocational Behavior*, 73(1): 63-77.
- Brewer, E. W., & Clippard, L. F. (2002). Burnout and job satisfaction among student support services personnel. *Human Resource Development Quarterly*, 13(2): 169-186.

- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In *Testing structural equation models*: 136-162. Eds. Bollen, K. A. & Long, J. S. Newbury Park, CA: Sage.
- Byrne, B. M. 1998. *Structural Equation Modeling with LISREL, Prelis, and Simplis: Basic Concepts, Applications, and Programming*. Mahwah, NJ: L. Erlbaum.
- Chong, V. K., & Monroe, G. S. (2015). The impact of the antecedents and consequences of job burnout on junior accountants' turnover intentions: A structural equation modeling approach. *Accounting & Finance*, 55(1): 105-132.
- Choo, F. 1986. Job stress, job performance, and auditor personality characteristics. *Auditing*, 5 (17).
- Cooper, M. L., Knight, M. E., Frazier, M. L., & Law, D. W. (2019). Conflict management style and exhaustion in public accounting. *Managerial Auditing Journal*, 34(2): 118-141.
- Cordes, C., & Dougherty, T. (1993). A review and an integration of research on job burnout. *The Academy of Management Review*, 18(4): 621.
- Cropanzano, R., Rupp, D. E., & Byrne, Z. S. (2003). The relationship of emotional exhaustion to work attitudes, job performance, and organizational citizenship behaviors. *Journal of Applied Psychology*, 88(1): 160-169.
- Diamantopoulos, A., & Siguaw, J. A. (2000). *Introducing LISREL*, edited by Wright, D, B. London, Thousand Oaks, New Delhi: Sage.
- Eagly, A. H., & Chaiken, S. (1993). *The Psychology of Attitudes*. Fort Worth, TX: Hartcourt Brace Jovanovich.
- Ensher, E. A., Thomas, C., & Murphy, S. E. (2001). Comparison of traditional, step-ahead, and peer mentoring on proteges' support, satisfaction, and perceptions of career success: A social exchange perspective. *Journal of Business and Psychology*, 15: 419-438.
- Fishbein, . (1973). The prediction of behaviors from attitudinal variables. In *Advances in communication research*: 3-38. Eds. Mortensen, C. D. & Sereno, K. K. New York: Harper & Row.
- Fisher, R. T. (2001). Role stress, the Type A behavior pattern, and external auditor job satisfaction and performance. *Behavioral Research in Accounting*, 13: 143-170.
- Fogarty, T. J., Singh, J., Rhoads, G. K., & Moore, R. K. (2000). Antecedents and consequences of burnout in accounting: Beyond the role stress model. *Behavioral Research in Accounting*, 12: 31-67.
- Gliner, J. A., & Morgan, G. A. (2000). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Guthrie, C. P., and Jones, A. (2012). Job burnout in public accounting: Understanding gender differences. *Journal of Managerial Issues*, 24(4): 390-411.
- Halbesleben, J. R. B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology*, 92(5): 1134-1145.
- Halbesleben, J. R. B., & Bowler, W. M. (2007). Emotional exhaustion and job performance: The mediating role of motivation. *Journal of Applied Psychology*, 92(1): 93-106.
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4): 408-420.
- Herda, D., & Lavelle, J. (2012). The auditor-audit firm relationship and its effect on burnout and turnover intention. *Accounting Horizons*, 26(4): 707-723.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3): 513-524
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50(3): 337-421.
- Hobfoll, S. E. & Freedy, J. (1993). In Conservation of resources: A general stress theory applied to burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout:Recent developments in theory and research*. Washington, DC: Taylor and Francis.
- Hom, P. W., & Griffeth, R. W. (1995). *Employee turnover*. Cincinnati, OH: South/Western.
- Hsieh, Y.-H., & Wang, M.-L. (2012). The moderating role of personality in HRM – from the influence of job stress on job burnout perspective. *International Management Review*, 8(2): 5-18.

- Jackson, S. E., Schwab, R. L., & Schuler, R. S. (1986). Toward an understanding of the burnout phenomenon. *Journal of Applied Psychology*, 71: 630-640.
- Janssen, O., Lam, C. K., & Huang, X. (2010). Emotional exhaustion and job performance: The moderating roles of distributive justice and positive affect. *Journal of Organizational Behavior*, 31(6): 787-809.
- Jones, A., Guthrie, C. P., & Iyer, V. (2012). Role stress and job outcomes in public accounting: Have the gender experiences converged? *Advances in Accounting Behavioral Research*, 15: 53-84.
- Jones, A., Norman, C. S., & Wier, B. (2010). Healthy lifestyle as a coping mechanism for role stress in public accounting. *Behavioral Research in Accounting*, 22(1): 21-41.
- Judge, T., Thoresen, C., Bono, J. & Patton, G. (2001). The job satisfaction- job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127(3): 376-407.
- Jui, L., and Wong, J. (2013). Roles and importance of professional accountants in business. *International Federation of Accountants*. Retrieved from <https://www.ifac.org/news-events/2013-10/roles-and-importance-professional-accountants-business>.
- Kline, R. B. (1998). *Principles and Practices of Structural Equation Modeling*. New York, NY: The Guilford Press.
- Kovach, K. A. (1995). Employee motivation: Addressing a crucial factor in your organization's performance. *Employment Relations Today*, 22: 93-107.
- Law, D. W. (2007). Exhaustion in university students and the effect of coursework involvement. *Journal of American College Health*, 55: 239-245.
- Law, D. W., Sweeney, J. T., & Summers, S. L. (2008). An examination of the influence of contextual and individual variables on public accountants' exhaustion. *Advances in Accounting Behavioral Research*, 11(129).
- Lee, R. T., & Ashforth, B. E. (1996). A meta- analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81(2): 123-133.
- Lui, S. S., Ngo, H.-Y., & Tsang, W.-N. A. (2001). Inter-role conflict as a predictor of job satisfaction and propensity to leave. *Journal of Managerial Psychology*, 16(6): 469-484.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7: 83-104.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39: 99-128.
- Maslach, C. (1982). Understanding burnout: Definitional issues in analyzing a complex phenomenon. In W. Paine (ed.), *Job stress and burnout: research, theory, and intervention perspectives* (pp. 29-40). Beverly Hills, CA: Sage Publishers.
- Maslach, C., Jackson, S.E. (1986). *Maslach burnout inventory manual*. Palo Alto, CA: Consulting Psychologist Press.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior*, 2(2): 99-113.
- Maslach, C., Jackson, S. E., & Leiter, M. P. 1996. *Maslach burnout inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., Schaufeli, W. B. & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1): 397.
- Moyes, G. D., Shao, L. P., & Newsome, M. (2008). Comparative analysis of employee job satisfaction in the accounting profession. *Journal of Business and Economic Research*, 6(2): 65-82.
- Muchinsky, P. M. (2006). *Psychology applied to work* (8th ed.), Belmont, CA: Thomson Wadsworth.
- Ng, T. W. H., Sorensen, K. L., & Yim, F. H. K. (2009). Does the job-satisfaction/job-performance relationship vary across cultures? *Journal of Cross-Cultural Psychology* 40: 761-796.
- Nisar, S. K., & Rasheed, M. I. (2020). Stress and performance: Investigating relationship between occupational stress, career satisfaction, and job performance of police employees. *Journal of Public Affairs* 20(1): 1-9.
- Peppercorn, S. (2019). Why you should stop trying to be happy at work. *Harvard Business Review*. Retrieved from <https://hbr.org/2019/07/why-you-should-stop-trying-to-be-happy-at-work>.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, H. P. (2003). Common method bias in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5): 879-903.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, and Computers, 36*(4): 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavioral Research Methods, 40*(3): 879-891.
- Reinstein, A., Sinason, D. H., & Fogarty, T. J. (2012). Examining mentoring in public accounting organizations. *Review of Business, 33*(1): 40-49.
- Saxton, M. J., Phillips, J. S., & Blakeney, R. N. (1991). Antecedents and consequences of emotional exhaustion in the airline reservations service sector. *Human Relations, 44*(6): 583-595.
- Schleicher, D.J., Watt, J. D., & Greguras, G. J. (2004). Reexamining the job satisfaction-performance relationship: The complexity of attitudes. *Journal of Applied Psychology, 89*: 165-177.
- Shirom, A. (1989). Burnout in work organizations. In C. L. Cooper & I. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 25-48). John Wiley & Sons, New York.
- Simanjuntak, P. I. (2020). The effect of emotional exhaustion and job satisfaction on employee performance at Telkomsel RTPO Work Unit in Sumatera Area. *International Journal of Research and Review, 7*(1): 37-46.
- Spagnoli, P., Caetano, A., & Santos, S. C. (2012). Satisfaction with job aspects: Do patterns change over time? *Journal of Business Research, 65*(5): 609-616.
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences* (Vol. 3). Thousand Oaks, CA: Sage Publications.
- Strauss, G. (1968). Human relations – 1968 style. *Industrial Relations, 5*: 262-276.
- Sweeney, J. T., & Summers, S. L. (2002). The effect of the busy season workload on public accountants' job burnout. *Behavioral Research in Accounting, 14*(223).
- Swider, B. W., & Zimmerman, R. D. (2010). Born to burnout: A meta-analytic path model of personality, job burnout, and work outcomes. *Journal of Vocational Behavior, 76*: 487-506.
- Tuithof, M., Ten Have, M., Beekman, A., Ban Dorsselaer, S., Kleinjan, M., Schaufeli, W., & De Graaf, R. (2017). The interplay between emotional exhaustion, common mental disorders, functioning and health care use in the working population. *Journal of Psychosomatic Research, 100*: 8-14.
- U.S. General Accounting Office, Accounting and Information Management Division. (1996). The accounting profession. Major issues: Progress and concerns. *Report to the Ranking Minority Member, Committee on Commerce, House of Representatives*. (AIMD-96-98). Washington, D.C. U.S. Government Printing Office.
- World Health Organization. (2019). Burn-out an “occupational phenomenon”: International Classification of Diseases. Retrieved from https://www.who.int/mental_health/evidence/burn-out/en/.
- Wright, T. A., & Bonett, D. G. (1997). The contribution of burnout to work performance. *Journal of Organizational Behavior, 18*(5): 491-499.
- Wright, T. A., & Cropanzano, R. (2000). Psychological well-being and job satisfaction as predictors of job performance. *Journal of Occupational Health Psychology, 5*: 84-94.
- Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology, 83*: 486-493.
- Wright, T. A., & Hobfoll, S. E. (2004). Commitment, psychological well-being and job performance: An examination of conservation of resources (COR) theory and job burnout. *Journal of Business and Management, 9*(4): 389-406.

APPENDIX A

Survey Questions

Emotional Exhaustion (5 questions)

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Job Satisfaction (3 questions)

- All in all I am satisfied with my job.
- In general, I like my job.
- In general, I like working here.

Job Performance (12 questions)

- I am satisfied with the quantity of work product.
- I am satisfied with the quality of my work product.
- I am satisfied with my oral communication skills.
- I am satisfied with my written communication skills.
- I am satisfied with my ability to accept responsibility and initiate positive action.
- I am satisfied with my ability to exercise my professional skills and due care.
- I am satisfied with my ability to follow policies and procedures.
- I am satisfied with my ability to plan and organize my work.
- I am satisfied with my ability to adapt to new situations.
- I am satisfied with my ability to get along with others in the firm.
- I am satisfied with my ability to get along with client personnel outside the firm.
- I am satisfied with my ability to supervise others.

ANALYZING THE FINANCIAL BURDEN OF USING STUDENT LOANS TO FINANCE A COLLEGE EDUCATION

James Nolan, Siena College
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ABSTRACT

Increasing the educational level of a population, especially at the tertiary level is key to a country's economic stability and long-term growth and prosperity. However, the rising costs associated with the college process have given rise to grave concern for students who pursue the process and are left with insurmountable college loans. This paper looks at student loan borrowing by college students and examine what propels students to take loans and the mitigating factors that may prevent them from repaying those in a timely fashion or not at all. The paper is structured as follows. It begins with a look at the history of student loans, followed by a literature review, a description of the research methodology and a detailed set of results. The purpose of this research project is to delve deeper into the student loan debacle and to find out more about the mitigating factors and antecedents that relate to college students and their student loans.

KEYWORDS: College Students; College Loans; Tertiary Education; College Financing

INTRODUCTION

Increases in educational costs and the corresponding increase in underemployment and unemployment levels of graduates has led to increased scrutiny from many arenas regarding college students and their student loan debt (Avery, 2012). Existing research offers three key explanations for the increases in college loan borrowing by students. These include escalating college tuition prices, increases in college enrollment rates, and changes in federal loan structuring and policies that seem to encourage increased borrowing by college students (Baker et al, 2006). Given the pressure to remain competitive in today's environment, many countries have encouraged their students to go beyond their secondary level of education and pursue a tertiary level of education (Friedman, 2018). The detracting issue is that the latter requires increased costs that are not feasible on many families' incomes and instead requires some level of borrowing, in the form of student loans (McCabe, 2016). The debate on the cost versus benefit of student loans has been seen in recent years as an issue that deserves another detailed look (Johnson et al, 2016).

There is no doubt that a tertiary level of education, i.e. a college degree, remains a sound investment for those who can afford to engage in the process (Avery and Turner, 2012; Weber,

2016). Increasing the educational level of a population, especially at the tertiary level is key to a country's economic stability and long-term growth and prosperity. However, the rising costs associated with the college process have given rise to grave concern for students who pursue the process and are left with insurmountable college loans, regardless of whether or not they have completed the process and achieved a degree (Perna, 2002). A number of government policy decisions have been proposed to address rising college costs, including providing more financial subsidies for college that will not have to be repaid (Johnson, 2016); paying closer attention to for-profit tertiary institutions and the guidance (or lack thereof) they provide their students in regards to college loans (Cellini and Darolia, 2015); looking very seriously at federal and state policies that provide alternatives to loans on the front-end (before attending college) and the back-end (after completing college) such as expanding loan forgiveness programs, or giving students the option to earn scholarships and grants before the process (Zhou and Mendo, 2015; Diris and Ooghe, 2018).

In this paper, we look at student loan borrowing by college students and examine what propels students to take loans and the mitigating factors that may prevent them from repaying those in a timely fashion or not at all. The paper is structured as follows. It begins with a look at the history of student loans, followed by a literature review, a description of the research methodology and a detailed set of results. The purpose of this research project is to delve deeper into the student loan debacle and to find out more about the mitigating factors and antecedents that relate to college students and their student loans. The debate regarding whether student loans should be forgiven or whether student loans are a burden to students and how that burden could be alleviated is too extensive and will not be debated here (Dynam, 2020; Dynarski, 2015; Sullivan et al, 1999).

THE HISTORY OF STUDENT LOANS

The first historic move towards creating student loans for tertiary education came after World War II. Soldiers who returned to the United States, after being deployed to fight in a war abroad, were beginning to use their G.I. Bill (officially known as the Serviceman's Readjustment Act of 1944) benefit to go to college (McConnell, 2013). The G.I Bill was not a loan, but a deferred compensation for enlisted men and women who at the time had served in World War II (McConnell, 2013). In 1947, the United States President's Commission on Higher Education proposed that each citizen of the United States should be allowed access to a tertiary level of education, regardless of race, creed, color, sex, socioeconomic status, national origin and ancestry (McConnell, 2013). In order to achieve that goal, they proposed a federally funded, need-based scholarship program to provide access to all United States citizens. In 1958, the United States congress enacted the National Defense Student Loan Program (Perkins Loan) to encourage US students to attend college and reduce deficiencies of US students versus citizens in other countries, in the areas of Mathematics, Science and Engineering (McConnell, 2013).

In 1965, the Higher Education Act (HEA) was created to fund various aspects of tertiary education at various U.S. institutions (McConnell, 2013). In a related vein, Title IV funding, which included four parts, was specifically created to provide tertiary student financial assistance

(McConnell, 2013). In 1992, a reauthorization of the 1965 HEA changed the designation of institution of higher education to that of postsecondary educational institutions (McConnell, 2013). This change allowed a wider range of options for students seeking a post-high school education (McConnell, 2013).

The increased access to loans and the wider options to which those post-secondary education could be applied, led to high levels of debt for college students and alumni. The college graduating class of 2009 held an average loan debt of \$24,000 (McConnell, 2013). By 2017, that average had risen to \$28,650 (Friedman, 2019). Current statistics put the total student loan debt amount at \$1.56 trillion, with a default rate (of 90 plus days) of 11.4%. One can see why college students, their rates of borrowing and the long-term implications have garnered such intense scrutiny.

LAWS AND EXECUTIVE ORDERS RELATED TO STUDENT LOANS

The journey regarding the current issues related to student loans and college students spans seven decades and is similar to other loan processes, such as mortgages that have evolved over the last several decades. The table below provides intricate details about the history and the laws enacted regarding student loans. The information presented shows a concerted effort to make loans available to more students, at easier rates and with increased convenience.

Exhibit 1 - Laws and Executive Orders Related to Student Loans

1944	Congress passed the G.I. Bill, one of the most impactful legislative achievements of all time. Among other things, the bill offered financial assistance to veterans of the U.S. armed forces who wanted to attend college following their discharge from the military.
1956	Massachusetts Higher Education Assistance Corporation (MHEAC) started a guaranteed student loan program in Massachusetts, which insured students' bank loans with money raised through philanthropic donations from local businesses. This program provided a model for a future student lending program.
1958	The National Defense Education Act (NDEA) created the National Defense Student Loan (NDSL) Program, the first federal loan program, now called the Federal Perkins Loan Program. Distributed to students by institutions, these loans required a monetary match from institutions.
1965	The first Higher Education Act (HEA) created Guaranteed Student Loans (GSL), a public-private partnership with the federal government subsidizing capital from banks to provide loans to low and middle-income students.
1972	The HEA Reauthorization Act created the Student Loan Marketing Association (eventually Sallie Mae), originally to add liquidity to the GSL program by buying loans from lenders to add more capital.
1976	HEA Reauthorization provided incentives for states to establish loan guaranty agencies, which insured federal student loans made by lenders.

1978	The Middle-Income Student Assistance Act (MISAA) eliminated the income requirement for student loans, allowing middle and high-income students to qualify for loans. The Act was repealed in 1981, but other income expansions followed.
1980	As part of the 1980 HEA reauthorization, the PLUS program was created to allow parents to borrow for their children's education.
1981	The Omnibus Reconciliation ACT repealed MISAA, replaced the PLUS program with Auxiliary Loans to Assist Students (ALAS) and extended borrowing to graduate and independent undergraduate students. It also imposed borrower loan origination fees on new loans.
1986	The HEA Reauthorization of 1986 added provisions prohibiting students in default under GSL from receiving new federal loans. It also gave the Department of Education more power to regulate student loan lenders. It split ALAS into the Supplemental Loan to Students (SLS) for graduate and independent students and brought back PLUS loans for parents. It also created consolidation loans, but borrowers who had different lenders could not consolidate (known as the single holder rule).
1990	The Cohort Default Rate (CDR) was established, eliminating student borrowing eligibility at schools with high default rates for three consecutive years. The way this is calculated has changed over the years.
1992	In the 1992 HEA Reauthorization, direct lending was introduced through a demonstration program that made unsubsidized Stafford loans available to all students and removed annual and aggregate borrowing limits on PLUS loans. This act also restructured Stafford loans and PLUS loans into the Federal Family Education Loan (FFEL) Program.
1993	The 1993 Omnibus Budget Reconciliation Act, formally (OBRA), called for a phasing in of the Direct Loan Program to begin in 1994. It also established Income-Contingent Repayment, Extended Repayment Plan and Graduated Repayment Plan for Direct Loan Borrowers.
1998	The Income-Sensitive Repayment Plan for FFEL borrowers was established, allowing FFEL borrowers to be eligible for extended and graduated Plans.
2005	The Higher Education Reconciliation Act (HERA) allowed for professional and graduate students to borrow through the PLUS program.
2006	The Emergency Appropriations Act (EAC) repealed the single holder rule, allowing borrowers to consolidate loans between lenders.
2007	The College Cost Reduction and Access Act (CCRAA) established the Income-Based Repayment Plan
2008	The Higher Education Opportunity Act (HEOA) mandated that cohort default rates be calculated to include students in default three years after entering repayment and that the U.S. Department of Education publish those rates. The Ensuring Continued Access to Student Loans Act (ECASLA) temporarily authorized the U.S. Education Department to buy loans from private lenders to ensure students had access to capital during the financial downturn.

2010	The Health Care and Education Reconciliation Act (HCERA) repealed the FFEL programs so that all new federal student loans - except for Perkins Loans - would be made directly from the government to students, saving administrative costs. The terms of the IBR are revised by Congress to lower the payment cap and forgive loans five years sooner than previously for a limited subset of students (those taking their first loans after July 1, 2014).
2011	The Obama Administration created the Pay As You Earn (PAYE) plan via executive order, extending more generous terms to a larger group of borrowers. The Budget Control Act eliminated subsidized loans for graduate and professional students.
2014	The Obama Administration, via an executive order, expanded the PAYE plan to individuals outside of the original 2011 scope, to all borrowers with Direct Loans.

Source: A History Related to Federal Student Aid: Lumina Foundation- Chapter 1

Dynarski (2014), a famed economist that has looked comprehensively and extensively on student loan debt, looked long term at student loans over several decades and debated the implication of student loan policies and the impact these policies had on students and their repayment vulnerability. The author concluded that student loans were made accessible to students to reward them (G.I. Bill); when the students needed additional funds to pay for a tertiary level of education (NDEA, HEA, HER) and to protect students in times of crises (HEA, CDR), (Dynarski, 2014). The author also noted that student loan defaults have accelerated in times of economic crises such as the Recession after 1998 and 2008 (Dynarski, 2014). Finally, the author concludes that we do not currently have a student loan debt crisis, instead we have a student loan repayment crisis and that new policies, laws and executive orders should focus on addressing that crisis – similar to what was done with President’s Obama’s PAYE executive order and the CRRRA of 2007 (Dynarski, 2014).

LITERATURE REVIEW

The literature review on students and college loans covers a variety of subject areas: college loans and issues; the rising costs of college; the impact of race, wealth, socioeconomic status on the probability of taking a college loan ; college loans and issues of first-generation students; college loans and its presence in increasing the likelihood of attending college; college loans and for-profit institutions; the impact on wealth on the probability of taking college loans; borrowing constraints on college loans; a student's GPA (Grade Point Average) on the probability of taking college loans.

To begin, four key studies have looked at how college loans increases the accessibility of a college education for students (Dynarski, 2003; Jackson and Reynolds, 2013; Rosinger et al, 2019; Baker et al, 2017). Dynarski (2003) found that additional college loans, even amounts as low as \$1000, did, in fact, increase the likelihood that someone would attend college. These results were echoed in a study from Jackson and Reynolds (2013) who added a caveat of including a look across racial lines. The authors found that for racial minorities, accessibility to college was more likely to increase at a greater rate with student loans, compared to their Caucasian counterparts (Jackson and Reynolds, 2013). They further found that college loans

were particularly instrumental in getting said, racial minorities, to graduate from college (Jackson and Reynolds, 2013). Rosinger et al (2019) looked across socioeconomic classes and found that middle class students were the most to benefit from increased access to college loans with increased enrollment and graduate rates. Baker et al (2017) and Friedman (2017) found similar results but cautioned that their follow up research had indicated that these loans, if not managed well, could be detrimental to the same group of students it had been most purported to help.

Access to college finances interacts across racial, socioeconomic and inter-generational lines. Engle and Tinto (2008) maintained that as the United States continues to realize the importance of increasing the educational attainment of its citizens as key to its future economic stability in the global marketplace, improving postsecondary access and success among underrepresented populations, such as low-income, first-generation students, is paramount, with the authors conceding that not enough had been done to rectify this deficiency. In a similar vein, Perna (2000) and McCabe and Jackson (2016), in studies sixteen years apart, and Page et al (2016) all concluded that enough was not being done to alleviate the financial college burden for lower income individuals and that racial minorities with lower socioeconomic status continued to borrow heavily to finance their college education. Hotz et al (2016) and McDonough et al (2006) in their assessment across socioeconomic classes concluded that wealth played a significant role in determining whether a student attended college and subsequently completed college. The implication being that financial backing, that was not loans, played a key role in reducing the stress level and likelihood that a student would attend college (Hotz et al, 2016).

Two important studies looked at the impact of GPA (Grade Point Average) on access to and impact of college loans (Robb, 2017; Stoddard et al, 2018). Both studies showed that students with lower GPAs were more likely to take higher loan amounts and also experienced higher levels of stress (Robb, 2017; Stoddard et al, 2018). The implication from the studies is that students with lower GPAs are less likely to qualify for scholarships and grants and have negative academic performance because of the added stress of lack of access to financial assistance (Robb, 2017; Stoddard et al, 2018).

A study by Johnson et al (2016) looked to understand the decision-making process college students maneuver when borrowing money to finance their education. The authors concluded the following critical points: (a) students relied heavily on advice from parents, guidance counselors, and friends; (b) attending college was not possible without student loans; and (c) students knew very little about the loans they would be responsible for repaying (Johnson et al, 2016).

Several very impressive research studies, based on research in the United States, have completed assessments on college athletes and their positioning vis-a-vis their financial debt, student loans and financial obligation to the colleges they attend. More specifically these studies have looked at student debt, academics, student retention, athletic revenue, financial aid, stress, facilities, education and eating. The articles showing the most coverage focused on student athletes and their financial debt. Williams et al (2015) contended that the current student loan debt structure did not assist students in getting out of debt. This was particularly potent for students athletes who relied heavily on loans outside of their college scholarships as they were

often unable to hold jobs, part-time or otherwise when in college (Williams et al, 2015). Rothstein et al (2011) looked at college athletes at a highly selective university and concluded that how much student athletes took in student loans was directly related to their expectations regarding the type of job they will take after graduation and their likelihood of going on to graduate school. Avery (2012) contends that a college education is probably not for everyone and that said education should not be sought at the expense of lifelong debt. In a similar vein, Dynarski (1994), Shen et al (2008) and Akers (2014) all contend that college students and especially college athletes are often surprised at their college debt levels and are more than unlikely unaware what their repayment amounts are versus their counterparts. Dynarski (1994) further pointed out that racial minority students, students were not counseled on student loan debt and students who had parents who were high school dropouts were more likely to default on their student loans.

Four important articles looked at student loan debt for college athletes and the intersection with financial aid issues. Mendoza et al (2012) found that student athletes had different experiences with financial aid depending on their economic status, gender, race and ethnicity. The authors concluded that racial minorities, ethnic minorities, females and those from lower economic status were more likely to experience a more negative experience with financial aid (Mendoza et al, 2012). Mendez et al (2009) investigated and found that student athletes who received athletic scholarships and financial aid were more likely to complete their degrees versus athletes who only received athletic scholarships. These sentiments were echoed by Bandre et al (2011) who used a different sample from Division III colleges and Linsenmeier et al (2002) who looked at racial minorities.

In a predictable fashion, Simmons et al (1999), Hobneck et al (2003) and Etzen (1987) found that student athletes who were given more financial aid and college scholarships had less fears of graduating, less fears of finding a job, did better academically and were more committed to both the sports and academic commitments while in college. In addition, Etzen (1987) further found that male athletes were less prepared than their female counterparts for college and that racial minority athletes were less prepared than their nonminority counterparts for the college academics.

Miscellaneous studies from other researchers found that college athletes were more likely to complete their degrees if they were provided with emotional support at school and at home, and that environmental factors and academic ability all help to propel student athletes to complete their studies (Wohlgemouth et al, 2007). Shropshire (1990) three decades ago advocated for college athletes to be paid additional amounts to their college scholarships and financial aid, amounts that would be equivalent to having a job. This debate has been reignited in the media recently. Orleans (2013) has an almost opposite argument, stating that college athletes receive too much in financial help, financial aid and athletic scholarships. Stress from participating in college sports has impacted the eating habits of college athletes, especially college women who participate in sports (Hellmish, 2006; Nguyen-Michel et al, 2006). Schneider et al (2012) looked at the reasons college athletes choose where they would play and found that facilities, playing time and most importantly financial aid, college scholarships and lesser student loans impacted their final choices.

College student loan debt is just not unique to the United States. A number of very impressive international research studies have been completed on college students and their positioning vis-a-vis their financial debt, student loans and financial obligation to the colleges they attend. More specifically three studies have looked overall at college students in the several international countries. Usher (2005) looked at college student loan debt in eight countries, namely Australia, Canada, Germany, The Netherlands, New Zealand, Sweden, the United Kingdom (England and Wales), and the United States (see Figure 1). After an intricate analysis, the author concluded that how “good” any given country appears to be on student debt varies considerably based on a variety of factors, including an individual student’s income and outstanding debt (Usher, 2005). Johnstone (2001) and Britton et al (2019) in a similar being and approximately two decades apart also concluded that factors that impact student loans for college students differ across countries based on various issues. The latter article looks at use of income contingent loans (ICLs) for Higher Education (HE) students is becoming increasingly prevalent around the world and that the magnitude and distribution of government subsidies is highly dependent on the institutional setting (Britton et al, 2019). The former article examines the challenges of student lending in low-income, or “less industrialized,” countries, as well as countries “in transition” from predominantly state-owned means of production and governmentally-controlled economies, to market-oriented economies with substantial private ownership, concluding that student loan programs are among the most complex, controversial, frequently misunderstood, and yet potentially important elements in the financing of higher education (Johnstone, 2001).

Four studies on student loan debt in developing countries speak to the trials, tribulations, nuances and difficulties for tertiary level students and their difficulty in obtaining financial assistance. Albrecht et al (1991) felt that in some countries income contingent payments may be more equitable for limiting risk to poorer students. In general, deferred cost recovery can help reduce government burdens, but only where institutional capacity exists. In a similar vein, Woodhall (1987; 1988) in earlier studies and drawing on lessons from experience in Asia and English-speaking Africa, suggested some ways of improving performance of student loans in developing countries was to provide guidance regarding loan education. Kirby (2016) in an interesting study looked at college student debt in Anglophone countries, which are countries where English is the primary language and found that such countries had the highest student loan debt rate when compared to other countries.

Callendar et al ((2017) and Gayardon et al (2019) who looked at students in England concluded that college students from low social classes are more debt averse than those from other social classes, and are far more likely to be deterred from going to university because of their fear of debt, even after controlling for a wide range of other factors. While Sato et al’s (2019) study on Japanese college students concluded that there was a significant association between student loan debt and psychological distress among graduates, but not current university students. These findings are in keeping with similar previously mentioned findings in the United States, where stress over the totality of the college loan debt negatively impacts students and can deter the pursuance of a college degree.

Similarly focused studies from Chile, Brazil and Ghana have looked at student loan debt from varying degrees of oppression. Pavlic (2018) used a qualitative study to look at Chilean student demonstrations and opposition to the burdens caused by student loan debt. College students in Brazil showed their frustration with college student loan debt by arguing that the current Brazilian loan repayment time-based scheme involved unsustainable repayment burdens for many graduates and contributed to the scheme's high default rates (Dearden et al, 2019). While Dary's (2018) study on Ghanaian college students and their debt commitments revealed that college student's age, household size, parents' occupation, salary, number of income sources, and the length of the study program play a significant role in explaining the demand for student loans and the loan debt burden at completion among tertiary students. The authors further concluded that socio-economic factors should thus inform the design and administration of student loans for college students (Dary et al, 2018).

DATA AND RESEARCH METHODOLOGY

The sample for this study was derived from students at a primarily undergraduate college, located in upstate New York, in the suburb of Albany. The college was originally established as a male commuter school in 1937. It remained a single sex institution until 1969, when the first female students were admitted. By 2009, the female population at the institution had grown to 56%. The students who participated in this study included freshmen, sophomores, juniors and seniors. A total of 432 students ultimately completed the questionnaire, from the three Schools at the college, namely the School of Liberal Arts, the School of Business and the School of Science. The survey was completed by the students between April and June, 2018. These 432 students represented a response rate of 62%.

Some students were sent an email soliciting their participation in an online questionnaire. Other students were read a script in class by their professor, again soliciting their participation in either a hard copy or an online questionnaire. The questionnaire was designed to assess the source of funding for the students' college education. In the questionnaire, participants were asked to respond with varying degrees of intensity regarding the source of their college funding, as well as demographic data (such as age, gender, family income, sports involvement and living arrangement) to be used for a correlation assessment.

The data was analyzed using several statistical methods that allowed the culmination of descriptive statistics being analyzed as well as a correlation analysis. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. The descriptive statistics were analyzed using frequencies and percentages. Correlation coefficient analyses were also used to look at the relationships between student loan debt and other variables. Using correlation analysis in the data analytic stage of student loan research has precedence. This was previously undertaken by Cooper and Wang (2014) who looked at the correlation between student loan debt, wealth, home ownership and graduate education. Correlation analysis was also instituted in a study by Boatman et al (2017) who looked at student loan aversion across racial, socioeconomic and gender lines. Thus, using correlation analyses is a legitimate method of data analysis.

RESULTS AND DISCUSSION

The descriptive results begin with a look at the age of the students who participated in this study. In Table 1, the first panel shows the age range of all participants, the second panel shows the number of students in the study who are that age and the third panel shows the corresponding percentage of students that were a certain age. The majority of the students were in the 17-22 age group with the largest percent of the participants falling in this category. There were some outliers in the age group, with a few students in their late 20s, 30s and 40s.

Table 1: Age of Participants

Age of Participants	Number of Students	Percentage (%)
17	0	0.00
18	27	8.10
19	74	22.10
20	80	23.89
21	89	26.57
22	51	15.22
23	5	1.50
24	1	.3
25	2	.6
26	1	.3
28	2	.6
31	0	0.00
37	1	.3
39	0	0.00
46	2	.6
Question not Answered	1	.3
TOTAL	335	100.00

This Table provides results on the age of the participants in the study.

Table 2 shows the gender of the students who participated in this study. The first panel shows the gender of all participants (including a category of Self-Identify), the second panel shows the number of students in the study who belong to each gender and the third panel shows the corresponding percentage of students that were in each gender category. In looking at the gender of the participants, most were female, with a percentage at 52.97 percent. The participants also consisted of 46 percent males. Three students, 0.89 percent of the participants chose to self-identify (see Table 2).

The Table also shows the School Division to which students belong at the college. As stated earlier, there are three divisions at the college, namely Arts, Business and Science. The first panel shows the School Divisions at the college, the second panel shows the number of students in each division and the third panel shows the corresponding percentage of students that were in each division. The results showed that School of Arts made up 29.94 % with 99 responses. 50.30% of participants came from the School of Business with 168 participants. The School of Science only made up 20.06% with 67 responses.

The Table also shows the description of the participants based on the year in school. Panel A shows the years in college, namely Freshman, Sophomore, Junior and Senior. In looking at the year of study for the sample, the results showed that 18.02% of responses came from the Freshman class at 60 responses followed by Seniors which makes up 27.03% with 90 responses. Sophomores made up 26.73% with 89 responses, and the junior class contributed 27.03% at 90 responses.

The Table also shows the type of school participants came from before attending the current college. In the Table, the first panel shows the type of school attended before coming to Siena College, the second panel shows the number of students in the study who attended a particular educational institution and the third panel shows the number of students in each category. In looking at the type of school participants came from before attending the current college, it should be noted that 81.85% of the students who participated in this survey came to Siena College from a high school. 10.12% of student participants came from a community college. 8.04% came from another four-year college. One student chose not to respond or did not understand how to answer.

The Table also shows the type of high school participants attended before going to college. In the Table, the first panel shows the type of high school attended before going to college, the second panel shows the number of students in the study who attended a particular high school and the third panel shows the number of students in each category. In looking at the type of high school participants came from before attending the current college, it should be noted that 77.40% of participants came from a public high school. 18.50% of participants came from a private high school. 0.89% of participants came from a boarding school and 2.18% came from both a public and a private high school before Siena College.

The Table also shows where the participants reside while attending college. In the Table, the first panel shows the type of residency, the second panel shows the number of students living in a particular type of residency and the third panel shows the number of students in each category. In looking at the place of residency of participants, it should be noted that 76.05% of participants live on campus, while 23.95% of the participants live off campus.

The Table also shows whether the students participating in this study paid rent or not. In the Table, the first panel asks whether students paid rent or not, the second panel shows the number of students in the study who answered yes or no to this question and the third panel shows the number of students in each category. In looking at whether or not a student paid rent, it should be noted, 89.29% of participants do not pay rent. 10.12% of participants do pay rent and 0.59% did not answer.

Table 2: Descriptive Results

Gender	Number of Participants	Percentage (%)
Female	178	52.97
Male	155	46.13
Self-Identify	3	.89
TOTAL	336	100.00
School Division	Number of Participants	Percentages (%)
School of Art	99	29.64
School of Business	168	50.30
School of Science	67	20.06
TOTAL	334	100.00
Students' School Year	Number of Responses	Percentages (%)
Freshman	60	18.02
Sophomore	89	26.73
Junior	90	27.03
Senior	90	27.03
Masters	4	1.20
TOTAL	333	100.00
Students' Previous School Attendance	Number of Responses	Percentages (%)
Question was not Answered	0	0.00
Another Four-Year College	27	8.04

Community College	34	10.12
High School	275	81.85
TOTAL	336	100.00
Type of High School Attended	Number of Responses	Percentages (%)
Boarding	3	.89
Homeschool	1	.29
Private	62	18.50
Private and Public	10	2.98
Public	260	77.40
TOTAL	336	100.00
Students' Campus Residency Status	Number of Responses	Percentages (%)
Student does not Live on Campus	80	23.95
Student does Live on Campus	254	76.05
TOTAL	334	100.00
Students' Status of Paying Rent	Number of Responses	Percentages (%)
Question was not Answered	2	.59
Student does not Pay Rent	300	89.29
Student does Pay Rent	34	10.12
TOTAL	336	100.00

This Table provides results on the gender, the school they majored in at the college, the school year the students were in and the type of school participants in the study attended prior to attending the current college. It also provides results on the type of high school attended, their current residency status while at the college and looked at whether or not they were paying rent in their current residency situation.

Table 3 shows the family income of the students who participated in this study. The first panel shows the range of family income of all participants, the second panel shows the number of students in the study who correspond to a particular income and the third panel shows the

corresponding percentage of students that were in each category. In looking at the family income of the participants. Of the responses, 13.71% claim a family income between \$1 and \$50,000, 38.31% of responses claim their family income is between \$50,001 and \$100,000, 19.76% of responses had a family income between \$100,001 and \$150,000, 14.92% claim a family income between \$150,001 and \$200, 000, 6.45% claim a family income between \$200,001 and \$250, 000 while 3.23% claim between \$250,001 and \$300,000. 0.00% claim a family income between \$300,001 and \$350, 000, 1.61% claim between \$350,001 and \$400,000, 0.40% claim a family income between \$400,001 and \$450, 000 and 1.06% claim between \$450,001 and \$500,000. And one person or 0.08% claim a family income between \$700,000 and \$900,000.

Table 3: Family Income Range

Students' Family Income Range	Frequency of Income Range	Percentages (%)
\$0	0	0.00
\$1 - \$50,000	34	13.71
\$50,001 - \$100,000	95	38.31
\$100,001 - \$150,000	49	19.76
\$150,001 - \$200,000	37	14.92
\$200,001 - \$250,000	16	6.45
\$250,001 - \$300,000	8	3.23
\$300,001 - \$350,000	0	0.00
\$350,001 - \$400,000	4	1.61
\$400,001 - \$450,000	1	.40
\$450,001 - \$500,000	2	.81
\$500,001 - \$550,000	0	0.00
\$550,001 - \$600,000	0	0.00
\$600,001 - \$650,000	0	0.00
\$650,001 - \$700,000	0	0.00
\$700,001 - \$750,000	1	.40
\$750,001 - \$800,000	0	0.00
\$800,001 - \$850,000	0	0.00
\$850,001 - \$900,000	1	.40
TOTAL	248	100.00

This Table provides the family income range of the students who participated in this study.

Table 4 shows the number of siblings of each participant and the number of siblings that attended college. The first panel shows the number of siblings each participant has, the second panel shows the number of students in the study who correspond to a particular number of siblings and the third panel shows the corresponding percentage of students that were in each category. In looking at the number of siblings of the participants, 71.04% of responses say they have between one and two siblings. 18.21% of responses say they have between three and four siblings. 7.50% of responses have no siblings. 2.39% of responses say they have between five and six siblings. 0.59% of responses have between seven and eight siblings. 0.29% of responses say they have between nine and ten siblings.

The Table also details the number of students who had siblings in college. The fourth panel details the number of participants who indicated how many siblings they had in college and the fifth panel indicates the corresponding percentages. The Table shows that 60.12% of participants stated they had zero siblings in college, 38.67% of responses stated that they had between one and two siblings in college, 1.21% stated they had between three and four siblings in college.

Table 4: Number of Siblings for Each Participant and Number of Siblings in College

Students' Number of Siblings Range	Frequency of Sibling	Percentages (%)	Frequency of Sibling in College	Percentages
0	25	7.50	199	60.12
1 – 2	238	71.04	128	38.67
3 – 4	61	18.21	4	1.21
5 – 6	8	2.39	0	0.00
7 – 8	2	.59	0	0.00
9 – 10	1	.29	0	0.00
11 – 12	0	0.00	0	0.00
TOTAL	335	100.00	331	100.00

This Table provides the results for the number of siblings each participant had in their family and the number of those siblings who are in college.

Table 5 shows the GPA of the students who participated in this study. The first panel shows the GPA range of all participants, the second panel shows the number of students in the study who correspond to a particular GPA range and the third panel shows the corresponding percentage of students that were in each category. In looking at the GPA, 325 of the participants answered or knew their GPA. 74.77% of participants had a GPA between the range 3.01 and 4,

24.62% of participants had a GPA between 2.01 and 3 and 0.62% of participants had a GPA between 1.01 and 2.

Table 5: Participants' GPA Range

Students' GPA Range	Frequency of GPA Range	Percentages
0.00 – 1.00	0	0.00
1.01 – 2.00	2	.62
2.01 – 3.00	80	24.62
3.01 – 4.00	243	74.77
TOTAL	325	100.00

This Table looks at the GPA of the students who participated in this study.

Table 6 shows the participants' type of residence and the students' status of being a first-generation college student. In the first section, the first panel shows the state of residency or if the participant was from a country outside of the United States – the latter was included since not all students had their permanent residence in the United States, the second panel shows the number of students in the study who correspond to a particular state and the third panel shows the corresponding percentage of students that were in each category. In looking at the state of residency of the participants, 79.46% of participants are from New York State. 5.14% of participants are from Connecticut. 3.32% of participants are from Massachusetts. 3.63% of participants are from outside the United States., 2.72% of the participants from New Jersey and 0.91% of the participants are from Pennsylvania.

The Table also shows the participants' type of residential area. The first panel shows the type of residential area the participants are from, namely rural, suburban and urban, the second panel shows the number of students in the study who belong to each residential area and the third panel shows the corresponding percentage of students that were in each category. In looking at the residential type, 35.71% of the participants are from suburban areas. 22.92% of the participants are from rural regions. 41.37% of participants came from an urban region. Three people did not know how to or choose not to answer this question.

The Table also shows whether the students in the study are first-generation students from their family to attend college or not. The first panel has categories that ask whether or not the participant was a first generation to attend college. The results showed that 79/17% were not a first-generation college attendee, while 20.24% were a first-generation college attendee.

Table 6: Participants' State of Residence

Students' State of Residence	Number of Responses	Percentages (%)
The Student is not From the United States	12	3.63
Question was not Answered	5	1.51
California	3	.91
Connecticut	17	5.14
District of Columbia	0	0.00
Florida	1	.30
Georgia	0	0.00
Illinois	0	0.00
Massachusetts	11	3.32
Maryland	0	0.00
Montana	1	.30
New Hampshire	0	0.00
New Jersey	9	2.72
New York	263	79.46
Ohio	1	.30
Pennsylvania	3	.91
Rhode Island	1	.30
Texas	0	0.00
Vermont	4	1.21
TOTAL	331	100.00
Students' Type of Residential Area	Number of Responses	Percentages (%)
Question was not Answered	0	0.00
Rural	77	22.92
Suburb	120	35.71

Urban	139	41.37
TOTAL	336	100.00
Students' Status of Being a First-Generation College Student	Number of Responses	Percentages (%)
Question was not Answered	2	.60
The Student is not a First-Generation College Student	266	79.17
The Student is a First-Generation College Student	68	20.24
TOTAL	336	100.00

This Table looks at the state the students were from, the type of residential area the students were from, as well as whether the student was a first-generation student to attend college in their family.

Table 7 shows the birth order of participants and order of family to attend college. The first panel shows the participants' birth order in their family, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 45.54% of participants are the first child in their family. 31.85% of participants are the second child in their families, 13.99% of participants are the third child of their family, 3.87% of participants are the fourth child in their family, 1.79% of participants are the fifth and 0.60% are the sixth child.

The Table also shows the participants' order in family to attend college. The fourth panel shows the participants' order in their family to attend college, the fifth panel shows the corresponding percentage of students that were in each category. In looking at the Table, 49.40% of participants are the first child in their family to go to college, 33.63% of participants are the second child in their family to go to college, 10.12% of participants are the third child in their family to go to college, 3.87% are the fourth child in their family to go to college, 2.38% did not answer the question. 0.30% are the sixth child to go to college, 0.30% are the fifth to go to college.

Table 7: Birth Order of Participants and Order of Family To Attend College

Students' Birth Order in Their Family	Number of Responses	Percentages (%)	Students' Order in Family to Attend College	Percentages (%)
Question was not Answered	7	2.08	8	2.38
The Student is the First Child in the Family	153	45.54	166	49.40
The Student is the Second Child in the Family	107	31.85	113	33.63
The Student is the Third Child in the Family	47	13.99	34	10.12
The Student is the Fourth Child in the Family	13	3.87	13	3.87
The Student is the Fifth Child in the Family	6	1.79	1	.30
The Student is the Sixth Child in the Family	2	.60	1	.30
The Student is the Seventh Child in the Family	0	0.00	0	0.00
The Student is the Eighth Child in the Family	1	.30	0	0.00
The Student is the Ninth Child in the Family	0	0.00	0	0.00
The Student is the Tenth Child in the Family	0	0.00	0	0.00
TOTAL	336	100.00	336	100.00

This Table provides results on the birth order in their family of the students who participated in this study and the order that the students went to college.

Table 8 shows the participants' in this study parental household status, type of housing, students' sports status, students' status on graduate school intentions and number of hours worked by participants. The first panel shows the participants' parental status, the second panel shows the number of students in the study who belong to each category of parental status household and the third panel shows the corresponding percentage of students that were in each

category. In looking at the Table, 76.79% of participants came from a dual parent household. 18.15% of participants are from single parent households. 0.30% came from neither a dual or single household, 2.98% didn't answer and 1.50% answered the question with "not applicable."

The Table also looked at the types of housing participants permanently resided in, such as an apartment or house. The first panel shows the participants type of permanent housing, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 87.79% of participants live in a house, 11.61% of participants live in an apartment, 0.60% did not answer the question.

The Table also looked at whether or not a student participated a sport and represented the college. The first panel details whether or not a student participated in a sport, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 85.12% do not play a sport. 14.29% do play sports and 0.60% did not answer.

The Table also looked at whether or not participants intended to go to graduate school. The first panel details whether or not a student intended to pursue graduate studies, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. In looking at the Table, 58.33% of the participants do want to go to graduate school. 31.55% are unsure. 8.63% do not want to go to graduate school.

The Table also looked at whether or not a student worked while attending college and the number of hours they worked. The first panel details whether or not a student worked and how many hours, the second panel shows the number of students in the study who belong to each category and the third panel shows the corresponding percentage of students that were in each category. Of the 322 participants that answered the question about how many hours a week on average they worked 45.34% of student worked between 0 and 5 hours. 16.46% worked between 5.01 and 10 hours per week. 12.11% of students worked between 15.01 and 20 hours. 14.29% of students worked between 10.01 and 15 hours on average per week. 3.42% of students worked between 20.01 and 25 hours per week. 3.42% worked between 25.01 and 30. 1.86% worked between 35.01 and 40 hours. 2.48% worked between 30.01 and 35 and 0.62% worked over 40 hours per week.

Table 8: Parental Household Status, Type of Housing, Students' Sports Status, Students' Status on Graduate School Intentions and Number of Hours Worked by Participants

Parental Household Status	Number of Responses	Percentages (%)
Question was not Answered	10	2.98
The Student is from a Dual Parent Household	258	76.79
The Student is from both a Dual Parent and a Single Parent Household	1	.30

The Question was Answered “Other Guardian”	1	.30
The Student is from a Single Parent Household	61	18.15
The Student does not have any Parents	5	1.50
TOTAL	336	100.00
Type of Housing	Number of Responses	Percentages (%)
Question was not Answered	2	.60
The Student Resides in an Apartment	39	11.61
The Student Resides in a House	295	87.79
TOTAL	336	100.00
Students’ Status on Participating in College Sports	Number of Responses	Percentages (%)
Question was not Answered	2	.60
The Student does not Participate in a Sport	286	85.12
The Student Does Participate in a Sport	48	14.29
TOTAL	336	100.00
Students’ Status on Wanting to Attend Graduate School	Number of Responses	Percentages (%)
Question was not Answered	0	0.00
The Student Does Not Want to Attend Graduate School	29	8.63
The Student is Unsure Whether They Want to Attend Graduate School	106	31.55
The Student Does Want to Attend Graduate School	196	58.33
The Student is currently in Graduate School	5	1.49
TOTAL	336	100.00
Students’ Hours Worked per Week (Done in Ranges)	Number of Responses	Percentages (%)
0 – 5	146	45.34

5.01 – 10	53	16.46
10.01 – 15	46	14.29
15.01 – 20	39	12.11
20.01 – 25	11	3.42
25.01 – 30	11	3.42
30.01 – 35	8	2.48
35.01 – 40	6	1.86
Over 40	2	.62
TOTAL	322	100.00

This Table provides results for the type of parental household status, specifically looking at whether students belonged to dual or single parent household. It also looks at the type of housing, specifically whether students lived in an apartment or house as well as if students played a sport for the college. Finally, it provided results on whether student intended to attend graduate school and the number of hours they worked on a weekly basis.

Table 9 shows the participants' in this study source of funding for college and what percentages participants used for college from each source. The first panel shows the source of their college funding for each participant, the second panel shows the number of students in the study who used 0-25% from that particular source, the third panel shows the number of students in the study who used 25.01-50% from that particular source, the fourth panel shows the number of students in the study who used 50.01-75% from that particular source the second panel shows the number of students in the study who used 75.01-100% from that particular source. In terms of the majority in each percentage category, looking at the Table, 317 students used 0-25% of their funding from other sources, 103 students used 25.01-50% from scholarships, 33 students used 50.01-75% from parents and 36 students used 75.01-100% from scholarships.

Table 9: Source of Funding

Source of Funding	Number of Students who Used 0-25%	Number of Students who Used 25.01-50%	Number of Students who Used 50.01-75%	Number of Student who Used 75.01-100%
Funding From Loan	204	55	21	10
Funding From Scholarship	99	103	31	36
Funding From Parents	177	44	33	34
Funding From Family Members	311	3	2	4
Funding From Working	308	3	1	0
Funding From Other Sources	317	1	0	1

This Table provides the results for the source of funding from which students accessed financial resources. It looks at different sources of funding and the percentage of that funding students accessed.

As shown in Table 10, 37.38% of the students in this study received Pell grants, another 54.89% of other grants, 36.21% received state grants and 41.24% received federal grants. Almost all of the students expected to graduate in four years at 96.74%, while 39.76% filed their own tax returns. In terms of loan amounts per student, students on average took \$8,178 in loans per year, received \$12,530 in grants per year and had a total amount in loans of \$19,731 on average. In terms of credit card usage, 41 students or 12.17% of the students used credit card to cover their college expenses, with shockingly 5 students placing between \$24,000-\$57,000 on credit cards. Most of the students in the study were Caucasian Americans at 75.66%, followed by African Americans at 9.19% and then Asian and Hispanic Americans, each with a sample size of 5.63%. About half the students were worried about taking loans, at 47.78% and students on average expected to earn an average of \$71,531 per year in salary after graduation. Most of the students in the study had mothers and fathers who primarily held graduate and undergraduate degrees, with mothers primarily holding undergraduate degrees and fathers primarily graduate degrees.

Table 10 - Grants, Loans and Earnings

	Number of Students	Percentages (%)
Percentage of Students who received Pell Grants	126 students	37.38%
Percentage of Students who received Other Grants	185 students	54.89%
Percentage of Students who received State Grants	122 students	36.21%
Percentage of Students who received Federal Grants	139 students	41.24%
Percentage of Students who expect to graduate in 4 years or less	326 students	96.74%
Percentage of Students who filed their own tax returns	134 students	39.76%
Loan Amounts for Students (per year)	\$8,178	Average per student
Amounts in Grants Received (per year)	\$12,530	Average per student
Amounts in Loans Taken by Students	\$19,731	Average total in loans so far per student
Percentage of Students Using Credit Cards to Pay for College	41 students	12.17%
Total Amounts on Credit Cards for College Expenses	\$0-1000 \$1001-6000 \$24,000 \$25,000 \$30,000 \$57,000	22 students 14 students 1 student 2 students 1 student 1 student
Race of Students in Study	African Americans Asian Americans Caucasian Americans Hispanic Americans Other	9.19% 5.63% 75.66% 5.63% 3.89%
Percentage of Students Worried About Loans	161 students	47.78%
Highest Level Education - Mother	1- Did not Know 2- Did not graduate high school	9 (2.67%) 7 (2.07%)

	3 - Graduated High School 4 - Graduated with an Associate 5 - Graduated with an Undergraduate 6 - Graduated with a Graduate	60 (17.80%) 35 (10.37%) 124 (36.79%) 102 (30.27%)
Highest Level of Education of Father	1- Did not Know 2- Did not graduate high school 3 - Graduated High School 4 - Graduated with an Associate 5 - Graduated with an Undergraduate 6 - Graduated with a Graduate	14 (4.15%) 15 (4.45%) 67 (19.88%) 44 (13.37%) 72 (21.36%) 124 (36.79%)
Expected Earnings After Graduation	\$71,531 per year	Average

This Table provides details on the participants' loans, grants and scholarships received, race and parents' educational levels.

CORRELATION COEFFICIENTS

The correlation coefficient statistical analysis was used to analyze relationships between likely variables, specifically looking at the relationships between loans and other variables. Correlation coefficient or R is a measure of the degree of linear relationship between two variables. The value ranges from -1 to +1, the closer the results to -1 or +1, the stronger the relationship. The results below have been divided into strong, moderate and weak relationships. Strong relationships were said to be those that had values of 0.50 or higher. Moderate relationships were those that had values between 0.30 and 0.50. Weak relationships were those that had values less than 0.30 (Schober et al, 2018, Taylor, 1990).

As shown in table 11, there were some predictable and some not so predictable results. The first panel shows the relationships between loans taken by the students and a number of variables, the second panel shows the correlation coefficient values for a number of relationships and the third panel shows the level of significance. To begin, strong relationships were found between students taking loans and the longer they had been in school (-0.62) with the value indicating that the longer they were in school (4th versus lower years) the less likely they were to take loans. Students who had entered the college from another four-year college were also more likely to take loans (0.53). Students from families with higher incomes were also less likely to take loans (-0.69). Finally, a surprising result showed that students who were later in their family (fifth versus a second sibling) to go to college were also less likely to take a loan (-0.52).

Five moderate relationships were found. To begin, students who lived on campus (versus off) were more likely to take loans (0.36). Students who worked more hours were also more likely to take loans (0.32). Students born later in their family were also less likely to take loans (-0.41). As expected, students with higher GPAs were less likely to take loans (-0.37). Also as expected, students from dual-income families (single-income families) were also less likely to take loans (-0.43).

Weaker relationships were found for students, depending on the school to which they belonged. Specifically, students from the School of Science were less likely to take loans (-0.27) and students who were planning to attend graduate school were also less likely to take loans (-0.29), students worried about loans were less likely to take loans (-0.31), students who expected to earn more after graduating were more likely to take loans (0.27) and students receiving other grants were less likely to take loans (-0.42).

Table 11: Correlation Tables and Results

Correlations Analyzed From Data	Correlation Coefficient Values	Level of Significance	Strength of Significance
Relationship Between Loans and Year in School	-0.62*	0.05	Strong
Relationship Between Loans and School of Business/Arts/Science	-0.27**	0.10	Weak
Relationship Between Loans and Source of Entry (high school, community college, 4 year college)	0.53*	0.05	Strong
Relationship Between Loans and residence (on campus versus off campus)	0.36**	0.10	Moderate
Relationship Between Loans and number of hours per week worked	0.32**	0.10	Moderate
Relationship Between Loans and family income	-0.69*	0.05	Strong
Relationship Between Loans and order of birth in family (first/second/third child, etc.)	-0.41*	0.05	Moderate
Relationship Between Loans and order of sibling to go to college	-0.52*	0.05	Strong
Relationship Between Loans and GPA	-0.37**	0.10	Moderate
Relationship Between Loans and single/dual income family	-0.43*	0.05	Moderate
Relationship Between Loans and going to graduate school	-0.29**	0.10	Weak
Relationship between worry about loans and taking loans	-0.31**	0.10	Weak
Relationship between students who expected to earn more and student loans	0.35**	0.10	Weak
Relationship between students who receive other grants and student loans	-0.42	0.05	Moderate

This table provides results for the correlation analysis of student loans with other variables. The corresponding level of significance and the strength of the correlation is also noted.

CONCLUSION

This study examined patterns of student loan funding for college students' tertiary education. In essence, how were college students funding their college education? Was this primarily through loans, scholarships, working, parental or family assistance? The sample for this study was derived from students at a primarily undergraduate college, located in upstate New York, in the suburb of Albany. The students who participated in this study included freshmen, sophomores, juniors and seniors. A total of 321 students ultimately completed from the three Schools at the college, namely the School of Liberal Arts, the School of Business and the School of Science. The survey was completed by the students between April and June 2019.

The study identified a number of factors associated with student loan borrowing and took a second look at a number of factors that were not previously explored in detail by previous studies. Current statistics indicate that one in five previous college students default on their loans. It is therefore critical to look at the front-end research regarding what are some of the factors that lead to students initially taking loans. By providing additional evidence on these issues, the paper adds significantly to the body of knowledge that currently looks at this important topic.

The evidence shows a number of significant relationships - specifically this key question addressed what were the factors that lead to students taking out loans for college. With regard to this overall question, five factors indicated a strong relationship for the students who took loans – namely students taking loans and the longer they had been in school, students who had entered the college from another four-year college were also more likely to take loans, students from families with higher incomes were also less likely to take loans and students who were later in their family to go to college were also less likely to take a loan.

In addition, five moderate relationships were found. To begin, students who lived on campus were more likely to take loans, students who worked more hours were also more likely to take loans, students born later in their family were also less likely to take loans, students with higher GPAs were less likely to take loans and students from dual-income families (single-income families) were also less likely to take loans.

Weaker relationships were found for students, depending on the school to which they belonged. Specifically, students from the School of Science were less likely to take loans and students who were planning to attend graduate school were also less likely to take loans. Students worried about loans and who received other grants, were less likely to take loans and students who expected to earn more after graduation were more likely to take loans.

The result on family income and the negative relationship it had to students taking loans was echoed in a previous study by Breier (2010) – showing that we can have confidence in the current data. Bertolas' (2018) study on athletes found that NCAA founded athletes were less likely to take college loans. While a significant relationship cannot be shown between these two

variables in the current study. Handwerker's (2011) study on students and college loans found that parents were likely to keep working longer years to support their college attending students, even postponing retirement. The results in the current study may partly allude to this, as we see students later in line in the family being less likely to take loans – maybe relying more on their not-yet-retired parents. Cheng et al's (2012) study found that students with more family social support were less likely to take loans. This could be seen as in keeping with the current study, which found that siblings who were later in line to attend college were less likely to take loans – possibly an indication that such credit sources are not needed since the students were obtaining support from other or previous family members.

Overall, the results of this study provide sound knowledge and reliable information that a variety of critical factors affect college student funding and the extent to which students will take loans, based on demographic, socioeconomic and perceptual factors.

Were there limitations to the current study? Absolutely. This limitation began with the sample, a convenience sample of students that is taken from a small liberal arts college in upstate New York. Furthermore, while the students covered all three colleges, namely Business, Arts and Science, there was some skewing of numbers towards Business students versus students from the other areas. However, stylized facts that could be most valuable for interested parties include conclusions made in this study regarding the source of college funding and the factors that impact the necessity for increased college loans.

A future follow-up study could be expanded to look at how additional variables, namely internships before and during college, GPA before college, race and college advising before and during college, impacted the source of students' financial sources for college. Future follow up studies could also extend the current study to a larger sample of students from different perspectives, increasing the generalizability of the findings related to this topic.

REFERENCES

- Akers, Elizabeth J, and Matthew M Chingos. "Are college student athletes Borrowing Blindly?" *Brown Center on Educational Policy*, Dec. 2014, doi:10.2139/ssrn.2662620.
- Albrecht, Douglas, and Adrian Ziderman. *Deferred cost recovery for higher education: Student loan programs in developing countries*. The World Bank, 1991.
- Avery, Christopher, and Sarah Turner. "Student Loans: Do college student athletes Borrow Too Much—Or Not Enough?" *Journal of Economic Perspectives*, vol. 26, no. 1, 2012, pp. 165–192., doi:10.1257/jep.26.1.165.
- Baker Amanda R., Andrews, Benjamin D. McDaniel, Anne. "The impact of student loans on college access, completion, and returns." *Sociology Compass*, 11, 6, 2017.
- Bandre, Mark A. "The Impact of Financial Aid on the Enrollment and Retention of Student Athletes at National Collegiate Athletic Association (NCAA) Division III Colleges and Universities: A Review of the Literature." *Journal of Student Financial Aid*, vol. 41, no. 1, 2011, doi:10.1016/j.jnma.2018.03.004.
- Bertolas, Randy, et al. "Policy Point--Counterpoint: Are Colleges and Universities Obligated to Provide Student-Athletes with Additional Compensation beyond Tuition, Room, and Board?." *International Social Science Review*, vol. 94, no. 1, Jan. 2018, pp. 1-8. EBSCOhost, ezproxy.siena.edu:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=129149309&site=ehost-live.
- Boatman, A. and Evans, B. and Soliz, A. 2017. Understanding Loan Aversion in Education: Evidence from High School Seniors, Community College Students, and Adults. *Sage Journals*. Volume 3, Issue 1, Pages 1-16.

- Breier, Mignonne. "From 'Financial Considerations' to 'Poverty': towards a Reconceptualisation of the Role of Finances in Higher Education Student Drop Out." *Higher Education*, vol. 60, no. 6, 2010, pp. 657–670. JSTOR, JSTOR, www.jstor.org/stable/40930317.
- Britton, Jack, Laura van der Erve, and Tim Higgins. "Income contingent student loan design: Lessons from around the world." *Economics of Education Review* 71 (2019a): 65-82.
- Britton, Jack W., and Jonathan Gruber. *Do income contingent student loan programs distort earnings? evidence from the uk*. No. w25822. National Bureau of Economic Research, 2019b.
- Cellini, S. R., & Darolia, R. (2015). College costs and financial constraints. *Student loans and the dynamics of debt*, 137.
- Cheng, Wen, et al. "How Is Family Support Related to Students' GPA Scores? A Longitudinal Study." *Higher Education*, vol. 64, no. 3, 2012, pp. 399–420. JSTOR, JSTOR, www.jstor.org/stable/23256471.
- Cooper, D. and Wang, C. 2014. Student Loan Debt and Economic Outcomes. Current Policy Perspectives. Federal Reserve Bank of Boston, 14-7, 1-38.
- Calderone, Shannon, McDonough, Patricia M. "The Meaning of Money: Perceptual Differences Between College Counselors and Low-Income Families About College Costs and Financial Aid." *American Behavioral Scientist*, 49, 2, 2006. <https://journals.sagepub.com/doi/abs/10.1177/0002764206289140>
- Callender, Claire, and Geoff Mason. "Does student loan debt deter higher education participation? New evidence from England." *The ANNALS of the American Academy of Political and Social Science* 671.1 (2017): 20-48.
- Dary, Stanley K., and Harvey S. James. "Financing Higher Education through Student Loans: An Examination of Student Loan Take up and the Debt Burden among Ghanaian Tertiary Students." *International Journal of African Higher Education* 5.1 (2018).
- Dearden, Lorraine, and Paulo Meyer Nascimento. "Modelling alternative student loan schemes for Brazil." *Economics of Education Review* 71 (2019): 83-94.
- De Gayardon, Ariane, Claire Callender, and Francis Green. "The determinants of student loan take-up in England." *Higher Education* 78.6 (2019): 965-983.
- Diris, Ron, Ooghe, Erwin The economics of financing higher education, *Economic Policy*, Volume 33, Issue 94, April 2018, Pages 265–314, <https://doi.org/10.1093/epolic/eiy003>
- Dynan, K. (2020). Rising student loan burdens and what to do about them. *Business Economics*, 55(3), 129-133.
- Dynarski, Susan, M. 2003. "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion." *American Economic Review*, 93 (1): 279-288.
- Dynarski, S. M. (2015). An economist's perspective on student loans in the United States.
- Dynarski, Mark. "Who Defaults on Student Loans? Findings from the National Postsecondary Student Aid Study." *Economics of Education Review*, vol. 13, no. 1, 1994, pp. 55–68., doi:10.1016/0272-7757(94)90023-x.
- Engle, Jennifer. and Tinto, Vincent. "Moving Beyond Access: College Success for Low-Income, First-Generation Students." *Pell Institute for the Study of Opportunity in Higher Education*, 2008. <https://eric.ed.gov/?id=ED504448>
- Eitzen, D. Stanley. "The Educational Experiences of Intercollegiate Student-Athletes." *Journal of Sport and Social Issues*, vol. 11, no. 1-2, 1987, pp. 15–30., doi:10.1177/019372358701100102.
- Friedman, Zack. "Student Loan Debt Statistics In 2018: A \$1.5 Trillion Crisis." *Forbes*, 3 June 2018. <https://www.forbes.com/sites/zackfriedman/2018/06/13/student-loan-debt-statistics-2018/#7ce4b4a97310>
- Handwerker, Elizabeth Weber. "Delaying Retirement To Pay For College." *Industrial and Labor Relations Review*, vol. 64, no. 5, 2011, pp. 921–948. JSTOR, JSTOR, www.jstor.org/stable/41343707.
- Hartlep, N. D., Lucille L.T. Eckrich, Brandon O. Hensley. *The Neoliberal Agenda and the Student Debt Crisis in U.S. Higher Education*, Routledge, New York, 2015. <https://doi.org/10.4324/9781315638768>
- Hellmish, Nanci, and Andy Gardiner. "Athletes' Hunger to Win Fuels Eating Disorders." *USA Today*, 2006.
- Hershbein, Brad, Hollenbeck, Kevin M. *Student Loans and the Dynamics of Debt*, W. E. Upjohn Institute for Employment Research, 2015.
- Hobneck, Cheryl, et al. "Improving Student Athlete Academic Success and Retention." *Eric*, May 2003, doi:10.5204/ssj.v8i2.387.

- Hotz, V. Joseph et al. "Role of Parental Wealth & Income in Financing Children's College Attendance & Its Consequences." (2016).
https://hceconomics.uchicago.edu/sites/default/files/file_uploads/HCEO_HC_%26_Family_Conf_10-28-16.pdf
- Jackson, Brandon A., and Reynolds, John R. "The Price of Opportunity: Race, Student Loan Debt, and College Achievement." *Sociological Inquiry*, 83, 3, 2013, 335-368.
<https://onlinelibrary.wiley.com/doi/abs/10.1111/soin.12012>
- Johnson, C., O'Neil, B., Worthy, S. and Lown, J. M. (2016). What Are Student Loan Borrowers Thinking? Insights from Focus Groups on College Selection and Student Loan Decision Making. *Journal of Financial Counseling and Planning*, 27 (2), 184-198.
- Johnstone, D. Bruce. "Student loans in international perspective: Promises and failures, myths and partial truths." *The Center for Comparative and Global Studies in Education, University at Buffalo* (2001): 3.
- Kelly Ochs Rosinger, Andrew S. Belasco & James C. Hearn (2019) A Boost for the Middle Class: An Evaluation of No-Loan Policies and Elite Private College Enrollment, *The Journal of Higher Education*, 90:1, 27-55, DOI: 10.1080/00221546.2018.1484222
- Kirby, Philip. "Degrees of Debt: Funding and Finance for Undergraduates in Anglophone Countries." *Sutton Trust* (2016).
- Linsenmeier, David, et al. "Financial Aid Packages and College Enrollment Decisions: An Econometric Case Study." 2002, doi:10.3386/w9228.
- Matthew T. Johnson, "Borrowing Constraints, College Enrollment, and Delayed Entry," *Journal of Labor Economics* 31, no. 4 (October 2013): 669-725
- McCabe, Janice., and Jackson, Brandon A. "Pathways to Financing College: Race and Class in Students' Narratives of Paying for School." *SAGE Journals*, 3, 4, 2016, 367-385.
<https://doi.org/10.1177%2F2329496516636404>
- Mendez, Jesse, et al. "Student Athlete Retention and Financial Aid." *Journal for the Study of Sports and Athletes in Education*, vol. 3, no. 1, 2009, pp. 59–84., doi:10.1179/ssa.2009.3.1.59.
- Mendoza, Pilar, et al. "Retention Among Community College Student-Athletes." *Community College Journal of Research and Practice*, vol. 36, no. 3, 2012, pp. 201–219., doi:10.1080/10668921003677183.
- McConnell, B. S. (2013). *Student Loan Default Rates As A Function Of Availability Of College Career Development Service Interventions* (Doctoral Dissertation, Benedictine University).
- McDonough, P. M., & Calderone, S. (2006). The meaning of money: Perceptual differences between college counselors and low-income families about college costs and financial aid. *American Behavioral Scientist*, 49(12), 1703-1718.
- Nguyen-Michel, Selena T., et al. "Associations between Physical Activity and Perceived Stress/Hassles in college student athletes." *Stress and Health*, vol. 22, no. 3, 2006, pp. 179–188., doi:10.1002/smi.1094.
- Orleans, Jeffrey H. "The Effects of the Economic Model of College Sport on Athlete Educational Experience." *Journal of Intercollegiate Sport*, vol. 6, no. 1, 2013, pp. 79–85., doi:10.1123/jis.6.1.79.
- Page, Lindsay, C., Scott-Clayton, Judith. "Improving college access in the United States: Barriers and policy responses." *Economics of Education Review*, 51, 2016, 4-22.
<https://doi.org/10.1016/j.econedurev.2016.02.009>
- Pavlic, R. D. (2018). Sentenced to debt: Explaining student mobilization in Chile. *Latin American Research Review*, 53(3).
- Perna, L. W. (2000) Differences in the Decision to Attend College among African Americans, Hispanics, and Whites, *The Journal of Higher Education*, 71:2, 117-141, DOI: 10.1080/00221546.2000.11778831
- Perna, L. W. (2002). Financing Higher Education at Selective Private Institutions: Implications for College Access and Choice. *The Review of Higher Education*, 25 (2), 225-235. <http://dx.doi.org/10.1353/rhe.2002.0006>
- Robb, Cliff A. "College Student Financial Stress: Are the Kids Alright?" *Journal of Family and Economic Issues*, 38, 4, 2017, 514-527. <https://link.springer.com/article/10.1007/s10834-017-9527-6>
- Rosinger, K. O., & Ford, K. S. (2019). Pell grant versus income data in postsecondary research. *Educational Researcher*, 48(5), 309-315.

- Rothstein, Jesse, and Cecilia Elena Rouse. "Constrained After College: Student Loans and Early Career Occupational Choices." *Elsevier*, vol. 95, no. 1-2, Feb. 2011, pp. 149–163., doi:10.3386/w13117.
- Sato, Yukihiro, et al. "Student loans and psychological distress: a cross-sectional study of young adults in Japan." *Journal of Epidemiology* (2019): JE20190057.
- Schneider, Ray, and Steve Messenger. "The Impact of Athletic Facilities on the Recruitment of Potential Student-Athletes." *College Student Journal*, vol. 46, no. 4, 1 Dec. 2012, doi:10.25035/jsmahs.02.01.04.
- Shen, Hua, and Adrian Ziderman. "Student Loans Repayment and Recovery: International Comparisons." *Higher Education*, vol. 57, no. 3, 2008, pp. 315–333., doi:10.1007/s10734-008-9146-0.
- Shropshire, Kenneth L. *Agents of opportunity: Sports agents and corruption in collegiate sports*. Philadelphia: University of Pennsylvania Press, 1990.
- Simmons, Herbert D, et al. "Academic Motivation and the Student Athlete." *Journal of College Student Development*, vol. 40, no. 2, 1999, pp. 151–162., doi:10.4324/9780203111758-10.
- Stoddard, Christiana, Urban, Carly, Schmeiser, Maximilian D. "College Financing Choices and Academic Performance." *The Journal of Consumer Affairs*, 52, 3, 2018, 540-561. <https://onlinelibrary.wiley.com/doi/full/10.1111/joca.12175>
- Sullivan, T. A., Warren, E., & Westbrook, J. L. (1999). *As we forgive our debtors: Bankruptcy and consumer credit in America*. Beard Books.
- Usher, Alex. *Global debt patterns: An international comparison of student loan burdens and repayment conditions*. Toronto, ON: Educational Policy Institute. [www. Educationalpolicy. org](http://www.Educationalpolicy.org), 2005.
- Webber, Douglas A. "Are college costs worth it? How ability, major, and debt affect the returns to schooling." *Economics of Education Review*, 53, 2016, 296-310. <https://www.sciencedirect.com/science/article/abs/pii/S0272775715300224>
- Williams, Alvin J, and Ben Oumlil. "College Student Financial Capability." *International Journal of Bank Marketing*, 6 July 2015
- Wohlgemuth, Darin, et al. "Financial, Academic, and Environmental Influences on the Retention and Graduation of Students." *Journal of College Student Retention: Research, Theory & Practice*, vol. 8, no. 4, 2007, pp. 457–475., doi:10.2190/86x6-5vh8-3007-6918.
- Woodhall, Maureen. "Designing a student loan programme for a developing country: The relevance of international experience." *Economics of education review* 7.1 (1988): 153-161.
- Zhou, E., & Mendoza, P. (2017). 1 Financing Higher Education in the United States A Historical Overview of Loans in Federal Financial Aid Policy. *The Neoliberal Agenda and the Student Debt Crisis in US Higher Education: Indebted Collegians of the Neoliberal American University*.