# Accounting Professors' Perceptions of Academic Dishonesty: Motivations, Controls and the Impact of Technology

## Naqi Sayed
Lakehead University

## Camillo Lento
Lakehead University

## Abstract

*New technology has had a significant impact on higher education, including the area of academic dishonesty. Technology provides new opportunities for students to engage in dishonest behaviour while simultaneously providing faculty members with new ways to control against such behaviour. The purpose of this study is to investigate academic dishonesty in accounting programs from the perspective of accounting faculty members with a focus on the impacts of technology. A total of 388 survey responses were received from faculty members across Canada and the United States. The results reveal that accounting faculty perceive academic dishonesty to be a significant issue that is compromising the integrity of the classroom and that incidences of academic dishonesty have increased over the past five to ten years. The proliferation of technology is perceived to have resulted in increased incidences of academic dishonesty, with a greater impact on assignments as opposed to exams. The three types of academic dishonesty impacted the most by technology are: i) using information without proper referencing; ii) using unauthorized materials during a test; and iii) using another student's assignments from a previous semester. Further, faculty members perceive that university policies related to academic dishonesty have not yet adapted to deal with the new challenges posed by technology.*

## Introduction

Accounting scandals are not a recent phenomenon. Several high profile accounting scandals have taken place over the past century, and it appears that accounting scandals have been increasing in recent years (Cornerstone Research, 2015). Serious questions are being raised regarding the ethical conduct of accountants as a result of the increasing implications of these accounting scandals. Many are questioning the ability of academic institutions to develop ethical sensitivity among students in light of widespread incidences of academic dishonesty (McCabe, 1993). Much has been written on the ethical conduct of professional accountants and accounting students. Most of the prior literature attempts to gauge the overall level of accounting student ethics by exploring how students behave in different situations (e.g., Chapman and Lupton 2004; Christensen et al., 2010). Overall, the prior literature suggests that academic dishonesty is a serious concern (Greene and Saxe, 1992; McCabe et al., 2001; Brown and Choong, 2005).

The rapid proliferation of new technologies has had a profound impact on higher education (Bowen, 2012). With respect to academic dishonesty, technological developments provide new avenues for students to engage in dishonest behaviours (e.g., portable and wearable devices enable students to discreetly communicate during exams or view unauthorized material). Conversely, faculty members can also make use of new technologies to better prevent and detect instances of academic dishonesty (e.g., faculty members can make use of new software to detect plagiarism in student assignments). Currently, it is unclear how new technologies are impacting the perpetration of, and controls

for, academic dishonesty. Accordingly, the main purpose of this paper is to explore the impacts of technology on academic dishonesty in accounting programs. In addition, this paper explores various other facets of academic dishonesty from the perspective of accounting faculty members. This secondary purpose is motivated by the fact that most prior academic dishonesty studies are focused on student responses (Rakovski and Levy, 2007; Chapman and Lupton 2004) and studies based on faculty perspectives are few and dated (e.g., McCabe, 1993).

Faculty members in colleges and universities across Canada and the United States were surveyed with the approval of Lakehead University's Research Ethics Board. The survey was administered electronically with invitations sent via email. All email addresses were obtained from publicly available sources. All responses were examined for unusual patterns (e.g., straight-liner response). A total of 388 usable responses were received and analyzed in this research.

This study makes several contributions to the extant body of literature. First, the results suggest that most accounting faculty members perceive academic dishonesty to be compromising the integrity of the classroom and that the proliferation of technology has increased incidences of academic dishonesty. Technology is perceived to have impacted incidences of academic dishonesty related to exams and assignments; however, the perceived impact of technology on assignments is more pronounced. The three types of academic dishonesty perceived to be impacted the most by technology are: i) using information without proper referencing; ii) using unauthorized materials during a test; and iii) using another student's assignments from a previous semester. All three of these incidences are also correlated with faculty members' perceptions of the overall integrity of the classroom being compromised.

Second, this study reveals that faculty members perceive that technology facilitates a student's ability to engage in academically dishonesty behaviour and that current university policies are unable to meet this growing challenge. This study suggests that university administrators should consider updating policies and procedures that deal with the growing impacts of technology on academic dishonesty.

Third, this study provides unique insights into how faculty members attempt to control against academic dishonesty. Our findings reveal some disconnects between the frequency of use and the perceived effectiveness of controls. For example, professors will often inform students about policies relating to academic dishonesty through their syllabi even though this is not perceived to be a useful control. In addition, we find that certain controls are not frequently employed by faculty members even though they are perceived to be useful. For example, creating assessment such that the question responses are unique to a student and using online resources to detect plagiarism are perceived to be among the most effective controls, but, were also among the most infrequently utilized. Considering the fact that faculty members have limited time and various demands related to teaching, research and administration (Fairweather, 1993), our results highlight the need for faculty members to be recognized for creating pedagogical materials which are considered to be effective against academic dishonesty.

Fourth, our findings suggest that faculty members' perception of the motivations for students engaging in academic dishonesty differ from the reasons provided by students. Specifically, faculty members perceive that pressure to get good grades is the main motivator while the prior literature has shown that students ranked pressure to get good grades as the fourth highest motivator (Brimble and Stevenson-Clarke, 2005). In addition, students reported difficult assessment as a stronger motivator than accounting professors. These findings are important as they can help faculty members reconsider their course design in order to minimize student motivation for engaging in academic dishonesty.

The remainder of this paper is organized as follows. Section 2 presents a brief review of the prior literature. Section 3 presents the research questions. Section 4 discusses the methodology and survey development. Section 5 presents the results and key findings. Section 6 offers a brief conclusion.

## Understanding Academic Dishonesty

### *Defining Academic Dishonesty*

There seems to be little agreement on the definition of academic dishonesty (Apostolou, 2013). Most definitions are based on examples of what constitutes academic dishonesty as opposed to defining academic dishonesty as a construct. Students often claim that they did not know that their act was wrong when caught committing academic dishonesty or have varying understandings of academic dishonesty (O'Neill, 2012). The changing academic environment is making it even more difficult to pin-down an exact definition of academic dishonesty. New technologies (Christensen et al., 2010) and social norms (Bernardi, 2011) are challenging conventional perceptions of academic dishonesty. There are many examples of behaviour which are the direct result of new developments and hard to define as academic dishonesty. Research has shown that students largely agree on what constitutes acceptable and unacceptable practices, however, their views can differ from faculty views (Ashworth et al., 1997; Pincus and Schmelkin, 2003) and university policies (Sheard et al., 2002; Braun and Stallworth, 2009). Faculty members tend to include a greater number of activities as academic dishonesty than students and tend to view academic dishonesty more seriously (Roberts and Toombs, 1993; Graham et al., 1994; Koljatic and Silva, 2002).

Academic dishonesty can be classified as passive or active. Passive academic dishonesty includes actions such as sharing or using sorority/fraternity resources or not reporting incidents of academic dishonesty. Active academic dishonesty includes cheating in exams, letting someone take an exam on your behalf, or appearing in exam for some other student (Anitsal et al., 2009).

### *Incidences of Academic Dishonesty*

Academic dishonesty appears to be a global problem (Chapman and Lupton 2004) and there appears to be little difference in dishonest academic behaviour between educational institutions that are publicly versus privately owned, or guided by secular versus religious values (Brown and Choong, 2005). Measuring the overall prevalence of academic dishonesty has proven to be a difficult undertaking and tends to depend on how it is defined. For example, the percentage of students engaged in some type of dishonest activity has been reported to range from a low of 10% (Sheard et al., 2002) to a high of 75% (McCabe and Trevino 1996).

The incidences of academic dishonesty appear to be increasing over the last few decades (Greene and Saxe, 1992; Brown and Choong, 2005; Chapman and Lupton, 2004). Reasons offered for the increase in academic dishonesty include the fact that more students are engaged in online learning, a greater emphasis on team work, and emerging technologies that assist / facilitate academically dishonesty behaviour (Christensen et al., 2010).

Student cynicism is also on the rise as academic institutions become less personal and more competitive (McCabe and Trevino, 1996). It also appears as though academic dishonesty is becoming more socially acceptable. Although the majority of students (92%) agree that cheating is unethical, approximately half (45%) believe it to be socially acceptable (Bernardi, 2011).

It has also been argued that part of the reason for the increase in academic dishonesty is the attitude of the professors, who are less inclined to confront students, report academic dishonesty or impose sanctions. A survey found that 44% of faculty members did not report incidents of academic dishonesty to university administration (McCabe and Trevino, 1996). A lack of administrative support and complex bureaucratic processes are seen to be the main reason for this attitude among professors (Jendrek, 1989).

Cheating appears to be more prevalent among pre-med, engineering, and business majors. The highest level of academic dishonesty was found among undergraduate business majors. About 26% of business majors committed severe acts of cheating, compared to 20% for other disciplines. Business students tend to perceive a greater need for unethical behaviour (Lane and Schaupp, 1989), score lower on measures of moral development (Bernardi et al., 2004), and are more likely to engage in unethical behaviour as compared to students from other disciplines (Iyer and Eastman, 2006; Smyth and Davis, 2004).

It can be argued that students have greater tendency to cheat in more difficult disciplines. As a result, accounting students may report a higher inclination for academic dishonesty considering that their subject matter is considered to be challenging. However, research findings on the ethical development of accounting students are inconclusive. For example, Moffat (1990) found that accounting majors exhibited the least tendency to cheat among business students; however, Nowell and Laufer (1997) were unable to reproduce these results. More recently, Brimble and Stevenson-Clarke (2005) did not find significant differences in academic dishonesty among accounting students when compared to other business disciplines. McCabe et al., (2006) claim that academic dishonesty among accounting students has increased exponentially in recent decades.

There is some preliminary research investigating the impacts of technology on academic dishonesty (Szabo and Underwood, 2004). Cellphones and wearable technology have become sophisticated allowing users to text-message answers during an exam or take pictures of an exam to share with friends writing the exam at a later time. For example, twelve students registered in a University of Maryland introductory accounting course were caught cheating on the final exam during a 2003 sting operation. In this situation, the professor informed students that an answer key would be on the Internet so that students could review the answers after the exam. The professor posted an answer key during the exam which purposely included incorrect answers. A comparison of the responses made by certain students made it clear that they had accessed the answer key during the exam. It was later found that the students reportedly arranged to have friends access the answers and text-message them during the exam (McGeeney and Serrill-Robins, 2003; Read, 2004).

### Student Motivations for Engaging in Academic Dishonesty?
Bolin (2004) believes that Gottfredson and Hirschi's (1990) general theory of crime offers a plausible explanation of academic dishonesty. The theory posits that deviant behaviour can be explained by the interaction between lack of self-control and perceived opportunity in conjunction with a student's attitude toward academic dishonesty. The attitude variable explains nearly 40 per cent of the variation in academic dishonesty by US psychology students.

What causes differences in student's attitudes toward cheating is unclear. Some literature suggests that differences in student attitudes may be specific to a particular region (Magnus et al., 2002), attribute (e.g., age, gender (Guo, 2011), and self-efficacy (Bandura, 1997)), situation (e.g., academic versus business life (Grimes, 2004)), or goal orientation (e.g., learning versus grades orientation (Davis et al., 1992; Eison, 1981; Marsden et al., 2005)). However, some of these assertions have been questioned. For example, Nonis and Swift (2001) found a high correlation between the frequency of cheating at university/college and the frequency of cheating at work, suggesting that dishonest behaviour is not situation specific. Additionally, Roedel et al., (1994) have questioned the goal specific setting by arguing that it is possible for a student to score high on learning and grade orientations simultaneously.

### Controlling Academic Dishonesty
Academic dishonesty needs to be controlled because it reflects a more serious problem in a student's perception of ethical values (Carpenter et al., 2006; Chapman and Lupton, 2004). Educational institutions are expected to hold students accountable and shape their values by communicating, explaining and enforcing ethical behaviour before students are released into the workforce (Rozzet et al., 2011).

Despite their importance, controls against academic dishonesty have not been researched as much as other aspects of academic dishonesty. Institutional honor codes (McCabe, 2005), students perceptions of their behaviour (Teodorescu and Andrei, 2009), in-class deterrents (Smith et al., 2002; Smith and Rosenberg, 2009) and student perceptions of faculty's understanding of policies are cited as possible contextual control factors. Faculty members sanctioning students for academic dishonesty prefer reporting the matter to appropriate authorities, granting a lower grade and/or warning students (Nuss, 1984). The effectiveness of these specific measures remains to be determined.

## Motivation and Research Questions

As discussed, this paper has two primary motivations. First, this paper is motivated by providing preliminary insights into how technology has impacted the academic integrity of academic accounting programs in North America. Second, this paper is motivated by the lack of recent research that focuses on academic dishonesty from the faculty member's perspective. Most prior studies are focused on student responses (e.g., Chapman and Lupton, 2004) and any prior studies based on faculty perspectives have become dated (e.g., McCabe, 1993). The following is a brief discussion of the exploratory research questions that emerge from these two motivations.

Academic dishonesty is an age old issue; however, the rapid adoption of new technologies, such as smartphones and wearable smart devices, combined with the proliferation of social media and online information, have changed the academic dishonesty landscape. These new technologies, which are constantly emerging, can unfairly advantage a student by facilitating academic dishonesty (Christensen et al., 2010).

Mobile and wearable devices can aid students in cheating in exam settings. For example, these technologies can allow students to easily store pictures of solutions and course materials that can be viewed in the exam room or during a washroom break. Mobile and wearable devices can also be used by students to share information during an examination. Trends in mobile and wearable devices suggest that these technologies will become more powerful, smaller in size and more discreet.

The advent of social media, Wikipedia and collaborative websites allow students to easily access a wealth of information in a matter of seconds. This has led to issues with plagiarism and referencing, summarized as follows:

> *"In the age of blogs, mashups, smashups and Wikipedia, traditional notions about academic and educational integrity and appropriate acknowledgment of sources seem altogether out of synch with everyday, creative or artistic research and writing practices. Rarely do students' everyday experience of the Internet include an awareness or consideration of ownership or authorship, much less of plagiarism"* (Pfannenstiel, 2010, pg. 41)

Social media and collaborative websites also allow students to access, store and share class materials (e.g., previous year's exams and previously used assignment materials). New websites are also emerging that allow students to purchase solution manuals for textbooks and/or purchase ready to submit assignments papers and case solutions.

However, faculty members can also use technology to mitigate the impacts of academic dishonesty. For example, technologies can be used to monitor a student's digital footprints during online exams, lockdown technologies can be used to control student's Internet activity during online exams, and computer software can be used to search for plagiarism.

The impact of technology on academic dishonesty leads to the following research questions as posed from the perspective of accounting faculty members:

RQ1 – Do faculty members perceive academic dishonesty to be a serious and growing problem?

RQ2 – Have recent developments of new technologies resulted in increased incidents of academic dishonesty?

RQ3 – Which incidences of academic dishonesty are impacted the most by technology?

An important step in dealing with academic dishonesty is to better understand why students engage in this behaviour in the first place. Recent literature has investigated the motivations for engaging in academically dishonesty behaviour from the student's perspective (e.g., Brimble and Stevenson-Clarke, 2005), but, not from the faculty member's perspective. Accordingly, it is unclear whether accounting faculty members understand the student motivations for

engaging in academic dishonesty.  A better understanding between faculty and students can aid instructors in better designing courses to reduce motivators of academic dishonesty.  This leads to our fourth research question:

RQ4a – What factors do faculty members perceive to be the most significant in motivating students to engage in academic dishonesty?

RQ4b – Is there a gap between the perceptions of faculty members and students with respect to motivations for engaging in academic dishonesty?

With the advent of new technologies, faculty members must be more vigilant in order to ensure that academic integrity is maintained.  Controls for academic dishonesty can be viewed as preventative or detective.  Preventive controls are policies and practices employed in order to discourage academic dishonesty from occurring, while detective controls are designed to identify academic dishonesty once it has occurred.

The controls used against academic dishonesty have not been researched extensively even though controls are becoming more important in today's technology enabled classrooms.  Prior literature provides little insights into the specific measures used by faculty members to prevent academic dishonesty from occurring.  This leads to the fifth research question:

RQ5a - What controls do accounting faculty members use frequently to prevent and detect academic dishonesty?

RQ5b - What controls do accounting faculty members find effective to prevent and detect academic dishonesty?

**Research Design**

*Survey Instrument*
This study adopts a survey methodology.  The survey was developed primarily based on previous studies related to academic dishonesty. The survey was pre-tested on a small group of accounting faculty members in different universities across Canada. The feedback from the pre-test was incorporated into the survey instrument. The pre-testing identified small ambiguities and issues with the survey language prior to being used to collect the data.

The survey was designed based on the extant body of literature, and divided into five sections. The first section focuses on the respondent's demographics. The second section gauges respondent's perceptions about the frequency, significance and role of technology for different incidences of academic dishonesty. The third section relates to the reasons that academic dishonesty occurs.  The fourth section focuses on the frequency and perceived effectiveness of various controls used by faculty members to mitigate the impacts of academic dishonesty. The fifth section focuses on overall perceptions on academic dishonesty of accounting faculty members.

It is important to note that the survey was designed specifically to explore the research questions.  For example, the survey questions related to the motivations for engaging in academic dishonesty were prepared based on the prior literature in order to allow for a meaningful comparison between student responses (Brimble and Stevenson-Clarke, 2005) and faculty responses.  The survey was designed around a 5-point Likert scale anchored at 1 = Low and 5 = High.  A 5-point Likert scale is easy for respondents to visualize and extract meanings as a measure.  The 5-point and 7-point Likert scales also result in the highest possible mean scores relative to the highest attainable score (Dawes, 2008; Preston and Coleman, 2000).

*Research Sample*
Accounting professors from colleges and universities across Canada and the United States were identified as the research sample. The research sample was broad and inclusive of professors from all year levels (introduction to advanced), accounting discipline areas (financial, managerial, auditing, taxation and information systems), educational

backgrounds, and years of experiences.  A database of email addresses was compiled based on publicly available information (e.g., websites of different universities in North America and faculty directors).

The survey was initially emailed during the first week of October 2014 to 5,420 faculty members in the United States and 544 faculty members in Canada.  The email included a cover letter, consent form and a link to the survey which was hosted on Google Forms.  Consistent with the Lakehead University Research Ethics Board approval, the cover letter provided a description of the research, the research ethics approval and outlined the benefits of the study.  The cover letter asked potential participants for their informed consent prior to participation. Two reminder emails were sent out after the initial request.

*Respondent Profile*
In response to these emails, 388 usable responses were received from United States and 57 from Canada with a response rate around 6% and 10%, respectively.  One reason for the higher response rate from Canadian faculty members may be that the principal investigators are from Canada.[1][2] Table 1 presents the demographic profile of the respondents.

Our responses reflect the larger number of faculty members teaching accounting in the United States (85%) relative to Canada (15%).  The breakdown of respondents by gender reveals a fairly even split among male and female.  Approximately 55% of the respondents were males.  This gender mix was similar in both United States and Canada and is consistent with the prior literature (Kwak and Radler, 2002; Smith and Leigh, 1997; Saxon et al., 2003; Underwood et al., 2000).

The majority (67%) of respondent had more than 15 years' experience teaching accounting.  More females (26%) reported less than 10 years' experience than males (15%). Dividing experience into respondents with more than 15 years' experience and less than 15 years' experience yielded 54% females as opposed to 46% males with less than 15 years' experience.  This demographic profile is consistent with the prior literature (Almer and Single, 2007).

Table 1 confirms earlier findings that approximately 80% of accounting faculty hold a terminal degree (Kamath et al., 2011).  Approximately 37% of respondents with a terminal degree also hold a professional designation. Disaggregating the data on the basis of experience into more and less than 15 year experience indicates some significant differences between qualifications. A larger number of faculty members with more than 15 years' experience have both terminal degree and professional qualifications (33%) compared to faculty with less than 15 years' experience (21%).  The percentage of faculty holding a terminal degree was found to be almost equally divided.

Most respondents answered based on their primary teaching responsibility related to advance accounting courses.  More respondents with only a Master's degree or professional designation responded from the introductory level perspective as compared to intermediate or advanced level perspective.  Similarly, more faculty members with less than 15 years' experience (34%) used introductory level perspective as compared to more experienced faculty (17%).

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[1] It is unclear how high the response rate should be (Baruch, 1999). While studies have been done on the variables that impact the level of response rate (Heberlein and Baumgarther, 1978), there is no agreed norm as to what is or what may be considered an acceptable and reasonable response rate. Henderson (1990) has argued that a response rate of 20-30% is fairly typical for mail out surveys. Schaefer and Dillman (1998) found that all else being equal, paper based surveys seemed to enjoy higher response rates than e-mail surveys.  In terms of academic dishonesty research, most of the previous research has focused on student with class administered surveys (Ashworth et al., 1997; Martin, 2005) which results in very high response rate. Braun and Stallworth's (2009) study reported a 13% response rate of accounting faculty members when participation was sought through email.

[2] It is important to note that the results may be impacted by non-responder bias.  That is, only faculty members who are interested in academic dishonesty may have chosen to respond to this voluntary survey.

Approximately 47% of accounting faculty selected financial accounting as their primary teaching area. Teaching areas were fairly evenly distributed across experience levels.  Only 5.7% of the respondents chose online courses as the frame of reference to respond to the survey.

*Analysis of Survey Responses*
We explore our research questions through a variety of descriptive statistics and univariate analyses. For example, we present the mean, median, mode and standard deviation of various survey responses.  In addition, we present Pearson and Spearman correlations and conduct a one-way analysis of variance (ANOVA) between the groups, as required, to explore the research questions.  With respect to the ANOVA, we only present the p-value of the post-hoc between groups t-test.   In addition, Mann-Whitney U tests (Wilcoxon rank-sum) are employed to compare the results across two-by-two groups in order to control for any non-normality of the populations and the difference in sample sizes (Fagerland and Sandvik, 2009).

**Results and Findings**

*Research Question 1 and 2 - Faculty's overall perceptions regarding academic dishonesty and the impact of technology*
The first two research questions explore whether the recent and rapid development of new technologies resulted in increased incidents of academic dishonesty.  In order to explore these research questions, respondents were asked to use a 5-point Likert scale to rate the following four "global statements": i) Overall, academic dishonesty is compromising the integrity of the classroom ("Overall" question); ii) The proliferation of technology has resulted in increased incidents of academic dishonesty ("Technology" question); iii) Incidents of academic dishonesty have increased over the past five to ten years ("Increases" question); iv) University policies have adapted to meet the academic dishonesty challenges posed by technology ("Policy" question).   Table 2 presents the results.

Table 2 reveals that most accounting faculty members (approximately 75%) believe that academic dishonesty is compromising the integrity of the classroom.  ANOVA analysis (results not tabulated) reveals that faculty members who primarily teach at the introductory level feel more strongly that academic dishonesty is compromising the classroom (4.10 mean response versus 3.86, respectively, $\alpha = 0.061$). These findings are consistent with the prior literature that suggests that student learn about academic dishonesty in earlier courses which results in future behaviour modification (Nuss, 1984).

Most faculty members agree (approximately 74% of respondents) that the proliferation of technology has resulted in increased incidences of academic dishonesty.  Only 10% of respondents believed that technology has not resulted in increased incidences of academic dishonesty.

There is less consensus on whether academic dishonesty has increased over time. Approximately 60% seem to agree (somewhat or strongly) that academic dishonesty has increased over time.  ANOVA analysis (results not tabulated) with demographic variables reveals that the increase in the incidences of academic dishonesty varies only by faculty members' years of experience.  That is, faculty members with over fifteen years of experience perceived the incidences of academic dishonesty to have increased more so than faculty with less than fifteen years of experience (3.76 mean response versus 3.53, respectively, $\alpha = 0.059$).

Lastly, the results reveal that accounting faculty members perceive that university policies have not adapted in order to meet the academic dishonesty challenges posed by technological advancements. Approximately 50% of respondents disagreed (somewhat or strongly) that universities have adapted adequately while approximately 24% of respondents believe that policies are adequate.

In order to further explore the first two research questions, we conducted a pairwise correlation analysis between the four "global statements". Table 3 presents the resulting correlations (Pearson correlations are presented above the diagonal while Spearman correlations are presented below the diagonal).

Table 3 reveals that all four global questions are correlated. The largest correlations are documented between the ratings of the Technology, Overall and Increases questions. These findings suggests that faculty perceptions related to the impact of technology is associated with their perception of the overall integrity of the classroom being compromised and incidences of academic dishonesty increasing.

As expected, the rating for the Policy question is negatively associated with the other three questions. The Policy question is most correlated with the Technology question.

### Research Question 3 - Faculty perceptions on how technology has impacted various incidences of academic dishonesty

The third research question explores which incidences of academic dishonesty have been impacted the most by the advent of new technologies. Faculty members were asked to rate various incidents of academic dishonesty in terms of frequency, significance and technological impact. Table 4 presents the results.

Table 4 reveals that the three incidences of academic dishonesty perceived to be impacted the most by technology are: i) using information without proper referencing; ii) using unauthorized materials during a test; and iii) having another person complete an assignment or using another students assignments from a previous semester. The mode was "strongly agree" that technology has impacted all three of these types of academic dishonesties.

Prior literature suggests that faculty members view academic dishonesty relating to exams and assignments differently (Pincus and Schmelkin, 2003). Accordingly, we segregate incidents which are clearly related to exams versus assignments in order to assess whether any differences exist in terms technological impact. Specifically, we grouped incidences number 1 to 8 from Table 4 as being exam related academic dishonesty and incidences number 9 to 11 as being assignment related academic dishonesty. Table 5 presents the results of the mean difference test across the two groups.

Table 5 reveals that faculty believe that technology has impacted academic dishonesty related to assignment much more than exams. One reason may be easier access to electronic documents from prior years (e.g., previous assignments and teaching notes) and the widespread, proliferation of information available through the Internet.

An analysis of the qualitative, open-ended questions reveals that many respondents perceive online information sharing and collusion as a growing issue among students. Most respondents referred to examples of collusion among students where students submit the same or similar assignment with different names. This type of collusion is difficult to detect in larger classes or where different graduate assistants mark assignment.

### Research Questions 4 - Faculty perceptions regarding motivations for engaging in academically dishonesty behaviour

Our fourth research question seeks to understand faculty perceptions of student motivators for engaging in academic dishonesty and also asks whether there is a gap between the perceptions of faculty members and students with respect to motivations for engaging in academic dishonesty. Accordingly, respondents were asked to rate the following eight motivations for academic dishonesty: i) pressure to get good grades; ii) not likely to get caught; iii) cheating is victimless; iv) wanting to help a friend; v) assessment was too time consuming; vi) test date or due date was too close to other test/assignments; vii) assessment is too difficult; viii) teaching method did not accommodate student's learning style. Table 6 presents the survey results from these questions.

When analyzing faculty member responses in isolation, Table 6 reveals that accounting faculty strongly believe that pressure to get good grades is the primary motivation for accounting students to engage in academic dishonesty. Not only did pressure to get good grades receive the highest mean score, but, also the lowest standard deviation which suggests that faculty members have a high level of consensus about this motivation. Faculty members perceived "assessment to difficult" and "teaching method did not accommodate student learning style" as being the least influential motivators.

ANOVA analysis (results not tabulated) reveals that there was no difference in faculty member's perceptions about the pressure to get good grades across course levels. That is, faculty members perceived pressure to get good grades as a strong motivator for introductory, intermediate and advanced level courses. Overall, these findings are consistent with the prior literature that suggests that pressure to get good grades was the most important determinant of academic dishonesty (Drake, 1941; Keller, 1976) and that students more often cheat to enhance their grades rather than pass a subject (Davis, 1993).

The fourth research question is further explored by comparing our results to prior studies that rely on student-based surveys. Prior literature suggests that the top three accounting student motivations for engaging in academic dishonesty are: i) wanting to help a friend; ii) not likely to be caught; and iii) the assessment was too difficult (Brimble and Stevenson-Clarke, 2005). Our results reveal that the top three accounting faculty perceptions regarding student motivations for engaging in academic dishonesty are: i) pressure to get good grades; ii) not likely to get caught; and iii) cheating is victimless.

A direct comparison of faculty versus student responses suggests that there are some gaps between student and faculty perceptions regarding the motivation for engaging in academic dishonesty. First, pressure to get good grades may not be as strong a motivator for engaging in academic dishonesty as faculty tend to perceive. Secondly, faculty members perceive that students may be motivated as a result of the rationalization that cheating is victimless; however, student responses reveal that this rationalization is the least influential motivator. Third, student ranked both "assessment as being too difficult" and "the professor's deficient teaching" as a stronger motivator than faculty members.

However, there is some consensus regarding the "unlikelihood of being caught" as being a strong motivating factor for engaging in academic dishonesty. This finding suggests that either proper controls are lacking or not working as intended. Controls against academic dishonesty are explored in the following section.

### Research Questions 5 - How do accounting faculty control against academic dishonesty?
The fifth research question explore the use and effectiveness of controls employed by faculty members to mitigate the impact of academic dishonesty. Table 7 presents a summary of the responses.

Table 7 reveals that the most commonly used controls are: i) referring to university policies; ii) changing assignment and exams each year; and iii) using multiple examination versions. Davis (1993) found that the preparation of separate test forms was the most effective deterrent regardless of the size and type of institution. Our results also find that the controls perceived to be most effective include: i) changing assignment and exams each year; ii) using multiple examination versions; and iii) creating assessment such that the question responses are unique to a student and cannot be copied.

The results reveal that changing assignments and exams annually and using multiple exam versions are commonly used by faculty members and perceived to be effective. Faculty members have remarked that creating new exams and/or assignment every year requires a considerable time commitment that mostly goes unacknowledged because it does not neatly fit into teaching performance evaluations. This may be a reason why creating assignments such that the responses are unique and cannot be copied is perceived to be effective but is not widely practiced.

Referring to university policies in syllabi is frequently done by faculty members; however, it is not perceived to be an effective deterrent. Leading a discussion in class about academic dishonesty with specific examples is practiced often

and is also considered effective. The results corroborate Nuss' (1984) recommendation that besides publishing academic codes of conduct, due consideration should be given to discussion between students, faculty and student advisors during orientation and regular classes.

Using online resources to detect plagiarism was also reported as comparatively effective but used less often. Faculty members may not use online detection software for many reasons. Web based search engines and free online services to check plagiarism have serious limitations and students who are inclined to plagiarise learn to avoid these detections. Paid software like Turnitin can be expensive and their effectiveness has been questioned. Students have also refused to submit their assignments to online plagiarism software and instructors are increasingly being required to provide opt-out policies in their course outline[3]. Mount Saint Vincent University in Nova Scotia, Canada banned the use of online plagiarism detection software in 2006 (CBC, 2006) as a result of the aforementioned issues. Contrary to expectations that younger faculty would be more tech savvy and consequently prone to use online plagiarism detection tools, we did not find any difference in frequency of online software use between more or less experienced faculty members.

The survey provided respondents with the opportunity to report other techniques that they use to control academic dishonesty. This open-ended question yielded some interesting results. Many faculty members commented that they inform students about academic dishonesty at the beginning of classes. The practice has been adopted by many universities as a matter of policy and Table 7 confirms its widespread use. Some faculty members seem to believe that the approach can be effective if used persistently and creatively. For example, some instructors develop quizzes based on academic dishonesty, discuss stories about accountants who were involved in dishonest practices and provide students with examples of academic dishonesty. A few faculty members commented on the effectiveness of explaining consequences of getting caught while engaged in dishonesty and believe it to be effective. Most of the comments received about controls focused around examination room management. Comments ranged from diligent invigilation to restricting access to cell phone and contact with peers.

**Conclusions and Implications**

The purpose of this paper is explore how technological advancements have impacted different facets of academic dishonesty in accounting courses. Overall, the results reveal that: i) accounting professors perceive academic dishonesty to be a significant issue that is compromising the integrity of the classroom; ii) incidences of academic dishonesty are perceived to be on the rise (over the past five to ten years); iii) the proliferation of technology is perceived to have increased incidences of academic dishonesty; iv) the impact of technology is perceived to have a more significant impact on plagiarism as opposed to exam cheating; and v) university policies are not perceived to be adequate to deal with the academic dishonesty issues arising from technological developments.

This study contributes to the literature on academic dishonesty in three main ways. First, this is among the first studies to provide insights into the impacts of technology on academic dishonesty in accounting programs. Second, this study explores faculty's perceptions of student motivations for engaging in academic dishonesty. Our findings reveals some gaps between faculty members' and students' perceptions of motivators for engaging in academic dishonesty. This is an important finding as it can help faculty members reconsider their course design in order to minimize student motivation for engaging in academic dishonesty. Third, this study explores faculty members' controls against academic dishonesty. Our findings suggest that faculty members frequently utilize controls even though they are not perceived to be useful; however, faculty members do not frequently employ other controls even though they are perceived to be useful. These findings are important for faculty members seeking new ways of mitigating the impacts of academic dishonesty and/or to better understand the controls employed in the courses.

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[3] For example, various students unions, such as the University of Toronto Student Union, have policies for students to opt out of using Turnitin. See http://www.utsu.ca/turnitin/.

This study is not without limitations.  First, the survey instrument did not include a "not applicable" option. Accordingly, respondents may have selected Low ("1") in situations where they would have selected "not applicable". Therefore, not having a "not applicable" option may have resulted in a negative bias in some of the mean responses. However, this limitation is mitigated by the fact that respondents were not required to answer all questions.  Second, respondents voluntarily agreed to participate in the survey.  Therefore, respondents may have chosen to participate due to an interest in academic dishonesty thereby biasing the sample statistics.

**Acknowledgements**

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**Tables**

*Table 1 – Demographic Profile of Respondents*

| Country | |
|---|---|
| Canada | 14.9% |
| United States | 85.1% |
| | |
| Gender | |
| Male | 54.8% |
| Female | 44.5% |
| No response | 0.8% |
| | |
| Years of experience | |
| 1 to 5 years | 4.9% |
| 6 to 10 years | 14.9% |
| 11 to 15 years | 12.3% |
| 15 or more years | 66.8% |
| No response | 1.0% |
| | |
| Educational Profile | |
| Professional designation only | 1.8% |
| Master's level without professional designation | 9.0% |
| Master's level with professional designation | 9.8% |
| Doctoral level without professional designation | 49.4% |
| Doctoral level with professional designation | 29.5% |
| No responses | 0.5% |
| | |
| Course Level | |
| Introductory level courses | 22.6% |
| Intermediate level courses | 34.4% |
| Advanced level courses | 42.2% |
| No response | 0.8% |
| | |
| Course Level | |
| In-class | 93.6% |
| Online | 5.7% |
| No response | 0.8% |
| | |
| Subject Area | |
| Financial Accounting | 47.0% |
| Auditing | 12.9% |
| Taxation | 10.8% |
| Managerial Accounting | 19.5% |

| | |
|---|---|
| Accounting Information Systems | 9.0% |
| No response | 0.8% |

*Table 2 – Overall Faculty Perceptions related to Academic Dishonesty*

| | Overall, academic dishonesty is compromising the integrity of the classroom.<br><br>("Overall") | The proliferation of technology has resulted in increased incidents of academic dishonesty.<br>("Technology") | Incidents of academic dishonesty have increased over the past five to ten years.<br><br>("Increases") | University policies have adapted to meet the academic dishonesty challenges posed by technology<br>("Policy") |
|---|---|---|---|---|
| Strongly disagree | 3.3% | 3.6% | 4.1% | 20.3% |
| Somewhat disagree | 10.8% | 5.1% | 10.3% | 29.4% |
| Neither agree nor disagree | 10.8% | 16.2% | 26.2% | 27.0% |
| Somewhat agree | 41.1% | 44.0% | 29.8% | 17.9% |
| Strongly agree | 33.7% | 30.6% | 28.8% | 5.5% |
| | | | | |
| Mean | 3.91 | 3.93 | 3.69 | 2.53 |
| Mode | 4 | 4 | 4 | 2 |
| Standard Deviation | 1.08 | 1.00 | 1.12 | 1.15 |
| n | 388 | 387 | 387 | 385 |

Respondents were asked to use a 5-point Likert scale to respond to the above note four questions. Specifically, respondents were instructed to consider "What is your level of agreement with the following statements?" when responding. The responses categories were defined as follows: 1 – "Strongly disagree"; 2 – "Somewhat disagree"; 3 – "Neither agree nor disagree"; 4 – "Somewhat agree"; and 5 – "Strongly agree". The mean, median, mode, and standard deviation were calculated based on the number of useable responses per question, as identified by the sample size (n).

*Table 3 – Correlation Matrix among the Global Questions*

| | | **Pearson** | | | |
|---|---|---|---|---|---|
| | | **Overall** | **Technology** | **Increases** | **Policy** |
| **Spearman** | **Overall** | 1.00 | 0.563***<br>(0.000) | 0.228***<br>(0.000) | -0.152***<br>(0.001) |
| | **Technology** | 0.564***<br>(0.000) | 1.00 | 0.424***<br>(0.000) | -0.173***<br>(0.001) |
| | **Increases** | 0.221***<br>(0.000) | 0.421***<br>(0.000) | 1.00 | -0.125<br>(0.014)** |
| | **Policy** | -0.194***<br>(0.000) | -0.176***<br>(0.000) | -0.121**<br>(0.017) | 1.00 |

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

Correlation analysis was conducted among the four questions presented in Table 2.  Pairwise Pearson correlations are presented above the diagonal and Spearman rank correlations are presented below the diagonal.  The significance (p-value, two tailed) of each correlation is presented in parentheses below the coefficient.

*Table 4 - Frequency, significance, and technological facilitation of various types of academic dishonesty*

| Incidence # | Incidence of Academic Dishonesty | Frequency | | | Significance | | | Technology | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Mode | St Dev | Mean | Mode | St Dev | Mean | Mode | St Dev |
| 1 | Copying from another student on a test | 1.79 | 1 | 1.02 | 3.73 | 5 | 1.49 | 2.08 | 1 | 1.39 |
| 2 | Using unauthorised material during a test (e.g., phone, notes, pre-programmed calculator, etc.) | 1.75 | 1 | 1.05 | 3.63 | 5 | 1.55 | 3.23 | 5 | 1.61 |
| 3 | Communicating by signals during a test. | 1.35 | 1 | 0.67 | 2.90 | 1 | 1.67 | 1.80 | 1 | 1.22 |
| 4 | Continuing to write after the test time has expired. | 2.32 | 1 | 1.37 | 1.97 | 1 | 1.12 | 1.26 | 1 | 0.78 |
| 5 | Gaining unauthorised access to test material before writing. | 1.56 | 1 | 1.02 | 3.65 | 5 | 1.71 | 2.76 | 1 | 1.65 |
| 6 | Getting someone else to pretend they are the student (impersonation) during a test. | 1.17 | 1 | 0.58 | 3.52 | 5 | 1.82 | 1.59 | 1 | 1.17 |
| 7 | Using washroom breaks to access unauthorized materials (e.g., hidden notes, phone access, etc.) | 1.79 | 1 | 0.99 | 3.30 | 5 | 1.58 | 2.30 | 1 | 1.45 |
| 8 | Requesting special consideration/deferred exam (eg for illness) assuming that the conditions are not genuinely met. | 2.09 | 1 | 1.19 | 2.78 | 1 | 1.43 | 1.56 | 1 | 1.02 |
| 9 | Having another person complete an assignment or using another student's assignment from a previous semester | 2.84 | 3 | 1.34 | 3.45 | 5 | 1.39 | 3.21 | 5 | 1.51 |
| 10 | Using information without proper referencing. | 2.61 | 1 | 1.35 | 3.18 | 3 | 1.45 | 3.43 | 5 | 1.56 |
| 11 | Falsifying the results of one's research. | 1.35 | 1 | 0.88 | 3.07 | 5 | 1.84 | 2.45 | 1 | 1.61 |
| 12 | Preventing other student's access to resources required to complete an assignment. | 1.19 | 1 | 0.68 | 2.38 | 1 | 1.62 | 1.77 | 1 | 1.29 |

Respondents were asked to use a 5-point Likert scale to rate each of the twelve incidences of academic dishonesty. Specifically, respondents were provided the following instructions "Each of the following presents a scenario of academic dishonesty. Please rate each scenario on a scale of one (low) to five (high) across the following three metrics: Frequency: how often does this type of academic dishonesty occur in your classroom? Significance: how significant would this type of academic dishonesty be to the overall integrity of a student's grade in your course? Technological Facilitation: how important is technology in facilitating this type of academic dishonesty?" The mean, median, mode, and standard deviation were calculated based on the number of useable responses per question.

*Table 5 – Technology's impact on plagiarism versus exam related academic dishonesty*

|                                           | Mean      |
| ----------------------------------------- | --------- |
| Exam related academic dishonesty          | 2.08      |
| Plagiarism related academic dishonesty    | 3.03      |
| Mean difference                           | 1.05      |
| ANOVA t-test p-value                      | 0.00***   |
| Mann-Whitney U test p-value               | 0.00***   |

*** Significant at the 1% level

The exam related academic dishonesty represents the average rating for incidences number 1 to 8 from Table 5. The plagiarism related academic dishonesty represents the average rating for incidences 9 to 11 from Table 5. Both the ANOVA ad-hoc t-test and the Mann-Whitney U test were conducted on the mean difference between the two groups. The t-test was conducted assuming unequal variance across the groups.

*Table 6 - Faculty Perceptions on why students engage in academic dishonesty*

| Motivations                                                    | Mode | Mean | Std. Deviation | Ranking |
| -------------------------------------------------------------- | ---- | ---- | -------------- | ------- |
| Pressure to get good grades                                    | 5    | 4.46 | .789           | 1       |
| Not likely to get caught                                       | 4    | 3.78 | .980           | 2       |
| Cheating is victimless                                         | 4    | 3.29 | 1.245          | 3       |
| Wanting to help a friend                                       | 3    | 3.28 | 1.070          | 4       |
| Assessment was too time consuming                              | 4    | 3.24 | 1.210          | 5       |
| Test date or due date was too close to other test/assignments | 4    | 3.20 | 1.156          | 6       |
| Assessment is too difficult                                    | 3    | 3.18 | 1.138          | 7       |
| Teaching method did not accommodate student's learning style   | 1    | 2.08 | 1.016          | 8       |

Respondents were asked to use a 5-point Likert scale to rate each of the eight motivators of academic dishonesty. Specifically, respondents were asked "Why do you think students engage in academic dishonesty?" whereby 1 was defined as "Not a strong motivator", 3 was defined as "Somewhat of a Motivator", and 5 was defined as "Strong Motivators". The mean, median, mode, and standard deviation were calculated based on the number of useable responses per question.

*Table 7 - Faculty member controls for academic dishonesty*

|  | Frequency | | | Effectiveness | | |
|---|---|---|---|---|---|---|
|  | Mean | Mode | St Dev | Mean | Mode | St Dev |
| Include or refer to the University's policy on academic dishonesty in the syllabus. | 4.36 | 5 | 1.17 | 2.32 | 1 | 1.15 |
| Changing assignments and exams each year in order to limit student's access to past materials. | 4.03 | 5 | 1.22 | 3.96 | 5 | 1.07 |
| Using multiple examination versions (e.g., scrambling the order of questions on multiple-choice exams). | 3.75 | 5 | 1.52 | 3.82 | 4 | 1.12 |
| Increase the certainty of punishment if detected. | 3.39 | 5 | 1.51 | 3.50 | 3 | 1.26 |
| Lead a discussion in class about academic dishonesty with specific examples and explanations of the consequences. | 2.97 | 5 | 1.57 | 2.72 | 3 | 1.17 |
| Have students sign a statement that their work is their own. | 2.71 | 1 | 1.74 | 2.29 | 1 | 1.16 |
| Using online resources, search engines or other plagiarism software to detect plagiarism. | 2.64 | 1 | 1.62 | 3.52 | 1.12 | 1.24 |
| Creating assessment such that the question responses are unique to a student and cannot be copied. | 2.25 | 1 | 1.48 | 3.63 | 5 | 1.37 |
| Requiring students to turn in research materials, with incorporated sections highlighted. | 1.52 | 1 | 1.07 | 2.60 | 3 | 1.31 |
| Checking the washrooms before an exam for unauthorized materials. | 1.32 | 1 | 0.89 | 1.60 | 1 | 0.99 |

Respondents were asked to use a 5-point Likert scale to rate each of the ten controls for academic dishonesty. Specifically, respondents were instructed as follows "Each of the following questions presents a potential control to mitigate the impacts of academic dishonesty. Please rate each scenario on a scale of one (low) to five (high) across the following two metrics: Frequency: how often do you use this control in your classroom? Effectiveness: how useful do you believe that this control is at mitigating the impacts of academic dishonesty? The mean, median, mode, and standard deviation were calculated based on the number of useable responses per question.