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MEASURING THE EFFECTIVENESS OF BUSINESS ETHICS EDUCATION: AN ANALYSIS OF BUSINESS ETHICS EDUCATION MEASUREMENT PREFERENCES IN NATIONAL LIBERAL ARTS COLLEGES IN THE UNITED STATES

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ABSTRACT

As evidenced by the recent revitalization of guidelines for general learning objectives for business ethics education by the two primary undergraduate business accrediting agencies, the Association to Advance Collegiate Schools in Business (AACSB) and the Accrediting Council for Business Schools and Programs (ACBSP), undergraduate business ethics education is of significance importance today. However, the specific ways in which business schools implement and measure business ethics education remains quite diverse. This study was designed to survey and compare current undergraduate business ethics education measurement preferences in national liberal arts colleges in the United States. The results indicate that, while preferences for measurement methods centered upon the ability to apply ethics concepts, the support for any use of standardized testing of business ethics learning objectives, whether based in ethics application or conceptual knowledge alone, was clearly divided.

JEL: A2, A22, I2, I21, I23

KEYWORDS: Business Ethics, Ethics Education, Undergraduate Business Programs, Education Measurement

INTRODUCTION

While the first higher education program in business was established in Paris on December 1, 1819, the study of ethical decision making as it relates to business education has only been addressed over the past one hundred years and only seriously implemented over the past forty years (Abend, 2013). It was not until the late 1970's and early 1980's, that the subject of business ethics became a discipline worthy of education, research and publication. Academic societies related to the study of business ethics, such as the Society for Business Ethics, founded in 1980, finally provided forums for research, teaching and promotion of ethical decision making in business. Around this same time, journals such as the Business and Professional Ethics Journal, Journal of Business Ethics, and Business Ethics Quarterly provided academic outlets for the publication of business ethics study and research (Abend, 2013).

Following the ethics scandals early in the twenty-first century such as Enron and WorldCom as previously mentioned, the Association to Advance Collegiate Schools in Business (AACSB) established a task force to examine and report on the current status of ethics education in business schools (Waples, Antes, Murphy, Connely, & Mumford, 2009). The published report strongly encouraged business schools to ramp up their ethics education to better prepare students for the wide range of ethical dilemmas found in day to day business decision making (Waples et al., 2009). Not only have the new academic

requirements led to only gradual increases in curriculum development for business ethics, the specific ways in which business schools address the issue have also been quite diverse (Evans & Marcal, 2005; Waples et al., 2009). In large part due to the continued discourse about the effectiveness of incorporating ethics into business education, the AACSB has maintained a mission-based approach to the ethics requirement which allows for a great deal of institutional freedom in addressing the topic (Evans & Marcal, 2005).

An expansion of educational programs in undergraduate business and economics programs and the addition of specific course offerings over the past several decades have been designed to more adequately prepare future business leaders for the dynamic opportunities facing them in the profit driven business world based in a capitalist society. While, the effectiveness of business ethics education's impact on future business leaders is still heavily debated, business schools are constantly attempting to understand the effectiveness of each aspect of their education program. Steven Armstrong and Cynthia Fukami (2010) reflect on the challenges business schools face when trying to determine whether or not their programs are effective in promoting student learning. Often, the focus on the academic expansion has been courses and programs dealing with such vital subjects as finance and accounting, but, given the scandals in the business community over the past decade, subject matter in the area of ethical decision making has garnered increasing attention. However, when measuring the impact on student learning within business programs, the focus has been on more concrete material (Armstrong & Fukami, 2010).

When it comes to measuring the effectiveness of business ethics education, either from the context of a stand-alone ethics course or from integration into already existing courses, there are a variety of methods that can be used. The accrediting agencies such as the AACSB and ACBSP (Accrediting Council for Business Schools and Programs) have established general learning objectives for business ethics education. While not requiring specific ethics approaches, the AACSB does require that business ethics education enable students to develop "ethical understanding and reasoning (able to identify ethical issues and address the issues in a socially responsible manner)" (AACSB, 2013, p. 30) in addition to understanding "social responsibility, including sustainability, and ethical behavior and approaches to management" (AACSB, 2013, p. 31). To determine satisfaction of these requirements, students can be tested on the material by defining ethics terms and/or by the specific application of ethical theories on an exam, they can be required to write about or present an ethical decision making process incorporating theoretical information into an ethical dilemma, or they can be measured by use of a standardized test such as the Defined Issues Test.

LITERATURE REVIEW AND RESEARCH DEVELOPMENT

Measuring the effectiveness of ethics education is a relatively new endeavor. It was only thirty years ago, in 1985, that Muriel Bebeau, an educational psychologist with the University of Minnesota School of Dentistry, began a research study addressing, among other questions, whether or not a person's moral sensitivity can be enhanced. Partnering with James Rest, they created eight dramas for teaching and assessment. These dramas centered upon the most common ethical dilemmas found in the profession of dentistry. The total instruction consisted of 39 contact hours over four years. They tested 720 students from 1985 to 1992 using the Defined Issues Test. The results revealed that "pretest to posttest Defined Issues Test comparisons for seven of the eight classes of instructed students indicated statistically significant improvement" (Baab & Bebeau, 1990, p. 44).

Following up on the aforementioned longitudinal study, Murial Bebeau published additional research in the Journal of Moral Education in 1983. In the 1993 article, Bebeau incorporates her ongoing research to address specific reasons as to why some individuals fail to make moral decisions and/or fail to provide an effective construct for building ethics training and education within their organizations (Bebeau, 1993). Bebeau (1993) concludes that it is often a lack of action planning that leads to a failure in ethical decision

making. It is not simply enough to encourage ethical character building, it is also important to help individuals within the organization build credible decision making skills. While an individual's moral character is a vital ingredient for making ethical decisions, skills in problem solving and in building interpersonal relationships are also paramount (Bebeau, 1993).

Bebeau goes on to discuss how the concept of self-regulation is closely tied to the implementation of these problem solving skills (Bebeau, 1993). Self-regulation refers to the ability that an individual possesses in order to act in their long-term best interest, and to make decisions consistent with their beliefs and values. Bebeau, using supporting work from James Rest, believes that unique educational experiences can be used to build and strengthen an individual's analysis and problem solving capabilities as well as helping to build an individual's confidence in making ethical decisions (Bebeau, 1993).

Both Rest (1983) and Bebeau (1993) used their ongoing research on the effectiveness of ethics education to further describe the impact of ethics instruction and discuss the very important relationship between an individual's confidence in their own cognitive abilities and any positive impact on ethical decision making. Essentially, if an individual believes that they are sufficiently equipped to solve an ethical problem then they are more likely to continue to work toward an ethical solution to the dilemma. On the other hand, if they feel unable or ill equipped to solve an ethical problem and face the problem with a sense of foreboding then they are less likely to persevere toward an ethical solution (Bebeau, 1993). As Bebeau and other researchers have studied, effective curriculum design in the area of ethics education can have a significant impact on an individual's capacity and willingness to make ethical decisions. An acknowledgement of the link between ethics instruction and the student's capacity and willingness to make ethical decisions is an important consideration as business schools design and implement their ethics education program.

So while the capacity for ethical decision making seems to make a difference in the long term, the ability to actually measure learning objectives remains a divided issue with a variety of methods in use. In fact, there are a growing number of undergraduate programs that are beginning to use standardized testing to measure learning objectives for undergraduate business education (Mirchandani, Lynch, & Hamilton, 2001), but the ethics component is just a small part of the testing (ETS, 2015). A Major Field Test for the Bachelor's Degree in Business was developed by the Educational Testing Service (ETS, 2015) and contains 120 multiple-choice questions designed to measure a student's subject knowledge and the ability to apply facts, concepts, theories and analytical methods. A growing number of colleges use the test to compare learning objectives and their performance as related to other colleges (Mirchandani et al., 2001). The test may provide some key insights into the future, however the overall acceptance of the ETS Major Field Test is still limited and ethics testing represents only a small portion of the exam.

Therefore, while there are a variety of methods used to measure the effectiveness of business ethics programs, there has been a void of research studies designed to examine the preferences of business school administrators or faculty members in terms of measurement methods. This is an important consideration since growing numbers of employers are looking for business graduates that have had some measure of undergraduate business ethics education. A 2009 survey of employers conducted for the Association of American Colleges and Universities found "that 75 % of those surveyed felt that colleges and universities needed to place greater emphasis on teaching students skills associated with the ability to connect choices and actions to ethical decisions'' (Floyd, Xu, Atkins, & Caldwell, 2012, p. 772) This would suggest that employers are learning to recognize that importance of ethical decision making in the context of business relationships and that American undergraduate institutions should be doing more to develop ethical business leaders.

Therefore, while the accrediting agencies such as the AACSB and ACBSP do not require specific approaches to undergraduate business ethics education, the AACSB does require that business ethics

education enable students to develop "ethical understanding and reasoning (able to identify ethical issues and address the issues in a socially responsible manner)" (AACSB, 2013, p. 30) in addition to understanding "social responsibility, including sustainability, and ethical behavior and approaches to management" (AACSB, 2013, p. 31). To determine satisfaction of these requirements, students can be tested on the material by defining ethics terms and/or by the specific application of ethical theories on an exam, they can be required to write about or present an ethical decision making process incorporating theoretical information into an ethical dilemma, or they can be measured by use of a standardized test such as the Defining Issues Test.

DATA AND METHODOLOGY

As shown through the literature review, undergraduate business programs, especially those programs which are accredited by either the AACSB or the ACBSP, are under increasing pressure to incorporate ethics more fully into their academic program, but there are a variety of methods used to measure the attainment of learning objectives. This study was designed to survey and compare current undergraduate business ethics education measurement preferences among liberal arts colleges in the United States. There are 180 liberal arts colleges as classified by the U.S. New and World Report Rankings and a significant percentage of these liberal arts colleges offer economics and/or business administration majors (US News and World Report, 2013). The primary purpose of the study was to examine the survey responses of business school administrators (and/or faculty) who work with undergraduate business education in national liberal arts colleges to determine preferences for the measurement of learning objectives in undergraduate business ethics education.

Participants in the research participated in an online survey focused on preferences regarding the structure of business ethics curricula in the liberal arts college's business programs. Data were collected from representatives of business programs in liberal arts colleges in the U.S. Participation was voluntary and risk to participants was minimal. Respondents were not asked to identify themselves by name and the data collected are only reported in the aggregate and is not linked in any way to the individual respondents.

National liberal arts colleges were selected for the study as, in many ways, these colleges represent the training ground for the broadly educated future leader and "while liberal arts colleges account for only 2 percent of the total college enrollment in the United States, the image of the liberal arts campus is now synonymous with higher education as a whole" (Connelly, 2012, p. 526). An institutional representative from each of the national liberal arts colleges was invited to participate in a survey developed specifically for addressing the research questions of the study. The survey was addressed to faculty or administrators working with the undergraduate business programs at the college. Data were collected and analyzed in an attempt to answer primary research question concerning the measurement of learning objectives in undergraduate business ethics education.

The survey instrument developed for this study regarding business ethics education in national liberal arts colleges was specifically developed by the researcher to address the research question. Previous studies have examined ethics education in business schools, but the majority of these studies have focused only on accredited programs (Rutherford et al., 2012; Schoenfeldt, McDonald, & Youngblood, 1991). Therefore, the previously used questionnaires would not be applicable to a study of national liberal arts colleges which are diverse in terms of separate accreditation for their undergraduate business programs. For this study, a questionnaire was selected as the means of gathering information in order to emphasize objectivity in the collection of data.

As each national arts college implements different organizational structures in their business programs in terms of leadership for undergraduate business programs, respondents included faculty and/or administrative leaders, such as: (1) deans or other college level administrators responsible for implementation of the undergraduate business curriculum, (2) department chairs responsible for the undergraduate business curriculum, and/or (3) other faculty responsible for the undergraduate business curriculum. The survey instrument collected demographic data as to the academic personnel, by position only, which provide the information.

At the close of the survey period in June 2014, online surveys had been sent to each of the 180 national liberal arts colleges classified and ranked by U.S. News & World Report. Fifty-five respondents returned surveys for an overall response rate of 30.55%. Four additional surveys received were only partially completed and thus determined to be unusable. Although the expected response rate was 35%, it was determined that a 30% response rate would nonetheless provide sufficient data to address the research question since the responses received reflect an adequate representation of the sample when examining the demographic data (Gall et al., 2007).

The survey asked four demographic questions to ensure that the respondents were appropriately qualified to fill out the survey and to provide some insight into the makeup of the governance and accreditation of the undergraduate business programs surveyed. In order to be classified as appropriately qualified, respondents needed to be faculty and/or administration personnel who had direct knowledge of business ethics education at the undergraduate level. This would include business school deans, department chairs, and other appropriate faculty members. The data reveals that 54.5% of the respondents indicated that they served as the department chair in business or business administration, and 20% of respondents indicated that they served as the department chair in economics.

Respondents were also asked to identify the particular affiliation of their institution: public, private with religious affiliation, or private without religious affiliation. The data indicates that nearly two-thirds of the respondents (65.5%) in this study belonged to private, religiously affiliated institutions. Slightly less than one-third of respondents (30.9%) were from private, non-religiously affiliated institutions, and only two respondents (3.6%) belonged to public institutions.

Thirdly, respondents were asked to identify the business program accreditation status of their institutions. The accreditation data reveals that 89.1% of the participants in this study indicated that their business school program was not separately accredited by either the AACSB or the ACBSP. These results are similar to a previously conducted document analysis by the researcher of the complete pool of 180 national liberal arts colleges which indicated only 13 (7%) were separately accredited by the AACSB and only 2 (1%) were accredited by the ACBSP leaving 92% of the entire sample without separate accreditation for the business school/program.

Finally, respondents were asked to identify whether or not the institution mission statement contains a reference to ethics or ethical decision making. It is noteworthy that only 38.2% of respondents indicated that the institutional mission statement included a reference to ethics or ethical decision making. Despite the growing emphasis on ethics and ethical decision making throughout U.S. colleges and universities (Waples, et al., 2009), the majority of respondents in this survey (56.3%) indicated that the mission statement of their business program did not contain a reference to ethics of ethical decision making (43.6%) or that they did not have a mission statement (12.7%).

RESULTS

The research objective of this article was to examine preferences for the measurement of undergraduate business ethics learning objectives in national liberal arts colleges using the aforementioned measurement

strategies. The study sought to determine any relationship between the preferences of the institutional representative with respect to the measurement of learning objectives for undergraduate business ethics education and three selected factors including institutional type, business school accreditation, as well as ethics references in the mission statement.

It was question 10 of the survey which addressed the preferred method for measuring the attainment of learning objectives for business ethics education at the undergraduate level. The stem of the statement—"Measurement of business ethics learning objectives is best achieved through student performance on a:"— was followed by six distinct choices. Respondents were asked to respond to the following choices: written examination based on ethical concepts; written examination based on ethics application; written case analysis paper; verbal presentation of an ethics case analysis; Defining Issues Test; or other standardized ethics assessment. If none of these five answers applied to the respondent, he or she was given the option to mark that "there is no effective way to measure the attainment of business ethics learning objectives." Respondents were asked to rate each statement as strongly agree (SA), somewhat agree (sA), neutral (N), somewhat disagree (sD) or strongly disagree (SD). The responses were given a 1-5 point value with strongly agree responses assigned 5 points and strongly disagree 1 point.

Table 1 summarizes that data and shows that the statement: "Measurement of business ethics learning objectives is best achieved through student performance on a written examination based on ethics application" had the highest percentage of agreement, with 94.5% of respondents indicating that they somewhat agree or strongly agree with the statement, 3.6% indicating neutrality toward the statement and only one respondent indicating somewhat or strongly disagree with the statement.

Table 1: Preferences for Measurement of Business Ethics Learning Objectives

		SA/sA	Neutral	sD/SD
Measurement of business ethics learning objectives is effectively achieved through student performance on a:	**Mean**	**N %**	**N %**	**N %**
Written examination based on ethics application	4.24	52 (94.5%)	2 (3.6%)	1 (1.8%)
Verbal presentation of an ethics case analysis	4.02	40 (72.7%)	15 (12.7%)	0
Written case analysis paper	4.00	39 (70.9%)	16 (27.3%)	0
Written examination based on ethics concepts	3.85	45 (81.8%)	7 (12.7%)	3 (5.5%)
Defining Issues Test or other standardized ethics assessment	3.38	25 (45.5%)	25 (45.5%)	5 (9.1%)
There is no effective way to measure the attainment of business ethics learning objectives	2.05	12 (21.8%)	29 (52.7%)	14 (25.5%)

This table shows overall results of the study indicating preferences for measurement of business ethics learning objectives: written examination based on ethics application, verbal presentation of an ethics case analysis, written case analysis paper, written examination based on ethics concepts, defining issues test or other standardized ethics assessment or the statement "there is no effective way to measure the attainment of business ethics learning objectives."

The next three statements were fairly close in percentage terms. The statement: "Measurement of business ethics learning objectives is best achieved through student performance on a verbal presentation of an ethics case analysis" had the second highest mean point value with 72.7% of respondents indicating that they somewhat agree or strongly agree with the statement, 12.7% indicating neutrality toward the statement and no respondents indicating that they somewhat or strongly disagree with the statement. The statement: "Measurement of business ethics learning objectives is best achieved through student performance on a written case analysis" had the third highest mean point value with 70.9% of respondents indicating that they somewhat agree or strongly agree with the statement, 27.3% indicating neutrality toward the statement and only no respondents indicating that they somewhat or strongly disagree with the statement. The statement: "Measurement of business ethics learning objectives is best achieved through student performance on a written examination based on ethics concepts" had the fourth highest mean

point value with 81.8% of respondents indicating that they somewhat agree or strongly agree with the statement, 12.7% indicating neutrality toward the statement and only 5.5% of respondents indicating that they somewhat or strongly disagree with the statement.

The lowest ranked statement was the statement "There is no effective way to measure the attainment of business ethics learning objectives." This statement had a distinctly lower mean point value when compared to the other statements with 21.8% of respondents indicating that they somewhat agree or strongly agree with the statement, 52.7% indicating neutrality toward the statement and 25.5% of respondents indicating that they somewhat or strongly disagree with the statement. Thus, the data seem to support the idea that business ethics learning objectives can be effectively measured through a variety of methods with the methods focused on ethics application garnering the higher levels of support.

In terms of mean value, the data from this survey revealed that the statement "measurement of business ethics learning objectives is best achieved through student performance on a written examination based on ethics application (the ability to identify and analyze ethical issues in cases or other fact based situations)" had highest mean value (4.24) compared to other statements with responses Strongly Agree (30.9%), Agree (63.6%), Neutral (3.6%), Disagree (1.8%) and Strongly Disagree (0%). This response, when combined with the second and third most popular responses, indicate a preference for measurement based on ethics application (the ability to identify and analyze ethical issues in cases or other fact based situations).

The statement "measurement of business ethics learning objectives is best achieved through student performance on a verbal presentation of an ethics case analysis (analyzing ethical issues in a specific case applying theoretical knowledge and critical thinking principles)" had the second highest mean value (4.02) compared to other statements with responses Strongly Agree (29.1%), Agree (43.6%), Neutral (27.3%), Disagree (0%) and Strongly Disagree (0%) and the statement "measurement of business ethics learning objectives is best achieved through student performance on a written ethics case analysis paper (analyzing ethical issues in a specific case applying theoretical knowledge and critical thinking principles)" had the third highest mean value (4.00) compared to other statements with responses Strongly Agree (29.1%), Agree (41.8%), Neutral (29.1%), Disagree (0%) and Strongly Disagree (0%).

Both of these responses support the view that measurement of learning objectives for business ethics education is best served through ethics application. The data indicate that the preferences for measurement of learning objectives in business ethics center upon the actual application of ethical decision making in a case analysis format, whether through exam, written paper or verbal presentation. Measurement based on ethics application has been studied in previous research and several studies have demonstrated support for measurements based on ethics application through critical thinking examinations, presentations and papers (Nelson et al., 2012). In a 2012 study, researchers found that the completion of a writing assignment would lead to greater capacity for managing ethics and that completion of a writing assignment on the topic of diversity would lead to greater capacity for managing diversity (Nelson et al., 2012).

In contrast to measurement based upon ethics application, the choices regarding measurement based on knowledge of ethics concepts had lower levels of support. The statement "measurement of business ethics learning objectives is best achieved through student performance on a written examination based on ethics concepts (the ability to identify and explain major ethical theories like utilitarianism, natural rights, etc.) had the third lowest mean value (3.85) compared to other statements with responses Strongly Agree (10.9%), Agree (70.9%), Neutral (12.7%), Disagree (3.6%) and Strongly Disagree (1.8%). This result also supports the general move toward ethics application through case studies or other means.

The result concerning the Defining Issues Test was a slight surprise and is deserving of future research since an increasing number of undergraduate business programs are using standardized testing to measure learning objectives in business subjects, including business ethics. The statement "measurement of business ethics learning objectives is best achieved through student performance on the Defining Issues Test or other standardized ethics assessment." had the second lowest mean value (3.38) compared to other statements with responses Strongly Agree (1.8%), Agree (43.6%), Neutral (45.5%), Disagree (9.1%) and Strongly Disagree (0%).

The Defining Issues Test has been around since 1974, when James Rest created five dramatic stories for teaching and assessment of ethical decision making. Since then a number of studies have shown that ethics education can result in statistically significant improvement in ethical awareness and decision making as revealed in the Defining Issues Test (Baab & Bebeau, 1990, p. 44). In 1999 the instrument was revised in the DIT-2 to strengthen the validity criteria and continues to be used to measure changes in ethical awareness and decision making. Therefore, it is noteworthy that the respondents in this study do not strongly support the use of such standardized testing to measure the attainment of business ethics learning objectives. Future research is indicated to examine why the defining issues test, or other standardized testing for business ethics learning objectives, does not have higher levels of support.

While respondents were not in complete agreement regarding the most effective ways to measure the attainment of business ethics learning objectives, most respondents did support some type of measurement. The statement "there is no effective way to measure the attainment of business ethics learning objectives" had the lowest mean value (2.05) compared to other statements with responses Strongly Agree (9.1%), Agree (12.7%), Neutral (52.7%), Disagree (25.5%) and Strongly Disagree (0%). This reveals that respondents generally believe that some measurement is appropriate in determining the level of learning objectives in business ethics.

Further differences were found with the final statement "there is no effective way to measure the attainment of business ethics learning objectives" as there seems to be a distinct division of support for the viewpoint that business ethics learning objectives cannot be adequately measured depending on institution type, accreditation status and mission statement. For this statement 30.5% of respondents from private religious affiliation colleges expressed agreement while only 6% of respondents from private non-religious affiliation colleges expressed agreement. In addition, no respondents from accredited programs expressed agreement while 25% of respondents from non-accredited programs expressed agreement and no respondents from institutions with an ethics reference in their mission statement expressed agreement while 23.3% of respondents from institutions without an ethics reference in their mission statement expressed agreement. This is another result that would bear greater examination in further research to address the reasons why one group of faculty/administrators would have stronger feelings about the adequacy of measuring business ethics learning objectives than another.

Finally, the data concerning measurement of student learning objectives by use of a standardized assessment are also noteworthy considering the lack of support across the different institutional factors. This result is noteworthy because there has been a gradual increase in the use of standardized assessment for ethics analysis and ethical decision making in business ethics and other professional fields over the past thirty years. Therefore this is a result that bears greater investigation.

<u>Preferences on the Measurement of Learning Objectives and Institution Type</u>

One of the major questions of this research was how two different types of private colleges, religious affiliation or non-religious affiliation, perceived the effectiveness of different instructional strategies. (For the analysis based on institutional type, public institutions were not included in the final analysis as only two respondents were from public institutions.) The respondents were queried on whether they

thought five different instructional strategies could effectively measure business ethics objectives, or indicate there was no effective method of measurement. The data provide an indication about the degree of agreement of the respondents on which instructional strategies can effectively measure business ethics objectives.

In reviewing the data in Table 2, it is clear that the greatest degree of agreement about an effective way to measure business ethics objectives is by written examination based on ethics application with a very strong majority of both religious (94.4%) and non-religious (100%) institutions strongly agreeing or somewhat agreeing with the statement. The instructional strategies of "verbal presentation of an ethics case study" and "written case analysis paper" were also deemed effective ways to measure ethics, but to a lesser degree. The verbal presentation of an ethics case analysis was the second highest ranked instructional strategy with only slight differences in terms of institution type with 88.2% of non-religiously affiliated institutions expressing somewhat or strong agreement and 63.9% of religiously affiliated institutions expressing somewhat or strong agreement. The results of the third ranked instructional strategy, written case analysis paper, demonstrated little difference based on institution type as 70.6% of non-religiously affiliated institutions expressing somewhat or strong agreement and 63.9% of religiously affiliated institutions expressing somewhat or strong agreement.

The results of the fourth ranked instructional strategy, written examination based on ethical concepts, also demonstrated only slight differences based on institution type as 76.5% of non-religiously affiliated institutions expressing somewhat or strong agreement and 86.1% of religiously affiliated institutions expressing somewhat or strong agreement.

The responses concerning measurement of student learning objectives by use of a standardized assessment, the fifth ranked instructional strategy, demonstrated a lack of support across the different institution types. Responses were similar despite differences in institution type with 41% of respondents from private non-religiously affiliated institutions and 47% of respondents from private religiously affiliated expressing that they somewhat agreed or strongly agreed with the use of a standardized assessment. This is a result that bears greater investigation as the Defining Issues Test and other similar standardized assessments for ethics awareness and decision making have continued to gain ground in their use in undergraduate and graduate programs (Baab & Bebeau, 1990) but apparently no so much for business ethics in national liberal arts colleges with such relatively low levels of support.

The differences among respondents from different institutional types were most apparent when examining the statement, "There is no effective way to measure the attainment of business ethics learning objectives." For this statement 30.5% of respondents from private religious affiliation colleges expressed agreement while only 6% of respondents from private non-religious affiliation colleges expressed agreement. This is another result that would bear greater examination in further research to address the reasons why one group of faculty/administrators would have stronger feelings about the adequacy of measuring business ethics learning objectives than another.

Table 2: Preferences for Measurement of Business Ethics Learning and Institution Type

Measurement of business ethics learning objectives is effectively achieved through student performance on a:			Institution Type: Private - No Religious Affiliation	Private - Religious Affiliation	Total
Written examination based on ethics application	SA/sA	N	17	34	51
		%	100%	94.4%	96.2%
	Neutral	N	0	2	2
		%		6.6%	4.8%
	SD/sD	N	0	0	0
		%			
			Institution Type Private - No Religious Affiliation	Private - Religious Affiliation	Total
Verbal presentation of an ethics case analysis	SA/sA	N	15	23	38
		%	88.2%	63.9%	71.7%
	Neutral	N	2	13	15
		%	12.8%	36.1%	28.3%
	SD/sD	N	0	0	0
		%			
			Institution Type Private - No Religious Affiliation	Private - Religious Affiliation	**Total**
Written case analysis paper	SA/sA	N	12	25	37
		%	70.6%	69.4%	69.8%
	Neutral	N	5	11	16
		%	29.4%	30.6%	30.2%
	SD/sD	N	0	0	0
		%			
			Institution Type Private - No Religious Affiliation	Private - Religious Affiliation	**Total**
Written examination based on ethics concepts	SA/sA	N	13	31	34
		%	76.5%	86.1%	64.1%
	Neutral	N	1	5	6
		%	5.9%	13.9%	11.3%
	SD/sD	N	3	0	3
		%	17.6%		5.6%
			Institution Type Private - No Religious Affiliation	Private - Religious Affiliation	**Total**
Defining Issues Test or other standardized ethics assessment	SA/sA	N	7	17	24
		%	41.2%	47.3%	45.3%
	Neutral	N	8	16	24
		%	47.1%	44.4%	45.3%
	SD/sD	N	2	3	5
		%	11.7%	8.3%	9.4%
			Institution Type Private - No Religious Affiliation	Private - Religious Affiliation	Total
There is no effective way to measure the attainment of business ethics learning objectives	SA/sA	N	1	11	12
		%	6.5%	30.5%	22.6%
	Neutral	N	9	20	29
		%	52.3%	55.6%	54.7%
	SD/sD	N	7	5	12
		%	41.2%	13.9%	22.6%

This table shows comparative analysis regarding six different methods of measurement as related to institution type. Panel A reveals preferences for a written examination based on ethics application. Panel B reveals preferences for a verbal presentation of an ethics case analysis. Panel C reveals preferences for a written case analysis paper. Panel D reveals preferences for a written examination based on ethics concepts. Panel E reveals preferences for use of the Defining Issues Test or other standardized ethics assessment. Panel F reveals responses indicating that there is no effective way to measure the attainment of business ethics learning objectives.

Preferences on the Measurement of Learning Objectives and Accreditation Status

An additional question of this research was how two different types of national liberal arts colleges, those with business program accreditation and those without business program accreditation, perceived the effectiveness of different instructional strategies. The central problem regarding this part of the research is that the low numbers of business programs in national liberal arts colleges that have separate accreditation make analysis and interpretation problematic. In this study only six respondents represent institutions with separate accreditation for their business programs.

In reviewing the data in Table 3, it is clear that the greatest degree of agreement about an effective way to measure business ethics objectives is "by written examination based on ethics application," with both accredited (100%) and non-accredited institutions (98%) strongly agreeing or agreeing. The instructional strategies of "verbal presentation of an ethics case study" and "written case analysis paper" were also deemed effective ways to measure ethics, but to a lesser degree. The verbal presentation of an ethics case analysis was the second highest ranked instructional strategy with only slight differences in terms of institution accreditation with 50.0% of respondents from accredited programs expressing somewhat or strong agreement and 75.5% of respondents from non-accredited programs expressing somewhat or strong agreement. The results of the third ranked instructional strategy, written case analysis paper, demonstrated little difference as 66.7% of respondents from accredited programs expressing somewhat or strong agreement and 71.4% of respondents from non-accredited programs expressing somewhat or strong agreement.

The results of the fourth ranked instructional strategy, written examination based on ethical concepts, demonstrated the greatest differences based on business program accreditation with 33.3% of respondents from accredited programs expressing somewhat or strong agreement and 78.2% of respondents from non-accredited programs expressing somewhat or strong agreement. The responses concerning measurement of student learning objectives by use of a standardized assessment, the fifth ranked instructional strategy, also demonstrated differences dependent on accreditation status. For this statement 66.7% of respondents from accredited programs expressed agreement and 42.8% of respondents from non-accredited programs expressed agreement.

The differences among respondents from accredited and non-accredited programs was most apparent when examining the statement, "There is no effective way to measure the attainment of business ethics learning objectives." For this statement, no respondents from accredited programs expressed agreement while 25% of respondents from non-accredited programs expressed agreement. This is another result that would bear greater examination in further research to address the reasons why faculty/administrators from accredited programs would have stronger feelings about the adequacy of measuring business ethics learning objectives than respondents from non-accredited business programs.

Preferences on the Measurement of Learning Objectives and Institution Mission Statement

One final question of this research was how two different types of colleges, those with an ethics reference in their mission statement and those without an ethics reference in their mission statement, perceived the effectiveness of different instructional strategies.

In reviewing the data in Table 4, it is clear that the greatest degree of agreement about an effective way to measure business ethics objectives is "by written examination based on ethics application," with 100% of respondents from institutions with an ethics reference in their mission statement as well as 100% of respondents from institutions without an ethics reference in their mission statement strongly agreeing or agreeing.

Table 3: Preferences for Measurement of Business Ethics Learning and Accreditation Status

Measurement of business ethics learning objectives is effectively achieved through student performance on a:			**Accreditation Status** AACSB/ABCSP	None	Total
Written examination based on ethics application	SA/sA	N	6	48	54
		%	100%	98%	96.2%
	Neutral	N	0	1	1
		%		2%	4.8%
	SD/sD	N	0	0	0
		%			
			Accreditation Status AACSB/ABCSP	None	Total
Verbal presentation of an ethics case analysis	SA/sA	N	3	37	40
		%	50%	75.5%	72.8%
	Neutral	N	3	12	15
		%	50%	34.5%	27.2%
	SD/sD	N	0	0	0
		%			
			Accreditation Status AACSB/ABCSP	None	Total
Written case analysis paper	SA/sA	N	4	35	39
		%	66.7%	71.4%	70.9%
	Neutral	N	2	13	15
		%	33.3%	28.6%	29.1%
	SD/sD	N	0	0	0
		%			
			Accreditation Status AACSB/ABCSP	None	Total
Written examination based on ethics concepts	SA/sA	N	2	43	45
		%	33.3%	78.2%	82%
	Neutral	N	4	3	7
		%	66.7%	5.4%	13%
	SD/sD	N	0	3	3
		%		5.4%	5%
			Accreditation Status AACSB/ABCSP	None	Total
Defining Issues Test or other standardized ethics assessment	SA/sA	N	4	21	25
		%	66.7%	42.8%	45%
	Neutral	N	2	23	25
		%	33.3%	47.2%	45%
	SD/sD	N	0	5	5
		%		10%	10%
			Accreditation Status AACSB/ABCSP	None	Total
There is no effective way to measure the attainment of business ethics learning objectives	SA/sA	N	0	12	12
		%		25%	22%
	Neutral	N	0	29	29
		%		59%	53%
	SD/sD	N	6	9	15
		%	100%	16%	25%

This table shows comparative analysis regarding six different methods of measurement as related to Accreditation Status. Panel A reveals preferences for a written examination based on ethics application. Panel B reveals preferences for a verbal presentation of an ethics case analysis. Panel C reveals preferences for a written case analysis paper. Panel D reveals preferences for a written examination based on ethics concepts. Panel E reveals preferences for use of the Defining Issues Test or other standardized ethics assessment. Panel F reveals responses indicating that there is no effective way to measure the attainment of business ethics learning objectives.

The instructional strategies of "verbal presentation of an ethics case study" and "written case analysis paper" were also deemed effective ways to measure ethics, but to a lesser and divided degree. The verbal presentation of an ethics case analysis was the second highest ranked instructional strategy with only a slight difference with 85.7% of respondents from institutions with an ethics reference in their mission statement expressing somewhat or strong agreement and 62.5% of respondents from institutions without an ethics reference in their mission statement expressing somewhat or strong agreement.

Table 4: Preferences for Measurement of Business Ethics and Institutional Mission Statement

Measurement of business ethics learning objectives is effectively achieved through student performance on			Ethics Reference in Mission Statement Yes	No	Don't Know	No Statement	Total
Written examination based on ethics application	SA/sA	N	21	24	2	6	53
		%	100%	100%	66.6%	85.7%	96.4%
	Neutral	N	0	0	1	1	2
		%			33.3%	14.3%	3.6%
	SD/sD	N	0	0	0	0	0
		%					
			Ethics Reference in Mission Statement				**Total**
			Yes	**No**	**Don't know**	**No Statement**	
Verbal presentation of an ethics case analysis	SA/sA	N	18	15	2	5	40
		%	85.7%	62.5%	66.6%	71.4%	72.7%
	Neutral	N	3	9	1	2	15
		%	14.3%	37.5%	33.3%	28.6%	27.3%
	SD/sD	N	0	0	0	0	0
		%					
			Ethics Reference in Mission Statement				**Total**
			Yes	**No**	**Don't know**	**No Statement**	
Written case analysis paper	SA/sA	N	17	17	1	4	39
		%	81%	70.8%	33.3%	57.1%	70.9%
	Neutral	N	4	7	2	3	16
		%	19%	29.2%	66.6%	42.9%	29.1%
	SD/sD	N	0	0	0	0	0
		%					
			Ethics Reference in Mission Statement				
			Yes	**No**	**Don't know**	**No Statement**	**Total**
Written examination based on ethics concepts	SA/sA	N	16	23	2	4	45
		%	76.2%	95.8%	66.6%	57.1%	81.8%
	Neutral	N	2	1	1	3	7
		%	9.5%	4.2%	33.3%	42.9%	12.7%
	SD/sD	N	3	0	0	0	3
		%	14.3%				5.5%
			Ethics Reference in Mission Statement				
			Yes	**No**	**Don't know**	**No Statement**	**Total**
Defining Issues Test or other standardized ethics assessment	SA/sA	N	15	10	0	0	25
		%	71.4%	41.7%			45.5%
	Neutral	N	4	13	2	6	25
		%	19%	54.2%	66.6%	85.7%	45.5%
	SD/sD	N	2	1	1	1	5
		%	9.6%	4.1%	33.3%	14.3%	9%
			Ethics Reference in Mission Statement				
			Yes	**No**	**Don't know**	**No Statement**	**Total**
There is no effective way to measure the attainment of business ethics learning objectives	SA/sA	N	0	8	1	3	12
		%		33.3%	33.3%	42.8%	21.8%
	Neutral	N	12	13	1	3	29
		%	57.1%	54.2%	33.3%	42.8%	52.7%
	SD/sD	N	9	3	1	1	14
		%	42.9%	12.5%	33%	14.3%	25.5%

This table shows comparative analysis regarding six different methods of measurement as related to the presence of an ethics reference in the institution mission statement. Panel A reveals preferences for a written examination based on ethics application. Panel B reveals preferences for a verbal presentation of an ethics case analysis. Panel C reveals preferences for a written case analysis paper. Panel D reveals preferences for a written examination based on ethics concepts. Panel E reveals preferences for use of the Defining Issues Test or other standardized ethics assessment. Panel F reveals responses indicating that there is no effective way to measure the attainment of business.

The results of the third ranked instructional strategy, written case analysis paper, also demonstrated only a slight difference as 81% of respondents from institutions with an ethics reference in their mission statement expressing somewhat or strong agreement and 70.8% of respondents from institutions without an ethics reference in their mission statement expressing somewhat or strong agreement.

The results of the fourth ranked instructional strategy, written examination based on ethical concepts, demonstrated a greater difference based on institutional mission statement with 76.2% of respondents from institutions with an ethics reference in their mission statement expressing somewhat or strong agreement and 95.8% of respondents from institutions without an ethics reference in their mission statement expressing somewhat or strong agreement. The responses concerning measurement of student learning objectives by use of a standardized assessment, the fifth ranked instructional strategy, also revealed a strong difference based on institutional mission statement. For this statement, 71.8% of respondents from institutions with an ethics reference in their mission statement expressed agreement while only 41.7% of respondents from institutions without an ethics reference in their mission statement expressed agreement.

The differences among respondents from accredited and non-accredited programs were also apparent when examining the statement, "There is no effective way to measure the attainment of business ethics learning objectives." For this statement no respondents from institutions with an ethics reference in their mission statement expressed agreement while 23.3% of respondents from institutions without an ethics reference in their mission statement expressed agreement. This is another result that would bear greater examination in further research to address the reasons why faculty/administrators from accredited programs would have stronger feelings about the adequacy of measuring business ethics learning objectives than respondents from non-accredited business programs. From these data there seem to be a distinct difference in support for the viewpoint that business ethics learning objectives cannot be adequately measured.

LIMITATIONS

Although the results of this study reveal some interesting findings regarding preferences for measurement methods for undergraduate business ethics education in national liberal arts colleges, there are some limitations of the study that should be acknowledged when interpreting the data. The first limitation considers the institution type (public, private with religious affiliation, private without religious affiliation). Descriptive statistics indicates that nearly two-thirds of the respondents (65.5%) in this study belonged to private, religiously affiliated institutions and slightly less than one-third of respondents (30.9%) were from private, non-religiously affiliated institutions. These two categories were included for comparative analysis.

The data also revealed, however, that only two respondents (3.6%) belonged to public institutions. For the purpose of comparative analysis public institutions were not included in the final analysis due to the very limited number of respondents from public institutions. These results are similar to a previous document analysis conducted by the researcher of the complete pool of 180 national liberal arts colleges which indicated that a majority of these institutions are private, religiously affiliated institutions, therefore to include a comparative analysis of public national liberal arts institutions would be problematic given the very low numbers within that category.

The second limitation considers business program accreditation. For question 14, respondents were asked to identify the business program accreditation status of their institutions. The data revealed that 89.1% of the participants (forty-nine out of the fifty-five respondents) in this study indicated that their business school program was not separately accredited by either the AACSB or the ACBSP. Therefore, the limited numbers of respondents from accredited business programs make comparative analysis problematic. These results are similar to a previously conducted document analysis by the researcher of the complete pool of 180 national liberal arts colleges which indicated only 13 (7%) were separately accredited by the AACSB and only 2 (1%) were accredited by the ACBSP leaving 92% of the entire sample without separate accreditation for the business school/program. While comparative analysis of accredited and

non-accredited programs was included in the study, the limited numbers should be considered in data interpretation and drawing conclusions based upon the analysis.

IMPLICATIONS FOR FUTURE STUDY

As the current survey only focused on national liberal arts colleges as classified and ranked by the US News and World Report (2013), additional research would be merited to expand to other classifications. With demographic trends running against national liberal arts colleges (Baker & Baldwin, 2009), continued examination of other four-year as well as two-year colleges is needed for future investigation. While the current study seems to indicate differences in terms of the curricular strategies currently being used in the national liberal arts colleges, it did indicate that there are similar preferences for instructional method, business ethics faculty and the measurement of learning objectives. Further research examining other institutional classifications could be of tremendous assistance in developing a full picture concerning the climate of business ethics education at the undergraduate level.

The data from this study also revealed another statistic that bears further examination. One interesting reveal from this study is that, while the clear majority respondents (81.8%) indicated that they believed business ethics education at the undergraduate level can ultimately raise the ethical level of actual business/management practice, most national liberal arts institutions are clearly divided in terms of preferences for measurement of learning objectives. Therefore further study is merited concerning the assessment of business ethics learning objectives. The literature review suggested that employers are learning to recognize the importance of ethical decision making in the context of business relationships and that they are looking to hire ethical business leaders (Floyd et al., 2012), however, there remains a wide range of measurement tools used for the discerning the achievement of learning objectives. As this study revealed, only 5% of the respondents indicated preferences, either strongly agree or agree, for a standardized type of measurement such as the Defining Issues Test. The development of a widely accepted evaluation instrument for business ethics could become a tremendous assistance in future studies concerning the achievement of business ethics learning objectives and with the increased use of standardized testing in other business fields it may be appropriate to examine its use and effectiveness for business ethics.

In addition, while this study focused on the "what and how" of undergraduate business ethics education and measurement, further research would be beneficial in examining the "why" question. Additional qualitative research, using surveys, interviews and focus group research could help to understand the preferences for instructional methodologies, preferences for business ethics faculty as well as preferences for the measurement of learning objectives.

SUMMARY

As the literature review discussed, there has been a long-standing debate concerning the methods and effectiveness of teaching ethics in undergraduate business programs. While there has been an expansion of interest in teaching ethics in undergraduate business programs over the past decade, there seems to be little consistency regarding instructional approaches to business ethics education as well as approaches for the measurement of business ethics learning objectives. As previous studies have found, the inclusion of ethics into undergraduate business programs has been "indiscriminate, unorganized and undisciplined in most North American schools of business" (Brown, 1998, p. 106). This present study adds to the body of literature on undergraduate business ethics education exploring the current state of business ethics education in national liberal arts colleges and also examining preferences regarding instructional methods and learning objective measurement.

Undergraduate business programs, especially those programs which are accredited by either the AACSB or the ACBSP, are under increasing pressure to incorporate ethics more fully into their academic program, but there are a variety of approaches in implementing ethics instruction in addition to a variety of methods to measure the attainment of learning objectives. These are the primary issues which have guided the direction of this study.

This study affirms the general theme of the literature review indicating a variety of curricular strategies currently in use for teaching ethics in undergraduate business programs, but also fills a gap in understanding the preferences of institutional representatives in terms of instructional strategies and measurement methods. While there were respondent similarities in the preferences for face-to-face instructional methods regardless of institutional type, program accreditation or an ethics reference in the mission statement, there were differing levels of support for the online instructional methods dependent upon those factors. In addition, while preferences for measurement methods centered upon the ability apply ethics concepts, support for the use of standardized testing of business ethics concepts was clearly divided. These are issues that could be further examined in studies of business ethics education in other institutional classifications.

APPENDIX

Survey Instrument

Section I: Curricular Approach to Ethics Education

The following questions deal with the current curricular approach to business ethics education within national liberal arts colleges.

1. Which of the following best describes your business (or economics) program's approach to including business ethics in the curriculum?

- Students take a required course in ethics
- Students have the option to take an elective course in ethics
- No required or elective course in ethics but ethics is integrated throughout a variety of courses in our program
- We offer both a required course in ethics and integrate ethics into a variety of

Courses in our program

- We offer both an elective course in ethics and integrate ethics into a variety of

courses in our program.

- Other, please explain: _____
- Do Not Know

2. If you require an ethics course, at what level is the required ethics course taught?

- Freshman
- Sophomore
- Junior
- Senior
- Not Applicable
- Open to Any Level Student

3. In which subject area(s) is a required ethics course taught? (Select the area(s) that require an ethics course.)

- Accounting
- Economics
- Finance
- Marketing
- Management
- Philosophy (liberal arts philosophy course)
- Not Applicable
- Other _____

4. If you offer an elective ethics course, at what level is the elective ethics course taught?

- Freshman
- Sophomore
- Junior
- Senior
- Not Applicable
- Open to Any Level Student

5. In which subject area(s) is your elective ethics course taught? (To which department does the course belong?)

- Accounting
- Economics
- Finance
- Marketing
- Management
- Philosophy (liberal arts philosophy course)
- Not Applicable
- Other _____

6. If you offer a required or elective ethics course, what curriculum format is used for the course(s)? (Please select all that apply)

- Traditional Classroom, Face to Face – Primarily Lecture Based
- Traditional Classroom, Face to Face – Primarily Socratic method (Case study and discussion)
- Online Classroom
- Blended Course (Both Traditional, Face to Face Classroom and Online Work)
- Other format, please specify_____
- Not Applicable

Section II: Preferences concerning instructional approach to teaching business ethics.

The following questions deal with business school administrators' self-perceived preferences regarding the importance and most effective instructional approaches to teaching business ethics in national liberal arts colleges.

For the following questions, please indicate your degree of agreement with each statement using the following scale: Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree, Strongly Disagree.

7. An undergraduate business ethics course can be effectively taught by:

	Strongly Agree	**Somewhat Agree**	**Neutral**	**Somewhat Disagree**	**Strongly Disagree**
Use of the case study method (analysis of actual or hypothetical cases) in a face to face, traditional class.					
Use of the case study method (analysis of actual or hypothetical cases) in an online class.					
Use of the lecture method (lecture based instruction on ethical concepts and ethical practice) in a face to face, traditional class.					
Use of the lecture method (lecture based instruction on ethical concepts and ethical practice) in an online class.					

8. An undergraduate business ethics course should be taught by:

A business faculty member from the business law discipline.					
A business faculty member from the management discipline.					
A business faculty member from the accounting discipline.					
A business faculty member from the finance discipline.					
A philosophy faculty member.					

9. Rank the following four descriptions of your ideal undergraduate business ethics professor

(1 = *Least Preferred* to 4 = *Most Preferred* – Please do not repeat your responses)

_____ A Philosophy/Ethics Professor with no formal training, education, or experience in business
_____ A Philosophy/Ethics Professor with formal training, education, or experience in business
_____ A Business Professor with no formal training, education, or experience in philosophy/ethics
_____ A Business Professor with formal training, education, or experience in philosophy/ethics

Section III: Preferences regarding the measurement of business ethics learning outcomes.

The following questions deal with the institutional representative's preferences regarding the measurement of business ethics learning outcomes.

Please indicate your degree of agreement with each statement using the following scale: Strongly Agree, Somewhat Agree, Neutral, Somewhat Disagree, Strongly Disagree.

10. Measurement of business ethics learning outcomes is best achieved:

	Strongly Agree	**Somewhat Agree**	**Neutral**	**Somewhat Disagree**	**Strongly Disagree**
Through student performance on a written examination based on ethics concepts (the ability to identify and explain major ethical theories like utilitarianism, natural rights, etc.).					
Through student performance on a written examination based on ethics application (the ability to identify and analyze ethical issues in cases or other fact situations).					
Through student performance on a written ethics case analysis paper (analyzing ethical issues in a specific case applying theoretical knowledge and critical thinking principles).					
Through student performance on a verbal presentation of an ethics case analysis (analyzing ethical issues in a specific case applying theoretical knowledge and critical thinking principles).					
Through student performance on the Defining Issues Test or other standardized ethics assessment.					
There is no effective way to measure the attainment of business ethics learning outcomes.					

11. Is there another method of measurement of business ethics learning outcomes that you would prefer? If so what measurement would be preferred? (Open Ended)

Section IV: Demographic Information

12. Select one of the following that best represents your role or position. (If more than one fits your description, select all that apply)

- Dean of a College (or School) of Business
- Assistant or Associate Dean of a College (or School) of Business
- Department Chair (Business or Business Administration)
- Department Chair (Economics)
- Department Chair (Management)
- Business faculty (Teaching an ethics course)
- Other Faculty and/or Administrative Position (Please Describe) _____

13. What is your institution type?

- Public
- Private-No Religious Affiliation
- Private-Religious Affiliation

14. Is your business school/program accredited by any of the national accrediting agencies for business schools?

- AACSB
- ACBSP
- Other
- The Business school is not separately accredited

15. What is the total number of full time undergraduate students at your college?

- Less than 1,000
- 1,000 to 2,000
- 2,000 to 3,000
- 3,000 to 4,000
- 4,000 to 5,000
- Over 5,000

16. Does the mission statement of your business (or economics) program contain a reference to ethics or ethical decision making?

- Yes
- No
- I don't know
- Our business program (or economics program) does not have a mission statement

17. Please select the majors that your college offers: (Please select all that apply, even if housed in a different department)

- Economics
- Business Administration
- Management
- Accounting
- Finance
- Marketing
- International Business
- Entrepreneurship
- Other business or economics related major, please specify

18. Please select the minors that your college offers: (Please select all that apply, even if housed in a different department)

- Economics
- Business Administration
- Management
- Accounting
- Finance
- Marketing
- International Business
- Entrepreneurship
- Other business or economics related major, please specify

19. A concerted effort by undergraduate business schools to improve the ethical awareness and decision making capability of undergraduate business students would eventually raise the ethical level of actual business management practice.

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BIOGRAPHY

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THE IMPACT OF GENDER ON ETHICAL WORK CLIMATES: A CROSS-CULTURAL COMPARISON OF BUSINESS SCHOOL FACULTY

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Oheneba Ama Nti Osei, The Africa Report Magazine
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ABSTRACT

The purpose of this paper is to examine the relationship that Ethical Work Climates and National Culture have on business faculty in universities based on gender. Most studies involving ethics focus on students or professions outside academia. Since business faculty form the frontline between student and the professional, their role becomes one that should be analyzed as a critical link in the study between organizational and national culture and their effect on the student. In our study the results showed that Ghana demonstrated an overall benevolent climate more conducive for ethical decision-making where the student is concerned. The United States of America and Taiwan showed a greater reliance on rules, laws, and codes to govern their decision-making. One distinguishing result revealed Taiwan to be stronger in egoism, usually associated with individualist cultures. One possible explanation is the way Taiwan structures its incentive programs. They are more designed to drive faculty to achieve more personal gain beneficial to their academic career than the United States of America. This difference could negatively impact ethical decision-making at the organizational level.

JEL: M00, M14

KEYWORDS: National Culture, Cross-Cultural, Ethical Work Climates

INTRODUCTION

The role of the educator has expanded beyond just preparing students through the acquisition of knowledge and skills to include interactions that impact their relationship as student and teacher. In doing so, their relationship and interactions become more acute in higher education. The student-faculty relationship and interactions can lead to confusion and distress if they sense their moral sensibilities are dishonored (Ozcan, Bayler, & Servi; 2013). In today's environment faculty responsibilities may extend beyond the campus. Study abroad experiential trips, sporting events, club events, luncheons and fundraising are some of the activities faculty are expected to participate in with students. The added dimension of diversity of genders at universities assumes that men and women solve ethical problems the same. Harvard psychologist, Carol Gilligan, suggests men consider moral issues in terms of justice, rules, and individual rights, whereas women, approach the same issues from a position of relationships, caring, and compassion (Leslie Dawson, 1995). This may have significance within the United States of America but what of other countries. Will this assessment hold to different cultures? Do men and women respond to ethical issues the same the world over. The other issue we faced was the impact of organizational culture and its relationship with national culture. Does the intersection of the two cultures impact differently on men and woman from different parts of the world? To gain a greater understanding of this issue, we focused our study on three nations from different parts of the world;

Ghana, Taiwan, and the United States of America. We used the Ethical Work Climate survey developed by Victor and Cullen, (1987, 1988) and James W. Bronson (1993) to assess the ethical climate within each institution. The insight we gained provided us with a view of how male and female business faculty from different points on the globe within distinct institutions approached ethical decision-making. This gauge was then viewed in terms of national culture and any affects that may have had. We found this study to be of deep concern in the changing view of higher education and the role that the educator is expected to play.

LITERATURE REVIEW

Ethical Work Climates

"Ethical climates are conceptualized as general and pervasive characteristics of organizations; affecting a broad range of decisions" (Victor & Cullen, 1988, p.101). The Ethical Climate Questionnaire is "simply an instrument to tap, through the perceptions of organizational participants, the ethical dimensions of organizational culture" (Victor & Cullen, 1988, p.103). Therefore, the participants become the 'type of observer' who views different kinds of behavior, whether in decision-making or their compliance in the organization's practices and procedures; "but not evaluating the perceived organizational expectations" (Cullen, Victor, & Bronson, 1993, p.671). The Ethical Climate covers two dimensions of theoretical typology (Victor & Cullen, 1988); one dimension is ethical criterion, which is used for the organization's decision-making, and the second, locus of analysis, refers to ethical decision-making. Egoism, benevolence, and principle are the three 'ethical criterion' dimensions. Egoism drives self-interest. In an organizational setting, the individual places their own welfare above others or the business. When an employee displays benevolence, they are more open to caring and interpretation of rules and laws than obeying them. And lastly, a principled employee is one who would blow the whistle on another employee without second thoughts. A violation of policy is an unethical act and that is all they need to make their decision (Victor & Cullen, 1988). The three 'locus of analysis' are individual, local and cosmopolitan. An employee who relies on their own point of view is described as individual. Local relies more on the group for decision-making, while the cosmopolitan will seek professional associations or laws.

National Culture and Organizational Culture

Studies have shown that organizational cultures are affected by national cultures regardless of the presence of significant subcultures within a nation (Soeters et. al., 1988; Hofstede et. al., 1990). Parboteeah et. al. (2005) also explains the usefulness of the concept of national culture to distinguish work practices (Hofstede, 2001). These work practices summed up as an organization's culture – "a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration" (Schein, 1992, p.12) – have a direct link to the national culture of the individuals who make up the company's workforce (Joiner, 2001; Dusan, 2003). Employees are influenced by various institutions present in their culture before they even join a given organization, such as family, society, religious orders, educational systems, and many other in which they participate have been shaping their beliefs, habits, and identities for years and it is not surprising that employees bring these external influences with them they join an organization. A similar view is echoed by Erakovich and others (2002) who pointed out those cultural influences have the power to change the character and identity of an organization, altering the perceptions and behavior of organizational members.

Research (Crisitie et. al., 2003) has also shown that more than thirty empirical cross-cultural studies on ethical attitudes and ethical behavior have been conducted and practically all of them recognize the influence of national culture on one's ethical attitude and behavior. This demonstrates how national culture plays a significant role on the ethical reasoning and the ethical attitudes of persons, including those in the teaching profession. Hence, we can assume that "if organizational cultures are influenced by

national cultures, one can also expect that national cultures will have a significant impact on ethical climates" (Parboteeah et. al., 2005, p.462).

National Culture, Ethical Work Climates and Business College Faculty

Ethical issues associated with the teaching profession have not been given significant attention regardless of many moral and ethical issues being constantly dealt with in university teaching. One of the reasons for this negligence is that even though several researches (De Russy, 2003; Sergiovanni, 1992; Braxton & Bayer, 1999; Markie, 1994) have over the years emphasized the importance of the teaching profession and the power teachers have to create a long lasting impact on their students, "college teaching is not recognized as a distinct profession" (Markie, 1994, p.155). College faculty have been referred to as "gatekeepers of knowledge" (Gaikward, 2011, p.22) who have a significant influence on the quality of life their students are going to have once they are on their own. In A Professor's Duties: Ethical Issues in Professional Teaching (1994), Markie tackles various ethical issues in college teaching by partly focusing on the obligations of individual professors, primarily with regard to issues about what and how to teach. Markie asserts that the role of college teachers is a complex one which comes with considerable power and authority, the exercise of which can have significant effect on the lives of students. This 'power and authority' can either be used to better or destroy inadvertently the lives of students shown in the irresponsible and unethical behavior within the professoriate. These include, among other, "lateness for class, use of vulgarity in scholarly forums, showing favoritism among students, improper use of campus funds, plagiarism, and sexual liaisons with students, failure to properly perform administrative duties and unwilling to uphold the value of truth in teaching and research" (De Russy, 2003, p.20).

Even less research has been conducted to determine whether there is any difference between genders as a variable in ethical decision making. Studies have found conflicting results, considered inconclusive (Chen, Tuliao, Cullen, & Ching; 2016). One study conducted at universities in Hong Kong (Au, Chan, and Tse, 2006) found there to me a difference between genders, where males were found to be less ethical than females. Kahreh, et.al 2014) in a study examining the effects of gender differences on CSR found women to have a slightly higher orientation and intention toward CSR than men. In another study though, 513 executives were given a seven ethical scenarios related to economics. Barnett and Karson (1989), found no gender differences in four out of the seven. To bring the differences if any into focus, we decided on a study that looks at the organizational climate of the institution in relation to their national culture. To analyze the major distinguishing characteristics of Ghanaian, USA, and Taiwanese national cultures that impact the perceived ethical climate by faculty in Business Colleges, this study focused on the three ethical climates; egoism – maximizing one's own self-interest, benevolence – maximizing the joint interest of an organizational community, and principle – loyalty to universal values and beliefs.

Faculty members in an egoistic climate, more associated with individualism, will more than likely opt for actions that are motivated by personal gains and are beneficial to their career in an academic institution. Given the direct link established between the corporate scandals that have plagued the business world and the responsibility of institutions of higher education to nurture and produce 'ethically-sound' graduates, it is highly relevant to study differences in egoistic climates for faculty in Business Colleges. Benevolence grounded in collectivism is primarily based on concern for others (Victor & Cullen, 1987; 1988). An organization characterized by a benevolent climate will find faculty identify and solve ethical problems where the well-being of others takes precedent. Parboteeah et. al. (2005) also notes that decisions are aimed to coincide with socially responsible behavior. In a principled or rule-based climate, ethical decisions are made on the interpretation of rules, laws, and standards (Victor & Cullen, 1998). In an educational institution with a principled climate, fraternization policies prohibiting romantic, sexual, and exploitative relationships between college employees and students will be observed to the letter. The academic institutional rules and professional code of conduct will guide faculty in ethical decision-making.

DATA AND METHODOLOGY

This study aims to discover the ethical work climate perceived by male and female business faculty members across cultures. Ethical Work Climate dimensions will serve as the independent variables for this research. The independent variables will determine whether the possible factors show any significant effect on the dependent variables, which are male and female college business faculty across three nations.

Research Hypothesis

Hypothesis 1: There is no significant difference on perceived ethical work climate values from their institution between male faculty and female faculty.

Hypothesis 2 There is no significant difference on perceived ethical work climate values from their institution between male Ghana faculty and female Ghana faculty.

Hypothesis 3 There is no significant difference on perceived ethical work climate values from their institution between male Ghana faculty and male Taiwan faculty.

Hypothesis 4 There is no significant difference on perceived ethical work climate values from their institution between male Ghana faculty and female Taiwan faculty.

Hypothesis 5 There is no significant difference on perceived ethical work climate values from their institution between male Ghana faculty and male U.S.A. faculty.

Hypothesis 6 There is no significant difference on perceived ethical work climate values from their institution between male Ghana faculty and female U.S.A. faculty.

Hypothesis 7 There is no significant difference on perceived ethical work climate values from their institution between female Ghana faculty and male Taiwan faculty.

Hypothesis 8 There is no significant difference on perceived ethical work climate values from their institution between female Ghana faculty and female Taiwan faculty.

Hypothesis 9 There is no significant difference on perceived ethical work climate values from their institution between female Ghana faculty and male U.S.A. faculty.

Hypothesis 10There is no significant difference on perceived ethical work climate values from their institution between female Ghana faculty and female U.S.A. faculty.

Hypothesis 11 There is no significant difference on perceived ethical work climate values from their institution between male Taiwan faculty and female Taiwan faculty.

Hypothesis 12 There is no significant difference on perceived ethical work climate values from their institution between male Taiwan faculty and male U.S.A. faculty.

Hypothesis 13 There is no significant difference on perceived ethical work climate values from their institution between male Taiwan faculty and female U.S.A. faculty.

Hypothesis 14 There is no significant difference on perceived ethical work climate values from their institution between female Taiwan faculty and female U.S.A faculty.

Hypothesis 15 There is no significant difference on perceived ethical work climate values from their institution between female Taiwan faculty and male U.S.A. faculty.

Hypothesis 16 There is no significant difference on perceived ethical work climate values from their institution between male U.S.A faculty and female U.S.A. faculty.

Research Instrument

The Ethical Climate Questionnaire developed by John Cullen and Bart Victor (1987, 1988) and further perfected with James W. Bronson (1993) was used. The questionnaire is based on the assumptions that 1) each company or subgroup has its own moral character; 2) group members know what character is; and 3) group members can tell an outsider about their organization's moral character in an objective way (Acharya, 2005). In the ECQ, questions emphasize description rather than feelings and respondents are asked to act as observers of their organizations (Victor & Cullen, 1988). The questionnaire is composed of a 36-item Likert scale representing the nine dimensional values of ethical climate. Minor linguistic changes were made to fit an educational institution. In place of the word 'company', institution was replaced. 'Customer' and 'public', which appeared in items 26, 30, and 34, were substituted with student and stakeholder. These linguistic changes did not alter the meaning of the questions, rather brought the questionnaire in line with terminology best understood within an academic sector setting. The questionnaire was translated into Mandarin Chinese for the Taiwanese faculty. The Chinese version was prepared by a bi-lingual professor in Taiwan and translated back into English by a different professor from the Applied English department at Southern Taiwan University of Science and Technology in Taiwan. Pre-tests were conducted for assurance using faculty in Taiwan from engineering, health sciences, and linguistics and foreign languages departments.

Data Collection

Data was collected from Business faculty in the USA, Ghana, and Taiwan. Twenty-one American professors from three different states in the United States responded. One hundred Ghanaian professors from Accra and Kumasi and seventy professors from public and private universities in Taiwan took part in the study for a total of one hundred ninety-seven respondents. The sample population was as close to even as possible. A total of 110 male and 87 female faculty responded to this study. The study was conducted in 2013. Because the sample was geographically dispersed, administering electronic questionnaires was a major advantage due to relative inexpensiveness and fast delivery to email accounts at the American universities. However, an exception was made for Ghanaian and Taiwanese faculty members to whom questionnaires were personally administered. This was deemed necessary by the researchers as proper etiquette in the two cultures.

Research Methods

Factor analysis was used for this research. This extracted the data into factors that determined the dimensions of ethical work climates among male and female college of business faculty.

Reliability Measure of the Instrument

The reliability statistics result showed that the ECQ has a Cronbach's Alpha of 0.858, which is above the standard reliability measure of 0.70. Empirical results also show Cronbach's Alpha of each item range from 0.851 to 0.863 in the questionnaire. It means good internal reliability.

Table 1: Reliability and Validity Measure of ECQ

Panel A: Reliability Measure	**Value**
Cronbach's Alpha	0.858
Cronbach's Alpha Based on Standardized Items	0.866
Panel B: Validity Measure	
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)	0.817
Bartlett test of sphericit	3,172.405***[a]

*This table shows the reliability and validity measures. *** indicates p value below 1 percent.*

ANALYSIS AND RESULTS

Factor Analysis

Several procedures were done in performing factor analysis. Initially, there were nine factor loadings formed from the first procedure with a 64.603% of total variance explained. Kaiser-Meyer-Olkin (KMO) measure is 0.817, which shows that the homogeneity of the constructs are adequate to continue running the factor analysis. Construct validity took place using the Principal Component Factoring (PCF). Q10, Q33, Q17, Q36 contained factor loadings lower than 0.5 and were removed one by one after each rotation. Then, we use the principal component analysis to analyze the remaining 32 questions and product eight constructs over 1. 63.985% of variance can be explained by the eight constructs.We test the correlation between eight constructs. All of the correlation coefficients are 0.000, meaning the eight constructs is very independent.

Table 2: Independent Sample T-Test on ECQ Dimensions on Gender

ECQ Dimensions	**Mean Scores**		**Difference**		**P Value**
	Male	**Female**			
Caring	0.0657	-0.0831	0.1488		0.3010
Professional Codes	-0.1269	0.1605	-0.2874	**	0.0449
Self-Interest,	-0.2188	0.2766	-0.4954	***	0.0005
Rules	0.0370	-0.0468	0.0838		0.5603
Team Interest	-0.0223	0.0282	-0.0505		0.7256
Personal Morality	-0.2055	0.2599	-0.4654	***	0.0011
Social Responsibility	-0.0238	0.0300	-0.0538		0.7086
Efficiency	0.0312	-0.0395	0.0707		0.6232

*This table shows the independent sample T-test of the variables. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Factor 1: Caring contains the dimensions of Benevolence-Individual (BI) and Benevolence-Local (BL) dimensions of ECQ. Each construct loaded in this factor describes that faculty perceived the ethical climate of caring as being more concerned in maintaining good relationship and team interest among faculty members.

Factor 2: Professional Codes contain the dimensions of Principle-Cosmopolitan (PC). Professional codes are served as the first important ethical climate dimension in their institution.

Factor 3: Self-Interest is the combination of Egoism-Individual (EI) and Egoism-Local. Factor loadings show that personal interest exists in the organization.

Factor 4: Rules contains the dimension of Principle-Local (PL). Factor loadings show that standard operating procedures are followed by the participants.

Factor 5: Team Interest is formed by the constructs of Benevolence-Local (BL).

Factor 6: Personal Morality contains the dimension Principle-Individual (PI). Factor loading explains that most of the individuals are morally responsible for their actions distinguishing right from wrong and to be ethical or unethical.

Factor 7: Social Responsibility is formed by the constructs of Benevolence-Cosmopolitan (BC). Factor loadings explain that individuals perform their tasks with social awareness or responsibility.

Factor 8: Efficiency is formed by the constructs of Egoism-Cosmopolitan (EC). Efficiency is being observed by individuals.

Factor analysis results extracted eight dimensions and all of them were originally identified from the base theory of the Ethical Work Climate of Cullen, Victor, and Bronson (1993). These are Caring, Professional Codes, Self-Interest, Rules, Team Interest, Personal Morality, Social Responsibility, and Efficiency.

Table 3: Independent Samples T-test on ECQ Dimensions on Gender and Nationality

ECQ Dimensions	Ghana		Taiwan		USA	
	Male (N=66)	Female (N=34)	Male (N=30)	Female (N=40)	Male (N=14)	Female (N=13)
Friendship	-0.0458	0.0228	0.3084	-0.2044	0.0713	0.0135
Laws, Professional Codes	-0.1133	0.0039	-0.3564	0.3679	0.3009	-0.0683
Self-Interest	-0.5287	-0.0141	0.6847	0.8437	-0.6941	-0.7077
Social Responsibility	0.0856	-0.1105	0.1561	-0.0570	-0.4472	0.1511
Rules, Standard Operating Procedures	-0.0359	-0.2117	-0.0343	0.2282	0.0675	0.0403
Personal Morality	-0.3818	0.2841	0.0976	0.2399	-0.0244	0.2581
Efficiency	-0.0198	-0.0941	-0.1659	0.0012	0.2618	0.4436
Team Interest	0.2546	0.4786	-0.2512	-0.3636	-0.4167	-0.3972

This table shows analysis of Ghana, Taiwan, and USA faculty members.

Table 4: Independent Samples T-test on ECQ Dimensions on Ghana Male vs Taiwan and USA

ECQ dimensions	Difference[a]				
	Ghana Male vs. Ghana Female	Ghana Male vs. Taiwan Male	Ghana Male vs. Taiwan Female	Ghana Male vs. USA Male	Ghana Male vs. USA Female
Friendship	-0.0686	-0.3542 *	0.1586	-0.1171	-0.0593
Laws, Professional Codes	-0.1172	0.2431	-0.4812 **	-0.4142	-0.0451
Self-Interest	-0.5145 ***	-1.2134 ***	-1.3724 ***	0.1654	0.1790
Social Responsibility	0.1961	-0.0704	0.1426	0.5329 *	-0.0654
Rules, Standard Operating Procedures	0.1757	-0.0017	-0.2642	-0.1035	-0.0762
Personal Morality	-0.6658 **	-0.4794 **	-0.6217 ***	-0.3574	-0.6399 ***
Efficiency	0.0743	0.1461	-0.0209	-0.2816	-0.4633
Team Interest	-0.2239	0.5058 ***	0.6183 ***	0.6713 **	0.6519 **

*This table shows analysis of Ghana Male faculty members and Taiwan and USA faculty members. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Table 5: Independent Samples T-test on ECQ Dimensions on Ghana Female vs Taiwan and USA

ECQ dimensions	Difference[a]				
	Ghana Female vs. Taiwan Male	Ghana Female vs. Taiwan Female	Ghana Female vs. USA Male	Ghana Female vs. USA Female	Taiwan Male vs. Taiwan Female
Friendship	-0.2856	0.2272	-0.0485	0.0093	0.5128 **
Laws, Professional Codes	0.3603	-0.3641	-0.2970	0.0721	-0.7243 ***
Self-Interest	-0.6989 ***	-0.8579 ***	0.6800 **	0.6936 **	-0.1590
Social Responsibility	-0.2666	-0.0535	0.3367	-0.2616	0.2131
Rules, Standard Operating Procedures	-0.1774	-0.4399 *	-0.2792	-0.2520	-0.2625
Personal Morality	0.1864	0.0441	0.3085	0.0260	-0.1423
Efficiency	0.0718	-0.0953	-0.3559	-0.5376	-0.1670
Team Interest	0.7298 ***	0.8422 ***	0.8953 **	0.8758 ***	0.1124

*This table shows analysis of Ghana Female faculty members and Taiwan and USA faculty members ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Table 6: Independent Samples T-test on ECQ Dimensions on Taiwan and USA

ECQ dimensions	Difference[a]				
	Taiwan Male vs. USA Male	Taiwan Male vs. USA Female	Taiwan Female vs. USA Male	Taiwan Female vs. USA Female	USA Male vs. USA Female
Friendship	0.2371	0.2949	-0.2757	-0.2179	0.0578
Laws, Professional Codes	-0.6573 **	-0.2881	0.0670	0.4362	0.3691
Self-Interest	1.3789 ***	1.3925 ***	1.5378 ***	1.5514 ***	0.0136
Social Responsibility	0.6033 *	0.0050	0.3902	-0.2081	-0.5983
Rules, Standard Operating Procedures	-0.1018	-0.0746	0.1607	0.1879	0.0272
Personal Morality	0.1220	-0.1604	0.2643	-0.0181	-0.2825
Efficiency	-0.4277	-0.6094 **	-0.2607	-0.4424 *	-0.1817
Team Interest	0.1655	0.1460	0.0531	0.0336	-0.0194

*This table shows analysis of Taiwan and USA faculty members ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Hypotheses 1-15 are partially supported. Hypothesis 16 is fully supported. There was no significant difference between U.S.A. male and female college of business faculty.

CONCLUSION AND LIMITATIONS

Our goal was to examine whether business school faculty across cultures would provide insight into whether they were influenced by their organizational culture or national culture when making ethical decisions that would impact on their students. The data collected from universities in the United States, Ghana, and Taiwan was analyzed using SPSS. A one way ANOVA was performed with surprising results. The results did show that ethical behavior is influenced by both ethical climates (organizational culture) and national culture, although the results were not as expected. Our study discovered that overall female respondents will draw upon professional codes, their own sense of right and wrong, as well as have greater concern for their own self-interest than males. Ghanaian male faculty were less driven by personal gain and rewards in academia than either Taiwanese male or female faculty. We also found that Ghanaian male faculty is less likely to rely on their own sense of right and wrong when making ethical-decisions than their male and female Taiwanese counterparts, as well as American female faculty.

Ghanaian male faculty was shown to be more benevolent, grounded in identifying and solving ethical problems where the well-being of others takes precedent than either male or female Taiwanese faculty.

Taiwanese female and both American male and female faculty are more rule based, prone to rely upon a standard set of laws, codes, and rules to guide them in ethical decision-making than Ghanaian male faculty. Ghanaian female faculty where shown to be more driven by personal gain and personal morality than Ghanaian male faculty, although not to the extent that faculty from Taiwan and the United States demonstrated. Not surprisingly, Ghanaian female faculty is more benevolent than both Taiwanese and American faculty. Taiwanese faculty and American male faculty are more strongly rule based than Taiwanese males. Both Taiwanese male and female faculty are driven more by personal gains that are more beneficial to their academic careers than either male or female American faculty. In conclusion, we are able to discern that the ethical climate within Ghanaian universities are more benevolent, that is, less egoistic than either Taiwan or the United States. Taiwan thought to be more collectivist, has shown itself to more individualist or egoist associated with individualist national culture than the United States. One reason for this may be the structure of incentives in the respective countries. American universities offer a greater variety of incentive to travel and compensation than Taiwan. The scores demonstrating greater personal gain in Taiwan reflect a Confucian hierarchy of governmental incentives that might negatively impact on ethical decisions at the organizational level.

Limitations of The Study and Future Study

The small number of respondents from the United States may have skewed the results. Many respondents were also reluctant to participate. There is always the risk when participants are asked ethical questions that the respondents may attempt to answer the questions as they deem to be socially or culturally acceptable. This then makes the answers biased with the potential to distort the results. To conclude more accurate finding and expand the study for future research the study should be replicated using other countries around the world to determine if there are significant differences among them where ethical climate is concerned. Another important implication of this study is to encourage faculty to emphasize more on ethics while teaching. Research has proven that the more ethical faculty members are the more positive outcomes for students (Hagedorn, 2000). This may provide further incentive for leadership within Business Colleges to work to foster a more benevolent and/or principled Ethical Climate.

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THE EFFECT OF VOLUNTARY USE OF AN ONLINE HOMEWORK MANAGEMENT SYSTEM ON COURSE GRADES IN FINANCIAL ACCOUNTING

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ABSTRACT

In previous studies of online homework systems in accounting courses, their use was mandatory for all participants. This paper presents the results of a small study in which financial accounting students had the option of completing homework by using an online homework manager (MyAccountingLab) or by using a traditional pencil-and-paper approach. The research project was conducted at a women's college in the southeastern United States, and all participants were female. Controlling for GPA, major, and hours of study, those students who chose to use an online homework system were significantly more likely to have a lower course grade than those who did not.

JEL: M400, M490

KEYWORDS: Online Homework, Grades, Financial Accounting

INTRODUCTION

A recent survey found that 85 percent of college students now own a laptop and 81 percent cannot imagine doing schoolwork without their technology ("Laptops Move," 2014). One result of the widespread use of laptops is the increasing numbers of colleges adopting online homework management systems. Their use in accounting courses reflects a desire of faculty to offer students a way to get help on demand or to develop mastery by completing additional algorithmic problems. Online homework systems provide immediate feedback on homework, extra practice problems, help or explanations on complex material, and usually include video tutorials or guided problem solving. They tend to offer more problem-solving support than traditional homework through partially set-up templates where students choose from an array of possible choices. For those students who have different learning styles, these systems can help them achieve success that might not be possible with traditional approaches. Numerous studies have examined the effectiveness of online homework systems in accounting. The students in these studies were required to buy a computer-based homework system.

Because the additional cost of an online homework system might discourage enrollment for some cash-strapped students, we offered financial accounting students the option of buying MyAccountingLab or using traditional methods to complete homework assignments. Our research examined whether there was a significant difference in student performance as measured by final course grade between students who used an online homework management system and those students who did not. Final course grades were collected along with GPA, study hours per week, visits to the tutoring center, previous experience with computer-assisted homework, and major. Participants also completed a survey about their perceptions of the homework system, motivation to buy (or not buy), and changes in study habits. Regression results showed that those students who chose to use an online homework system were significantly more likely to have a lower course grade than those who completed their homework without the online homework system. The findings of this study contribute to the accounting education literature

by suggesting that students who use an online homework system may view it as shortcut to completing homework to the determent of their subject mastery. The remainder of this paper is organized as follows: Section 2 reviews previous studies on the use and effectiveness of online homework systems in accounting. Section 3 describes the data collected and the methodology followed. The results and discussion are presented in Section 4. In Section 5, we present our main conclusions and offer suggestions for future research.

SELECTED LITERATURE REVIEW AND RESEARCH QUESTIONS

Many researchers have examined the effectiveness of online homework systems finding mixed results. In most of the prior studies, the use of computer-based learning was mandatory. In a study of financial accounting students, Collins, Deck, and McCrickard (2008) reported that accounting students who used computer-aided instruction for homework had significantly higher final exam scores than students who did their homework on paper. When GPA was added as a control variable, Dillard-Eggers, et al. (2008) found a similar result. They also considered other variables that might influence the effectiveness of online homework such as time spent studying and technical problems with the computer program. When comparing online homework to traditional format, most students (44%) reported spending about the same amount of time studying with 39% spending more time and only 16% spending less time. Few (5%) reported experiencing any technical difficulties using the online homework manager. Most students said the online homework resulted in higher quality study time (53%) and a higher understanding (55%) of the topics compared with alternate study methods. However, when asked to compare online homework with "pencil and paper" homework on its effect on learning, a sizable minority (31%) viewed online learning negatively. There was a more ambiguous result in a study by Gaffney, Ryan, and Wurst (2010). They found that financial accounting students who used an online homework management system performed significantly better than students who used a traditional homework method on comprehensive problems. However, there was no difference in their performance on predominately multiple-choice exams. Hahn, Fairchild and Dowis (2013) also found no significant difference in performance between students using an online homework management system and a pencil-and-paper control group. Multiple-choice questions were used to measure performance.

Fatemi, Marquis, and Wasan (2014) examined the use of online homework systems by intermediate accounting students. They found that those who used an online homework system performed significantly better on test problems but significantly worse on multiple choice questions compared with students who did traditional homework. The multiple-choice questions were designed to test a student's conceptual understanding of the material. The authors concluded that manual homework "forces students to consult the textbook more often, engage in critical thinking to a higher degree, and determine the overriding conceptual issues for themselves." (Fatemi, et al., 2014, p. 8)Several student traits may influence the effectiveness of online homework management systems. Khanlarian and Singh (2014) theorized that students who experience frustration in their use of technology might not benefit from computer-based learning. If students experience difficulty installing or navigating the online homework system, its effectiveness may be negatively impacted. Some students are less engaged in the course and not motivated to learn. Peng (2009) identified the role of cognitive need in the effectiveness of online homework managers. He found that "students who are less motivated to do homework are significantly more likely to use the instant feedback from the system so they can lessen their cognitive burden when working on homework" (Peng, 2009, p. 264). If less motivated students rely on online homework systems to take shortcuts with homework, their effectiveness will be impaired. In previous studies of the effectiveness of online homework managers, the use of technology was mandatory. Agarwal and Prasad (1997) examined the role of perceived voluntariness in technology acceptance. They found that when the use of technology is mandatory, especially in the early stages of the experience with the technology, initial usage increases. Over time, though, the individual's acceptance of the technology may weaken.

DATA AND METHODOLOGY

Many students view ancillary costs associated with college classes as major expenditures. The price of college textbooks has increased dramatically over the last decade and students struggle to pay for both textbooks and other required materials. Students in this study purchased both a textbook and a one-semester subscription to the *Wall Street Journal*. To lower the financial barrier for course entry, the instructors in this study gave students in Financial Accounting the option of buying MyAccountingLab for an added $55 license fee. There was no difference in homework assignments or tests given to both groups. The purpose of this exploratory study was to examine the influence of "perceived voluntariness" on the effectiveness of online homework systems. We investigated whether there is a significant difference in student performance as measured by course grades between students who chose to use an online homework system and students who chose to complete homework using traditional methods.

The population in this study consisted of 53 female students enrolled in financial accounting in academic year 2014-2015. The research project was conducted at a women's college in the southeastern United States, and all participants were female. There were 28 students who bought MyAccountingLab and 25 students who chose not to do so. Most participants were sophomores (66%) followed by juniors (23%) and seniors (11%). Student performance as measured by the semester course grade consisted of the student's average on three tests given during the semester. Each test was about 60%-70% multiple choice/objective questions and 30%-40% problems. Students completed a questionnaire at the end of the semester. Users of MyAccountingLab (MAL) responded to questions about their reasons for choosing to use the online homework system, the ease of installation and use, prior experience with online homework systems, average hours of study each week, changes in study habits related to MAL, use of in-person tutoring services, and their perceptions of the effectiveness of MAL. Those who chose not to buy MAL (Non-Users) responded to questions about their reasons for not choosing it, prior experience with online homework systems, average hours of study each week, use of in-person tutoring services and whether MAL should be mandatory for future students. We also collected student course grades and GPAs.

RESULTS AND DISCUSSION

An independent-samples t-test compared differences between the users and non-users. As shown in Table 1, there was a significant difference in the GPA for users compared with non-users, but there was no significant difference in the self-reported study hours each week or the final course grade.

Table 1: Comparison of Student Users' and Non-Users' GPA, Study Time, and Course Grade

Student Characteristics		Mean	*Sd*	*T*	*Df*	Significance Level
GPA	Users	3.211	0.483	-2.991	40	***
	Non-users	2.778	0.446			
Self-reported study hours per week	Users	4.10	2.843	0.631	51	
	Non-users	4.60	2.940			
Course grade	Users	80.3	10.941	-1.162	51	
	Non-users	77.0	9.772			

*This table compares student characteristics of users and non-users of MyAccountingLab. *** indicates significance at 0.01 level.*

Because the final course grade might be influenced by a student's use of the institution's Learning Center, accounting tutors in the Business School, by previous experience with online homework systems in other courses, or even by interest in the subject as evidenced by declared major, we conducted a two-sample z test of proportion to compare differences between the two groups. As reported in Table 2, students who did not use MyAccountingLab were more likely to use the Learning Center and accounting tutors, but the difference was neither sizable nor significant.

The non-users were less likely to have previous experience with other online homework managers and less likely to be Business School majors, but these differences were also not significant.

Table 2: Comparison of Previous Experience and other Learning Support

Background/Support	Users	Non-Users	*Z*	Significance Level
Visited the Learning Center	10.7%	16.0%	0.567	
Received help from accounting tutors	25.0%	28.0%	0.247	
Previous experience with online hw manager	78.6%	68.0%	-0.871	
Business School major (acc, bus, eco)	85.7%	76.0%	-0.902	

This table shows previous experience with online homework systems, other learning support, and major of users and non-users. None were significant.

A linear regression explored whether the use of an online homework manager significantly increased a student's final course grade. The dependent variable was the Course Grade and the three independent variables were: MAL (the use of an online homework manager) GPA, and Major (a dummy variable that takes the value of 1 if the student is majoring in accounting, business, or economics). The regression model is as follows:

$$\text{Course Grade} = \beta_0 + \beta_1(\text{MAL}) + \beta_2(\text{GPA}) + \beta_3(\text{Major}) + \varepsilon \quad (1)$$

The results of the regression in Table 3 showed a significant positive relationship between GPA and the final course grade. However, there was a significant negative relationship between the use of an online homework manager and the final course grade. (R2 = .63, F(3, 38) = 21.81, p = .036). Holding constant the student's major, students who chose to use an online homework manager were more likely to have a lower course grade than those who did not use MyAccountingLab.

Table 3: Relationship between Course Grade and the Use of an Online HW, GPA, and Major

	Coefficient Estimate	Std. Error	*T* Stat	Significance Level
Intercept	23.00	7.05	3.26	***
MAL (use of online homework manager)	-5.50	2.53	-2.17	**
GPA	18.26	2.35	7.78	***
MAJOR (1 if accounting, bus, or econ)	3.63	3.61	1.01	
$R^2 = 0.632$ $F(3,38) = 21.81$ $p = 0.000$				

*This table shows the regression analysis results. Course Grade = $\beta_0 + \beta_1(MAL) + \beta_2(GPA) + \beta_3(Major) + \varepsilon$ **, *** indicates significance at the 0.05 and 0.01 levels respectively.*

We then added the self-reported hours spent studying (Hours) to the model to determine how using an online homework manager (MAL), study time per week (Hours), GPA, and Major affected the course grade. The regression model is as follows:

$$\text{Course Grade} = \beta_0 + \beta_1(\text{MAL}) + \beta_2(\text{GPA}) + \beta_3(\text{Major}) + \beta_4(\text{Hours}) + \varepsilon \quad (2)$$

Again, there was a significant positive relationship between GPA and the final grade and there was still a significant negative relationship between the use of an online homework manager and the final course grade. (R^2 = .65, F(4, 37) = 17.47, p = .000). Table 4 presents the results of adding study time to the regression. Holding constant the student's major and hours of study, students who chose to use an online homework manager were significantly more likely to have a lower course grade than those students who did not use MyAccountingLab.

Table 4: Relationship between Course Grade and the Use of Online HW Manager, GPA, Major, and Study Time

	Coefficient Estimate	Std. Error	*T* Stat	Significance Level
Intercept	22.32	6.95	3.21	***
MAL (use of online homework manager)	-5.018	2.508	-2.00	**
GPA	17.836	2.326	7.67	***
MAJOR (1 if accounting, bus, or econ)	2.971	3.578	0.83	
HOURS (time spent studying per week)	0.554	0.369	1.50	
$R^2 = 0.654$ $F(4,37) = 17.47$ $p = 0.000$				

This table shows the regression analysis results. Course Grade = $\beta_0 + \beta_1(MAL) + \beta_2(GPA) + \beta_3(Major) + \beta_4(Hours) + \varepsilon$ **, *** indicates significance at the 0.05 and 0.01 levels respectively.

Introducing "voluntariness" into the course by allowing students to decide whether to buy an online homework system adversely affected student performance as measured by course grades. To understand why the use of an online homework system and course grades were negatively related, we examined the differences among the students who opted to buy MyAccountingLab. A sizeable majority of students positively perceived the experience of using an online homework manager. They reported that their confidence increased (75% agreed or strongly agreed) as they gained experience with the program. They believed that it was effective in improving their test scores (71.4% found it very effective or somewhat effective). They reported that they would recommend it to a friend (92.9% were likely or somewhat likely to do so). However, student behavior changed as the semester progressed with 75% reporting that their study habits changed. Table 5 reports the ways in which their study habits changed.

Table 5: Changes in Study Habits after Using the Online Homework System

Spent Less Time on This Element (Mark all That Apply)	Number Reporting	Percentage
Homework problems	9	42.9%
Reading the textbook (or online version included with MAL)	9	42.9%
Included supplements (Demo Docs, Help-Me-Solve-This, Video Tutorials)	5	23.8%
Additional problems similar to homework assignments	4	19.0%
Re-reading or reviewing class notes	2	9.5%
*(21 of 28 users reported changes; some reported more than one change)		

This table shows changes in study time as students gained more experience with the online homework system.

As the semester continued, students reported spending less time on homework problems and reading the textbook. The online homework manager provides a structured environment in which students often choose the correct answer from a set of choices in a drop-down box. Students value the immediate feedback but may be tempted to take a shortcut by repeatedly choosing an answer until they find the correct value. It then appears the student has "learned" the material but cannot apply that knowledge on a test. We next examined differences in the reasons for buying an online homework manager. Our survey asked students to identify all the reasons they chose to buy and then select one as the "most important." Table 6 shows these reasons ranked by the most important reason to buy according to those students who used MyAccountingLab. The ability to "get immediate feedback on homework" was the most important reason to buy the online homework manager. It is possible the online homework manager is more attractive to less motivated students. The immediate feedback feature, when misused, allows students to spend less time on homework. They lead themselves to believe that they have mastered the material but their performance on tests is adversely affected.

Table 6: Most Important Reason to Buy an Online Homework System According to Users

Most Important Reason	Number	Percentage
Getting immediate feedback on homework	12	42.9%
Raising my grade	9	32.1%
Ability to get help on demand	5	17.9%
Access to extra practice problems	1	3.6%
Other (list)	1	3.6%
"All of the above are important"		

This table shows the reasons students gave as the "most important" in their decision to buy the online homework system.

Because we controlled for general academic achievement by using GPA, students who wanted immediate feedback were not necessarily the "weaker" students in the class. We found no evidence that frustration with the technology was significant. As shown in Table 7, a sizable majority found MyAccountingLab easy to install and navigate. Once they began to use it, 68% used it for every chapter.

Table 7: Student Users' Perceptions of the Ease of Use of Online Homework Manager (N=28)

Item	Strongly Agree or Agree	Strongly disagree or Disagree	Neither Agree or Disagree
The setup/installation of MAL was easy.	26 (92.9%)	1 (3.6%)	1 (3.6%)
The navigation of MAL site was clear and I had no problem finding what I was looking for.	22 (78.6%)	1 (3.6%)	5 (17.9%)
Once set up, I used MAL for every chapter.	19 (67.9%)	1 (3.6%)	6 (21.4%)

This table shows students users' perceptions of the ease of use of the online homework system.

Controlling for GPA, major, and hours of study, those students who chose to use an online homework manager were significantly more likely to have a lower course grade than those who used a traditional homework method. Yet, the users of the online homework system rated MyAccountingLab very high (4.0 out of 5) on its effectiveness in helping them improve their grade. Self-selection bias may influence effectiveness when students can voluntarily choose to buy an online homework system. Our result supports Agarwal and Prasad (1997) which found the acceptance and use of technology is influenced by whether or not it is mandatory, especially early in the adoption. If the use of an online homework manager is not a course requirement, students may not take it seriously. Further, in this study, the primary student motivation to use the system was to get "immediate feedback on homework." These students reported changing their study habits over time, especially the time spent on reading the textbook or doing homework.

CONCLUSIONS AND FUTURE DIRECTION

The results of this small study suggest that there is a significant, negative relationship between the voluntary use of an online homework manager in financial accounting and student performance as measured by course grades. Further exploration of the relationship between voluntary usage of online homework systems and student learning is warranted. For instance, further studies might include other homework managers beyond MyAccountingLab. Our results may have been affected by the number of attempts allowed when requesting feedback. Performance could be improved if students were given multiple attempts for practice problems, but allowed only one chance to prepare certain other problems. This would eliminate the possibility of students randomly selecting answers until they hit upon the correct one and would ensure that students gave the homework their best efforts. The setting of maximum time limits for practice problems and graded problems would promote wise use of time by students and help them prepare for timed examinations. Finally, because the research occurred at a women's college and all participants were female, it is possible that the results would have been different at a co-educational institution. In this study, a sizable number of students may have wanted to lessen the burden of learning as measured by the importance they placed on "getting immediate feedback" from their purchase of

MyAccountingLab. The instructor may want to monitor more intently the time spent by each student. The instructor can then intervene if the student is not sufficiently engaged with the homework manager. This sends a signal to students that the instructor regards the online homework as essential to their success in the course, and provides motivation for them to increase their participation.

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GRADUATION RATES AT COLLEGES AND UNIVERSITIES IN THE MIDWEST

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ABSTRACT

This research examines the relative impact of a broad variety of variables on the graduation rates of 283 four-year colleges and universities in the Midwest. It compares the relative importance of campus life (such as sports, number of student organizations and Greek life) to financial characteristics (like the percentage of students who borrow and the proportion receiving Pell Grants). It looks at these features building on previous literature that studies institutional (like type of school) and student (percent female and selectivity) characteristics. Results show that economic variables such as the socio-economic status of students is much more important in predicting graduation rates than social characteristics like the percentage of students in sororities.

JEL: A20, A22, Z18

KEYWORDS: Graduation Rates, Colleges, Universities, Higher Education

INTRODUCTION

A college degree has never been more important. High school students and their parents realize this: thus there were over twenty million students attending American colleges and universities in the fall of 2015 (National Center for Education Statistics, NCES). On average, workers with a college degree earn almost twice as much as those with only a high school degree. Thus, over a lifetime college graduates earn over a million dollars more compared to those without one (Leonhardt, 2014). In addition, individuals with a college degree report a higher sense of self-worth and satisfaction with life. Higher education in the United States is extremely important to not only all of those involved, but to the country as a whole. The increased costs over the past two decades has impacted students, potential students and their parents, with student debt now well over a trillion dollars. In addition, most companies need qualified, skilled workers with degrees that help them compete in an increasingly global world economy. There are social benefits to higher education, with it being correlated to lower crime rates and more social responsibility. Directly or indirectly related to almost all of the areas in post-secondary education is the graduation rates at colleges and universities. Policy makers want to ensure that government funds are spent wisely. Part of the Obama administration's accountability program for higher education looks at improving graduation rates. The Bill and Melinda Gates Foundation spends millions of dollars promoting college. Additionally, the basic fact that students do not attend college with the intention of flunking out or leaving before finishing. Thus, those variables that increase (or decrease) graduation rates deserves special attention. On the following pages this paper will provide a broad overview of the literature on graduation rates focusing on the articles most related to our research. We then discuss the data sources and summarize our variables. Next we explain the econometrics used and our results. We conclude the paper with how our findings add to the literature and suggestions for future research.

LITERATURE REVIEW

There is a large and varied body of literature on graduation rates at colleges in the United States. As with most disciplines, some of the research focuses on developing mathematical models that lead to theoretical foundations explaining differences. Related literature attempts to improve models based on data. One example is Bailey (2006), who uses data mining to develop a system of predicting graduation rates at two and four year schools in Minnesota. Much of the research examines how specific programs can increase graduation rates at one particular school or a small number of institutions. Kilgo and Pascarella (2016) looked at about 4,000 students at seventeen institutions and found that undergraduate students who conducted research with professors does improve the likelihood of students completing their degrees. Unlike most anecdotal evidence in this area, they held constant other relevant variables in order to control for differences in characteristics of students. A lot has been written about the importance of mentoring, advising, new student orientation, tutoring, and other actively intensive programs for student success. White (2015) is one of many who contends that improved advising for students leads to higher levels of graduation. Lei, Gorelick, Short, Smallwood and Wright-Porter (2011) argue that cohorts (placing students in the same fields together) helps promote a support system that can improve academic outcomes.

It is well known that certain demographic groups such as first generation students, minorities, and those from lower socio-economic backgrounds not only attend college at lower rates but are also less likely to finish. Denny, Doyle, McMullin and O'Sullivan (2014) find that programs for at-risk students with financial aid improves retention better than providing aid only. Oseguera, Locks and Vega (2009) finds that specific programs aimed at helping Latinas/os overcome perceived prejudice and bias and other obstacles improves completion rates within this group. There is also debate about whether graduation rates are an accurate gauge of school quality or truly measure the value added students get from institutions. Kalsbeek and Zucker (2013) is one of the more recent studies on retention theory. They contend that market structure and schools positions are the primary driver between graduation rates. The 'brand-name' schools' that are highly selective, have high list and net prices, with top students from around the country have higher graduation rates because of the well prepared, mostly wealthy student bodies they attract.

The majority of studies analyzing graduation rates rely on case studies, anecdotal evidence, qualitative analysis or just focus on one or a small number of schools. Regression is a well-known econometric technique used for predicting particular outcomes based on certain characteristics. Thus, it is somewhat surprising that it has not been used much in the literature on forecasting retention and graduation. However, there has been some literature using regression in the area and it has grown over the past few years. Pike and Graunke (2015) use a fixed-effect model to account for variables that are not, or cannot, be included in predicting retention rates. They control for time-invariant characteristics (such as if the school is public or private), time-varying institutional (undergraduate enrollment, etcetera) and time-varying cohort (like the percentage minority and non-traditional age students) characteristics. Of the 464 schools in their data set, they find that student characteristics such as incoming standardized test scores are largely responsible for differences in retention rates.

There are very few studies that use large data sets examining graduation rates from a macro level. Anstine (2013) examined about 1,400 schools finding that the percentage of faculty that is full-time positively impact graduation rates, and that liberal arts colleges' research and masters' universities have higher rates graduation than comprehensive ones. The existence of learning communities and teaching centers at institutions of higher learning do not improve graduation rates. However, if they type of school is taken into consideration, the existence of learning communities does improve graduation rates at comprehensive universities but do not have any impact on research and masters' universities or liberal arts colleges. Most recently Horn and Lee (2016) tested the reliability and validity of regression examining almost 1,500 institutions of higher education. They have four broad categories of explanatory variables: structural (type of school, selectivity, etcetera), demographic characteristics (such as gender and ethnicity), financial (like

money spent on instruction), and contextual (degree of urbanization and unemployment rates in the surrounding area). They conclude that regression will provide reliable and valid results as long as the model is specified correctly. This research adds to the body of knowledge in a few ways. Importantly, while controlling for relevant characteristics that have been shown to impact graduation rates in previous studies, we have included different predictor variables that have not been examined before. Thus we compare the marginal impact of social variables, like the percentage of students in Fraternities, to socio-economic variables such as the affluence of the student body. In addition, we also look at how specific variables impact graduation at different schools.

DATA AND METHODOLOGY

Data was compiled from about a half a dozen different sources on 'traditional' four year colleges and universities in the Midwest. (See the appendix for more information about classifications of colleges and geography.) From all potential schools, a significant number of schools have not provided information on percentage of faculty that is full-time, average ACT scores and other variables that contribute to differences in graduation rates. Thus, these colleges cannot be included in the analysis. Not surprisingly the majority of these schools have very low graduation rates. There are also newer schools that have just been around for a decade or two and small schools that do not report relevant information either. Thus, our analysis only examines the 'better' schools in the region. In addition, we have excluded: for-profit schools (for example, DeVry), those specializing in On-line degrees, specialty schools in Art (Minneapolis College of Art & Design), Business, Culinary and other trades, those admitting only upper division transfer and graduate students (Governors State University) and seminaries (Grace Bible College). Thus, the vast majority of the schools have at least some residential component, all have at least a few student organizations and all require standardized tests for admission.

Data was gathered directly from the U.S. Department of Education. The Integrated Post-Secondary Education Data System (IPEDS) gathers information from four-year institutions on graduation rates, number of student athletes and dozens of other variables. The Chronicle of Higher Education provides data on faculty salaries. We used the most recent data from the U.S News and World Report Rankings, though it should be noted that much of their data is from the U.S. Department of Education. We used it instead of IPEDS directly because it was less cumbersome to compile. In addition, some variables (such as the state) were just calculated by the authors. Initially a total of 106 variables were collected but some of them measured the same thing (percent who lived on campus and percent who lived off) so some of them were excluded. In other situations, variables were extremely correlated (levels of professors' salaries) so only one of the variables was included (Associate Professor Salary) in our data. There were also some variables in this initial data set that we would have liked to include, such as the percentage of students that use the GI Bill to pay for college, but almost 100 schools did not report that data, so were unable to.

There was an enormous amount of correlation between many of the sports variables, such as between aid given to athletes and total expenses and revenue. Here we just kept total revenue and average salary for men's coaches as a proxy for the importance of sporting events. Thus, there are a total of seventy-two variables in our data set. Table 1a and 1b describe the variables, provide the source of the data and give simple descriptive statistics. Note that where available, the numbers in our data set are comparable to other statistics. For example, for the 283 schools the average for the percentage of students who are female is about fifty-six percent, which is comparable to other recent studies (Anderson, 2014). Horn and Lee (2016) categorize variables in their research into four broad categories: structural (such as Carnegie classification), demographic, financial (educational expenditures), and contextual (labor market conditions). Similarly, Pike and Graunke (2015) follow a well-used format of variable classification into: time invariant institutional (such as Carnegie classification), time varying institutional (undergraduate enrollment), and time varying cohort (percentage of non-traditional age students) characteristics.

Table 1a: Description of Structural, Selectivity and Demographic Variables

Variable	Description of Variables	Data Source	Numb Obs	Min	Max	Mean	Number
GradRate	Graduation rate at each school.	US News (from IPEDS)	283	0.08	0.96	0.577	
STRUCTURAL							
Regional	If the school is a regional university (yes=1)	Carnegie Foundation	283	0	1	0.57	161
LibArt	If the school is a Liberal Arts College (yes=1)	Carnegie	283	0	1	0.23	64
National	If the school is a national university (yes=1)	Carnegie	283	0	1	0.20	58
Private	If the school is Private (yes=1)	Author	283	0	1	0.67	191
Urban	If the school is in an urban location (yes=1)	Author	283	0	1	0.46	130
Suburban	If the school is suburban (yes=1)	Author	283	0	1	0.25	71
Rural	If the school is in a rural location (yes=1)	Author	283	0	1	0.29	81
IA	If the school is in Iowa (yes=1)	Author	283	0	1	0.08	24
IL	If the school is in Illinois (yes=1)	Author	283	0	1	0.16	46
IN	If the school is in Indiana (yes=1)	Author	283	0	1	0.12	35
KY	If the schools is in Kentucky (yes=1)	Author	283	0	1	0.09	25
MI	If the school is in Michigan (yes=1)	Author	283	0	1	0.11	32
MN	If the schools is in Minnesota (yes=1)	Author	283	0	1	0.08	23
MO	If the school is in Missouri (yes=1)	Author	283	0	1	0.11	30
OH	If the school is in Ohio (yes=1)	Author	283	0	1	0.14	40
WI	If the school is in Wisconsin (yes=1)	Author	283	0	1	0.10	28
SELECTIVITY							
Retention	The percentage of first-time, full-time undergraduate students who returned to school for their second year.	USNews-IPEDS	283	0.46	0.99	0.764	
PerClsU20	Percentage of classes with fewer than 20 students	USNews-IPEDS	283	0.234	0.94	0.570	
PerClsO50	Percentage of classes with more than 50 students	USNews-IPEDS	283	0	0.62	0.041	
StudFac	Student faculty ratio	USNews-IPEDS	283	6	26	14.01	
AccpRate	Percent of students accepted out of those who applied	USNews-IPEDS	283	0.07	1	0.688	
ACT25	The ACT scores of the 25th percentile of entering students.	USNews-IPEDS	283	14	32	20.73	
ACT75	The ACT scores of the 75th percentile of entering students.	USNews-IPEDS	283	18	35	26.03	
Fresh10	Percentage of students who were in the top 10 percent of their high school class	USNews-IPEDS	283	0.02	0.98	0.225	
Fresh25	Percent of students who were in the top 25 percent of their high school class	USNews-IPEDS	283	0.09	1	0.474	
DEMOGRAPHIC							
PerFemale	Percentage of students who are female	USNews-IPEDS	283	0	1	0.557	
Over25	Percent of students older than 25 years	USNews-IPEDS	261	0	0.7	0.137	
OutState	Percent of students from another state.	USNews-IPEDS	282	0	0.93	0.274	

The first and second columns in this table lists and defines the structural, selectivity and some demographic variables. Structural variables are those that do not change over time. Selectivity variables provide an indication of the quality of each school showing variables such as average ACT scores. Demographic show student body characteristics. The third column shows the data source. The fourth column gives the number of observations, followed by the minimum and maximum values for each variable. The last two columns show the average value of each variable and the number in the category if it is a dummy variable.

To simplify the large number of variables in our data set we follow a similar format and categorized college characteristics into seven broad categories: structural, selectivity, demographic, faculty characteristics, student body characteristics, financial, and sports. In some cases, it is not perfectly clear where a variable should be categorized. For our purposes, it is not the exact area that matters, it is just classifying them to simplify because of the large number of variables. Table 1a summarizes structural, selectivity and some demographic variables. Structural variables are those that do not change over time or if they do they change slowly. The majority of the schools, fifty-seven percent, are regional. Ninety-three of the institutions are public. About half the schools are in urban locations with a quarter each in suburban and rural. The number of schools corresponds closely to state populations with the most in Illinois and least in Iowa.

Selectivity variables include the acceptance rate (most selective University of Chicago) and percentage of students in the top ten percent of their high school class (average twenty-two percent). Demographic

variables, in Table 1a and 1b, include things such as the percentage of students who are female, about fifty-six percent, which is similar to the average for all schools in the U.S. The percentage from out of state ranges from zero to ninety-three (Washington University in Saint Louis). A few were all male or all female. Table 1b provides information on variables pertaining to faculty and students, the financial viability of schools and the importance of sports. There was a lot of variability in the faculty characteristics categories. The percentage of faculty that is full-time ranged from twenty-five to one hundred percent and average salary from $36,594 to $117,600 (University of Chicago).

There was also a wide range in the characteristics of student bodies. The number of undergraduates go from about 500 to over 44,000 (Ohio State). The percentage of students that are part of the Greek system averages about nine percent but varies from zero to 77 percent. Financial variables illustrate the economic stability of schools (endowment measured on a per capita basis) and socio-economic status (percentage of students receiving Pell Grants). Of the students who do borrow, the average debt is about $29,000. In order to focus on their relative importance, sports variables have been separated from other student body characteristics. The majority of schools' sports are regulated by the National Collegiate Athletic Association (NCAA) with just twenty percent adhering to National Association of Intercollegiate Athletics (NAIA) rules.

Most schools are NCAA Division III, 110, with others ranging between five and fourteen percent.
Title IX is close to achieving its goal in some ways, with the average number of sports teams for women actually just slightly ahead the number for men, averaging 8.32 to 7.69. By other measures though it is not the case, such as there are more male athletes than female overall.

RESULTS

Regressions below examine the impact different variables, such as percentage of students receiving Pell Grants, holding other influences constant, have on graduation rates at institutions of higher learning in the Midwestern U.S. Thus, the dependent variable, the graduation rate of school i, is a function of independent variables described in Tables 1a and 1b in detail and shown below in equation 1. There have already been quite a few studies examining the first four categories, so while we do look at them our focus is on the last three where there has not been much analysis using regression.

$$Graduation\ rate i = \beta 0 + \beta 1\ Structural + \beta 2\ Selectivity + \beta 3\ Demographic + \beta 4\ Faculty + \beta 5\ Student\ Body + \beta 6\ Financial + \beta 7\ Sports + \varepsilon i \quad (1)$$

Due to multi-colinearity not all of the variables listed in Tables 1a and 1b are used in the regressions. For example, freshman in the top 10 percent of their high school class and freshman in top 25 are both highly correlated so top 25 is excluded. The number of sports for men and number of sports for women are also highly related, and therefore are combined into one variable. In addition, we used the per capita for number of athletes and organizations to control for heteroscedasticity and large variations in the numbers. Table 2 shows the first regression with all of the variables kept in their original form. Thus, they were not transformed into logs or other different mathematical forms. The majority of the variables are quantitative so we could interpret coefficients in the usual way, but we do not. Nominal variables are placed into a dummy variable format where if the characteristic exists it is identified with a one and if it does not exist it is given a zero. Hence, these coefficients are the difference between colleges and universities with the characteristic and those without it.

Table 1b: Description of Demographic, Faculty, Student Body, Financial and Sports Variables

Variable	Description of Variables	Data Source	Numb Obs	Min	Max	Mean	Number
DEMOGRAPHIC							
Interntl	Percentage of students from another country. Those who originated in another country	USNews-IPEDS	283	0	0.3	0.040	
Black	Percentage of students who reported Black	USNews-IPEDS	283	0	0.83	0.081	
Asian	Percentage of students who reported Asian	USNews-IPEDS	283	0	0.23	0.028	
Hispnc	Percentage of students who are Hispanic	USNews-IPEDS	283	0	0.44	0.058	
White	Percentage of students who reported White	USNews-IPEDS	283	0.25	0.97	0.727	
Other	Percentage of students who reported as Native American, Pacific Islander, Multiracial, or did not report	USNews-IPEDS	283	0	0.3	0.067	
FACULTY							
PerFTFac	Percent of faculty that is full time	USNews-IPEDS	283	0.249	1	0.790	
PerinstrFT	Percentage of employees on instruction, research or service who are full-time	USNews-IPEDS	283	0.109	1	0.599	
SasocProf	Average Associate Professor Salary	Chronicle of Higher Education	283	36549	117600	66147	
STUDENT BODY							
Students	Number of undergraduate students	USNews-IPEDS	283	543	44201	6004.95	
WkendCmps	Percentage of students who are on campus on the weekends	USNews-IPEDS	228	0	0.99	0.606	
PerLiveOn	Percentage of students who live in campus housing	USNews-IPEDS	278	0	1	0.502	
StudOrg	Number of student organizations	USNews-IPEDS	283	4	21	15.41	
PerFrat	Percent of male students in a Fraternity	USNews-IPEDS	268	0	0.77	0.088	
PerSor	Percent of female students in a Sorority	USNews-IPEDS	267	0	0.67	0.095	
PerStudFT	Percentage of undergraduates who attend full-time	USNews-IPEDS	283	0.007	1	0.834	
FINANCIAL							
PerHaveNBA	Percent determined to have financial need	USNews-IPEDS	275	0.37	1	0.717	
PerFullMet	Percent who had need fully met	USNews-IPEDS	268	0	1	0.252	
Pellgrant	Percentage of undergraduates receiving a Pell Grant	USNews-IPEDS	282	0.062	0.926	0.342	
PerBorrow	Percent of graduating students who have borrowed	USNews-IPEDS	263	0.08	0.98	0.722	
PerCapEndow	End-of-year endowment value per full-time equivalent student	USNews-IPEDS	282	507	950232	45377.85	
ALUMGvRt	Percentage of alumni who give to the school	USNews-IPEDS	282	0.01	0.51	0.128	
SPORTS							
NumSportsM	Number of Sports teams for Men	USNews-IPEDS	279	0	22	7.69	
NumSportsF	Number of Sports teams for Women	USNews-IPEDS	282	0	21	8.32	
MenCoachSal	Ave. salary per FTE HD Coach/ Men's	USNews-IPEDS	271	0	1408829	121199	
MenAthletes	Total Number of Athletes in Men's Sports	USNews-IPEDS	272	0	941	281.27	
NCAADivIA	The school is in Division I – A of the NCAA	USNews-IPEDS	283	0	1	0.11	30
NCAADivIAA	The school is in Division I – AA	USNews-IPEDS	283	0	1	0.05	15
NCAADivIAAA	The school is in Division I – AAA	USNews-IPEDS	283	0	1	0.07	19
NCAADivII	The school is in Division II of the NCAA	USNews-IPEDS	283	0	1	0.17	48
NCAADivIII	The school is in Division III of the NCAA	USNews-IPEDS	283	0	1	0.39	109
NAIADivI	The school is in Division I of the NAIA	USNews-IPEDS	283	0	1	0.06	18
NAIADivII	The school is in Division II of the NAIA	USNews-IPEDS	283	0	1	0.14	40

The first and second columns in this table lists and defines demographic, faculty, student body, financial and sports variables. Faculty variables describe the importance of faculty to the schools. Student body variables are those that indicate the connectedness of students to their campus. Financial variables show the socio-economic status of students and sports shows the level of participation. The third and fourth columns show the data source, number of observations, followed by the minimum and maximum values for each variable. The last two columns show the average value of each variable and the number in the category if it is a dummy variable.

If there are more than two options the excluded category is listed (regional is excluded for type of institution, etc.). A total of forty-eight variables were included in the regression. The variables we chose were selected based on findings in previous research, but primarily came from studies with anecdotal evidence, not

necessarily using data and theory in existing literature. Regressions by Horn and Lee (2016) show that the type of school, gender and other variables are important in predicting graduation rates, so we include these. Other research that does not use regression analysis has suggested that the importance of sports to students may influence college success. There is also lots of evidence that socioeconomic variables are extremely important.

Table 2: Regression no Variables Transformed: Dependent Variable: Graduation Rate

Independent Vars	Coefficients	Stand Error	T-Statistics
Intercept	0.045	0.137	0.331
LibArt [a]	0.034	0.016	2.057**
National	0.004	0.014	.291
Private (yes =1)	0.108	0.021	5.141***
Urban [b]	-0.007	0.011	-0.636
Suburban	-0.003	0.013	-0.192
IA [c]	0.023	0.021	1.102
IN	-0.013	0.021	-0.654
KY	-0.038	0.022	-1.700*
MI	-0.023	0.018	-1.302
MN	0.005	0.023	0.234
MO	0.008	0.021	0.370
OH	-0.009	0.017	-0.528
WI	0.000	0.021	-0.020
PerClsU20	-0.034	0.045	-0.755
AccptRt	-0.050	0.033	-1.510*
ACT25	0.013	0.004	3.236***
Fresh10	0.099	0.077	1.287
PerFemale	0.159	0.067	2.367**
Over25	-0.102	0.059	-1.720**
OutState	-0.046	0.031	-1.477
Interntl	0.067	0.127	0.528
Black [d]	-0.203	0.093	-2.180**
Asian	-0.120	0.195	-0.615
Hispnc	0.112	0.116	0.966
Other	-0.015	0.108	-0.140
PerFTFac	0.087	0.057	1.514
SalAssocProf	-2.159E-7	0.000	-0.305
Students	3.107E-6	0.000	2.474***
PerLiveOn	0.061	0.033	1.847**
StudOrgPCap	-2.406	1.864	-1.291
PerFrat	-0.013	0.086	-0.148
PerSor	0.020	0.081	0.253
PerStudFT	0.001	0.001	1.920**
PerHaveNBA	-0.143	0.074	-1.936**
PellGrant	-0.001	0.001	-2.411***
PerBorrow	0.132	0.052	2.524***
PerCapEndow	-6.615E-9	0.000	-0.104
AlmnGivRt	0.259	0.099	2.619***
MenCoachSal	8.891E-9	0.000	0.274
NCAADivIA [e]	-0.014	0.025	-0.578
NCAADIVIAA	0.007	0.020	0.361
NCAADIVIAAA	-0.017	0.019	-0.889
NCAADivII	0.014	0.014	0.951
NAIADivI	-0.030	0.025	-1.178
NAIADivII	-0.008	0.015	-0.490
NumSports	0.004	0.001	2.883***
MenAthPerCap	-0.462	0.133	-3.471***
WomenAthPCap	0.220	0.240	0.914
Number of Obs: 283	R-squared: 0.899	F-statistic: 31.28	

*This table shows the regression with the graduation rate as the dependent variable as a function of many explanatory variables with all of the variables in their original form. For the qualitative variables with more than two options the excluded categories are as follows: a Regional, b: Rural, c: Illinois, d: White, e: Division III. The levels of statistical significance are: * at the 10% level, ** at the 5% level, *** at the 1% level.*

We included new variables for regressions that best follow earlier work in the area but have not been analyzed using econometrics in this manner. Thus, the regressions control for those variables that are known to impact graduation rates while adding new unexamined factors in the regression. We also ran a step-wise regression that suggested including most of the variables that we used. Since there is no theoretical rational to the variables chosen with this method, we are using regressions based on existing knowledge. The R squared for the simple Ordinary Least Squares (OLS) regression is 0.899, showing that practically ninety percent of the variance in graduation rates is explained by our variables. R squared in

previous literature tended to range around 0.65, with a minimum of 0.44 (Gansmer-Topf and Schuh, 2006) and a maximum of 0.85 (Scott, et al., 2006). Given that our data has more and new variables than earlier research, it is not surprising that we can explain a large amount of school's graduation rates. The big F-statistic, 31.35, is not surprising either.

The majority of the control variables have the expected sign and are statistically significant. Most of the structural variables (type of school, etc) are similar to results in existing literature. There are small differences in graduation rates between some states, with Kentucky having lower graduation rates than Illinois, but overall the differences are not statistically significant. The results of the regression for selectivity control variables is also consistent with other studies. Standardized test scores are a huge determinant of a school's graduation rate. Results of the demographic and faculty variable categories are also consistent with previous literature. Schools with a higher percentage of black students have lower graduation rates. Institutions with a higher percentage of female students graduate at higher rates. And schools with a larger percentage of non-traditional students (as proxied by the percentage of students over twenty-five) also have less academic success.

The focus of this research is on the relative importance of factors that have not been in previous regression analyses: student body, financial and sports categories. Previous anecdotal studies have shown that the more engaged students are with college, the more likely they are to graduate (Denny, et al., 2014). Controlling for other variables, our results confirm this. The percent of students that live on campus and are full-time students demonstrates engagement. Both of these variables are positive and statistically significant. The alumni giving rate is positive and statistically significant. It is likely that schools with higher giving rates had students that were engaged and thus give back at higher rates than those who were less so. The importance of social characteristics showing how involved students are in college depends on the type of activity. The number of student organizations (on a per capita basis), the percentage of students in fraternities and sororities are not statistically significant at any level. Thus, at least for Midwestern institutions, the importance of these is not relevant for schools' graduation rates.

One might expect that bigger, 'name' schools that are recognized by their Division I sports programs would have higher graduation rates than other institutions. Our results show that this is not the case in the Midwest with there being no statistically significant difference in the graduation rates of schools across all divisions. In addition, holding constant the level of play, the higher the number of sports, the higher the graduation rate. It is likely that the student-athletes at all levels are engaged, thus making no difference. The regression in Table 2 confirms other studies showing that schools that enroll higher numbers of disadvantaged students graduate at lower levels than institutions that have more students from well to do families. *Holding constant all other influences*, colleges that have a higher percent of students with need based aid and those receiving Pell Grants have lower graduation rates. Unfortunately, no matter what type of school, the demographic characteristics, etcetera, schools that have more students from lower socio-economic backgrounds are less successful in having their students' complete college.

Some variables were found to be non-linear. For example, a simple graph examining the percentage of freshman that are in the top 10 percent of their high school class appeared to be increasing at a decreasing rate. Thus, we squared it and also included that. Regressions showed the untransformed variable to be positive and the squared on to be negative, both statistically significant, confirming this. Dozens of other regressions were estimated with some variables transformed into logarithmic and other forms. After comparing adjusted R squared with these, while continuing to base regressions on existing knowledge and theory, we found the best regression. Table 3 shows a regression with six variables in logarithmic form: faculty salary, number of students, percent living on campus, percent who borrowed, per capita endowment and percent of alumni giving, with the others not transformed. Results are very similar to those in Table 2. R squared is 0.896, compared to 0.899, again illustrating that a large percentage of the variation in graduation rates in the Midwest is explained by our variables. The adjusted R squared is almost identical

too and both have very similar F statistics. The sign and level of statistical significance on the majority of the variables in Table 3 are similar to those in Table 2 illustrating that our results are robust across different specifications. While there were some small changes in some coefficients, most remained very close, for example the sign on the Kentucky variable went from -0.038 to -0.039 and the level of significance stayed at ten percent. Thus, the results on the structural, such as private schools having a higher graduation rate than public and demographic, such as schools with a higher percentage of females having a higher graduation rate, remain consistent with earlier research.

Table 3: Regression with Some Variables Transformed: Dependent Variable: Graduation Rate

Independent Vars	Coefficients	Stand Error	T-statistics
Intercept	0.142	0.509	0.280
LibArt [a]	0.013	0.017	0.785
National	-0.011	0.014	-0.751
Private (yes=1)	0.084	0.022	3.856***
Urban [b]	0.004	0.011	0.320
Suburban	0.009	0.013	0.674
IA [c]	0.029	0.021	1.393
IN	-0.001	0.021	-0.059
KY	-0.039	0.022	-1.769*
MI	-0.018	0.018	-0.976
MN	0.024	0.023	1.043
MO	0.001	0.021	0.048
OH	0.001	0.017	0.055
WI	0.022	0.021	1.070
PerClsU20	0.005	0.049	0.098
AccptRt	-0.082	0.036	-2.248**
ACT25	0.011	0.004	2.934***
Fresh10	0.320	0.119	2.680***
Fr10Sqrd	-0.259	0.117	-2.214**
PerFemale	0.147	0.068	2.182**
Over25	-0.046	0.059	-0.775
OutState	-0.055	0.030	-1.825*
Interntl	-0.005	0.134	-0.040
Black [d]	-0.196	0.098	-1.996**
Asian	-0.187	0.193	-0.971
Hispnc	0.409	0.133	3.080***
Other	-0.011	0.110	-0.103
PerFTFac	0.066	0.057	1.160
LnSalary	-0.009	0.049	-0.193
LnStudents	0.039	0.016	2.497**
StudOrgPCap	-1.338	2.082	-0.643
LnLivOnCamp	0.025	0.013	1.964**
PerFrat	0.027	0.083	0.323
PerSor	-0.042	0.079	-0.535
PerStudFT	0.001	0.001	0.899
PerHaveNBA	-0.184	0.073	-2.516**
PellGrant	-0.001	0.001	-2.136**
LnBorrow	0.012	0.026	0.479
LnEndow	0.007	0.007	0.999
LnGiving	0.033	0.013	2.578**
MenCoachSal	1.776E-8	0.000	0.549
NCAADivIA [e]	-0.020	0.024	-0.854
NCAADIVIAA	-0.012	0.020	-0.599
NCAADIVIAAA	-0.043	0.018	-2.409**
NCAADivII	-0.006	0.014	-0.428
NAIADivI	-0.023	0.025	-0.904
NAIADivII	-0.018	0.015	-1.172
MenAthPerCap	-0.320	0.134	-2.394**
WomenAthPCap	0.492	0.235	2.097**
Number of Obs: 283	R-Squared: 0.896	F-statistic: 29.14	

*This table shows a regression with the graduation rate as the dependent variable as a function of independent variables with some transformed into logs. For the qualitative variables with more than two options the excluded categories are as follows: a Regional, b: Rural, c: Illinois, d: White, e: Division III. The levels of statistical significance are: * at the 10% level, ** at the 5% level, *** at the 1% level.*

The major exception to the results remaining similar is the coefficient for the percentage of students that borrow. There is quite a bit of literature on the effects of borrowing to finance a college education but it excludes the impact that other variables may have. So our research sheds a little light on this, by controlling for student body and other characteristics. The coefficient is positive and significant at the five percent level when it is not transformed but is not statistically significant at all when it is logged. Dwyer et. al.

(2012) find on a micro level that there is an optimal level of debt and the relationship between it and graduation is not linear. Though much more needs to be analyzed, our results confirm this on a macro level. In addition to the similar results with our control variables, the student body, financial, and sports variables that is the focus of this paper also mostly stay the same. Holding constant other variables, the percentage of students in fraternities and sororities does not increase, or decrease, graduation rates. On a per capita basis, schools with more female athletes (holding constant the level of play) have a higher graduation rate. Again, socio-economic variables are highly important in determining graduation rates at colleges and universities in the Midwest. The higher the percentage of students that have need based aid, the lower the graduation rates. In our data, this ranged from a low of thirty-seven percent (Miami University, with the University of Michigan close at thirty eight percent) to a high of one hundred percent at a few schools. The average for all the schools is seventy-two percent with most of the schools within fifteen points of this. The average percentage of students receiving Pell Grants is almost exactly half that of students getting need based aid at thirty-four percent. The dispersion of the data is higher (as measured by standard deviations) with a range from six percent (Washington University in Saint Louis) to ninety-three percent (Drury University). At those schools with a higher percentage of students getting Pell Grants graduation rates are lower.

CONCLUSION

The goal of this paper was to compare the relative impact on graduation rates at colleges and universities of variables that have not been examined, holding constant dozens of other factors that have already been shown to influence them. We gathered data from different sources on about three hundred schools then used regression analysis to isolate how important each variable was. Institutions that have a higher percentage of students living on campus and likely feel more of a part of the college have higher graduation rates than schools with lower percentages. The socio-economic status of students in colleges plays a huge role in determining outcomes. Using regression our results confirm that institutions that enroll higher percentages of students from disadvantaged households have lower graduation rates. While this research uses dozens of variables, thus allowing us to control for many differences in schools, there are other variables that are not in our data set. For example, specific measures of how engaged students are with professors is difficult to quantify and is not included. In addition, our focus is on quantitative research and excludes qualitative factors. Future research should look at examining other variables that we were not able to obtain and combine qualitative research with the use of econometrics.

APPENDIX

We are examining colleges and universities, that is, post-secondary institutions. The Integrated Post-Secondary Education Data System (IPEDS) defines a postsecondary institution as an organization that is open to the public and has as its primary mission the provision of post-secondary education or training beyond the high school level, NCES, 2016). Colleges and universities provide post-secondary education and while often used interchangeably are different. Officially a college is an educational establishment for higher or professional education. A college is also an independent part of a university. A university is an educational institution, composed of one or more colleges and graduate schools that provides instruction and facilities for research in many branches of advanced learning and awards degrees. While we recognize the difference we use the words interchangeably. There are slight differences in definitions of the Midwest. The Encyclopedia Britannica calls the "Middle West**,** also called Midwest, or North Central States, region, northern and central United States, lying midway between the Appalachian and Rocky Mountains and north of the Ohio River and the 37th parallel. The Middle West, as defined by the federal government, comprises the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin." Kansas, Nebraska, North Dakota, and South Dakota are also considered part of the Great Plains and are not included but due to its proximity to the other states we have included Kentucky instead.

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IMPROVING CRITICAL THINKING SKILLS: AUGMENTED FEEDBACK AND POST-EXAM DEBATE

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ABSTRACT

Studies have confirmed critical thinking skills are necessary for a comprehensive education and successful business career, but methods for developing these skills are often missing in the classroom. The "Student Self-Initiated Challenge of Examination Questions" method is a pedagogical technique that encourages and increases critical thinking skills by allowing students to challenge objective examination questions through written feedback and classroom debate. The method was found to facilitate class discussion and participation while simultaneously reinforcing course content and was well liked by the students surveyed. Discussion and areas for future research follow presentation of data.

JEL: A22, K40, K41

KEYWORDS: Critical Thinking, Classroom Techniques, Objective Examinations, Class Discussion, Participation, Business Law Course

INTRODUCTION

Developing student critical thinking skills is a consistent priority in education. The reason for this prioritization is the desire to have students with the ability to see beyond simple facts and apply knowledge in complex ways that can make decisions, solve problems, and master concepts (Flores, Matkin, Burbach, Quinn, & Harding, 2012). Though critical thinking is inescapably linked with factual knowledge, the application of those facts enhances a student's education. To achieve this goal, faculties need to engage students in the pedagogy of critical thinking (Bannon, 2014). By embedding critical thinking skills in course content, students develop stronger skills in critical thinking processes. According to Braun (2004), continuing to focus business education on the development of critical thinking will lead to stronger decision makers for the next generation. Additionally, with a continued effort to include critical thinking in coursework, the business graduate will be able to obtain, analyze, and effectively use information to solve future problems more effectively (Celuch & Slama, 1999). Unfortunately, little coursework in business schools includes critical thinking components (Bobrowski & Cox, 2003). This research serves to understand the practice of augmented feedback in a post-exam situation. The reasoning is to understand if the augmented feedback enhances student critical thinking skills to better prepare students for their future careers. This research is organized starting with a literature review of related peer reviewed articles on the topic, assessing the augmentation process and the impact on student critical thinking skills, the methodology of application in engagement, findings, and conclusions and future research.

LITERATURE REVIEW

This paper serves to understand the practice of augmented feedback in a post-exam situation. The reasoning is to understand if the augmented feedback enhances student critical thinking skills to better

prepare students for their future careers. The best way to reinforce course priorities and enhance effective learning is to assess the process (Boylan, 2015). Current literature on the development of critical thinking has four consistent themes. First, more effective classroom methods for developing critical thinking skills are needed. Second, simultaneous methods to incorporate covered material into the content of a college-level course should be employed. Third, to be effective, the pedagogical approach must motivate students to engage with the professor orally or in writing, as well as with other students in the classroom, so the learner can benefit from exposure to multiple perspectives. Finally, teachers need an instrument to measure the skills students are developing.

Presently, there are few studies on testing methodologies, their level of effectiveness, and student preferences. Few scholars have explored student opinions about testing formats, but those that have researched this topic found students prefer a multiple choice format with an opportunity to earn extra credit points (Scanlan, 2013). Even fewer studies have addressed testing methods that enhance critical thinking (Carlson, 2013). In contrast, there is significant research on critical thinking skills and class participation. Studies have consistently shown that these learning outcomes are important factors in student understanding of course material, the overall effectiveness of education, and student success in future careers. Because critical thinking skills are a prerequisite for a successful career, educators should develop ways to assist students in developing these skills (Celuch & Slama, 1999; Flores et al., 2012; Young & Warren, 2011). In general, educators wholeheartedly support critical thinking as a primary goal of higher education (Bissell & Lemons, 2006). Given this is a long-term goal, any method promoting analytical and critical thinking should be considered (Vo & Morris, 2006) and consistently applied to the entire curriculum. Business schools engaging critical thinking as part of a degree program would address a reported weakness students possess when entering the workplace (Braun, 2004).

Poor teaching of critical thinking skills is a major weakness in our education system. Students seldom express an original idea, offer an opinion, or provide any sort of evidence (McEwen, 1994). The lack of critical thinking has an impact on the workforce and on an individual's ability to exercise leadership (Flores et al., 2012). Accordingly, the practitioner community has long called for educators to equip students with critical thinking and communication skills (Braun & Sellers, 2012). The Association to Advance Collegiate Schools of Business (A.A.C.S.B.) has emphasized critical thinking as an important component of business education (Page & Mukherjee, 2007).

The United States education system has performed poorly in producing critical thinkers (Flores et al., 2012). According to Bannon (2014), though introductory courses meet required content needs, they often do not incorporate critical thinking. To address this problem, methods to promote critical thinking in existing courses modified (Page & Mukherjee, 2007). A challenge to engaging critical thinking is the difficulty faculty has in allocating time and expertise to the practice. In regard to time issues, some educators are concerned teaching critical thinking skills will mean inadequate time to cover course content (McEwen, 1994) and assessment (Braun, 2004). Often faculty training has not been effective in regards to assessment techniques (Peach, Mukherjee, & Hornyak, 2007).

Communication skills are critical to professional success (Albrecht & Sack, 2000). Educators have advocated a shift away from the primary focus on teaching toward a greater emphasis on student learning (Barr & Tagg, 1995; Bok, 1988). A fundamental component of this shift has been a call for instructors to use strategies designed to engage students actively in the teaching-learning process (Bonwell & Eisen, 1991; Wulff & Nyquist, 1999). According to Dallimore, Hertenstein, and Platt (2010), class discussion not only helps students learn content, but this discussion also helps build communication skills. Time constraints in the workplace have also increased; therefore, critical thinking development in the classroom will prove more valuable to future employers (Braun, 2004).

Class discussion requires listening closely, taking a position on an issue, speaking up to defend one's position, questioning another student's logic, experiencing diverse perspectives, and developing communication skills. Communication and interpersonal skills are the number one quality employers seek when hiring business school graduates (Mainkar, 2008). Furthermore, research shows learning is an active process, not a passive one; students learn best when they take an active part in the learning process (Petress, 2006). Students tend to retain ideas better through engagement than through vicarious learning, so all students should have the opportunity to participate in class discussion and debate (Petress, 2006). Techniques used to improve critical thinking include in-class discussion and debate (Cotter & Tally, 2009). Class discussion also leads to increased mastery of course content and enhances communication skills (Dallimore et al., 2010). For the educator, offering students an opportunity to participate in classroom discussion "is a most satisfying undertaking because it offers the reward of seeing students apply knowledge in ways that will clearly enhance their careers" (Bannon, 2014).

METHODOLOGY

The researchers understood the need in a business program to incorporate critical thinking into the entire curriculum. The researchers developed a pedagogical method to address the need for critical thinking practice in the classroom. The "Student Self-Initiated Challenge of Examination Questions" (SSCEQ) is a new approach that seamlessly incorporates the development of critical thinking skills with no loss of time to cover the course material. This method permits students to identify and challenge objective examination items such as true/false and multiple-choice questions in written form directly on their examinations during testing and orally in class after the examinations are scored and returned. The opportunity to improve their grade motivates students to engage with their professor and other students, thereby increasing overall class discussion and participation. SSCEQ has become so popular students have affectionately deemed it the "Dot Method."

The methodology looks into the relationship between an advanced curriculum design and engaging critical thinking to ensure stronger academic performance. Testing pedagogy assessed the effectiveness of engaging business student learning by researching a business law program. The curriculum design focused on several key objectives: ensuring students were motivated to learn, develop student's ability to properly interpret questions posed, teach students how to understand multiple sides of an issue, and strengthen student's ability to respond to objective questions. The design of the SSCEQ program motivates students to learn. The goal of the researchers was to improve classroom techniques. This improvement utilized both positive and negative reinforcement. On the positive reinforcement side, students were able to see the "real life" application of course content by engaging academics in a manner aimed at what future careers require, engaging students in the academic process, and an ability to improve grades using reinforcement techniques. On the negative side, students may have felt peer pressure to be prepared for the classroom discussion and pressure from students holding opposing viewpoints.

One goal of the SSCEQ design was to ensure students properly interpret questions. Using a 360-degree feedback methodology, the goal of the curriculum design was to ensure teachers asked questions in a format students understood about the material to develop a platform for pulling important information from a conversation to seek clarification and be able to ask for additional information if needed. This style of learning matches the circumstances students will encounter in their future professions. Each client and case is unique to the individuals involved; business and the legal professions demand critical thinking and reasoning skills to address this uniqueness. Professionals must be able to process and react to a constantly changing environment. The ability of business and legal professionals to use critical thought ensure strategic thinking to address the increasingly tumultuous legal and business environment.

The SSCEQ requires a debate from all sides of an issue. This debate strengthens a student's skills by honing their understanding of others' arguments and requiring them to articulate responses to those

arguments. This process also encourages students to brainstorm possible solutions. The researchers applied SSCEQ to basic and advanced level business law and paralegal studies courses at an AACSB accredited institution within the University System of Georgia to develop critical thinking skills. The courses this curriculum was applied to involve freshman to junior. The freshman level course was "Introduction to Paralegalism & Ethics." The sophomore level courses include "Legal Environment of Business," "Legal Research & Writing I," "Civil Procedure & Litigation I," and "Civil Procedure & Litigation II." The junior level courses included "Survey of the Legal Environment of Business" and "Criminal Procedure & Litigation II."

Students complete a variety of graded assignments in each of these classes. These include completing written projects and several examinations. Due to testing time constraints, objective examination items such as true/false and multiple choice questions are a large component of examinations. With SSCEQ, the researchers invite feedback about these objective test items to enhance the development of critical thinking skills as an integral part of the learning process.

The researchers created SSCEQ to address several classroom challenges. First, the method seems to facilitate student understanding of the course material. The real value in teaching legal principles lies in a student's ability to apply concepts to real-life events. However, textbooks, professors, and examples, which are routinely provided, use real-world and fictional examples to demonstrate legal principles, examinations can be used to provide another opportunity. Providing engagement by using graded examinations and possible extra credit is another way students can enhance their thinking skills. This is done by providing a forum for understanding why an exam response may be incorrect. Students are incentivized to understand the material, think more deeply about the subject, formulate a cogent argument to support their propositions, and persuasively present arguments to their professor and other students.

The researchers also designed SSCEQ to develop critical thinking, encourage class discussion and participation, and develop oral and written communication skills. To obtain credit for an incorrect exam item, students must not only understand and critically think about the item and course material, but they must also listen to others' arguments about the item, take a position, defend their positions, and question other students. This process, above all, requires effective articulation. Participating in class debate enhances communication skills, which should aid students throughout their college classes and in their careers.The SSCEQ method is straightforward. While taking an exam, if a student wishes to explain an answer on any true/false or multiple-choice item, the student may articulate a challenge on the physical paper exam next to the questioned item. The student then places a dot to the right of the item on the computerized answer sheet to notify the professor about the challenge. During the grading process, if a student misses a dotted item, the professor retrieves the physical paper exam and reads the comments. If the student satisfactorily demonstrates understanding of the material, the professor uses discretion in determining whether to give partial or full credit for the item despite the incorrect answer. Those students who dot the item and present a cogent argument in challenging the item earn credit for their responses.

When the examinations are returned to the students, the professor sets aside a fifteen to thirty-minute period during which students may review their examinations and answer sheets. During this time, students may orally challenge any of the items, regardless of whether they dotted them on their answer sheets. If students demonstrate their knowledge of the material and provide a well-reasoned argument defending their answer, students earn partial or whole credit for the item. Students are then encouraged to listen to and participate in supporting or challenging their classmates' arguments. As stated previously, this research serves to understand the practice of augmented feedback in a post-exam situation. The measurement of the impact will be based on the following research questions: (a) Does SSCEQ help students develop a better understanding of the course material? (b) Does SSCEQ aid students in developing critical thinking about the course material? (c) Did SSCEQ encourage class participation? (d)

Does listening to others aid student understanding of course material? (e) Does listening to others aid the development of critical thinking skills?

Adapting the student satisfaction scales used by Helms, the researchers developed a survey to explore these questions (Helms, 2014). The University's IRB committee approved the survey instrument submitted. The survey first asked students whether they had used the "Dot Method" during the semester. If students answered in the affirmative, they were asked to rate their agreement or disagreement with four statements using a 5-point Likert-type scale: did the method (a) increase their understanding of the material, (b) aid in developing their critical thinking about the course material, (c) encourage them to participate in class discussion, and (d) provide an opportunity to improve their grades? All students, regardless of whether they used the method, were asked to rate their agreement or disagreement with two additional statements: did listening to other students engage in the method during class (a) increase their understanding of the material and (b) aid in developing their critical thinking about the course material? Finally, students were asked open-ended questions about (a) benefits and detriments of the method and (b) suggestions they might have to improve the method.

During the last week of the semester, the survey announcement occurred during class time of thirteen selected business law and paralegal sections. Students were informed they would be receiving an email inviting them to take a survey about the "Dot Method." The email contained a link to an anonymous survey on Qualtrics. For purposes of identification, once the students completed the confidential survey, they were automatically linked to a second survey, which asked them to provide their name and to identify the course and the professor of the section in which they were enrolled. The sample size involved 305 students from the fall 2014 and spring 2015 sections of business law and paralegal classes. Of the 305 students who were sent an invitation email, 236 began the survey and 227 completed it. This is a 74% response rate. Table 1 includes the student population demographics of the survey respondents.

Table 1: Demographic Data of Students Asked to Take Survey

	Males	Females	Total
Panel A: Fall 2014			
Legal Environment of Business (3 sections)	33	51	84
Survey of the Legal Environment of Business (1 section)	2	2	4
Introduction to Paralegalism (1 section)	4	27	31
Criminal Procedure & Litigation II (1 section)	2	10	12
Civil Procedure & Litigation I (1 section)	4	23	27
Legal Research & Writing I (1 section)	2	6	8
Fall Semester Total	47	119	166
Panel B: Spring 2015			
Legal Environment of Business (4 sections)	80	37	117
Introduction to Paralegalism (1 section)	4	18	22
Spring Semester Total	84	55	139
Total Students			305

**Some students were enrolled in more than one course but were not permitted to take the survey more than once; therefore, course totals reflected in Table 1 might not reflect the actual number of students enrolled in the courses.*

FINDINGS

The results of the survey reveal perceived benefits of SSCEQ. Of the students who completed the survey, 75% reported they had used the method, and three outcomes were discovered. These included an improved understanding of and critical thinking about course content, improved class discussions and participation, and grade improvement. Table 2 presents the student rankings of the statements in the survey. Students reported course understanding and critical thinking were improved. In all five of the research questions, there was overwhelming agreement of skill improvement.

Table 2: Student Rankings of Survey Statements

Statement	Percentage of Students Rating 1 or 2	Percentage of Students Rating 4 or 5	Mean	Standard Deviation
The "Dot Method" increased my understanding of the course material.	81%	1%	1.83	0.75
The "Dot Method" aided in developing my critical thinking about the course material.	90%	1%	1.66	0.68
The "Dot Method" encouraged me to participate in class discussion.	85%	4%	1.81	0.80
Listening to my fellow classmates challenge examination questions in class *aided my understanding of the material*.	88%	2%	1.64	0.73
Listening to my classmates challenging examination questions in class *aided in developing my critical thinking about the course material*.	90%	3%	1.69	0.71

**The remainder of the respondents neither agreed nor disagreed. Scale: Strongly Agree (1); Agree (2); Neither Agree nor Disagree (3); Disagree (4); Strongly Disagree (5).*

In general, the responses from the five questions ranged between 81% and 90%. All of these results represent very positive results. In the written comments of the survey, students mentioned various benefits associated with the method: (a) helping them understand the grayer areas of law (3 students), (b) encouraging a more thoughtful approach to examination items (5 students), and (c) providing an incentive to study more (one student). Two students mentioned their negotiation/persuasion skills improved because of the method. Two questions experienced the highest favorability of 90%. Ninety percent of students also felt that the "Dot Method" aided students in developing critical thinking about the course material. Over 90% of students felt they developed critical thinking skills using the "Dot Method". From this, it can be seen that simple acceptance of an answer as correct did not encourage students to think more critically, but the challenge of an answer did encourage the development of thinking skills. For these questions, only 2% and 1%, respectively, disagreed or strongly disagreed.

Three questions had slightly lower favorability scores. These include "Does listening to others aid my understanding of course material?" (88%), "the Dot Method encouraged me to participate in class" (85%), and "Does SSCEQ help students develop a better understanding of the course material?" (81%). For these questions, only 2%, 4% and 2%, respectively, disagreed or strongly disagreed. One student underscored this benefit: "The discussions that resulted from my fellow students' challenges greatly improved my ability to retain the knowledge. When confronted with the same subject matter again, I was able to easily recall not only the correct answer, but the reasons that made it the correct answer."

CONCLUSIONS

This research studied the practice of augmented feedback in a post-exam situation to determine if critical thinking skills were improved with the aim to better prepare students for their future careers. The methodology employed to look at testing pedagogy used to assess the effectiveness of engaging student learning. The points include ensuring students were motivated to learn, that students were able to properly interpret questions posed to them, teach students how to understand all sides of an issue and strengthen students' ability to respond to objective questions.The findings lead the researchers to conclude that augmented feedback enhances student critical thinking skills to better prepare students for their future careers. Specifically, the findings suggest that a method similar to the Dot Method should be employed to aid in the development of critical thinking. In every category measured, at least 81% of students either strongly agreed or agreed the method advanced them academically.

The results show students perceived the advanced design of the curriculum to engage critical thinking as enhancing their academic experience. The basis of this conclusion involved the results of the following questions. First, 81% of students felt SSCEQ helped them develop a better understanding of the course material. Second, 90% of students believed SSCEQ aided students in learning to think critically about the course material. Third, 85% of students believed the method increased class discussion. Fourth, 88% of students felt listening to others aided their understanding of the material. Fifth, over 90% of students felt their critical thinking skills were improved.

An overwhelming majority of students surveyed believed SSCEQ increased their understanding of and critical thinking about course material, gave them an opportunity to increase their grade, and encouraged them to participate in class discussion. In turn, the classroom environment became a forum where active engagement deepened understanding, perpetuating the cycle.One benefit of SSCEQ the researchers discovered, but had not anticipated, was the impact on addressing question ambiguity. This confusion occurred because of the subjective wording on exam items. Such ambiguities often occur innocently and might not be recognized by the professor. Graduate students who might fail to recognize the ambiguities written into the exam items often draft test banks accompanying textbooks. Many disciplines, including but not limited to, the law, deal not with absolutes, but with the "gray areas" of concepts. It is not unusual for subjective topics to be misinterpreted. It is especially common in the field of law given there are always opposing sides to every story and there are significant communication barriers that can occur in a technical field with clients unfamiliar with legal jargon. In this instance, writing questions requiring cognitive analysis is more important than legal wording. The researchers suspect many professors who have no mechanism to evaluate their objective exam items do not appreciate the extent to which those items might be confusing their students.

The value in encouraging students to think critically about and desire to understand the course material is of real value, regardless of whether an item is clear and unambiguous or contains unperceived or intentional ambiguities. SSCEQ helps initiate class discussion and encourages students to clarify their understanding of the subject matter, even those items the professor and students agree are clear and unambiguous. Indeed, some professors employing SSCEQ might deliberately include a few ambiguously worded items in their exams to ignite class discussion and debate. There are several limitations to this study. These limitations include: there was no measure between academic success and student satisfaction; only one method, the Dot Method, was studied; the sample only had one year's worth of data; and there is difficulty measuring the relationship between student satisfaction and academic output.

Future research can be expanded to other areas. In future studies, more detailed student demographics should be collected to discover whether perception patterns emerge based on race, gender, ethnicity, age, traditional versus nontraditional status, and student rank. This study looked into classes with a size between 15 and 35; another area of interest is looking into the effectiveness with larger class sizes. Another possible area of interest is the inclusion of this method with both online education and upper division or graduate courses. Possible other research includes comparing this group to a control group and adding a measurement to determine the extent of critical thinking improvement. Finally, scholars should investigate students longitudinally to ascertain whether SSCEQ has helped them in their chosen careers.

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A COMPARATIVE STUDY OF ABET ACCREDITED ASSOCIATE DEGREE PROGRAMS, EVIDENCE FROM SAUDI ARABIA

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ABSTRACT

In this paper, we will present a comparative study of all the Accreditation Board for Engineering and Technology accredited associate degree programs at Yanbu Industrial College, Jubail Industrial College, and Hafr Al-Batin Community College, all located in the Kingdom of Saudi Arabia. In this comparison, we will look at some similarities and differences among these accredited associate degree programs. Moreover, we will also present some salient features of all the accredited associate degree programs at those three colleges. Finally, we hope that our study will benefit other community, industrial, and technical colleges seeking accreditation at the associate degree program level.

JEL: A1, A2, A3, H8, Y9

KEYWORDS: Accreditation, Associate Degree Programs, Curriculum Design, Engineering Technology

INTRODUCTION

As colleges and schools seek accreditation (institutional or program level) and highlights their achievements in this regard, we need to explore this issue in details. We will try to answer the questions: what does it mean to be accredited? How is this reflected in the programs? What accredited programs share in common? With the expansion of the post-secondary institution in terms of the number and formats (traditional vs. online or distance education) came the idea of quality assurance. This can be achieved through internal bodies (department, college, university level) or through external bodies (professional, national, regional, or international). Based on a predefined standard or criteria, the quality of the program of the institution is to be recognized. This will help the institution improves its facility, programs, reputation, and environment by benchmarking with other regional and international schools (Dodridge, 2002, Szanto, 2005, Young, 1983). Assessing the program outcomes is not an easy task. It is a continuous and tedious process. As such, it requires implementing quality factors deep in the details of the programs (Mourtos, 2006, Van Duzer, 2000). Accreditation Board for Engineering and Technology known short as ABET is accrediting post-secondary programs in the fields of applied science, computing, engineering, and engineering technology. ABET has been recognized by the Council for Higher Education Accreditation (CHEA) since 1997.

Also, ABET evaluates programs offered in a 100-percent online format. As of December 2016, 3709 programs at 752 colleges and universities in 30 countries are accredited by ABET (ABET, 2017). Out of those 752 universities or colleges, only 99 are accredited for their associate degree programs. The United States came on the top of the list with 90 university or college followed by Saudi Arabia and Kuwait with 3 each, and Lebanon, Peru, and Singapore with 1 each. In this paper, we will reveal the fine details of all 16 ABET accredited associate degree programs in Saudi Arabia and compare them side by side. This can be used as a benchmark for similar colleges seeking ABET accreditation. The rest of this paper is structured as follows. The literature review is presented in the next section. It will be followed by data collection and study methodology. After that, a detailed study of the ABET accredited associate degree programs at YIC,

JIC, and HBCC, respectively is presented. The results and findings of the detailed study of those programs is presented after that. Finally, the paper is concluded by concluding remarks and findings.

LITERATURE REVIEW

Accreditation Bodies and Models

In north America, the Accreditation Board for Engineering and Technology (ABET) is the most popular one. We will cover it in further details in the next section. The ABET evaluate programs rather than institutions on some outcome-based criteria. It covers the different aspects of the program like students, faculty, program outcomes, and educational objectives. Some of the concerns related to ABET include: the emphasis on being put at the program level, the documentation process is stressful for the constituents, and inconsistencies between the program evaluators. In Europe, the joint declaration of the ministers of education (known as Bologna) was the first attempt to set a standard for higher education in Europe (Bologna, 2004). The quality assurance and guidelines was developed by European Association for Quality Assurance in Higher Education (ENQA) (ENQA, 2007). The major concern with the European system is the tremendous variations among the different European countries. It has been noted that some European universities are focusing on the domestic needs rather than keeping up with the industrial or continental need. In Asia, the development of quality assurance frameworks in higher education was slow. In India, they have the National Board of Accreditation (NBA). In Japan and Korea, they have Japan Accreditation Board of Engineering Education (JABEE) and Accreditation Board for Engineering Education of Korea (ABEEK), respectively. The major concern in the Asian Accreditation systems is the non-uniformity and the lack of mutual understanding and agreements. To summarize, the most common observations of the above systems or models are: 1) lack of uniformity, 2) ignoring the process cycle, 3) assessment of graduate attributes, 4) lack of global perspective.

Accreditation Board for Engineering and Technology

The Accreditation Board for Engineering and Technology (ABET) Inc., is a non-governmental non-profit organization that accredits post-secondary education programs in the fields of applied science, computing, engineering, and engineering technology (ABET, 2017, Slotkin, 2010, Bucciarelli, 2009). ABET was established in 1932 as the Engineers' Council for Professional Development (ECPD) by seven engineering societies (ABET, 2017): The American Society of Civil Engineers (ASCE), the American Institute of Mining and Metallurgical Engineers – now the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME), the American Society of Mechanical Engineers (ASME), the American Institute of Electrical Engineers – now the Institute of Electrical and Electronics Engineers (IEEE), the Society for the Promotion of Engineering Education – now the American Society for Engineering Education (ASEE), the American Institute of Chemical Engineers (AIChE), and the National Council of State Boards of Engineering Examiners – now the National Council of Examiners for Engineering and Surveying (NCEES). Now It is a federation of 35 professional and technical member societies representing the fields of applied science, computing, engineering, and technology.

Programs that are accredited by ABET (formerly the Accreditation Board for Engineering and Technology) have been thoroughly evaluated and found to meet agreed-upon quality standards for the engineering profession. The organization only offers specialized accreditation for engineering, computing, technology and applied science programs; they do not accredit entire schools. ABET accreditation is voluntary; the request for accreditation is initiated by the institution seeking accreditation. Accreditation is given to individual programs within an institution rather than to the institution as a whole. Accredited programs must request re-evaluation every six years to retain accreditation; if the accreditation criteria are not satisfied, additional evaluations may be required within the six-year interval. Programs without previous accreditation can apply for accreditation as long as they have produced at least one program graduate.

ABET specifies minimum curricula for various engineering programs. For instance, ABET requires that all engineering graduates of a baccalaureate program receive at least one year of study in the natural or physical sciences and mathematics, and requires some study within general education. ABET also requires that each student complete a capstone project or design class in their education. Because of ABET's involvement, engineering curricula are somewhat standardized at the bachelor's level, thus ensuring that graduates of any ABET-accredited program have some minimal skill set for entry into the workforce or for future education. For most of its history, ABET's accreditation criteria specifically outlined the major elements that accredited engineering programs must have, including the program curricula, the faculty type, and the facilities. However, in the mid-1990s, the engineering community began to question the appropriateness of such rigid accreditation requirements. After intense discussion, in 1997, ABET adopted Engineering Criteria 2000 (EC2000). The EC2000 criteria shifted the focus away from the inputs (what material is taught) and to the outputs (what students learned). EC2000 stresses continuous improvement, and accounts for specific missions and goals of the individual institutions and programs. The intention of this approach was to enable innovation in engineering programs rather than forcing all programs to conform to a standard, as well as to encourage new assessment processes and program improvements. The first step in securing or retaining ABET accreditation is for an institution to request an evaluation of its program(s) by January 31 of the year in which accreditation is being sought. The eligibility of the institution must be established, which can be satisfied if the institution is accredited by a regional accreditation agency. Each program is then assigned to one of four accreditation commissions within ABET:

Applied Science Accreditation Commission (ASAC)
Computing Accreditation Commission (CAC)
Engineering Accreditation Commission (EAC)
Engineering Technology Accreditation Commission (ETAC)

The program is assigned to a commission based on its title (the program name shown on the transcript). Each commission has different accreditation criteria. Each program then conducts an internal evaluation and completes a self-study report. The self-study documents how well the program is meeting the established accreditation criteria in multiple areas, such as their students, curriculum, faculty, administration, facilities, and institutional support. The self-study report must be provided to ABET by July 1. While the program conducts its self-study, the appropriate ABET commission (Applied Science, Computing, Engineering, or Technology Commission) will choose a team chair to head the on-campus evaluation visit. A visit date (generally in the September – December time frame) is negotiated between the team chair and the institution. Once the date is set, the ABET commission will assign program evaluators (generally one per program being evaluated). The institution is provided the opportunity to reject the team chair or program evaluators if a conflict of interest is perceived. The team chair and evaluators are volunteers from academe, government, industry, and private practice. Once the program evaluators are accepted by the institution, they are provided with the self-study report for their assigned program. This report forms the basis of their evaluation of the program, and prepares them for the campus visit.

The evaluation team (team chair and program evaluators) will normally arrive on campus on a Saturday or Sunday. During the on-campus visit, the evaluation team will review course materials from each program, as well as student projects and sample assignments. Evaluators will also interview students, faculty, and administrators, and tour the facilities to investigate any questions raised by the self-study. The visit will normally conclude the following Tuesday with an exit interview with the institution's chief executive officer, dean, and other appropriate institution personnel as appropriate. This interview is intended to summarize the results of the evaluation for each program. Following the campus visit, the institution has 7 days in which to correct perceived errors of fact communicated during the exit interview. Following this period, the team chair will begin preparation of a draft statement to the institution; this statement undergoes extensive editing and will typically be provided to the institution several months after the visit. On receipt of the draft statement, the institution has 30 days to respond to issues identified in the evaluation. After this

response, the team chair prepares a final statement to the institution. The final statement and recommended accreditation action is reviewed by the large annual meeting of all ABET commission members in July after the campus visit. Based on the findings, the commission members vote on the final accreditation action, and the school is notified of the decision in August. The information the school receives identifies strengths, concerns, weaknesses, and deficiencies of the program, as well as recommendations for compliance with ABET criteria. Accreditation is granted for a maximum of six years, after which the institution must request another evaluation.

ABET Accredited Associate Degree Programs in Saudi Arabia

Yanbu Industrial College (YIC) (YIC, 2016), affiliated with the Royal Commission for Jubail and Yanbu (RCJY) (RCJY, 2016), is located in Yanbu Industrial City on the Red Sea coast of Saudi Arabia. YIC is the "first industrial college" in Saudi Arabia to get ABET accreditation (ABET, 2017) and has established itself, over the years, as one of the leading technical colleges in the Middle Eastern region. Six associate degree programs at YIC are accredited by the Engineering Technology Accreditation Commission (ETAC) (ABET, 2017) of ABET. The ABET accredited associate degree programs at YIC (ABET, 2017) include Electrical Power Technology (EPT), Electronics Technology (ET), Instrumentation and Control Technology (ICT), Manufacturing Technology (MT), Mechanical Maintenance Technology (MMT), and Process Operations and Chemical Analysis Technology (POCAT).

Jubail Industrial College (JIC) (JIC, 2016), also affiliated with the RCJY (RCJY, 2016), is located in Jubail Industrial City on the Arabian Gulf coast of Saudi Arabia. Hafr Al-Batin Community College (HBCC) (HBCC, 2016), affiliated with the University of Hafr Albain (UOHB), is located in Hafr AlBatin city in Saudi Arabia. Both JIC and HBCC have lately emerged among the leading technical colleges in the Middle Eastern region. The reason behind this regional recognition is due to the fact that some of the associate degree programs at both JIC and HBCC received the ABET accreditation (ABET, 2017). Having achieved this milestone, JIC becomes the "second industrial college" and HBCC becomes the "first community college" in the Kingdom of Saudi Arabia (KSA) to get ABET accreditation. Six associate degree programs at JIC and four associate degree programs at HBCC got accredited by the ETAC (ABET, 2017) of ABET. The ABET accredited associate degree programs at JIC (ABET, 2017) include Chemical Engineering Technology (CET), Electrical Power Engineering Technology (EPET), Instrumentation and Control Engineering Technology (ICET), Manufacturing Engineering Technology (MET), Mechanical Maintenance Engineering Technology (MMET), and Polymer Engineering Technology (PET). The ABET accredited associate degree programs at HBCC include Electrical and Electronics Engineering Technology (EEET), Computer Science & Engineering Technology (CSET), Mechanical Engineering Technology (MET), and Non Destructive Evaluation Technology (NDET).

DATA AND METHODOLOGY

As of December 2016, out of 50 associate degree level colleges in Saudi Arabia, only three of them are ABET accredited. Those three colleges together have 16 ABET accredited programs. All these 16 ABET accredited associate degree programs have been selected for the study. The analysis of the study was done by closely examining all the selected programs. The data were gathered from the web content of each program or through direct contact with the department administration. We have noticed that the web content of those departments were up-to-date with relatively sufficient data content. The department administration in each college will be the reference in case of variations in course classification or credit count. For simplicity, we will refer to the colleges and the programs by their official acronyms.

Yanbu Industrial College (YIC)

In this section, we briefly discuss the salient features of all the 6 ABET accredited associate degree programs at YIC. As mentioned before, the accredited programs at YIC are: Electrical Power Technology (EPT), Electronics Technology (ET), Instrumentation and Control Technology (ICT), Manufacturing Technology (MT), Mechanical Maintenance Technology (MMT), and Process Operation and Chemical Analysis Technology (POCAT). Each will be discussed briefly. The Electrical Power Technology (EPT) associate degree program at YIC consists of 26 courses totaling together 70 credit hours (YIC, 2013). The program is divided into 13 general and 13 core courses. The general courses include English Communication, English Composition, Technical Report Writing, Calculus I, Calculus II, Applied Differential Equations, General Physics, General Chemistry, Computer Programming, Industrial Safety, Industrial Supervision, Islamic Culture, and Physical Education III. The above-mentioned 13 general courses constitute for 30 credit hours (YIC, 2013). On the other hand, the core courses include Electrical and Electronics Drafting, Fundamentals of Electric Circuits, Electrical Machines I, Electronics I, Basic Industrial Electronics, Digital Electronics I, Control System Components, Power Generation & Transmission, Electrical Machines II, Electrical Control Systems, Electrical Systems and Layout, Electrical Troubleshooting and Maintenance, and Co-op Training.

Those 13 core courses constitute for 40 credit hours (YIC, 2013). The Electronics Technology (ET) associate degree program at YIC consists of 27 courses totaling together 70 credit hours. The general courses are the same as those for the EPT. The core courses include Electrical and Electronics Drafting, Fundamentals of Electric Circuits, Electrical Machines I, Electronics I, Basic Industrial Electronics, Digital Electronics I, Control System Components, PCB Fabrication, Electronics II, Digital Electronics II, Microprocessors, Communications, Electronics Troubleshooting and Maintenance, and Co-op Training. The above-mentioned 14 core courses constitute for 40 credit hours.

The Instrumentation and Control Technology (ICT) associate degree program at YIC consists of 27 courses totaling together 70 credit hours. The general courses are the same as those for ET and EPT. The core courses include Electrical and Electronics Drafting, Fundamentals of Electric Circuits, Electrical Machines I, Electronics I, Basic Industrial Electronics, Digital Electronics I, Control System Components, Process Control System I, Instrumentation Electronics, Microprocessors, Process Control System II, Analytical Instrumentation, Instrumentation Troubleshooting and Maintenance, and Co-op Training. The above-mentioned 14 core courses constitute for 40 credit hours. When comparing the core courses of EPT, ET, and ICT, we noticed the following. ICT and ET have 14 core courses compared to only 13 for EPT. Moreover, the following 7 courses are exactly the same for the three programs: Electrical and Electronics Drafting, Fundamentals of Electric Circuits, Electrical Machines I, Electronics I, Basic Industrial Electronics, Digital Electronics I, and Control System Components. In addition, ICT and ET share another similarity which the Microprocessors course.

The Manufacturing Technology (MT) associate degree program at YIC consists of 28 courses totaling together 70 credit hours. The general courses include English Communication, English Composition, Technical Report Writing, Calculus I, Calculus II, General Physics, General Chemistry, Computer Programming, Industrial Safety, Industrial Supervision, Islamic Culture, and Physical Education III. The above mentioned 12 general courses constitute for 28 credit hours. The core courses for the MT include Engineering Drafting, Applied Mechanics, Mechanical Measurements, Machining Processes I, Materials Technology, Plant Maintenance, Applied Statistics, Industrial Electricity, Mechanical Drafting, Machining Processes II, Applied Strength of Materials, CAD/CAM Technology, Inspection and Quality Control, Machine Tool Design, Elective, and Co-op Training. The above-mentioned 16 core courses constitute for 42 credit hours. The elective courses for the MT include Welding Technology and Sheet Metal Technology.

The Mechanical Maintenance Technology (MMT) program consists of 27 courses totaling together 70 credit hours. The general courses for the MMT are the same as those for the MT program at YIC. The core courses for the MMT include Engineering Drafting, Applied Mechanics, Mechanical Measurements, Machining Processes I, Materials Technology, Plant Maintenance, Applied Statistics, Industrial Electricity, Mechanical Drafting, Applied Thermodynamics, Fluid Machines, Equipment Maintenance, Heat Exchangers, Elective, and Co-op Training. The abovementioned 15 core courses constitute for 42 credit hours. Nine of the MMT core courses are exactly the same as those for the MT program, namely, Engineering Drafting, Applied Mechanics, Mechanical Measurements, Machining Processes I, Materials Technology, Plant Maintenance, Applied Statistics, Industrial Electricity, and Mechanical Drafting. The elective courses for the MMT include Refrigeration and Air Conditioning Technology and Hydraulics and Pneumatics Technology. The Process Operation and Chemical Analysis Technology (POCAT) associate degree program at YIC consists of 26 courses totaling together 70 credit hours. The general courses for the POCAT program are the same as those for the MT and MMT program. The only difference among the general requirements for the MT, MMT, and POCAT when compared to the EPT, ET, and ICT is the presence of Applied Differential Equations course in the EPT, ET, and ICT associate degree programs. The core courses for the POCAT include Engineering Drafting, Introduction to Chemical Engineering Technology, Fluid Mechanics, Methods of Chemical Analysis, Applied Organic Chemistry, Process Heat Transfer, Chemical Engineering Thermodynamics, Mass Transfer Operations, Petroleum Refining & Testing, Applied Statistics, Environmental Pollution, Process Instrumentation & Control, Petrochemicals, and Co-op Training. The above-mentioned 14 core courses constitute for 42 credit hours. Only two POCAT core courses are exactly the same as those for the MT and MMT namely, Engineering Drafting and Applied Statistics.

Jubail Industrial College (JIC)

In this section, we briefly discuss the salient features of all the 6 ABET accredited associate degree programs at JIC. The accredited programs at JIC are Chemical Engineering Technology (CET), Electrical Power Engineering Technology (EPET), Instrumentation and Control Engineering Technology (ICET), Manufacturing Engineering Technology (MET), Mechanical Maintenance Engineering Technology (MMET), and Polymer Engineering Technology (PET). Each will be discussed briefly.

The Chemical Engineering Technology (CET) associate degree program at JIC consists of 29 courses totaling together 72 credit hours (JIC, 2014). The general courses include English III, English IV, Technical Writing, Calculus I, Fundamentals of Physics, General Chemistry, Computer Applications, Engineering Drawing, Workshop Technology, Industrial Safety and Environment, Islamic Culture, and Organizational Behavior and Ethics. The above-mentioned 12 general courses constitute for 27 credit hours (JIC, 2014). The core courses include Organic Chemistry I, Chemical Engineering Principles, Process Equipment, Instrumentation and Process Control, Computer Applications in Chemical Engineering, Industrial Chemical Processes, Transport Processes, Reaction Kinetics and Reactors, Chemical Engineering Thermodynamics I, Process Plant Safety, Petroleum Refining Technology, Separation Processes I, Process Plant Simulation, Environmental Control, Elective, Project, and Coop Training. The above-mentioned 17 core courses constitute for 45 credit hours (JIC, 2014).

The Electrical Power Engineering Technology (EPET) program consists of 27 courses totaling together 72 credit hours. The general courses include English III, English IV, Technical Writing, Calculus I, Fundamentals of Physics, General Chemistry, Computer Applications, Workshop Technology, Industrial Safety and Environment, Islamic Culture, and Organizational Behavior and Ethics. The abovementioned 11 general courses constitute for 26 credit hours. The only difference between the general courses for EPET and CET is the presence of Engineering Drawing course in the CET associate degree program. The core courses for the EPET include Electrical Circuits I, Instrumentation and Measurements I, Electrical Machines I, Electrical Circuits II, Electronics, Electrical Machines II,

Electrical Control and Protection I, Power Electronics, Electrical Wiring, Power Plant Operation, Transmission and Distribution of Electrical Energy, Electrical Troubleshooting, Programmable Logic Controllers, Elective, Project, and Co-op Training. The above-mentioned 16 core courses constitute for 46 credit hours. The Instrumentation and Control Engineering Technology (ICET) program at JIC consists of 28 courses totaling together 72 credit hours. The general courses for ICET are the same as those for the CET associate degree program. The core courses include Electrical Circuits I, Instrumentation and Measurements I, Process Equipment, Analogue Electronics, Digital Electronics, Instrumentation and Measurements II, Electrical Machines and Controls, Industrial Control, Introduction to Microprocessor, Instrumentation System Diagram, Instrumentation Engineering, Computer Control I, Programmable Logic Controllers, Elective, Project, and Coop Training. The above-mentioned 16 core courses constitute for 45 credit hours. Out of those 16 core courses only the Process Equipment course is common with CET. On the other hand, Electrical Circuits I, Instrumentation and Measurements I, and Programmable Logic Controllers courses are common with EPET.

The Manufacturing Engineering Technology (MET) associate degree program at JIC consists of 30 courses totaling together 72 credit hours. The general courses are the same as those for the CET. The core courses for the MET include Manufacturing Processes I, Introduction to Engineering Materials, Manufacturing Processes II, Production Technical Drawing, Plant Maintenance, Applied Mechanics, Strength of Materials, Metallurgy, Mechanical CAD Applications, Manufacturing Processes III, Metrology and Quality Control, Electrical and Electronic Principles, Machine Elements, Production Planning and Control, Welding and Inspection, Elective, Project, and Co-op Training. The above-mentioned 18 core courses constitute for 45 credit hours. The Mechanical Maintenance Engineering Technology (MMET) associate degree program at JIC consist of 29 courses totaling together 72 credit hours. The general courses are the same as those for the CET and MET. The core courses for the MMET include Plant Maintenance, Introduction to Engineering Materials, Fluid Mechanics, Computer Aided Drafting, Applied Mechanics, Electrical Circuits I, Strength of Materials, Applied Thermodynamics, Metrology and Quality Control, Pumping Machinery and Installations, Electrical Machines and Controls, Hydraulics and Pneumatics, Industrial Compressors, Power Generation Systems, Elective, Project, and Co-op Training. The above-mentioned 17 core courses constitute for 45 credit hours. Only Electrical Circuits I course is common between MMET and EPET. On the other hand, Electrical Circuits I and Electrical Machines and Controls courses are common among MMET and ICET. Also when comparing MMET with MET we found the following 5 common core courses: Introduction to Engineering Materials, Plant Maintenance, Applied Mechanics, Strength of Materials, and Metrology and Quality Control.

The Polymer Engineering Technology (PET) associate degree program at JIC consists of 27 courses totaling together 72 credit hours. The general courses include English III, English IV, Technical Writing, Calculus I, Fundamentals of Physics, General Chemistry, Computer Applications, Engineering Drawing, Industrial Safety and Environment, Islamic Culture, and Organizational Behavior and Ethics. The above mentioned 11 general courses constitute for 26 credit hours. The only difference among the general requirements for the PET and those for the CET, ICET, MET, and MMET is the presence of Workshop Technology course in the CET, ICET, MET, and MMET. The difference between the general requirements for the PET with those for the EPET is the presence of Engineering Drawing course in the PET and the presence of Workshop Technology course in the EPET. The core courses for PET include Introduction to Polymer Technology, Process Equipment, Polymer Science and Engineering, Polymer Chemistry, Instrumentation and Process Control, Polymer Materials, Industrial Polymerization, Polymer Characterization and Testing, Polymer Processing I, Quality Control, Polymer Processing II, Polymer Engineering and Design, Process Plant Simulation, Elective, Project, and Co-op Training. The above-mentioned 16 core courses constitute for 46 credit hours. The Process Equipment, Instrumentation and Process Control, and Process Plant Simulation courses are common between PET and CET. The Process *Equipment course is common between PET and ICET. Moreover, the elective courses for all the 6 ABET accredited associate degree programs at JIC*

include Management Theory and Practice, Principles of Marketing, Principles of Economics, Soft Skills, Management Information System, Business English Correspondence, and Enterprise Resource Planning.

Hafr Albatin Community College (HBCC)

In this section, we briefly discuss the salient features of all the 4 ABET accredited associate degree programs at HBCC. The accredited programs at HBCC are Electrical and Electronics Engineering Technology (EEET), Computer Science and Engineering Technology (CSET), Mechanical Engineering Technology (MET), and Non-Destructive Evaluation Technology (NDET). Each will be discussed briefly. Electrical and Electronics Engineering Technology (EEET) associate degree program at HBCC consists of 20 courses together totaling 64 credit hours (HBCC, 2009). The general courses for the EEET include English Composition I, English Composition II, Applied Calculus, General Physics, Computer Programming, Industrial Safety, Islamic Ideology, and Objective Writing. The abovementioned 8 general courses constitute for 22 credit hours (HBCC, 2009). The core courses for this program include Electric Circuits, Digital Circuits I, Electronic Workshop, Solid State Devices, Digital Circuits II, Electronic Circuits, Electronic Troubleshooting, Instrumentation and Measurements I, Elective I, Elective II, Elective III, and Co-op Training. The abovementioned 12 core courses constitute for 42 credit hours (HBCC, 2009). Moreover, the elective courses include Industrial Electronics, Microprocessor Interfacing, Programmable Logic Controllers, and Microcontroller Applications (HBCC, 2009).

Computer Science and Engineering Technology (CSET) associate degree program at HBCC consists of 18 courses together totaling 64 credit hours. The general courses for CSET consist 7 courses totaling together 21 credit hours and they are the same as for EEET excluding the Industrial Safety course. The core courses for the CSET program include Visual Programming I, Computer Organization, Database Applications, Solid State Devices, System Analysis & Design, Visual Programming II, Computer Networking, PC Operating Systems, PC Maintenance & Troubleshooting, Internet Services & Web Authoring, and Co-op Training. The abovementioned 11 core courses constitute for 43 credit hours. Only Solid State Devices core course is common between CSET and EEET.

Mechanical Engineering Technology (MET) associate degree program at HBCC consists of 20 courses together totaling 64 credit hours. The general courses include English Composition I, English Composition II, Applied Calculus, General Physics, Computer Programming, Applied Electricity & Electronics, Industrial Safety, Islamic Ideology, and Objective Writing. The abovementioned 9 general courses constitute for 25 credit hours. When comparing the general courses for both MET and EEET, we note presence of Applied Electricity & Electronics course in the MET when it is not there in EEET. When comparing the general course for both MET and CSET, we note the presence of Applied Electricity & Electronics and Industrial Safety courses in the MET when it is not there in CSET. The core courses for MET include Technical Drafting, Applied Mechanics, Applied Thermo-Fluids, Materials Science and Technology, Thermal System Performance, Industrial Hydraulics & Pneumatics, Welding & Forming, Machining, Automotive Technology, Troubleshooting & Maintenance, and Co-op Training. The abovementioned 11 core courses constitute for 39 credit hours.

Non Destructive Evaluation Technology (NDET) associate degree program at HBCC consists of 23 courses together totaling 70 credit hours. The general courses include English Composition I, English Composition II, Applied Calculus, General Physics, Computer Programming, Applied Electricity & Electronics, Islamic Ideology, and Objective Writing. The above-mentioned 8 general courses constitute for 24 credit hours. When comparing the general courses for both NDET and EEET, we note the presence of Applied Electricity & Electronics course in the NDET when it is not there in EEET. On the other hand, we note the presence of the Industrial Safety course in EEET when it is not there in NDET. When comparing the general requirements for NDET with those for CSET, the Applied Electricity & Electronics course is there in NDET

where it is not there in CSET. Moreover, when comparing the general requirements for NDET with those for MET, the Industrial Safety course is there in MET where it is not there in NDET.

The core courses for NDET include Technical Drafting, Introduction to Non Destructive Testing, Radiation Safety, Materials Science and Technology, Practical Sessions for Ultrasonic Testing, Instrumentation and Measurements I, Visual Testing I & II, Ultrasonic Testing I & II, Welding & Machining, Practical Sessions for Radiographic Testing & Ultrasonic Testing, Radiographic Testing I & II, Liquid Penetrant Testing I & II, Magnetic Particle Testing I & II, Inspection Codes & Practices, and Co-op Training. The abovementioned 15 core courses constitute for 46 credit hours. Only Instrumentation and Measurements I core course is common between NDET and EEET. Moreover, Technical Drafting and Materials Science and Technology core courses are common between NDET and MET.

RESULTS

Table 1 shows a comparison of all the ABET accredited associate degree programs at YIC, JIC, and HBCC in terms of the number of courses. As can be seen from the table, the CSET associate degree program at HBCC require the least number of courses (18 courses), whereas the MAET associate degree program at JIC requires most number of courses (30 courses).

Table 1: General and Core Courses

Program	General	Core	Total
EPT	13	13	26
ET	13	14	27
ICT	13	14	27
MT	12	16	28
MMT	12	15	27
POCAT	12	14	26
CET	12	17	29
EPET	11	16	27
ICET	12	16	28
MET	12	18	30
MMET	12	17	29
PET	11	16	27
EEET	8	12	20
CSET	7	11	18
MET	9	11	20
NDET	8	15	23

This table compares the required number of general and core courses in ABET accredited associate degree program at yanbu industrial college, jubail industrial college, and hafr albatin community college.

Tables 2 and 3 compares the theoretical and the practical general and core requirements for all the programs in the three colleges in terms of contact hours per week respectively. For all the programs, the co-op students are required to spend 40 hours per week (8 hours per day for 5 working days) during their training period. Therefore, when calculating the lab hours, those 40 training hours where included.

Table 2: Lecture vs. Lab Hours for General Courses

Program	Lect. H/Week	Lab H/Week	Total H/Week
EPT	25	13	38
ET	25	13	38
ICT	25	13	38
MT	23	13	36
MMT	23	13	36
POCAT	23	13	36
CET	18	26	44
EPET	18	24	42
ICET	18	26	44
MET	18	26	44
MMET	18	26	44
PET	18	24	42
EEET	19	8	27
CSET	18	8	26
MET	21	11	32
NDET	20	11	31

This table compares the theoretical and practical requirements in terms of contact hours for the general courses in and core courses in ABET accredited associate degree program at yanbu industrial college, jubail industrial college, and hafr albatin community college.

Table 3: Lecture vs. Lab Hours for Core Courses

Program	Lect. H/Week	Lab H/Week	Total H/Week
EPT	24	79	103
ET	23	82	105
ICT	23	82	105
MT	24	85	109
MMT	25	82	107
POCAT	27	76	103
CET	28-29	74-76	102-105
EPET	28-29	80-82	108-111
ICET	26-27	82-84	108-111
MET	24-25	84-86	108-111
MMET	26-27	77-79	103-106
PET	29-30	74-76	103-106
EEET	22-23	79-82	101-105
CSET	22	73	95
MET	22	73	95
NDET	25	85	110

This table compares the theoretical and practical requirements in terms of contact hours for the core courses in and core courses in ABET accredited associate degree program at yanbu industrial college, jubail industrial college, and hafr albatin community college.

Table 4 shows the required number of credit hours in ABET accredited associate degree programs at YIC, JIC, and HBCC. As it can be seen from this table, all the ABET accredited associate degree programs at YIC and JIC have a uniform total credit hours of 70 and 72, respectively.

Table 4: Credit Hours Comparison

Program	General Credit H	Core Credit H	Total Credit H
EPT	30	40	70
ET	30	40	70
ICT	30	40	70
MT	28	42	70
MMT	28	42	70
POCAT	28	42	70
CET	27	45	72
EPET	26	46	72
ICET	27	45	72
MET	27	45	72
MMET	27	45	72
PET	26	46	72
EEET	22	42	64
CSET	21	43	64
MET	25	39	64
NDET	24	46	70

This table compares the total credit hours for the ABET accredited associate degree program at yanbu industrial college, jubail industrial college, and hafr albatin community college.

As per the ABET General Criterion 5: Curriculum for accrediting engineering technology programs state that the technical content of the program must represent at least 1/3rd of the total credit hours for the program but no more than 2/3rd of the total credit hours for the program (ABET, 2017). In Table 5, the credit hours the technical content in ABET accredited associate degree programs at YIC, JIC, and HBCC is examined closely. It can be seen from the table that all the ABET accredited associate degree programs at YIC, JIC, and HBCC satisfy this criterion.

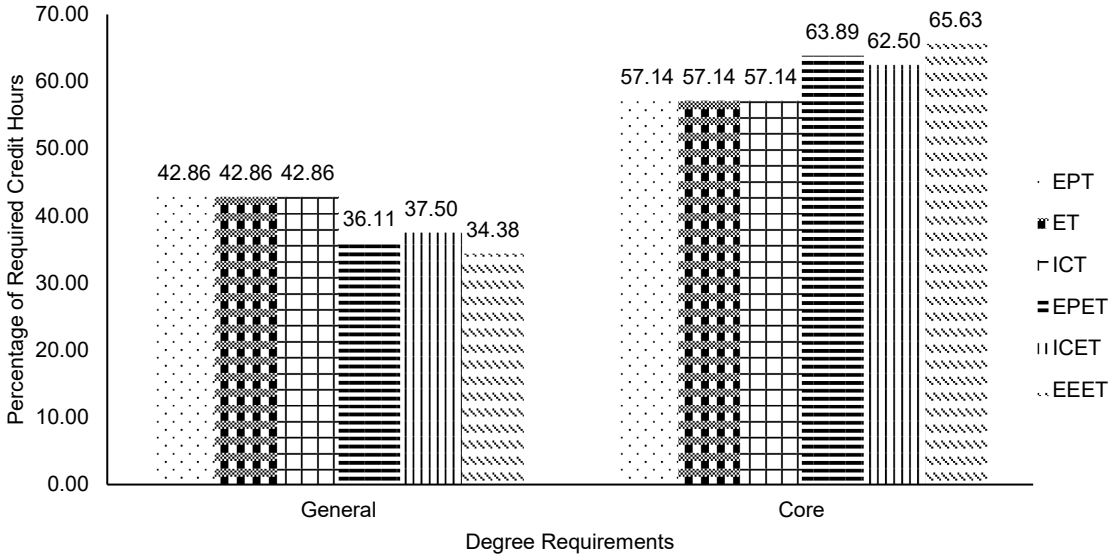
Table 5: Technical Content Credit Hours

Program	Total Credit H	1/3rd	2/3rd	Core Credit H
EPT	70	23	47	40
ET	70	23	47	40
ICT	70	23	47	40
MT	70	23	47	42
MMT	70	23	47	42
POCAT	70	23	47	42
CET	72	24	48	45
EPET	72	24	48	46
ICET	72	24	48	45
MET	72	24	48	45
MMET	72	24	48	45
PET	72	24	48	46
EEET	64	21	43	42
CSET	64	21	43	43
MET	64	21	43	39
NDET	70	23	47	46

This table compares the technical content credit hours in ABET accredited associate degree program at yanbu industrial college, jubail industrial college, and hafr albatin community college.

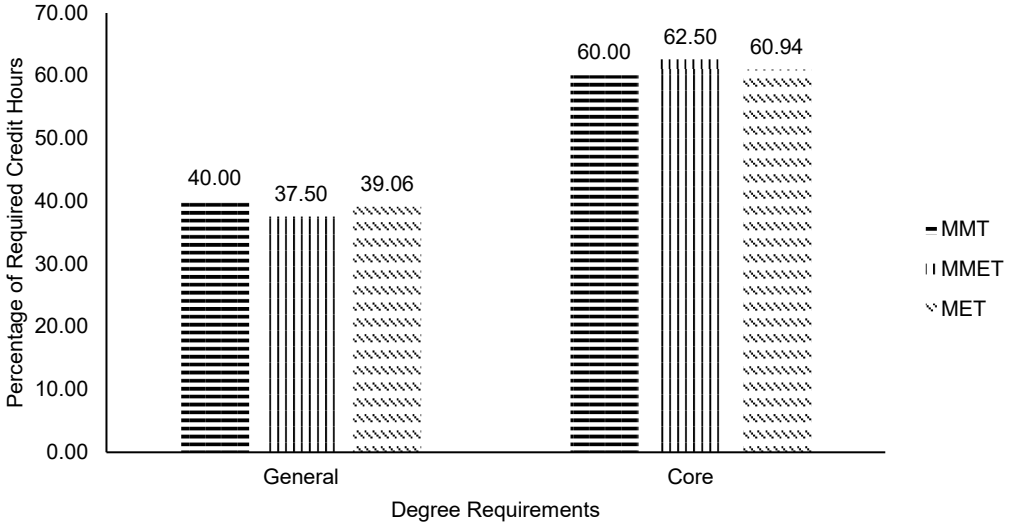
Figures 1 through 7 show the percentage of required credit hours in ABET accredited associate degree programs at YIC, JIC, and HBCC. In Figures 1 through 4, the percentage of required credit hours for similar programs (same field of study) are compared with each other, whereas the percentage of required credit hours for non-similar programs are shown separately in Figures 5 through 7.

Figure 1: EPT, ET, ICT, EPET, ICET, and EEET



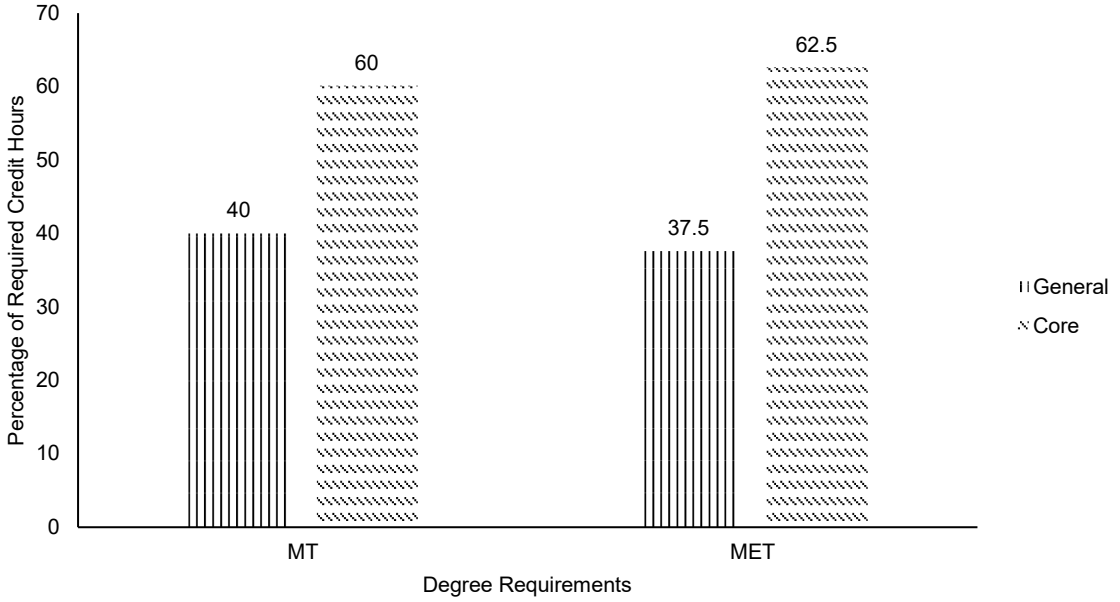
This figure compares the percentage of required credit hours in EPT, ET, ICT, EPET, ICET, and EEET associate degree programs at yanbu industrial college, jubail industrial college, and hafr albatin community college.

Figure 2: MMT, MMET, and MET



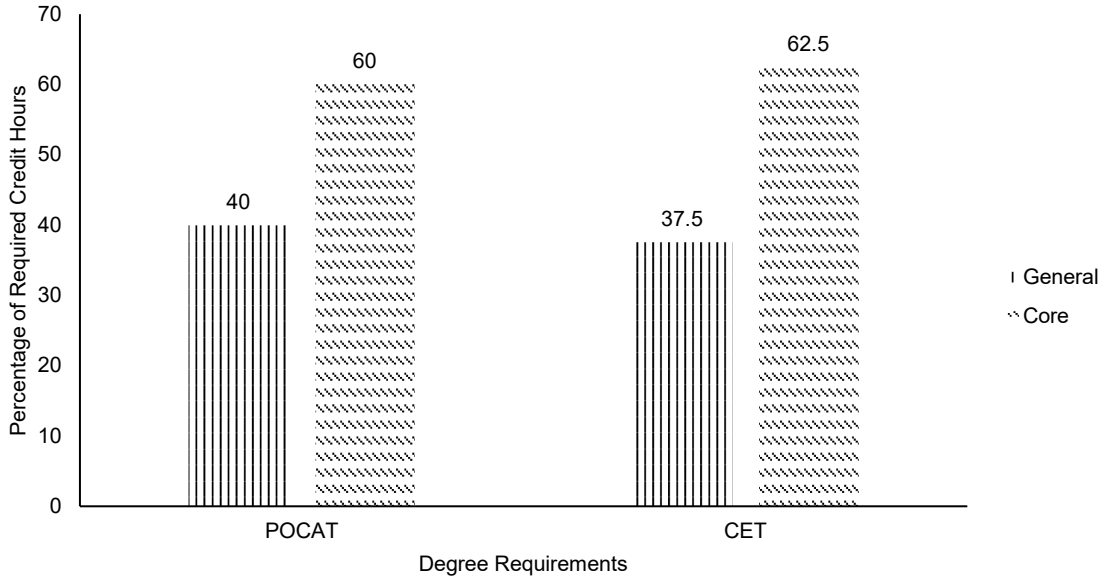
This figure compares the percentage of required credit hours in MMT, MMET, and MET associate degree programs at yanbu industrial college, jubail industrial college, and hafr albatin community college.

Figure 3: MT, and MET



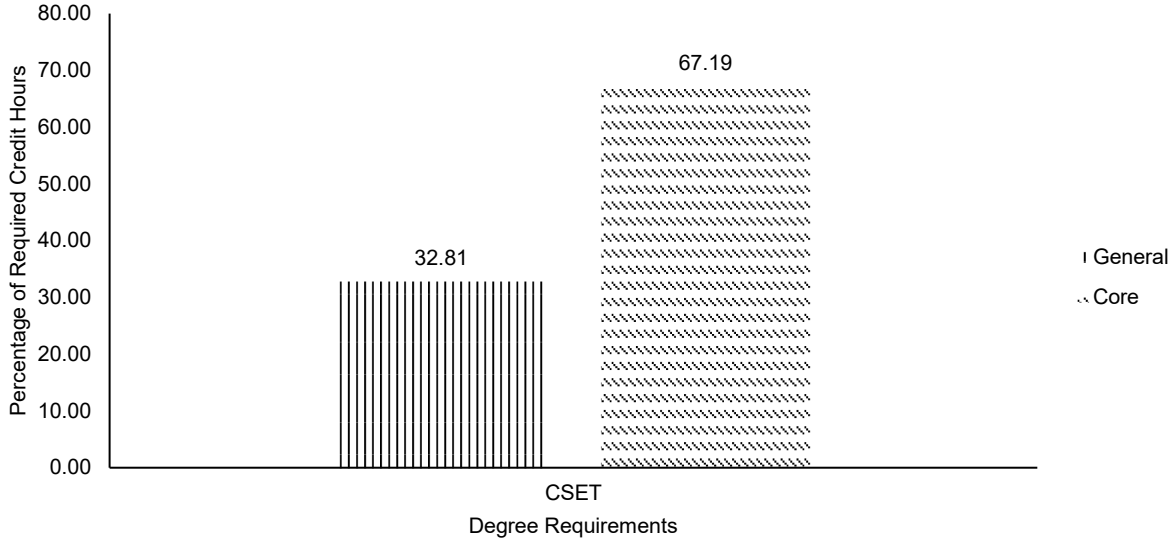
This figure compares the percentage of required credit hours in MT and MET associate degree programs at yanbu industrial college, and jubail industrial college.

Figure 4: POCAT and CET



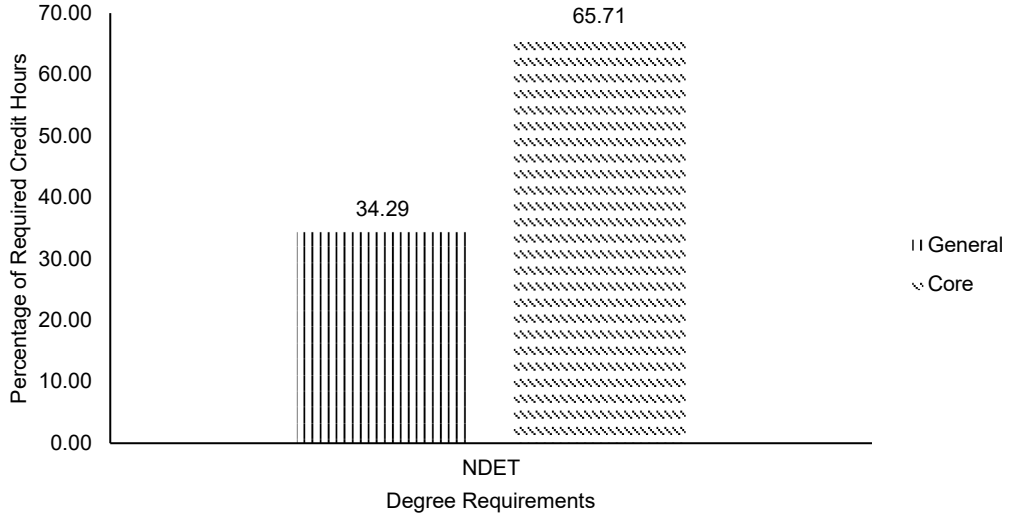
This figure compares the percentage of required credit hours in POCAT and CET associate degree programs at yanbu industrial college, and jubail industrial college.

Figure 5: CSET



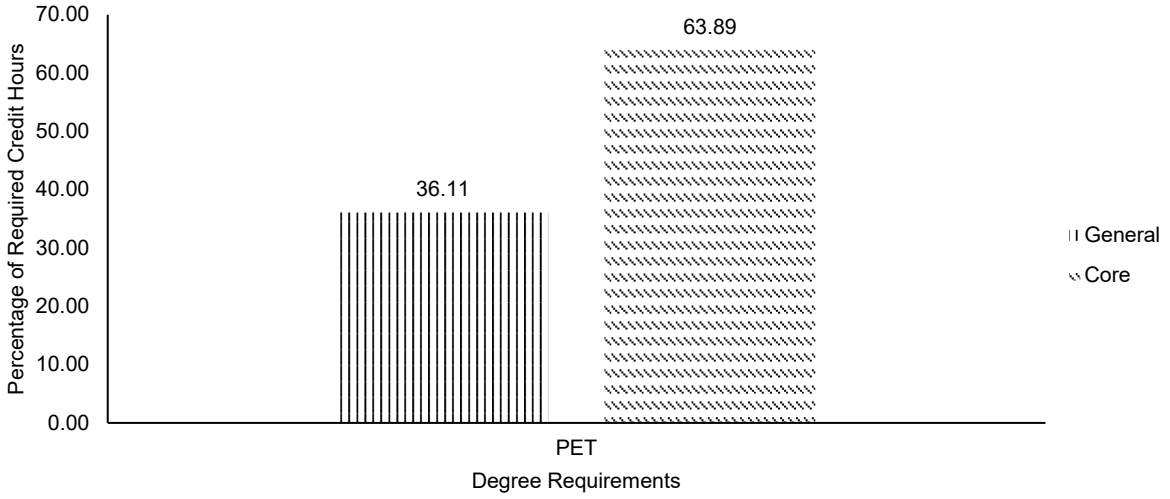
This figure shows the percentage of required credit hours in CSET associate degree program at hafr albatin community college.

Figure 6: NDET



This figure shows the percentage of required credit hours in NDET associate degree program at hafr albatin community college.

Figure 7: PET



This figure shows the percentage of required credit hours in PET associate degree program at jubail industrial college.

CONCLUDING COMMENTS

Upon careful study and analysis of those programs, the following conclusions can be drawn: 1). 50% of the core requirements for both ET and EPT at YIC are the same, 2). when comparing ICT, EPT, and ET at YIC, they are 50% and 57.14% the same respectively, 3). the core requirements for MMT and MT at YIC are 60% the same, 4). the core requirements for POCAT is only 14.29% similar when compared to those for MT and MMT at YIC, 5). when comparing ICET, CET, and EPET at JIC, they are 6.25% and 18.75% the same respectively, 6). when comparing MMET, EPET, ICET, and MET at JIC, they are 5.88%, 11.76%, and 29.41% the same respectively, 7).

When comparing PET, CET, and ICET at JIC, they are 18.75% and 6.25% the same respectively, 8). 9.09% of the core requirements for both CSET and EEET at HBCC are the same, 9). when comparing NDET, EEET, and MET at HBCC, they are 6.67% and 13.33% the same respectively, and 10). all the ABET accredited associate degree programs at YIC and JIC have a uniform total credit hours of 70 and 72, respectively. Therefore, we propose to increase the total credit hours of the EEET, CSET, and MET associate degree programs at HBCC from 64 to 70 like NDET. This can be achieved by introducing new design or elective courses. The number of credit hours for the co-op training course in all the ABET accredited associate degree programs at YIC and JIC is 3. Therefore, we propose to reduce the number of credit hours for the co-op training from 6 to 3 in all the ABET accredited associate degree programs at HBCC.

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BIOGRAPHY

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SOCIAL ENVIRONMENT AS A PART OF ORGANIZATIONAL BEHAVIOR: ANALYSIS OF FOUR INSTITUTIONS

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ABSTRACT

This research analyzes social environment as part of the organizational climate in four institutions. We describe how this factor influences the total organizational climate through a representative sample of members of the various organizations. These organizations consisted of two schools from two universities from different countries, a Municipal Presidency and a governmental institution. The study begins with frequency analysis followed by a correlation analysis. The analysis also compares the results of different internal groups' analysis by chi-square tests. We conclude there are four factors that determine the characteristics of social environment that affect the organizational climate. The four institutions produce similar results. We find four factors of groupings. The first is the support provided to each other by members of organizations, the second is conflict resolution conditions, the third is existing information they can use and the fourth teamwork. Similar results are obtained between the questionnaires, validating the questionnaire designed by the researchers.

JEL: M140

KEYWORDS: Social Environment, Organizational Behavior, Universities, Town Council

INTRODUCTION

The author of this article has dedicated the past few years to identifying characteristics that make up the organizational climate. Several institutions of different sizes and conditions were studied to observe what each reveals with regard to aspects studied. We tried to formulate the organizational climate through various factors, divided into several parts, in such way that it is easier to study. We take into account necessary aspects to emphasize the identity of diverse organizations. This work takes into account one of the aspects, we identify called social environment factor. We observe how coexistence with the other members of the organization can improve. We studied four institutions that made possible an analysis of variability of this factor with respect to organizational climate. The organizations examined include two university schools, one in Zacatecas, Mexico and the other in Buenos Aires, Argentina; the third institution of analysis is the Town Council of Zacatecas (Presidencia Municipal de Zacatecas) and the fourth is the Board of Conservation and Maintenance of Colonial Monuments and characteristic areas of Zacatecas. The latter is a dependency of the government of the State of Zacatecas. Obtaining this information is important from several points of view. This research the deepens academic knowledge by reinforcing the theory of organizations. We also examine the impact that this factor has as part of a whole that tries to study the organizational climate. The third objective is to compare the organizations.

This article is structured with a literature review. Because there is no similar study, we reinforce our theories with subjects from areas of study in different circumstances, and in different regions of our planet. Later we describe the methodology used to obtain our information, used to examine different questions we used to obtain the data. The study is mixed and transformed into an understandable social objective study. To

do this, we used a correlational analysis and Chi squared comparison. Finally, the discussion focuses on what we identify as the main differences in the institutions. We also want to highlight what all have in common.

Or objective is to identify the differences existing in the various organizations with respect to the social environment factor. Our hypothesis is that perception of the social environment by various institutions is homogeneous.

LITERATURE REVIEW

We consider social environment to be a combination of different situations that results with coexistence with various people. The optimal situation is to generate positive working conditions and a favorable and productive treatment. Some researchers have examined this issue which allows us ratify or rectify these conditions. Tabak et al (2015) reported that "there were differences in health behaviors and socio/organizational environment by gender, race, age, income, and worksite size, and said that there was agreement with the statement the 'company values my health' was highest among whites, older employees, and higher income workers". If worksite size increases, the frequency of seeing coworkers doing several types of healthy behaviors increased. These researchers suggest that some "social/organizational characteristics of the workplace environment, particularly feeling the company values the workers' health, and seeing co-workers engaging in healthy behaviors, may be related to nutrition and PA behaviors and obesity. These findings point to the potential for intervention targets including environment and policy changes".

In Brazil, the general objective is to analyze the predictive power of the locus of control in work on personal well-being in organizations. The goal is to evaluate whether the worker perceives himself or herself as the controller of a situation or perceiving others as holders of this control interferes with their level of well-being. The results indicated that interiority positively predicts personal well-being in organizations. This finding emphasizing its capacity of prediction on the indicator of identification with the work. The results contribute to a better understanding of the micro-organizational processes, identifying antecedents that facilitate promotion of the well-being of workers by planning intervention strategies in work contexts (Carneiro y Pereira; 2015).

The social environment generates an impact in cultural conditions as proposed by Reyes Arellano (2016). He explains that in the process of cultural evolution, "these generate an immune system that attracts those practices, values and systems that are consistent with the central cultural system, while repelling those that are not in accordance" (Reyes Arellano 2016). This generates structures that seek preservation of the system and rejection of other ways of acting and thinking. An organization that arose from the need to meet challenges of the industrial revolution is dysfunctional to the current challenges. Somehow, these organizations meet their adaptive purpose with an evolutionary purpose. These two forces are the paradoxical constant the organizations must overcome to succeed in changing conditions of today's world (Reyes Arellano 2016). In France, Parent-Rocheleau's (2016) team shows that control locus has a moderating effect on the relationship between affective commitment and perceptions of procedural fairness and organizational pride. This leads to more emotional engagement in people who believe they have control over their environment. The results points to the importance of investigation into the interaction of individual and organizational factors in the prediction of work attitudes and behaviors. These results help understand labor relations to better understand employees' reactions to the perception of organizational justice (Parent-Rocheleau et al 2016).

In analyzing what happens with these type of conditions in Kuala Lumpur, researchers led by Wong Sek Khin showed that there is a more participatory style of management by SMEs. SME's have a less formalized organizational structure and the culture of the workplace are healthier and have a positive influence on the

effectiveness of communication within the organization. They also established that the relationship between supervisors and subordinates, known as Guanxi, has a positive moderating effect on the relationship between leadership style, organizational structure and workplace culture on one hand and effectiveness of communication within of the organization on the other hand. They conclude the attitude of management in the organization and participation of employees, the formalization of health structure and culture plays an important role in fostering effective communication and Guanxi relationships between supervisor and subordinate (Wong Sek Khin et al, 2016).

Kamran Nawaz et al. found that no significant relationship existed between home environment and social behavior. They concluded that all variables of their study have no significant relationship with our objective of this study. The results show that home environment has no relationship with social behavior of secondary school students which means that Home Environment and Social Behavior are not related with one another. The aim of their study was to examine the relationship of home environment with social behavior of the students and show that no significant relationship exists between home environment and social behavior of the students. Regional and racial prejudices may also be the reason. Similarly, our schools focus of attention is only on intellectual development. So, the social aspect of the students may be given due consideration (Kamran Nawaz et al, 2015).

Kasim e Indram developed a framework for organizational justice, "this study assesses the impact of organizational justice on job performance and job satisfaction of unskilled expatriate employees in the Arabian Gulf region" (Kasim; Indram, 2015). The paper investigates the impact of demographic variables, such as nationality of workers and multicultural factors, on organizational justice. Further, they explore various organizational models to identify the most suitable model for organizational justice in the region. Given the findings reported in this study it can be argued, "organizations and employers in the Middle East need to understand the significant role that justice plays in influencing employees' behavior and work outcomes (Kasim; Indram, 2015). They further need to continuously ask questions such as whether the outcome of a decision was fair, especially if the organization is undergoing change, downsizing or restructuring. To change or improve their monitoring of the social environment and the extent of borders, organizations develop the use forecasting, futuristic, social audits, opinion polls and attitudes. They add constituents to committees and the board of directors, and employ consultants and research institutes. Management's social values and objectives can be modified through training, organizational development activities, changes in reward structures and staffing practices, and the hiring and dismissal of managers (Strand, 1983).

Trillo and Holgado (2008) develop an index to measure organizational culture. This index is formed according to the following criteria. Work environment calculates the average valuation of this work environment. It is a means for knowledge management in organizations. Knowledge increases intellectual capital and, at the same time, the cohesion of the elements through the culture of the company. The cultural power of companies, together with the resources they have, is the main source of value creation. This value creation is important in the deployment of strategic business actions (Trillo; Holgado, 2008). Luhmann et al (2015) studied a group who show that when there is loneliness, people try to find others. This situation generates a vicious cycle among lonely people. They found that after studying a lonely group, the behavioral consequences of trying to join lonely or happy people and the solitary activities were not significant. The patterns remain unchanged until a spouse was present. But, not if the spouse was absent. These findings suggest that conditions that activate the vicious cycle of loneliness are specific to persons and situations (Luhmann et al 2015).

Peršič (2016) identifies the importance of implementation of standards of socially responsible management and their impact on the business performance of organizations. He confirmed correlations among the natural and sustainable development of the broader social environment. The research was done in the Republic of Slovenia, and confirmed the link of a larger number of employees and achieved higher income from

operations with the understanding of management standards in organizations. They found that implementation of principles of social responsibility has a positive impact on sustainable development. As a consequence, the financial indicators of the organization like profits, business growth, productivity and cost-effectiveness in operations have been confirmed (Peršič and Peršič, 2016). In the Arabic culture, Hejazi (2016) examined the relationship between managers' cognitive style and their leadership type as moderated by organizational culture. The perceptions of subordinates were surveyed to explore the relationships. While adaptive cognitive style could be a predictor of producer, hard driver, regulator, and monitor leadership types, the innovative cognitive style could not predict any leadership type. Findings of the current research contribute to the study of behavioral complexity in leadership by introducing a new paradigm in which the effectiveness of managers originates from the coordination between their adaptive cognitive styles and compete and control oriented leadership types (Hejazi, 2016).

DATA AND METHODOLOGY

The organizations in this study are public institutions but at different levels. The largest is the Faculty of Economics of the University of Buenos Aires (FCE UBA). According to official data it has an enrollment of 60,000+ students and 5,000+ teachers. Next, the Academic Unit of Accounting and Administration of the Autonomous University of Zacatecas (UACA) has 2,200+ students and about 100 teachers and 50 non-teaching workers. The third institution is the Zacatecas City Town council (Presidencia Municipal de Zacatecas) (PMZ) with a staff of 1,350 people. Finally the Board of Conservation of Colonial Monuments and characteristic areas of the State of Zacatecas (JMC) has a staff of 60 individuals. The UACA is part of a university of 35,000 students and 3,500 teachers and 2,000 non-teaching workers is influenced by the actions and interaction of members with other faculties such as Medicine, Engineering and the Language Center. The samples used for this work are diverse because they come from different survey moments and also different survey application options. In FCE UBA, despite the magnitude of the population, only 67 people were interviewed because of difficulty associated with getting close to the people. In UACA, 372 persons were interviewed, in the Zacatecas Town council (PMZ) 276 and in the JMC 49 of 60 employees. Table 1 shows how the sample is distributed among the different institutions. FCE UBA has a large population, but for communication and time problems the sample was small. To avoid large differences. the comparisons is made using ANOVA that allows the homogenization of means and standard deviations. The interviews were done in different years, UACA and FCE in 2013, PMZ in 2015 and JMC in 2016.

Table 1: Distribution Sample

Institution	Population	Sample
FCE UBA	60,000 +	67
UACA	2,000 +	372
PMZ	1350	276
JMC	60	49

Table1. Distribution Sample. It can be seen that the four institutions have different sizes and, also the samples do not correspond proportionately due to the facility giving access to people who would answer the questionnaires.

A questionnaire was used to measure the organizational climate. For this study, we take into account only questions related to the factor analyzed in this research. The questionnaire was designed by the authors and has been applied and validated in the usual ways. The questions use a Likert 5 scale and the answers are sorted from least to greatest on a scale of 1 to 5. The data analysis used frequency analysis of the general data and analysis of correlations by Spearman's value because they are non-parametric data. The reliability value is high because we used a Chronbach alpha to identify the value. Finally, comparisons between groups are performed after they have met the normality levels required in each sample.

RESULTS

The gender of participants is 43.8% male and 56.2 % female. Students and first level workers respresent 68.1% of the sample. Faculty and second order workers constitute 26.4% of the sample. Higher level managers constitute 5.5% of the sample. Table 2 shows the frequency analysis which shows the different results of the variables completing the social environment factor.

Table 2: Frequencies of Results That Integrate the Social Environment Factor

Variable	Minimum	Minor	Intermediate	High	Maximum
The level of help among partners is	5.6	4.8	17	29.7	**42.8**
The response to help is	3.1	5	19.1	28.5	**44.2**
Partnership influences on everyday activities	4.3	5.4	20.7	26.6	**43.1**
I let everyone assume the responsibility to solve problems	22	14.8	**26.6**	22.5	14.1
Before solving disagreements, agreements are solved	7.3	8.2	**34.7**	29.3	20.4
The solutions taken are convenient for everyone	2.6	7.5	24.7	31.9	**33.2**
Whatever is done to avoid useless frictions	5.6	6.4	29.8	27.7	**30.4**
Dislikeable situations are avoided	4.3	8.1	21.1	31.4	**35.1**
The organization's media are well known	9.8	11.9	21.2	29.2	**27.9**
The information flows normally by institutional media	8.5	10.5	**30.2**	26.3	24.5
Organizational affairs are solved by teams	7.7	10.5	**31.3**	25.3	25.3
Its comfortable to work in teams	4.6	3.5	18.1	28.5	**45.3**

Table 2 shows the different options. Variables are spread through different choices. Higher answers are in the maximum possible, so the results integrate a good social environment.

Help among partners produces a maximum level of 42.8%. Almost all the people are willing to help their partners. When we asked how is the response to help, the answers reached a maximum value of 44.2%. This second answer produces approximately the same percentage as the prior question. It is also high, indicating that if people ask for help they get a favorable answer. Partnership influences every day activities. Partner influences shows a result of 43.1% for the maximum option. So, it seems that having a mutual goal within the organization is important to every day actions. To be willing to act when its necessary, influences the conduct of the people. So, we asked if respondents left the responsibility to others. The most popular answer was the middle choice with 26.6% of results. It seems the answer is dispersed across the choices, not all the decisions are taken by themselves and they don´t take all the responsibility. This situation may be viewed in many ways.

People may disagree or agree on the decisions. Of interest is how hard they discuss agreement before the disagreement? The answer was mainly in the intermediate option with a 34.7% of responses. So the arguments are discussed no matter what the disagreements are. After discussing any matter, the solutions are focused on the whole organization. When asked about the decisions, they are taken in a way that is convenient to all parts of the organization. The highest frequency is the maximum choice with a 33.2% of responses. This result shows that the organization's interests come first before personal needs. Discussion generates friction among parts. Persons answer to the question saying that they have done as much as necessary to avoid friction. Respondents choose at a 30.4% rate the maximum option. So it appears that people are discussing to solve matters with respect to others. We assume the discussion is according to the organization goals.

With regard the question: The people discuss carefully the matters, avoiding conflicts or dislikable situations, the highest choice is in the maximum situation with a 35.1% response. Again, discussions in these organizations don't have to lead to conflicts. Rather, they are doing their best to remain in favorable agreement and with no conflicts. People in these organizations are connected by different media, so we asked if the integrant knows which are used by the organization. The highest frequency is in the high option with at 29.2%. It seems that not all media are known. This condition may be used to improve organization skills.

We asked about the flow of information. We supposed that formal ways are the main options for information flow. Surprisingly we found that the highest frequency was the medium choice with at 30.2 %. Information flows in different ways, which may not be a good situation. Messages could be misunderstood. Problems are not somebody else's matter, they may affect several people. We asked if people work on teams and if these are a good way to solve problems. The highest frequency was in the medium choice at 31.3 %. We know that the grouping situation depends on matter. Thus, we ask if it is comfortable to work in teams. The highest answer was for the maximum choice at 45.3% (the highest option in the entire questionnaire). Because people work fine in teams, the answer was in accordance with the other questions. After making decisions, agreement is something that the people try to do to help everyone. The answer given to us by respondents was highest for the maximum option wat 40.2 %. We found that the decisions may take a long time when trying to find agreement among participants.

To identify how the variables are correlated with each other, we used Spearman's correlation. The main correlations show that all variables have at least 9 high correlations to others with an average of Spearman correlation level of 0.3. The highest correlations are between "asking for help" and "the response to help" with a coefficient 0.65 and a 0.01 p-value. After running some tests to reducing some dimensions we found that using only coefficients higher than 0.5 we have a four-component matrix with variable reduction. Table 3 shows how the components are grouped into four main components, to achieve this matrix different conditions were analyzed.

Table 3: Rotated Component Matrix to the Variables That Integrate the Social Environment

	Component			
	1	**2**	**3**	**4**
The level of help among partners is			0.794	
The response to help is			0.796	
Partnership influences on everyday activities			0.732	
I let everyone assume the responsibility to solve problems				0.899
Before solving disagreements, agreements are solved	0.514			0.511
The solutions taken are convenient for everyone	0.681			
Whatever is done to avoid useless frictions	0.776			
Dislikeable situations are avoided	0.770			
The organization's media are well known		0.839		
The information flows normally by institutional media		0.876		
Organizational affairs are solved by teams		0.699		
Its comfortable to work in team	0.522			
The decisions are taken when everyone agrees	0.629			

Table 2: Matrix Extraction Method: main components analysis. Rotation Method: Varimax with Kaiser normalization. Four groups were found a) Teams, b)Media, c) Help and d) Responsibility

To determine the normality of the data obtained, Kolmogorov Smirnoff statistic was calculated as 0.240 with a p value of 0.000 indicating a normal distribution. Thus, ANOVA can be used to find some differences or similarities between the organizations. We tried to identify differences between the groups of analysis, so we ran some normal tests to allow using ANOVA in the group comparison. Table 4 shows that the significance value is very small, as low as 0.000.

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin sampling adequacy		0.860
Bartlett's sphericity test	Aprox. Chi-square	3640.064
	gl	78
	Sig.	0.000

Table 4 provides results about the significance that allows applying the ANOVA tests. We found a very low significance, under 0.000.

After running the tests, we choose the results where we could find differences among the groups FCE, UACA, PMZ and JMC, Table 5 shows the variables having statistical differences among the groups.

Table 5: Synthesis of ANOVA Comparisons Among Groups

Variable	Group	Is different to	Statistic Value	p-value
The level of help among partners is	FCE	JCM	0.554	0.470
The response to help is	FCE	All	0.197	0.005
Partnership influences on everyday activities	UACA	PMZ	-0.395	0.001
I let everyone assume the responsibility to solve problems				
Before solving disagreements, agreements are solved				
The solutions made are convenient for everyone				
Whatever is done to avoid useless frictions	UACA	FCE PMZ	0.089	0.001
Dislikeable situations are avoided	UACA	PMZ	0.280	0.009
The organization's media are well known	UACA	All	0.187	0.000
The information flows normally by institutional media	UACA	FCE PMZ	0.167	0.000
Organizational affairs are solved by teams	PMZ	UACA JCM	0.541	0.000
Its comfortable to work in team				
The decisions are taken when everyone agrees	JCM	UACA	-0.455	0.035

Table 5 shows that not all the variables display differences among the diverse groups. But, UACA presents more differences than other groups. FCE is different from all others in response to help, and UACA is different from all others about knowing the organization's media.

CONCLUSIONS

All respondents feel great in helping, and the response to others is as good when they know that somebody is willing to help. Sometimes we may think that groups are resisting asking for help, but in these four cases they feel free to ask for assistance. In the same way, the response to the help is good when they asked for it. We assume that it is a nice circle of cooperation. I respond to help, so they request it from me. FCE, produces different results from all other organizations. However, that all others are in the city of Zacatecas. When an organization depends on partnerships it will be easier to ask or offer help. Different organizations who state this situation are UACA and PMZ. We found a group of questions where all the variables have the same results. They have to do with responsibility. This situation gives us the knowledge that no matter what happens inside, responsibility remains the same. They say that it is very comfortable to work in teams. UACA differs from all others regarding media. Despite it being a university with a communications department, it differs from others at flowing information by unofficial channels, perhaps via gossip.

Most variables are highly correlated. We find a high correlation index and a high significance except for one. We infer the questionnaire is well structured. Nevertheless, any variation affects all of the others. The closest variables are Ask for help and responding to help. Four components are found a) Help, b) Responsibility, c) Discuss favorably and d) Teamwork. The social environment could be studied in four small parts. We found that there are differences among the organizations, but there are more similarities among them than unequal situations. After analyzing this data we don't have statistical evidence to reject the hypotheses that says "The perception of the social environment by several institutions is homogeneous". These results may be used later in an effort to understand what happens inside an organization and if social environment implies some other results that benefit all parts of the organization. The results here are one step toward understanding the implications for all organizational behavior.

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BIOGRAPHY

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FACTORS THAT IMPACT ATTRITION AND RETENTION RATES FOR ACCOUNTANCY DIPLOMA STUDENTS: EVIDENCE FROM AUSTRALIA

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ABSTRACT

The Paper examined attrition and retentions rates factors for technical and further education colleges in Australia, the paper examined three factors eternal factors , internal factors and demographic factors, the eternal factors are factors beyond the college control, the internal factors these are factors the college can control, the demographic factors these factors also can lead to high attrition and low retention rates in Australia, also the paper developed a model that can be tested in different environments setting. The finding showed that some of external factors, internal factors and demographic factors indeed impacts the attrition and retention rates in Australia.

JEL: M 410

KEYWORDS: Accounting Attrition, Accounting Retention, Community Colleges

INTRODUCTION

Accounting education underpins the whole accounting profession (Wilkerson Jr. 2010). According to Diamond (2005) accounting programs taught inside business schools supply a substantial amount of students entering the profession. This implies the profession is heavily reliant upon accounting programs to produce trainee accountants.

Currently, there is a lot of negative publicity surrounding the profession (Lampe and Garcia, 2013, and Sullivan, 2006). Similarly, Gerstein and Friedman (2013), Gordon (2011) Rogers, Dillard and Yuthas (2005) stated that the accounting profession's appearance and reputation are based upon it being seen to act with the "highest sense of integrity". Enron and other accounting scandals have contributed to the accounting profession's bad image and loss of public trust in the profession. This has led to a reduction in students considering majoring in accounting (Hung, 2014, Heiat et al 2007).

The demand for accounting trainees has however increased in recent years. This high demand can be attributed in part to the shortage of accounting graduates. This argument is supported by Campbell et al. (2013), Wessels and Sumner (2013) and accounting governing bodies. The American Institute of Certified Public Accountants (AICPA, 2004), note that business and legal environments should be encouraging an expansion of the accounting profession. This is because the supply of competent accountants is insufficient to meet the current demand. Similarly, Fielding (2005) noted a UK research study by Robert Half International (RHI, 2001) which found that 40% of respondents reported their accounting firm had faced difficulty in recruiting staff with the right accounting skills, to fulfil their increased workload. In Australia, difficulty in recruiting competent accountants is also noted by Certified Public Accountant Australia (CPA,

2011), and the Institute of Public Accountant Australia (IPA, 2007). According to Byrne and Flood (2005), Jackling and Calero (2006), and French and Capage (2011) in Australia and other developed countries around the world the demand for business studies has increased, but the number of accounting graduates has decreased.

Meanwhile, a white paper commissioned by the American Accounting Association (AAA, 2000) revealed disturbing news for the accounting profession. The report stated that both capacity and value at accounting faculties in community colleges were experiencing major decreases. Currently all universities and colleges are working to develop retention strategies, not only for accounting but for all majors. For example, Griffith University, Australia in 2013 developed a 'student's success program' to assist students achieving success at University.

This section looks at the history of TAFE development, their characteristics, and their role in Australia. Goozee's seminal book, titled the development of TAFE in Australia, published in 2001 is highly instructive. The first Australian university launched in Sydney in 1850, motivated each of the six states to create their own university, and also led to the creation of the Australian National University in Canberra. After the Second World War, the number of students that enrolled in higher education increased. So, in order to meet this demand, more universities were opened, and by 1987 they were 400,000 students enrolled in 19 Universities and 46 colleges of higher education (Yorke and Longden, 2004). Some of these colleges are named TAFEs (Technical and Further Education). Both states and commonwealth government are obligated to oversee TAFE institutions in Australia. TAFE colleges share mutual roots but all established their own separate formation. This formation was a result of diverse social, economic, demographic, geographic and political systems in each state (Goozee, 2001).

In summary, TAFEs are playing an important role in economic and development growth in Australia by providing graduates that are needed in the labour market, including accountancy. Evaluation of attrition rates therein, and comparison to other countries is therefore considered an important ground for research. The rest of the paper is organized as follow Literature Review, Data and Methodology, Results, Concluding Comments, Appendix, References and Biography.

LITERATURE REVIEW

External factors are factors that relate to students' lives outside college. Burgess (2008) identified that these factors can be used as predictors of student dropout rates. Thirteen individual factors have been extracted from the extant literature. Some of these factors are: financial issues, jobs, family problems, physical or emotional challenges, and motivational characteristics. Each of the 13 factors is taken in turn. Initially we consider college (two-year) studies and then we consider university studies which have incorporated these factors.

In the US, financial assistance programs are very important in supporting students' admissions to community colleges, especially students belonging to mid to lower socio-economic classes (St. John, Paulsen and Carter, 2005). For these students, college assistance programs offer the money needed to enrol in higher education, and without such programs students from these disadvantaged groups, would not be able to obtain a college education (Dowd and Coury, 2006;, Mendoza, Horton and Mendez, 2012).

Furthermore, Nakajima, Dembo and Mossler (2012) and Vieira (2012) note that college fees are a very important factor impacting both attrition and retention rates. Their research found that some students discontinue their studies for a sometime, to seek employment that earns them money, and then they re-enrol to continue their studies. However, in some cases they do not go back to college to continue their studies. This finding is supported by other researchers such as Bynum (2010), who noted how students who receive financial support are more likely to stay in college to complete their degree. Similarly, Clark et al. (2012)

and Bharath (2009) found that being forced to pay for college was the number one factor that leads college students to dropout.

Khan and Osman (2011) discovered that 59% of students enrolled in Dammam community college (Saudi Arabia) said they would withdraw from college due to their financial situations. This was especially true of students enrolled in the evening diploma program. Marital status is an additional factor impacting students' attrition. According to Astin (1975) getting married while in college has little impact on attrition rates for men, but is an important factor impacting attrition rates of female students. Subsequent studies support this finding.

According to Ge (2011) who notes that marriage, de factor and committed relationships in the US play a major role in females' decisions to attend college. In the US marital status is a factor impacting student's attrition, especially for female students (Millar, 2010). According to Millar (2010), college students (two-year) tend to have extra family and marriage responsibilities, compared to four-year college (i.e. university type) students. This can lead to their withdrawal from college. This argument is supported by Tinto, (1993), Stratton, O'Toole and Wetzel (2008) and Urwin et al. (2010). Other scholars also noted that the marriage factor is positively associated with attrition (Bean and Metzner, 1985). This suggests that female's students are more concern about family responsibilities than male's students which may impact their decision to drop out from college.

Employment is an additional factor impacting students' attrition. Many scholars stated that getting a job while studying can lead to students' decisions to drop out from college or university.

According to Nakajima, Dembo and Mossler (2012) note that in the US engaging in full time employment while attending college full time has a significant influence on college student dropout rates. Full time employed college/university students are less likely to prosper in college/university than students who do not have a job (King and Bannon, 2002; Salisbury et al. 2012). According to Cuccaro-Alamin (1997) and Riggert et al. (2006) students employed full time are less likely to attain a college or university degree than other students; this because the job takes must of the time for these students.

Personal and family illness is an additional factor impacting students' attrition. A few scholars linked this factor to students' drop out decisions from college or university.

According to Roberts, McGill and Hyland (2012) who conducted a study to find out the reasons female students withdraw from college, a number of current and former students specified they had been influenced by severe illness (3.7%) family fatality and illness (7.4%) or pregnancy (7.4%). These factors had forced them to dropout from college. Kelly et al. (2007) similarly reported that about 23% of college students withdraw from college for family issues, such as death or illness of a close family member, and pregnancy.

This current paper will investigate whether getting sick (self or family member) while studying can force students to dropout from college. Another factor that can impact students' decisions to drop out from college is poor English skills. As this study cover two environments in which English is not the native language, it is considered this can lead to higher attrition rates. This factor becomes a very important issue impacting students enrolled in universities who teach their courses entirely in English and where this is not their native language. In a US study, Bynum (2010) notes that English proficiency programs have definitely influenced students' decisions to stay in college, and have encouraged them to remain and obtain their degrees.

In South Africa Brits et al. (2011), note that a confident level of English proficiency, linguistic and study abilities are crucial factors for guaranteeing academic success. According to Del Vecchio and Guerrero (1995) students should be skilled in English language if it is the language of instruction. They also should be competent enough to ask questions and understand their college instructors.

Another factor that can impact a student's decision to drop out from college is racial/ demographic tension. College students enrolling in city colleges may come from different part of the country. Living away from home, especially in Sudan can lead to higher attrition rates.

According to Pender (2010) who noted that students from under-represented communities in the US (African American, Latinos, and American Indians) have the highest dropout rates compared to other racial groups of students (i.e. white and Asian students). These students fail to continue their studies partly because of inadequate or unsuccessful efforts by colleges to help them upgrade their academic and social involvement in the institution's setting (Summers and Hrabowski, 2006). Similarly, Mangan and Trendle (2010) found that in Australia, college attrition rates among indigenous students enrolled at VETs and TAFEs are higher than for other groups of students.

Lack of transportation is an additional factor impacting students' attrition decisions. A few scholars linked this factor to students' dropout decisions from college or university. This factor can impact a student's decision to drop-out and as this study has three different environments, it will be tested in this research to see its relevance.

Roberts, McGill and Hyland (2012) found that several characteristics of commuting to university were found to be an issue among female students. The distance between the university and the student's home was an issue for 22% and transportation availability was a problem for 22% as well. The researchers stated that these factors make it hard for students to be completely involved with their education and are more likely to work in combination with other factors, which can lead to increased student attrition.
This paper will look how lack of transportation impact student's decision to drop-out from college.
Conflict with college authorities is an additional factor impacting students' attrition. This factor may influence students' decisions to drop out of college. This issue is very sensitive and that is why there is no available literature considering it. This study is the first of its kind to link this factor to attrition rates.

There is a lack of literature concerning this factor and most attrition research has failed to focus on this issue. This is possibly due to the fact that most research on attrition has emanated from Academic who views attrition as the "student's" problem, rather than any fault of the institutions. Also getting information or data needed to investigate this issue it's not easy, so views of Academic and difficulty of collecting data played in this lack of literature.

In this paper will therefore investigate this issue to see if there is any evidence that it can impact a student's decision to withdraw from college or suspend their studies. Absence of clear policies is an additional factor impacting students' attrition. This issue is also very sensitive and explains why there is no available literature considering it. This research is the first of its kind to link this factor to attrition rates.

As with the previous issue, this factor has not been investigated by many researchers. Again, this could possibly be due to the potential for a negative image to emerge of universities and colleges. It is unlikely colleges and universities are going to admit that their policies are weak and these factors contribute to students' dropping out. Dockery (2012) stated that college dropout issues should be blamed on high school counsellors. He noted high school policies should be focused on this fact, to prevent or at least reduce college dropout ratios. He stated that high school policies should focus on Academic performance and offers extra Academic programs to help students academically by doing so students will perform better at college.

This paper will include the above factor in the devised model to find out if this factor is significant in contributing to college attrition rates. Another factor that can be linked to attrition rate is poor attendance/grades. Prior research demonstrates this factor has a strong influence on student's drop-out decisions.

Bean and Metzner (1985) included GPA and its relationship to attrition among college students in their model. Most researchers find that this factor is more related to community colleges than university due to the different academic settings of the two groups. This is commented upon by many researchers (Leone and Tian, 2009; Kinloch, 2012; Nakajima et al., 2012).

Another factor which may cause students to drop out is increased interest in other areas of study. Prior research, listed below, linked this issue to high attrition rates. Currently accounting programs facing many challenges such as losing their students to other areas (for example nursing, IT, etc.) and the explosion of interest in information technology; have contributed to increased student interest in other area of studies over accounting. Several studies and reports attest to this. These include AAA (1986) AECC (1990) Arthur Andersen & Co. Perspectives Paper (1989) Frederickson and Pratt (1995) and French and Cappage (2011). Accounting programs requires certain skills that are needed to enter the accounting profession, student's views these skills is challenging and demanding which contribute to their drop-out from accounting program, and enroll in other majors that are less demanding, Kavanagh and Drennan, (2008).

This paper will include the above factor in the devised model to find out if this factor is significant in contributing to college attrition rates.

According to Bougen (1994) and Ferreir and Santoso (2008) a negative view of accounting programs appears to be reinforced in the first year of college education. This is exacerbated when outdated teaching styles are used to teach accounting. For example when faculty teach bookkeeping and other quantitative problems, students perceived this as negative because it is viewed as boring due to the way it is taught. This can then impact on the students' decision to continue (or discontinue) their studies in the field of accounting. Another issue students sometime enrolling in program without known what skills the profession requires which also can lead to high attrition rates. Johnston et al (2010), Dewey (1912)

Family pressure is another factor that can impact a student's decision to drop out from college. Many researchers wrote about this factor and its influence on attrition rates. Shah and Widin (2010) note that education level of college students' parents is an important factor in determining whether those students persist at college. Parent education levels also play a major role in determining student accomplishment, especially students from lower social class groups (which most community college students belong to).

Ishitani (2006) and Whitehead (2012) both note students who are the first person in their family to attend college have higher dropout rates than other students. Similarly, minority group students and students belonging to lower socio-economic classes, demonstrate higher dropout rates. This is supported by other researchers such as Chen et al. (2005), Majer (2009) and Savi (2011).

This present paper expands upon previous studies of attrition models by using institutional internal factors as well as external and demographic factors to predict attrition rates. These factors are linked to student engagement in curricular and extra-curricular activities, for example, communication with faculty, involvement in college activities, and interactions with other students. Many researchers have focused on student characteristics regarding attrition. This paper will supplement findings as regards these characteristics but will also investigate students' satisfaction levels regarding their institutions

The general importance of these factors is highlighted in the literature in business management which shows that customer satisfaction is very significant in retaining customers. Douglas, McClelland and Davies (2008) conclude that, "the concept of the student as customer is not new". They stated that students should be considered as customers and their approval is significant to their retention. High levels of approval among students will help in increasing college retention rates (Chandler, 2001).

According to Petruzzellis and Romanazzi (2010) in Italy, student satisfaction is related to retention and has become a very critical issue for colleges and administration. If students are not pleased, they will send negative messages about the college to others. This will harm the image of the college. Students who will not endorse their college to others create other issues such as engorging other students to drop-out, not paying school fees (Blackmore, Douglas and Barnes, 2006). As Voss (2009) concluded, German student approval increases not only student retention but also the potential enrollment of new students. It is therefore important to know the aims of students. If these aims are fulfilled, then the overall satisfaction level will increase

An institution's registration system is a factor, which if students are not satisfied with, can increase the attrition rate. A few researchers such as Hale and Bray (2011) Andrews (2003) and Angelo (1990) have completed studies focusing on the influences of the college registration system and its impact on retention and attrition rates. The findings of these researchers state that the college registration system strongly impacts retention and attrition rates. Course scheduling/timetabling is another factor that may decrease the satisfaction level of students. If it does, this can also be associated with high attrition rates.

According to Douglas, McClelland and Davies (2008) communication with students concerning modification to course timetables and exams has a significant impact on student satisfaction and attrition these due to fact students might have other plans and also this create impact students plan agenda. The authors stated that keeping students notified about course syllabus, instructions, changes in schedules, and paying attention to their comments, enhances student confidence and satisfaction.

The college accounting curriculum, as a potential attrition factor, has not been well investigated by researchers. Most researchers (Allensworth and Nomi, 2009; Harris and Tienda, 2012; LeBeau et al.,2012) focus on high school curriculum and its impact on college retention rates. Other researchers (Dorn, 1993 Ibrahim and Brihoum, 2001) propose that college curriculum must be reviewed regularly to ensure they remain relevant to the requirements and demands of the industry.

Course assessment (exam grading, assignments, etc.) is another factor that many researchers investigated, which also can be linked to attrition. According to Bahr (2012) students who do not pass their course the first time are unlikely to enrol again in that course. Other researchers such as Bailey (2009) have also noted that course assessment impacts college attrition, students who getting bad grades in exams are more likely will not enrol in the same course again, this can impact course attrition rate. Bailey, Jeong and Cho (2010) supported the above argument. Teaching and college instructors are another internal factor that can be linked to attrition. Many researchers find this factor is highly associated with college attrition.

The teacher-student relationship has a major impact on students' satisfaction levels and retention decisions (Khan and Osman, 2011). The extant literature notes that 'faculty-student collaboration" is a predictor of student attrition (Pascarella and Terenzini, 1991). Tinto (1975) agreed that increased collaboration between students and faculty supports the ties between students and their college, and helps in decreasing student attrition rates. Another factor which may impact attrition is college facilities. This factor may not have been investigated sufficiently by others.

Lau (2003) stated that course instructors can aid to keep constructive learning environment for their students by using multimedia tools and creative instructional techniques such as cooperative and collaborative learning in their classroom which can help to reduce attrition rate. An additional factor which may impact attrition is technology. Many researchers have investigated this factor and its impact on college attrition.

The extant literature is inconclusive regarding the connection between student satisfaction, the utilization of technology in higher education, and their relationship, if any, to student attrition rates. Green and Gilbert (1995) supported the opinion that utilization of information technology improves the learning progression

among college students. This can lead to better retention rates. Roy and Elfner (2002) and Khan and Osman (2011) reviewed the benefits of utilizing technology in the classroom. Both studies noted the use of several IT instruments such smart board and module, webtv can be valuable in the student learning process and improves their satisfaction levels.

College services are an additional factor that may impact college attrition. Many researchers find that this factor is highly associated with college attrition. According to Noel et al. (1985) counseling and advising have a significant positive impact on student satisfaction and therefore retention rates. The authors believe that employment preparation, and counseling and advising services by a college are crucial factors in student retention.

Harvey-Smith (2002) notes that the accessibility of student services provided by the college can have a huge impact on student's persistence and retention decisions. The author also notes that students' involvement in student unions, as well as their participation in college activities, will help in increasing retention rates.

Another area which has not received much focus is the relationship between use of college facilities and student retention rates. Mallinckrodt and Sedlacek (2009) tested this in the US and discovered that the use of college facilities is indeed positively connected to students' retention rates. Also the authors noted that use of the library is positively related to retention as well. Their research concluded that the use of non-academic facilities such as GYM, sport facilities was a particularly important factor that impacted attrition decisions, especially for African American students. According to Windschitl (2008) and Fenzel (2001) both found that several of the activities that help to maintain a healthy lifestyle also have a positive influence on college retention rates.

According to Roberts and Styron (2010) and Pascarella and Terenzini (2005), note that many educational institutions offer their students different types of academic services and resources in order to enhance the chances of retaining them. Miller (2005) and Seidman (2005b) argued that if students are admitted to an institution, then the institution should provide services that will assist these students to succeed.

The seven demographic factors included in this research are as follows: age, marital status, geographic location/nationality, year of study, computer skills, and reasons for choosing an accounting program, and willingness to encourage others to major in accounting. Some of these factors have been evaluated in previous studies. Others however, it is argued, need more attention and so are included in this updated model used to assist in evaluating factors impacting attrition decisions. The age factor can impact attrition rates and many researchers have investigated this factor and its impact on attrition.

According to Khan and Osman (2011) note that literature which discusses student dropout rates in relation to student age, shows inconsistent results. Some researchers believe that the age factor is directly related to drop out decisions. Cooper (1990) stated that the age factor has a limited yet significant effect on student attrition. Xenos, Pierrakeas and Pintelas (2002) concluded that older students are more likely to drop out than younger ones. Hoyt and Winn (2004) reported that both stop outs (temporary withdrawals) and drop outs were likely to be older students with children Anionwu et al. (2005) commented that young students are less likely to finish their studies. Marital status is an additional factor that can impact attrition. Many researchers have investigated this factor and its impact on college attrition.

According to Bradburn (2002) tested the characteristics impacting students' withdrawal at two and four-year colleges. His findings showed that around 62 percent of married students drop out from college within a three years period.

Geographic location and students' nationality is an additional factor that may impact attrition. Prior research has investigated this factor and its impact on college attrition.

A report by the Australian National Audit Office (as cited in Jackling and Keneley 2009), studied 485,983 tertiary students, including 102,868 international students. The study took place in the 2006 academic year across 32 Australian universities. The study investigated student retention rates and the findings showed that 89.5% remained at university, and only 10.5% withdrew. The 89.5% of students who stayed in their course either finished their course or continued their studies from the previous year. 7.6% of the 102,686 international students dropped out which is a lower than the domestic students with an 11.3% drop out rate.

Other studies, such as Grebennikov and Shah (2012) similarly found that international students demonstrate better retention rates than local Australian students. Other researchers have also noted that country of origin has been classified as an element which influences students' decisions to choose accounting as an area of study and career (e.g. Mauldin et al., 2000 Tan and Laswad, 2006 and Jackling and Keneley, 2009).

Years of studies are an additional factor that can impact attrition. Prior research has investigated this factor and its impact on college attrition. A study by Horn (2009) found that after three years of enrolment, forty nine percent of community college students had remained as students. Reason for choosing the accounting program is an additional factor that can impact attrition. Here again prior research has investigated this factor and its impact on college attrition.

According to Uyar, Haydar and Kuzey (2011) investigated the reasons that influence students' career choices in accounting. They began by summarizing the results of earlier studies. Mauldin et al (2000) investigated twelve factors that influenced students' decisions to choose accounting as a college major. These factors are: career opportunities, accounting instructor, money, interest in the subject, parents, enjoyment, pervious experience, life style, challenge, prestige, and usefulness. They found that the accounting instructor was the most significant factor

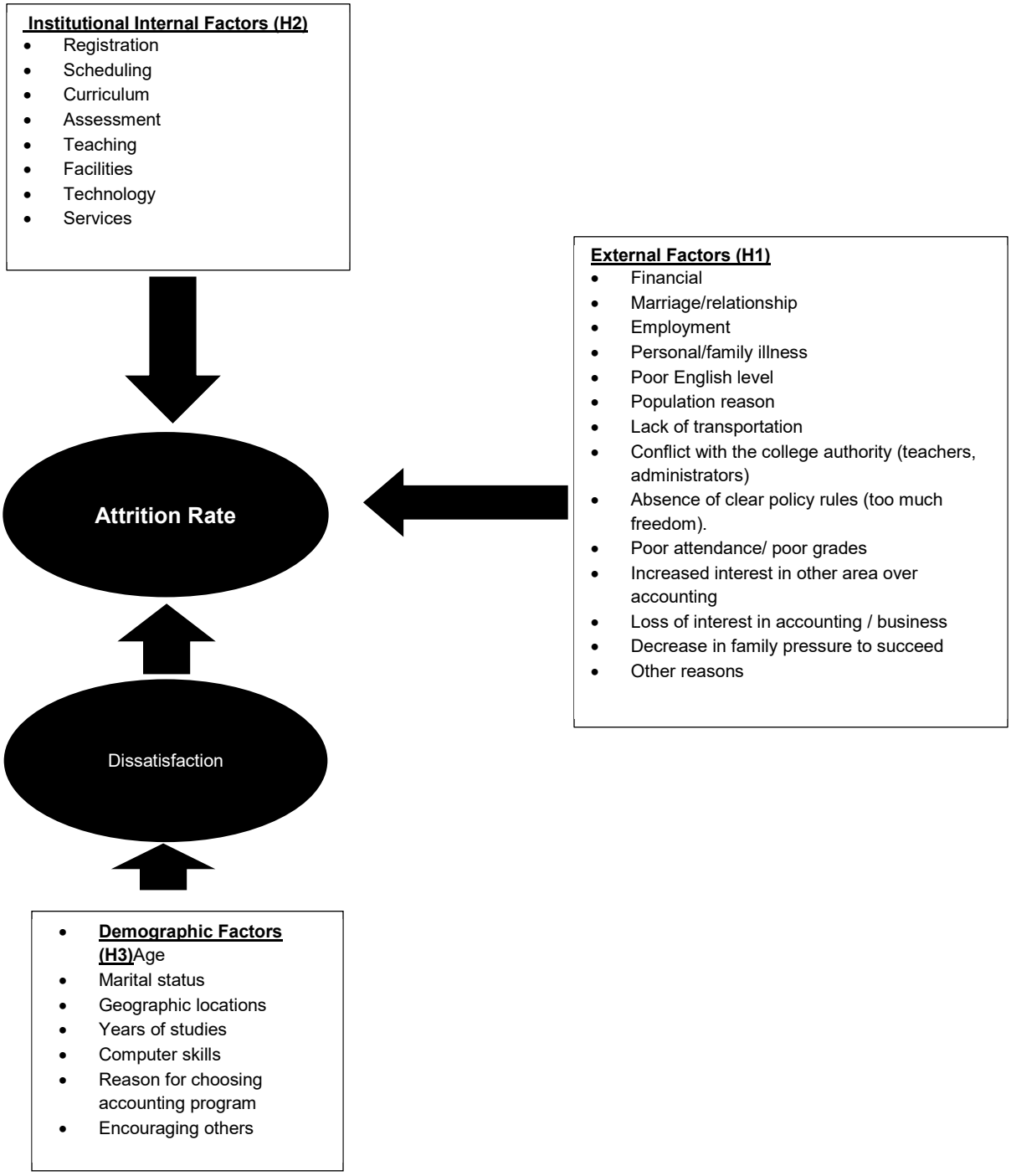
Encouraging others to major in accounting is an additional factor that may impact attrition rates. Not many scholars have investigated this factor and its impact on attrition, so it is included here to test its impact.

There is a lack of literature regarding whether students encourage other students to major in accounting and the impact, if any; this has on student retention rates. Studies by Person (2002) and Albert and Sacks (2000) stated that accounting practitioners and educators, if they had to redo their studies, would not choose accounting as their choice of topic.

Based upon the discussions above a model to evaluate the impact of various factors on attrition rates has now been developed. It has been developed from Bean and Metzner's (1985) model, Tinto's (1975) model of student departures, and Astin's (1975) work on student involvement.

This model also includes some new variables not previously evaluated. The model identifies three categories of variables which impact upon attrition rates (i) external factors; (ii) internal factors; and (iii) demographic factors. A diagram of the full model is presented on the next page. The overall intention of the model is to show that it can be used as an evaluative tool with which to analyze attrition decisions in different environments.

Figure 1: Research Model



METHODOLOGY AND DATA COLLECTION

This paper study uses a mixed methodology approach of both quantitative and qualitative methods. Mixed methods research is well supported by Lieberman (2005), Mertens (2009) and Creswell (2009) as it can supply more extensive results for a specific research problem. Creswell further observed that quantitative and qualitative methods in the fields of social and human sciences are well known, well justified and appropriate. Woolley (2009) and Johnson and Onwuegbuzie (2004) also support mixed methods approaches, claiming they offer an integrated approach to collecting data and can supply numerous viewpoints to the same research questions, based on the above studies mixed methodology is the appropriate one to use in the paper because it can supply extensive result for attrition problem, also its offer numerous viewpoints to the research questions.

Data for this research was collected through questionnaire surveys completed by students and administrators and structured interviews with administrators only. The questionnaires were then distributed to the accounting/business students and their program directors in four TAFE colleges in Australia. Paper-based questionnaires were distributed to collect the data. The reason for using a paper-based survey is because of its reliability and emphasis on a broader population.

The researcher contacted six TAFEs in Queensland. Some of the colleges requested more clarification and they enquired about the aims of the research which the researcher and his supervisors elaborated on. Then a request for data collection was sent for higher management for approval after 4 weeks during fall 2013. Only two directors out of the six colleges approved the researcher's requests and their program directors of business and accounting studies ultimately assisted in collecting the data. The researcher visited the first of these two colleges two times which allowed the researcher on both occasions to distribute and collect from students with the program directors present. The second college choose a different method with the program director distributing and collecting the questionaries' and then calling the researcher by phone to collect them. Two additional colleges were contacted and also agreed to participate. At those two colleges the college staff organized the survey completions and mailed all completed questionnaires to the researcher. These interviews were conducted with the interviewee completing the list of questions and the reviewer following up via phone conversation.

In summary, the survey instrument was distributed to the accounting students and their program directors in four Australian TAFE colleges that offer a two year accountancy diploma program. In college one the students completed the questionnaires during lecture time under the supervision of the college administer. The second college allowed the researcher to visit the class rooms during lecture hours to distribute the survey questionnaires to students. Administrators' questionnaires and interview questionnaires were sent to the program directors by e-mails and/or letter. The researcher subsequently collected the hard copies from the program directors and also conducted the face-to-face interviews with the program directors at this time.

Data from New South Wales and Western Australia TAFEs were distributed to accounting students during lecture hours by course instructors and then submitted to the program directors. The data was collect during the fall and spring semester of 2013The program directors subsequently sent all completed questionnaires to the researcher by post. A total of 197 questionnaires were collected overall and actual attrition rates for the four colleges were 20%, 40%, 20%, and 25%. It is argued that this convenience sampling approach is suitable for this research and resulted in a geographically dispersed and representative sample of Australian colleges participating in the study.

RESULTS

Initially two reliability tests were performed. The first test measured the internal consistency of the external factors, and the second measured the internal consistency of the internal factors. Tables 1 and 2 below summarize the outcomes of these tests.

Table 1: Reliability Statistics –External Factors (A)

Cronbach's Alpha	0.84	N. of Items	14	
External Factors	Scale Mean	Scale Variance	Total Correlation	Cronbach's Alpha
1	33.8557	86.714	0.383	0.838
2	34.5672	85.967	0.416	0.836
3	34.0746	88.209	0.344	0.840
4	33.9254	92.369	0.160	0.851
5	35.1642	84.398	0.486	0.831
6	35.2338	84.380	0.541	0.828
7	34.9950	83.495	0.537	0.828
8	34.8756	83.019	0.617	0.823
9	34.9403	83.476	0.578	0.825
10	34.4726	81.890	0.590	0.824
11	34.4279	81.446	0.608	0.823
12	34.7761	82.975	0.626	0.822
13	34.9801	86.490	0.461	0.832
14	34.3980	88.121	0 .383	0.837

Note: This table contains summary data of the reliability of the external factors

The Cronbach Alpha for the external factors for all colleges in Australia is 0.84. This implies 84% of the items are measuring the same construct. This percentage is considered acceptable because it meets the scale set in the previous chapter, as supported by Davidshofer (1988, p. 89, quoted by Peterson 1994).

The result of the reliability factor analysis of the internal factors provides a satisfactory measure when compared to Nunnally's (1967) benchmark. The result implies 90.3% of the items are measuring the same construct.

H1A: External factors will impact attrition rates of accountancy programs

First basic analysis of means and independent sample t-tests were used to test Hypothesis 1, whether external factors contribute to attrition in Australia. The students were asked if the listed external factors would force them to terminate their accounting studies. The constructed measurement started with 1 (strongly disagree) and ended with 5 (strongly agree) on the 5-point Likert scale. Therefore, all factors with means greater than 3.0 are considered to impact upon attrition. Referring to Table 2 rows 4 to 17, of the 14 external factors; three were found to impact on attrition, as they had means greater than 3.0.

Based upon the students' responses it is valid to conclude that in Australia three external factors identified in previous literature do indeed affect attrition rates in Australia. These are: financial issues, getting a job, and personal/family sickness.

Another three factors displayed means close to 3.0, so the researchers concluded that these factors also have some effect on students' decisions to leave college. These were: loss of interest in the subject, academic performance, and "other reasons". The open ended "other reasons" question offered the following three issues as impacting attrition: working full time leaving no time to attend classes, family responsibilities, and the need to save more money for college.

The remaining eight external factors, marriage, interest in other major, issues with administration, absence of clear policy, family pressure, demographic reason, lack of transportations, and English language issues,

had means less than 2.75 and so could not be considered as impacting upon attrition in the Australian setting. This is discussed further below.

Table 2: Reliability Test: Internal Factors (A)

Cronbach's Alpha	**0.903**	**N. of Items**	**38**	
Internal Factors	**Scale Mean**	**Scale Variance**	**Total Correlation**	**Cronbach's Alpha If Item Deleted**
Registration (Process)	131.4776	283.431	0.481	0.900
Registration (course selection)	131.3731	286.285	0.408	0.901
Registration (no Delays)	131.3731	286.635	0.41	0.901
Registration (Warning system)	131.7065	285.978	0.467	0.900
Registration (Announcement)	131.5473	270.629	0.315	0.911
Registration (Overall)	131.4975	286.281	0.423	0.901
Lecture and Exam (Flexibility)	131.6169	284.118	0.471	0.900
Lecture and Exam (Course conflict)	131.4826	287.251	0.405	0.901
Lecture and Exam (Exam conflict)	131.6567	288.837	0.34	0.902
Lecture and Exam (Overall)	131.5174	284.791	0.508	0.900
Curriculum (High Expectation)	131.3284	282.262	0.576	0.899
Curriculum (Transferable)	131.2239	287.975	0.404	0.901
Curriculum (Interesting)	131.2687	282.897	0.562	0.899
Curriculum (Contents)	131.1393	287.28	0.101	0.916
Curriculum (Overall)	131.2338	284.74	0.589	0.899
Exam and Feedback (Criteria)	131.3284	282.232	0.569	0.899
Exam and Feedback (Feedback)	131.3881	283.319	0.494	0.900
Exam and Feedback (Overall)	131.2786	285.082	0.494	0.900
Teaching Satisfaction (Knowledge)	131.2040	281.023	0.58	0.899
Teaching Satisfaction (Availability)	131.2139	282.339	0.53	0.899
Teaching Satisfaction (Cares)	131.1045	284.264	0.537	0.900
Teaching Satisfaction (Style)	131.1343	284.677	0.504	0.900
Teaching Satisfaction (Overall)	131.1542	281.751	0.629	0.898
Facilities (Computer lab)	125.8307	285.828	0.494	0.900
Facilities (Teaching facilities)	125.7937	285.794	0.461	0.901
Facilities (Class Size)	125.9339	284.915	0.511	0.900
Facilities (Overall)	125.7963	284.28	0.584	0.899
Technology Used (E-mail account)	131.4080	283.863	0.533	0.900
Technology Used (Support)	131.4527	284.369	0.53	0.900
Technology Used (Facility)	131.5274	285.38	0.519	0.900
Technology Used (Overall)	131.4826	286.251	0.464	0.901
Service (Learning resources)	131.393	286.88	0.434	0.901
Service (Bookstore)	131.5323	287.49	0.382	0.902
Service (Gym-Health facilities)	131.8209	288.478	0.361	0.902
Service (Support services)	131.5572	284.038	0.535	0.900
Service (Careers services)	131.5373	286.53	0.438	0.901
Service (Overall)	131.4279	286.506	0.505	0.900

Note: This table contains summary data of the reliability of the internal factors

These results indeed showed that external factors impact attrition rates in Australia, therefore H1 is accepted. Let us now consider Hypothesis 2

H2A: Institutional internal factors will impact attrition rates of accountancy programs

The students were asked how satisfied they were with the listed internal factors. This time the constructed measurement started with 1 (strongly dissatisfied) and ended with 5 (strongly satisfied). Hence, rather than cutting off at the midpoint of 3.0 and evaluating whether or not the factors impacted attrition (as with the external factors) an alternative analysis methodology was selected. The questionnaire contained 8 internal

factor clusters: registration, scheduling of lecture and examination, curriculum, grading, teaching, facilities, technology, and college services. These were then further sub-divided into 37 sub-factors.

As classified by both students and program administrators. Interestingly, both groups agreed on the order of the two of the first four factors (Lecture scheduling, and registration), as noted above. Furthermore, from the students' responses the first four means are very close in raw scores (3.47 to 3.57) and then there is a gap to the remaining four means (3.70 to 3.87). For the administrators the differences are not that significant except for the lecture factor and registration which are below 4.00. According to the students and administrators' responses they agreed that the internal factors examination, facilities, curriculum, and teaching are not contributing to students' decisions to drop out of college. On the other hand, students think the first four factors impact their decision to leave college (lecture scheduling, college service, technology and registration).

The administrators disagreed with students in two of these factors which were college services and technology. They think these two factors should not have such an impact on student attrition. But they agreed with the students on the other two which are lecture scheduling, and registration processes. They believe these two factors are related to attrition. As students appear less than satisfied with four of the eight factors (registration, technology, college services, and lecture scheduling) H2 is therefore accepted. Let us now consider H3

H3A: Demographic factors will impact attrition rates of accountancy programs

The first two demographic factors to be assessed were age and marital status. Previous studies, as mentioned above had found these to be significant factors impacting upon attrition decision. In the current sample of four TAFE colleges, the numbers were significant enough to spread the participants in these categories to assess their impact or otherwise upon attrition decisions. As regards the age factor, of the 197 respondents, 31 students are aged 17-20 years, 36 aged from 21-25, 51 aged from 26-30, and 79 aged 31+. For this category colleges 1 and 2 have more students aged 31+ than the other two colleges.

Similarly, when considering marital status, of the 197 students who completed the survey 87 students are de-facto or married and 110 single. College three had more single students compared to married ones. Another significant demographic detail was gender with 79 students being female and 118 students male. Only college 4 has more female students than male.

A further demographic factor, impact of years of study, also yielded a split which enabled analysis. 105 students who responded to the survey were in their first year and 92 were in their 2ndyear of study. Finally 58 students were international as opposed to 139 domestic.

A further analysis of the six demographic factors' (age, marital status, nationality, year of study, reason choice and gender) impact on external factors revealed that of the 14 external factors 4 were impacted. Age had a significant influence on one external factor. This was external factor 11, loss of interest in accounting with ANOVA results showing an F-score of 2.250 (significant at .084). Marital status had a significant influence on a different external factor (external factor 4: personal/family sickness) where ANOVA results showed an F-score of 3.840, significant at .051. Students' nationality did not show any significant impact on the external factors. Years of study significantly influenced three external factors; external factors 1 (financial, ANOVA results showing a-score of 3.083, significant at.081) 4 (personal/family sickness, ANOVA results showing an F-score of 6.674, significant at.010), and 10 (academic, ANOVA results showing an F-score of 3.478, significant at.064).

'Reason choice' had significant influence on three external factors (Ext 1: financial, ANOVA results showing an F-score of 4.874, significant at .003, Ext 10: academic, ANOVA showing F-score of 2.441,

significant at .066, and Ext 11: lost interest in the accounting subject, ANOVA showing F-score of 3.900, significant at .010), Gender had significant influence on two of the external factors(Ext1: financial ANOVA results showing a F-score of 4.311., significant at .039, Ext4: personal/family sickness, ANOVA results showing a F-score of 6.663., significant at .011).

Two other demographic variables, level of computer skills, and whether the participant would encourage others to commence accounting studies, were subjected to ANOVAs to evaluate any significant differences as regards evaluation of the 14 external factors. In the two instances only one factor was noted as having significantly different results and it was a different factor in each instance. Hence, these are deemed not to have provided evidence of impacting attrition decision-making in this setting.

Additional evaluation of the impact of demographic characteristics on external factors was conducted on an individual college by college basis. This produced the following not tabulated results, on a college-by-college basis.

College 1 revealed 2 external factors were impacted by the respondents' age (external factors 3, and 7). Student's nationality impacted six of the factors (external factors 1, 5, 8, 9, 12, and 14). Computer skills impacted only one external factor, which was external factor 2. Other demographic factors did not impact any of the external factors for college 1.

For college 2, years of study impacted seven of the external factors (external factors 1, 2, 3, 4, 10, 11 and12). Marital status impacted three external factors (external factors 4, 9 and 13) Nationality impacted three factors (external factors 5, 6 and 13). Other demographic factors were not impacted by any of the external factors for college 2.

For college 3 computer skills impacted on one external factor, number 2. No other impacts were noted.

Finally, for college 4, 'reason choice' impacted seven factors (external factors 2, 5, 6, 7, 8, 10 and 11). Age impacted two external factors (external factor 2 and 9). Students nationality impacted two external factors (external factor 1 and 5) and computer skills impacted two factors (external factors 4 and 7).

Despite the many cross-impacts, there was not one common factor across the four colleges. In other words, different demographic factors impacted the students' external factor evaluations. As 13 of 14 external factors revealed differences when evaluating results from the four colleges, these demographic factors are assessed as significantly impacting attrition decisions.

A review of the raw data and response to open ended questions does not support the concept of demographic factors influencing attrition decisions. The participants were asked whether they would recommend the accounting programs to friends/family and to expand on their answer. The majority 163 (82.5% - this explains the mean of 1.18 , as the construct was 1 = yes and 2 = no) said they would. The main reasons they gave were, (i) many jobs in accountancy, (ii) entry accounting level positions require at least an accounting diploma, and (iii) the diploma program is a pathway for university education. This demographic factor, attitude towards recommending accountancy to others, therefore, appears to have no impact on attrition decision-making.

The interaction of demographic and external factors noted above highlights the complexity of attempting to evaluate attrition from accountancy courses overall. The actual attrition rates from the four colleges reveal colleges 1 and 3 have the lowest rate (20% as opposed to two colleges with 40% and 25%). The only three external factors which showed a difference between the colleges were financial factors (external factor 1) employment opportunities (external factor 3) and personal/family sickness (external factor 4). College 3 had a significantly lower mean in all three cases thus indicating they were less worried about these factors

and so their lower attrition rate makes sense intuitively. However, when the ratings for the internal factors, summarized by category are investigated, they reveal the means for college 2 are actually lower than colleges 1, 3, and 4. This would suggest that college 2 students are more dissatisfied with their institution and based upon the attrition figures they are more inclined to leave. These results indeed showed that demographic factors impact attrition rates in Australia, therefore H3 is accepted.

H4A: There will be no difference in the attitudes of students between institutions, as to the impact of influencing factors, on attrition rates of accountancy programs.

Based upon the fourth hypothesis, it was anticipated there would be no significant differences between the participants of the four institutions in their attitudes towards attrition factors. Considering the external factors firstly, 14 factors evaluated. A significance levels when ANOVAs were performed comparing the mean scores of the four individual colleges. Four of the 14 revealed significant differences. These are financial issues, academic performance, family pressure, and 'other'. In three instances, financial problems (external factor 1) academic performance (external factor 10), and other (external factor 14) students at colleges 2 and 4 were more inclined to think they would be forced to leave, than students in colleges 1 and 3. The means for both colleges, in all three instances, being greater than the means for college 1 and 3. This clearly demonstrates that there is a significant difference in attitudes of students between institutions, as to the impact of influencing factors, on attrition rates of accountancy programs when considering the external factors, H4 is therefore rejected.

However, when the internal factors are considered, no significant differences emerge. The means for the 37 internal sub-factors, extracted from the 8 institutional internal factors are, none of the factors reveal significant differences (at the .10 level or below). Similarly the eight combined sub-internal factor means reveal no significant differences (at the .10 level or below, column 5). So, when considering the internal factors, it appears there are no significant differences between institutions from the same geographical location, as to factors impacting student satisfaction, and ultimately therefore, decisions to terminate their accounting studies. When we considered the internal factors no significant difference in opinions emerged, so, H4A must be accepted as regards internal factors.

H5A: There will be no difference between the attitudes of students and administrators as to the impact of influencing factors, on attrition rates of accountancy programs.

Based upon the fifth hypothesis, it was anticipated there would be no significant differences between students and administrators in their attitudes towards attrition factors.

Considering the external factors firstly, some significant differences in attitudes between the administrators and the students in 4 of the 14 comparisons. Administrators considered financial pressures, poor attendance and grades, family pressure, and other reasons (motivations, program structures) would be more likely to force students to leave their accounting studies than students.

Focusing on the internal factors, significant differences in attitudes between the administrators and the students in all eight comparisons. Only college 4 showed some significant differences in attitudes. Students were significantly less satisfied with course scheduling and time tables, curriculum, facilities, technology (internal factors 2, 3, 6, 7 and 8) than the administrator considered they would be, at that institution.
Considering the external factors firstly, some significant differences in attitudes between the administrators and the students in 4 of the 14 comparisons. Administrators considered financial pressures, poor attendance and grades, family pressure, and other reasons (motivations, program structures) would be more likely to force students to leave their accounting studies than students.

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The results for the external factors revealed some significant differences of opinion between students and administrators for 4 of the 14 factors. This result offered some support for H5. The internal factors revealed significant differences only at one of the four institutions. H5 has to be rejected as regards internal factor.

CONCLUDING COMMENTS

In Australia only three external factors were found to impact attrition rates. These factors are; financial, getting a job, and personal/family sickness. This suggests that attrition from accountancy courses in Australia is less impacted by external factors.

Students in Australia appear to be dissatisfied with four of the eight clusters. They appeared to be dissatisfied with lecture scheduling, registration, technological services, and college facilities and services. This result was not anticipated due to technological advances, newer facilities, and relatively easier enrolment procedures. In Australia four demographic factors were found to impact the external factors and therefore lead to high attrition. These factors are years of study, gender, reasons for choosing accounting studies, and marital status.

In Australia results showed significant differences in attitudes between administrators and students in 4 of the 14 external factor comparisons. Administrators considered financial issues, poor attendance and grades, family pressure, and other reasons (motivations, program structures etc.) would be likely to force students to leave their accounting studies but the students disagreed.

When the internal factors were compared, there were no significant differences in attitudes between the administrators and students in all 8 comparisons. On an individual institutions basis, only college 4 showed some significant differences in attitudes.

The model used in this research helps us to a better understanding of factors impacting college attrition and retention. It also appears flexible enough to be used in environments that are similar to Australia, and hopefully elsewhere as well.

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