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AN ENTITY EXCHANGE ANALYSIS OF ASSESSMENT IN SCHOOLS OF BUSINESS

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ABSTRACT

This paper analyzes assessment of student learning outcomes in schools of business by applying the accounting concepts of entity, exchange, and responsibility accounting to the structure of an educational organization. Results indicate that student outcomes will be enhanced by use of selective admission and recruitment of students who are capable of and motivated to learn. Further, schools of business cannot directly control student learning and should concentrate on controllable factors, such as teaching and the learning environment.

INTRODUCTION

For universities and colleges, assessment is integral to The Association to Advance Collegiate Schools of Business (AACSB) accreditation, as well as regional accreditation. Colleges with AACSB accreditation are well recognized as being quality institutions employing quality faculty. AACSB accreditation increases the reputation of the college, which could attract better-qualified students.

The AACSB frames assessment in terms of student outcomes (i.e. expectations of what students should learn from taking courses and earning a degree). Assessment also determines whether students have learned what was expected. The purpose of this paper is to analyze assessment of student learning outcomes by applying the accounting concepts of entity, exchange, and responsibility accounting to an educational organization, specifically a school of business. The term, school of business, is used to describe an entity offering business programs and is not intended to imply any specific organizational structure.

ASSESSMENT

AACSB accreditation requires schools of business to ensure a quality education is being provided and to validate that continuous quality improvements are being made. This process requires schools to perform rigorous self-evaluations to ensure they are meeting and continuously improving desired outcomes. Thus, an assessment of student outcomes is required.

Assessment is the process of identifying and evaluating student outcomes. However, assessing student outcomes must be preceded by a selection of program objectives and desired outcomes. Each department comprising a school of business (e.g. accounting, finance, marketing, etc.) must identify what will be evaluated before assessment can be conducted. Departments must first identify their assessment objectives along with an effective assessment process that will disclose whether the objectives are being met. This process entails determining degree or program goals, learning objectives, and the desired outcomes.

Palomba and Banta (1999) define outcomes assessment as "the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development" (p. 4). This definition emphasizes the aim of the

assessment process, which is to improve student learning. Such improvement could result from pedagogical changes and/or curricular changes.

The following sections are not geared toward any particular set of degree or program goals, learning objectives, or outcomes, but instead analyze the assessment process in general. First, the concept of social organization is derived and then applied to schools of business. Next, the concepts of entity and exchange are related to the school of business. The resulting organization structure is then used as a reference in analyzing assessment of business education. Finally, the concept of responsibility accounting is applied as a limiting factor.

ORGANIZATIONS

Organizations utilize inputs to create outputs. For education, many of the inputs (i.e., the resources employed) are well defined (e.g. faculty, buildings, utilities). However, the outputs (i.e. the results) of schools of business are not clearly defined. In addition, the role of the student in the educational setting is not clear. Some regard students as outputs, packaged and processed like units in a manufacturing plant, while others do not. There is a segment of the literature that views the role of student as output (Baker et al., 1994; Choi, 1993; Nelson, Baker, & Nelson, 1998; Emery, Kramer, & Tian, 2001). In an effort to determine what role a student plays in an educational settings' output, a closer look at organizational structure is first presented.

Organizational Structure

Willingham (1964) defines social organization as the combination of roles and positions. In social situations involving two individuals, a *role* is "a reciprocal set of rights and obligations," such as a doctor-patient role, a doctor-nurse role, a doctor-hospital administrator role. The doctor is expected to behave in a manner consist with each role. A *position* is a cluster of roles that belong together (i.e. a summary of all one's roles) (Willingham, 1964). Thus, the listing of all the doctor's roles and all of the nurse's roles are separate positions. Further, each role (e.g. doctor-nurse role) involves two positions (e.g. doctor and nurse positions), and a complete listing of all the roles (more precisely, half roles) for a given position indicates how this position interacts with other positions.

To illustrate further and to bring these definitions into the context of the paper, a teaching-related example is presented. Teachers have various roles including teacher-teacher role, a teacher-school administrator role, and a teacher-student role. The collection of all these roles is a position. A teacher plays the appropriate half role at the necessary times. As such, a teacher is not be expected to play the teacher-teacher role when interacting with a student. Rather, the teacher-student role would be the expected behavior.

Combining the concepts of role and position, one arrives at a concept of social organization. As Willingham (1964) notes:

> The essence of social organization of any group is just such interaction patterns and the positions and roles on which they rest. So to the extent that positions and resulting interaction patterns are present in a plurality of persons, social organization exits among them. This is the identifying feature or property of social organization. (p. 546) (Quoting Haas, 1956, p. 35)

The concept of social organization is the first step in defining an organization, its boundaries, and related positions to determine the role of student in an educational setting.

Willingham (1964) points out that when the above concept of social organization is adopted, determining boundaries (i.e. which positions to include in an organization) becomes a matter of preference and depends on the purpose of the analysis between organizations. Consider the student role in a school of business. Depending on the school's objective, it may be useful to include a student's position within the organization or it may be useful to define them as separate from the organization. The concept of social organization is flexible enough for either grouping (Willingham, 1964).

ROLE, POSITION, AND ORGANIZATION APPLIED TO EDUCATION

Schools of business have many objectives; among them, is providing students with an education (i.e. output). Education in its most basic form consists of teaching and learning. Teaching can exist in many forms (e.g. lecture, seminar, closed circuit television, computer-aided instruction, textbooks). However, learning is always a process of individual internalization. As Mazur (1994) states "although even specialists have difficulty defining the term *learning* precisely, most would agree that it is a process of change that occurs as a result of an individual's experience" (p. 2). Schools of business assessing their objectives need to define the positions in the organization first in order to focus on areas within their control.

Many positions exist within a school of business (e.g. teacher, administrator, registrar, and advisor). The roles relating to these positions include a teacher-student role, an administrator-student, registrar-student role, and advisor-student role. The grouping of these roles constitutes an organization, as previously discussed. However, should all positions be included when defining an organization that will be analyzed and evaluated for business education? Specifically, should a student position be included within a school of business?

Willingham's (1964) concept of organizations is flexible enough to be consistent with either combining students and schools into a single organization or separating students from the school. It is suggested herein that insight can be gained concerning the assessment of the education process by viewing the school and the student as two distinct elements. In particular, such an approach eliminates confusion regarding the inputs and outputs of educational institutions.

INPUTS, OUTPUTS, AND THE FUNCTION OF SCHOOLS OF BUSINESS

Schools of business, like all organizations, utilize inputs to create outputs. The inputs include facilities, faculty, and utilities, among others. These are easily identified when students are considered separate from the school of business. From such a viewpoint, it also seems clear that the output of the school is "teaching" and "a learning environment." There is little more a school can do regarding education (and omitting research) than provide teaching and a learning environment in which individual internalization (learning) can take place. Schools cannot "learn" students anything, but they can teach and produce a learning environment. Learning, however, can occur without an educational institution.

APPLYING THE ACCOUNTING ENTITY CONCEPT TO ORGANIZATIONS

A transition from an educational organization to an accounting entity will facilitate analysis of the assessment process. An accounting entity is one that accounts for the business transactions of another entity. The transition can be made by applying the concept of "exchange"

in a manner similar to Willingham (1964). Willingham (1964) states an exchange is "a compromise of interests on the part of the parties in the course of which goods or other advantages are passed as mutual compensation reciprocally from the control of each to that of the others" (p. 549) (Quoting Weber, 1947, p. 169). The term "exchange" is also referred to as "transaction" and "exchange transaction."

To understand the concept of exchange and the application of the accounting entity to an organization, it is important to understand the positions involved. Positions within an organization must be classified as either representative positions or non-representative positions. Moreover, as Willingham (1964) notes, representative positions can commit the organization to an exchange and there can be no exchanges without such positions. Non-representative positions only facilitate the exchange within an organization. This concept is important to understanding the accounting entity and concept of exchange because the act of accounting is only concerned with exchanges between different entities because this is the only type of exchange that is recorded in the accounting records. Thus, an accounting entity is nothing more than an organization with its exchange representative positions identified. In a school of business, representative positions are those that facilitate the exchange of goods as mutual compensation from one party to another.

THE STUDENT/SCHOOL EXCHANGE

Applying the accounting entity concept further supports the exclusion of the student position from the school of business organization. The student position cannot be defined as non-representative because they do not provides goods or advantages within the school of business. However, students can be classified as representative positions, but not representing a school of business.

Consider the Student-Admissions role, where students pass a good (e.g. money) as compensation for good received (e.g. admission into a school of business where a teaching and learning environment is received). This role is the only exchange of goods as mutual compensation between both parties; there is no other point in time that an "exchange transaction" occurs. Thus, according to the accounting entity concept, the Student-Admissions exchange adds strength to not recognizing the student position as part of a school of business organization and supports defining each position as two distinct parts - schools and students.

In summary, the student is not one of the inputs to be used by the school, nor is the student an output of the school. The student is a purchaser of the output of the school, and the school itself is a seller (i.e. the school and the student engage in an exchange of educational services for monetary consideration). Clearly, then, the student and school form two separate accounting entities. Further, distinguishing a separation between the two entities is important because an entity should focus on what it can control (e.g. schools of business should focus on improving teaching and learning environments).

IMPLICATION OF APPLYING THE ENTITY CONCEPT

Applying the entity concept to education shows support for the separation of the student position and the school position. Schools utilize inputs (i.e., resources) to generate outputs (i.e., teaching and a learning environment). This leads to several implications for schools of business regarding the outputs (i.e., teaching and a learning environment) because they are not necessarily being assessed. Instead, student outcomes are being assessed and evaluated.

Schools with graduates who perform exceedingly well gain prestige (i.e. output). Thus, schools with prestige as a goal would strive to have their graduates perform well. This can be accomplished in two ways: 1) create first-class teaching programs and learning environments, and 2) selectively admit students into the school.

First-Class Programs and Learning Environments

The focal point for schools of business should be the outputs - the teaching performed via instructors and the curricula (i.e. programs of study) and the learning environment (those structured and unstructured situations designed to enhance student learning, e.g., library facilities, exposure to business professionalism). These concerns should dominate both in the determination of goals (and subsequent design of business programs) and in the evaluation of how well the goals have been achieved. Periodically, actual teaching services must be evaluated by comparison with stated goals. Additionally, the outputs desired indicate what input resources will be needed.

Selective Admission of Students

Administrators desiring to enhance the prestige of their institution's business programs should consider selective admission as well as the creation of premium grade programs. Students selected should be students both capable of learning and motivated to learn. Selective admission can be interpreted via common business terminology as a decision by the school (i.e., administrators) concerning to whom the institution will sell its services. Because of selective admission, even institutions with equal inputs and outputs (i.e., resources, teaching programs, and learning environments) might be viewed differently by the market for graduates.

THE MARKET VIEWPOINT

The market for graduates of a school of business probably takes a viewpoint regarding students that is contrary to that presented above. The market most likely views students as an output of the school they attended. The school attended (as well as grades, interviews, and other criteria) thereby becomes a basis for evaluating students (i.e., job applicants).

The business curriculum and pedagogy can be designed to provide teaching and a learning environment incorporating the objectives and competencies deemed necessary by the market for business graduates. In other words, the output of educational institutions can be modified to incorporate learning experiences that include each skill and knowledge desired by employers. The "teaching" and "learning environment" can be controlled and refined to make available the knowledge and skills that students need to learn. However, how much control does the school exert over student learning?

RESPONSIBILITY ACCOUNTING

Anthony, Dearden, and Bedford (1984) state, "management control is the process by which management ensures that the organization carries out its strategies" (p. 11). A basic principle of management control is responsibility accounting. As Baiman (1982) notes, "Responsibility accounting states that a person should be evaluated only on the basis of those factors that he controls" (p. 197). A person, then, should not be held accountable for things the person cannot control. This concept can be extended and applied to a department, a division, or

an entire organization. An organization should not be held accountable for things the organization cannot control.

Should schools be held accountable for student learning? How much control does the school have over whether or not a student learns? Schools can control teaching and a learning environment to create an atmosphere where learning can occur; they may even employ coercion; but, again, schools cannot "learn" students anything.

THE AACSB, CONTINUOUS IMPROVEMENT, AND THE ROLE OF THE STUDENT

A dominant theme across all AACSB Accreditation Standards is "continuous improvement." In Part C, Learning and Teaching, of the current accreditation standards, the AACSB (2016) states, "[High-quality] schools have systems in place to assess whether learning goals have been met. If learning goals are not met, these schools have processes in place to improve" (p. 30). Processes for improvement involve changes to goals, curricula, and pedagogy (AACSB, 2016, p. 31).

It is interesting that the AACSB is almost silent regarding the student's role in learning, assessment, and continuous improvement. In the updated AACSB (2016) Accreditation Standards, students are referred to as "part of the School of Business's external market and also part of the school's constituency" (p. 9). These views tend to add support for the position in the current paper that students are separate from the school of business. A more direct statement regarding students is made by the AACSB (2016): "Students who are matched to the expectations of degree programs - as well as prepared and supported to achieve those expectations - are essential for successful educational programs" (p. 24). The AACSB seems to assume that the students that schools of business have chosen to admit are capable of and motivated to learn. Since the AACSB seems to recognize the student as an object distinct from the school, it is interesting to ponder why AACSB chooses to ignore the outputs of a school of business (i.e. teaching and the learning environment).

CONCLUSIONS

Analysis has shown that students should be considered as separate from the school of business. Students cannot be controlled and they are the primary unknowns in an education setting. Little is known about whether students have the capacity to develop the capabilities the market demands. Thus, selective admission should be utilized to increase the quality of graduates going to the market resulting in higher prestige of a school of business. Lastly, because teaching and a learning environment are controllable outputs in a school of business, more attention should be focused on these to facilitate the learning process.

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BUILDING A COOPERATIVE LEARNING ENVIRONMENT IN A FLIPPED CLASSROOM

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ABSTRACT

This paper examines a study which combined the effectiveness of a flipped classroom (i.e., students are instructed outside of the classroom and complete enrichment activities inside the classroom) with a cooperative learning approach (i.e., the instructional use of small groups in which students work together to maximize their own and each other's learning). The researchers implemented a flipped classroom approach in a project management course and utilized cooperative learning activities to enrich the material that students had previously learned independently. Based on the end of course written evaluations, students found the combination pedagogy to be the most valuable learning experience of the course. In addition to students learning the technical skills necessary to be project managers, they also learned the vital role that project management plays in the project development process by working cooperatively with each other throughout the course. The result demonstrates that the classroom flip, if properly implemented with cooperative learning, can lead to increased student learning.

INTRODUCTION

The learning environment in higher education has changed drastically in the past several years. A literature review identifies significant changes in learning models and the learning environment as reported widely in recent research. Relevant best practices are described in the first part of this research paper. Courses are evolving into hybrid course models, blending online and classroom activities, flipping classes with experiential learning in the classroom, and sometimes including an integrated lab component often with collaborative student groups (Schreurs, 2013.).

The assessment of quality in higher education includes ever-more personalized measurement of how students learn best. Leaders who are trying to make sense of emerging innovations should understand that these changes in higher education do not necessarily require a complete overhaul. The learning tools and platforms created today are both transformative and accumulative. A look to the future finds an expansion of the "anytime, anywhere" learning ethos that has already gained a foothold in academe and among entrepreneurial providers. The power of technology on college and university campuses in the future might happen behind the scenes with the expanding use of Big Data to help students and institutions make better decisions (Jeffrey J. Selingo & Ben Wildavsky, 2015.)

Although the traditional lecture model prevails in higher education as the most popular teaching method, recent technological advances make blended or hybrid learning classrooms possible. In the blended or hybrid model, students learn at least in part via an online delivery of course content. In a flipped classroom, also known as an inverted classroom, a type of blended learning approach is used whereby traditional lectures are moved outside of the classroom through the use of online videos. A growing number of faculty in higher education have begun using the flipped classroom model in their courses. The availability of online videos helps

students learn topics that are difficult to explain in a standard lecture. The availability of online videos helps students learn topics that are difficult to explain in a standard lecture. Knowledge transmission is delivered through videos that students view outside of an in-house classroom. Classroom time is then freed up so that the instructor may challenge students using more forms of active learning than what is usually employed in lectures. Although the flipped classroom is particularly well-suited for an active learning methodology, it is also acknowledged that traditional lecture-based courses may also benefit from incorporated active learning components (Cavanagh, 2011)

Flipped Classroom

A flipped classroom is one in which students are instructed outside of the classroom (e.g., using the video lectures mentioned above) and do "homework" or enrichment activities inside the classroom, once they have learned the material. Specifically, a flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Short video lectures or instructional materials are viewed by students at home before the class session, while in-class time is devoted to exercises, projects, or discussions.

The concept of a flipped classroom utilizes methodologies including: active learning, student engagement, hybrid course design, and course podcasting. In a traditional educational model, how students interact with each other is oftentimes a neglected aspect of instruction. Instructors devote the majority of their preparation time arranging for interactions between students and the materials (i.e., textbooks, curriculum programs). Instructors do not emphasize the time spent interacting with their students or how students should interact with one another. The value of a flipped class is in the repurposing of class time into a workshop where students can inquire about lecture content, test their skills in applying mastered knowledge, and interact with one another in hands-on activities. During class sessions in a flipped classroom, instructors function as coaches or advisors, encouraging students in individual inquiry and collaborative efforts. Thus, more active learning activities and instruction are utilized within the classroom setting. The teamwork component of the course becomes as important as individual learning. As a result of this pedagogical shift, students will be better prepared for the collaboration and teamwork required in most careers.

There is no single model for the flipped classroom. The term is widely used to describe almost any class structure that provides pre-recorded lectures followed by in-class exercises. Educators have been working to break the lecture-centered instructional model by shifting the focus from the curriculum pacing guide to student learning needs as the driver of instruction. Faculty are increasingly turning to an alternative model of instruction called Flipped Learning in which digital technologies are used to shift direct instruction outside of the group learning space and into an individual learning space, usually via videos (Noora Hamdan, Patrick McKnight, Katherine McKnight and Kari M. Arfstrom, 2013).

Case study teaching has been extolled for its ability to engage students and develop critical-thinking skills, among other benefits. There are some problems with a case study approach: greater preparation time from instructors, student resistance to novel teaching methods, and a concern on the part of many instructors about content coverage. The "flipped" approach to teaching has become particularly attractive because of the availability of internet resources including audio and video on virtually any subject, frequently narrated by some of the world's outstanding instructors. Recent research paper states the advantages of the flipped classroom. The article also identified two major problems that a flipped classroom approach

would bring to students. The flipped classroom is similar to other methods that depend heavily on students preparing outside of class (Clyde Herreid and Schiller, 2013.)

Cooperative learning

Cooperative learning is the instructional use of small groups in which students work together to maximize their own and each other's learning. (HOW ABOUT: The cooperative learning model helps strengthen individual performance while it is focused on accomplishing team objectives. Particularly in an information systems class, it is vital that students learn to apply their individual efforts toward stated team goals. This approach helps produce more high-quality graduates for tomorrow's workforce.) Many studies indicate that students exposed to cooperative learning environments show a greater effort to achieve than students involved in learning on their own (i.e., when not learning in a group or as part of a team) (Springer, Stanne, & Donovan, 1999; Johnson, Johnson, & Stanne, 2000; Hassanien, 2007; Roseth, Johnson, & Johnson, 2008). Instructors are often afraid to implement cooperative learning in the classroom because it requires them to give up some control. However, this method of instruction has been shown to increase student communication skills and academic achievement if done correctly. The question we asked for this study is how to effectively implement cooperative learning to increase group and individual student learning performance in a flipped classroom environment. This paper concludes with an opportunity to discuss and introduce tools that instructors can implement in their flipped classroom courses.

Cooperative learning

Cooperative learning environments strive to reinforce a student's learning while at the same time encouraging students to positively influence the learning of fellow members of the group. Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve the understanding of a subject for everyone on the team. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of cooperation and group achievement. Cooperative groups increase opportunities for students to produce and comprehend language and to obtain modeling and feedback from their peers. Much of the value of cooperative learning lies in the way that teamwork encourages students to engage in such high-level thinking skills as analyzing, explaining, synthesizing, and elaborating ideas and established goals.

In cooperative learning, the instructor acts as a facilitator, a tutor, a resource, but is not the source of all course content. In this model, students are also content sources through their own research and analysis. The goal of the cooperative learning model is to foster independence, teamwork, and critical thinking.

CASE STUDY: PROJECT MANAGEMENT COURSE IMPLEMENTATION

"Project management includes the processes of initiating, planning, executing, controlling, and closing a project in order to meet the project's goal" (Bunin, 2003, p. 4). A project goal is met when the required tasks are completed to produce an agreed-upon deliverable within the established time and budget constraints (Bunin, 2003). Gido and Clements (2003) offer another definition. They refer to a project as an endeavor that is established to accomplish a

specific objective by completing a unique set of interrelated tasks. In their definition, Gido and Clements address the need for "effective utilization" of resources (p. 4). Balancing the triple constraint of time, budget, and scope is an important concept in project management. Although it is certainly imperative to accomplish the scope and performance requirements as dictated in the project plan, it is equally as important to complete the project within the time and budget allotted.

Throughout their academic careers, students should strive to gain the knowledge and skills necessary to get jobs in the real world after graduation. During their careers, most students will work on specific projects (i.e., temporary endeavors that have a defined beginning and end in time, and therefore defined scope and resources). In a project management course, teaching students how to successfully control a project is only one aspect of that knowledge and skill base. It is important that students learn that effective project management processes and procedures are applied to all related tasks. Students must understand how to balance the triple constraint of time, budget, and scope while effectively and efficiently managing a project. They must utilize the skills necessary to balance their time and thereby their budget against the end goal of an assigned project.

Within the scope of a team project, students act in the role of designers, shareholders, and project managers. They must be aware of the time limitations against which they are working. Their project design must be such that it satisfies the project criteria, but they must balance that design against the amount of time (i.e., one semester) that they have to complete the project. The instructors for project management courses act as project supervisors throughout the semester. Instructors oversee all development and assure that project milestones are met. Additionally, instructors approve the project design from the initiating stage to execution and finally to a finished product.

Flipped Classroom and Cooperative Learning

Our objective is to utilize a flipped classroom model (i.e., students are instructed outside of the classroom and complete enrichment activities inside of the classroom) in conjunction with cooperative learning techniques (i.e., the instructional use of small groups) in a project management course. Students view multiple lectures of five to seven minutes each class. Online quizzes or activities are used to intersperse to test what students have learned. Immediate quiz feedback and the ability to rerun lecture segments may help clarify points of confusion. Instructors lead in-class discussions or turn the classroom into a studio where students create, collaborate, and put into practice what they learned from the lectures that they view outside class. As on-site experts, instructors suggest various approaches, clarify content, and monitor progress. They might organize students into an ad hoc workgroup to solve a problem that several students are struggling to understand. Because this approach represents a comprehensive change in the class dynamic, some instructors have chosen to implement only a few elements of the flipped model or to flip only a few selected class sessions during a term.

Once students have acquired fundamental project management skills, knowledge and methodology (through weekly lab assignments), they embark on a team-oriented, real-world project. The team project is divided into the following five milestones to help students apply scope, time, and cost constraints to their deliverable:

1. Team and project selection
2. Initiating and planning

3. Project proposal
4. Monitoring, controlling, and executing
5. Group presentation and project close-up

Milestone 1 – Team and Project Selection Memo

The first task for the project is to define a student team. Teams consist of two or three students. When you assemble a team, you bring together people who represent diverse experiences, skills, personalities and social backgrounds. Had you not brought these people together for the project, they may not have naturally gravitated to one another to form friendships or to engage in social interaction. Yet now these people must work together to achieve a specific objective. Students must learn to manage group interactions and unite very different people to accomplish established goals. The advantage is that the different experiences and skills provide you with tremendous opportunities to devise innovative solutions to the problem or task you face. The disadvantage is that the differences, if not managed properly, can create endless stumbling blocks and make it difficult to achieve any results.

In the first two weeks of the course, students learn how to build a team, create a team goal and how to work on the team activities as well as to learn the effective problem-solving tools and techniques. The instructor can take advantage of this stage to give students pre-assessment surveys and tests to review the pre-knowledge that the students should have prior to taking this course.

- Team members should have compatible schedules outside of class.
- Students are expected to meet their team's expectations for attending team meetings, completing individual assignments, and contributing to the integration of those assignments into a cohesive team submission. Team members must make a reasonable attempt to inform their teammates of meetings and to contact their teammates if they have missed a class or a team meeting. Teams should promptly notify the instructor of attendance or performance problems.
- Each team member must document all of their personal activities related to the team project. The documentation will include dates, times, and descriptions of work completed and must be available to the instructor on request. Team members who do not contribute adequately to the project will have their personal project grade adjusted accordingly.

The use of personal journals is an important part of the class. The project constraint of time is addressed through these journals. Instructors review the journals, just as they would view a work log or meeting recap in a business setting, to assure that each team member is working at an equal level on the project. Students can also use the log to do a cost analysis, when given a set figure for various tasks. For instance, project design work is generally given a higher cost than tasks associated with executing.

For this milestone, student teams submit a dated memo to the instructor that includes the team's chosen project as selected from a list of businesses, together with each team member's name, phone number, and e-mail address. Each member must sign this memo, and all team members should have a copy of this memo.

Once the team has their memo approved by the instructor, they will begin to create a project charter for the company. The scope of the project should be neither too broad nor too trivial. Again, students must balance the project constraints of time and scope when determining what to include in the scope. The teams have to find a balance that considers their schedules, the total calendar time allotted to the project (approximately 10 weeks), and their project

management skills. To abet the students in this area, instructors define minimum project features that constitute 75% of the project requirements. The student team determines additional relevant features to add to the site for the remaining 25% of the project.

Milestone 2 – Initiating and planning

It is important for students to analyze the competition of the type of business chosen for their project. To this end, each student team must complete an assessment of three related projects currently available for a similar business. For the successful completion of this milestone, they must discuss the benefits and/or problems with the three projects. They include such things such as budget, schedule, appropriateness for the topic and intended audience. Finally, they discuss which aspects of the example project might be useful and which they would change for their project. The assessment of each site should be at least one printed page. Students also attach a printout of the projects identified.

Milestone 3 – Project proposal

Once the team has completed initial project planning, they must thoroughly analyze the proposed project needs and expectations. Before they are officially allowed to develop the project structure, they must seek permission from the instructor by documenting their complete analysis in a project proposal. This document is written as an executive summary memo that addresses the following points:

- One paragraph statement of the proposal
- Description of the company and statement of needs for the proposed project.
- Outline of work to be completed, including strategic methods and criteria for collecting project data.
- Justification for the project (i.e., potential value of the project).
- Shareholders profile.
- Benefits to all Shareholders (i.e., company, users).
- Outline of work to be completed, including the strategy for collecting data.
- Evaluation strategy including budgeting methodologies, schedule, team management plan, and communication plan.
- Anticipated problems and change management.
- A one page description of the project design and content of your proposed project.
- A graphical representation identifying the organization, layout and anticipated issues.

As long as the above points are adequately addressed, permission to pursue the proposed project is granted.

Milestone 4 – Monitoring, controlling, and executing

One of the most valuable things that teams discover is that it is difficult to keep the scope within an achievable time frame. For monitoring and controlling, a student team sits with the instructor and reviews what work has been done thus far, and what work remains. As the project supervisor, the instructor analyzes the feasibility of the students completing the project scope submitted within the given time frame.

In addition to the stage in this milestone, student teams must include a report that describes their work strategy, including samples of the user tests, the actual data collected, and their analysis of the results. Although studies have shown that the optimum number of test users

is five (Nielsen, 2000), the minimum requirement is ten. This helps students realize trends and account for different groups of users.

Milestone 5 – Group presentation and project close-up

During the semester, every team is developing a project for a different client with unique objectives. One of the most interesting milestones completed by the teams is a presentation of the project to the rest of the class. Every team member is required to actively participate in the presentation. Minimum content requirements are given to the students prior to their presentation. The presentations are timed. Finally, the presentations include a demonstration of the major elements of the project. Since the presentations are completed at least one week prior to the final submission, many teams are able to get peer feedback and ideas for the additional features that can help improve the project for the client and target users.

The final deliverable for the project is the submission of the following material in a three ring binder.

- Printouts of all related documents for completed tasks that incorporate feedback from instructor, peers, and potential users.
- Results of the shareholders' feedback.
- A one-to-two page written report describing the project. In this report, students discuss features that they successfully incorporated, and possible future improvements. They also describe how the content meets the owners and users' needs.
- Complete activity logs for each member must be submitted with the project. Failure to provide activity logs will result in a score of zero for the team member whose logs are missing.
- A flash drive containing all files relating to the project.
- Copies of all previously submitted materials.

SUMMARY AND CONCLUSION

Based on the written evaluations included with the final documentation package, students find this combination pedagogy (i.e., combination of flipped classroom and cooperative learning) to be the most valuable learning experience of the course. In addition to students learning the technical skills necessary to be project managers, they also learn the vital role that project management plays in actual project development. Students learn first-hand that they must balance the triple constraints of scope, time, and budget. Although most student teams are quite aggressive in their original project document, they immediately see that the time constraint prohibits them from accomplishing everything that they set out to accomplish. The original project scope is somewhat diminished once students realize that the 16 week semester is not long enough to accommodate all of the skill learning that must take place in addition to the development effort itself.

Learning a skill such as project management makes the students very valuable in today's business job market. Our students are able to easily get jobs because there are so many positions open, and so few people skilled in the necessary project management methodologies and technologies. In addition, our students have learned first-hand how to balance the scope, time, and budget of a project that will help them satisfy the initial goals of a project within the very real limitations that affect all projects. Accordingly, this project serves as a mechanism for bridging business and academe.

The instructors for the course have an easier time controlling students' learning curves based on the whole project process. Since the instructors treat the project as a true business venture, they can assess the success or failure of the project in the same way. Instructors rely heavily on the feedback that the students conduct with real users in order to determine the success of the functional features of a project.

In summary, in a traditional lecture, students often try to comprehend what is being said at the instant the instructor says it. Students cannot stop to reflect on what is being said, and they may miss significant points because they are trying to transcribe the instructor's words. By contrast, the use of video and other prerecorded media puts lectures under the control of the students: they can watch, rewind, and fast-forward as needed. Devoting class time to the application of concepts might give instructors a better opportunity to detect errors in thinking, particularly those that are widespread in a class. At the same time, collaborative learning projects can encourage social interaction among students, making it easier for them to learn from one another and for those of varying skill levels to support their peers.

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ON THE INCREASING SALARIES BEING PAID TO UNIVERSITY PRESIDENTS

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ABSTRACT

For the past decade or more, the salaries of the Chief Executive Officers of American firms have been a topic of heated debate. This debate in the corporate world of business seems to have more recently spilled over into at least some of the salaries that are being paid to the presidents of various universities. Today, there are scores of university presidents receiving a million or more in yearly compensation. On top of the yearly salary, there are the perks, bonuses, and retirement costs that can add another million or two to the package.

Citing examples from the corporate world as well as higher education, the objectives of the paper are several. First, like in the world of business debate, is the difference in the salary of the person at the top and those further down the hierarchy widening? Second, it is an attempt to determine to what extent the rising salaries of university presidents are problematic. Third, to investigate and propose some ratios that might be appropriate for comparing those differences across campuses and over time. Fourth, the study looks at average faculty salaries and how those compare to average presidential salaries. And, fifth, it is an attempt to provide some insight into the factors that boards of education use in determining presidential pay.

Among the findings and conclusions of the paper are the following. There remains a big gap between what is happening to CEO salaries in the corporate world and those in higher education. On the other hand, there appears to be a slippery slope effect taking place in salary creep for presidential salaries. This slippery slope is creating a ratcheting up effect on various levels just below the president. All contributing to what may be a more pressing issue, requiring a need for further analysis, and that's the growing bureaucratic costs of running a university.

INTRODUCTION

For the past decade or more, the salaries of the Chief Executive Officers of American firms have been a topic of heated debate. Some of the important issues at stake were the amount of pay for these executives, the perks that often accompanied their salaries, stock options that often were much more than just the salary, and the CEO's compensation package as compared to the average, the median, or the lowest paid employees in the company. The essence of this debate revolves around the fairness of their salaries as compared to those throughout the organization and the justification or logic for such high amounts to those at the very top of the hierarchy.

The debate in the corporate world of business seems to have more recently spilled over into at least some of the salaries that are being paid to the presidents of various universities. Today, with scores of university presidents receiving a million or more in yearly compensation, while charging $50,000 plus in yearly tuition, and total student loan debt exceeding $1.1 trillion dollars, perhaps the increasing pay scales for university presidents should be scrutinized more closely.

The objectives of this article are several. First, to determine, like the debate in the corporate world, is the difference in the salary of university presidents and those further down

the hierarchy widening? Second, it is an attempt to determine to what extent the rising salaries of university presidents are problematic. Third, to investigate and propose some ratios that might be appropriate for comparing those differences across campuses and over time. Fourth, it is an attempt to provide some insight into the factors that boards of higher education use in determining presidential pay.

EXCESSES OF CEO PAY IN THE CORPORATE WORLD

First, some examples of what many consider to be gross excesses of CEO pay in the for profit corporate world. The median pay for the Chief Executive Officers of 500 companies in the Standards & Poors Index was $11.4 million in 2013; roughly 257 times the income of the American worker. While Oracle's CEO Larry Ellison only made $1.5 M in compensation in 2013, he also was awarded $78.4 million in stock grants, thus making him the nation's highest paid CEO that year. Anthony Petrello, the CEO of Nabors Industries was paid $68 million in 2013, plus Nabors spent $60 million to buy him out of his old contract. CBS's CEO, Leslie Moonves received $66 million in 2012 (Nelson, 2014).

The phenomenal success of Chipotle Mexican Grill has resulted in the Co-CEO's of that company both being paid $28.9 million yearly. That figure was more than old line company's Boeing and AT&T paid their CEOs. The co-founders earned 1,192 times the median salary at the company; which means the average worker at Chipotle would have to work 1,192 years to equal what the company paid its two co-CEOs (Che, 2015).

The ratio of CEO pay to average worker pay has been on a rapid incline over the past few decades. In the 1960-70's the ratio in America was about 20-1. By the 1980's, it was in the 40-1 range; in the 1990's it was 200-1. In recent years it has been as high as 500-1 (Stropoli, 2014). Ron Johnson, in his short eighteen months at J. C. Penny during 2012-13, was paid 1,795 times the average pay of a U.S. department store employee (Linker, 2014).

Another way of comparing salaries is by breaking them down into hourly amounts. In 2013, the CEOs for both McDonalds and Starbucks made more than $9,200 an hour. That was more than 1000 times the hourly wage of their sales associates (Gelles, 2014). Several other companies were in the 1000 times category, including Dollar General. To make it even more revealing, the CEO pay, in these examples, was calculated by dividing each CEO's total compensation by 60 hours a week rather than 40. To their credit, or criticism, these firms operate in an industry where low wages abound at the lower levels of the organization.

RECENT EXAMPLES OF PRESIDENTIAL SALARIES IN THE UNIVERSITY RANKS

Recognizing up front that the examples of huge salaries citied here are for the most part outliers when compared to thousands of university presidents, it may be representative of what is an emerging trend in compensating these caretakers of American universities. As universities turn more and more toward a corporate management model, they may also be following the lead of their corporate counterparts as concerns pay at the top.

The first to cross the million dollar mark in the public university ranks was E. Gordan Gee at Ohio State University (Stripling, 2013). He was paid $1.3 million in 2011-12. By 2013, Mr. Gee remained the highest paid college president in the United States when he was paid over $6 million by Ohio State. President Gee is now at West Virginia, in part due to some anti-Catholic comments he made while President at Ohio State.

One of the highest paid public university presidents in 2013 was Hamid Shirvani of the North Dakota University System (Pfeiffer, 2014). Note this is North Dakota University. He was there for less than a year and received a $1.3 million salary. This million dollars plus salary was awarded even though he had a poor track record to begin with. He had previously received a vote of no confidence at California State University -Stanislaus; and prior to that was run off as Dean at the University of Colorado - Denver School of Architecture and Planning.

The top five in terms of compensation for presidents at public universities for the 2012 fiscal year were: $2.9 million at Pennsylvania State University; $2.5 at Auburn University; $1.9 at Ohio State University; $1.9 at George Mason University; and almost a million at Ball State University. The median total compensation for public college leaders is $441,392 (Stripling, 2013).

Although increasing, the number of public universities paying their presidents more than a million dollars a year is much fewer than compared to their private counterparts. During the 2011-12 year, there were only four public college presidents making over a million. On the other hand, a 2014 report found 42 private colleges in America paying their presidents over a million dollars in compensation (Stripling, 2013). The University of Chicago president earned $3.4 million in 2011. He made $1,113 for every million the University of Chicago spent. He also received free housing in what had to be a very costly housing market.

The third highest paid president at a private university in 2011 was Dennis J. Murray, of Marist College. As reported in one article, this is a university of 6000 students which is famous for nothing, yet President Murray was paid $2.7 million (Pfeiffer, 2014). Chatham University, a small woman's college with barely 2000 students, and accepting male students in 2015 due in part to financial woes, paid their President Esther Barazzone $1.8 million. Chatham University has a modest university budget of $48 million. President Barazzone was making $37,545 for every million the university spent. Anthony Catanese got $1.8 million in 2011 as President of Florida Institute of Technology plus a red Corvette when he left. Florida Institute of Technology was recently named America's worst university by Florida Atlantic. All of the above examples of excess took place while the median pay for private university presidents in 2011 was $410,523 (Pfeiffer, 2014).

MEANWHILE: PAY FOR FACULTY

The national average salary for full professors in fiscal year 2013 was $112,199 (Chroncile, 2013). The average salary for Associate professors dropped to $79,575; while Assistant Professors averaged $68,318. Obviously, there are huge differences between colleges and what they pay their respective faculty. The highest average full professor salary was $215,500 at Columbia University. Texas A&M University faculty averages did not make the top 50. They paid $128,200 as an average for full professors and an average of $88,100 for Associate Professors.

The national average for all ranks of faculty in 2013 was $80,863. Again, averages vary significantly not only by universities but by state as well. For instance, the New Jersey average was $104,499 (note that faculty are unionized in that state); while in Texas the average was $80,863.

IT'S NOT JUST THE PAY FOR UNIVERSITY PRESIDENTS

Perks, both in corporate America and academia can be enticing and expensive. University presidents, as well as corporate CEO's, invariably negotiate for and are given more than just a salary for their position. More often than not, their homes, utilities, cars, and insurance are part of the package. In many cases, the biggest part of the entire package comes in the form of substantial payouts of years of accumulated deferred compensation or retirement benefits. Often, these other forms of compensation are buried deep in the budget, provided that it's public information to start with.

As an example, the president of Auburn University only made $482,070 in base salary in 2011-12, but his total earnings for the most recent year amounted to $2.5 million, mostly from deferred compensation. The president of Ball State University, fearing a backlash of sentiment recently because the budget was tight and tuition was increasing, turned down a recent pay increase. She asked that her salary of $431,244 be kept the same as the previous year. But, a deferred compensation payout plan, in combination with several other benefits, brought her yearly total pay package to $984,647. Keep in mind this is Ball State. At Marist University, mentioned early in the article as having the 3rd highest-paid private university president, their board saw fit to allocate $2 million toward the retirement of the president. The Board at Northeastern University created a $2 million retirement package for its president when their university moved from number 98 in the US News and World Report on best colleges to 49 from the year 2006 to 2011 (Stripling, 2013).

Deferred compensation plans are common in school systems, be it secondary education or at the university level. A board may allocate hundreds of thousands of dollars a year in deferred pay which can be invested tax free until the time of payout. It serves as a retention tool, because those recipients typically forfeit those dollars if they resign before a specified date.

MEASURING UNIVERSITY PRESIDENTS' PERFORMANCE AND DETERMINING THEIR SALARY

While strong stock returns are often seen as justification for corporate CEO pay, measuring the performance of university presidents is more ambiguous. How do boards measure the performance of the leaders of the universities that ultimately fall under the board's responsibility? A better question might be: how should they be measured? Some of the more typical measurement tools for presidents of universities include: the school's records of student and faculty achievements; their relationships with students, faculty and boards; their fund-raising abilities; their legislative successes; engagement with industry leaders; success in achieving the university's strategic vision; diversity efforts; etc.

How much, or how little to pay an incoming university president can be a fairly simple task, and one where there is often little rationale justifying the final amount College presidential salaries often don't necessary correlate with the overall affluence of the college. The president of Harvard, Drew Faust, earned $899,734 in total compensation for 2011 (Stripling, 2013). Harvard's budget is close to $4 billion dollars, and it's president's salary wasn't even in the top 50 highest-paid president's in the country.

When high salaries are open and a matter of public record, the resultant visibility serves as an incentive to escalate salaries. This has been the case in the business world as well as the academic field. The Board of the University of Pennsylvania was surprised in 2010 to find that their president was trailing 14 other president's in compensation as reported by the Chronicle of

Higher Education. As a result of that insight, the Board boosted their president's salary by 43% to over $2 million, thus pushing her to number six on the list (Stripling, 2013). Guess one can do that with a $5.6 billion dollar budget.

When boards are looking at determining a salary to offer prospective candidates, their thinking is often: do we want an "average" president or do we want the best? If average is in the low to mid $400,000 range, what does it take to get the best? On the other hand, excessively high salaries can become unflattering in the public's eye. Possible university donors might think twice about giving if they are turned off by what they see as excessive presidential salaries.

Other contributing factors to be considered when determining one president's salary would be what the school has paid in the past. Often what peer institutions are paying is an influence, and/or what the flagship is paying and scaling it down from there.

TWO UNIVERSITY EXAMPLES - TAMU AND TAMUT

In the spring of 2015, Texas A&M University announced their new President, Michael Young, would be paid a million dollars annually. This would be more than twice what the previous President of the A&M campus was paid. In addition to the annual salary, he would receive a yearly $200,000 housing allowance, an $800,000 signing bonus and be eligible to receive up to four $100,000 performance bonuses. Both the Chancellor and Board Chairman justified the amounts by saying that the new President does not compare to the last president and that he was one of the great sitting presidents in all of the country (Young was previously President at the University of Washington where he was being paid $853,000 annually) (Werund, 2015). Texas A&M's budget is approximately $1.5 billion. At the smallest of the ten A&M campuses, Texas A&M University-Texarkana, where the budget is $33 million, the current president's salary is $250,000 plus some modest benefits.

LIMITATIONS OF RESEARCH

There are several things that complicate finding exact salaries paid to the top official at universities, thus making it difficult to calculate comparisons or arriving at conclusions. Salary (to include all other forms of compensation) for university presidents are always in flux. It is difficult to capture a snapshot in time in order to compare across the board. Some of the numbers cited in this study are from different years; however, most were in a 2-3 year range (2012-14).

While university president's salaries are a matter of public record (at least for public universities), other perks are sometimes not so public. Just as in the corporate world where CEO salaries for public traded companies are reported in annual statements, other awarded pay can be difficult to ascertain. Titles are also sometimes difficult to compare; for instance, in Texas the Chancellor is over all campuses in the system, while the President is in charge of an individual campus in that system. However, in Missouri, the roles are reversed, where the President is in charge of the system and the Chancellor in charge of a campus.

CONCLUSIONS

While the author of this paper is attempting to couch the university pay debate much in the same vein as what has happened in the corporate world, there still remains a tremendous gap in comparing business salaries with those in academy world. With few exceptions, university CEO salaries are far from the lofty highs reached by many in the corporate world. In 2014 the

highest paid CEO in America was GoPro's founder whose total awarded salary topped $284 million; while the top University CEO was under $4 million (Marcinek, 2015).

In most cases, presidential pay may not amount to much in the context of a university's total budget; but it still remains a hot-button issue for those concerned about excess and waste, particularly at the nonprofit schools. Senator Charles Grassley of Iowa has been critical of compensation for private-college leaders, questioning whether tax exemptions are serving to lower college costs for students or simply enabling charmed lives for administrators (Stripling, 2013) Critics complain that universities are increasingly using, and exploiting, cheap faculty labor while expanding the ranks and pay of their administrators. As Debra Leigh Scott pointed out "administrators now outnumber faculty on every campus across the country" (Giroux, 2014). Colleges are drawing more and more upon adjunct and non-tenured faculty whose ranks now constitute one million out of the one and a half million total faculty in America.

Some would say that the pressure to increase pay for college presidents has even contributed to increased student debt and lead to the hiring of more and more adjunct professors. At the University of Minnesota, President Eric Kaler was rewarded with $2.1 million between 2010 and 2012, while the average student debt of their graduates was $29,702, and the University increased the number of their adjuncts by 105% between the years of 2005 and 2011 (Pfeiffer, 2014).

There are two sides to the argument surrounding pay to those at the top, be they corporate types or university types. But regardless of which side of the argument is correct, universities need to be sensitive to the message that presidential salaries send out to its various communities (alumni, potential and present donors, parents who pay tuition, students, etc.) College presidential salaries are beginning to resemble those being paid to professional athletics, what with signing bonuses, retention bonuses, termination buyouts, retirement perks, housing, and performance bonuses.

Boards of these schools also need to be aware of the slippery slope of salary creep. The Texas A&M University example previously cited is an apt one. University boards look around and say we can't just pay average and expect to get the best. We can't just be in the top 50% of average pay, we have to be in the top 10%. If the Board wants the best at the top position, why wouldn't the same principle apply at the middle ranks; or even those at the bottom? Wouldn't it be nice to think the university had the best Secretary One or the best groundskeeper?

A more pressing problem than just the president's compensation might be the rising administrative costs of running a university. Increased pay for presidents pale in comparison to the growing bureaucratic costs of running a university. George Will said that "college tuitions are soaring in tandem with thickening layers of administrative bloat" (Will, 20-15). A report by AAUP found pay for bureaucrats surpassing salaries for teachers, especially adjuncts and part-timers. Between 1978 and 20114, the number of administrative jobs rose 369 percent while the number of part-time faculty increased 286 percent. Full-time tenured or tenure-track academic positions increased only 23 percent (McFeaters, 2015).

It's obvious that pay in the university ranks haven't come close to reaching the heights of those in the corporate world. The differences between those at the top and the average employee are not even close, particularly if one compares the gaps in the retail or low wage sectors to those of college; but it is disturbing that the trend line is moving up.

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AN INVESTIGATION INTO GRADUATE STUDENT PREFERENCE FOR COMPRESSED COURSES

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ABSTRACT

Traditionally, universities use either the semester or quarter systems with shorter-length courses in the summer. Increasingly universities are now experimenting with compressed courses as part of the normal semester. Compressed courses can help students by giving them fewer courses to concentrate on at a time in a more intensive format. Compressed courses also assist students in course scheduling and sequencing where prerequisites are present. There have been several studies pertaining to course length and student outcomes with most studies showing the same or increased student outcomes for compressed courses. The focus of this study is on graduate student's preferences for regular semester based compressed courses. This study used Master of Business Administration (MBA)-level courses where classes met six hours a week for either the first or second half of each 15-week semester. Data was collected from 846 students from 57 compressed MBA courses that were surveyed between 2009 and 2015. The results of the survey were very positive for the compressed courses. The average student felt that they learned the same or more in compressed courses preferred the pace and would rather take a compressed course than a full-length semester course. Open-ended questions for students that preferred compressed courses mentioned completion and time management, scheduling, retention of material and an enhanced learning experience. Those that favored the traditional-length courses emphasized that they needed more time for the material to sink in, more time for class projects and research, and that dealing with unexpected life happenings were more difficult in compressed courses.

Keywords: Compressed courses, course length, MBA

INTRODUCTION

The means in which higher education is delivered has rapidly evolved over the past few decades in part in response to advances in technology, students desiring a quicker path to the job market and shrinking university budgets (Anderson & Anderson, 2012). As a result a number of institutions have supplemented the traditional quarter or semester-long courses with compressed courses. Advantages to compressed courses for students are that they can more intensely focus on fewer courses at a time and that it allows them to more easily plan a course schedule that satisfies prerequisites giving them the ability to decrease time to graduation. As with other fundamental changes to higher education there have been authors that have investigated for time-compressed courses, student knowledge, retention, passing rates and the overall quality of the courses (e.g., Ewer, Green, Bridges & Lewis, 2002; Tan 1996). This paper reports on students' opinions of courses that have six contact hours a week for half of a semester (roughly seven and one half weeks, although for this report we will call them seven-week courses). The focus of the study is on MBA-level courses in which data was collected from 846 students from 57 compressed MBA courses that were surveyed between 2009 and 2015.

The study takes place at the University of Alaska Fairbanks (UAF) School of Management (SOM). UAF was founded in 1917 when Alaska was still a territory and is America's northern most Land, Sea and Space Grant institution. A degree in business administration was first offered at UAF in 1924 where SOM officially formed as a school in 1975. In 1988, the Association to Advance Collegiate Schools of Business (AACSB International) accredited the School of Management's graduate and undergraduate business administration and accounting programs. By business school standards, SOM is considered a small school with a budget of approximately $6.5 million. In total, SOM has approximately 700 students with 70 in the MBA program.

In 2004, as SOM was undergoing its five-year AACSB Accreditation maintenance review, it was noted that the school was suffering from a decade of stagnate or declining enrollments. The problem of declining enrollments was particularly acute in the MBA program and twice in 2007 the UAF Vice-Provost met with the SOM Dean to voice concern that unless the number of MBA students increased that the program would not remain sustainable. Starting with a school-wide retreat in 2007, SOM identified, as part of its efforts to increase enrollments, targeting semester-length courses to seven-week compressed courses and began to do so with nearly all of its MBA courses. The move was not supported by all of the faculty members with concerns raised about overall program quality. However, growth in the MBA program, which is offered in the evenings to mostly students with full-time jobs, was immediate. This was followed by an increased number of graduates. The number of MBA graduates increased from its low point of just five students in 2006 to 36 in 2014 and enrollment continues to increase.

LITERATUE REVIEW

The majority of the literature on compressed courses focuses on student success measured in large part by passing rates in compressed vs. traditional-length courses. These studies have typically compared compressed summer school courses to traditional quarter-and semester-length classes.

Tan (1996) found no difference in performances on either midterms or finals in three vs. 15-week skills-based MBA courses and concluded that student outcomes in well-planned condensed courses can be just as effective as full-length courses. Ewer (2002) concludes no discernable difference in student aptitude or performance in introductory accounting courses between 4 and 16-week courses, although controlling for student performance predictors (ACT and GPA), found that "the four-week format appears to help weaker students" (p. 164). Bowling, Riles & Ivanitskaya (2002) summarized 53 compressed courses where outcomes-based findings showed that in 96% of the programs examined compressed courses led to outcomes that were the same or greater than that of the traditional-length courses and in 40% of these the outcomes for compressed courses were better.

Arrey (2005) reported on four-week organic chemistry condensed courses that met five days a week and found that student passing rates were higher in the condensed course. It was also found that students in the compressed courses faired significantly higher than the national average on the standardized American Chemical Society organic chemistry exam. The author concludes that the outcome may be due to the students focusing on just one course at a time rather than multiple courses in a traditional semester. Austin and Gustafson (2006), focusing on courses in accounting, algebra, Spanish and micro and macroeconomics, compared grades in compressed courses to traditional semester courses and concluded that students in compressed courses (3, 4 and 8 weeks) did better than the traditional length courses and that performance

peaked at 4 weeks. They also concluded that there was a "real increase" in knowledge for compressed courses (not grade inflation). They conclude that "overall we find that there is a significant improvement from taking shorter courses that cannot be explained solely by student characteristics (p. 35)."

There is a growing amount of literature that also focuses on instructor opinions of compressed courses. Kretovics, Crowe and Hyun (2005) surveyed 151 faculty and concluded that, to be effective, instructors made adjustments in teaching methods for compressed courses. Adjustments included changes to reading and writing assignments as well as changes to projects assigned. Sarkaria & Schuster (2008) surveyed instructors about their perceptions of an 11-week quarter system vs. a 16-week semester system with generally positive reviews for the quarter-length courses. Kops (2014) offers best practices for teaching compressed formatted courses emphasizing that maximizing the quality of student education differs for compressed and traditional-length courses but when the quality of teaching, as measured by university-administered teaching evaluations, is high the benefits of both course formats are similar.

Our study focuses on student opinions of compressed MBA courses seeking first-hand knowledge directly from the students who have taken both compressed and traditional-length courses during their academic careers.

Course Compression: Seven-Week Courses

The University of Alaska Fairbanks runs a typical 15-week semester system with a full 60 minutes per credit hour. There are also summer session courses compressed into two six-week segments as well as January and May courses that are only two-week long. In the School of Management (SOM), 15-week MBA courses were typically offered in the evening either twice a week with 90-minute classes or once a week with a three-hour class. Starting in the fall of 2009 MBA courses were condensed. They were offered in three-hour classes that met twice a week for either the first or second half of the semester. The reasoning was that with many of our students having full-time jobs, it would be more efficient for them to focus more intensively on fewer classes at a time. It would also make it easier to schedule a sequence of courses where one course is a prerequisite to another. It was believed that this would benefit the students and increase the demand for the program.

The move by SOM to having a substantial number of its MBA courses in a seven-week format was not without controversy. Some faculty members were skeptical of the validity of compressed courses given that their only extensive teaching experience was with semester-length courses and existing courses had to be restructured to take into account the shorter time period. However, making this transition somewhat easier was the changing nature of education and in particular technology that was requiring somewhat rapid changes in teaching techniques for all courses. In general, these changes came easier for the younger faculty than the older more entrenched ones.

Student Survey

At the end of each seven-week course, the students were given a survey designed to help SOM better understand how the students viewed compressed courses. In particular, the survey was used to solicit opinions as to the advantages and disadvantages of seven-week vs. the traditional 15-week course. The survey was only administered in the compressed courses (and not in the traditional-length courses). Because graduate students will have predominantly taken

15-week courses in their careers they have plenty of experience in regular semester courses on which to base their opinions (see Table 1).

TABLE 1
SURVEY OF SEVEN VS. 15-WEEK COURSES ADMINISTERED TO STUDENTS
1. I would learn more in class if I had the traditional 15-week vs. 7-week schedule/format.
2. I work more closely with my classmates outside of class in this course as a result of the 7-week format (compared to the 15-week format).
3. I prefer the pace of 15-week traditional format for personal reasons (ex. work/family/other non-academic reasons).
4. I would take more 7-week compressed classes if offered.
5. Taken as a whole (advantages and disadvantages) I prefer the 15-week format over the 7-week.
6. I find that I have a cohort group to interact and study with as a result of the 7-week format.
7. The 7-week format is better for certain classes (explain) _____.
8. I prefer the 7-week or 15-week format (circle one) because _____.
For questions 1-7 choose the following:
1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree

The students filled out the survey based on a 5-point Likert system. The questions were designed to minimize biases associated with answering a question either as Agree vs. Disagree. For example, if a student favors the seven-week format in comparison to the 15-week format the questions were evenly split as to whether answering Agree or Disagree would indicate that preference. Questions seven and eight asked for a further written explanation. In all, 846 students from 57 compressed MBA courses were surveyed between 2009 and 2015 with the last two questions generating 952 comments.

Below the average score is reported for each question. All ratings were statistically different than the midpoint (3.0) with p-values < 0.00.

RESULTS AND DISCUSSION

Question 1. *"I would learn more in this class if I had traditional 15-week vs. 7-week format"*

Students were asked directly whether they would learn more from the 15-week course vs. the seven-week course. The average student score, out of the 846 responses over a six-year period, was 3.49, putting their opinion between neutral and disagree. This indicates that, in general, students did not believe that they would have learned more if the course had been a semester-long course. This opinion agrees with several studies of student outcomes where there is evidence that student outcomes in compressed courses are as good or better than in traditional length courses.
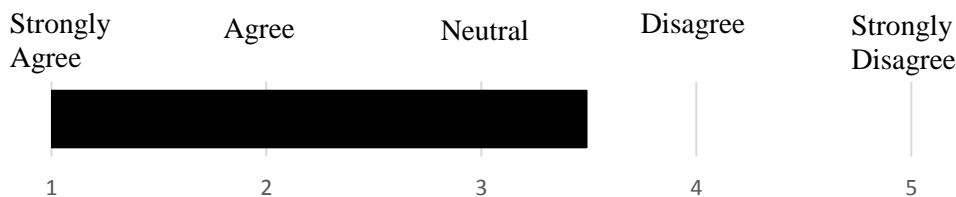
Average score = 3.49

Question 2. *"I work more closely with my classmates outside of class as a result of the 7-week format (compared to the 15-week format)"*

Literature has suggested that students may work more closely with classmates in compressed courses (Arrey 2005). Question two asks this directly. In general, students agree with this. Although statistically significantly different than "neutral" the average scores (2.76) shows an opinion preference is just slightly below neutral.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5
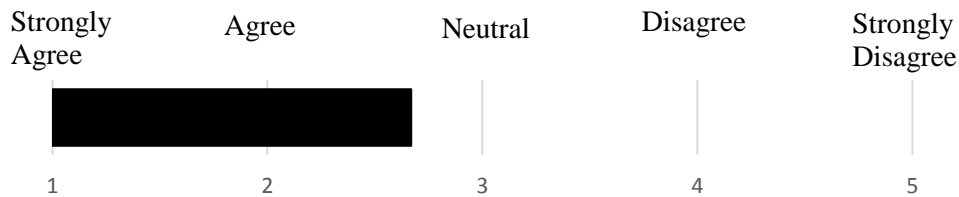
Average score = 2.76

Question 3. *"I prefer the pace of 15-week traditional format for personal reasons (ex. work/family/other non-academic reasons)"*

Question three asks if students prefer the traditional semester course for personal (non-academic) reasons. This question was posed because of concerns that a compressed course may lead some students to have problems when the academic rigors of a more time intensive course are balanced with concerns over family and work (which applies to many of our MBA students). The average score for this question was 3.63 indicating that for the students sampled this did not pose a problem.

Average score = 3.63

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5
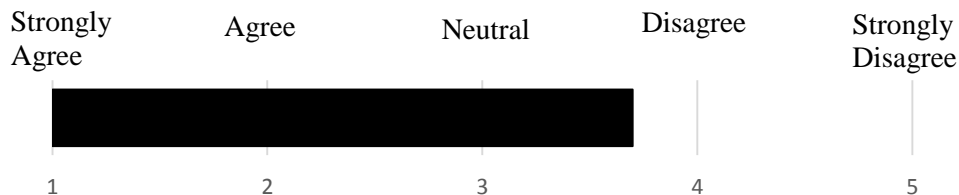
Average score = 3.70

Question 4. *"I would take more 7-week compressed classes if offered."*

Since 2009, the plan was for the MBA program to transition more and more of their courses to 7 weeks. Therefore we queried students on the demand for these courses directly in question 4. The average score was 2.00 indicating a solid demand for additional compressed courses.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5
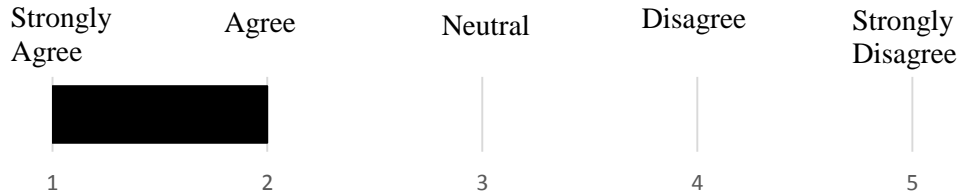
Average score = 2.00

Question 5. *"Taken as a whole (advantages and disadvantages) I prefer the 15-week format over the 7-week"*

Students were asked directly whether they preferred the traditional-length semester courses to the compressed 7-week courses. The average score of 3.63 indicates that the average student did not.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5
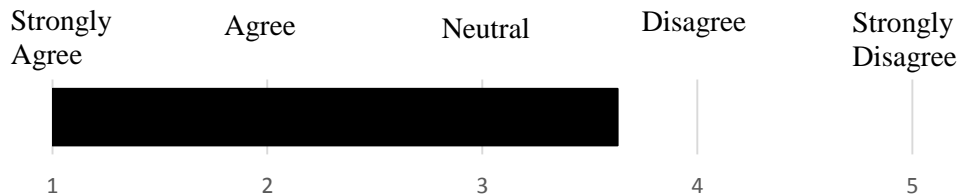
Average score = 3.63

Question 6. *"I find that I have a cohort group to interact and study with as a result of the 7-week format."*

Other studies have alluded to an advantage of compressed courses being that students may work more closely with a cohort group. Question six asks whether in the compressed courses they had a cohort group to interact and study with. The average score of 2.43 indicates that the students felt that they did.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
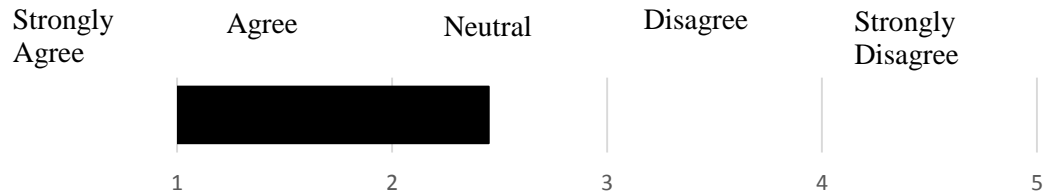
Average score = 2.43

Results from question two and six mirror the findings of Arrey (2005) who found that in compressed courses students have more time to "…interact with peers and work effectively together…(p.3)".

Questions seven and eight were used to elicit open answer responses from the students about compressed courses. The two questions together elicited 952 responses. Although overall the student's opinions of the seven-week courses have on average been positive much can be gained from examining students' opinions whether favorable or not. Below we have generalized the most expressed opinions for each question.

Question 7. *"The 7-week format is better for certain classes (explain)"*

Question seven was designed to elicit opinions on whether some courses may be better than others for compressed courses. Many of the students here stated that they would like all courses compressed. The majority of the students, that had an opinion on whether certain courses were better, made a distinction between classes with a heavy quanititative aspect vs. those that they felt were more qualitiative. These students prefered compressed courses for ones that were less quantitative. For example, some comments in this regard were "Accounting and quantitative classes work better in a 15-week format" or "more technical courses such as financial courses benefit from the full 15-week period, as do those with a lot of reading outside of the classroom."

To test whether students felt this way overall, we divided up our course into what we considered relatively more quantitative courses (54%) and what we considered more qualitative (46%). We examined their answers to question 5 which asked "Taken as a whole (advantages and disadvantages) I prefer the 15-week format to the seven-week" which had an average score of 3.63 that indicated that the students did not prefer the traditional semester-length courses to the compressed courses. We found a slightly higher average scores for the non-quantitative courses (3.76) than the quantitative courses (3.52) however the absolute differences are not great and both scores still indicate the students do not prefer, for both quantitative and qualitative courses, traditional-length courses over compressed courses.

Question 8. *I prefer the 7-week or 15-week format (circle one) because"*

The last question was open-ended. It asked the students their reasons for preferring either the seven or 15-week format. Again, the majority of the responses were in favor of the compressed courses but examining both the pros and cons to compressed courses offers insights

beyond the rating system. Below are answers that represent the majority of the answers in both categories.

Many of the students who favored compressed courses mentioned time to completion and time management as an advantage. Representative comments follow:

- *"It was a challenge to keep up, but in the end it will be worth having one less thing to worry about in regards to time management"*
- *"Get done with class earlier"*
- *"To get in and get it over with quickly"*
- *"It will end up saving me a lot of time"*
- *"It is out of the way faster"*
- *"Efficient utilization of time"*

Many of the comments referenced being able to take more courses due to the compressed nature making it easier to schedule classes.

- *"You are able to focus more on the class and get the credits faster"*
- *"It's really nice to have it over with. I can also fit more in a semester"*
- *"I can take more credits without extreme stress"*
- *"I like the compressed courses because I can take more classes in a semester"*
- *"Finish school faster"*
- *"It's better for schedules"*
- *"Fits better with my schedule at work"*
- *"Gets program done faster and don't get as burned out in the class"*
- *"Work scheduling and ability to fit in more classes with 7-week course"*
- *"Enables me to focus on one class plus work full time!"*

Many students liked the compressed courses because they felt like it enhanced their learning and retention of material:

- *"I felt I learned more"*
- *"Better retention of material"*
- *"I learn faster"*
- *"Concentrating for more intense, but shorter time span, is very good for my personal learning"*
- *"The condensed classes require much more attendance"*
- *"Sometimes a class can drag over too long, this class was perfect"*
- *"The tests are every week, so I don't forget everything compared to a test every 5 weeks, where it is easy to forget stuff*
- *"Information stays fresh and class ends in 7 weeks when there is no need for 15"*
- *"There's no time to waste. It keeps me focused and I don't get bored.*
- *"Promotes cohort work, ability to focus on one class at a time"*
- *"Students are more attentive and participate more than in a 15-week course"*
- *"I don't have time to disengage from the material, thus, I retain more"*
- *"It makes me engage and doesn't allow me to procrastinate"*
- *"Straight to the point. Many ideas exchanged in a short period of time"*
- *"Most classes are more interesting to me when they're compressed/accelerated"*

Beyond the comments found in question seven, where some students did not favor the compressed courses for the more quantitative courses, other students who favored the more traditional-length courses can be categorized in a group that indicated for compressed courses there was a lot of material to absorb in a short-period of time, not enough time for class projects

and research and also less time to work around unexpected life happenings (like being sick). Representative comments in favor of 15-week courses are below:

- *"I have more time to learn and comprehend"*
- *"Time is too short [for 7-weeks], I can't learn it deeply"*
- *"Leave more time to absorb information"*
- *"More time to do reading and assignments"*
- *"More time to work on projects and cover chapters"*
- *"More time to study and digest and to do research"*
- *"7 week is too fast. There is no room to work around unexpected/unplanned events in your life"*
- *"You don't fail a course when you get sick. You can coordinate to meet with classmates with more flexibility. Research projects are not rushed; you can actually do correspondence and do research".*

SUMMARY AND IMPLICATIONS

In order to boost enrollments and increase the quality of its evening MBA program, in 2009 the University of Alaska Fairbanks' School of Management started compressing several of its semester-length courses. Instead of two 90-minute classes a week for 15 weeks, compressed courses were offered in three-hour blocks twice a week for either the first or second half of the semester. As a result, enrollment increased substantially, with MBA graduates increasing six-fold over an eight-year period.

At the end of each compressed course, a survey was sent to the students asking them to rate compressed courses vs. ones that are offered in a traditional 15-week format. Data was collected from 846 students from 57 compressed MBA courses that were surveyed between 2009 and 2015. The responses were substantially positive. The preference for compressed courses centered on learning outcomes including retention of material, time management, more intensive focus on each class and less classes to take at a time, course sequence, the ability to finish school faster, and less boredom and burnout. Students also indicated that in compressed courses they worked more closely with other students. Those favoring the traditional 15-week semester length courses cited that they needed more time to digest the material, a longer period of time for class projects and research and time to recover from being sick or other reasons for missing class. Some students indicated that compressed courses were better for the less quantitative ones although the difference was slight and students overall preferred the compressed courses for both more quantitative and qualitative courses.

The results of this study have implications for both program design and marketing. Institutions looking to use compressed courses should consider the perception of students. If the program has learning goals concerned with students learning time management skills or learning to work with others or in teams, then compressed courses should be considered in the design of their program. The program could consider this a selling point and promote this to potential students. For institutions that are offering programs that are quantitative they should consider the students perceptions and make sure that they have the buy-in from their students before compressing courses.

There are also implications for future research. First, future research could address whether there are demographic variables that can provide further insight into the perceptions of students. The result of this research would help institutions market their programs to specific targets. Austin and Gustafson (2006) provide evidence that students learn more in compressed courses with performance peaking at four weeks. Based on these results it would be important to investigate the perception of the students that enroll in courses that are less than seven weeks.

Kretovics, Crowe and Hyun (2005) concluded that instructors had to make adjustments to their teaching methods in order to be effective. Future research could also be done on the relationship between student's perceptions and the instructor's willingness to adapt their teaching methods in the compressed course. Finally, in order to help address the need for buy-in from faculty members before introducing a program using compressed courses, research needs to investigate how students' perceptions affects end of the course instructor evaluations.

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"ARE THERE GENDER DIFFERENCES WHEN MANAGING ELEMENTARY SCHOOLS?" PARENTS' PERSPECTIVES IN CYPRUS

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INTRODUCTION

This study was part of a larger program that examined effective school management and leadership. Since principals are highly influential figures in education (Organization for Economic Co-operation and Development, 2001), the purpose of this study was to explore parents' perceptions regarding the effectiveness of female principals. The interaction between gender and school leadership is an important topic given the centrality of leadership to school success, and increasing numbers of females who occupy administrative educational positions. Results suggest that parents perceive female principals as more effective than males among various aspects of school management and leadership.

Leadership is one of the most influential factors of student learning and school success (Cotton, 2000; Hallinger & Heck, 1998; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Marzano, Waters, & McNulty, 2005; Waters, Marzano, & McNulty, 2003); it is second only to teacher instruction regarding student achievement (Leithwood et al., 2004). Schools led by principals who contribute to staff effectiveness and student learning work in the most effective schools (Bossert & Dwyer, 1982; Murphy & Hallinger, 1992). Working directly with students, or more commonly indirectly through teachers, principals affect what students learn (Supovitz, Sirinides, & May, 2010). During crises and times of constant change, officials and policymakers turn to school leaders for answers. School leadership quality is essential to continued organizational learning and improvement (Datnow, 2005; Murphy, Elliott, Goldring, & Porter, 2006).

The interaction between gender and leadership is important, but surprisingly, empirical research on how various school stakeholders (e.g., parents) perceive the role and effectiveness of female principals, especially in comparison to male principals, is limited. Parental beliefs and perceptions are strong predictors of parental involvement (Epstein, 2001). If parents perceive a female principal to be less effective than a man is, they might engage in less frequent communication with female principals, or judge them erroneously. This study addresses this gap by examining parents' perceptions of female principals, and identifies parental characteristics that shape such perceptions. By adding to the existing body of knowledge on gender and leadership, this study advances knowledge of how parents perceive the roles, functions, and effectiveness of female principals in Cyprus. Specifically, this study addresses the following questions:

- According to parents, are female principals more effective at managing and leading schools in comparison to male principals?
- What personal characteristics shape parental perceptions regarding the effectiveness of female principals?

LITERATURE REVIEW

This article explores parents' perceptions regarding the roles and effectiveness of female principals. Research on various aspects of effective school leadership, interactions between gender and leadership, and perceptions of the role principal's play is reviewed.

Effective School Leadership

Principals have both direct and indirect effects on student achievement and school success, even though principals exert most of their influences indirectly (Leithwood et al., 2004). Although the leadership practices that matter most depend on context, consensus exists on the categories of leadership practices that are useful across many contexts and schools. These categories are labeled disparately among researchers, but their substance is similar. I broadly follow the categorization that Leithwood & Jantzi (2008) offer, and present leadership practices that fall into them.

Setting Directions

One role of school leaders is to guide groups of people (e.g., teachers and students) toward accomplishing common goals. Research suggests that identifying and articulating a vision (Leithwood, 1996; Witziers, Bosker, & Kruger, 2003), and establishing goals and expectations (Leithwood, Jantzi, Silins, & Dart, 1993; Robinson, Lloyd, & Rowe, 2008), help leaders accomplish this.

Developing People

Principals are generally not engaged in daily teaching, but their actions have powerful effects on how instructors teach and what they learn (Leithwood & Jantzi, 2008; Wahlstrom, 2008). Hence, a component of leadership is facilitating teachers' work and providing constant support. Practices that help principals in this area include intellectual stimulation, support, encouragement, and participation in teacher learning and development (Robinson et al., 2008).

Redesigning Schools

Organizational culture and structures should serve teachers' needs and adapt schools to environmental pressures for change and improvement. A primary leadership task is to establish conditions and structures that enable teachers to adapt and make positive, direct impacts on students (Lieberman, 2005; Marzano et al., 2005). Practices associated with this category include modification of school structures, establishment and nurturing of a school culture that is conducive to learning (Bossert & Dwyer, 1982), transforming schools into professional learning communities, creating a safe and collaborative environment for teachers, and building effective collaborations with the broader school community (Sebring & Bryk, 2000).

Instructional Leadership

Accountability pressures increased in recent years, and principals are held responsible for the instruction in their schools. Principals are essential to instructional program implementation and delivery of quality instruction (Matsumura, Sartoris, Bickel, & Garnier, 2009; Newmann, Smith, Allensworth, & Bryk, 2001). Recent research suggests that in schools in which principals are rated highly on instructional leadership, students experience improved results (Marsh et al., 2008). Research also suggests that some leadership practices influence effective teacher practices such as having sufficient knowledge of a curriculum (Supovitz & Poglinco, 2001), understanding the tenets of quality instruction (Wahlstrom & Louis, 2008), planning, coordinating, and evaluating teaching (Robinson et al., 2008), and providing instructional support (Leithwood et al., 1993)

Gender and Leadership

Until recently, assumptions concerning gender equality in leadership led to limited interest in the relationship between gender and leadership (Chemers, 1997), but increasing numbers of female researchers, combined with more women occupying administrative positions in education and various other fields, sparked interest in the interactions between gender and leadership (Northouse, 2007). Attention has turned to leadership disparities between men and women, and whether women or men are more effective at leading. Great diversity in opinions exists on this issue, with some researchers supporting that women's leadership is more effective (Book, 2000), and others claiming that gender has little or no relationship to style and effectiveness (Engen, Leeden, & Willemsen, 2001). According to Northouse (2007), the only robust gender difference in all studies that examine differences in effectiveness is that women lead more democratically and in a more participative manner than men do. However, evidence also suggests that women are more effective in leadership roles that accord with their gender. For example, women are more effective in education and social service roles, and in roles in which interpersonal skills are valued greatly (Eagly, Karau, & Makhijani, 1995; Northouse, 2007).

Perceptions of Leadership

Until recently, men dominated leadership positions, resulting in a generally held view that leadership is a male trait (Cunha & Cunha, 2002; Kanter, 1977). Given this widespread belief, women in education face stereotyping that suggests they are better suited to teaching, not leading schools (Coleman, 2002). A recent study conducted in Greece shows that both men and women share negative attitudes and prejudices toward women in leadership positions (Taki, 2006). In research among university students, the majority (65%) reported that men are more suited to school leadership, with only 5% supporting female principals. Students attributed the success of men to capacity and knowledge, but success of women was due to effort and luck (Schein & Davidson, 1993). Even within their own profession, female principals face such stereotyping. A recent survey in Greece reveals that teachers treat female principals with suspicion, and believe men are better suited to school leadership positions (Papastamatis & Kantartzi, 2006).

METHODOLOGY

Survey Participants and Data Collection

The population for this study was the parents of approximately 8500 students enrolled in 42 elementary schools in the district of Limassol in Cyprus during the 2009/2010 academic year. Data collection took place in three phases during May 2010. The study gained approval from the Ministry of Education. An assistant researcher visited seven randomly chosen elementary schools. The researcher met with principals and teachers in all seven schools, explaining the study's rationale and clarifying questions, and was granted permission to administer the surveys. Most teachers agreed to participate by administering surveys to parents through their students. To increase the response rate, a cover letter accompanied each survey that explained the study's goals and assured participants that the survey was anonymous, the schools were not involved with developing the survey, and responses would be held confidential. One thousand six-hundred fifty surveys were administered, and the assistant researcher retrieved the surveys during two visits. One thousand twenty-nine surveys were returned, and the final sample consisted of 904 parents who completed all survey items.

Instrumentation and Variables

Instrument Components and Variables

The researcher developed the survey for this study since no appropriate instrument was available. It consisted of items that measured parental perceptions regarding the effectiveness of female principals, and demographic questions. The majority of items that measured perceptions asked parents to compare male and female principals by indicating how much better or worse female principals performed leadership/principal functions. Participants used a 5-choice scale to indicate their perceptions (-2=much worse, -1= worse, 0= the same, 1= better, and 2= much better). Items clustered into five sections: school environment (SE), school management and leadership (SML), principals and teachers (PT), principals and parents (PP), and principals and students (PS). The SE section included four items that measured female principals' relative ability to improve a school's internal and external environments, and create a school climate conducive to student learning. The SML section included 17 items that measured female principals' relative ability to manage a school's financial resources, implement innovations, manage and lead elementary or secondary schools, manage teaching staff members, and lead in a democratic, unbiased way. The PT section included seven items that measured female principals' relative ability to establish good working relationships with teaching staff members, support teachers with instruction, and empower teachers. The PP section included seven items that measured female principals' relative ability to establish good relationships and effective communication with parents, involve parents in school processes, and gain parents' trust. The PS section included seven items that measured female principals' relative ability to establish school discipline, establish relationships with students, support students with special learning or other needs, and cultivate respect. The last section of the survey included eight items that collected parental demographics such as gender, number of children, age, education, and their children's grade levels. Before analysis, three dichotomous variables were created based on parents' personal characteristics. These variables indicated whether parents were under 35 years old, parents had a child in the three lower elementary grades, and the combined parental education per household was higher than Lyceum.

Content Validity

Assessment of content validity is important to all empirical research. Considerable effort ensured that the survey items asked parents to compare female and male principals regarding the most important aspects of a principal's work. Literature on effective school leadership was reviewed in order to identify principals' practices and functions that are most relevant to school success. The review resulted in more than 20 leadership dimensions, which provided a representative sample of effective leadership practices. In collaboration with 4 employed or retired elementary principals, five leadership dimensions were selected as most appropriate for the purposes of this study (i.e., school environment, school management, school leadership, principals and teachers, principals and parents, principals and students). For each leadership dimension, survey items were constructed, resulting in more than 100 survey items. Discussions among the principals reduced that number to 71. Two professors of educational administration and two supervisors reviewed the items to assess the extent to which they captured the essence of school leadership. Based on the experts' assessments, 9 items were deleted, reducing the number to 62. Forty-two conveniently chosen parents of elementary students participated in a pilot study, and completed the survey. The purpose was to identify errors in the items' wording, and items that parents would likely find difficult to answer. Based on results from the pilot study, a few changes to six items enhanced their content validity.

Data Analysis

Cronbach's alpha coefficient measured the reliability of five constructs. Descriptive statistics (i.e., means and standard deviations) for each construct explored parental perceptions regarding the effectiveness of female principals relative to male principals. Finally, t-tests and multiple regressions determined which personal characteristics of parents influenced perceptions of female principals for each of the five constructs.

RESULTS

Instrument Constructs and Reliabilities

Items in the survey's five sections were combined to create five constructs: school environment (SE), school management and leadership (SML), principals and teachers (PT), principals and parents (PP), and principals and students (PS). Reliability analyses were conducted on the five constructs using Cronbach's alpha coefficient. Table 1 reports internal reliabilities of the five scales. The reliability coefficients were between .74 (SE) and .93 (PP), suggesting reliability for all five leadership constructs.

Table 1
RELIABILITIES FOR SURVEY CONSTRUCTS

CONSTRUCT	CRONBACH'S ALPHA
School Environment (SE)	.74
School Management and Leadership (SML)	.89
Principals and Teachers (PT)	.90
Principals and Parents (PP)	.93
Principals and Students (PS)	.88

Participant Characteristics

Table 2 shows participants' descriptive statistics. The majority of parents were female (80.8%), reflecting the fact that mothers are generally more involved in their children's education. Most parents were young since only 7% were 45 years old or older, and more than one-third were under 35. More than half had one or two children (63.5%), and approximately one-third had earned a bachelor's or post-graduate degree. Forty-eight percent had children enrolled in one of the three lower elementary grades. Overall, the sample was representative of parents in Limassol.

Table 2
PARTICIPANT DEMOGRAPHICS

CHARACTERISTIC	N	%
Gender		
Male	174	19.2
Female	730	80.8
Age		
Under 35	328	36.3
36 to 45	511	56.5
Over 45	65	7.2
Number of children		
1	118	13.0
2	456	50.5
3 or more	330	36.5
Educational attainment		
Bachelor's degree or higher	572	31.9
3-year college degree	407	22.5
Lyceum	667	37.3
Gymnasium or lower	149	8.3
Children's grade level		
Lower grade (1 to 3)	434	48.0
Higher grade (4 to 6)	470	52.0

Parental Perceptions across the Leadership Constructs

Table 3 presents descriptive statistics of mean scores and standard deviations for the five leadership constructs. Since participants scored the survey items on a scale from -2 to +2, mean scores of zero indicate that parents perceived female and male principals equally effective regarding the leadership constructs. For example, a mean score of zero for school environment would indicate that parents perceived women and men equally effective at improving the internal and external school environments. Mean scores below zero would indicate that parents perceived women to be less effective than men, and mean scores above zero would indicate that parents perceived female principals to be more effective than males.

Table 3
MEANS AND STANDARD DEVIATIONS OF THE LEADERSHIP CONSTRUCTS

LEADERSHIP CONSTRUCT	M	SD
School Environment (SE)	0.83	0.62
School Management and Leadership (SML)	0.27	0.55
Principals and Teachers (PT)	0.39	0.60

Principals and Parents (PP)	0.46	0.68
Principals and Students (PS)	0.42	0.59

All five mean scores were above zero, which suggests that parents perceived female principals to be more effective than male principals concerning all five leadership constructs. Female principals seem to enjoy the greatest relative advantage over male principals when establishing and improving a school's environment (M=0.83). Females seem to have the smallest advantage over men regarding school management and leadership.

In response to the second research question, *t*-tests were computed to determine relationships between parental perceptions and their personal characteristics. *T*-tests were computed to determine the strength of relationships between four parents' characteristics (i.e., gender, age, children's grade, and education) and parental perceptions of the five leadership constructs. Table 4 presents the results of these analyses. Three of the parents' characteristics— age, children's grade, and education—did not relate to some leadership constructs, and parental gender did not relate to any. However, male parents perceived female principals to be more favorable across all five leadership constructs.

Table 4
MEAN SCORES OF LEADERSHIP CONSTRUCTS BY PARENTAL CHARACTERISTIC

CONSTRUCT	GENDER		AGE		GRADE LEVEL		EDUCATION	
	FEMALE	MALE	<35	>35	LOWER	HIGHER	LOW	MEDIUM /HIGH
SE	.81	.88	.91	.78	.71	.92*	.90	.79
SML	.25	.33	.36	.21*	.19	.33*	.36	.22
PT	.37	.50	.48	.35	.32	.45	.52	.33*
PP	.45	.51	.52	.43	.40	.53	.58	.40*
PS	.40	.55	.48	.40	.36	.48	.48	.40

Note: SE=school environment, SML=school management and leadership, PT=principals and teachers, PP=principals and parents, PS=principals and students
*$p<0.05$

The pattern of results suggests that younger parents, parents with children in a higher elementary grade, and parents with less education perceived female principals to be more effective than male principals regarding all five leadership constructs. However, statistically significant results appeared in only five of twenty comparisons. Younger parents perceived female principals to be more effective at general school management and leadership. Parents with children in higher grades perceived female principals to be more effective at improving school environments and school management/leadership. Finally, parents with lower education perceived female principals to be more effective at interacting with teachers and parents. The only leadership construct with no statistically significant results was principal/students (i.e., PS).

The last step during data analysis was to perform multiple regression to determine the collective effect of parental characteristics on perceptions regarding the effectiveness of female principals relative to male principals. Table 5 presents results of the regression of two leadership constructs, SE and SML, on the four parental characteristics. Results for PT, PP, and PS are not shown because there were no significant predictors. Both regressions returned significant predictors, but as a group, the four parental characteristics explained only 5% of the variance for

SE or SML. For both regressions, parental age and children's grade were significant predictors of parental perceptions. Controlling for other predictor variables, parental correlated negatively with SE and SML, and children's grade correlated positively with SE and SML.

Table 5
REGRESSION OF PARENTAL CHARACTERISTICS ON LEADERSHIP CONSTRUCTS

CONSTRUCT	B	T	SIG.	R^2
SE				
Female	-.068	-.63	.529	
Age	-.181	-2.03	.044	
Grade Level	.232	2.77	.000	
Educational Attainment	-.079	-.90	.371	
				0.053
SML				
Gender	-.105	-1.08	.280	
Age	-.179	-2.24	.026	
Grade	.163	2.16	.032	
Education	-106	-1.34	.182	
				0.054

DISCUSSION AND CONCLUSION

Main Findings

This study addresses two research questions. The first asks whether parents perceive female principals to be more effective at leading schools in comparison to male principals. According to results, parents perceived female principals to be more effective than male principals across five leadership constructs. These results accord with the recent, popular view that women are superior to men in leadership positions (Book, 2000). Female principals appear to outperform male principals at establishing and improving a school's environment (SE), but their leadership advantage is also sizeable for the other leadership constructs examined in this study. One explanation for the substantial difference between female principals' effectiveness with SE and the other constructs is that SE is one aspect of a principal's work that is highly visible to parents and the public. Simply by walking into a school, an outsider can get a feel about the school's atmosphere and climate, and evaluate the aesthetics and conditions of a school's internal and external environments (e.g., classes, walls, paintings, schoolyard, etc.). It is more difficult for parents to evaluate a principal's ability to establish and maintain healthy working relationships with teachers and students, or obtain reliable knowledge on many aspects of school management and leadership.

The second question asks which parental characteristics influence perceptions regarding the effectiveness of female and male principals. Two personal characteristics had a statistically significant relationship with parental perceptions—age and children's grade. Younger parents (i.e., 35 or younger) and parents with children in higher elementary grades appear to give female principals an even greater advantage over men for SE and SML. One explanation is that female principals' ways of managing and leading appear more appealing to younger parents and to parents whose children are preparing for secondary education. Perhaps feminine traits of managing and leading schools are more appropriate for children getting ready for secondary

education. Male parents perceived female principals more favorably across all five leadership constructs, though differences were not statistically significant.

Implications and Future Research

Findings from this study have both practical and research implications. If female principals are more effective at managing and leading elementary schools, then future education leaders would benefit from incorporating feminine traits into leadership/principal preparation programs. Future research should explore parental perceptions further. This study examines only a small number of parental characteristics that influence perceptions of leadership, and critical variables are certainly absent from analyses. For example, it would have been informative to have information about parents' communication and interaction patterns with principals, and on principals' practices that promote or suppress these patters. The R^2 for two regression analyses were slightly above 5%, which suggests that variables that affect parental perceptions were excluded from analysis. Future research should use qualitative designs, with in-depth interviews with parents, to elucidate why parents perceive female and male principals disparately. Finally, researchers should also consider parents whose children are in secondary education, comparing parental perceptions by children's education.

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SENSITIVITY OF LIFE INSURANCE COMPANY FINANCIALS TO CHANGES IN PREMIUMS AND INTEREST RATES: A TEACHING NOTE ON POLICY RESERVES

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ABSTRACT

Policy reserve allocations of life insurance firms are extremely sensitive to changes in premiums and interest rates and therefore it is recommended that state regulators and life insurance actuaries pay close attention to ensure the solvency of firms. This paper uses a simple example of a 10-year term-life insurance contract with level premiums to show that relatively small changes in level premiums and interest rates can affect the financials of a life insurance firm significantly.

INTRODUCTION

The nature of the life insurance business requires that collected premiums be held for lengthy periods before they are distributed for life losses. In addition, life insurance firms must provide state regulators assurance of solvency by demonstrating that collected premiums are both safely invested and available for long term. With no access to reserves for operating needs, life insurance firms need to forecast their "loss reserves" carefully.

Published research on the sensitivity of life insurance firm policy reserves and financials to small changes in premiums and interest rates is very limited. Several authors provide a variety of examples of insurance company-specific transactions and required financial statement entries (Mooney et al., 1995; Rejda, 2011; Vaughan and Vaughan, 2008; Santos and Richman, 2015; Santos et al., 2016). However, they do not explore the sensitivity of life insurance financials to changes in premiums or interest rates.

Though not a scholarly publication but lecture presentation slides, Miles (2006) states that "small changes or errors in reserves can have a major impact on [insurance company] income" (slide 5). By example, the author points out that for a company with reserves of $1,346,059,480 and net income of $1,328,303, "a 0.1% error in reserve [estimates] would wipe out net income" (slide 6). However, the author fails to identify explicitly where such changes and errors could come from, proceeding instead to the core presentation topic of how reserves calculations should be made in different insurance scenarios.

In this paper, we elaborate on the idea that small changes and errors in reserves calculations can significantly impact insurance company financials. First, we stipulate that premium levels and interest rates in the economy are the principal sources of errors and changes, respectively, in reserves calculations. Second, develop a rigorously constructed example that demonstrates step by step how small changes in premium levels and interest rates significantly influence reserves and the firm's financial position. Through the paper, we validate the

importance of setting life insurance premiums precisely and of anticipating changes in interest rates accurately.

ASSUMPTIONS FOR LONG LIFE CORPORATION

Our example considers a stock life insurance firm. First, we introduce the assumptions for a fictitious firm called "Long Life Insurance Corporation" on Table 1.

Table 1 **ASSUMPTIONS FOR LONG LIFE INSURANCE CORPORATION**
1. Long Life Corporation just started its operations.
2. Policies are issued once at the beginning of the year. Also, the firm collects premiums at the beginning of the year and makes payments for life losses at the end of the year.
3. The firm issues only one type of policy: a 10-year level term-life insurance for 30-year-old males with a face value of $100,000. The policy pays face value to dependents if the insured dies within a 10-year period.
4. The firm issues 100,000 identical policies (10-year level term-life) every year. Each policyholder pays $175 of premium annually. Therefore, annual total net premium is $17,500,000 (= $175 x 100,000). The contracts are purchased by 30-year old males with identical risk characteristics.
5. Long Life Corporation is a stock insurance company and just issued 200,000 common stock shares with a share price of $100 each. Thus, the total equity is $20,000,000 (= $100 x 200,000). The firm will distribute $0.50 per share of dividends to its investors for the first year.
6. The premiums and capital funds are invested for a one-year period at 5% in long-term bonds. Therefore, investment income from interest earnings for the first year is equal to $1,875,000 [= (0.05) x (37,500,000)].
7. State laws require the firm to allocate "policy reserves" (also called "legal reserves") annually. Our policy reserves estimates will be based on data in the Social Security Administration's 2011 Actuarial Life Table.
8. The firm has operating expenses equivalent to 10% of Expected Losses [E(L)].
9. The corporate tax rate is assumed to be 30%, and the state tax (premium tax) is assumed to be 3% of the total collected premiums.

BALANCE SHEET ENTRIES FOR LONG LIFE CORPORATION

Long Life Corporation raises capital by issuing 200,000 common stock shares at $50 per share for a total equity capital of $10,000,000 (= $100 x 200,000). In Table 2, the transaction is reflected on December 31, 2013 as a debit to "Cash" under Assets and a credit to "Capital" under Liabilities and Surplus. The firm has not started operations on this date and therefore "Policy Reserves" is equal to $0.

Table 2
BALANCE SHEET OF LONG LIFE CORPORATION
Before Starting its Operations on December 31, 2013

ASSETS		LIABILITIES AND SURPLUS	
Cash	$20,000,000	Policy Reserves	$0
		Capital	$20,000,000
		Surplus	$0
TOTAL ASSETS	$20,000,000	TOTAL LIABILITIES AND SURPLUS	$20,000,000

Table 3 reflects transactions at the start of operations on January 1, 2014. On that date, the firm collects $17,500,000 in premiums from 100,000 identical 10-year level term-life contracts at an annual premium of $175 per contract. The face value of each contract is $100,000, and all contracts are purchased by 30-year old males. On the balance sheet, this transaction is recorded as a $17,500,000 addition to the Cash and Investments account of $20,000,000 already there, for a total of $37,500,000.

The firm is legally mandated to set aside a portion of the $17,500,000 received in premiums as policy reserves. Based on a formula we explain the following Table 3 where the firm allocates $302,427in 2014 reserves. As Table 3 shows, this entails a credit to the Policy Reserves account on the balance sheet. The remainder of the premium collected is $17,197,573 (= $17,500,000 - $302,427). That amount is credited to the Surplus account.

Table 3
BALANCE SHEET OF LONG LIFE CORPORATION
January 1, 2014

ASSETS		LIABILITIES AND SURPLUS	
Cash and Investments	$37,500,000	Policy Reserves	**$302,427**
		Capital	$20,000,000
		Surplus	$17,197,573
TOTAL ASSETS	$37,500,000	TOTAL LIABILITIES AND SURPLUS	$37,500,000

The formula to calculate policy reserves is:

Policy Reserves = (Present Value of Total Expected Future Death Benefits Payable) – (Present Value of Total Expected Future Premiums Receivable)

Determining the 2014 policy reserves amount for Long Life Corporation requires applying the formula to the appropriate row in the actuarial estimates in Table 4. The table is

based on death probabilities over 10 years as estimated by the Social Security Administration. The amounts shown under Present Value of Total Future Death Benefits Payable, Present Value of Total Future Premiums Receivable, Policy Reserves, and Expected Losses are calculated totals for 100,000 policyholders.

Table 4
ACTUARIAL TABLE FOR LONG LIFE CORPORATION SHOWING POLICY RESERVES

YEARS	AGE	DEATH PROBABILITY	PRESENT VALUE OF TOTAL FUTURE DEATH BENEFITS PAYABLE (1)	PRESENT VALUE OF TOTAL FUTURE PREMIUMS RECEIVABLE (2)	POLICY RESERVES* (1) - (2)	EXPECTED LOSSES
1	30	0.001432	123,804,391	123,501,964	**302,427**	14,320,000
2	31	0.001464	115,674,610	112,202,122	3,472,489	14,619,036
3	32	0.001497	106,839,305	100,362,871	6,476,434	14,926,678
4	33	0.001530	97,254,592	87,957,780	9,296,813	15,232,885
5	34	0.001568	86,884,437	74,959,091	11,925,345	15,587,333
6	35	0.001617	75,641,325	61,337,746	14,303,579	16,049,233
7	36	0.001682	63,374,158	47,063,420	16,310,738	16,667,383
8	37	0.001759	49,875,483	32,104,546	17,770,937	17,401,079
9	38	0.001852	34,968,178	16,428,179	18,539,999	18,288,864
10	39	0.001963	18,427,723	0	18,427,723	19,349,109

*See Appendix I for individualized "Policy Reserves" calculations.

For Long Life Corporation, the applicable row for 2014 is Year 1 when the policyholders are at age 30. Applying the formula to the items in that row yields the Policy Reserves amount of $302,427 reflected on the balance sheet in Table 3.

INCOME STATEMENT ENTRIES FOR THE LONG LIFE CORPORATION

Long Life Insurance Corporation's transactions will impact not only the firm's balance sheet but also its income statement. Table 5 shows what happens to the firm's Income Statement after one year of operations. Revenues total $19,375,000 (= $17,500,000 in premiums + $1,875,000 in interest earnings as calculated in Table 1 above). Expenses include $14,320,000 in Expected Losses, $302,427 in Changes in Reserves, $1,432,000 in Operating Expenses [= (0.10) x ($14,320,000 in Expected Losses), and $525,000 in Premium Taxes [= (0.03) x ($17,500,000)]. Earnings before Taxes (EBT), the difference between revenues and expenses, amounts to $2,795,573. Deducting Federal Taxes of $112,907 [= (0.30) x ($2,795,573)] from EBT yields a Net Income figure of $1,956,901. Finally, the firm pays out $100,000 in Dividends [= (0.50) x (200,000)], leaving $1,856,901 in Retained Earnings.

Table 5
INCOME STATEMENT OF LONG LIFE INSURANCE CORPORATION
December 31, 2014

REVENUES		= Premium + Investment Income
Premium	$17,500,000	= (175) x (100,000 life insurance contracts)
Investment Income	$1,875,000	= (0.05) x (27,000,000)
EXPENSES		
Benefits (Expected Losses)	$14,320,000	= Expected Losses for the first year
Change in Reserves	$302,427	= Change in reserves is $302,427 in the 1st year
Operating Expenses	$1,432,000	= (0.10) x ($14,320,000 of E(L))
Premium (State) Taxes (3%)	$525,000	= (0.03) x ($17,500,000)
Earnings before Taxes (EBT)	$2,795,573	= REVENUES - EXPENSES
Federal Taxes (30%)	$838,672	= (0.30) x ($2,795,573)
Net Income	$1,956,901	= EBT – Federal Taxes
Dividends	$100,000	= (0.50) x (200,000)
Retained Earnings	$1,856,901	= Net Income - Dividends

SENSITIVITY OF LIFE INSURANCE FINANCIALS

Table 6 shows the sensitivity of Long Life Insurance Corporation's Net Income and Earnings per Share (EPS) to $10 incremental changes in premiums. In Table 6, we start with a base premium of $175 and subsequently calculate Net Income and EPS. Increasing the premium by $10 to $185 (a 5.71% increase) causes a drop in Policy Reserves of $7,057,255 (a decrease of 2,334%). Furthermore, this small increase in premium causes a significant increase in Net Income (from $1,956,901to $7,610,979) and in EPS (from $9.78 to $38.05 at 200,000 shares or a 578% increase). Conversely, lowering the premium by $10 increases reserves by 2,334% and decreases net income and EPS by 289%. Overall, Table 6 shows small changes in premiums are significantly negatively correlated with policy reserves but significantly positively correlated with net income and EPS.

Table 6
SENSITIVITY OF LIFE INSURANCE COMPANY FINANCIALS TO CHANGES IN PREMIUMS

PREMIUMS	% CHANGE IN	POLICY RESERVES	$ CHANGE IN	% CHANGE IN	NET INCOME	EPS	$ CHANGE IN	% CHANGE IN
$205	17.14%	-	-	-7001%	$18,919,13		$84.81	867%
$195	11.43%	-	-	-4667%	$13,265,05		$56.54	578%
$185	5.71%	-	-	-2334%	$7,610,979		$28.27	289%
$175	**0.00%**		**$0**	**0%**	**$1,956,901**		**$0.00**	**0%**
$165	-5.71%	$7,359,682	$7,057,255	2334%	-	-	-$28.27	-289%
$155	-11.43%	$14,416,93	$14,114,51	4667%	-	-	-$56.54	-578%
$145	-17.14%	$21,474,19	$21,171,76	7001%	-	-	-$84.81	-867%

*Interest rate is assumed to equal 5% and the outstanding shares is 100,000.

Table 7 shows the sensitivity of Long Life Insurance Corporation's Net Income and EPS to 1% incremental changes in interest rates. As an example, an increase in interest rates from 5% to 6% results in a policy reserves reduction from $302,427 to -$481,906, a 259% or $784,333 drop. This reduction in policy reserves translates into a significant increase of net income (from $1,956,901 to $$2,505,934) and a $2.75 increase (from $9.78 to $12.53) in EPS or a 28% change. Conversely, a 1% drop in interest rate from 5% to 4% causes a significant increase in reserve requirements and significant decreases in net income and EPS. Furthermore, the similar effects can be observed for the changes of interest rates for the range of 2% to 8%. Overall, Table 7 shows small changes in interest rates are significantly negatively correlated with policy reserves but significantly positively correlated with net income and EPS.

Table 7
SENSITIVITY OF LIFE INSURANCE COMPANY FINANCIALS TO CHANGES IN INTEREST RATES

INTEREST RATES*	POLICY RESERVES	$ CHANGE IN RESERVES	% CHANGE IN RESERVES	NET INCOME	EPS	$ CHANGE IN EPS	% CHANGES IN EPS
8%	-$1,776,276	-$2,078,703	-687%	$3,411,993	$17.06	$7.28	74%
7%	-$1,171,195	-$1,473,623	-487%	$2,988,437	$14.94	$5.16	53%
6%	-$481,906	-$784,333	-259%	$2,505,934	$12.53	$2.75	28%
5%	**$302,427**	**$0**	**0%**	**$1,956,901**	**$9.78**	**$0.00**	**0%**
4%	$1,194,095	$891,668	295%	$1,332,733	$6.66	-$3.12	-32%
3%	$2,207,060	$1,904,633	630%	$623,658	$3.12	-$6.67	-68%
2%	$3,357,194	$3,054,767	1010%	-$181,436	-$0.91	-$10.69	-109%

*Premium is assumed to equal $175 and the outstanding shares is 100,000.

Tables 6 and 7 show that relatively small adjustments in premiums and interest rates result in substantial changes in policy reserves, net income, and EPS. While a minor exaggeration in insurance premiums can unduly benefit a life insurance firm, a minor reduction in premiums, perhaps to be more competitive, can significantly harm the financials of the firm. And while an upward movement in interest rates can benefit the firm, downward movements due to economic contraction increases the risk of insolvency for life insurance companies. As such, actuaries within life insurance firms and state insurance agencies alike should pay close attention to the accuracy of premium calculations, and particularly the interdependence between premiums and interest rates, to ensure the solvency of life insurance firms.

CONCLUSION

We present the SAP main entries for the balance sheet and income statement for a fictitious life insurance firm called Long Life Insurance Corporation. We show the sensitivity of life insurance financials to minor changes in premiums and interest rates in the economy. By focusing specifically on the impact of premiums and interest rates, our work elaborates on Miles' (2006) generalization that small changes or errors in reserves can have significant influences on insurance company financials. An avenue for future research is to drill down into the specific, financially impactful factors that lead insurance companies, in the first place, to making erroneous and financially inimical premium levels and interest rate projections.

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Appendix I
PV OF TOTAL BENEFITS, PV OF TOTAL PREMIUMS, POLICY
RESERVES, AND CHANGE IN RESERVES

YEARS	PV of Benefits	PV of Premiums	Policy Reserves*	Change in Reserves
1	1238.04	1235.02	3.02	3.02
2	1156.75	1122.02	34.72	31.70
3	1068.39	1003.63	64.76	30.04
4	972.55	879.58	92.97	28.20
5	868.84	749.59	119.25	26.29
6	756.41	613.38	143.04	23.78
7	633.74	470.63	163.11	20.07
8	498.75	321.05	177.71	14.60
9	349.68	164.28	185.40	7.69
10	184.28	0.00	184.28	-1.12

*Estimates are based on a one 10-year Term-Life Contract for a 30-year male paying $175 annual premium, and an interest rate of 5%.

Appendix II
PV CALCULATIONS FOR THE TOTAL BENEFITS

YEARS	PVB*	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	1238	136	0	0	0	0	0	0	0	0	0
2	1157	133	139	0	0	0	0	0	0	0	0
3	1068	129	135	142	0	0	0	0	0	0	0
4	973	125	132	138	145	0	0	0	0	0	0
5	869	122	128	135	141	148	0	0	0	0	0
6	756	120	126	132	139	146	153	0	0	0	0
7	634	118	124	131	137	144	151	159	0	0	0
8	499	118	124	130	136	143	150	158	166	0	0
9	350	118	124	130	136	143	150	158	166	174	0
10	184	119	125	131	138	144	152	159	167	176	184
TOTALS		1238	1157	1068	973	869	756	634	499	350	184

*PVB refers to Present Value of Benefits Payable at the end of the year by the insurance firm. All entries apply to one 10-year term-life contract. The entries in the shaded area are calculated by using probabilities from the Actuarial Life Table (2010) at the Social Security Administration website shown on Table 4. For example, the number, $136 (at the third column and second row intersection), is calculated from $(0.001432) \times (100,000) / (1+0.05)^{\wedge}1$ where $100,000 is the face value of the life insurance contract. Similarly, the number, 133 (at the third column and third row intersection), is calculated from $(1-0.001432) \times (0.001464) \times (100,000) / (1+0.05)^{\wedge}2$. Interest rate is assumed to be 5%.

Appendix III PV CALCULATIONS FOR THE TOTAL PREMIUMS										
YEARS	PVP*	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	1235	0	0	0	0	0	0	0	0	0	0
2	1122	166	0	0	0	0	0	0	0	0	0
3	1004	158	166	0	0	0	0	0	0	0	0
4	880	151	158	166	0	0	0	0	0	0	0
5	750	143	150	158	166	0	0	0	0	0	0
6	613	136	143	150	158	165	0	0	0	0	0
7	471	129	136	143	150	157	165	0	0	0	0
8	321	123	129	136	142	150	157	165	0	0	0
9	164	117	123	129	135	142	149	157	165	0	0
10	0	111	117	123	129	135	142	149	156	164	0
TOTALS		1235	1122	1004	880	750	613	471	321	164	0

*PVP refers to Present Value of Premiums Receivable at the beginning of each year by the insurance firm. All entries apply to one 10-year term-life contract. The numbers in the shaded area are calculated by using probabilities from the Actuarial Life Table (2010) at the Social Security Administration website shown on Table 4. For example, the number, $166 (at the third column and third row intersection), is calculated from $(1-0.001432) \times (175) / (1+0.05)^{\wedge}1$ where $175 is the flat one-year insurance premium paid by the insured individual. Similarly, the number, 158 (at the third column and fourth row intersection), is calculated from $(1-0.001432) \times (1-0.001464) \times (175) / (1+0.05)^{\wedge}2$. Interest rate is assumed to be 5%.

AN APPLICATION OF PARTIAL LEAST SQUARES PATH ANALYSIS TO STUDENT SATISFACTION

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ABSTRACT

One of the many challenges institutions of higher education face in the future deals with having a smaller number of high school graduates, which translates to a smaller pool of potential applicants. This decrease in the number of potential college students may force universities to develop different strategies with regard to attracting and retaining quality students. One such strategy would be to view students as customers and to focus on student satisfaction. This viewpoint is not without controversy; however, emphasizing student satisfaction may give universities a competitive edge in recruiting students. The purpose of this paper is to study the relationship between Student-Faculty Interaction, Quality of Faculty, Quality of Curriculum, and Student Satisfaction. These latent variables were used in partial lease squares path analysis, which is a special type of structural equation modeling. Sets of hypotheses were tested to examine the direct effect Student-Faculty Interaction has on Student Satisfaction as well as the relationship Student-Faculty Interaction has on Students' Satisfaction through the mediating effect of Quality of Faculty and Quality of Curriculum. One hundred twelve surveys were collected from six upper level business classes from a small university located in the southeastern United States. Recommendations were made to develop strategies for enhancing student satisfaction.

LITERATURE REVIEW

Program/Curriculum evaluation has always been of interest to administrators and faculty in order to improve quality. In their efforts to increase student satisfaction, a variety of methods (i.e., alumni surveys, senior seminars etc.) have been used. Research has even been extended to overall college wide satisfaction in undergraduate schools (Benjamin and Hollings, 1997). As Koseke and Koseke (1991) indicate, student satisfaction has a positive impact on retention. Student satisfaction is also an important factor that provides a sense of personal accomplishment, academic success, and professional realization (Bean and Bradley, 1986; Pike, 1993).

Important changes in curriculum development, such as the implementation of hybrid or on-line courses, also helps schools to adapt to changes in the educational environment (Nugent, Bradshaw, and Kito, 1999). These relatively new teaching modalities, according to Marra (2004), can reduce the constraints experienced by nontraditional students. Additionally, Hopkins (2008) addresses the support for the curriculum changes in practical nursing education to include a hybrid component which was implemented based on three salient factors: first, increase the number of qualified graduates; second, adapt to the needs of students, and finally, make it more convenient for nontraditional students.

In the authors' opinion, student-teacher interaction plays an important role in student satisfaction. The interaction can occur at different levels (i.e., teacher, mentor, friend, etc.) and under different situational frameworks (i.e., in class, outside of class, outside the school, etc.).

Since communication is an essential part of education and learning, the main portion of this interaction, according to Kindeberg (2013) is oral interaction. A trusting relationship between student and teacher has to be achieved in order for knowledge to be effectively communicated and transferred (Kindeberg, 2013). In a study by Allen, Gregory, Mikami, Lun, Hamre, and Pianta, (2013) the quality of teacher-student interaction, was found to be a strong predictor of student performance in classrooms, encouraging a good emotional environment and sensitivity to the student's needs. The degree of teacher-student quality interaction was the highest in small class sizes (Allen et al., 2013).

Quality of teaching is going to play an important role in student satisfaction. Student's perception of quality instruction has been considered over time to be an important factor leading to overall satisfaction. Quality of teaching not only involves knowledge of the subject matter but also includes delivery style and teacher accessibility. In a study that included some non-business majors Elliot and Shin (2002) found quality of instruction as one of the relevant factors influencing student satisfaction. A study by DeShields, Kara, and Kaynak reinforced this finding when they also found quality instruction as a significant factor of student satisfaction (DeShields, et al., 2005).

Faculty and administrators recognize student satisfaction as one of the most important elements leading to retention and alumni support. The authors' modeling of faculty quality, interaction with students, and curriculum soundness as they relate to student satisfaction could provide a better understanding of these factors helping schools to implement effective management of resources and programs that help to improve student satisfaction.

METHODOLOGY

Business students from six upper level business classes within the School of Management from a small regional university located in the southeastern part of the United States represented the population of interest. A non-probability convenience sample of business courses was selected. A total of 112 questionnaires were collected from a captive population of 128 students. Considering that no questionnaires were rejected for lack of completion or other concerns, an effective response rate of 87.5% was attained. The purpose of the study, as well as the voluntary nature of participation was disclosed and made clear to participants. Research procedures were properly applied to assure the students' anonymity, to maintain the privacy of the information, and to avoid duplications in participation. Demographic/classificatory questions were used to further evaluate potential differences between the participants. The demographic table is presented below.

As can be seen in Table 1, approximately 58% of the students were female, while only 42% of the students were male. Ninety-eight percent of the participants were either juniors or seniors, while only 2 % of the students were sophomores. Eighty-six percent of the students were between the ages of 16 and 22. Approximately 64% of the participants were white while 29% of the participants were black. Eighty percent of the students who participated in the study live off-campus and 21% of the students live on-campus.

DESCRIPTION	GENDER	CLASSIFICATION	AGE	RACE	RESIDENCE
Table I **SAMPLE CHARACTERISTICS**					
Male	42%				
Female	58%				
Freshman		0%			
Sophomore		2%			
Junior		18%			
Senior		80%			
16-22			86%		
23-27			12%		
28 or more			2%		
White				64%	
Black (African American)				29%	
Hispanic/Latino				3%	
Other				4%	
On-Campus					20%
Off-Campus					80%

The data were analyzed through a partial least squares method using structural equation modeling (PLS-SEM). The software package used in the study is called Smart/PLS.

DEFINITIONS

Definitions relevant to this data analysis section from Hair, Hult, Ringle, and Sarstedt, (2014) and from Hair, Anderson, Tatham, and Black, (1995) are as follows:

Constructs (Also Called Latent Variables)

Measure concepts that are abstract, complex, and cannot be directly observed by means of (multiple) items. Constructs are represented in path models as circles or ovals (p. 29).

Endogenous Latent Variables

Serve only as dependent variables, or as both independent and dependent variables in a structural model (p. 29). (It is the) outcome variable in at least one causal relationship. In terms of a path diagram, there are one or more arrows leading into the endogenous construct or variable (p. 619).

Exogenous Latent Variable

Are latent variables that serve only as independent variables in a structural model (p. 29). Construct or variable that acts only as a predictor or "cause" for other constructs or variables in the model. In path diagrams, the exogenous variables have only causal arrows leading out of them and are not predicted by any other variables in the model (p. 619).

Formative Measurement Model

Is a type of measurement model setup in which the direction of the arrows is from the indicator variables to the construct, indicating the assumption that the indicator variables cause the measurement of the construct (p. 29).

Indicators [Variables]:

Are directly measured observations (raw data), generally referred to as either *items or manifest variables,* represented in path models as rectangles (p. 29).

Inner Model

See *Structural model* (p. 29).

Latent Variable

See *Constructs* (p. 29).

Measurement

Is the process of assigning numbers to a variable based on a set of rules (p. 29).

Measurement Model

Is an element of a path model that contains the indicators and their relationships with the constructs and is also called the *outer model* in PLS-SEM (p. 29).

Outer Model

See *Measurement model (p. 30).*

Partial Least Squares Structural Equation Modeling (PLS-SEM)

Is a variance based method to estimate structural equation models. The goal is to maximize the explained variance of the endogenous latent variables (p. 30).

Path Analysis

Employing simple bivariate correlations to estimate the relationships in a system of structural equations. The method is based on specifying the relationships in a series of regression-like equations (portrayed graphically in a path diagram) that can then be estimated by determining the amount of correlation attributable to each effect in each equation simultaneously. When employed with multiple relationships among latent constructs and a measurement model, it is then termed structural equation modeling (p. 620-621).

Path Diagram

Graphical portrayal of the complete set of relationships among the model's constructs. Causal relationships are depicted by straight arrows, with the arrow emanating from the predictor variable and the arrowhead "pointing" to the dependent variable. Curved arrows represent correlations between constructs or indicators, but no causation is implied (p. 621).

Reflective Measurement Model

Is a type of measurement model setup in which the direction of the arrows is from the construct to the indicator variables, indicating the assumption that the construct causes the measurement (more precisely, the covariation) of the indicator variables (p. 30).

Structural Equation Modeling

Multivariate technique combining aspects of multiple regression (examining dependence relationships) and factor analysis (representing unmeasured concepts—factors—with multiple variables) to estimate a series of interrelated dependence relationships simultaneously (p. 621).

Structural model

Is an element of a PLS path model that contains the constructs as well as the relationships between them. It is also called the *inner model* in PLS SEM (p. 30).

The Model in Figure 1.1 shows the latent variable and the paths under investigation. The latent variable Student/Faculty Interaction (INT) is the exogenous variable while Quality of Curriculum (COC), Quality of Faculty (QOF), and Student Satisfaction (SAT) are endogenous variables. INT is the exclusively independent variable while SAT is the exclusively dependent variable. QOC and QOF can be both independent and dependent.

Figure 1.1.
THE INITIAL MODEL SHOWING LATENT VARIABLES (CONSTRUCTS)
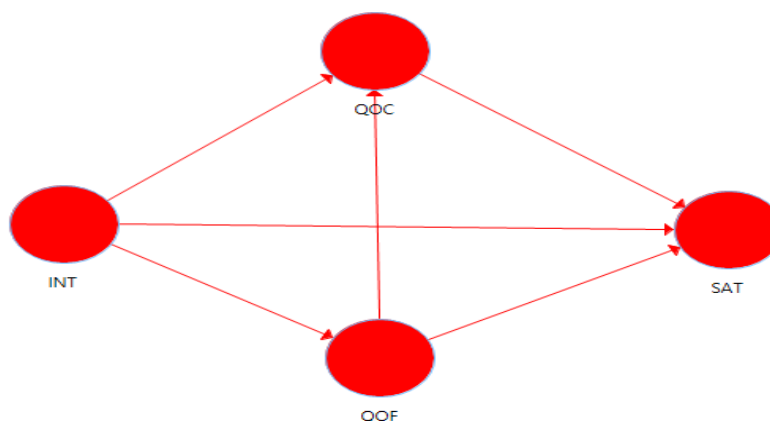
The following are the research hypotheses for this study:

Hypothesis 1: Student/Faculty Interaction (INT) has a positive causal impact on Student Satisfaction (SAT).

Hypothesis 2: Quality of Faculty (QOF) has a positive effect on Student Satisfaction (SAT).

Hypothesis 3: Quality of Curriculum (QOC) exerts a positive mediating effect between Quality of Faculty (QOF) and Student Satisfaction (SAT).

Hypothesis 4: Quality of Curriculum (QOC) positively influences Student Satisfaction (SAT).

Hypothesis 5: Quality of Faculty (QOF) has a mediating effect between Student/Faculty Interaction and Student Satisfaction (SAT).

Hypothesis 6: Quality of Curriculum (QOC) has a mediating effect between Student/Faculty Interaction (INT) and Student Job Satisfaction (SAT).

Figure 1.2 shows the Stage I Model without results but with both the inner (blue circles) and outer model (yellow rectangles). The blue circles represent the four latent variables, while the yellow rectangles represent the survey questions associated with each latent variable. The 20 survey questions represented by the yellow rectangles are referred to as indicator variables.

Figure 1.2.
STAGE I MODEL WITHOUT RESULTS (MEASUREMENTS)
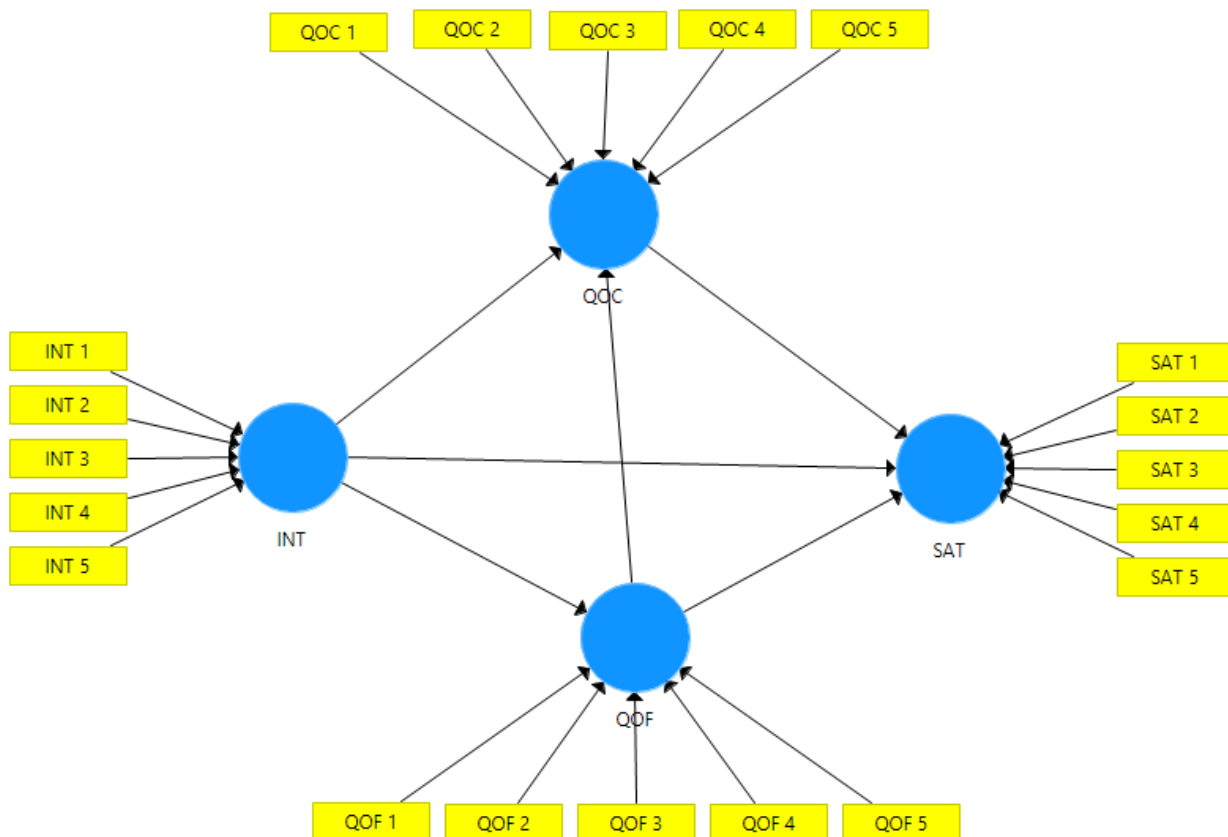
Each set of indicator variables must be classified as being reflective or formative in relation to its latent variable. Indicator variables are considered reflective when the latent variable explains the indicator variables, while indicator variables are classified as formative when the indicator variables explain the latent variable. In each of these four sets of indicator/latent variables, the assumption was made that the indicator variables explain the latent variable; therefore, the indicators variable were considered formative the arrows were shown pointing toward the latent variables as can be seen in Figure 1.2.

The results of the initial model are presented in Figure 1.3. The weights are shown for each of the indicator variables and the coefficients and R^2 values are shown for the latent variables.

Figure 1.3
STAGE I MODEL WITH RESULTS (MEASUREMENTS)
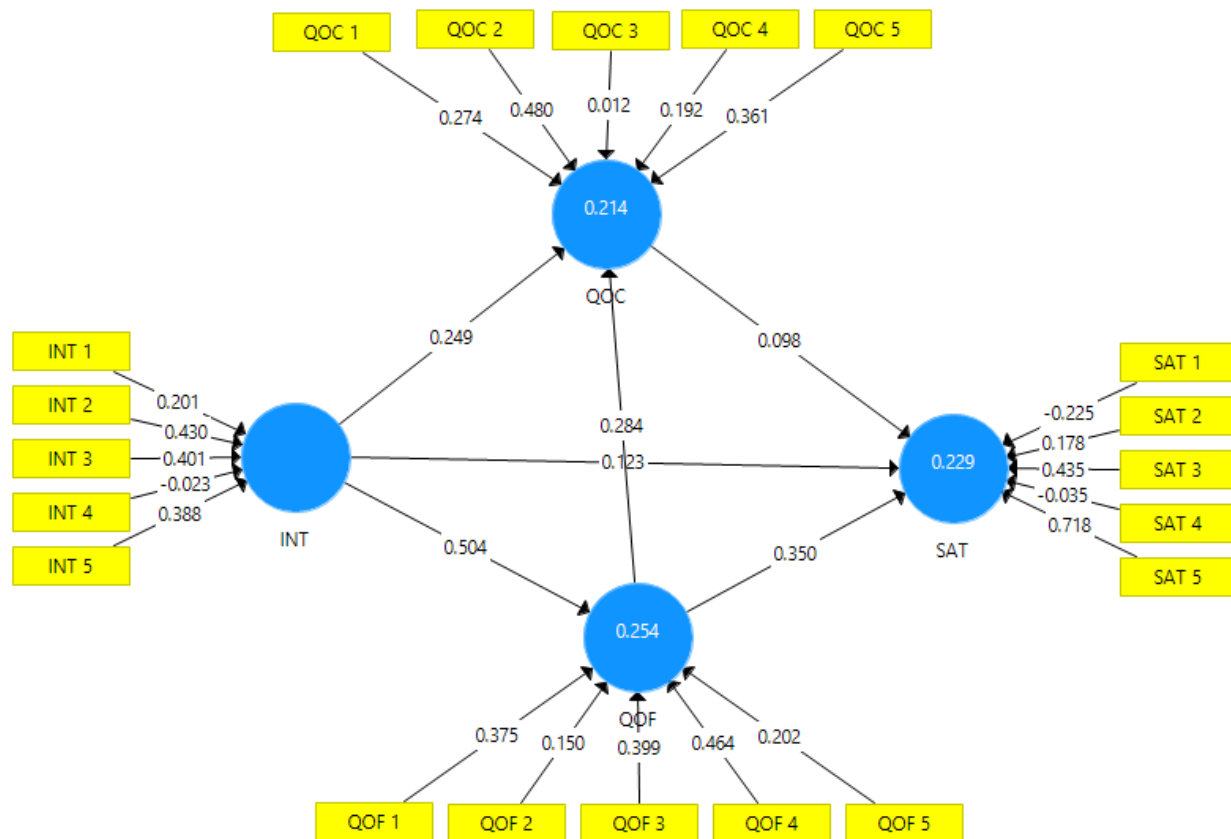
EVAULATION/ASSESSMENT OF THE MODEL

A two-step process was necessary to evaluate/assess the outer and inner model results. The first step was to check for reliability and validity. The purpose of this evaluation is to ascertain if the results/measures genuinely represent the latent variables (constructs). If they are not representative, then those particular variables should be deleted from the model. Step two involves assessing the estimates within the inner model.

The outer model was assessed for collinearity and reliability. Each set of formative variables was tested for collinearity. The variance inflation factor (VIF) was used to determine multicollinearity between the formative variables. If the VIF is greater than 5, then collinearity exists. None of the formative variables had a VIF greater than 5; therefore, there is no significant correlation between the formative variables associated with each latent variable.

Next, each formative variable was assessed to determine if it contributed significantly to the corresponding latent variables. The method used to perform this assessment is called bootstrapping. Bootstrapping is a nonparametric procedure used to generate t-scores and is used because PLS-SEM does not assume a normal distribution of the data. The program takes repeated random samples with replacement from the original sample. The standard errors are calculated and used in hypothesis testing. (Davison and Hinkley, 1997; Efron and Tibshirani, 1986). This bootstrapping procedure was used to generate the test statistic for testing each of the formative variables. If the indicator variable does not significantly contribute to each latent variable, then the indicator variable should be deleted from the model. The formative indicators are referred to as weights, while the reflective indicators are referred to as loadings. The weights for the formative indicator variables were tested for significance. If the weights were not significant for an indicator variable, the loading was also tested for significance. There was only one indicator variable (QOC 3) that was not significant when looking at both the weight and loading value. Therefore, the indicator variable QOC3 was deleted from the model. Figure 1.4 shows the new model with QOC3 deleted. The assessment of the formative indicator variables is now complete.

Figure 1.4
MODEL WITH QOC3 DELETED
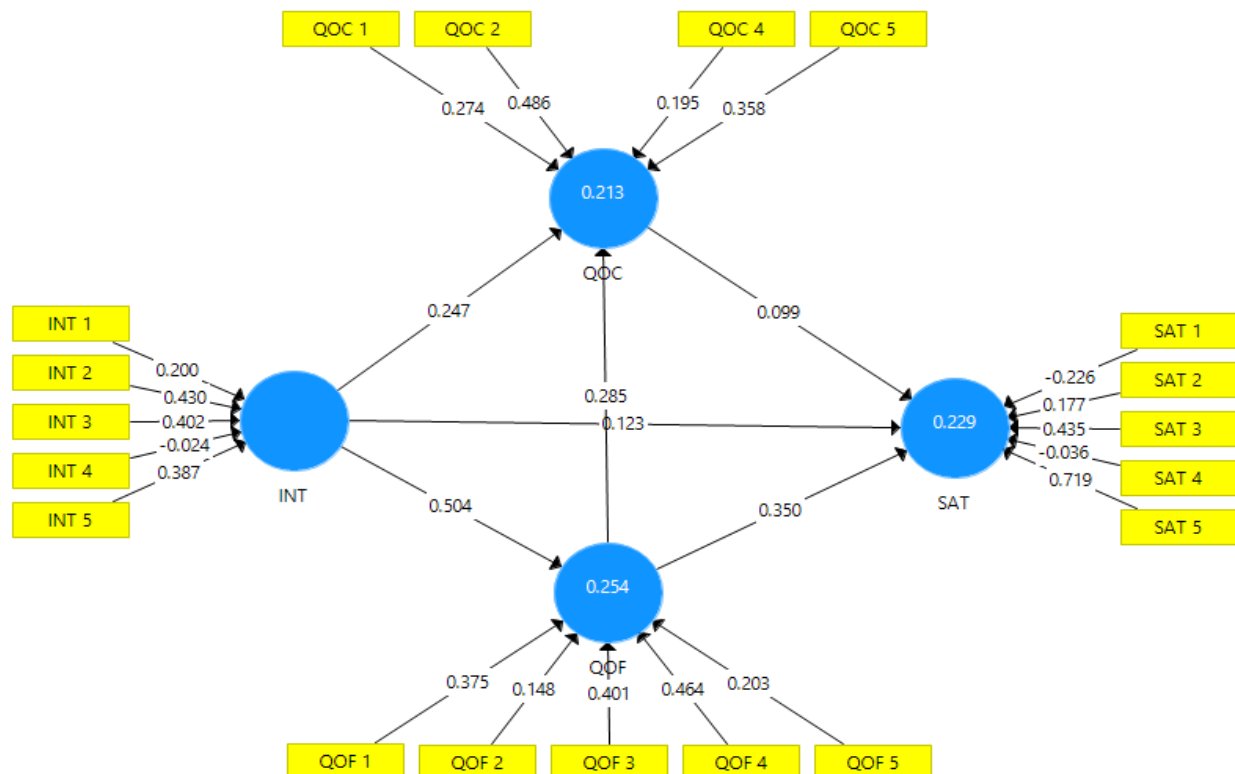
However, before the final model can be used, the structural (inner) model was assessed. Both the bootstrapping procedure combined with a procedure called blindfolding was used to assess the structural model for collinearity, R^2 value, path coefficient significance, effect size, and predictive relevance of the model. The blindfolding procedure is a "sample reuse technique that omits every d*th* data point in the endogenous construct's indicators and estimates the parameters with the remaining data points" (Hair, Hult, Ringle and Sarstedt, 2014). The structural model met the assessment requirements and is now ready for interpretation.

TESTS OF HYPOTHESIS

Table II will be used to analyze the path coefficients and hypotheses tests with conclusions presented below.

Table II PATH COEFFICIENTS WITH T-VALUE AND P-VALUE RESULTS			
	COEFFICIENT	T-VALUE	P-VALUE
INT → SAT	.123	.799	.437
QOC → SAT	.099	.559	.577
QOF → SAT	.350	2.086	.037
INT → QOC	.247	1.094	.275
INT → QOF	.504	4.744	.000
QOF → QOC	.285	1.178	.239

Hypothesis 1: Student/Faculty Interaction (INT) has a positive causal impact on Student Satisfaction (SAT).

Even though the coefficient for INT->SAT was positive (.123), the path coefficient was not significant with a p-value of .437. Student/Faculty Interaction does not have a direct positive effect on Student Satisfaction. Therefore, there is no statistical evidence to support Hypothesis 1.

Hypothesis 2: Quality of Faculty (QOF) has a positive effect on Student Satisfaction (SAT).

The path QOF -> SAT had a coefficient of 0.350 with a significant p-value of .037. This study supports hypothesis 2; therefore, the quality of faculty has a positive influence on Student Satisfaction.

Hypothesis 3: Quality of Curriculum (QOC) exerts a positive mediating effect between Quality of Faculty (QOF) and Student Satisfaction (SAT).

The path coefficients for QOF->QOC and QOC->SAT were .285 and .099 respectively, and had p-values of 0.239 and 0.577 respectively, both being > .05 and non-significant. Therefore, hypothesis 3 was not supported by the statistical evidence. The quality of curriculum does not have a mediating effect between Quality of Faculty and Student Satisfaction.

Hypothesis 4: Quality of Curriculum (QOC) positively influences Student Satisfaction (SAT).

The path coefficient for QOC -> SAT is .099, which is not significant with a p value of .577. Therefore, hypothesis 4 was not supported by the significant evidence. The quality of curriculum does not positively influence Student Satisfaction.

Hypothesis 5: Quality of Faculty (QOF) has a mediating effect between Student/Faculty Interaction (INT) and Student Satisfaction (SAT).

The path INT -> QOF had a coefficient of .504 and a p-value of .00, which is highly significant. As presented in hypothesis 2, the path QOF -> SAT had a path coefficient of 0.350 and was significant with a p-value of .037; therefore, Hypothesis 5 is supported by this study which indicates that the Quality of Faculty had a mediating effect between Student/Faculty Interaction and Student Satisfaction.

Hypothesis 6: Quality of Curriculum (QOC) has a mediating effect between Student/Faculty Interaction (INT) and Student Job Satisfaction (SAT).

Both the INT -> QOC and QOC -> SAT path had coefficients of .247 and .099 respectively. Both paths had non-significant p values of .275 and .577 respectively. Therefore, hypothesis 6 does not have significant evidence for support and indicates that quality of curriculum does not have a mediating effect between Student/Faculty interaction and Student Satisfaction.

SUMMARY AND CONCLUSIONS

The data supports Hypothesis 2: Quality of Faculty (QOF) has a positive effect on Student Satisfaction (SAT) and Hypothesis 5: Quality of Faculty (QOF) has a mediating effect between Student/Faculty Interaction (INT) and Student Satisfaction (SAT) indicating that the interaction between students and faculty does impact student satisfaction through having a quality faculty. Although Student/Faculty interaction is very important, there is no direct relationship with Student Satisfaction. The Quality of Faculty has the mediating effect between Student/Faculty interaction and Student Satisfaction.

Improving the quality of the curriculum within itself may have little impact on student satisfaction. Business curriculum must constantly be evaluated and continuously improved in order to meet accreditation standards. According to the AACSB website, only the best business schools are even eligible to obtain accreditation (AACSB International, 2015). These standards are reviewed every five years in which faculty qualifications are one of the components analyzed, together with curriculum and assessment results. However, the improvement of the curriculum may have little influence on the student satisfaction. Increasing interaction between student and faculty while improving the quality of the faculty may be the key to keeping students satisfied, which could help in the recruitment and retaining of quality students.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research could focus on a comparison of student satisfaction at this public university versus a private university of the same or comparable size. Additionally, there could be a comparison of student satisfaction between this small university and a larger public university. The authors have often heard students mention the attention they receive at this smaller university versus just being a number without a face or name at a larger university, so an

interesting comparison could be made to determine if students at larger universities are indeed satisfied with faculty, student/faculty interaction, and/or curriculum. If not, what makes these students content at larger schools, possibly athletics or social life? Research in this area of student satisfaction using the Partial Least Squares Path Analysis Model can be ongoing for years to come.

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COMPARING TOPIC IMPORTANCE PERCEPTIONS OF INDUSTRY AND BUSINESS SCHOOL FACULTY: IS THE TAIL WAGGING THE DOG?

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ABSTRACT

Collaboration between industry and academia has become an important issue for business schools. This collaboration manifests itself when faculty are asked to work in partnership to create a curriculum that serves both students and industry. Unfortunately, the curriculum topics considered to be most important by academia are not necessarily the same as the topics that are important to industry. While academia's primary objective is to provide business students with a broad range of skills and experiences that will serve them throughout their entire careers, industry often seeks specific skills to meet its current requirements. Therefore, academicians should be interested in identifying those topics in which significant disagreement exists and in developing a resolution strategy.

The authors compare data from (Evans, 1996) and (Weinstein et al., 1998) to that of follow-up surveys to examine these differences. They find that the preferences of both parties change over time. On some subjects, academia's preferences move towards those of industry, while on others, industry's preferences move towards academia. In some cases the preferences of both moves towards each other.

Our empirical evidence supports the benefit of collaboration between academia and industry. However, it also suggests that neither party should assume it will have a better perspective in all cases.

INTRODUCTION

Representatives of academia and industry struggle to define the nature of their relationship relative to curriculum development. Should academia remain independent or follow the lead of industry? One argument is that because industry hires business school graduates, it is better qualified to determine the competencies students will need in order to compete successfully in the job market (Plice & Reinig, 2007). A counter argument is that while industry seeks specific skills to meet its immediate requirements, business schools are more qualified to provide students with a broad range of skills and experiences that will serve them throughout their entire careers (Azevedo et al., 2012). The unique value of the university business school lies not in the disseminating of specialized content to meet industry's needs, but in its ability to teach students to relate and utilize their knowledge through the cultivation of creativity and problem-solving skills (Chia, 2014).Thus, academia faces the challenge of finding an equilibrium between these competing viewpoints. While acknowledging industry's perspective, academia must also balance these views with its obligation to provide students with the foundation skills they will require. Faculty has the responsibility to provide a curriculum that addresses the needs of both students and industry – both important stakeholders of the higher education system (Weinstein &

Sanders, 1997). Faculty commonly identifies and satisfies students' requirements (e.g., satisfaction of prerequisites for subsequent classes, graduation, employment, and preparation for graduate programs, etc.). However, too often they do not identify and satisfy the requirements of industry. With the growing call for increased collaboration, industry is called upon to play multiple roles in its relationship with faculty and schools of business. These roles include providing financial support, creating opportunities for professional development and consulting, and participating in strategic and operational planning through membership on corporate advisory boards. Because of decreasing state funding, schools of business increasingly turn to industry to fund student scholarships, supplement physical plant needs, support research, and sponsor special events (Ping, 1981; Muller & Sepehri, 1988). Moreover, industry often influences the preparation students need to enter the workforce by providing cooperative education opportunities, internships, and projects. Industry representatives participate in the academic process as adjunct faculty and speakers for classes and student organizations. They also provide faculty with opportunities for consulting and case analysis. Lastly, in their role as members of a corporate advisory board, they are asked to provide guidance for strategy and curriculum development (Baker et al., 2008; Dorazio, 1996).

Standard Eight of the Association to Advance Collegiate Schools of Business (AACSB) accreditation standards for learning and teaching asks applicants to describe stakeholder involvement in curriculum development (AACSB, 2016). These stakeholders might include students, alumni, government representatives, industry partners, and faculty. The standard is not specific in regard to how each program incorporates external input into its curriculum. Therefore, faculty in each program may decide how it should handle stakeholder preferences and recommendations. Sometimes they allow industry to exert uncomfortably large degrees of influence in critical decisions.

The authors focus on the topic of quality management as the basis for their study to address the evolving relationship between topics considered important to academia versus those essential to industry. Since the entire business curriculum is too broad to permit a comprehensive comparison, the authors have limited the study to what they believe is a representative field which is interdisciplinary, significant, and mature. This maturity and the evolving nature of the field provide the authors the opportunity to study its curriculum development over time. Furthermore, this topic has gained renewed importance for research and practice with the advent of global supply chain management (Flynn & Flynn, 2005; Foster, 2008; Das, 2011; Kuei et al., 2011; Tse et al., 2011). W. Edwards Deming, an academic who became famous for his contributions to quality management, introduced Total Quality Management (TQM) concepts to U. S. industry and promoted their integration throughout the collegiate curriculum (Deming, 1981). The U. S. business community acknowledged that quality management practices are essential in order to respond to global competition and its economic consequences (Robinson et al., 1991). Quality management remains an important source of competitive advantage for industry (Narasimhan & Schoenherr, 2012). Academia has responded to these business needs by increasing its coverage of quality related topics in the curriculum (Rao & Rao, 2007; Vazzana et al., 1997).

However, academia and industry have not reached a consensus on the relative importance of quality management topics (Weinstein et al., 1998). The authors use the term *gap* to describe the situation where there is a significant difference between two groups as to the importance of specific quality management topics. Figure 1 illustrates the six gaps this study addresses. The reader will note that these comparisons are used to describe gaps that occur between different

groups during a specific point in time (gaps one and two), within the same group over time (gaps three and four), and between different groups at different times (gaps five and six). The specific questions the authors address are:

- On which topics do the authors find statistically significant differences between faculty and practitioner preferences when comparing data reported in Evans (1996) and Weinstein et al. (1998) to data from their two follow-up surveys, the higher education survey and the Baldrige survey (gap one versus gap two);
- On which topics do academia and industry report a significant difference in level of importance in the follow-up surveys that differs from those reported in the 1996/1998 baseline surveys (gaps three and four); and
- Can the authors conclude whether academia has moved towards earlier industry preferences or whether industry has moved towards earlier faculty preferences by comparing preferences identified in the 1998 faculty survey with those of the follow-up Baldrige survey (gap five), or by comparing preferences identified in the 1996 Evans survey with those of the later Higher Education faculty survey (gap six). Is there evidence to conclude whether academia has moved towards earlier industry preferences or has industry moved towards earlier faculty preferences? The answer can be logically inferred from the comparisons to imply where industry has led and academia followed, and where academia has led and industry followed.

The literature argues both sides of the issue of whether academia should play the primary role in curriculum development or follow the recommendations of industry. This paper seeks to provide guidance in regard to the role of each party by comparing results of the four surveys described. These comparisons and the logical conclusions they offer constitute the contribution of this paper.

Figure 1
COMPARISONS OF SURVEY RESULTS
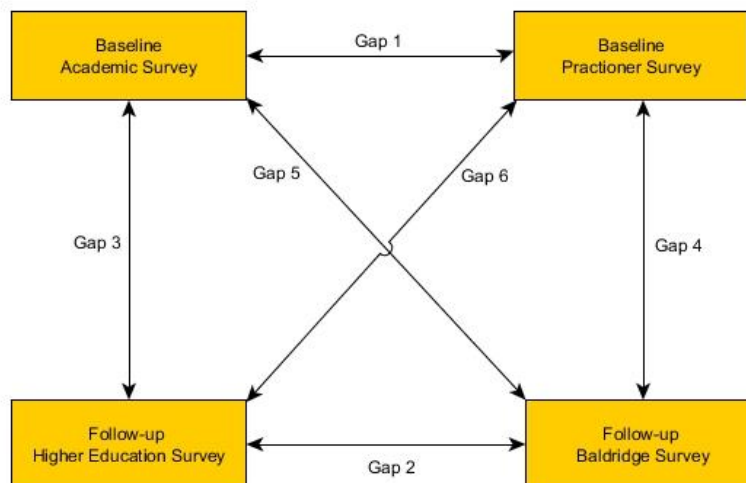
LITERATURE REVIEW

Management education is a marriage between theory and practice that requires an interactive and collaborative partnership between industry and academia in order to strike a balance between the technical and managerial knowledge that graduates require (Choudhary,

2012; Trauth et al., 1993). However, there are growing concerns that academic programs may not be equipping students with the skills needed to gain or maintain employment. Critics cite a perceived mismatch between those skills acquired through higher education versus those required for employment (Azevedo et al., 2012). Nowhere is this more apparent than in the field of quality management.

The challenge to academic institutions appeared in Robinson et al. (1991) in which six senior executives from American Express, Ford, IBM, Motorola, Proctor & Gamble, and Xerox expressed business community concern that universities integrate Total Quality Management (TQM) into their curricula. They write, "If the United States expects to improve its global competitive performance, business and academic leaders must close ranks behind an agenda that stresses the importance and value of TQM … academic institutions that are slow to embrace TQM, at best, miss the opportunity to lead change and, at worst, run the risk of becoming less relevant to the business world."

As with all areas of the business curriculum, the discipline of quality management has evolved significantly. Once the province of manufacturing departments, quality management is practiced in areas as diverse as purchasing, human resources, and marketing (Young & Wilkinson, 2002), and service-oriented sectors such as health care and education (Edgeman & Bigio, 2004; Stevenson & Mergen, 2006).This growing application of quality management practices supports the argument that the topics within the field should be integrated into the business school curriculum (Rao & Rao, 2007), although agreement may not exist regarding which quality management topics are important (Weinstein et al., 1998). Evans (1996) describes a survey of managers of Baldrige Award-winning organizations performed for the 1994-95 ASQC Education Board Research Fellowship Program in response to Robinson et al. (1991). The survey investigates what topics should be taught in quality-related courses to best serve the needs of business and industry. Evans first asks respondents to list the most important quality-related skills that any entry-level college graduate should possess. The results include customer focus, continuous process improvement, teamwork, and personal commitment to and responsibility for quality performance. Evans next asks respondents to rate how important it is that entry-level college graduates know specific quality-related concepts and skills. The 60 concepts and skills listed are adapted from the Leadership Steering Committee Report of the 1992 Total Quality Forum (Proctor & Gamble, 1992) and a 1994 study of quality curricula and syllabi (Gitlow et al., 1994). The concepts and skills are listed in eight categories adapted from the Ernst and Young International Quality Study (Ernst and Young, 1991). The categories include: customer orientation, practical knowledge and application of TQM tools, fact-based decision making, and understanding of work as a process, team orientation, and commitment to improvement, active learner, and systems perspective. Evans asks respondents to evaluate the extent to which each of the 60 concepts and skills is taught in company training courses. His results exhibit high correlations between importance and training coverage for line managers (0.74229), technical staff members (0.68867), and frontline employees (0.85297) (Evans 1996; Weinstein et al., 1998).

Observing these relatively high correlations, Weinstein et al. (1998) performed a second survey to determine the correlation between the results of Evans' survey and what was being taught in quality-related courses in higher education. This survey was mailed to representatives of institutions that had indicated that their programs offered a course in quality control in *Quality Progress's Sixth Quality in Education Listing* (Klaus, 1996). For each topic identified in the first part of Evans' survey, the authors asked the extent to which the particular topic was covered in a

designated quality course. Weinstein et al. (1998) compared the means calculated from Evans' 1996 survey to the means for undergraduate programs and then calculated correlation coefficients using the Spearman rank order correlation coefficient procedure. They did not find a statistically significant correlation (r= 0.06126, p = 0.7478) between the quality-related topics identified as important by the Baldrige Award-winning companies and the emphasis in undergraduate quality courses. Based upon their survey results, Weinstein et al. (1998) suggested that educators face four major challenges in addressing the need to

- Increase awareness of industry-preferred quality training topics;
- Re-assess the current curriculum and quality-related course topics;
- Explore benchmarking opportunities with Baldrige corporate training programs;
- Rapidly offer new quality-related course topics expected by industry or face irrelevancy.

Clearly these recommendations imply that academia should follow industry's lead. However, that argument lacks empirical evidence for support. The authors observe that in industry, participants attend training because they need it to do their jobs. When industry designs or selects the content for its training, naturally there should be a high correlation between the preferences of managers and the content of that training. Industry's curricular desires follow its current needs whereas academia's curricular designs concern themselves with balancing current with future needs. The role of academia should not be restricted to providing short-term technical training but instead, should include a focus on establishing a foundation for lifetime learning. An emphasis on technical topics desired by industry at the exclusion of academic-oriented topics may provide short-term benefits in obtaining employment, but also may inhibit eventual career advancement (Plice & Reinig, 2007). By way of contrast, business school graduates will be challenged to apply what they have learned if faculty only presents concepts in an abstract and decontextualized manner (Brimble et al., 2012; Herrington & Oliver, 2000). Likewise, it may be difficult to simultaneously address the needs of business while maintaining the traditional academic principles of rigor and scholarship (Chia, 2014).

The authors observe that there is a greater incentive for higher education to consider the needs of industry today than in 1996 when Evans (1996) performed his initial survey. Today, revenue streams --- such as those from state aid --- that once provided reliable sources of support are shrinking or disappearing entirely (Fethke & Policano, 2012). Business schools also face new enrollment challenges such as competition from online market entrants, online technology, and international competitors (Hall et al., 2016, Pucciarelli & Kaplan, 2016) as well as declining numbers of students entering higher education (*Investor's Business Daily,* 2014). A strategy to establish partnerships with representatives of industry may be a critical key to financial survival. An example of such partnerships can be seen in the growing use of industry advisory boards. With this form of collaboration, academia benefits from the direct financial support, curricular guidance, and business expertise of industry and from opportunities for collaborative research and consulting. Industry in turn benefits from the technical expertise of academia and the supply channel of recent graduates (Dorazio, 1996; Hammond & Moser, 2009).

DATA COLLECTION

To investigate the research questions, the authors used results from four surveys. The first two, Evans (1996) and Weinstein (1998) are described in the literature review above. The remaining two surveys are described below.

The Baldrige Survey

The participants for this survey included quality professionals and executives from organizations that previously had won the Malcolm Baldrige National Quality Award. Fifteen of the 127 invited participated, for a response rate of 11.8 percent. These quality professionals and executives were asked to rate how important it was that entry-level college graduates and new MBA hires understand specific quality-related concepts and skills. The list of skills and concepts was based upon those previously used in surveys by Evans (1996) and Weinstein et al. (1998), with several topics added to capture new areas in quality management. Table 1 describes the participants in the survey.

Table 1
BALDRIGE SURVEY DEMOGRAPHIC INFORMATION

JOB TITLE		ANNUAL SALES	
Quality Director	4	Less than $1 million	0
Quality Professional	5	$1 - $19 million	2
Other Executives	6	$20 - $100 million	5
		More than $100 million	8
Industry			
Manufacturing	11	**Number of employees**	
Retail	2	Mean	5325.2
Other	2	Standard deviation	12988.9

The Higher Education Survey

The authors sent this survey to the representatives of 147 academic institutions that had indicated their programs offered a course in quality management in *Quality Progress's Sixth Quality in Education Listing* (Klaus, 1996). This list also was used by Weinstein et al. (1998), and therefore it provides the authors the means to effectively compare curricula of well-established quality management programs over time. Representatives from 35 academic institutions responded, for a response rate of 23.8 percent. They were asked, for each of 67 quality management topics, the extent to which each topic was covered in designated quality courses. Many of these topics were also included in Weinstein et al.'s (1998) Higher Education Survey and make up the basis of the authors' comparative analysis. The authors compare survey results to Evans' (1996) and Weinstein et al.'s (1998) published results and describe their analysis below.

RESEARCH METHODOLOGY AND RESULTS

The authors divide this section into three parts. The first part compares practitioners' and academics' perceptions of quality management practices using a subset of the results reported in Evans' (1996) and Weinstein et al.'s (1998) survey results (gap 1). The second section compares the perceptions of importance of quality management practices across the two more recent follow-up surveys (gap 2). The third investigates changes in perceptions of importance of quality management practices of academics between the baseline surveys and the follow-up surveys (gap 3). The authors then compare the changes in perceptions of importance of quality management practices of practitioners between the baseline surveys and the follow-up surveys (gap 4). They also compare faculty baseline responses with practitioner follow-up responses and compare practitioner baseline responses with faculty follow-up responses (gaps 5 and 6).

Baseline Perceptions of Quality Management Practices

The authors utilize a subset of topics from Evans' (1996) practitioner survey and Weinstein et al.'s (1998) faculty survey to establish a baseline for comparisons to the results from the later Baldrige and Higher Education surveys. The 22 topics are divided into categories of Customer Orientation, Practical Knowledge and Applications of TQM Tools, Fact-based Decision Making, Understanding and Improving Work as a Process, and Team Orientation. They use Welch's t-test to compare the surveys' results. This approach is appropriate because of unequal sample sizes and because the authors cannot assume that the variances of these two samples are equal. Table 2 contains the results that the authors will refer to as their *baseline* faculty versus practitioner results. This table addresses the question of whether faculty and practitioners initially had different perceptions of importance for topics within the categories listed above (gap 1). In seven of 22 comparisons, the authors find statistically significant differences ($p \leq 0.05$) in faculty and practitioner perceptions of the importance of these topics. The authors also determined the correlation between faculty and practitioner perceptions of topic importance using Spearman's rho and found it to be statistically insignificant (r= -0.232, p= 0.343). Both these results suggest that faculty and practitioner perceptions of topic importance may have been systematically different and not positively correlated.

Table 2
BASELINE COMPARISON OF FACULTY AND PRACTITIONER RESPONSES

SURVEY ITEM	FACULTY		PRACTITIONER		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Identifying customers	3.638	1.017	4.700	0.803	0.001
Internal vs. external customers	3.975	0.861	4.228	1.064	0.276
Listening to the voice of customers	4.063	0.939	4.764	0.718	0.013
Customer satisfaction	3.950	0.950	4.285	0.971	0.200
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.413	0.570	4.286	1.141	0.612
Statistical process control	4.563	0.738	3.336	1.209	0.993
Design of experiments	3.563	1.319	2.736	1.133	0.955

SURVEY ITEM	FACULTY		PRACTITIONER		COMPARISON
	mean	std.	mean	std.	p-value
Fact-based Decision Making					
Cost of quality	3.788	0.950	3.750	1.251	0.529
Operational definitions of metrics	3.638	0.850	3.571	1.530	0.544
Plan-do-study-act cycle	4.038	0.850	3.693	1.082	0.786
Root-cause analysis	3.675	0.805	4.407	1.048	0.042
Understanding and Improving Work as a Process					
Process Focus	4.313	0.794	4.586	0.727	0.184
Understanding and minimizing variation	4.300	0.749	3.750	1.251	0.867
Flowchart and process mapping	3.950	0.861	4.164	1.538	0.360
Special vs. common variation	4.275	0.693	3.629	1.268	0.902
Building in quality vs. inspecting in quality	4.338	0.749	4.343	1.361	0.495
Process control concepts	4.513	0.559	3.693	1.133	0.966
Team orientation					
Empowerment	3.713	1.006	4.343	0.938	**0.055**
Cross-functional-teamwork	3.750	0.928	4.643	0.642	0.001
Team-building skills	3.713	0.984	4.643	0.549	<0.001
Team-meeting skills	3.238	1.062	4.286	0.913	0.004
Consensus development	2.988	1.107	4.464	0.854	<0.001

Follow-up Perceptions of Quality Management Practices

In order to investigate how faculty and practitioner perceptions may change over time, the authors use two follow-up surveys: the Baldrige Survey and the Higher Education Survey. They again use Welch's t-test to compare the results of the two surveys (Table 3). They find statistically significant differences ($p \leq 0.05$) in faculty and practitioner perceptions of topic importance in only three of 22 comparisons. They also look at the correlation between the faculty and practitioner perceptions of topic importance using Spearman's rho and find a marginally significant correlation between the two samples ($r = 0.359$, $p = 0.099$). These results suggest that faculty and practitioner perceptions of topic importance may have become more similar and positively correlated with one another during the period since the original surveys were conducted, closing what the authors refer to as gap one. Gap two clearly is smaller than gap one.

These results lead the authors to the important question of whether the perceptions of topic importance of one or both groups have evolved. This is addressed below.

Table 3
FOLLOW-UP COMPARISON OF FACULTY AND PRACTITIONER RESPONSES

SURVEY ITEM	FACULTY		PRACTITIONER		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Identifying customers	3.650	1.288	4.467	0.834	0.006
Internal vs. external customers	3.900	1.133	4.200	0.941	0.172
Listening to the voice of customers	4.250	0.968	4.400	0.828	0.293
Customer satisfaction	4.428	0.931	4.600	0.737	0.248
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.471	0.719	4.533	1.125	0.422
Statistical process control	4.423	0.960	4.000	1.309	0.865
Design of experiments	3.550	1.357	3.800	1.320	0.275

SURVEY ITEM	FACULTY		PRACTITIONER		COMPARISON
	mean	**std.**	**mean**	**std.**	**p-value**
Fact-based Decision Making					
Cost of quality	3.850	1.067	4.067	1.033	0.255
Operational definitions of metrics	3.646	1.138	4.133	0.990	0.070
Plan-do-study-act cycle	4.100	1.142	4.000	1.069	0.614
Root-cause analysis	4.086	1.120	4.267	1.033	0.294
Understanding and Improving Work as a Process					
Process Focus	4.328	1.012	4.267	1.033	0.574
Understanding and minimizing variation	4.423	0.723	4.133	1.060	0.828
Flowchart and process mapping	4.375	0.932	4.000	1.000	0.886
Special vs. common variation	4.279	0.904	4.071	0.997	0.751
Building in quality vs. inspecting in quality	4.279	0.847	4.267	0.961	0.516
Process control concepts	4.039	1.063	4.067	0.884	0.462
Team orientation					
Empowerment	3.750	1.233	4.214	0.802	0.064
Cross-functional-teamwork	4.050	1.035	4.071	0.616	0.464
Team-building skills	3.700	1.349	4.000	0.555	0.143
Team-meeting skills	3.550	1.278	4.143	0.770	0.027
Consensus development	3.400	1.230	3.929	0.829	0.044

Evolution of Perceptions

The authors first compare the results from the 1998 faculty baseline survey with the responses from the later Higher Education Survey in order to evaluate gap three. They find statistically significant differences ($p \leq 0.05$) in only three of 22 comparisons (Table Four). This suggests that faculty's perceptions of the importance of Customer Orientation, Practical Knowledge and Applications of TQM Tools, Fact-based Decision Making, Understanding and Improving Work as a Process, and Team Orientation did not change at a statistically significant level from the earlier survey to the later since 19 of 22 topics did not differ significantly.

Table 4
COMPARISON OF FACULTY BASELINE AND FOLLOW-UP RESPONSES

SURVEY ITEM	FACULTY BASELINE		FACULTY FOLLOW-UP		COMPARISON
	mean	**std.**	**mean**	**std.**	**p-value**
Customer Orientation					
Identifying customers	3.638	1.017	3.650	1.288	0.482
Internal vs. external customers	3.975	0.861	3.900	1.133	0.621
Listening to the voice of customers	4.063	0.939	4.250	0.968	0.204
Customer satisfaction	3.950	0.950	4.428	0.931	0.017
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.413	0.570	4.471	0.719	0.353
Statistical process control	4.563	0.738	4.423	0.960	0.751
Design of experiments	3.563	1.319	3.550	1.357	0.515
Fact-based Decision Making					
Cost of quality	3.788	0.950	3.850	1.067	0.397
Operational definitions of metrics	3.638	0.850	3.646	1.138	0.485
Plan-do-study-act cycle	4.038	0.850	4.100	1.142	0.398
Root-cause analysis	3.675	0.805	4.086	1.120	0.041

SURVEY ITEM	FACULTY BASELINE		FACULTY FOLLOW-UP		COMPARISON
	mean	std.	mean	std.	p-value
Understanding and Improving Work as a Process					
Process Focus	4.313	0.794	4.328	1.012	0.472
Understanding and minimizing variation	4.300	0.749	4.423	0.723	0.241
Flowchart and process mapping	3.950	0.861	4.375	0.932	0.024
Special vs. common variation	4.275	0.693	4.279	0.904	0.492
Building in quality vs. inspecting in quality	4.338	0.749	4.279	0.847	0.620
Process control concepts	4.513	0.559	4.039	1.063	0.987
Team orientation					
Empowerment	3.713	1.006	3.750	1.233	0.444
Cross-functional-teamwork	3.750	0.928	4.050	1.035	0.101
Team-building skills	3.713	0.984	3.700	1.349	0.517
Team-meeting skills	3.238	1.062	3.550	1.278	0.134
Consensus development	2.988	1.107	3.400	1.230	0.070

Second, the authors compare the practitioner baseline survey results with the responses from the Baldrige Survey in order to evaluate gap four. They find that only one of 22 comparisons is statistically significant. This suggests that practitioner's perceptions of the importance of the topics did not change at a statistically significant level from the earlier survey to the later (Table 5).

Table 5
COMPARISON OF PRACTITIONER BASELINE AND FOLLOW-UP RESPONSES

SURVEY ITEM	PRACTITIONER BASELINE		PRACTITIONER FOLLOW-UP		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Identifying customers	4.700	0.803	4.467	0.834	0.731
Internal vs. external customers	4.228	1.064	4.200	0.941	0.523
Listening to the voice of customers	4.764	0.718	4.400	0.828	0.847
Customer satisfaction	4.285	0.971	4.600	0.737	0.228
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.286	1.141	4.533	1.125	0.319
Statistical process control	3.336	1.209	4.000	1.309	0.128
Design of experiments	2.736	1.133	3.800	1.320	0.032
Fact-based Decision Making					
Cost of quality	3.750	1.251	4.067	1.033	0.283
Operational definitions of metrics	3.571	1.530	4.133	0.990	0.192
Plan-do-study-act cycle	3.693	1.082	4.000	1.069	0.270
Root-cause analysis	4.407	1.048	4.267	1.033	0.614
Understanding and Improving Work as a Process					
Process Focus	4.586	0.727	4.267	1.033	0.792
Understanding and minimizing variation	3.750	1.251	4.133	1.060	0.245
Flowchart and process mapping	4.164	1.538	4.000	1.000	0.600
Special vs. common variation	3.629	1.268	4.071	0.997	0.212
Building in quality vs. inspecting in quality	4.343	1.361	4.267	0.961	0.552
Process control concepts	3.693	1.133	4.067	0.884	0.224

SURVEY ITEM	PRACTITIONER BASELINE		PRACTITIONER FOLLOW-UP		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Cross-functional-teamwork	4.643	0.642	4.071	0.616	0.968
Team-building skills	4.643	0.549	4.000	0.555	0.990
Team-meeting skills	4.286	0.913	4.143	0.770	0.638
Consensus development	4.464	0.854	3.929	0.829	0.909

Third, the authors compare the 1998 faculty baseline survey results with the practitioner responses from the later Baldrige Survey. This is referred to as gap five. The authors find that in only four of 22 comparisons are differences statistically significant (Table 6). This suggests that faculty's 1998 baseline results are similar to those reported in the later Baldrige Survey. This describes the nature of gap five.

Table 6
COMPARISON OF FACULTY BASELINE AND PRACTITIONER FOLLOW-UP RESPONSES

SURVEY ITEM	FACULTY BASELINE		PRACTITIONER FOLLOW-UP		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Identifying customers	3.638	1.017	4.467	0.834	0.011
Internal vs. external customers	3.975	0.861	4.200	0.941	0.444
Listening to the voice of customers	4.063	0.939	4.400	0.828	0.258
Customer satisfaction	3.950	0.950	4.600	0.737	0.028
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.413	0.570	4.533	1.125	0.657
Statistical process control	4.563	0.738	4.000	1.309	0.090
Design of experiments	3.563	1.319	3.800	1.320	0.585
Fact-based Decision Making					
Cost of quality	3.788	0.950	4.067	1.033	0.389
Operational definitions of metrics	3.638	0.850	4.133	0.990	0.102
Plan-do-study-act cycle	4.038	0.850	4.000	1.069	0.901
Root-cause analysis	3.675	0.805	4.267	1.033	0.051
Understanding and Improving Work as a Process					
Process Focus	4.313	0.794	4.267	1.033	0.875
Understanding and minimizing variation	4.300	0.749	4.133	1.06	0.564
Flowchart and process mapping	3.950	0.861	4.000	1.000	0.868
Special vs. common variation	4.275	0.693	4.071	0.997	0.451
Building in quality vs. inspecting in quality	4.338	0.749	4.267	0.961	0.795
Process control concepts	4.513	0.559	4.067	0.884	0.058
Team orientation					
Empowerment	3.713	1.006	4.214	0.802	0.109
Cross-functional-teamwork	3.750	0.928	4.071	0.616	0.240
Team-building skills	3.713	0.984	4.000	0.555	0.307
Team-meeting skills	3.238	1.062	4.143	0.770	0.006
Consensus development	2.988	1.107	3.929	0.829	0.007

Fourth, the authors compare the results from the 1998 practitioner baseline survey with those from the later Higher Education Survey. This is referred to as gap six. The authors find that six of 22 comparisons show differences that are statistically significant (Table 7). Of these, four occur in the category of Team Orientation where previously the authors identified five significant differences in gap one. In this category, little movement has occurred in preferences for either group.

Table 7
**COMPARISON OF PRACTITIONER BASELINE AND FACULTY FOLLOW-UP RESPONSES**

SURVEY ITEM	PRACTITIONER BASELINE		FACULTY FOLLOW-UP		COMPARISON
	mean	std.	mean	std.	p-value
Customer Orientation					
Identifying customers	4.700	0.803	3.650	1.288	0.002
Internal vs. external customers	4.228	1.064	3.900	1.133	0.362
Listening to the voice of customers	4.764	0.718	4.250	0.968	0.062
Customer satisfaction	4.285	0.971	4.428	0.931	0.651
Practical Knowledge and Applications of TQM Tools					
Definition of quality	4.286	1.141	4.471	0.719	0.575
Statistical process control	3.336	1.209	4.423	0.960	0.005
Design of experiments	2.736	1.133	3.550	1.357	0.048
Fact-based Decision Making					
Cost of quality	3.750	1.251	3.850	1.067	0.797
Operational definitions of metrics	3.571	1.53	3.646	1.138	0.870
Plan-do-study-act cycle	3.693	1.082	4.100	1.142	0.266
Root-cause analysis	4.407	1.048	4.086	1.120	0.366
Understanding and Improving Work as a Process					
Process Focus	4.586	0.727	4.328	1.012	0.355
Understanding and minimizing variation	3.750	1.251	4.423	0.723	0.064
Flowchart and process mapping	4.164	1.538	4.375	0.932	0.633
Special vs. common variation	3.629	1.268	4.279	0.904	0.090
Building in quality vs. inspecting in quality	4.343	1.361	4.279	0.847	0.870
Process control concepts	3.693	1.133	4.039	1.063	0.344
Team orientation					
Empowerment	4.343	0.938	3.750	1.233	0.094
Cross-functional-teamwork	4.643	0.642	4.050	1.035	0.031
Team-building skills	4.643	0.549	3.700	1.349	0.003
Team-meeting skills	4.286	0.913	3.55	1.278	0.040
Consensus development	4.464	0.854	3.400	1.230	0.002

DISCUSSION

This paper addresses the question whether industry or academia should direct the development of business school curricula. Although the literature supports both arguments, there is scarce empirical research that addresses the effectiveness of either conclusion. While it might appear to be intuitively obvious that industry should be in the stronger position to understand its own requirements, the authors' analysis suggests it cannot be assumed that industry consistently recognizes emerging business trends before academicians do.

Figure 2a illustrates the relationships between faculty and industry preferences using data

from the baseline Evans (1996) and Weinstein et al. (1998) surveys. Figure 2b illustrates those relations using data from the follow-up Baldrige and Higher Educations surveys. Points in the upper right and lower left quadrants represent topics upon which the two groups tend to agree regarding significance. Points in the upper left and lower right quadrants represent topics on which the two groups tend to disagree in regard to significance.

Figure 3a	Figure 3b

Gap 1: Baseline Survey Results   Gap 2: Follow-up Survey Results
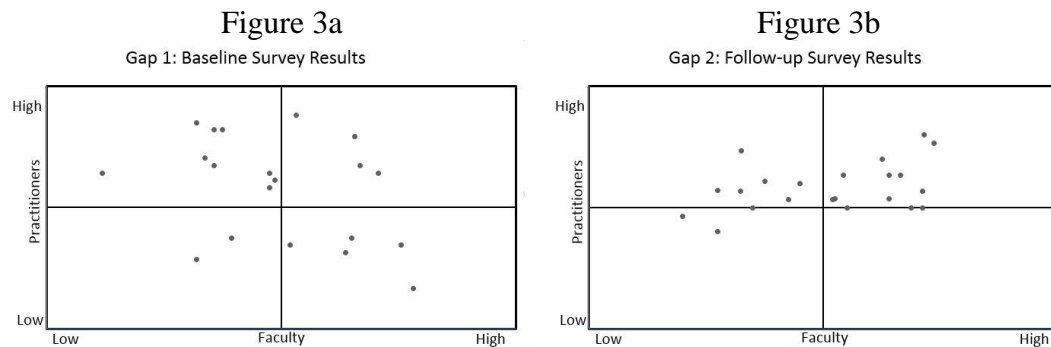
The comparison of data from Evans (1996) and Weinstein et al. (1998) confirms the significant difference between faculty and practitioner perceptions. What is referred to as gap one shows eight of 22, or 36.36 percent of comparisons exhibit differences that are statistically significant ($p \leq 0.05$). The categories with significant topic differences are Customer Orientation, Fact-Based Decision Making, and Team Orientation. These data establish a baseline for comparisons to data from the follow-up Baldrige and Higher Education surveys.

The authors observe that much of gap one has closed in the years since the baseline surveys. The later Baldrige and Higher Education survey results show that only three of 22 or 13.64 percent of comparisons exhibit differences that are statistically significant ($p \leq 0.05$). The topics with significant differences are Customer Orientation and Team Orientation. The insignificant but negative correlation calculated using Spearman's rho (r= -0.232, p= 0.343) based upon results from Evans (1996) and Weinstein et al. (1998), now has changed to a significant and positive correlation (r= 0.359, p= 0.099). These results suggest that faculty and practitioner perceptions of topic importance may have become more similar during the period since the original surveys were conducted. Thus, gap two is far smaller than gap one.

Gaps three and four reflect the changes over time of faculty and of practitioners. For gap three, the authors find statistically significant differences ($p \leq 0.05$) in only three of 22 comparisons for faculty. Comparing faculty results from the baseline survey to the results from the faculty follow-up survey, the authors see significant differences for customer orientation, fact-based decision making, and understanding and improving work as a process. For gap four, the authors find a statistically significant difference ($p \leq 0.05$) in only one of 22 comparisons for practitioners for Practical Knowledge and Applications of TQM Tools. These results raise the question of how the faculty/practitioner comparisons could change so much over time when each group individually shows so little change.

The authors investigate gaps five and six to resolve this question. They find that in some cases, neither party has changed over time nor the original gaps remain. In other cases, we the authors find that current industry preferences have moved closer to those of academia identified in Weinstein et al. (1998). Likewise, in certain cases, the current preferences of academia identified in the Higher Education Survey have moved closer to those of industry (gap five) identified in Evans (1996)

Table 8
SUMMARY OF RESULTS FOR SIGNIFICANT DIFFERENCES IN PREFERENCES

RESULTS	CATEGORIES OF TOPICS AND NUMBERS OF SIGNIFICANT DIFFERENCES IN EACH
Table 2	Customer orientation (2); Fact-based decision making (1); Team orientation (5)
Table 3	Customer orientation (1); Team orientation (2)
Table 4	Customer orientation (1); Fact-based decision making (1); Understanding and improving work as a process (1)
Table 5	Practical Knowledge and Applications of TQM Tools (1)
Table 6	Customer orientation (2); Team orientation (2)
Table 7	Customer orientation (1); Practical Knowledge and Applications of TQM Tools (1); Team orientation (4)

LIMITATIONS AND FUTURE RESEARCH

It should be noted that this study does not suggest an optimal approach to balancing the preferences of the two parties nor does it attempt to identify an optimal curriculum. This analysis is confined to a narrow but critical portion of the business curriculum: quality management. Quality management often is taught within an operations or supply chain management class although it also may be offered as a stand-alone course. These survey results are limited to topics considered to be part of the quality management body of knowledge and the authors cannot assume that the conclusions drawn from these results will necessarily apply to other topics within operations management or in other fields in the business curriculum. Therefore, the reader should be cautious to extend the findings of this analysis until they have been verified across other business school curricular domains.

In spite of the limitations identified above, the results should foster interest in future research to determine the level of external validity in the authors' conclusions. Future research could follow the paper's methodology by exploiting existing survey literature in order to improve our understanding of the nature of similar gaps in other business topic areas.

CONCLUSIONS

The intent of this paper has been to improve the understanding of the leadership roles of academia and industry in curricular development. As described earlier, industry's desires for skillsets of new hires follow current needs whereas academia seeks a balance between current and future needs of students. The authors' analyses provide support for both sides of the issue of whether academia should play the primary role in curriculum development or follow the recommendations of industry. In particular, they find that both parties may change over time and the natural tensions that exist between academia and industry can be managed when the significant differences in preferences can be identified and resolved. On some subjects, academia's preferences move towards those of industry, while on others, industry's preferences move towards academia. In some cases their preferences move towards each other. In closing, academia should not abandon its responsibility to provide a solid foundation of knowledge that will serve students throughout their careers by blindly following industry's curricular preferences. Rather, it must develop a process to evaluate and appropriately integrate industry's preferences.

These observations point to the conclusion that neither group can be said to have consistently led over the time period between the baseline and follow-up surveys. Rather, what is

observed is that in most cases, each group has moved closer to the preferences of the other. Sometimes one will lead, sometimes the other. And sometimes both will move. We can address how best to move forward with curriculum development with the understanding of the nature of change. The empirical evidence supports the need for further collaboration between academia and industry. However, neither party should assume that it necessarily will have a better perspective in all cases.

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THE IMPACT OF METACOGNITIVE AWARENESS ON CLASS PERFORMANCE IN FINANCIAL ACCOUTNING COURSES

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ABSTRACT

Metacognition is defined as "thinking about your thinking". It leads students more conscious of what they are learning and more strategic in their learning process. Among many studies in metacognition, metacognitive awareness has been identified as an important factor in student academic success. This study examines the impact of metacognitive awareness on student performance in financial accounting courses. Metacognitive awareness is repeatedly measured by a survey question which must be answered before students answer each assignment question, and class performance is measured by exam grades across the entire semester. The results indicate that metacognitive awareness is positively associated with class performance, which suggests that students with higher metacognitive awareness perform better than those who are unaware. Implications of these findings for research and practice are discussed.

INTRODUCTION

Metacognition is defined as "thinking about your thinking" (Falvell, 1979). According to Schraw and Dennison (1994), metacognition is referred to as an individual's ability to understand, control, and reflect upon one's learning. Metacognition explores what individuals know, or believe that they know about what they learn, how they assess their acquisition of knowledge, the accuracy of their self-assessments, and how the further learning is guided (Schmidt & Ford, 2003). Previous research indicates that the functions of metacognition are two folds: monitoring and control. Specifically, monitoring includes the identification of learning objectives, assessment of learning process, and prediction of learning outcomes. On the other hand, control function refers to an individual's decisions on resource allocation and measures to achieve learning goals (Schmidt & Ford, 2003). Metacognition has important implications for learning and self-regulation. Thus metacognitive awareness leads students more conscious of what they are learning and more strategic in their learning process.

Advances in information technology have impacted on, and will continue changing the dimensions of education. To meet the demand for effective and efficient learning, higher education institutions have been extensively utilizing new technologies for course design and delivery. The various applications present both opportunities and challenges to accounting educators. Research suggests that the adoption of computer-assisted teaching should incorporate considerations of various factors, including but not limited to motivations, student learning, course contents, and more broadly, the possibility of an accounting education reform (Boyce, 1999). Numerous studies provide empirical evidence in respect to the effect of computer technology. For instance, Mcdowall and Jackling (2006) find that students' positive perceptions of Computer-Assisted Learning (CAL) may lead to improved learning outcomes. Potter and Johnston (2006) investigate the connection between accounting students' performance and an

interactive online learning system named "*MarlinaLS*". Using a sample of Australian college students, they find that *MarlinaLS* usage is positively related to examination performance (Potter and Johnston, 2006). In the literature review of a recent study, Gavira and Omoteso (2013) summarize the positive consequences of E-learning, and also suggest educators to approach teaching in the Virtual Learning Environments (VLE) with caution. Their discussion of possible VLE pitfalls provides insight on the importance of an instructor's role in the selection and application of instructional technology in specific courses (Gavira and Omoteso, 2013).

Online assignments powered by web-based homework systems are widely used in financial accounting courses. These systems provide students a platform to gain a good understanding of the concepts and to access extensive practice to improve problem solving skills. Besides flexibility in location and time, such systems provide students much control over their learning contents and intensity. Students' control over their learning process presents opportunity for educators and researchers to explore methods and measures to improve student learning experience and outcome. User Statistics collected from these systems also offer an initiative for researchers to access data related to a student's metacognitive awareness level, an important predictor of student achievement in a self-regulated learning environment. Using the objective data from a web-based homework system, this paper finds that metacognitive awareness is positively associated with class performance, suggesting that students with higher metacognitive awareness perform better than those who are unaware.

The research examines the relationship between student performance and metacognition, assessed by objective data from a Learning Management System (LMS).This study contributes in several ways to the empirical literature on the association between metacognition and student performance. First, this paper extends previous research that measure metacognition using self-selective data (e.g., survey and questionnaire) and collaborates the positive and significant effect of metacognitive awareness on academic success. Second, the use of objective data derived from a web-based homework system provides a mechanism for instructors to monitor students' learning progress. Third, this study sheds lights on the application of metacognitive theory in accounting and business education to further improve students' learning experience.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Blummer and Kenton (2014) review the literature of problem solving and metacognition in their book. Since 1970s, researchers have realized the importance of self-awareness and the ability to monitor, control, and coordinate learning in efficient and effective problem solving. Empirical evidence also supports that students with higher metacognitive awareness and skill level are more likely to solve problems successfully. The practical implications suggest that instructors should put more emphasis on teaching poor students metacognitive strategies such as inspiring them with greater awareness.

In a training course participated by seventy-nine subjects, Schmit and Ford (2003) find that the level of metacognitive activities significantly improve knowledge mastery, self-efficacy, and training performance. These results imply that training development should focus on fostering metacognitive activities on trainees, although the benefit may not apply to everyone. More than one third of total fifteen questions in the self-report about metacognitive activities in this study are about metacognitive awareness which directs each trainee's learning path and progress optimization, and knowledge acquisition level.

Using a sample of 900 students in chemistry classes, Rahman et al. (2010) examine the relationship between students' performance and metacognitive awareness, measured by results

from a survey to students. Adapted from research by Schraw and Dennison (1994), the survey uses 5 point Likert scale, ranging from "always" to "not at all". They find that high level of metacognitive awareness has positive impact on test performance (Rahman et al., 2010).

Memnum and Hart (2012) survey 153 mathematics teacher trainees in different grades of their undergraduate study using Metacognitive Awareness Inventory (MAI) and identify that metacognitive awareness levels are positively related to course performance measured by GPAs, though the significance level is low. Their findings also imply that trainees' awareness can be developed and improved as their GPAs increase.

Erbas and Okur (2012) study the relationships among learning strategies, episodes, and metacognitions in solving ten mathematical problems through both quantitative and qualitative methods. Based on the analyses of interview data, the authors are able to discover learning process besides outcomes, thereby investigating why and how students solve problems correctly or incorrectly. The integrated results from the interviews and a questionnaire show that the lack of mistake awareness is the primary factor causing failed analysis, plan, implementation and verification in problem solving, and ultimately leading to incorrect answers. Students who demonstrate correction and awareness seem to provide correct answers.

Backhaus & Liff (2007) conduct two widely validated psychometric surveys: Cognitive Style Index (CSI) and Revised Approaches to Studying Inventory (RASI) survey with more than two hundred undergraduate business students in various business classes. A significant positive relationship between academic performance and metacognitive awareness scales of the RASI is found through multivariate statistical analyses.

Johnson et al. (2009) report the results of a survey participated by 914 students in an online information system course, indicating that metacognitive activity partially mediates the impact of student characteristics and technology characteristics on e-learning outcomes in terms of perceived utility judgments and satisfaction. Higher level of metacognitive awareness is assumed to lead to greater metacognitive activity by facilitating program identification, learning behavior adjustment and monitoring.

Schleifer and Dull (2009) examine the metacognitive attributes in accounting students, and further investigate the association between metacognitive attributes and student performance. Metacognitive attributes in this study are based on students' responses to Metacognitive Awareness Inventory (MAI) from Schraw and Dennison (1994), a questionnaire consisting of 52 items. MAI measures metacognition in two categories, knowledge of cognition and regulation of cognition, known in the study as "metaknowledge" score and "metaregulation" score, respectively (Schleifer and Dull, 2009). The empirical evidence indicates that metacognitive attributes are significantly linked with academic performance in accounting courses, measured by students' course grades. The results also show an interaction between metaknowlege and metaregulation, shedding light on the phenomenon that diligence may lead to unsatisfactory performance due to the lack of an effective study strategy (Schleifer and Dull, 2009). In addition to the above mentioned association, their paper also addresses the research questions in regards with the over-the-time change of metacognitive awareness. In summary, their findings suggest that metacognitive attributes contribute to student achievement in accounting classes (Schleifer and Dull, 2009). That is, students with higher metacognitive skills are more likely to perform better in accounting courses.

Based on previous research, we believe that it is logical to hypothesize a relationship between metacognitive awareness level and class performance as follows:

H1   Metacognitive awareness is positively associated with class performance.

H2   Metacognitive unawareness is negatively associated with class performance.

RESEARCH BACKGROUND

Nelson & Narens (1992) presents a theoretical framework of metacognition (as Figure 1 shows), including control and monitoring as two principle cognitive processes. Consistent with our literature review, this study focuses on monitoring process which particularly addresses the assessment of learning process and prediction of learning outcomes based on the data automatically generated from the LMS.

Figure 1
THEORETICAL FRAMEWORK OF METACOGNITIVE PROCESSES (NELSON & NARENS, 1992)
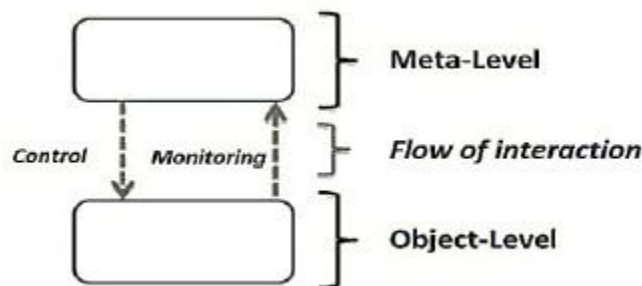
A successful student in financial accounting courses should demonstrate strong problem solving skills, rooted in a solid understanding of accounting concepts and terminologies. These skills can hardly been taught in classrooms, merely by watching instructors' demonstrations on whiteboard. Thus, relevant assignments from accounting instructors become an important element in financial accounting education. Besides contents of the assignments, how to assist students in their self-regulated learning outside of classroom is also a consideration for instructors. In a self-regulated learning, what's the impact of a student's behavior on class performance? What would be the implications to educators and researchers? These are the research questions that this paper attempts to answer.

The courses investigated in the research are two financial accounting courses on introductory and intermediate levels. Motivated by educational and behavioral research, the instructor adopted *Connect*, a web-based homework system supported by McGraw-Hill. The instructor assigned three types of assignments on *Connect*: reading and practice assignments, homework assignments, and quiz assignments. Reading and practice assignments, based on the learning platform called LearnSmart (LS), are used to motivate students to read the text, to understand the basic concepts, and to be prepared for the lectures on specific chapters. Homework assignments, in the format of problems, are targeted to improve students' problem solving skills. Quiz assignments include multiple choice questions that test students' quantitative skills and their understanding of concepts.

As a part of McGraw-Hill Connect, LS is a learning program that can adapt to students' learning progress. Specifically, LS tests students' understanding of concepts by giving questions in various formats, including multiple choice questions, fill-in blank, and short answer problems, etc. Before every question, LS provides a brief survey, as demonstrated in Figure 2, on students'

confidence about the answers. Based on the above information, LS is able to adapt to each student's needs, and customize subsequent questions and practices to each student's learning level. In the process, students can build up their understanding of concepts, and better retain knowledge through practicing.

Figure 2
SCREENSHOT OF METACOGNITIVE AWARENESS LEVEL SURVEY QUESTION IN LS

Figure 2 demonstrates the survey before a multiple choice question from intermediate accounting I. The four choices are "I know it", "think so", "unsure", and "no idea". There is also a tab "Read about this" that can direct students to the specific section of the e-book to help answer the question. Figure 3 demonstrates the LS system's response to an incorrect answer. When a student answers a question incorrectly, LS shows the correct answer. In the meanwhile, LS attaches the "Read about this" tab to direct the student to the designated chapters in the e-book.

Figure 3
SCREENSHOT OF A QUESTION INCORRECTLY ANSWERED
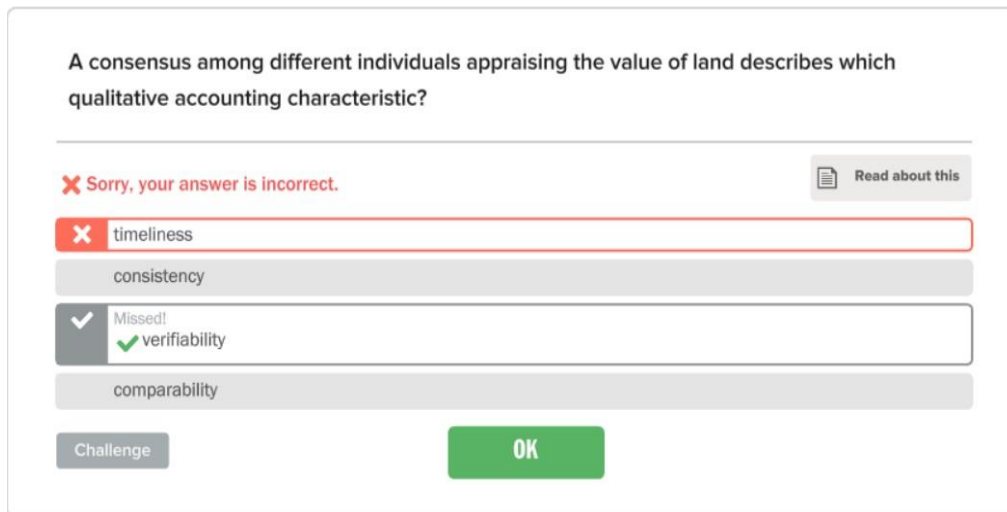
As LS's questions to every student are different, LS is graded based on completion, not on the correctness of a student's answers to the questions. In all courses, the points available from LS account for less than 5% of the course grade. The instructor carefully reviewed, and selected relevant learning objectives for each chapter's LS assignments. A student is expected to complete one chapter's LS within 30 minutes.

RESEARCH METHOD

Sample and Procedures

The sample for this study consisted of business students attending a regional university in Midwest. Data were collected in undergraduate financial accounting courses taught by the same instructor in the College of Business. The two financial accounting courses are ACC 20000 Introductory Financial Accounting, and ACC 35000 Intermediate Accounting I. In the Introductory Financial Accounting course (ACC 20000), the students used "Financial Accounting", 3rd edition, published by McGraw-Hill. The text book was written by Spiceland, Thomas, and Hermann. The Intermediate Accounting I course (ACC 35000) covered the first half of "Intermediate Accounting", 7th (by Spiceland, Sepe, Nelson) and 8th edition (Spiceland, Sepe, Nelson, and Thomas). All classes included in this study were lecture-based, and used face-to-face delivery method.

In both courses, students were required to complete LS assignments for all chapters covered in the course. As discussed earlier, before students answered each question in LS assignments, they were required to complete a survey question testing their metacognitive awareness level. Students were also required to take three exams over the semester which assessed their class performance. The total points available from the three exams accounted for 70% of the course grades. These three closed book exams consisted of both multiple choice questions and problems. Among 97 subjects, 2 were identified as outliers by statistical software and dropped from the sample, so a total of 95 subjects remained in the following analysis.

Measures

As previously discussed, metacognitive awareness was repeatedly measured by the survey question presented in Figure 2. Right after students viewed each question but before they answered it on LS, they were given this question to evaluate if they were aware of their knowledge when completing assignments. By integrating the accuracy of student answers, LS automatically generated a Student Self-Assessment Report which broke down into four categories: "Aware that you knew the answer", "Aware that you didn't know the answer", "Unaware that you knew the answer", and "Unaware that you didn't know the answer". The detailed explanation of each category is provided in student self-assessment report as shown in Figure 4. These four categories were interpreted in the instructor's report as the following four categories: the correct and aware, correct and unaware, incorrect and aware, and incorrect and unaware. The variable definition and the connection between student survey question selection, student self-assessment report categories, and instructor's metacognitive measures were summarized in Table 1. The percentages reported in the first and fourth categories were used to test hypotheses.

Figure 4
SCREENSHOT OF STUDENT SELF-ASSESSMENT REPORT

Aware that you knew the answer:

You were conscious of the fact that you knew the correct answer. If you have a high percentage in this category, you are well on your way to mastering the subject. You should still practice once in a while to keep your new knowledge fresh — you don't want to get rusty.

60%

Aware that you didn't know the answer:

You knew that you didn't know the answer. That is OK! It takes time to learn new things. What is important is that you know which material you should study more. This is the first step towards improving. Just keep practicing and you will quickly learn this material!

8%

Unaware that you knew the answer:

You thought you didn't know the answer, even though you actually did. When you are learning new material, it is easy to be uncertain about what you truly know and don't know. One way to gain confidence is to keep practicing. As you get more questions correct, you will start to trust in your new knowledge!

0%

Unaware that you didn't know the answer:

You thought you knew the answer, but got the question wrong. If you have a high percentage in this category, be careful! You may think you know the material better than you really do. You don't want to do poorly on a test by not preparing well enough. Practice more to make certain you have learned the material.

32%

Table 1
METACOGNITIVE AWARENESS LEVELS

INSTRUCTOR METACOGNITIVE REPORT	STUDENT SURVEY	STUDENT SELF-ASSESSMENT REPORT
Aware & Correct	I know it	Aware that you knew the answer
Aware & Incorrect	Think so	Aware that you did not know the answer
Unaware & Correct	Unsure	Unaware that you knew the answer
Unaware & Incorrect	No idea	Unaware that you did not know the answer

Dependent variable class performance was measured by a student's performance in three closed-book exams. Students were allowed 1 hour 20 minutes to complete the first two exams, and 2 hours to complete the third comprehensive exam. The points from LS were included in the course grade. Thus, exam performance, instead of course grade, was used as the dependent variable to address potential endogeneity.

RESULTS

The data were analyzed using SPSS 23. Table 2 presents descriptive statistics and intercorrelations among metacognitive awareness level and class performance. This table reveals that aware & correct level is positively correlated with class performance, and unaware & incorrect level is negatively correlated with class performance.

Table 2
CORRELATIONS, MEANS AND STANDARD DEVIATIONS

	MEAN	STD. DEVIATION	A&C	U&I	CP
Aware & Correct Level (A&C)	57.01%	16.54%	1		
Unaware & Incorrect Level (U&I)	32.87%	13.57%	-.507**	1	
Class performance (CP)	76.09%	12.58%	.229*	-.245*	1

** Correlation is significant at the 0.01 level (2-tailed).
  * Correlation is significant at the 0.05 level (2-tailed).

Regression Analysis

The regression results address our research question about the association of metacognitive awareness and class performance. The first model ($R^2 = 0.053$, Adjusted $R^2 = 0.042$, F = 5.161, $p < 0.05$) and the second model ($R^2 = 0.060$, Adjusted $R^2 = 0.050$, F = 5.935, $p < 0.05$) are significant. Overall, both models are parsimonious, and multicollinearity is not a concern.

As shown in Table 3, aware and correct (A&C) level (β =.197, t = 2.272. $p < 0.05$) has significant coefficients. Consistent with our expectations, there is a significant and positive relationship between aware & correct level and class performance. Therefore, hypothesis 1 is supported.

Table 3
THE RELATIONSHIP BETWEEN AWARE & CORRECT LEVEL AND CLASS PERFORMANCE

CLASS PERFORMANCE = $B_{01} + B_{01}*A\&C$

VARIABLES	COEFFICIENT	STD. COEFFICIENT	T	SIG.
Intercept	.075		.881	.380
A&C	.197	.229	2.272	.025

Regression results include collinearity statistics that indicate multicollinearity is not a problem.

$R^2 = 0.053$

Adjusted $R^2 = 0.042$

$F = 5.161$ (p < 0.05)

As shown in Table 4, unaware & incorrect level (β = -.208, t = -2.436. p < 0.05) has a significant coefficient, which indicates that there is a significant negative and relationship between unaware & incorrect (U & I) level and class performance. Therefore, hypothesis 2 is supported.

Table 4
THE RELATIONSHIP BETWEEN UNAWARE & INCORRECT LEVEL AND CLASS PERFORMANCE

CLASS PERFORMANCE = $B_{02} + B_{02}*U\&I$

VARIABLES	COEFFICIENT	STD. COEFFICIENT	T	SIG.
Intercept	.077		.903	.369
U&I	-.208	-.245	-2.436	.017

Regression results include collinearity statistics that indicate multicollinearity is not a problem.

$R^2 = 0.060$

Adjusted $R^2 = 0.050$

$F = 5.935$ (p < 0.05)

DISCUSSION AND IMPLICATION

The goal of this study is to explore the relationship between metacognitive awareness and class performance for business students who study in various financial accounting courses. This study examines the impact of LS, an adaptive online learning tool supplemented with the textbooks. The constant and holistic interaction between LS and students provides a mechanism to monitor their learning progress. That is, students' metacognitive awareness levels are measured before they solve each assignment question. Therefore, the metacognitive awareness report automatically generated by LS provides reliable and rich data for statistical analyses.

Regression results reported in the previous section find that students with greater metacognitive awareness achieve better class performance, which is consistent with Cardelle-Elawar (1992), Schraw and Graham (1997), Memnum and Hart (2012). On the other hand, students with greater metacognitive unawareness perform worse in exams. Similar findings are presented by Erbas and Okur (2012). The standard coefficients of A&C and U&I are .229 and -.245 respectively, indicating opposite impact of metacognitive awareness and unawareness on class performance but the levels of impact are similar. This finding brings a new perspective to the literature. To improve performance, students should consider to put similar degree of effort on increasing metacognitive awareness and decreasing unawareness.

This study makes a valuable contribution to the understanding of the effect of metacognition on student performance in financial accounting courses. In addition to empirical evidence, the research provides insights into the practical application of metacognitive theory and measures to improve learning experience. Perhaps more important, by integrating metacognitive considerations into learning, this study sheds light on expanding instructors'

traditional role in knowledge dissemination. That is, instructors should also be actively engaged in facilitating students' learning and their development of metacognitive awareness. For example, instructors may encourage students to highlight the key points when reading the eBook and click "Read about this" during the practice if they are not sure the answer to a question. In turn, students' metacognition would lead to learning achievements. Implications of this research are related to the design of web-based homework and learning systems. Metacognition is of great importance in a learner controlled learning environment, where learners exercise much control over the speed and intensity of the learning progress. As such, instructors would be advised to consider students' metacognitive awareness level when they develop and implement online assignments. In short, if students demonstrate metacognitive unawareness reactions, they are likely to perform poorly in exam. The poor performance in exams is likely to lead to less satisfactory learning outcomes. In such situations, instruction should address in classroom lectures the specific concepts that the students are challenged, and assist students to gain better understanding to become more confident about learning. As such, instructors who are aware of the weak links of learning objectives would be able to supplement students' lack of metacognition in self-regulated learning, and result in their enhanced acquisition and retention of targeted knowledge and skills.

LIMITATIONS AND FUTURE RESEARCH

Although this study reveals many interesting findings about metacognitive awareness and approaches to learn, there are also some limitations. Our data were collected in one academic discipline from a single university. The generalizability was contained by this lack of diversity, which wasleveled by the inclusion of classes from different semesters. As LS is a popular adaptive learning tool nationwide, future studies may include cross-institute and cross-major students to further test the validity and generalizability of our hypotheses.

A second limitation is that the regression analysis in this study would not be adequate to predict exam performance of particular students due to the limited number of variables reported in LS. The power of the regression model (R^2) will improve with the incorporation of other variables, like quiz scores.

Future research could examine how to enhance students' metacognitive awareness level so they will become more aware of their knowledge and channels to acquire and retain knowledge.. It would be helpful to advance student success through continuously monitoring and guiding students' metacognitive strategies, especially for students who struggle initially in their classes.

It would also be important to examine to what extent students use other features of the LMS which relate to the "control" dimension of metacognition such as resource allocation (use vs. non-use of LMS tools) and measures to achieve learning goals. For example, students who often use "recharge" function are more likely to have greater metacognitive awareness.

Since metacognitive judgment and monitoring can affect the efficiency of student learning, it would be worthwhile to investigate the relationship between metacognitive awareness level and class performance which is mediated by study time. As it is essential to carefully control studies involved in human subjects, including more controlled variables, such as age, gender, major of study, GPA, and etc., will definitely improve the power, reliability, and validity of the research model.

There are many streams of research in the area of metacognition and business education. Most empirical studies are either survey-based or experiment-based. The application of some

qualitative research methods such as interviews would enrich the quantitative findings and better interpret the underlying stories behind causal relationships.

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