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This Issue

This article explores the Millennial generation's use of social media, specifically Facebook, and how it is used as a complaint method in a higher education context. A survey was conducted at a public university in the United States, with 413 respondents. Results indicate that 93% of the sample used Facebook, with women reporting greater usage. There were significant differences in complaining behavior between heavy and light users. Heavier users of Facebook were more likely to complain to other students face-to-face or to complain to the professor or other students via email, posting comments to an online chat room or on Facebook.

The staffing management area of an office of human resources is simply the process agency responsible for determining human resource needs in any organization and securing enough talent to carry out the strategic goals of that organization. The success of any organization is clearly dependent on its ability to select and acquire talent. Likewise, in academia, the selection of tenure track faculty is also a critical element for any college or university in carrying out its vision and strategic goals in the higher education arena. This paper will examine the selection of a tenure track faculty member by using the Analytical Hierarchy Process (AHP) in order to select the best applicant for a tenure track position. A pairwise analysis will be developed in order to evaluate three potential applicants based upon four primary factors including: 1) Ph.D. or ABD; 2) teaching experience; 3) research and number of publications; and 4) work experience. The paper will conclude with an evaluation of the AHP approach as a viable selection tool for attaining the best tenure track candidate.

Upon analyzing the symptoms and the potential causes for quantitative anxiety, we test a twenty-item scale for measuring quantitative anxiety in MBA students. The scale was administered to a sample of MBA students at four U.S. universities. The 20-item scale yielded a four-factor solution: confidence, usefulness, enjoyment and perceived value. The findings suggest that in general, MBA students, though aware of the value and usefulness of quantitative methods, have low levels of confidence in their ability to use quantitative tools.

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The *Journal of Higher Education Theory and Practice* (JHETP) is dedicated to the advancement and dissemination of academic and intellectual knowledge by publishing, through a blind, refereed process, ongoing results of research in accordance with international scientific or scholarly standards. Articles should combine disciplinary methods with key insight to contemporary issues central to faculty, administrators, and industry specialists. Articles of regional interest are welcome, especially those dealing with lessons that may be applied in other regions around the world. Accepted manuscripts should make strong empirical and/or theoretical contributions and highlight the significance of those contributions to the higher education field.

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3. Provide an additional outlet for scholars and experts to contribute their research findings in the area of higher education

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The Millennial Generation's Use of Social Media as a Complaint Method: An Application to Higher Education

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This article explores the Millennial generation's use of social media, specifically Facebook, and how it is used as a complaint method in a higher education context. A survey was conducted at a public university in the United States, with 413 respondents. Results indicate that 93% of the sample used Facebook, with women reporting greater usage. There were significant differences in complaining behavior between heavy and light users. Heavier users of Facebook were more likely to complain to other students face-to-face or to complain to the professor or other students via email, posting comments to an online chat room or on Facebook.

INTRODUCTION

Students from the millennial generation are filling the seats in college classrooms across the United States. With nearly 90 million born since 1980, this generational cohort is projected to make up a very large percentage of all co-eds in the future. From 2010 to 2019, National Center for Education Statistics projects a 9 percent rise in undergraduate enrollments of students under 25, and a 23 percent rise in enrollments of students 25 and over. In addition, Millennials are the largest and most racially and ethnically diverse generation ever to attend college (NCES, 2011). Among the characteristics used to describe are: pressured to perform, ambitious, tech savvy, team oriented, connected, demand instantaneous feedback, structured, respect authority, self- assured, and fast paced (Howe & Strauss, 2007).

Millennials were born and raised in a technologically advanced era, drastically different than those of previous generations. Technology has been part of their daily life from their reliance on Facebook, cell phones, and texting - to watching and/or creating their own YouTube videos, blogging on the Internet, or Skyping with others throughout the globe. Throughout middle school and high school their learning preferences and information usage behaviors have also gravitated toward technology-mediated learning (Gasson, Agosto, & Rozaklis, 2008) and Millennials have come to expect technology will be incorporated into their everyday life.

Though there are many good qualities about the Millennials, some of the characteristics of this generation create challenges for higher education. Millennials grew up being told by parents, relatives, coaches, etc. they were "special" and therefore, are highly expectant. "Millennials are arriving on campuses with higher expectations than any generation before them" (Slippery Rock University, 2010).

Many institutions are concerned that if the expectations of Millennials are not met, they will instantly tell hundreds of their friends via texting and/or Facebook. Being raised in a world dominated by technology, this generation tends to be inpatient and desires immediate gratification. In addition, Millennials have been described as "blunt and expressive" favoring self-expression over self-control. Having their point "heard" is most important to them (NAS, 2006). Wanting immediate feedback, students from this generation consider themselves "customers" of higher education. They have assumed a consumer mentality, having been marketed to since birth (NAS, 2006).

Colleges and universities are shifting to a more "corporate marketing" model, putting greater emphasis on customer satisfaction models and customer-orientated programs to increase their enrollments and retain students (Alves & Raposo, 2010; Finney & Finney, 2011). In this framework, colleges or universities act as service providers in a customer relationship with students (Finney & Finney, 2010). As such, the student and the college or university are partners in a reciprocal relationship in which education (knowledge) is exchanged for money (tuition and fees). Both parties enter into the exchange with a set of expectations (Bagozzi, 1974). Failure to receive these expected outcomes may result in dissatisfaction. Garner (2009) contends that the number of student complaints on college campuses is rising. One potential reason for this rise is the "consumerist thinking" on campuses and students' perceptions of themselves as customers (Finney & Finney, 2010). Therefore, higher education administrators are interested in the issues of student (customer) satisfaction, dissatisfaction, and complaining behavior.

BACKGROUND

Customer satisfaction and consumer complaining behavior have both been recognized in the academic and the practitioner world as important phenomena impacting an organization's success. Several studies have supported this view, going as far as identifying successful complaint handling as a type of competitive advantage (Chahal, 2010; Fox, 2008; Tax, Brown, & Chandrashekaran, 1998). A firm's competitive advantage may actually be more impacted by customer retention than it is by other more commonly held factors such as market share and unit costs (Hansen, Samuelsen, & Andreassen, 2011). Customers who exit the firm cause reduced retention rates and reduced customer equity (Blodgett & Li, 2007; Rust, Zeithaml, & Lemon, 2000). Customer equity can be strengthened through the complaint process when consumer complaints are voiced and satisfactorily resolved. In fact, consumer loyalty will be greater as a result of this process, more than if no complaint had ever occurred (Stauss & Seidel, 2004). As such, marketers have embraced the fact that complaints are not nuisances, but opportunities to resolve problems, improve products and services, and develop value-added relationships by turning dissatisfied customers into satisfied, loyal ones (Bearden & Oliver, 1985; Chahal, 2010). It is also widely accepted that it is less costly for the firm to keep a current customer than it is to obtain a new one (Jaffee, 2010; Hart, Heskett, & Sasser, 1990).

Models of Consumer Complaining Behavior

Despite the evidence that complaints are actually beneficial to an organization and the customer, many dissatisfied customers still do not complain directly to the marketer or organization. While the percentage differs by type of situation and type of industry, the majority of dissatisfied customers do not make a direct complaint (Andreasen, 1997; Best & Andreasen, 1977; Hansen, Samuelsen, & Andreassen, 2011). Studies in consumer complaint behavior have identified several ways that consumers manifest their dissatisfaction in addition to complaining directly to the marketer and have developed or extended models of such (Day & Landon, 1977; Hirschman, 1970; Singh, 1988; 1989; 1990).

While these models differ slightly, they have recurring themes that address the type of behavior, the entity to which the behavior is directed, and the method of expressing that behavior. It is commonly understood that dissatisfied consumers can either take action, or not take action. Dissatisfied consumers can either take action, or not take action. If they take action, consumer complaining behavior is typically expressed in these general categories: 1) Voice: complaining directly to the marketer or firm; 2) Third Party: complaints to consumer advocacy agencies such as the Better Business Bureau, contacting the

media, or taking legal action; 3) Negative Word-of-Mouth: telling others such as family or friends about their dissatisfaction, and 4) Exit: where no complaining is involved, but the customer defects by either shifting patronage or stop using the products or services from the dissatisfying firm. These response behaviors are not mutually exclusive, in that many complaining consumers engage in more than one type of behavior (Kurtulus and Nasir, 2008).

This study is particularly interested in the response behavior category of negative word-of-mouth and the means by which this behavior is communicated. When initially conceptualized as a behavior category, most negative word-of-mouth (NWOM) was communicated person-to-person. However, new technological advances have provided opportunities to communicate the NWOM via the Internet or via social networks. Complaints through electronic media such as the Internet have increased dramatically and will most likely continue to do so in the future (Tripp & Gregoire, 2011; Reisinger, 2009).

Use of Technology

The use of technological advances is particularly important to the millennial generation. Electronic media and social networks, instant messaging, twitter, and others have become a fact of life and are prevalent on college campuses today (Marketing Profs Research, 2010; Lenjart, Purcell, Smith, & Zickuhr, 2010). These types of communication allow college students to be connected 24/7 to friends, family, faculty, and business sites in ways which previous generations could not have imagined (Euro RSCG Worldwide Knowledge Exchange, 2010). Many campuses today are communicating almost exclusively through electronic media recognizing "an expanding reliance on electronic communication among students, faculty, staff and the administration due to the convenience, speed, cost effectiveness, and environmental advantages it provides" (University of Michigan – Dearborn, 2011).

According to Pinto and Mansfield (2006). "The proliferation of computer-mediated communication on college campuses suggests the need to reconsider complaining responses in the context of higher education" (p. 84). As such they expanded the complaining options for students to include an electronic complaint channel - i.e., email. Other researchers also document the use of web-based technology as channels for complaint behavior (Mukherjee, Pinto, & Malhotra, 2009; Lala & Priluck, 2011). Lala and Priluck (2011) included the use of social networking as a complaint channel.

Facebook

Facebook originated in 2004 as a college social networking site and since that time has attracted more than 800 million active users. Statistics from Facebook.com state that on any given day, more than 50% of their active users log on to the site (Facebook, 2011). Based on these statistics, it is not surprising that in 2011 Americans spend more time on Facebook than any other US website (Nielsen, 2011).

Facebook is ubiquitous on college campuses today. The Millennial generation, of which college students are members, have the highest concentration of social media usage (Marketing Profs Research, 2010). Numerous studies have documented over 85% of all college students have a Faceboook account (Pempek, Yermolayeva, & Calvert, 2009; Ross, Orr, Sisic, Arsenseault, Simmering, & Orr, 2009; Sheldon, 2008a; 2008b). Millennials are more likely to feel that time spent on social networks such as Facebook is as valuable as time spent in person (Euro RSCG Worldwide, 2010). Facebook, as well as other social networking sites, are a perfect medium for self expression - something particularly attractive to Millennials or the "Look at Me" Generation (Sheldon, 2008a, p. 69). As a member-based Internet community, Facebook allows its users to post profile information, communicate with others by sending public or private online messages or wall posts, and to share photos online. It features are constantly changing and being updated.

Millennials are drawn to Facebook to achieve some very fundamental human needs: "connection, conversation, and a sense of community" (Euro RSCG Worldwide Knowledge Exchange, 2010, p. 7). Sheldon (2008a; 2008b) studied the motives that bring college students to Facebook: 1) Relationship maintenance; 2) Passing time; 3) Wanting to be in virtual community; 4) Entertainment; 5) Coolness/fun; and 6) Companionship. She found that students go on Facebook to fulfill interpersonal needs first (relationship maintenance). For example, the need to communicate with others influences the use of

Facebook (Euro RSCG Worldwide, 2010; Ross, Orr, Sisic, Arseneault, Simmering, & Orr, 2009). Sheldon (2008a; 2008b) also found that gender was a significant predictor of students' motivation to go on Facebook and maintain their existing relationships. Women are more likely to use Facebook to stay connected, pass time and be entertained (2008b, p. 48).

RESEARCH QUESTIONS

Mangold and Smith (2012) found that Facebook and company websites are preferred by Millennials for voicing opinions about products or companies. Specifically in higher education, only one research study to our knowledge has looked at the use of Facebook as a complaint method (LaLa & Priluck, 2011). Their study identified the predictors of "students' intention to complain to school, friends, and others, both in person and using the web" (p.2). For data collection, the researchers used a critical incident approach, which allowed the students to recall a "really bad experience" they had with a professor. One drawback to this approach is that there are varying types of situations causing the dissatisfaction, and they had no way to control for differences that might occur between them. Additionally, in their response categories, the authors combined complaining to the professor (via email), dean, and academic advisor into one measure - entitled, "Intention to complain to school using web." This combination did not allow for "direct" voice to the professor either in the classroom or in his/her office, which would more closely represent the categories suggested in the literature by Singh (1988). Additionally, when measuring use of social networking, Lala and Priluck (2011) relied on response categories ranging from zero to "only" greater than three hours. Utilizing this type of categorical data did not allow for any grouping and comparison of respondents by usage categories (i.e., heavy versus light users).

This study will address the following research questions: 1) What are Facebook usage patterns among Millennials?, 2) What are the complaint behaviors of Millennials in higher education situations?, 3) Does the degree of Facebook usage impact the various complaint response methods (Facebook, email, face-to-face, etc.) in a university setting?, and 4) Does the dissatisfying experience situation impact the method of complaint?

METHODOLOGY

Phase I: Complaint Scenario Development

Complaint scenarios were used to gather data on student complaining behavior. To develop the scenarios, two focus groups were conducted with students from a large state university in the northeast region of the United States. Using the critical incident approach, students were asked to recall "a really frustrating experience with a professor." Four scenarios were developed from the information uncovered in the focus groups. Utilizing a modified version of the scale developed by McColl and Anderson (2002), the four scenarios were pretested with 78 undergraduate students to assess their level of frustration, stress, and irritation. Consistent with the threshold levels discussed by Singh and Pandya (1991), the two scenarios that generated the most negative reactions were chosen for the final data collection (See Appendix).

Phase II: Survey Data Collection

The sample for the data collection included a total of 441 undergraduates from a public university in the eastern half of the United States during the 2010-2011 academic year. Data was collected using a paper and pencil survey. Of the sample surveyed, 93.7% (N=413) of students had a Facebook account. Of those that had an account, 60% (n=247) were men and 40% (n=163) were women. The average age of respondents was 21 (M=21.32, SD = 3.301).

Measures

Complaint Intentions

Following a modification of the methodology used by Pinto and Mansfield (2006) respondents were presented with two case scenarios for collecting data on student complaining behavior. Respondents were asked to indicate how likely they would carry out specific complaint responses. Items were coded on a 5 point Likert scale (1= *Very Unlikely*; 5=*Very Likely*). The scale included items for each of the four complaining dimensions: Voice, Negative Word of Mouth, Third Party, and Exit. Use of social media was included with the item: "Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note." The psychometric properties of the complaint intention scale were consistent with those reported by Pinto and Mansfield (2006).

Facebook Usage

To measure the frequency of Facebook use and duration of use, we relied on the measures by Sheldon (2008a). Respondents were asked how many minutes/hours they spend on Facebook in an average day and at what age they first joined Facebook. To break the sample into Facebook usage groups based on intensity of usage, we followed the Richins and Dawson methodology (1992) and created tercile ranks for *High*, *Medium*, and *Low Facebook Usage*, based on the number of minutes reported by the respondents (range from 2 to 490). The Medium group (usage minutes 35 to 60; n = 118) was eliminated to create a clear separation between respondents reporting low and high Facebook usage. Groups of students with High usage (usage minutes 80 to 490; n = 136) and Low usage (usage minutes 2 to 30; n = 158) were compared to assess significance on complaining behavior and demographic characteristics. The research questions that refer to comparisons by High and Low usage categories use a final sample of 294 respondents. This number was calculated by taking the total number of respondents answering the survey (413) minus the Medium usage group (118 respondents).

RESULTS AND DISCUSSION

Facebook Usage Patterns

In answering the first research question, Facebook usage was analyzed in terms of whether or not the respondent actually used Facebook, the number of minutes users spent on Facebook in a typical day, and the age at which they first began using Facebook. As indicated in Table 1, in our sample (n = 441) 93% of the respondents had a Facebook account and used Facebook. Of those who used Facebook (n = 413), the average time they spent each day was approximately 75 minutes (SD = 68.81), with a range from 2 minutes to 490 minutes or approximately 8 hours. This wide range in reported activity could be suspect, however, in a previous study by Pempek, Yermolayeva, and Calvert (2009), the amount of time respondents reported spending on Facebook varied greatly from 2 minutes to 165 minutes. In the Pepek, Yermolayeva, and Calvert (2009) study, undergraduate students were asked to keep a diary of Facebook usage. Their diary measure is likely to be closer to the actual time spent on Facebook than was the self-reported measure used in the current study, however, both reported the wide range in minutes spent by respondents. In the current study, the students also reported spending 52.9 minutes on email (SD = 89.8) in addition to the time spent specifically on Facebook.

The mean age at which respondents began using Facebook was 17.7 (SD = 3.49) with a range from 6 years to 21 years. An interesting finding in this study was that while the age at which respondents first began using Facebook was not significantly different between males and females, there was a significant difference regarding Facebook usage. Males reported a mean of 64.2 minutes per day while females reported a mean of 90.7 minutes per day, p = .000. This finding is consistent with other literature showing a significant difference in Facebook membership between males and females (Valensuela, Park, & Kee, 2009), with women showing heavier usage on the social networking site (Nielsen, 2010). While not a part of our original research questions, given the findings in Facebook usage between males and females, gender was used as a comparison variable in other areas of this study, to be discussed later.

TABLE 1
SAMPLE CHARACTERISTICS

	All Students N=413		**High Users** N=136		**Low Users** N=158	
Gender	Males=60%; Females=40%		Males=46% Females=53%		Males=72.6% Females=26.6%	
Age at which began using Facebook	M=17.7	SD=3.49	M=17.03	SD=1.46	M=18.5	SD=4.61
Number of minutes on Facebook	M=74.7	SD=68.8	M=153.9	SD=4191.4	M=20.4	SD=86.9

In addition to these statistics, a comparison of High Users and Low Users as described above, was conducted to determine if there were significant differences in usage behavior. The High User group reported spending an average of 153.9 minutes (*SD* = 4191.4) or two and one half hours daily on Facebook and the Low User group reported spending an average of 20.4 minutes daily (*SD* = 86.9); results were significant with a value of $p = .000$. There was also a significant difference between the High User and Low User groups regarding the age at which the student began using Facebook. The average age was 17.03 for the High User group (*SD* = 1.46) and 18.5 for the Low User group (*SD* = 4.61), with a value of $p = .001$. Table 1 also contains these results.

Additionally, a Chi-Square analysis was conducted between gender and user group. Significant differences were found between the High User group where males comprised 46% of the sample ($n = 136$) and the Low User group where males were 72.6% ($n = 158$). The Pearson Chi-Square statistic was 22.850, with a value of $p = .000$. This finding supports previous research that females tend to be more intensive users of Facebook than males, and also supports our findings of the number of minutes both males and females spend on Facebook per day (Nielsen, 2010).

Consumer Complaint Behavior in a Higher Education Context

In terms of the complaint behavior of students in a higher education context, two scenarios were used in this study. Table 2 provides the mean, frequency, and percent of students' likelihood of engaging in several complaint response methods for Scenario 1. The frequency was calculated by adding together the number of responses of 6 or 7 on the 7-point Likert scale. In Table 2, the most likely methods for complaining included "complaining to other students face-to-face" (*M* = 4.64; frequency 169), "complaining to the professor via email" (*M* = 3.85; frequency 101), "complain to the professor in his/her office" (*M* = 3.73; frequency 93), and "never take another course from that professor again" (*M* = 3.67; frequency 96).

TABLE 2
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: CASE SCENARIO ONE

N=413				
Complaining Behavior	**Mean**	**Frequency****	**Percent**	**Std. Deviation**
Complain to the professor in class.	2.71	40	9.0	1.81
Complain to the professor in his/her office.	3.73	93	21.1	1.95
Complain to the professor via email.	3.85	101	22.9	1.98
Complain to other students via email.	1.83	17	3.9	1.42
Complain to other students face-to-face.	4.64	169	38.3	1.97
Talk to an administrator.	2.25	22	5.0	1.57
Talk to a student governance representative.	1.57	8	1.9	1.12
Never take another course from that professor.	3.67	96	21.7	2.0
Post a negative comment to an online chat room	1.75	15	3.4	1.41
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	2.34	36	8.1	1.78

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Frequency: # of responses of 6 or 7 on the 7-point Likert scale

Table 3 provides the data for the second scenario, where the most likely complaint responses were "complain to other students face-to-face" (*M* = 4.41; frequency 147), "complain to the professor in his/her office" (*M* = 3.73; frequency 96, and "never take another course from that professor again" (*M* = 3.57; frequency 96). Given that complaining to students face-to-face has the highest mean for both scenarios, it suggests that when students exit a classroom after a dissatisfying experience, they are directly face-to-face

TABLE 3
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: CASE SCENARIO TWO

N=413				
Complaining Behavior	**Mean**	**Frequency****	**Percent**	**Std. Deviation**
Complain to the professor in class.	2.44	32	7.3	1.72
Complain to the professor in his/her office.	3.73	96	21.8	1.98
Complain to the professor via email.	3.48	77	17.5	2.02
Complain to other students via email.	1.83	14	3.2	1.40
Complain to other students face-to-face.	4.41	147	33.4	2.05
Talk to an administrator.	2.16	27	6.1	1.60
Talk to a student governance representative.	1.51	3	.7	1.00
Never take another course from that professor.	3.57	96	21.7	2.04
Post a negative comment to an online chat room	1.74	15	3.4	1.39
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	2.37	43	9.8	1.86

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Frequency: # of responses of 6 or 7 on the 7-point Likert scale

with fellow class members and have an immediate opportunity to voice their complaint to others. It is interesting to note that when complaining directly to the professor students chose the least confrontational approach - i.e., choosing email over a visit to his/her office or a response in the classroom. There are several potential reasons for their reluctance including: attitude toward complaining (Blodgett & Granbois, 1992; de Matos, Rossi, Veiga, & Vieira, 2009; Singh, 1989), student personality issues (Bodey & Grace, 2007; Huang & Chang, 2008), classroom climate (Goodboy, 2011) and concern over grade in the class (Lala & Priluck, 2011).

An interesting finding is that complaining via Facebook was one of the lowest intended responses. It appears that students are not using Facebook as a complaint mechanism. Perhaps the reason for this result is that students are primarily drawn to Facebook for connection, community, and conversation (Euro RSCG Worldwide Knowledge Exchange, 2010). In the current study, students indicated they used social networks such as Facebook to communicate and stay in touch rather than to complain about unsatisfactory product/service encounters. In support of our finding, Mangold and Smith (2012) report that both male and female Millennials post positive comments more frequently than negative comments. However, their study found a significant gender difference in the number of negative comments posted. Males were more vocal and had a higher tendency to post negative comments.

Complaint Methods in Higher Education Context by Facebook Usage

The third research question addressed the relationship between the degree of Facebook usage and the likelihood to complain through various response methods. Table 4 provides the means and standard deviations for each complaint method across the two scenarios. An additional variable was computed, averaging the responses for the two scenarios on each complaint method. Independent t-tests were then used to compare the High User group and the Low User group on each of the complaint response methods. Significant differences were found between the two groups for six response types. For the response "complaining to the professor via email," High Users of Facebook reported a mean of 3.50 (*SD* = 1.75) while Low Users reported a mean of 3.50 (*SD* = 1.84). For the response "complain to other students via email" High Users reported a mean of 2.11 (*SD* = 1.65) and Low Users reported a mean of 1.69 (*SD* = 1.16). The response of "complaining to other students face-to-face" reported the highest means for both groups, however, there was still a significant difference between the two. High Users of Facebook reported a mean of 5.04 (*SD* = 1.72) and Low Users reported a mean of 4.20 (*SD* = 1.97). There were also significant differences between High and Low users of Facebook for exit behavior; for the response "never take another course from that professor again" High Users reported a mean of 3.87 (*SD* = 1.66) and Low Users reported a mean of 3.38 (*SD* = 1.88). There was also a significant difference for the response "post a negative comment to an online chat room" where High Users reported a mean of 1.97 (*SD* = 1.51) while Low Users reported a mean of 1.64 (*SD* = 1.21). Finally, there was a significant difference between the two groups for the response "go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note," with the High Users reporting a mean of 3.02 (*SD* = 1.91) and the Low Users reporting a mean of 1.91 (*SD* =1.49).

TABLE 4
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: METHODS COMPARISON BY USER GROUP

N=293	**High Users=135**		**Low Users=158**		
Complaining Behavior	**Mean**	**SD**	**Mean**	**SD**	**P=**
Complain to the professor in class.	2.54	1.60	2.53	1.62	.950
Complain to the professor in his/her office.	3.79	1.64	3.73	2.03	.782
Complain to the professor via email.	3.98	1.75	3.50	1.84	.024**
Complain to other students via email.	2.11	1.65	1.69	1.16	.014**
Complain to other students face-to-face.	5.04	1.72	4.20	1.97	.000**
Talk to an administrator.	2.40	1.43	2.08	1.42	.056
Talk to a student governance representative.	1.70	1.10	1.48	.95	.065
Never take another course from that professor.	3.87	1.66	3.38	1.88	.021**
Post a negative comment to an online chat room	1.97	1.51	1.64	1.21	.042**
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	3.02	1.91	1.91	1.49	.000**

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Significant at p<.05

Impact of Dissatisfying Experience

The fourth research question in this study asks if the dissatisfying experience itself has an impact on the complaint response method. To address this question, paired sample t-tests were used comparing the responses for the two scenarios. Table 5 provides the means, standard deviations, and *p* values for each comparison. Significant differences between Scenario 1 and Scenario 2 were found for three complain response methods. For each of the significant differences, Scenario 1 elicited the strongest complaint response. The first item is "complain to other students face-to-face" where the mean for Scenario 1 was 4.64, and the mean for Scenario 2 was 4.41. These means were the highest reported for both scenarios. While the reason for this reported intention is not known, one explanation is that since the students will be face-to-face while leaving the classroom where the dissatisfying situation has just taken place, they are already in a prime position for communicating their complaints to each other. For the results reported for the method "complain to the professor via email," the mean for Scenario 1 was 3.86 and the mean for Scenario 2 was 3.48. The last significant difference was for the method "complain to the professor in class" where the mean was reported at 2.71 in Scenario 1, and 2.44 in Scenario 2. The findings for "complain to the professor in class," which is a direct form of voice, are supportive of those by Singh and Pandya (1991), where voice behaviors were more likely to occur as the intensity of the dissatisfaction increased.

TABLE 5
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: IMPACT OF DISSATISFYING EXPERIENCE

N=413	**Scenario 1**		**Scenario 2**		
Complaining Behavior	**Mean**	**SD**	**Mean**	**SD**	**P=**
Complain to the professor in class.	2.71	1.81	2.44	1.72	.000*
Complain to the professor in his/her office.	3.73	1.95	3.73	1.98	.977
Complain to the professor via email.	3.86	1.98	3.48	2.03	.000**
Complain to other students via email.	1.83	1.42	1.83	1.40	1.00
Complain to other students face-to-face.	4.64	1.98	4.41	2.05	.001**
Talk to an administrator.	2.25	1.57	2.16	1.60	.160
Talk to a student governance representative.	1.57	1.18	1.51	1.00	.234
Never take another course from that professor.	3.67	2.01	3.56	1.04	.175
Post a negative comment to an online chat room	1.75	1.41	1.74	1.39	.727
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	2.34	1.78	2.37	1.86	.613

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Significant at p<.05

Gender Differences in Complaint Behavior

While not an original research question, findings began to emerge related to differences in complaining behavior between the genders. Tables 6 and 7 refer to the results from independent samples t-tests for Scenario 1 and Scenario 2 respectively. With regard to Scenario 1, there was a significant difference between males and females in their likelihood to "complain to the professor in class." Males were more likely to complain than were females; males reported a mean of 2.92 (*SD* = 1.87) and females reported a mean of 2.41 (*SD* = 1.68), *p* = .004. In Scenario 1, this was the only complaint response category reporting significant differences between the males and females.

However, for Scenario 2 there were three response types with significant differences. Once again, the response behavior "complain to the professor in class" produced a significant difference between males and females, with males more likely to complain. Males reported a mean of 2.74 (*SD* = 1.81) and females reported a mean of 1.99 (*SD* = 1.47), *p* =.000. Additionally, for the response category, "complain to the professor in his/her office," there was a significant difference between males and females, with males reporting a higher mean (3.94) and thus more likely to act through that response than did females (*M* = 3.42), *p* = .009. The third significant difference dealt with the likelihood of a student "talking to a student governance representative." Once again, males were more likely to act in that manner than were females. Males reported a mean of 1.59 (*SD* = 1.08) while the mean for females was 1.39 (*SD* = .87). *p* = .038. Previous studies have provided mixed results with regard to gender, aggressiveness, and complaining behavior (Richins, 1983; Singh, 1988; Swanson, 2011). The findings in this study support previous research that males are more likely to complain in general, and that gender impacts the type of complaint response, with males more likely to act through more direct, confrontational methods than are females (Swanson, 2011).

TABLE 6
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: CASE SCENARIO ONE, METHODS COMPARISON BY GENDER

N=410	**Males=247**		**Females=163**		
Complaining Behavior	**Mean**	**SD**	**Mean**	**SD**	**P=**
Complain to the professor in class.	2.92	1.87	2.41	1.68	.004**
Complain to the professor in his/her office.	3.80	1.64	3.73	2.03	.389
Complain to the professor via email.	3.91	1.99	3.78	1.99	.504
Complain to other students via email.	1.80	1.37	1.88	1.51	.569
Complain to other students face-to-face.	4.54	1.97	4.77	1.98	.248
Talk to an administrator.	2.32	1.62	2.15	1.50	.271
Talk to a student governance representative.	1.65	1.30	1.44	.95	.082
Never take another course from that professor.	3.63	2.05	3.73	1.93	.636
Post a negative comment to an online chat room	1.83	1.49	1.64	1.28	.171
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	2.26	1.79	2.48	1.77	.217

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Significant at p<.05

TABLE 7
COMPLAINING BEHAVIOR OF DISSATISFIED STUDENTS: CASE SCENARIO TWO, METHODS COMPARISON BY GENDER

N=410	**Males=247**		**Females=163**		
Complaining Behavior	**Mean**	**SD**	**Mean**	**SD**	**P=**
Complain to the professor in class.	2.74	1.81	1.99	1.47	.000**
Complain to the professor in his/her office.	3.94	1.99	3.42	1.92	.009**
Complain to the professor via email.	3.63	2.00	3.27	2.05	.081
Complain to other students via email.	1.89	1.44	1.72	1.31	.208
Complain to other students face-to-face.	4.35	2.02	4.50	2.10	.470
Talk to an administrator.	2.21	1.60	2.07	1.61	.383
Talk to a student governance representative.	1.59	1.08	1.39	.87	.038**
Never take another course from that professor.	3.58	2.06	3.55	2.02	.910
Post a negative comment to an online chat room	1.81	1.46	1.64	1.30	.213
Go to Facebook and post a negative comment about the professor and this circumstance as a status and/or note.	2.34	1.88	2.40	1.83	.759

*Scale: 7 point Likert scale, anchored by 1= Not at all likely and 7=Very likely
**Significant at p<.05

CONCLUDING REMARKS

The results from this study indicate that various factors affect students' methods of complaint behavior. A student's degree of Facebook usage (high versus low) has an impact on the type of complaint manifestation, as heavy users are more likely to complain to the professor (via email) and are more likely to complain through electronic media. Additionally, the findings indicate that complaint response methods are impacted by differences in the dissatisfying experience. Faculty and school administrators can manage their "customer" relationships by identifying the elements of students' academic programs that cause dissatisfaction and by managing complaints. As in the service industry, complaints in higher education are most helpful if made directly to the marketer, i.e. faculty or administration. Therefore, these should be encouraged while those made to friends and others should be minimized. As colleges and universities continue to see themselves as service industry providers, the shift toward customer-oriented satisfaction programs is necessary in recruiting and retaining students.

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APPENDIX

Scenario 1

In one of your classes, your professor collected an assignment that was due today. Unfortunately, you did not have the assignment ready to turn in because your computer malfunctioned last night and you could not print the assignment. Even though the course syllabus clearly states, "Late assignments will not be accepted," you decided to request an extension on the assignment until the next day. When you told your professor about the malfunction, he/she said, "This is unfortunate for you" and would not honor your request.

Scenario 2

Last week, you completed a case analysis that was 10 percent of your overall course grade. Today, you received your case analysis grade, which was lower than your were expected. You made an appointment with your professor to talk about your concern. He/she explained how the case analysis was graded using the rubric that was posted on Angel before the case study was given. You told him/her that the grading criteria on the rubric were unclear and did not provide you with enough information about how to properly complete the case analysis. The professor disagreed with you and said that if you had questions regarding the rubric, you should have come to him/her prior to submitting the assignment. The professor was not willing to reconsider your grade. Then, he/she advised you to follow the rubric thoroughly on the next case analysis.

The Potential Utilization of the Analytical Hierarchy Process (AHP) for the Selection of a Tenure Track Faculty Position

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The staffing management area of an office of human resources is simply the process agency responsible for determining human resource needs in any organization and securing enough talent to carry out the strategic goals of that organization. The success of any organization is clearly dependent on its ability to select and acquire talent. Likewise, in academia, the selection of tenure track faculty is also a critical element for any college or university in carrying out its vision and strategic goals in the higher education arena. This paper will examine the selection of a tenure track faculty member by using the Analytical Hierarchy Process (AHP) in order to select the best applicant for a tenure track position. A pairwise analysis will be developed in order to evaluate three potential applicants based upon four primary factors including: 1) Ph.D. or ABD; 2) teaching experience; 3) research and number of publications; and 4) work experience. The paper will conclude with an evaluation of the AHP approach as a viable selection tool for attaining the best tenure track candidate.

BACKGROUND

The staffing management area of human resources is involved with the process of determining human resource needs in an organization and securing the talent to carry out its strategic goals and objectives. In other words, staffing is simply the process of determining human resource needs in a company and securing qualified individuals to fill job vacancies. The primary objective of the staffing management process is to ensure that the proper numbers of new hires, with the appropriate skills, are placed in the right jobs at the right time to carry out the company's goals and objectives in order to fulfill organizational needs.

The success of any organization is clearly dependent on its ability to select and acquire talent. External recruitment methods are used to identify and attract job applicants from outside the company. Selecting the appropriate applicant is extremely difficult because it requires making judgments from among a group of job applicants and then selecting the individual who is deemed the best qualified for a particular job opening. In corporate America, employers use a variety of substantive assessment methods, such as interviews, cognitive ability tests, job knowledge tests, personality tests, and work samples, in order to select the appropriate job applicant. Hiring unqualified employees can lead to costly production results and other quality problems, as well as high employee turnover. So critical is the staffing management process in corporate America, that it is estimated that 19% of human resource

management budgets are spent on staffing activities and 15% of human resource management time is spent on various staffing activities (Society for Human Resource Management, 1993).

Likewise, in academia, the selection of each tenure track faculty member is also critical for any college or university to carry out goals in the higher education arena. Typically, the selection process for a tenured track position begins with the development of a specific job description and the formation of a search committee. The members of the committee review vitas, conduct interviews, and recommend the best candidate, consistent with the job description, for the tenure track position to the Department Chair/Head, as well as to the Dean of the School and/or other higher-level administrators who might be involved in making the hiring decisions. An important question remains whether as objective, fair, and effective as possible a method or process can be utilized in the selection of tenure track faculty positions.

One potential method is the Analytical Hierarchy Process (AHP), which was developed by Thomas L. Saaty in the 1970s and which has been used with almost all applications related to decision making in such areas as government, business, industry, healthcare and education (Vaidya and Kumar, 2006). This paper will examine the potential use of the AHP to assist search committees in the selection of tenure track faculty positions. Based on this approach, a pairwise analysis will be used to evaluate three potential applicants, involving four primary factors including: 1) Ph.D. or ABD status; 2) teaching experience; 3) quality of research, quality of publications, and the number of publications; and 4) work experience. An evaluation of the AHP will also be presented to determine if this assessment method is a viable selection tool for selecting the best tenure track candidate.

ANALYTICAL HIERARCHY PROCESS (AHP) MODEL DEVELOPMENT

This paper describes the use of AHP in selecting a tenure track faculty member. The goal is to choose the most suitable applicant based on the previously mentioned four criteria. Having a Ph.D. or being an ABD is the most important criterion with respect to meeting the goal, followed by research, teaching experience, and work experience. Table 1 presents the three potential applicants' background.

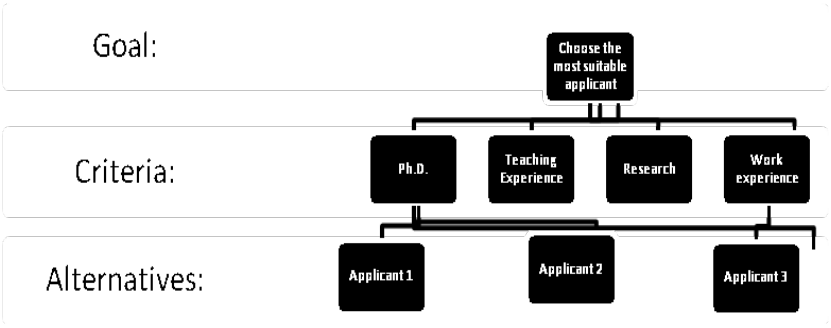
TABLE 1
APPLICANTS' BACKGROUND

Background	Applicant 1	Applicant 2	Applicant 3
Education	Ph.D. 3 years	Ph.D. recent	ABD
Teaching Experience	3 years teaching experience	Grad Assistant	No teaching Experience
Research	3- Publications	1 Article under review	No Publications
Work Experience	No Work Experience	5 years Corporate Experience	2 years Corporate Experience

The procedure for using AHP to select the most suitable applicant can be summarized as follows:

1. Model the problem as a hierarchy containing the decision goal, the alternative to reaching it, and the criteria for evaluating the alternatives. A hierarchy is an arrangement of items (objects, names, values, categories, etc.) in which the items are represented as being "above," "below," or "at the same level as" one another (Saaty, 2008). Abstractly, a hierarchy is simply a stratified system of ranking and organizing people, things, ideas, etc. Hierarchy can be described mathematically or through pyramid-shaped diagrams. Figure 1 exhibits the hierarchy used for this paper.

FIGURE 1
HIERARCHY USED IN SELECTING A TENURE TRACK POSITION



2. Establish priorities among the elements of the hierarchy by making a series of judgments based on pairwise comparisons of the elements. The criteria are pairwise compared against the goal for importance. The alternatives are pairwise compared against each of the criteria for preference. AHP is essentially a process of ranking the importance of each objective and then rating how well each alterative meets each objective. The result is a score for each alternative, in this case is the applicant, with higher scores preferred.
   In order to sort n alternatives, the AHP requires *n(n-1)/2* comparisons. In this paper, *n* is equal to three applicants, therefore, 3(2)/2 = 3 comparisons are needed to compute the priorities. Priorities are numbers associated with each node of an AHP hierarchy. Priorities are dimensionless absolute numbers between zero and one. A node with priority of 0.4 has twice the weight in reaching the goal as one with priority of 0.2. The priority of the goal is one, the priorities of the alternatives always add up to one, and the priorities of the criteria also always add up to one.
   The decision makers will start evaluating the criteria with respect to their importance in reaching the goal. A series of pairwise comparisons will be discussed. Table 2 interprets the values used in the pairwise comparison matrices (Albright and Winston, 2009).

TABLE 2
VALUES USED IN THE PAIRWISE COMPARISON MATRICES

Value of a_{ij}	**Interpretation**
1	Objective i and j are **equally** important
3	Objective i is **slightly more** important than j
5	Objective i is **strongly more** important than j
7	Objective i is **very strongly more** important than j
9	Objective i is **absolutely more** important than j

The decision makers agree on these relative weights for the various pairs of criteria, as shown in Table 3. Table 4 exhibits the pairwise comparison matrix among the four objectives:

TABLE 3
CRITERIA'S RELATIVE WEIGHTS

Having Ph.D.	5	Teaching Experience	1
Having Ph.D.	4	Research	1
Having Ph.D.	7	Work Experience	1
Teaching Experience	1	Research	3
Teaching Experience	4	Work Experience	1
Research	5	Work Experience	1

TABLE 4
PAIRWISE COMPARISON MATRIX A

	Ph.D.	**Teaching**	**Research**	**Work Exp.**
Ph.D.	1	5	4	7
Teaching	1/5	1	1/3	4
Research	1/4	3	1	5
Work Exp.	1/7	1/4	1/5	1

To determine the weights for each of the four objectives, matrix A needs to be normalized and the matrix's normalized Eigenvector is calculated as shown in Table 5.

TABLE 5
MATRIX A NORMALIZED

	Normalized matrix A				**Weights**
Ph.D.	0.6278	0.5405	0.7229	0.4118	0.5757
Teaching	0.1256	0.1081	0.0602	0.2353	0.1323
Research	0.1570	0.3243	0.1807	0.2941	0.2390
Work Exp.	0.0897	0.0270	0.0361	0.0588	0.0529

To determine how well each applicant scores on each objective, decision makers use the same scale described in Table 2 to construct pairwise comparison matrices for each criterion. Therefore, four matrices needed to be constructed, one for each criterion. Then, each of these four matrices should be normalized. The scores for each applicant on each criterion are then calculated by averaging the three values from the normalized matrices as shown in Table 6.

TABLE 6
PAIRWISE COMPARISONS AMONG APPLICANTS

Pairwise comparisons among applicants on Ph.D.				**Normalized matrix**				**Scores**
	App.1	App.2	App.3					
App.1	1	1/3	5	App.1	0.2381	0.2258	0.3846	0.2828
App.2	3	1	7	App.2	0.7143	0.6774	0.5385	0.6434
App.3	1/5	1/7	1	App.3	0.0476	0.0968	0.0769	0.0738

Pairwise comparisons among applicants on teaching				**Normalized matrix**				**Scores**
	App.1	App.2	App.3					
App.1	1	5	7	App.1	0.7447	0.7895	0.6364	0.7235
App.2	1/5	1	3	App.2	0.1489	0.1579	0.2727	0.1932
App.3	1/7	1/3	1	App.3	0.1064	0.0526	0.0909	0.0833

Pairwise comparisons among applicants on research				**Normalized matrix**				**Scores**
	App.1	App.2	App.3					
App.1	1	3	5	App.1	0.6522	0.6667	0.6250	0.6479
App.2	1/3	1	2	App.2	0.2174	0.2222	0.2500	0.2299
App.3	1/5	1/2	1	App.3	0.1304	0.1111	0.1250	0.1222

Pairwise comparisons among applicants on work experience				**Normalized matrix**				**Scores**
	App.1	App.2	App.3					
App.1	1	1/5	1/3	App.1	0.1111	0.1304	0.0769	0.1062
App.2	5	1	3	App.2	0.5556	0.6522	0.6923	0.6333
App.3	3	1/3	1	App.3	0.3333	0.2174	0.2308	0.2605

3. The scores obtained for each applicant on each criterion should be combined with the weights for each of the four criteria. This step will merge the decision makers' judgment about having Ph.D./ABD, research, teaching experience, and work experience for the three applicants into overall priorities for each applicant. AHP suggests that the decision maker should accept applicant 2, since he/she has the highest overall scores. The calculations are shown in Table 7. Figure 2 exhibits the hierarchy including all the weights.

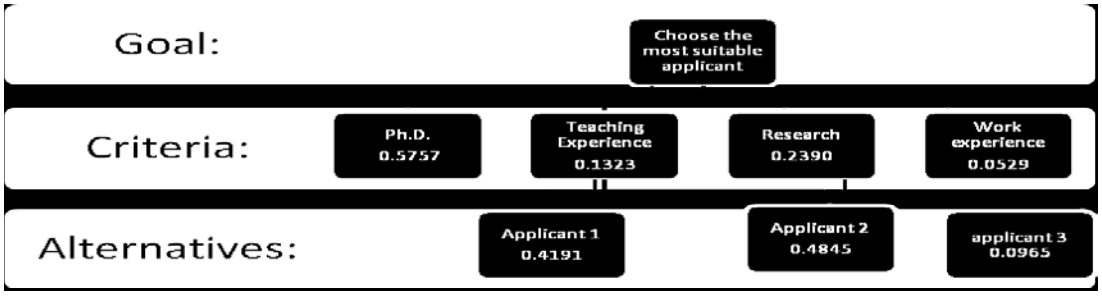
TABLE 7
BEST APPLICANTS CALCULATIONS

Determining best applicant

Matrix of scores

	PhD	Teaching	Research	Work Exp.		Weights		Weighted scores	
App.1	0.2828	0.724	0.648	0.106		0.5757		0.4191	
App.2	0.6434	0.193	0.230	0.633	X	0.1323	=	0.4845	← Applicant 2 has the highest score
App.3	0.0738	0.083	0.122	0.260		0.2390		0.0965	
						0.0529			

FIGURE 2
AHP HIERARCHY WITH FINAL PRIORITIES



4. Check the consistency of the judgment. For a consistent reciprocal matrix, the largest Eigenvalue is equal to the size of the comparison matrix, i.e. $\lambda_{max} = n$. The Consistency Index (CI) is a measure of deviation and is calculated as: $CI = (\lambda_{max} - n) / (n\text{-}1)$. The CI can then be compared with the appropriate consistency index, called the Random Consistency Index (RI), as shown in Table 8 (Saaty, 1994).

TABLE 8
RANDOM CONSISTENCY INDEX

n	2	3	4	5	6	7	8	9	10
RI	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.51

A comparison of CI and RI is done by the calculation of the Consistency Ratio (CR), according to the formula: CR= CI / RI. Then, CR is used to decide if the judgments are consistent or not. Values of the Consistency Index (CI) are displayed in Table 9. According to Saaty (2006), if *CI/RI* < 0.10, then the degree of consistency is satisfactory, whereas if *CI/RI> 0.10*, serious inconsistencies exists, and AHP may not yield meaningful results. In this application the *CI/RI* is 0.0905 which is less than 0.10. Therefore, the decision makers' initial matrix does not reveal any inconsistencies. The *CI/ RI* ratios are also calculated for the other four pairwise comparisons matrices among the applicants. The results are, 0.0565, 0.0567, 0.0032, and 0.0334 respectively. All of these ratios are less than 0.10, which means that the degrees of inconsistencies are satisfactory and AHP results are meaningful.

TABLE 9
CHECKING FOR CONSISTENCY

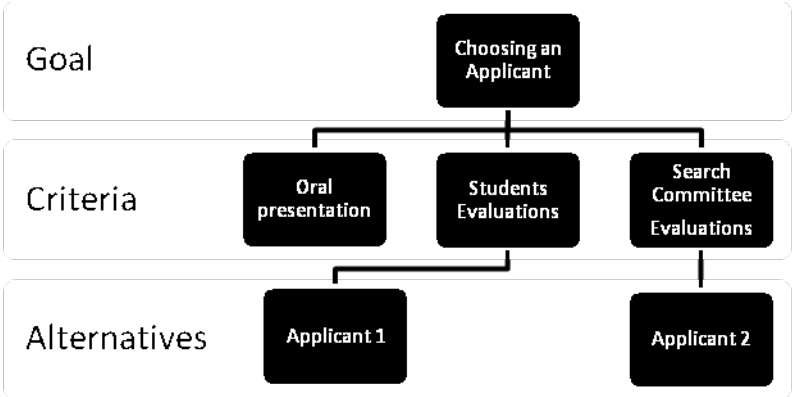
Checking for Consistency

	Ph.D.	Teaching	Research	Work Exp.		Weights		Product	Ratios
Ph.D.	1	5	4	7		0.5757		2.5638	4.4530
Teaching	1/5	1	1/3	4	X	0.1323	=	0.5388	4.0726
Research	1/4	3	1	5		0.2390		1.0445	4.3696
Work Exp.	1/7	1/4	1/5	1		0.0529		0.2161	4.0826
								CI	0.0815
								CI/RI	0.0905

5. A final decision is based on the results of this process. Reflecting on the best applicant calculations, applicant 2 has a slightly higher weighted score than applicant 1. An important question that still remains is whether other criteria could be used during an on-site interview at the college or university clearly to select the best qualified candidate for the tenure track faculty position. The other criteria would include the applicant's oral presentation to the faculty, student evaluations conducted after the applicant taught a class, and the search committee evaluations of the candidate. The following three criteria will be used to finalize the decision between the first two applicants:
    1. Oral presentation to the faculty
    2. Student evaluations after teaching one class
    3. Search committee evaluations

Figure 3 exhibits Round Two hierarchy model.

FIGURE 3
ROUND TWO HIERARCHY MODEL



Values from Table 2 are used again in round two to construct the pairwise comparison matrices. The decision makers agree on these relative weights for round 2 as shown in Table 10. Table 11 exhibits the pairwise comparison matrix among the three criteria:

TABLE 10
ROUND 2 CRITERIA'S RELATIVE WEIGHTS

Oral Presentation	1	Student Evaluations	3
Oral Presentation	1	Search Committee Evaluations	4
Student Evaluations	2	Search Committee Evaluations	1

TABLE 11
ROUND 2
PAIRWISE COMPARISON MATRIX

Round Two

Pairwise comparisons among objectives

	Oral Presentation	Students Evaluations	Search Committee
Oral Presentation	1	1/3	1/4
Students Evaluations	3	1	2
Search Committee	4	1/2	1

To determine the weights for each of the three criteria, round two matrix needs to be normalized and then the calculation may be made of the weights as an average for the three values as shown in Table 12.

TABLE 12
ROUND TWO NORMALIZED MATRIX

Pairwise comparisons among objectives

Round Two

	Oral Presentation	Students Evaluations	Search Committee	Normalized matrix			Weights
Oral Presentation	1	1/3	1/4	0.1250	0.1818	0.0769	0.1279
Students Evaluations	3	1	2	0.3750	0.5455	0.6154	0.5119
Search Committee	4	1/2	1	0.5000	0.2727	0.3077	0.3601

To determine how well each applicant scores on each objective, decision makers use the same scale described in Table 2 to construct pairwise comparison matrices for each criterion. Therefore, for round two, three matrices needed to be constructed: one for each criterion. Then, each of these three matrices should be normalized. The scores for each applicant on each criterion are then calculated by averaging the two values from the normalized matrices as shown in Table 13.

TABLE 13
ROUND TWO PAIRWISE COMPARISONS AMONG APPLICANTS

Pairwise comparisons among objectives — Round Two

	Oral Presentation	Students Evaluations	Search Committee	Normalized matrix			Weights
Oral Presentation	1	1/3	1/4	0.1250	0.1818	0.0769	0.1279
Students Evaluations	3	1	2	0.3750	0.5455	0.6154	0.5119
Search Committee	4	1/2	1	0.5000	0.2727	0.3077	0.3601

Pairwise comparisons among applicants on oral presentation — Normalized matrix

	App.1	App.2				Scores
App.1	1	3	App.1	0.7500	0.7500	0.75
App.2	1/3	1	App.2	0.2500	0.2500	0.25

Pairwise comparisons among applicants on student teaching evaluations — Normalized matrix

	App.1	App.2				Scores
App.1	1	1/3	App.1	0.2500	0.2500	0.25
App.2	3	1	App.2	0.7500	0.7500	0.75

Pairwise comparisons among applicants on Search Committee — Normalized matrix

	App.1	App.2				Scores
App.1	1	2	App.1	0.6667	0.6667	0.67
App.2	1/2	1	App.2	0.3333	0.3333	0.33

After combining the scores obtained for each applicant on each criterion with the weights for each of the three criteria, the final scores for the two applicants will be determined. AHP suggests that the decision maker should accept applicant 2 again, since he/she has the highest overall scores. The calculations are shown in Table 14. Figure 4 exhibits round two hierarchy including all the weights.

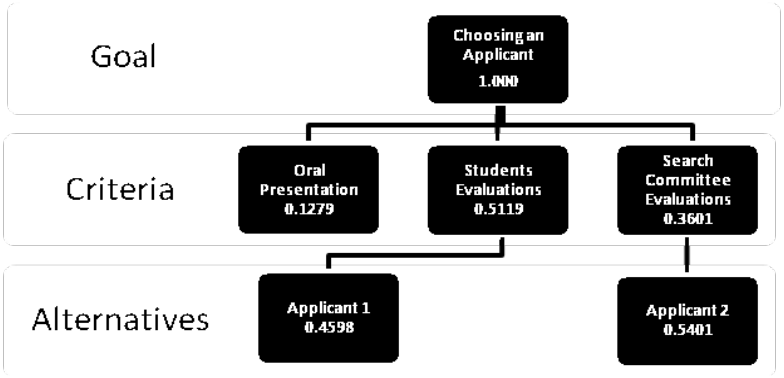
TABLE 14
ROUND TWO BEST APPLICANTS CALCULATIONS

Determining the best applicant — Round Two

Matrix of scores

	Oral present.	Students E'	Search com.	Weights	Scores	
App.1	0.750	0.25	0.6667	0.141558442	0.4598	
App.2	0.250	0.75	0.333333	0.524675325	0.5401	← Applicant 2 has the highest score
				0.333766234		

FIGURE 4
ROUND TWO AHP HIERARCHY WITH FINAL PRIORITIES



To check the consistency of the judgment for round two, the only *CI/ RI* ratio that is needed to be calculated is the pairwise comparisons matrix among the three criteria. The other three matrices have only two comparisons. Therefore, there is no need to calculate the consistency ratio for them. Table 15 exhibits the calculations for the *CI/ RI* ratio for round two initial matrix. The *CI/ RI* ratio is equal to 0.0937, which is less than 0.10. Therefore, according to Saaty (2006), the degree of consistency is satisfactory, and AHP method has produced meaningful results.

TABLE 15
CHECKING FOR CONSISTENCY

Checking for consistency

Round Two

Pairwise comparisons among objectives

	Oral Presentation	Students Evaluations	Search Committee		Weights		Product	Ratios
Oral Presentation	1	1/3	1/4		0.1279		0.388598	3.03796507
Students Evaluations	3	1	2	X	0.5119	=	1.615967	3.15651679
Search Committee	4	1/2	1		0.3601		1.127768	3.13147249
							CI	**0.0543**
							CI/RI	**0.0937**

Therefore, the final decision using AHP method is to select applicant number 2.

CONCLUSION

Analytic Hierarchy Process (AHP) is a multiple criteria decision making tool that has been widely used by researchers and decision makers. AHP has been used in many fields such as planning, resource allocation, resolving conflict, optimization, selecting a best alternative, forecasting, total quality management, and priority setting. Many AHP applications are used at high levels of large organizations where privacy and security prohibit the disclosure to the world at large. Therefore, these applications are used but have been relatively unnoticed. AHP is most useful when complex problems develop involving high stakes such as human perceptions and judgments. Reduction of problems of human perceptions and judgments could have long-term repercussions and, hence, adoption of AHP methodology needs to be considered in a careful manner. AHP has a unique advantage when communication among team members is impeded by their different specializations, terminologies, or perspectives. It may also

advantageous to use AHP when important elements of the decision making process are difficult to quantify or compare equally.

In retrospect, this paper focused on the potential usage of the Analytical Hierarchy Process in order to select the best applicant for a tenure track position. A pairwise analysis was developed to evaluate three potential applicants based upon four primary factors which included: Ph.D. or ABD status, teaching experience, research and number of publications, and work experience. Additionally, three other criteria such as oral presentation to faculty, student evaluations after teaching a class, and search committee recommendations were also used to finalize the hiring decision for the tenure track faculty position. In essence, the AHP has the potential to be a very useful selection tool to secure and acquire talented tenure track assistant professors for a university to carry out its strategic goals. It remains to be seen if the AHP gains popularity as a viable selection tool within academia.

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MBA Students' Quantitative Attitude: Confident or Anxious?

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Upon analyzing the symptoms and the potential causes for quantitative anxiety, we test a twenty-item scale for measuring quantitative anxiety in MBA students. The scale was administered to a sample of MBA students at four U.S. universities. The 20-item scale yielded a four-factor solution: confidence, usefulness, enjoyment and perceived value. The findings suggest that in general, MBA students, though aware of the value and usefulness of quantitative methods, have low levels of confidence in their ability to use quantitative tools.

INTRODUCTION

In a fact driven business environment, being comfortable with statistics, interpreting their meaning and devising ways to collect meaningful data are skills required of most business professionals. Therefore, understanding the anxiety related to quantitative aspects of MBA students, and how to overcome it, is of foremost importance if we, as educators, want to contribute to the development of highly qualified professionals.

Anxiety is defined as the fear developed due to a perceived non-specific threat (Barlow, 1988; Rachman, 1998). "Math Anxiety" is often defined as "the feeling of tension and anxiety that interferes with the manipulation of numbers and solving of mathematical problems in a wide variety of life and academic situations" (Richardson and Suinn, 1972). "Statistical Anxiety" is often defined in the literature as distinctive from "Math Anxiety," in the respect that statistical anxiety also includes components of fear of interpreting statistical data and results (Cruise et al., 1985). Because in the business world, the use of mathematics and statistics relies on the ability to interpret data and results, for the purpose of this paper we will use the term "quantitative anxiety" to include all forms of anxiety stemming from any type of quantitative subject matter.

In the remainder of the paper we discuss briefly the extant literature on math and statistical anxiety; then we discuss the instruments available for measuring math and statistical anxiety, and propose a parsimonious scale for measuring quantitative anxiety as it pertains to MBA students. In the conclusion of the paper we propose some measures for alleviating quantitative anxiety.

LITERATURE REVIEW

Quantitative anxiety manifests as fear of quantitative problems (Legg and Locker, 2009). This anxiety is often initiated at the high school level and can continue at the university level. It can be defined as a general fear or tension or timidity associated with anxiety provoking situations that involve interactions with quantitative issues. Quantitative anxiety is one of the factors identified that can affect a person's problem solving performance (Tsui and Mazzocco, 2007). In a data driven business environment this is a potential problem for MBA students.

"Statistics anxiety" or fear that occurs as a result of encountering statistics in any form and at any level is noticeably common among students whose academic background includes little previous mathematical or statistic training (Onwuegbuzie, DaRos, and Ryan, 1997). As expected, statistical anxiety affects students' performance in courses with statistical content, causes feelings of inadequacy or low self-efficacy (Blalock 1987; Dillon 1982) and it is a significant factor that impacts students' ability to finish their degrees (Onwuegbuzie, 1997).

Symptoms of Quantitative Anxiety

Many psychological and physiological symptoms can be observed in those who suffer from quantitative anxiousness. Psychological symptoms may include panic, nervousness before a quantitative class, feeling blank in an exam, or feeling helpless doing homework. Having sweaty palms, a fast heartbeat or an upset stomach are some of the physiological symptoms of quantitative anxiety (Ruffins, 2007). Pan and Tang (2005) indicate that factors contributing to quantitative anxiety include but are not limited to mathematics phobia, a lack of connection to daily life, the pace of instruction, and the instructor's attitude. Their results make it evident that utilizing multidimensional instructional methods and instructors' being attentive to students' anxiety are helpful strategies to reduce students' anxiety. Having quantitative anxiety is not reflective of a person's capability in performing tasks, but it can inhibit the person's ability to learn, or to successfully apply what they know (Freiberg, 2005). This could be quite damaging in a business career in which decisions are increasingly data driven.

Reasons for Quantitative Anxiety

There can be many causes for symptoms related to quantitative anxiety. It can often be related to past classroom experiences, parental influences, remembering poor past performance, the attitudes of teachers, inadequate curriculum, and/or faulty pedagogy. Mainstream thinking concerning quantitative anxiety has assumed that it is related to the ability of a person to deal with quantitative situations. However, a growing body of research shows a much more complicated relationship between ability and anxiety (Ruffins, 2007).

Many students who lack confidence in their ability to do mathematics may leave high school feeling apprehensive about encountering simple mathematical tasks (Scarpello, 2007). When students do not view quantitative based courses as useful to their careers, they are more likely to miss classes. Gaps in students' prior education (also called "dropped stiches") hold them back from learning more-complicated concepts. From a professor's perspective, dropped stitches can be annoying. Sewing up gaps in students' knowledge takes time and effort for both the professors and the students (Farrell 2006).

A "snowball effect" can develop in which students are afraid to ask questions about concepts they feel they should know already. This can cause a student to fall further behind increasing his/her confusion with each new concept. In a vicious circle, catching up seems like an insurmountable task to some students (Farrell, 2006). This is a major concern, for success in education, for a student's future employment and for our economy. "Creating a country of 'mathophobes' does not bode well for us in the uncertain global economy of the future" (Geist, 2010, p. 29).

The style of testing and grading quantitative assignments can influence the anxiety levels in students. Denying partial credit for simple miscalculations might be discouraging: the negative feedback, in spite of effort, increases the negative feelings about the subject. Also, exams and tests are often a source of anxiety, partly because the students are pressured to perform under high stress on the tests. Having poor

test results further limits the students' curiosity and inventiveness (Farrel, 2006). Teachers who use ineffective instructional practices generally find their students lagging behind in their learning when compared to students who have been taught with effective instructional practices (Scapello, 2007).

Research on the relationship between the length of the course and the level of anxiety discovered that the shorter the course, the higher the anxiety levels. "Students taking beginning statistics in an accelerated format, either in an intersession or during a summer session, score significantly higher on the anxiety scale, indicating more anxiety, than students taking beginning statistics during the regular semester" (Bell, 2001, p.713). Since many courses in MBA programs are in accelerated formats, similar to the summer classes they might have a role in increasing anxiety.

Measuring Quantitative Anxiety

Rating scales have been established to measure various forms of quantitative anxiety among students having varying levels of mathematical skill. Two relatively long rating scales are the "Math Anxiety Rating Scale" (MARS) and "Statistics Anxiety Rating Scale" (STARS). MARS was developed in 1972 by Richardson and Suinn and has 98 items. Hopko et al. (2003) developed a more parsimonious MARS scale, called The Abbreviated Math Anxiety Scale (AMAS), with only nine items and two factors. This scale, however, is specifically adapted towards measuring the anxiety in the math classrooms and less applicable in the business classroom setting. The STARS scale (Cruise, Cash, and Bolton, 1985) is a relatively widely employed scale with 65 items and six factors: *Worth of statistics* (perceived usefulness and relevance of the statistical course, "fit" with their personality and general attitude towards the course); *Interpretation anxiety* (anxiety that arises from interpreting statistical results); *Test and class anxiety* (anxiety resulting from simple enrolment in a statistics class and having to take statistics tests)*; Computation self-concept* (feelings of inadequacy when working with and interpreting statistics); *Fear of asking for help* and *Fear of Statistics Teachers.*

Based on a qualitative study, Pan and Tang (2005) have shown that there are four main factors that contribute to quantitative anxiety. One is a general phobia related to math and statistics. A second factor is that students do not see a connection of quantitative concepts to their daily lives. Third, the pace of instruction increases anxiety if instruction is too fast. And fourth, the attitude displayed by instructors can influence the anxiety level of students.

Using items designed to capture all factors using in MARS, STARS and the more recent qualitative study (Pan and Tang, 2005), we have developed a scale with only 20 items (but which shows strong reliability) to capture the quantitative attitude of MBA students.

METHODOLOGY

We constructed an instrument (see Table 1) that was administered to 152 MBA students at four universities. Approximately 36% of the overall sample were female. The students surveyed were enrolled in either full time (57%) or part time programs, traditional (69%) or executive / professional programs, taking classes face-to-face (85%) or in blended formats (online and in person).

Using Principal Component Analysis (PCA), we extracted a four-factor solution. The solution was robust, the variables loading the same way when using several factor extraction methods (i.e., generalized least squares, principal axes factoring), and various rotation methods (e.g., Varimax, Oblimin). The four factors we identified are *Confidence, Usefulness, Enjoyment* and *Perceived Value* (see Table 1 for factor allocation and loadings). None of the variables loaded heavily on multiple factors. The highest loading on a secondary factor was .392. The item "The "truth" or falsity of a research question has to be tested by empirical data" loaded .593 on the *Perceived Value* factor, and .392 on the *Usefulness* factor. The solution presented was rotated using Varimax with Kaiser normalization.

The overall reliability of the scale (Cronbach's Alpha) is 0.945, higher than the suggested reliability proposed by Cronbach (1951), of 0.7. The reliability factor for the sub scales were .913 for *Confidence*, 0.902 for *Enjoyment*, .870 for *Usefulness* and 0.858 for *Perceived Value*.

TABLE 1
DESCRIPTIVE STATISTICS AND FACTOR LOADINGS

	Factor Loadings	Mean
Factor: Confidence		
I know which statistical procedure to use to test my hypothesis.	0.792	3.83
I have a thorough understanding of quantitative research methods.	0.764	3.94
I understand the interrelations among measurement, statistics, and research design.	0.732	4.28
I understand the basic principles of hypothesis testing and statistical inference.	0.728	4.31
Compared to others I know, I am very good in quantitative subjects.	0.676	4.41
I am confident in my quantitative ability.	0.621	4.52
I understand the basic principles of classical test theory.	0.614	4.6
Factor: Perceived Value		
Any theory 'worth its salt' has to be subjected to data-based quantitative tests.	0.769	5
A sound methodology is essential for quality research.	0.767	4.89
A good researcher must have a strong background in quantitative methodology.	0.726	5.13
Statistical tools are valuable for understanding and interpreting one's data.	0.71	5.03
The 'truth' or falsity of a research question has to be tested by empirical data.	0.593	4.59
Factor: Usefulness		
Knowledge of quantitative research methods is useful for my job.	0.783	4.78
I need to keep up with quantitative developments to do my job well.	0.745	4.16
Quantitative research methodology is useful for my career.	0.696	4.61
I need to know research methodology in order to do my own research.	0.614	4.53
I see the usefulness of quantitative research methodology in my life.	0.531	4.42
Factor: Enjoyment		
I enjoy working with numbers.	0.867	4.76
I am good with numbers.	0.852	4.9
Math has been one of my favorite subject in school.	0.825	4.58

DISCUSSION

The four-factor solution proposed is robust and the instrument provided is reliable and less cumbersome to administer than previous instruments for assessing quantitative anxiety. The four factors, that we labeled *Confidence, Enjoyment, Perceived Value* and *Usefulness* provide useful titles for assessing the cause, and the potential measures to alleviate anxiety. It is interesting to note that in our sample *Confidence* scores were significantly lower than the scores on any of the other three factors ($p<.001$).

Besides the scale, we asked students additional questions regarding demographics, undergraduate and graduate GPA and participation in specific courses. It was interesting to note that participation in some quantitative courses had no statistical significant effect on any of the factors of the scale, some reduced enjoyment, and others increased confidence in students' quantitative abilities. It is possible that the style of the professors, and the way they covered the material are responsible for these effects, however, since no specific questions were asked in this regard no further conclusions could be drawn ($p<.05$).

Male students reported higher confidence than female students. Students majoring in science programs in their undergraduate studies scored higher on all four factors than students majoring in business or other subjects. Ethnic background also influenced students *Enjoyment, Confidence* and *Perceived Usefulness.* Students of Asian background scored higher on all these factors as compared to white students. Interestingly, full-time MBA students scored higher on *Confidence* and *Perceived Usefulness* than part-time MBA students, but students participating in online or blended programs scored higher on *Confidence* and *Perceived Usefulness* factors compared to students attending face-to-face programs. No difference was observed in terms of work experience, or between students enrolled in traditional MBA programs versus executive/professional MBA programs. All these results are reported based on t-tests ($p<.05$), without controlling for other possible influences.

CREATING A MORE POSITIVE ATTITUDE

There are curricular and pedagogical alternatives that can lessen the extent of quantitative anxiety and increase confidence among MBA students. Faculty may be able to use different teaching methods. In order to alleviate math anxiety faculty can try to portray a positive, enthusiastic, helpful attitude, which communicates the usefulness of quantitative methods of data analysis. MBA courses can be designed in a practical, engaging, and fun way. Pedagogy needs to be implemented so that the thinking shifts away from the explain-practice-memorize to strategies that stress reasoning and understanding. There is a need for a classroom culture that prompts student inquisitiveness, discovery, learning and the exploration of ideas to replace the structured, rigid atmosphere usually associated with quantitative classes. It may also be desirable for assessment to be conducted in a variety of ways (Shields, 2005).

According to Ruffins (2007) the following are few methods that faculty can implement as part of their curriculum to help their students overcome quantitative anxiety:[1]

1. *Highly qualified women or minority faculty can be role models for the students*. Women scored worse on one of the four factors (*Confidence*) but not better than men on the other three. Maybe having successful women business professionals visit classes can increase the confidence of women.
2. *People of importance who have implemented quantitative data analysis can be introduced when relevant to course material*. Often we may be able to find such professionals who are willing to talk with classes about the usefulness of data analysis and how they use data and quantitative techniques to solve important business problems.
3. *Real life examples may be given to help students visualize a problem in more concrete terms*. We have observed that the use of "real" problems with companies and other organizations generates student interest and enthusiasm. We have many opportunities to accomplish this by using "live cases" as part of our courses.
4. *Simple words or pictures may be useful when discussing quantitative problems*. Presenting data in visual format has been proven to help people understand relationships (Tufte, 1983). The old

saying that “a picture is worth a thousand words” seems applicable here. Encouraging students to display results in graphic forms can enhance their understanding of the studied phenomenon.

5. *Problems may be first presented descriptively and then presented in quantitative terms*. Presenting a logical description of a problem before diving in the quantitative aspects provides a base of understanding upon which we can then build the quantitative exercise. Otherwise, we run the risk of losing students right from the start.

CONCLUSION

Our study contributes to the MBA education literature by providing a framework for assessing and dealing with the problem associated MBA students and their quantitative anxiety. Though our study uses a sample of students from four universities only, we believe that the results provide bases for understanding the quantitative anxiety of MBA students in general.

ENDNOTE

[1]Ruffins original items are in *italic* while our additions are in the normal font.

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An Econometric Approach to Optimizing Student Enrollment

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The concept of optimal enrollments has been studied extensively in enrollment management settings; however, most studies approach the problem qualitatively. Due to the complexity of the problem, a qualitative decision-making process can be overwhelming. An alternative is to use a quantitative approach. This paper will suggest a way of modeling the problem of optimal enrollments using mathematical optimization techniques.

INTRODUCTION

The concept of optimal enrollments has been studied extensively in enrollment management settings; however, most studies approach the problem qualitatively. Due to the complexity of the problem, a qualitative decision-making process can be overwhelming. An alternative is to use a quantitative approach. This paper will suggest a way of modeling the problem of optimal enrollments using mathematical optimization techniques. This approach has the benefit of being able to handle many variables and constraints at once and to uncover patterns that may be difficult to discern using qualitative approaches.

The model assumes that a decision must be made each year as to how many students of a given type to admit. Students may be classified according to academic qualifications, program of study, whether or not they would live on campus, whether they come from a primary or secondary market, or any other characteristic that is considered when making admissions decisions.

The problem formulation also assumes that students of different types act differently with respect to the institution; for example, if admitted, different types of students will enroll with different probabilities. Even among students who do enroll when admitted, different student types will progress at various rates through the system; for example, those students with stronger academic qualifications may have a higher chance of persisting and graduating. The problem with trying to mathematically describe such a system is that it is riddled with uncertainty. If a student is admitted, he may or may not enroll. If he enrolls for one year, he may or may not continue to his second year, and so on. When a student is admitted, it is not known whether or not that student will be successful; however, we may be able to estimate the student's chances of being successful based on the expected behavior of students of the same type.

This paper introduces a mathematical model that allows us to represent the uncertainty associated with the admittance, enrollment, and retention of students in an institution with common random variables. The model will also allow us to "optimize" our admissions decisions, while satisfying the

constraints imposed. While it is unlikely that the model will be used directly by institutions to dictate admissions decisions, it may provide useful insight that could help admissions personnel make well-informed decisions and understand the implications of those decisions.

Description of Analysis

The model assumes that we can predict the behavior of the students who have applied based on the behavior of similar students who are or were already at the institution. That is, we need to be able to predict the future based on the past. In order to do this, we must somehow classify students into groups or types in order to track their behavior. To that end, we assume that students may be classified into types based on criteria that are used in admissions decisions. These criteria might include high school grade point average, standardized test scores, and whether or not they will live on campus or pay in-state or out-of-state tuition. The criteria used will vary among institutions.

Depending on the number of criteria used and the number of levels of classification within each (e.g. high GPA, medium GPA, or low GPA) there may be hundreds of different student types to consider, some of which may have only a few students. It is obviously much too complex to deal with hundreds of types; therefore, an effort can be made to reduce the number of student types by combining groups who act similarly with respect to the institution. By this we mean that the values of the yield, graduation and retention rates for the groups to be combined are not statistically different. If this is the case, then the combined group should act similarly to its member groups. If we do not combine groups who do not act similarly, then in the end we should be left with a small number of groups who are differentiated by their yield, retention, and graduation rates. This analysis can be done using Analysis of Variance (ANOVA) and should preferably be based on several cohorts to give as large a data set as possible.

Once we have reduced the student body to a small number of groups based on all cohort data available, we need to test the assumption that the behavior of these groups does not vary statistically from year to year. If this is the case, then it will be valid to predict the behavior of students of a given type who we would like to admit based on the behavior of past students of the same type. Therefore, for each student group or type, we can compare the yield, retention and graduation rates over several years to see if there are statistical differences over time. These tests (one for each student type and each rate) can be done by using a Chi Square test for a difference in proportions. If these tests hold, then the use of the model is validated.

Analysis of Institutional Data

The analysis described above was done on data for students enrolled in moderately sized mid western comprehensive university in the 1999-2005 cohorts. The criteria used to classify students were high school GPA, SAT (or ACT) scores, in-state vs. out-of-state, market (or yield level), and whether or not the student would live on campus. The last attribute could not be measured directly, but another variable representing whether or not the student lived within 50 miles of campus was used as a proxy. This is because the institution under analysis has a practice that students living further than 50 miles away must live in the residence halls.

When the initial classifications were done, there were 480 different student types present in the data. Groups were then combined using ANOVA in the following manner. The yield, retention (1-year through 7-year) and graduation rates (3-year through 7-year) of types that differed on only one variable, while all others remained constant, were compared. If there were no significant differences between the groups, then it was determined that that variable had no effect and the groups were combined. This analysis resulted in 25 distinct student types.

The 25 groups were then tested to determine whether the yield, retention and graduation rates varied from year to year. The results showed that, with the exception of a few outliers, that the rates remained very stable over the past several years. Thus, it was determined that the assumptions of the model held.

CONSTRAINTS INVOLVED IN ADMISSIONS DECISIONS

Since we found several student groups whose members act similarly to each other, we no longer need to look at each student individually in the admissions decision, but can now consider the number of students of each type to admit. These decisions must be made subject to certain constraints. There are two types of constraints that must be considered. Some of the constraints apply to the number of students we admit; for example, we cannot admit more students than we have applications. The others will be on the number of students who enroll, which is a random quantity based on the number of students we admit. We discuss each type of constraints below.

Constraints on the Decision Variables

Because we now only want to decide on the number of students of each type to admit, we will call these variables our "decision variables". There are several types of constraints on the decision variables that must be considered when admissions decisions are made. Some are real; for example, that we cannot admit more students that we have applications. Others are self-imposed; for instance, we may not want to admit too many remedial students who will require more resources. We call the latter constraints "capacity" constraints because they assume that the institution only has a certain capacity for certain types of students.

If we let x_i be the number of students of type i who we decide to admit, and let A_i be the number of applications from students of type i that we have, then for each student type, we will have the constraint:

$$x_i \leq A_i \quad \text{for all student types i}$$

Similarly, suppose there are certain upper bounds B_i on the number of students of type i that we wish to admit for some (not necessarily all) student types. Then our capacity constraints will be:

$$x_i \leq B_i \quad \text{for some student types i}$$

Capacity Constraints on the Outcome Variables

At the time when we admit a group of students, we do not know how many will enroll, and of those who do, how many will continue to enroll. These quantities are uncertain, and we just have to "wait and see" how they turn out. For this reason, we refer to the number of students who enroll as "outcome" variables.

There are several types of constraints that we might want to enforce on these outcome variables. One possible type of constraint might be capacity constraints similar to those we had on our decision variables. For example, you may want to limit the size of your freshman class. If you admitted too many of some types of students, for example those with high yield rates, you may end up exceeding that limit. Similarly, you may have a freshman dorm that houses all on campus freshmen. If too many on-campus freshmen were to enroll, then you would have overflow in your dorm.

The problem with trying to impose constraints on these outcome variables is that they are random quantities. We do not know with 100% certainty how many freshmen will enroll; thus, we can never ensure with 100% certainty that our capacity constraints will be met. However, based on our assumption that future students will behave similarly to past students of the same type, we can ensure that we will make a decision that will result in our constraints being met with a high degree of probability, say 95%.

We will discuss how this is done later in the discussion. However, at this point we can express these capacity constraints in mathematical terms. To that end, let X_i be the random number of students of type i who enroll as freshmen, and let U be the upper bound on the size of the freshman class. Then, if we sum the X_i over all types i, it will give us the total number of freshmen who enroll. Thus, the following constraint insists that we meet this bound on the size of the freshman class with a high degree of probability, represented by α_1:

$$\text{Prob}(\sum X_i \leq U) \geq \alpha_1$$

Similarly, we can impose capacity constraints for individual student types. If we let U_i be the upper bound on the number of students of type i who will enroll, then we have:

$$\text{Prob}(X_i \leq U_i) \geq \alpha_2$$

where α_2 is a probability close to 1. Note that α_2 does not need to be the same as α_1. Note also that we could create similar constraints to impose bounds on subsets of student types as well.

Quality Constraints on the Outcome Variables

When a student fails to persist, it affects institutional measures of success such as retention and graduation rates. Therefore, when we admit a group of students, we would like to be reasonably sure that the yield, retention and graduation rates that will result for that cohort will be acceptably high. These rates are based on the students who enroll, which is a random quantity, so we can never ensure with 100% accuracy that they will be met. However, using the past behavior of students to predict future behavior of students of the same type, we can ensure that these constraints will be met with a high degree of probability.

For example, suppose that you wish to satisfy, with a high degree of probability, the following constraints involving the outcome variables representing your yield, retention and graduation rates:

- that your yield rate, represented by Y, is sufficiently high, say at least p_y (where $0 \leq p_y \leq 1$).
- that your first year retention rate, R^1, is sufficiently high, say at least p_r (where $0 \leq p_r \leq 1$).
- that your four year graduation rate, G^4, is sufficiently high, say p_g (where $0 \leq p_g \leq 1$).

Then, your constraints would be expressed as:

$$\text{Prob}(Y \geq p_y) \geq \alpha_3$$
$$\text{Prob}(R^1 \geq p_r) \geq \alpha_4$$
$$\text{Prob}(G^4 \geq p_g) \geq \alpha_5$$

where α_3, α_4, and α_5 are (possibly different) probabilities close to 1. Note that we could also impose restrictions on these rates for specific student types instead of on the entire freshman class.

While the constraints on the decision variables are straightforward because you simply limit the number admitted to a certain level, the constraints on the outcome variables are more complex because they involve random variables. We will see later in the discussion how the assumptions made in the model will allow us to easily deal with these random constraints.

THE OBJECTIVE FUNCTION

The portions of the model that we have discussed so far allow us to ensure with a reasonable degree of confidence that the constraints we specify will be met. Subject to these constraints, we would like to admit the "optimal" number of students of each type. So, what is "optimal", or in other words, what is our objective?

Measures of Optimality

There are several possibilities for what would make up an optimal freshman class, depending on the institution and its mission. Note that each of these measures of optimality will be random quantities based on the outcomes variables because we are measuring the optimality of those who enroll and we do not

know if the students will enter the institution and how long they will stay enrolled. Some possible ways to measure the optimality or desirability of a class are as follows:

1. Quality of the freshman class, as measured by pre-entry attributes such as high school GPA and standardized test scores, or by behaviors after enrolling, such as retention and graduation rates.
2. Revenues generated by the incoming class over the course of their tenure at the institution, which may be important to institutions with limited financial resources. Note that revenues also incorporate to some extent quality aspects such as retention because we are looking at revenues generated over the course of several years, not just in the first year. Thus, students who are likely to be retained will be more desirable because they will generate revenues over several years.
3. A Combination of Quality and Revenues which would involve a weighted average of the two measures.
4. How well the freshman class conforms to some ideal class whose mix is defined by the institution.
5. How well the freshman class meets certain institutional goals, such as increasing the number of high quality students or increasing recruitment in new markets.

Calculate some utility to the distance of each type to its desired level. Then, a total utility score is computed so that solutions can be compared. The quality measure is very valuable, but to some extent is dealt with in the constraints where we ensure certain levels of retention and graduation rates. Thus, here we will discuss the revenue measure, which has the added benefit of having a simple form.

Objective Function Involving Revenues Generated

In this type of model, we wish to express the measure of optimality in a form that will allow us to compare different decisions and decide which is best. In this context, such an expression is called an objective function. Here, we wish to express our objective function in terms of the outcome variables X_i.

In order to express the revenues generated over the students entire tenure at the institution, we need to distinguish the number of students who enroll in their first year from the number who enroll in their second, third, fourth, etc. Thus, let $X_i(n)$ be the number of students of type i who enroll in their n^{th} year, for n = 1, 2, 3, … (Since X_i, which we defined as the number of students of type i enrolling in their first year, can also be written as $X_i(1)$, we will henceforth refer to it in the longer notation to emphasize its relation to the other random variables $X_i(n)$.) Also, let $r_i(n)$ be the amount of revenues generated by students of type i in year n. Note that the quantity $r_i(n)$ is just a number. It is varies by student type because different students may pay different amounts for tuition (in-state vs. out-of-state, on-campus vs. commuter, etc.). The value of $r_i(n)$ is also allowed to vary from year to year to account for tuition hikes and other changes in fees.

In year n, each student of type i will generate $r_i(n)$ dollars in revenue; therefore, the total amount of revenue generated by students of type i in year n is $r_i(n) \bullet X_i(n)$. If we sum over all values of n, we will get the total revenues generated by students of type i over their entire tenure at the institution. Lastly, if we sum this quantity over all values of i, we will get the total revenues generated by all students we admit, which we denote by r. Thus, our objective function is:

$$r = \sum \sum r_i(n) \bullet X_i(n)$$

In order to find the optimal freshman class, we will want to maximize this quantity. As was true with the constraints on the outcome variables, this quantity is complex because it involves random variables representing the number of students who enroll, and as such is itself a random variable. We will not be able to maximize this quantity directly because we do not know the outcome of the $X_i(n)$. For that reason, we will want to maximize a function of this quantity that we can know in advance. Although there are many possibilities, the simplest approach would be to maximize the expected value, or mean, of this random variable. Although the expected value is no longer a random variable, it is still a complex

quantity. Later in the discussion, we will show how the assumptions made in the model allow us to effectively deal with this aspect of the model.

THE MODEL

If we put together the various components we have discussed, we have the following mathematical model for the admissions decision:

$$\text{Maximize } E\left[\sum_i \sum_n r_i(n)\, X_i(n)\right]$$

Subject to:

$x_i \le A_i$ for all student types i

$x_i \le B_i$ for some student types i

$\text{Prob}(\sum X_i \le U) \ge \alpha_1$

$\text{Prob}(X_i \le U_i) \ge \alpha_2$

$\text{Prob}(Y \ge p_y) \ge \alpha_3$

$\text{Prob}(R^1 \ge p_r) \ge \alpha_4$

$\text{Prob}(G^4 \ge p_g) \ge \alpha_5$

where $x_i \ge 0$ for all student types i and
$0 \le \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, p_y, p_r, p_g \le 1$

The above problem, which consists of maximizing a quantity subject to constraints containing probabilities is a mathematical construct called a stochastic program. Although there are methods for solving such problems, they tend to be challenging problems to solve because of the uncertainty involved. The $X_i(n)$ are random quantities that depend on the number of students of that type who were admitted. Furthermore, the yield retention and graduation rates will all be calculated based on these $X_i(n)$. Thus, in order to make sense of this complex model, we need to get a handle on these random variables represented by the $X_i(n)$. We will discuss in the next section how these quantities can be expressed in terms of common distributions in order to greatly simplify the problem.

Probability Distributions of the Outcome Variables $X_i(n)$

Recall that the random variables $X_i(n)$ represent the number of students of type i who enroll in their n^{th} year. We know that the probability distribution of the random variables of $X_i(1)$ are related to the number of students of type i who we admit, namely x_i. If we assume that each of these x_i students acts independently of the others, and that each student of type i who is admitted will enroll with probability y_i, then $X_i(1)$ will be have a Binomial distribution with $n = x_i$ and $p = y_i$.

Furthermore, the value of $X_i(2)$ turns out to be the number of students of the x_i admitted who enroll the first year and the second year (assuming continuous enrollment). Thus, students must enroll in their first year, which they do with probability y_i, and then also enroll in their second year, which they do with probability equal to the first year retention rate denoted by R_i^1. Therefore, $X_i(2)$ also has a Binomial distribution with parameters $n = x_i$ and $p = y_i R_i^1$.

In general, a student who is admitted enrolls in period n with probability $y_i R_i^n$ where R_i^n is the n^{th} year retention rate of students of type i. Assuming each student acts independently, we will have for all n = 1,2,3,…

$$X_i(n) \sim \text{Binomial } (n = x_i,\ p = y_i R_i^n).$$

Furthermore, if the group sizes are sufficiently large, then this Binomial distribution can be approximated by a normal distribution. Generally, if the procedure described earlier results in a relatively small number of large groups, then this approximation will be valid. In this event, we have the following approximate probability distribution for $X_i(n)$:

$$X_i(n) \approx \text{Normal } (\mu = x_i y_i R_i^n,\ \sigma^2 = x_i y_i R_i^n (1 - y_i R_i^n))$$

Since the distribution of the random variables follows a normal distribution, and independent normal random variables can be added, it turns out that the constraints in the model that involve probabilities can be replaced with equivalent constraints that have no probabilities in them. In addition, we will be able to explicitly express the expected value in the objective function. Thus, by exploiting the properties of the normal distribution, we can reduce the above stochastic program to a much more manageable problem. We now explain the procedure that allows us to do this.

EXPLOITING PROPERTIES OF THE NORMAL DISTRIBUTION TO SIMPLIFY THE MODEL

The Objective Function

Recall that the objective function in the model involves an expected value of a sum of random variables. In general, this may not be an easy quantity to describe; however, when the variables added are independent and have normal distributions, the sum of the random variables will also be normally distributed. This is the case we have here. Thus, using the linearity of expected value, we have:

$$E\left[\sum_i \sum_n r_i(n) X_i(n)\right] = \sum_i \sum_n r_i(n) E[X_i(n)]$$

As we discovered above, the mean or expected value of each $X_i(n)$ is $x_i y_i R_i^n$. Therefore:

$$E\left[\sum_i \sum_n r_i(n) X_i(n)\right] = \sum_i \sum_n r_i(n) E[X_i(n)] = \sum_i \sum_n r_i(n) x_i y_i R_i^n = \sum_i x_i y_i \sum_n r_i(n) R_i^n$$

Since $r_i(n)$ and R_i^n are just numeric values that are determined by the physical system we are modeling, their sum over all values of n is just a function of i; therefore, let us express this sum as c_i. Similarly, y_i is just a numeric value as well; thus, the expected value in the objective function reduces to a simple linear function of the decision variables x_i, namely:

$$E\left[\sum_i \sum_n r_i(n) X_i(n)\right] = \sum_i y_i c_i x_i$$

where c_i and y_i are constants. As a result, we have removed all probabilistic quantities from the objective function.

Capacity Constraints on the Outcome Variables $X_i(1)$

In the previous section, we were able to remove all probabilistic attributes of the objective function by exploiting the properties of the normal distributions that govern the random variables $X_i(n)$. Using this same idea, we will also be able to deal with the probabilistic constraints involving $X_i(1)$, namely:

$$\text{Prob}(\sum X_i(1) \leq U) \geq \alpha_1 \quad (1)$$
$$\text{Prob}(X_i(1) \leq U_i) \geq \alpha_2 \quad (2)$$

Let us first deal with constraint (2). We know from our earlier discussion that $X_i(1) \approx$ Normal ($\mu = x_i\ y_i\ R_i^1$, $\sigma^2 = x_i\ y_i\ R_i^1\ (1 - y_i\ R_i^1)$). Therefore, by transforming this normal distribution into a standard normal, we have that (2) is equivalent to:

$$\text{Prob}([\ X_i(1) - \mu\ ] / \sigma \leq [\ U_i - \mu\ ] / \sigma) \geq \alpha_2 \text{ or } \text{Prob}(Z \leq [\ U_i - \mu\ ] / \sigma) \geq \alpha_2$$

where μ and σ are linear functions of the decision variables x_i. Since we now just have a standard normal random variable, we can use any normal table to find the value of $[\ U_i - \mu\ ] / \sigma$ such that the cumulative probability will be at least α_2. For example, if α_2 is 0.95, then $[\ U_i - \mu\ ] / \sigma \geq 1.96$. Therefore, the probabilistic constraint (2) is equivalent to the following non-probabilistic constraint:

$$[U_i - \mu] / \sigma \geq F^{-1}(\alpha_2)$$

where F^{-1} is the inverse standard normal distribution. Rearranging the above inequality, we have that:

$$U_i - \mu \geq \sigma F^{-1}(\alpha_2)$$

which is equivalent to:

$$[U_i - \mu]^2 \geq \sigma^2 [F^{-1}(\alpha_2)]^2$$

if $U_i \geq \mu = x_i\ y_i\ R_i^1$. Thus, we are left with the following two constraints that are equivalent to the original probabilistic constraint (2):

$$[U_i - x_i\ y_i\ R_i^1]^2 \geq (x_i\ y_i\ R_i^1\ (1 - y_i\ R_i^1))\ [F^{-1}(\alpha_2)]^2$$

$$U_i \geq x_i\ y_i\ R_i^1.$$

These constraints have no probabilistic elements, and the first is quadratic in the decision variables x_i, while the second is linear.

A similar method can be used for constraint (1) to reduce it to two non-probabilistic constraints in the decision variables. The only difference is that:

$$\sum X_i(1) \approx \sum \text{Normal}\ (\mu = x_i\ y_i\ R_i^n,\ \sigma^2 = x_i\ y_i\ R_i^n\ (1 - y_i\ R_i^n))$$
$$\approx \text{Normal}\ (\sum \mu = \sum x_i\ y_i\ R_i^n,\ \sum \sigma^2 = \sum x_i\ y_i\ R_i^n\ (1 - y_i\ R_i^n))$$

and so the parameters μ and σ used in the above method would take on different values.

Constraints on the Quality Measures Y, R^1 and G^4

The probabilistic constraints involving the yield, retention and graduation rates can also be replaced with non-probabilistic constraints using the properties of the normal distribution. Recall that the yield rate is the percentage of those admitted who enroll in their first year, so $Y = \sum X_i(1) / \sum x_i$. Therefore, $Y \geq p_y$ is equivalent to $\sum X_i(1) \geq p_y \sum x_i$ and the constraint:

$$\text{Prob}(Y \geq p_y) \geq \alpha_3$$

is equivalent to:

$$\text{Prob}(\sum X_i(1) \geq p_y \sum x_i) \geq \alpha_3.$$

Again, since $\sum X_i(1)$ has a normal distribution, we can transform it to a standard normal and use the method described above to find two equivalent constraints that are quadratic or linear functions of the decision variables x_i and have no probabilistic elements. These constraints are:

$$[p_y \sum x_i - \mu]^2 \leq \sigma^2 [F^{-1}(1-\alpha_3)]^2$$

$$p_y \sum x_i \geq \mu$$

where $\mu = \sum x_i y_i R_i^n$ and $\sigma^2 = \sum x_i y_i R_i^n (1 - y_i R_i^n)$.

The constraints involving R^1 and G^4 are a bit more complex. Note that R^1, the first year retention rate, is equal to the percentage of students who enrolled in their first year who also return for their second year. Thus $R^1 = \sum X_i(2) / \sum X_i(1)$. A similar function can be written for G^4. Thus, these two quantities are quotients of random variables. A procedure similar to the one described above can also be used to replace these constraints with non-probabilistic functions of the decision variables; however, we do not discuss this process here as it is a complex procedure involving bivariate normal distributions.

APPROACHES TO SOLVING THE SOLUTION

In the previous section, we showed that the stochastic program described above can be replaced with an equivalent problem in which we wish to maximize a linear function of the decision variables subject to constraints that are either linear or quadratic in those decision variables. This type of problem is called a nonlinear program, and since it has no probabilistic aspects, is much easier to solve than the original problem. There are established methods for solving such a problem in the field of Operations Research (Bazarra, Sherali, & Shetty, 1993).

The solution to this nonlinear program will give us the "optimal" solution to the problem. This optimal solution informs the decision-maker how many of each student type to admit (the values of the decision variables x_i). The solution is "optimal" in the sense that it maximizes expected revenues while maintaining acceptable retention and graduation rates and ensuring that any limits on the number of students are met with a high degree of probability.

The same approach can be used to discover optimal solutions for the alternative objective functions discussed earlier. The solutions of the nonlinear program in those cases will then be optimal in the sense of the objective function specified.

Once we have such a solution to the model, there are several possibilities for utilizing it. Chances are that admissions offices are not going to use the optimal solution to dictate their decisions; however, there may be other information that could be used to supplement the decisions made in more traditional ways. For example, an admissions office could use the decision to judge how close their practices are to optimal. While this may not mean an overhaul of their system, it may point out areas that could be targeted for improvement.

Although the solution of such a system has not yet been fully implemented, it is conjectured that other useful information that such optimal solutions may provide may include certain qualitative properties that such solutions exhibit. For example, there may be cases where it is always optimal to admit all students of a certain type that apply, which would certainly be information that could prove useful to admissions offices. Additionally, such an optimal solution may provide a sort of ordering among the student types, so that it is always better to admit a student of one type rather than a student of the other. Still other types of information may be obtained from optimal solutions, depending on the real system on which the model is

based. The next step would be to implement such a model for a real system and determine which of these types of information is available.

EXTENSIONS OF THE MODEL

The model described assumes that we make an admissions decision once and are done with it, but in reality, this same decision is made year after year. In addition, the decision we make in one year may affect our decision in a subsequent year. For example, if too many of one student type enroll in one year, we may need to curb the number of those students who are admitted the next.

Furthermore, restrictions on certain student types may be more complex than we stated earlier. For example, it may be that in any given year there can be no more than a specified number of students, both new and returning, who will live on campus. In addition to the uncertainty created by the fact that an admitted student may not enroll, there is uncertainty as to whether students who lived on campus last year will enroll and live on campus again this year. Thus, the decisions we made in the last several years affect the decision we will make this year.

This type of problem is a generalization of the stochastic program that was stated earlier. This more general problem involves maximizing the expected value of a random quantity based on random constraints, such that several decisions are made over many periods and the decisions we make in one year may influence our decision in subsequent years. This type of mathematical construct is called a stochastic dynamic program.

Solving a stochastic dynamic program is generally extremely difficult. This is because at each step, we need to look into the future and determine what the possible outcomes might be, and then ensure that we are doing the best we can do today, no matter which of those outcomes occurs. For more information on stochastic dynamic programming (Ross, 1983).

In this dynamic problem, or multi-stage problem as it is sometimes called, we may still replace the probabilistic constraints with non-probabilistic ones as discussed earlier; however, there is no way to totally remove the probabilistic component from the dynamic model. This is because of the constraint that states that we cannot admit more students of a given type than we have applications from students of that type. While we know this year how many applications we received this year, we do not know how many we will receive in future years, and we need this information to make our decision today. Thus, the number of applications in future years introduces a random aspect that cannot be removed from the model.

One approach to solving this dynamic model with a random application process is to try to describe the probability distribution of the application process. If this is successful, we may be able to find the optimal solution of such a model. If this approach is not successful, heuristics may be employed to approximate the optimal solution.

IMPLICATIONS OF THE MODEL

Eventual goals of the model include the development of a tool that allows enrollment managers to calculate admissions levels for each student type that will best accomplish institutional goals. The tool would also allow users to evaluate how close current admissions policies come to those optimal levels and to identify areas for improvement. Additionally, such a tool would inform admissions personnel of any qualitative properties of optimal solutions that might assist in their admissions decisions. The tool would also have the capability to allow the enrollment manager to perform “what if” analyses that are able to quickly predict how a change in policy or recruitment will affect revenues, institutional quality and yield, retention and graduation rates.

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Does the Choice of Introductory Corporate Finance Textbook Affect Student Performance?

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I examine whether the choice of a more readable introductory corporate finance textbook can improve student performance. The ordinary least squares regression model is employed to analyze a sample of 260 students during the period from 2009 to 2011. In contrast to my expectation, I find that the choice of a more readable introductory corporate finance textbook does not improve student performance regardless of course delivery modes. I also find that student's major, educational experience and course delivery method are significant determinants of student performance.

INTRODUCTION

Instructors in Introductory Corporate Finance usually receive students' comments associated with the choice of textbook in teaching evaluations. Students complain that the writing in the textbook is not clear and therefore, they cannot grasp concepts effectively and perform well on required assignments. Students' complaints about the choice of textbook may be valid because if instructors adopt a more readable textbook, students might be able to obtain better grades in the course. Therefore, this paper intends to examine whether the choice of a more readable introductory corporate finance textbook can affect student performance positively.

Researchers in finance education have examined the importance of textbooks in students' learning experience in introductory corporate finance. Berry et al. (2011) explore how and to what extent students use the finance textbook and how it relates to their study process when preparing for class and exams. They assess if the finance textbook is the main vehicle for the students' learning plan and to what extent they rely on their textbook. They find that students know it is important to read, know the professor expects them to read, and know it will impact their grade, yet most students still do not read the textbook. Though many factors can lead students not to read the textbook, one of the endogenous variables that instructors can control is the readability of the textbook.

Readability analysis of textbooks has been conducted in various business disciplines (e.g., business communication in Razek and Cone (1981), organizational behavior in Villere and Stearns (1976), introductory economics in Gallagher and Thompson (1981), and introductory corporate finance in Plucinski and Seyedian (2011)). Plucinski and Seyedian (2011) use the Flesch-Kincaid Grade Level to examine the readability of five popular introductory corporate finance textbooks in the market. They find that "Fundamentals of Corporate Finance" 9th Edition by Ross, Westerfield, and Jordan is most readable of all textbooks in the study. Given this finding, the natural question that needs to be answered is whether the choice of a more readable introductory corporate finance textbook can improve student learning experience, thereby helping students to achieve better grades.

To my knowledge, this study appears to be a unique contribution. I could not find a research study that attempts to empirically test the effects of different introductory corporate finance textbooks on student performance. Nevertheless, the relationship between textbook readability and student performance has been examined in other areas. Spinks and Wells (1993) compare the readability levels of textbooks used in various business core courses with grades made by students in those courses and find that relationships between textbook readability levels, grades earned by students, and withdrawals of students from courses are significant. Pyne (2007) examines whether students who used different introductory microeconomics textbooks performed differently when they took Intermediate Microeconomics and Money and Banking, and finds that the choice of an introductory microeconomics textbook has a significant effect on student performance in Money and Banking. Durwin and Sherman (2008) investigate whether the choice of college textbook for Educational Psychology affects students' comprehension of the materials. They find that the two educational psychology textbooks with different authors and publication dates, but comparable readabilities attribute no significant difference in student comprehension.

This study attempts to examine whether the difference in readability of the two popular textbooks for Introductory Corporate Finance leads to a statistical difference in student performance. The following sections describe the data and research method, report the results, and provide concluding remarks.

DATA AND RESEARCH METHOD

This study was conducted at a four-year state university in the Appalachian region. The College of Business and Public Affairs, accredited by the AACSB International (Association to Advance Collegiate Schools of Business), has three departments: the Department of Accounting, Economics, and Finance, the Department of Information Systems, and the Department of Management and Marketing. The introductory corporate finance class is a required core course for all business majors. Before taking Introductory Corporate Finance, Students are required to complete the prerequisite courses in Principles of Managerial Accounting, Introduction to Economics, and College Algebra.

Two hundred and eighty-four students in eleven sections of introductory corporate finance classes from 2009 to 2011 are the subjects in this empirical study. Twenty-four students who did not show complete effort by not participating in the required assignments after the mid-term are removed from the sample. Since the students in the sample are taught by only one instructor, this study avoids the confounding effects of different instructors and different teaching methods.

Two different introductory corporate finance textbooks were used in the study. The textbook, "Foundations of Financial Management" 13th Edition by Block and Hirt (BH), was used in six sections (2 face-to-face and 4 online) from the 2009 spring semester to the 2010 spring semester; the textbook, "Fundamentals of Corporate Finance" 9th Edition by Ross, Westerfield, and Jordan (RWJ), was used in five sections (3 face-to-face and 2 online) from the 2010 fall semester to the 2011 fall semester. The introductory corporate finance class covers such topics as financial statements and analysis, time value of money, bond and stock valuations, capital budgeting, cost of capital, working capital management, and international financial management.

The variables used in this study are primarily associated with student effort, student characteristics, and course characteristics. Student effort is measured by the student's course grade, which is based on homework assignments (25%), quizzes (20%), and exams (55%). Student characteristics such as gender, in-state/out-of-state status, and major were collected through the faculty advising system at the university. These variables have been examined in studies such as Didia and Hasnat (1998), Borde, et al. (1998), and Terry (2002). GENDER is a dummy variable where a male student is equal to 1 and 0 otherwise. FROM is a dummy variable where an in-state student is equal to 1 and 0 otherwise. AF is a dummy variable where a student with accounting/finance major is equal to 1 and 0 otherwise. BD is a dummy variable where a student with a bachelor degree is equal to 1 and 0 otherwise. The course delivery method can also affect student performance. Shum and Chan (2000) find that remote-site interactive television students have statistically significant poorer performance relative to regular students while Van Ness, et al. (2000)

find that students who take introductory corporate finance online receive lower grades than those who take the class in a traditional classroom setting. F2F is a dummy variable where the course that was taught in traditional delivery is equal to 1 and 0 otherwise. Finally, BOOK is a dummy variable where the class adopting the RWJ textbook is equal to 1 and 0 otherwise.

Assuming that a textbook with better readability can improve student learning, thereby increasing student performance, I hypothesize that the students in classes using the RWJ textbook perform better than those in classes using the BH textbook. The t-test is used to test the difference in means and the Wilcoxon rank-sum test is utilized to test the difference in medians for the full sample and two subsamples (face-to-face and online). After the nonparametric tests, the ordinary least squares regression analysis is used to examine the relationship between student performance and the choice of textbook by controlling student and course characteristics.

EMPIRICAL RESULTS

Table 1 reports the descriptive statistics for my sample. The mean course percentage in Introductory Corporate Finance is 73.3 or a low "C". The sample shows that there are more females than males. Almost seventy-seven percent of the students are in-state students. Out of the sample, thirty-seven percent of the students are majoring in accounting and finance. Ten percent of the students who take the Introductory Corporate Finance as one of the foundation courses in the MBA program have a bachelor degree. There are more students taking Introductory Corporate Finance online than in a face-to-face setting. Forty-six percent of the students take Introductory Corporate Finance in a face-to-face setting. Forty-four percent of the students take Introductory Corporate Finance with the more readable RWJ textbook.

TABLE 1
DESCRIPTIVE STATISTICS

Variable	# of Obs.	Mean	Std. Dev.	Min	Max
PERCENT	260	0.733	0.145	0.154	0.997
GENDER	260	0.412	0.493	0	1
FROM	260	0.765	0.425	0	1
AF	260	0.365	0.482	0	1
BD	260	0.096	0.295	0	1
F2F	260	0.462	0.499	0	1
BOOK	260	0.435	0.497	0	1

Note: PERCENT is a continuous variable showing students' course grades. GENDER is a dummy variable where a male student is equal to 1 and 0 otherwise. FROM is a dummy variable where an in-state student is equal to 1 and 0 otherwise. AF is a dummy variable where a student with accounting/finance major is equal to 1 and 0 otherwise. BD is a dummy variable where a student with a bachelor degree is equal to 1 and 0 otherwise. F2F is a dummy variable where the course that was taught in traditional delivery is equal to 1 and 0 otherwise. BOOK is a dummy variable where the class adopting the RWJ textbook is equal to 1 and 0 otherwise.

I use the t-test to test the mean difference and the Wilcoxon rank-sum test to test the median difference in student performance. Table 2 shows the nonparametric test results for the full sample and the two subsamples. Panel A indicates that regardless of the delivery method for the course, students in classes adopting the BH textbook perform better than those in classes adopting the RWJ textbook, but the difference is not significant. When I partitioned my sample by the delivery method, as indicated in Panel B and Panel C, students in both face-to-face and online classes adopting the BH textbook perform better than those in classes adopting the RWJ textbook; however, the difference is not significant.

TABLE 2
TEST OF DIFFERENCES IN MEAN AND MEDIAN OF COURSE GRADE

		Course grade in Introductory Corporate Finance	
Panel A: Full sample	# of obs.	Mean	Median
Classes using BH textbook	147	0.744	0.756
Classes using RWJ textbook	113	0.719	0.745
p-value for difference		0.169	0.147
Panel B: Face-to-face subsample			
Face-to-face classes using BH textbook	62	0.784	0.795
Face-to-face classes using RWJ textbook	58	0.765	0.764
p-value for difference		0.354	0.171
Panel C: Online subsample			
Online classes using BH textbook	85	0.714	0.728
Online classes using RWJ textbook	55	0.670	0.714
p-value for difference		0.116	0.177

I estimate the relationship between student performance and the textbook choice by using ordinary least squares with a sample size of 260 students, and report the results in Table 3. The coefficient of FROM is negative and significant at the 10% level, suggesting that in-state students perform worse than out-of-state students. Student motivation proxied by student major (AF) has positive coefficient with significance at the 1% level, suggesting that accounting and finance students perform better than students with other majors. Educational experience proxied by student bachelor degree completion (BD) has positive coefficient with significance at the 1% level, suggesting that students with a bachelor degree perform better than students without a bachelor degree. Consistent with the previous studies, course delivery methods affect student performance significantly. The coefficient of F2F has a positive sign and significant at the 1% level, suggesting that students in face-to-face sections perform better than those in online sections. Finally, the coefficient of BOOK is negative but insignificant, suggesting that students in classes adopting the more readable RWJ textbook do not perform significantly better than those in classes adopting the less readable BH textbook.

I disaggregate the sample by course delivery method and re-estimate the relationship between student performance and the textbook choice by controlling student characteristics. The results are also presented in Table 3. There are 120 students enrolled in face-to-face classes and 140 students enrolled in online classes. In subsample regressions, I find that accounting and finance students perform better than students with other majors. As to education experience, I find that students with a bachelor degree perform better than students without a bachelor degree in online classes, and that students with a bachelor degree perform worse than students without a bachelor degree in face-to-face classes. However, the choice of a more readable textbook does not have a significant effect on student performance in classes delivered both face-to-face and online.

TABLE 3
REGRESSION RESULTS

	Full Sample		Face-to-face Subsample		Online Subsample	
	coefficient	t-stat	coefficient	t-stat	coefficient	t-stat
Intercept	0.690***	31.047	0.790***	36.377	0.678***	20.102
GENDER	-0.012	-0.684	-0.021	-1.041	-0.009	-0.321
FROM	-0.029*	-1.658	-0.024	-1.219	-0.027	-0.945
AF	0.074***	4.204	0.056***	2.827	0.093***	3.092
BD	0.129***	4.298	-0.166***	-8.399	0.150***	4.987
F2F	0.092***	5.097				
BOOK	-0.027	-1.511	-0.024	-1.183	-0.029	-1.024
# of obs.	260		120		140	
F Statistic	9.84***		54.03***		6.95***	
R-squared	13.19%		10.25%		16.88%	

Note: PERCENT is the dependent variable in the regression. GENDER is a dummy variable where a male student is equal to 1 and 0 otherwise. FROM is a dummy variable where an in-state student is equal to 1 and 0 otherwise. AF is a dummy variable where a student with accounting/finance major is equal to 1 and 0 otherwise. BD is a dummy variable where a student with a bachelor degree is equal to 1 and 0 otherwise. F2F is a dummy variable where the course that was taught in traditional delivery is equal to 1 and 0 otherwise. BOOK is a dummy variable where the class adopting the RWJ textbook is equal to 1 and 0 otherwise. *** shows coefficients significant at the 1% level, ** significant at the 5% level, and * significant at the 10% level.

CONCLUSION

This research study investigates the impact of changing the introductory corporate finance textbook has on student performance. Given the fact that researchers have rated the readability of various introductory corporate finance textbooks in the market, I am able to extend the study by examining the impact of choosing a more readable textbook on student performance while controlling for student gender, in-state/out-of-state status, major, educational experience, and course delivery method. Based on a sample of 260 students, nonparametric tests of mean and median differences across textbooks and course delivery methods indicate that student performance in classes using less readable textbook is higher than student performance in classes using more readable textbook, but the difference is not significant. The result is confirmed by ordinary least squares regressions. Regression results also indicate that student major, educational experience and course delivery method appear to significantly affect student performance. Accounting and finance students perform better than students with other majors. Students with a bachelor degree perform better than students without a bachelor degree. Students in face-to-face classes perform better than those in online classes.

Because the sample used in this study was obtained from students at one university under one instructor, this research represents only a preliminary attempt at the issue. Collecting student data from different institutions to increase the sample size may lead to more robust findings. The research methodology in this study can be used by other disciplines to examine the effect of textbooks with different readability has on student performance.

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Two Problems with the Shutdown Rule in Introductory Economics Textbooks

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Two problems exist with the so-called shutdown rule in introductory economics textbooks: sunk costs are included in the calculation of firm production costs and non-sunk fixed costs are ignored in the calculation of costs and the firm's short-run shutdown decision. When production costs only include opportunity cost—and not sunk costs— firms shut down when total revenue is less than total cost. This rule is attractive because it uses only relevant economic costs, follows the long-run exit rule, and is economically intuitive: produce if economic profit is greater than or equal to zero.

INTRODUCTION

The theory behind a firm's decision of whether to shut down temporarily is of crucial importance to real-world decision-making. In this paper, we argue that two problems exist with how the *shutdown rule* is presently taught in introductory economics textbooks. The first problem is that sunk costs, which have no opportunity cost, are included in the economic calculation of the firm's short run cost of production. The second problem is that non-sunk fixed costs are ignored (a) in the calculation of the firm's short run cost of production and (b) in the firm's short-run decision to shut down or stay open.

Both of these problems arise from an uneasy pedagogical transition that takes place in most introductory economics textbooks. Greg Mankiw's textbook is the market leader, so let's look at how he talks about a firm's total cost of production. He writes, the total cost of production "include[s] all the opportunity costs of making its output of goods and services" (Mankiw 2009, 244). However, most all of the introductory economics textbooks we've reviewed subsequently slip sunk cost—a cost with no opportunity cost—into the firm's calculation of the total cost of production. In this paper, we argue that to stay true to the economic definition of total cost expenses with no opportunity cost—e.g., a sunk cost—must not be included in the calculation of total cost.

On the other hand, we have found no introductory economics textbook where an implicit but fixed opportunity cost such as—what we will refer to as a non-sunk fixed cost—is included in the calculation of a firm's total cost of production. Nor have we found an introductory economics textbook where a non-sunk fixed cost enters into the firm's decision to shut down.[1] However, we believe that a firm must consider, for example, how much rent it forgoes when it uses a fixed input. Introductory economics textbooks would better serve their readers if examples of non-sunk fixed costs were offered and such costs were then integrated into the decision to shut down or stay open in the short run.

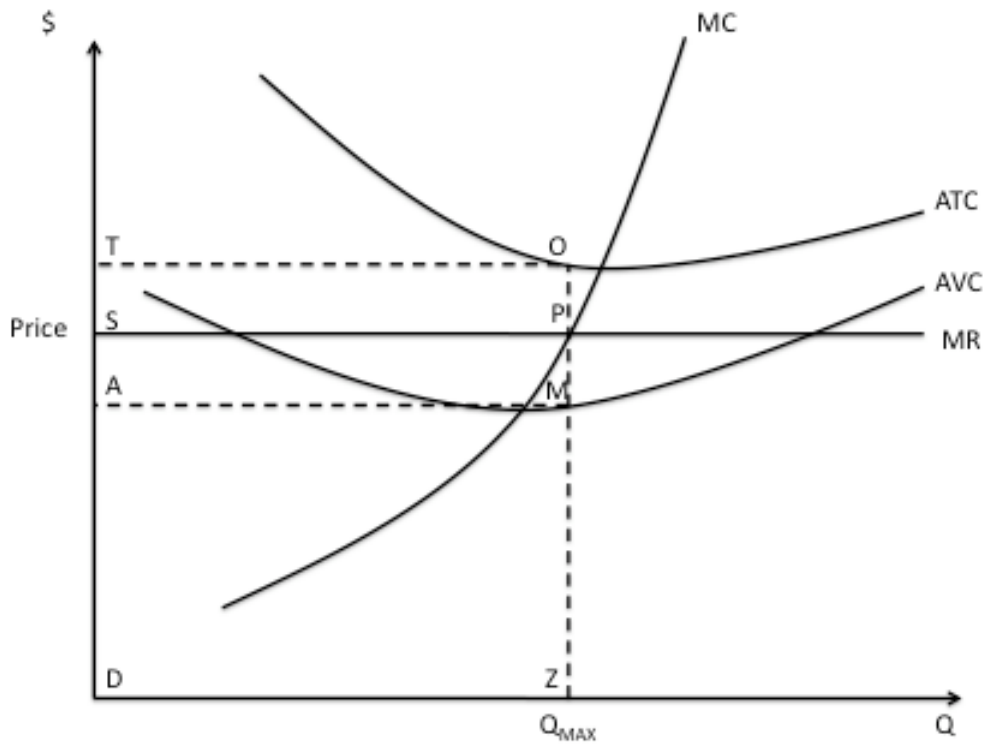
If a firm's short-run total cost of production includes variable cost and non-sunk fixed costs of production—but not sunk fixed costs, then a firm should shut down when total revenue is less than total cost, or when price is less than average total cost. This outcome is attractive because it (a) uses only relevant economic costs, (b) is the same as the long run exit rule, and (c) is economically intuitive: produce only when economic profit is greater than or equal to zero.

EXAMPLE FROM PRINCIPLES OF ECONOMICS: OPERATING WITH NEGATIVE ECONOMIC PROFIT IN THE SHORT-RUN

Let's begin by walking through the typical example of a perfectly competitive firm in the short run. In the pursuit of maximizing economic profit in the short run, the perfectly competitive firm must make two decisions. First, the firm determines the profit-maximizing quantity. Second, the firm decides whether to produce at the profit-maximizing quantity or to temporarily shut down.

Figure 1 depicts a perfectly competitive firm with negative economic profits in the short run.

FIGURE 1
COMPETITIVE FIRM WITH NEGATIVE ECONOMIC PROFITS



The firm's profit-maximizing quantity is Q_{MAX}, at which marginal cost equals price. Using basic geometry, we highlight the areas that represent fixed cost, variable cost, total cost, total revenue, and negative economic profit. They are: fixed cost = ATOM, total variable cost = DAMZ, total cost = DTOZ, total revenue = DSPZ, and negative economic profit = STOP.

The firm's rational decision is to produce Q_{MAX}. Although the result might seem strange to students, it is demonstrated that the firm would find itself in an inferior economic position if it decided to shut down. If the firm shut down, it would collect no revenue but it would continue to pay its fixed cost, which equals

the area ATOM. By staying open and selling Q_{MAX} at the competitive market price, total revenue fully covers the variable cost and some of the fixed cost. In the end, the firm must choose between two bad options: shut down and incur a negative economic profit equal to the area ATOM (equal to the fixed cost) or stay open and incur a negative economic profit equal to the area STOP (equal to total revenue minus total cost). Simply put: the firm loses less by staying open because STOP < ATOM.

Well, does it ever make sense to shut down? Yes, when total revenue is less than the variable cost. In this case, the firm loses less by shutting down because the negative economic profit generated by staying open would be greater than fixed cost.

This decision process is succinctly summarized in what economists commonly refer to as the shutdown rule. A firm should shut down if total revenue is less than its variable costs at the profit maximizing quantity (or when price is less than average variable cost), in all other cases the firm should stay open.

THE PROBLEM WITH THE TYPICAL EXAMPLE: ALL FIXED COSTS ARE SUNK COSTS

Consider the language used to describe opportunity costs in the most popular introductory economics textbooks. Hubbard (2008, p. 336) writes, "economists always measure costs as opportunity costs." Taylor and Weerapana (2010, p, 5) correctly claim that an opportunity cost is defined to equal "the value of the next-best forgone alternative." (For other way in which opportunity cost has been defined see Table 1.) Mankiw writes, opportunity costs include costs that "require the firm to pay out some money, they are called explicit costs" and "implicit costs, [which] do not require a cash outlay" (Mankiw p. 244). Thus, "[w]hen economists speak of a firm's cost of production, they include all the opportunity costs of making its output of goods and services" (Mankiw 2009, p. 244). In summary, students are properly taught that the firm's costs of production *include* opportunity costs.

TABLE 1
DEFINITIONS OF OPPORTUNITY COST

	Definition
Baumol and Blinder (2010)	The opportunity cost of some decision is the value of the next best alternative that must be given up because of that decision (p. 4).
Case, Fair and Oster (2012)	The best alternative that we forgo, or give up, when we make a choice or decision (p. 2).
Colander (2010)	The benefit that you might have gained from choosing the next-best alternative (p. 9).
Cowen and Tabarrok (2010)	The opportunity cost of a choice is the value of the opportunities lost (p. 4).
Frank and Bernanke (2004)	The opportunity cost of an activity is the value of the next-best alternative that must be foregone to undertake the activity (p. 7).
Hubbard and O'Brien (2010)	The highest valued alternative that must be given up to engage in an activity (p. 8).
Krugman and Wells (2010)	What you must give up in order to get an item you want (p. 7).
Mankiw (2012)	Whatever must be given up to obtain something (p. 6).
Parkin (2012)	The opportunity cost of something is the highest valued alternative that we give up to get it (p. 8).
Taylor and Weerapana (2010)	The value of the next-best foregone alternative that was not chosen because something else was chosen (p. 4).

Subsequently, students learn that a sunk cost is "a cost that has already been committed and cannot be recovered" (Mankiw 2012, p. 286). (See Table 2 for definitions of sunk cost in the leading introductory textbooks.) Therefore, "[a] sunk cost is an asset with no opportunity cost" (Cabral 2000, p. 22). Because a sunk cost has no opportunity cost, it is "irrelevant to the firm's current decisions" (Parkin 2008, p. 220).

TABLE 2
DEFINITIONS OF SUNK COSTS

	Definition
Baumol and Blinder (2010)	A sunk investment is one that cannot be recouped for a considerable period of time (p. 219).
Case, Fair and Oster (2012)	Costs that cannot be avoided because they have already been incurred (p. 3).
Colander (2010)	Costs that have already been incurred and cannot be recovered (p. 7).
Cowen and Tabarrok (2010)	A sunk cost is a cost that once incurred can never be recovered (p. 200).
Frank and Bernanke (2009)	Sunk cost a cost that is beyond recovery at the moment a decision must be made (p. 11).
Hubbard and O'Brien (2010)	A cost that has already been paid and that cannot be recovered (p. 297).
Krugman and Wells (2010)	A cost that has already been incurred and is non-recoverable. A sunk cost should be ignored in decisions about future actions (p. 238).
Mankiw (2012)	A cost that has already been committed and cannot be recovered (p. 286).
Parkin (2012)	Past expenditures [that have] no resale value. A sunk cost is irrelevant to the firm's current decisions (p. 252).
Taylor and Weerapana (2010)	A sunk cost is a cost that you have committed to pay and that you cannot recover (p. 221).

What introductory economics textbooks do not make explicitly clear is whether or not an *irrelevant cost*, e.g., a sunk cost, is to be *included* as a cost of production. Interestingly, we've discovered that introductory economics textbooks are explicitly silent on this issue. However, all introductory economics textbooks do include, albeit implicitly, sunk costs in the definition of short run production costs. And it is this pedagogical waving of hands that creates a serious problem for real world decision-making in the short run. Consider two examples. First, Mankiw (2012, p 286) writes,

> Our analysis of the firm's shutdown decision is one example of the irrelevance of sunk costs. We assume that the firm cannot recover its fixed costs by temporarily stopping production. That is, regardless of the quantity of output supplied (even if it is zero), the firm still has to pay its fixed costs. As a result, the fixed costs are sunk in the short run, and the firm can ignore them when deciding how much to produce. The firm's short-run supply curve is the part of the marginal-cost curve that lies above average variable cost, and the size of the fixed costs does not matter for this supply decision.

Second, Taylor and Weerapana (2010, p. 221) write,

> Economists have developed the concept of sunk cost, which may help you understand and remember why a firm ... would continue to operate in the short run even though it was reporting losses. A sunk cost is a cost that you have committed to pay and that you cannot recover. For example, if a firm signs a year's lease for factory space, it must make rental payments until the lease is up, whether the space is used or not. The important thing about sunk cost is that once you commit to it, there is nothing you can do about it, so you might as well ignore it in your decisions. The firm cannot recover these costs by shutting down.

The problem with both stories occurs when *all* fixed costs are treated as sunk costs in the short run. If a firm's total cost of production equals the sum of explicit opportunity cost and implicit opportunity cost, then sunk costs, which have no opportunity cost, should *not* be measured in the firm's economic cost of production in the short run.[2]

On the other hand, non-sunk fixed cost proliferate the economic landscape. And non-sunk fixed costs, which do have an opportunity cost, *must* be measured in the firm's economic cost of production in the short run. For example, the imputed rental value of a building—the amount for which a business could have rented out a building—is a non-sunk fixed cost because it is the next best alternative use of the building and the amount doesn't change as quantity produced changes. Non-sunk fixed costs must be incurred if the firm is to produce any output, but it does not have to be incurred if the firm chooses to produces no output.

Consider another example from Besanko and Braeutigum (2010, p. 339). For a rose grower, an example of a non-sunk fixed cost would be the cost of heating the greenhouses. Because greenhouses must be maintained at a constant temperature whether the firm grows 10 or 10,000 roses within the greenhouses, the cost of heating the greenhouses is fixed (i.e., it is insensitive to the number of rose stems produced). But the heating costs are non-sunk because they can be avoided if the grower chooses to produce no roses in the greenhouses.

Now let's consider an example in which we use a sunk fixed cost in one case and a non-sunk fixed cost in the second case. Suppose a local publishing firm with total revenues of $14,000 each month except August when demand declines and revenues fall to $10,000. At the optimum production level in August, the firm's variable costs equal $7,000. In addition, the firm has a $2,000 monthly mortgage payment for its printing press that it purchased for $100,000. The monthly mortgage payment is a sunk fixed cost.[3] As fortune would have it, a local publishing competitor is willing to pay $4,000 to use the printing press in August. The $4,000 is a non-sunk fixed cost.

If we ignored the non-sunk fixed cost, economic profit is positive because total revenue ($10,000) is greater than the variable cost ($7,000) plus the sunk fixed cost ($2,000)—economic profit is $1,000. Thus, when the non-sunk cost is ignored, the local publishing firm decides to stay open. However, if the non-sunk fixed cost (instead of the sunk fixed cost) is included in the calculation of the short-run production costs, then economic profit is negative because total revenue ($10,000) is less than variable cost ($7,000) plus the non-sunk fixed cost ($4,000)—economic profit is -$1,000. When sunk fixed costs are ignored and non-sunk fixed costs are included, the local publishing firm decides to shut down. By shutting down, the firm's economic profit actually equals $4,000—the payment from the publishing competitor for use of the printing press in August.

The difference in outcomes could not be more dramatic. By including an irrelevant cost and excluding a relevant cost in the decision calculus, decision makers are being taught by economists to make erroneous decisions. And as a result, real money will be left on the table.

The error all introductory economics textbooks make is that they treat all fixed costs as sunk costs and they ignore the existence of non-sunk fixed costs in the short-run. We believe that the definition of economic cost should only include opportunity costs. Thus, short run production costs should include variable costs and non-sunk fixed costs.[4]

THE SOLUTION TO THE PROBLEM: SHUTDOWN IF P < ATC

Once non-sunk fixed costs are included and sunk fixed costs are excluded from the analysis, we have an updated shutdown rule. The firm should shut down when:

total revenue at the profit-maximizing quantity is less than total economic cost,
or when P < ATC.

This revised shutdown rule has a very intuitive outcome: the firm should shut down when economic profit is negative or the firm should stay open if economic profit is greater than or equal to zero. As such, the short-run shutdown rule is the same as the long run exit rule. Firms should produce only when economic profit is greater than or equal to zero.

This definition is not at all novel. Indeed, in 1938, Ronald Coase wrote "[w]e may, however, lay down as a general rule that it will pay to expand production so long as marginal revenue is expected to be greater than marginal cost and the avoidable costs of the total output less than the total receipts. … This particular concept of costs would seem to be the only one which is of use in the solution of business problems, since it concentrates attention on the alternative courses of action which are open to the businessman" (1938, p. 123).

OTHER EXAMPLES TO CONSIDER

Consider three additional examples of excluding sunk fixed cost from the firm's calculation of total cost in the short run and including non-sunk fixed costs.

A Firm-Specific Asset

Suppose the printing press from our local publisher example is a firm-specific printing press being paid off with an unavoidable $4,000 loan payment per operating period. Because it is unavoidable, the $4,000 payment is a sunk cost to be excluded in the total cost of production. Because no other firm has a productive economic use for a firm-specific printing press, the non-sunk fixed equals zero. If we assume the existence of no other fixed costs, then the total variable cost of production ($7,000 in the example above) is the total economic cost of production. The publisher will continue to produce so long as total revenue is greater than or equal to the total variable cost.

Although the case of a firm-specific fixed factor of production is important to highlight, leading introductory textbooks do not typically refer to such assets in their analysis. Indeed, the leading textbooks fail to mention "firm-specific asset" or "specific asset" in the subject index.

Long-Term Contracts

Suppose a firm has a long-term contract to pay a legal staff on retainer every month. Whether the firm produces or not, they must pay $5000 to the lawyers. The unavoidable and non-negotiable retainer is a sunk cost. It is not calculated as part of non-sunk fixed cost. The firm should shut down in the short run if total revenue is less than the sum of total non-sunk fixed cost and total variable cost of production.

The rationale is parallel for a legacy cost, such as a pension plan expense. In the short run, a legacy cost is a sunk cost because it is unavoidable, and thus has no opportunity cost. Firms with a legacy cost should shut down if total revenue is less than the sum of total non-sunk fixed cost and total variable cost on production.

The 50th Anniversary of Woodstock

Consider a farm in eastern New York state in the year 2019 and a group of musicians (the few who are still with us) that played at Woodstock in 1969 wish to have a 50th anniversary concert on the farm. The group is willing to pay $100,000 to rent the land.

In the short run, land is a fixed factor of production. The price the farm paid for the land is a sunk cost, and it should not be included in the farm's short-run total cost of production. However, in the year 2019 the non-sunk fixed cost of the land equals $100,000. The farm should temporarily shut down if the expected total revenue from farming is less than the sum of total non-sunk fixed cost and total variable cost of production.

CONCLUSION

A principle of economics teaches decision-makers to "be aware of the opportunity costs that accompany each possible action" (Mankiw 2009, p.5). In this paper, we argue that the shutdown rule introduced in introductory textbooks does not support this principle in two ways. First, the sunk cost of a firm's fixed input, which has no opportunity cost, is included in the short-run total cost of production. Second, the non-sunk fixed cost of a firm's fixed input is ignored in the short-run total cost of production and in the decision to shut down.

We argue that expenses with no opportunity cost should not be included in the firm's short-run total cost of production, nor should they be considered in the decision to shut down. However, non-sunk fixed costs should be included in the firm's short-run total cost of production, and they should enter into the decision to shut down. It is important for introductory economics textbooks to inform readers that a firm's non-sunk fixed costs of production do matter in the decision to shut down or stay open.

The change we offer to the how introductory economics textbooks measure the economic costs of production will also affect the short-run shutdown decision. If a firm's total cost of production includes only the opportunity costs of production, then a firm should shut down when total revenue is less than total economic cost, or when price is less than average total cost. This outcome is attractive because it (a) uses only relevant economic cost, (b) is the same as the long-run exit rule, and (c) is economically intuitive: produce only when economic profit is greater than or equal to zero.

ENDNOTES

1. Besanko and Braeutigam's (2010) *Microeconomics*, an intermediate level textbook, does recognize implicit fixed opportunity cost in their chapter 8—they call such costs non-sunk fixed costs. Their book does integrate the concept of non-sunk fixed costs into the decision of when a firm should shut down or stay open in the short run.
2. John Maurice Clark wrote, "Should we, or should we not, count "overhead costs" in deciding whether a given thing is worth producing? … [I]n a general way the rule is: whenever a policy is being considered which will involve 'overhead expenditures' that could otherwise be avoided, they are part of the cost of that policy" (1923, p. 21).
3. The sunk fixed cost does not equal the $100,000 cost of purchasing the printing press. Because the $100,000 payment has been financed by a loan being paid off in monthly installments of $2,000, the relevant sunk fixed cost for this problem is $2,000—which must be paid monthly, regardless of whether the firm produces.
4. It is important to note that the opportunity cost framework also simplifies long-run cost analysis while preserving many of the standard short-run and long-run cost relationships. For example, the framework upholds the envelope theorem that links a firm's long-run average costs curve to its short-run cost average cost curves. For more information, see Stinespring (2011).

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Japanese Wireless: A Okay in the USA?

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In the paper we examine the concept of how one country's technological innovation (Japan's NTT DoCoMo wireless web i-Mode) is being translated/implemented into another country (US AT&T Wireless' mMode). We first present a factual overview of the technology, comparing the differing features and dynamics in each country, citing various relevant literatures. In the course of this discussion, we make a series of propositions about the implementation these strategies. Next we discuss further technological transfer between the firms and their strategic significance. We conclude with directions for future research.

INTRODUCTION

In November of 2000, NTT DoCoMo, the Japanese mobile telephone giant, invested approximately $9.8 billion and thereby took a 16% stake in the second largest American mobile telecommunications company, AT&T Wireless (ComputerWire, 2003). The strategic plan was to rapidly advance the technological level of AT&T Wireless by licensing the highly successful Japanese wireless internet technology known as i-Mode, and create a US version called mMode (Murphy, 2002a; Steinbock, 2003).

Both companies thought of this as a strong mutual alliance that would enable AT&T Wireless to gain strategic advantage by engaging in *technological leapfrogging* (M. Lennon, 2010; Schilling, 2003) over its competitors by accelerating its efforts to develop a 3G (third generation) mobile telecommunications system. AT&T Wireless would achieve this through licensing of the NTT DoCoMo i-mode technology and build upon and modify the i- Mode platform to create its own mMode platform for new technologies and services.

Both companies were extremely optimistic, as evidenced by statements made by their top corporate officers, who were quite confident that this *relation based strategy* (Li, 2001) would be successful. As identified in earlier research by Daellenbach et al (1999), this optimism was hoped to play a crucial role in the success of the venture. This optimism and commitment to innovation can be captured by two quotes from the firms' top management:

> *"This alliance allows AT&T Wireless to realize its vision of creating a high performing mobile Internet more quickly that we anticipated…"* John D. Zeglis, chairman and CEO of AT&T Wireless.
>
> *"AT&T Wireless and NTT DoCoMo expect to bring communications to a new level by combining our experience and prominent expertise in leading-edge wireless data*

applications and services." Dr. Tachikawa, president and CEO of NTT DoCoMo.
Source: AT&T November 2000 press release

Besides AT&T Wireless's ability to access i-Mode technologies, NTT DoCoMo also hoped to gain advantages by instantly gaining access to the huge American market for mobile communications. In essence they hoped to achieve the symbiotic relation of "co-opetition" as developed by Brandenburger and Nalebuff (1997) in which firms who may ostensibly be competitors can also successfully cooperate. AT&T Wireless was an ideal partner due to its millions of high-end use customers (see Table 1), as measured by the number of subscribers and ARPU (Average Revenue Per User per month) and its corresponding large market share, which has been identified researchers as key to long term profitability (Buzzell, 1975).

TABLE 1
MARKET SHARE OF MOBILE CARRIERS

Market Share and ARPU (Average Revenue Per User) of US mobile carriers		
Company Name	Number of Subscribers (millions)	ARPU
AT&T Wireless	21.8	$61
Sprint PCS	15.5	$63
Nextel	4.3	$71
Virgin	3.6	$50
Cingular	23.4	$51
T-Mobile	12.1	$54

Source: Authors' Research

Because of the high level of ARPU for AT&T Wireless customers ($61), it was thought that these customers were likely candidates for using the soon to be implemented mMode platform wireless web with all its new features and benefits (Dano, 2003; Murphy, 2002a). Additionally, both companies believed that through alliances with equipment manufacturers (e.g. handsets) economies of scale could be had .

What Is i-Mode?

i-Mode is a wireless telecommunications (mobile phone) service launched in Japan in 1997 by the company NTT DoCoMo, a subsidiary of NTT (Nippon Telephone and Telegraph). The i-Mode network carries not just voice, but also gives access to the wireless internet. "DoCoMo" is an acronym that refers to "Do Communications Over the Mobile Internet". Docomo is also the Japanese word for anywhere. The "i" stands for Internet and, also given the Japanese liking for puns, "i" also sounds like the word for love "ai" (Anwar, 2002; Kodama, 2001, 2002, 2003a; Lindmark, Bohlin, & Andersson, 2004; Steinbock, 2003)

The i-Mode service is accessed by a wireless data packet network, which was a leftover from NTT's attempts at creating a mobile pager network. The network is considered to be 2G (second generation) as it has a limited bandwidth of 9.6 kbps, intended to carry voice and short messaging (Kodama 2002)(Ratliff, 2002).

What is unique about the use of this network is that NTT DoCoMo was able to create a 'wireless web' by not billing itself as the graphic rich internet, but instead a convenient system for accessing wireless content (Anwar, 2002; Ratliff, 2002). To access the wireless internet, i- Mode consumers'

mobile phone handsets have a screen with a menu feature. By selecting menu choices, users can access the wireless internet to purchase goods and services. These range from stock quotes, to games and ring tones, and even images of cartoon characters. In 2000, more than half (55%) of the i-Mode access was for entertainment related areas (Anwar, 2002; Lindmark, et al., 2004).

For this information i-Mode customers are billed a nominal charge. Because it is on a digital network, i-Mode handsets are "always on" (e.g. connected to the internet), similar to cable modems and DSL connections. Therefore, the response time is almost instantaneous (M. M. Lennon, 2011; Ratliff, 2002).

From the start, there was an explosion of users and available content for i-Mode. Within two months of its inception, over 20,000 websites were available. This jumped to over 70,000 by 2003. In order to have as much content available for the i-Mode as fast as possible, thereby encouraging both the user base and usage of i-Mode, a simple technology to build wireless websites was needed. Therefore, unlike other technologies available to create mobile phone accessible websites, such as the European developed WAP (Wireless Application Protocol), c-HTML (compact hypertext markup language) was chosen. With c-HTML, is quite easy to convert an existing HTML based website into a wireless capable one by using the HTML subset of compact commands. This ease of programming in c-HTML (a subset of HTML) encouraged droves of webmasters to make their existing HTML based websites i-Mode accessible (Abrahams, 1998; Ratliff, 2002).

With this massive amount of available content, the number of NTT DoCoMo consumers exploded from fewer than 11 million in 1997 to over 36 million by 2001, giving NTT DoCoMo a 60% market share of mobile phone users in Japan (Abrahams, 1998; Steinbock, 2003) . Unlike the voice minutes-per-month mobile phone contracts used in the US, i-Mode customers are charged a nominal monthly fee of $2.50 and then charged by the amount of data packets uploaded and downloaded by the user. Unlike US plans where voice minutes are billed, the i-mode network uses the same data packets to transmit voice and is thus charged accordingly.

Premium content (such as stock quotations, games, etc.) can be downloaded onto the handset, at which point the connection is severed, and the user can view the data "off line", without incurring additional charges for data packets(Steinbock, 2003). The unusual billing method for this system is described later in this paper.

Rather than business people, NTT DoCoMo's strategy was to target affluent teenagers and twenty-something's by creating a system that was cheap to join and had growing amounts of wireless content. Following Schumpeter's (1936) directives, rather than fulfilling an expressed desire by the consumer, it was the producer (e.g., NTT DoCoMo) that created the new product i-Mode and then educated the consumer for its purchase and use

To keep content fresh, NTT DoCoMo gives great encouragement and assistance to developers. Even from its home page (www.nttdocomo.com), in both English and Japanese, there are easy step-by-step instructions on how to use c-HTML to create more i-Mode sites. This resulted in profits not just for NTT DoCoMo but also the site creators (Rao, 2000; Wieland, 2005).This leads us to our first proposition:

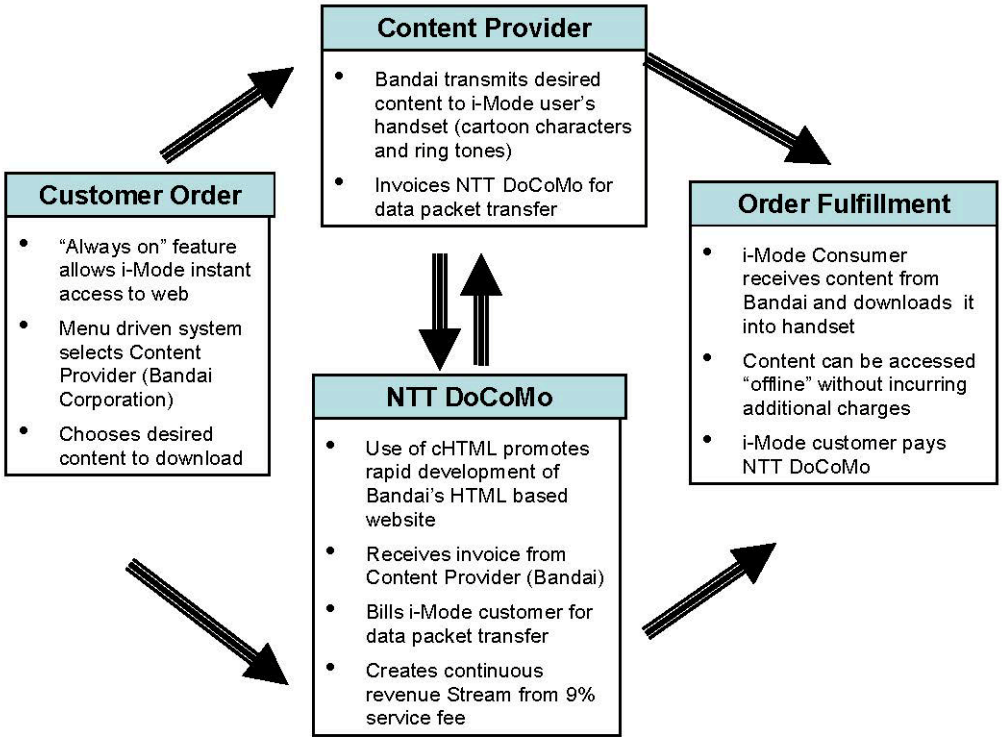
> *Proposition 1: in networked communication and content-based markets, to gain market share quickly, a simple technology should be chosen as the development platform in order to promote the rapid creation of content.*

By leveraging one of NTT DoCoMo's core competencies (Prahalad, 1990), its high level of trust by the Japanese consumer, NTT DoCoMo was able to create a unique strategic billing and revenue sharing system. Instead of each site tracking customer usage (e.g. data packet downloads) and then sending a bill to the i-Mode customer directly, the wireless website firms instead invoice NTT DoCoMo which then in turn includes these charges on the consumer's monthly bill.

This is convenient in several respects, as the consumer has only one bill to pay, nascent websites need not have supporting accounting and billing departments, and best of all, NTT DoCoMo gains a

healthy revenue stream by charging a hefty 9% (Baldi & Thaung, 2002) for facilitating these transactions. Figure 1 illustrates this process by using the company Bandai as an example, a provider of cartoon characters for i-Mode users.

FIGURE 1
NTT DOCOMO REVENUE SOURCE: HANDLING OF INVOICING AND BILLING



This leads us to our next two propositions:

> *Proposition 2: When offering new, varied and growing set of services to the consumer over a unique and new networked technological platform, a simple billing system would lead to faster diffusion of the platform and the associated services compared to complex one.*

and

> *Proposition 3: To encourage development of new, varied and growing set of services based on a unique and new networked technological platform, the platform creator- manager should employ a simple revenue sharing system.*

Having reviewed NTT DoCoMo's inception and operations, let us now turn to AT&T Wireless' implementation and adaptation of the i-Mode technology.

What Is mMode?

Like its i-Mode counterpart, mMode is the American version, AT&T Wireless' implementation of a menu driven internet connected mobile service, with handsets that carry both voice and data, and that enable the purchase of goods and services from wireless accessible websites. By licensing from NTT

DoCoMo, AT&T increased its absorptive capacity (Cohen, Levinthal, & Martin, 1990; Teece, 1994; Zahara, 2002) and was able to develop its own mMode product relatively quickly.

As outlined in Table 2, and described in the succeeding sections of this paper, however, there are significant differences in the implementation of AT&T Wireless mMode compared to the original i-Mode. First, the technology of the network carrying the mMode signals differs from Japan.

TABLE 2
ATT WIRELESS'S MMODE & JAPAN'S NTT IMODE COMPARED

	United States	Japan
Network	2.5G GSM/GPRS	'inherited' 9.6kps data packet
Monthly Costs	Yearly Contractual agreement for prepaid number of monthly voice minutes ($30 - $75 per month) PLUS additional charges for data packets ($2.50-$20 per month)	Low ($2.50) standard monthly connection fee, with 10% reduction in data packet costs if signup for optional yearly contract. No need for separate voice agreement as voice is carried via data packets
Internet Connectivity	Like broadband, mMode button connects user instantly to the net	Like broadband, i-Mode and other services provide "always-on" connectivity
Voice Fees	Per minute voice charge, with high per-minute costs for exceeding the contractual minutes	User charged by data packets transferred only
Data Fees	User charged only for the amount data packets transferred; content storable on handset for offline viewing	User charged only for the amount data packets transferred; content storable on handset for offline viewing
Website Technology	Only WAP (Wireless Application Protocol) website viewable; requires extensive website customization and programming sophistication	cHTML (compact Hypertext Markup Language) allows quick adaptation of existing and creation of HTML based wireless websites
Billing System	Small ticket, AT&T Wireless direct; big ticket credit card tied "e-wallet"	NTT DoCoMo 9% Centralized Billing

Since it was starting from scratch, AT&T Wireless chose to build out a network using the well-tested, modern 2.5 G (Generation) GSM/GPRS technology. This would enable future growth and create a "technical barrier to entry" (Levin, 1978) that would hinder potential competitors from entering the market.

This 2.5G technology was chosen not just because it was reliable, but also because it would facilitate transition to the next 3G (third generation) network technology. By managing the process of its strategic innovation, AT&T Wireless sought to manage its innovation by controlling both "current and future profits" (Afuah, 1998). This choice of GSM/GPRS has influenced the technological and economic implementation of mMode.

GSM (Global System for Communications) is a European developed mobile cellular standard that is used throughout Europe and Asia. There are competing technologies, including CDMA, a standard developed by the US company Qualcomm, and used by US mobile carrier SprintPCS. GSM carries

voice transmissions, where as for data GPRS (General Packet Radio Service) is an enhancement to GSM (Steinbock, 2003).

GPRS accommodates packet-switched data, such as data from wireless capable websites. To build out this GSM/GPRS network to enable mMode, AT&T Wireless spent approximately $5 billion in 2001, $4.9 billion in 2002, and $3.1 billion in 2003. This dual aspect of the network has led to the difference in pricing mechanisms in i-Mode versus mMode. Unlike i-Mode the mMode AT&T Wireless bills consumer separately for voice and data usage. For data transmissions (e.g. accessing the internet), the GPRS component of the network is used. Like i-Mode, this constant connection to the wireless internet enables the "always on" feature and near instantaneous response. Further, just like i-Mode, consumers are charged by the amount of data measured in kilobytes transferred.

But unlike i-Mode, where voice is also carried and billed by data packets, with AT&T Wireless, it is the GSM portion of the network that carries the voice traffic. Therefore, since data packets do not measure the amount of voice usage, the numbers of minutes used are tracked instead. This leads to AT&T Wireless requiring (just like other American carriers) an annual contract for a number of monthly voice minutes. The low subscription-fee advantage of i-Mode is lost in this dual billing system.

Another critical difference between i-Mode and mMode is the choice of technology employed for developing wireless websites. Unlike the easy c-HTML, AT&T Wireless chose the more cutting edge WAP (Wireless Application Protocol), which is technically superior (e.g. richer graphics, more features). WAP, however, requires higher levels of programming sophistication than c-HTML, so it does not encourage rapid conversion of existing websites, as does c-HTML. One reason WAP was chosen was to create a "mobility barrier" (Caves & Porter, 1977) , in which these wireless sites would have to be viewed through the mMode network. Unlike the 70,000 i-Mode sites in Japan, by 2003, AT&T Wireless network managed to inspire only 250 or so WAP enabled sites. This leads to the following proposition:

> *Proposition 4: In dynamic and networked technological settings, strategic decisions by the network platform leader to be at the cutting edge could present barriers to the efforts of firms attempting to develop services for that platform.*

There is also a major difference between the centralized i-Mode billing system and AT&T Wireless. Unlike i-Mode, mMode offers a choice of two billing options, one similar to NTT DoCoMo and another unique to AT&T Wireless.

For simple value added services, such as downloadable music, ring tones, games, etc., the mMode users incur charges on their monthly-itemized AT&T Wireless bills. It is for larger ticket items that the two systems differ. When purchasing from other websites, for example E-Bay, the mMode handset has a credit card number stored in the device, known as "e-Wallet", which is used to make the transaction. This affords the mMode user all the advantages of using a credit card in the US, not the least of which is the protection of consumer laws. This leads us to our next proposition:

> *Proposition 5: Prevalent consumer practices and entrenched billing practices may slow the transition to a unique, new networked technological platform that requires new consumer behaviors and billing modes.*

DISCUSSION

Whether AT&T Wireless' mMode service will be as successful as NTT DoCoMo's i- Mode is difficult to say. AT&T Wireless is seeking features beyond those available in i- Mode, such as its recent agreement with the Loudeye company for fully downloadable music tunes, transforming a handset into a portable music player. However, there are several factors that AT&T Wireless mMode

usage faces that i-Mode does not. These include the following: Americans are used to graphic rich access to the internet and may not settle for asimple text-based menu-driven structure for navigation.

Culturally, American students and workers have far less spare free time to kill compared to the Japanese, whose average daily commute of 1.5 hours affords considerable scope for playing with i-Mode. In the United States, consumers are used to free information from the internet, and therefore may not be willing to pay, even minimal charges, for information such as stock quotes and sports scores.

Unlike Japan, where 70% of internet access is through wireless devices, most Americans access the internet via PCs and are therefore not conditioned to use small mobile phones as a method for internet access (Ishii, 2004).In a sense, the American 'love affair with the PC' has held Americans back in the race for wireless achievement (Mossberg, 2000). Because the websites are being programmed in WAP, there may not be as much content as readily available for mMode as there is for i-Mode. Compared to i-Mode with its 60% or greater market share, there are far fewer mMode-capable mobile devices (e.g. handsets) available in the more fragmented American market, thereby limiting consumer choices and perhaps increasing their reluctance to adopt the "bleeding edge" mMode technology. Given that there are six major US mobile carriers in the US versus three in Japan, AT&T Wireless may find itself competing against other mMode like systems.

Even with these potential difficulties however, the strategic intent of NTT DoCoMo was not just to create an American i-Mode. The agreement does not just stop at the transfer of i-Mode technology. The strategic investment and partnership called for achieving performance excellence through an integrated strategy of radical innovation and continuous improvement (Kodama, 2003b; Rindova, 2001; Terziovski, 2002). This dedication to radical innovation is best exemplified by NTT DoCoMo and AT&T Wireless' commitment to the development and implementation of the cutting edge 3G (third generation) networks, which could enable a host of future applications.

In fall 2001, NTT DoCoMo launched FOMA (Freedom of Multimedia Access), the pioneering 3G platform worldwide. This network was to augment the existing lower band i-Mode network. Instead of i-Mode speeds of 9.6 kbps, lightening fast speeds of 384 kbps, equal to those of ISDN lines, are available with FOMA. This enabled features like streaming video and audio, and opened the gateway for the development of other multimedia applications. There were snags in the implementation though, caused by problems, including battery life, with the new 3G handsets. AT&T Wireless has benefited from this as part of their GSM/GPRS network they have implemented EDGE, the successor of GPRS, thereby avoiding technological lockout (Schilling, 1998).

The EDGE technology shares the same high-speed bandwidth as FOMA. Interestingly though, these two similar technologies are being targeted at totally separate demographic consumers in the two countries. In Japan, FOMA is targeted towards the same group as the original i-Mode users: young, affluent, urban Japanese teenagers and twenty-somethings who would enjoy such features as live video feeds from built in cameras in their handsets, enabling them to not just talk but also see who they are calling.

In contrast, in the United States, EDGE is being sold as a business technology, an imperative tool for fast changing high-tech industries (C. M. Christensen & Raynor, 2003; C. M. S. Christensen, Fernando F. Utterback, James M., 1998; Funk, 2004). For $80 per month, business users will get unlimited access (e.g. data transfer) to EDGE technology. Applications such as videophones are available, but are geared as tools for video conferencing. With the higher download speeds, other applications for businesspersons are being developed. These include rapid messaging (e.g. email and short instant messaging), access to and rapid download of information from company servers, and the sharing of data amongst other EDGE users.

While other US carriers are attempting to keep pace, as part of their agreement with NTT DoCoMo, by the end of 2004 AT&T Wireless will be required to have EDGE implemented in at least four US cities, including San Francisco and Seattle. Like most new technological debuts, ATT Wireless faced the "innovators dilemma" (Arrow, 1962) they will have to do this without any existing end user feedback to enhance their implementations.

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

In this paper we have examined the strategic decision of a foreign firm to invest into another to share its technological expertise in order to gain market share. We have studied the specifics of two such firms, NTT DoCoMo and AT&T Wireless, and their corresponding technologies of i-Mode and mMode. In the process we have made a series of propositions regarding such strategic initiatives. Through a longitudinal study tracking the progress of these firms, the validity of these propositions can be tested. Further research could also include examining other similar strategic international decisions pertaining to dynamic and networked technologies.

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Student-Created Assignments in an Undergraduate Accounting Information Systems Course: Student and Faculty Perceptions

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This paper examines how student-created case studies can enhance students' understanding of internal control in an undergraduate accounting information systems (AIS) course Students say cases require critical thinking, enhance research skills, and demand greater understanding of AIS course content. Faculty appreciate their use as cases can develop student engagement in the topics, incorporate real world examples, improve critical thinking and analysis, and stimulate class discussions. Drawbacks include students' lack of breadth or depth of knowledge and work experience to create meaningful cases. Faculty perceive a lack of fairness or standardization in the case content and grading and evaluating challenges.

INTRODUCTION

Calls for more interactive, learner focused college classrooms have been around for a number of years. Vreman-de Olde and De Jong (2004) state an expectation that students should make a substantial contribution to "the way they manage information and educational tasks". Albrecht and Sack (2000) emphasize this point for the undergraduate accounting curriculum in particular.

One way of introducing more student involvement in the classroom and fostering increased student responsibility for learning is to use student-created assignments. For the purpose of this project, we define these assignments as authored by students using material of their choosing. Students create the idea, design and write the assignment, and prepare a solution. Such assignments might include homework exercises or problems, in-class activities, quiz or examination questions, minicases or complete case studies, and discussion seminars. Student-created assignments, particularly case studies, provide an active method for students to observe the relevance between conceptual academic material and the world of work (Ashmalla and Crocitto, 2001). With student-generated assignments, students can move to more active levels of participation: specifically to the synthesis and evaluation levels of Bloom's taxonomy (Greenstein and Hall, 1996).

This paper examines how student-created minicase studies were used to enhance students' understanding of internal control in an undergraduate accounting information systems course. After a brief review of the literature on student-generated assignments, the paper describes how such cases were integrated into an AIS course in the Spring 2011 semester. Student feedback – gathered through pre- and post-assignment focus groups and an online survey – is reviewed. In an effort to include faculty perspectives on the topic, AIS faculty were surveyed and their comments are also presented.

LITERATURE REVIEW

Dori and Herscovitz (1999) remind us that when using student-created assignments the focus is not on students to demonstrate knowledge of a subject on an examination but to "construct, gain, or use knowledge about the matter in question". Students who create assignments are involved in a series of tasks: developing questions; arriving at answers and alternatives; and explaining the options (Vreman-de Olde and De Jong, 2006). Since most students likely will not have experience with such unstructured work, the assignments might address superficial topics or involve simplistic tasks (Vreman-de Olde and De Jong, 2004; Vreman-de Olde and De Jong, 2006). Students might be overwhelmed by the demands of creating their own assignment and feel it is more complex than it actually is (Ashmalla and Crocitto, 2001; Student Feedback, 2011a). Therefore it can be beneficial to provide guidelines, support, and examples so students can experiment and construct their ideas. Ashamalla and Crocitto (2001) use a written handout to outline main points about student-created case studies. Quintana et al. (2004) propose a collection of scaffolding guidelines to structure the scientific problem-solving process. Some of these could be extended to the process of having students generate their own assignments, including using language that bridges students' comprehension of older and newer subjects, providing structure for complex tasks, and embedding expert guidance about practice. Vreman-de Olde and De Jong (2006) use a "design sheet" to scaffold students through the question definition phase of student-created assignments.

Yu and Liu (2009) mention various benefits of using student-created questions, including increasing the depth of understanding, moving from acquiring knowledge to using it, taking responsibility for learning and "owning" the subject matter, building up more sophisticated thinking skills, and creating different and adaptable ways of thinking. Vreman-de Olde and De Jong (2004) explain that the process of designing questions makes students think about main ideas and "checking whether content is understood", as well as distinguishing between familiar and unfamiliar material and making choices about how to present it. Connor-Greene (2005) uses student-generated questions and student-prepared assignment quotes and talking points to foster careful reading and equip students for meaningful class discussion. Ashamalla and Crocitto (2001) contend that for bridging theory and business practice, student-created case studies have the potential to be more meaningful than pre-written cases. This was echoed by a student in the accounting information systems course where student-created assignments were employed (Anonymous Student Feedback, 2011a).

Dori and Herscovitz (1999) find the type of questions created by students generally shift from low-level (factual and recall questions) to high-level (involving judgment and opinion) after they gain experience creating their own questions. Brink, Capps, and Sutko (2004) describe an assignment where freshman students created the final examination. Multiple choice and fill-in-the-blank questions were not permitted. Consistent with the results of Dori and Herscovitz (1999), Brink et al. (2004) conclude that student-created assignments were more effective for above average students than below average students. Brink et al. (2004) also confirm that final examination grades were higher for students who designed good model examinations and appropriate answer keys.

Yu (2011) reports on the value of having fellow students offer feedback about student-generated questions. In his work, more than 95 percent of the students agreed or strongly agreed that peer review supported their learning. Peer comments help students identify weaknesses with their questions and refine them. Students found the process beneficial in both roles – as question author and question evaluator. Similarly, Gehringer and Miller (2009) find that students benefit from peer review of their self-created assignments, particularly in the editing and revision stages.

STUDENT-CREATED ASSIGNMENTS IN AN ACCOUNTING INFORMATION SYSTEMS COURSE

At the 2010 meeting of the North American Accounting Society, one of this paper's authors attended a presentation where student-created assignments were discussed. Upon returning to her institution, she thought of the various ways she was already making use of student-created assignments, particularly in the accounting capstone course, Accounting Research. The approach seemed to work well with graduating seniors. She considered other courses in the accounting curriculum to which the benefits of student-created activities might be extended. Because of its flexibility and lack of a rigid body of content that had to be covered during the semester, the junior-level Accounting Information Systems (AIS) course emerged as the candidate for this experiment.

Two student-created assignments were incorporated into the syllabus for the Spring 2011 offering of AIS. Both involved the creation of internal control minicases (1-2 pages in length and containing several open-ended questions). Students used domestic and foreign newspaper accounts of internal control and fraud situations as their starting points, then developed minicases using situation facts. These minicases and the related questions focused on recognizing specific internal control weaknesses and suggesting appropriate controls that could be employed to reduce risks of asset loss or financial reporting improprieties.

At the start of the semester, students worked a sample minicase written by the course instructor and reviewed several pages of guidelines contained in *Writing Case Studies: A Manual*, prepared by the Saskatoon Public Schools Online Learning Center (Saskatoon, 2009). During one class period they practiced writing – in teams – their first minicases and tested them with classmates. After these opportunities for practice, the two graded student-created minicases were prepared individually. The two minicase grades comprised 40 of the course's 125 points.

Instructor-created minicases were periodically used during the semester to exemplify how minicases might be constructed.

STUDENT FEEDBACK

Student Survey and Focus Group Methodology

Student feedback regarding student-created assignments was gathered by means of an online survey and two focus group sessions. The group of student responders was comprised of individuals enrolled in the Spring 2011 AIS course. Approximately two weeks before the end of the semester, invitations were emailed to all students enrolled in the class, inviting them to complete the online survey. Of the 26 students, only three students completed the survey. Due to the low response level, comments shared below come solely from the focus groups.

Student focus groups, conducted at the beginning and end of the semester, served as an alternative method of collecting student feedback on the topic of student-created assignments. A pre-assignment focus group session was scheduled during the first month of the semester. The purpose of this meeting was to gather students' thoughts about student-created assignments prior to being asked to develop and complete the minicases. Six students (23 percent of those enrolled in the course) chose to participate. In addition to the initial feedback, a post-assignment focus group was conducted during the final week of the semester. After having completed several student-created assignments throughout the course, the same six individuals were again welcomed to share their thoughts regarding student-created assignments. All six students participated.

Results of the Student Focus Group

Six students participated in the focus groups. During both the pre- and post-assignment focus groups, students were asked questions about the benefits and limitations of student-created assignments. Tables 1 and 2 display a selection of the views shared by the students.

TABLE 1
BENEFITS OF STUDENT-CREATED ASSIGNMENTS AND CASE STUDIES

Pre-Assignment Focus Group	Post-Assignment Focus Group
Student-created case studies serve as a good tool for the student conducting the research and producing the assignment.	Student-created assignments require more creative thinking than simply answering questions in response to a pre-written case.
A student participant who had past experience with student-created case studies in another course felt that the assignments serve as a useful learning tool.	Additional research and a more thorough understanding of the subject are necessary to develop an effective case study.
	Students must be able to both develop a hypothetical situation based on facts, as well as to understand which solutions would be most effective.

TABLE 2
LIMITATIONS OF STUDENT-CREATED ASSIGNMENTS

Pre-Course Focus Group	Post-Course Focus Group
Students may not have the necessary experience or knowledge to create realistic case studies and assignments.	Reading, thoroughly understanding, and providing solutions to a pre-written case require a similar amount of creative thinking without the busy work.
Case studies will not vary in content from student to student due to a limited exposure to real-world situations.	Students do not have the appropriate breadth or depth of knowledge to create case studies that vary in content. Individuals experienced difficulty writing multiple cases because of the similarities to the first case study.
Assignments will be oversimplified.	
Students do not have the necessary experience to develop assignments that are detailed and specific. Case studies will be too general to serve as an effective learning tool.	

Students were also asked if they felt that there are other assignments or projects with benefits that are similar or greater than those produced by student created assignments. This question was presented during both focus groups; Table 3 reports students' comments.

TABLE 3
ALTERNATIVE ASSIGNMENTS WITH SIMILAR BENEFITS

Pre-Course Focus Group	Post-Course Focus Group
Class discussions are oftentimes equally beneficial, depending on the subject.	Providing solutions to pre-written cases exposes students to a greater variety of situations.
Reading and evaluating a pre-written case study serves a similar purpose as creating the assignment. A student who can identify the problems in a case would be able to develop a similar situation.	Assignments that allow students to consult directly with local businesses would be more beneficial. This approach would allow students to develop different perspectives on business conduct and the potential problems that could arise.

Finally, during the post-assignment focus group students were asked to discuss their experience with student-created assignments. Their perspectives are shown in Table 4.

TABLE 4
OVERALL EXPERIENCE WITH STUDENT-CREATED ASSIGNMENTS

Students found that student-written cases were a beneficial part of the class, which reinforced the course content.
Students also felt that one or two student-created assignments is a useful learning tool but that other types of assignments and projects should be incorporated into the course as well.
Students in the post-assignment focus group discovered student-written case studies to be more helpful than they had originally anticipated.

AIS FACULTY PERSPECTIVES

Faculty Survey Methodology

In addition to gathering and evaluating student feedback, we felt it important to survey faculty who teach undergraduate AIS courses. Two tactics were used to develop a list of AIS faculty to survey. For more than a dozen years the AIS Educator Association has sponsored the annual AIS Educator Conference. The 2010 conference program was available on the association's website; participant, reviewer, and board member names were noted and their e-mail addresses researched. A second source was a general Google search for faculty who teach undergraduate AIS courses. These two approaches yielded a pool of 118 faculty to invite to take the survey.

Approximately one week prior to launching the survey, the 118 invitees were sent an e-mail message informing them about the upcoming survey. Those who did not wish to complete the survey were encouraged to respond and request to be removed from the invitation list. Two faculty responded. An additional eight e-mail addresses were invalid or messages to the recipients were undeliverable. Thus, a total of 108 invitees received the e-mail message containing the Zoomerang online survey link. Invitees were given nine days to complete the survey. One day before the survey closed, a reminder message was sent to the invitees.

Thirty faculty (27.8 percent) completed the survey. This rate is higher than averages reported in research about online survey response rates where e-mail invitations are used (Sheehan, 2001; Kaplowitz, Hadlock, and Levine, 2004; Muñoz-Leiva et al., 2010).

Faculty Survey Results

Of the 30 respondents, 53 percent were female and 47 percent male. Twenty-four percent were between the ages of 30 and 43; 45 percent were aged 44 to 57 years; and 31 percent were 58 years of age or older. The majority (53 percent) had been teaching AIS courses for somewhere between eight and 15 years. Fourteen percent had AIS teaching responsibilities in excess of 15 years, and 33 percent had been teaching AIS for between one and seven years. Additionally, 37 percent (11 respondents) identified themselves as teaching at four-year colleges, while the remainder (63 percent) indicated they were employed at institutions offering masters and doctoral degrees. Seventy-three percent taught at public institutions, while 27 percent taught at private institutions.

Respondents were asked to indicate all teaching and learning techniques, from a list of 12, used in their AIS classrooms. These are shown in Figure 1 (Appendix). It is interesting to note that none of the 30 faculty incorporate service learning activities. All respondents employ lectures to some extent and nearly all (29 of 30) involve students in classroom discussion.

A second cluster of survey questions focused on the use of student-created assignments in AIS courses. Only three of the 30 faculty (10 percent) have used such techniques. The final closed-ended question in the survey asked respondents to identify the importance their department or institution places on developing and using innovative teaching/learning tools in their AIS courses. Figure 2 (Appendix) communicates this result.

Faculty members who used student-created assignments in their AIS courses were asked to explain why they chose to implement them and to discuss some of the disadvantages associated with their use. Tables 5 and 6 share their comments.

TABLE 5
REASONS WHY STUDENT-CREATED ASSIGNMENTS ARE USED

So students cannot Google the answer for text assignments.
To learn about the software (Access, Excel, and Web design applications).
Student engagement, real world examples, critical thinking and analysis, and class discussion, both on the process of research and deliverable creation as well as learning from the PowerPoint presentations and constructive criticism.

TABLE 6
DISADVANTAGES OF USING STUDENT-CREATED ASSIGNMENTS

Perhaps not as comprehensive.
Lack of fairness, unequal responsibility, copying, no standardization, difficult to grade and evaluate, team arguments, students unable to complete assignments due to illness, job interviews, etc.
Student-creators having an advantage over others.
Students want an example deliverable and we do not provide this.

The feedback provided in Table 6 was offered by more than the three faculty who used student-created assignments. As it was not possible to identify the three adopters' comments, all responses are reported in Table 6.

The three faculty using student-created assignments provided descriptions of the assignments in varying levels of detail. Table 7 presents these accounts.

TABLE 7
DESCRIPTIONS OF STUDENT-CREATED ASSIGNMENTS

Students create a business process narrative and flowchart.
Access, Web design, Excel.
Select an instructor approved company of your choice and using their SEC 10-K for information supplemented by other research, relate textbook topics to your company. Deliverable is a report on AIS issues, internal control, and risk management. The business report (Word document) is supplemented with a six slide PowerPoint presentation shared with students in the class. Each student must provide constructive criticism and comments to the work of at least one other student. The creator then has an opportunity to decide what to do with the constructive criticism and comments as they prepare to submit the Power Point for grading by the professor.

The final question in the survey asked faculty not using student-created assignments to identify some of the reasons they do not use them. Twenty-five respondents replied. Nine respondents indicated they had never thought of using such assignments in their courses. Several mentioned they did not feel students in the undergraduate AIS course had sufficient knowledge to create their own assignments; they would be more inclined to experiment with student-created assignments in a graduate AIS course. A lack of control over such assignments was mentioned by three respondents. Two faculty stated that such unfocused assignments would be challenging to work with. A sample of representative comments follow.

- The course was packed with a lot of pre-defined projects due to Access, general ledger software, and Excel texts (in a textbook rental school) so did not seem as though I could change it that easily. When I had more discretion over choice (at my former institution), this idea never occurred to me.
- The class is full with the assignments I provide. Too, students are novices and not well enough informed to direct their own assignments. That is my job.
- I had not thought of it. Offhand it sounds a little unfocused, but it might be a memorable experience for the students.
- Too much disparity in what they choose. Difficult to grade fairly and consistently.

PUTTING IT ALL TOGETHER – FUTURE WORK WITH STUDENT-CREATED ASSIGNMENTS IN AIS

Observations

Student-created assignments present rewards and risks to students and faculty. While students may feel these assignments strengthen connections between their classroom and outside worlds, they can be apprehensive about how to approach such unstructured work. David Kolb (1984) understands that the abilities used in experiential learning can frequently be at "polar opposites" with each other, for example between the dimensions of concrete and abstract, and active and reflective. Students rely on all of these abilities – to a greater or lesser extent depending on the situation – in developing their own assignments. It is challenging for a student to think in both concrete and abstract levels while being creative yet pausing to reflect on what's being created (Figure 10). Yet this is what we ask of students when using student-created assignments.

Faculty recognize that one effective mode of learning about something is to experience it, but evaluating student-generated material can be filled with uncertainties and inconsistencies. It seems appropriate to include faculty guidance and support (scaffolding) as well as breaking up the assignment into smaller components so peer and faculty feedback can be incorporated into a revision process.

Limitations

One section of one accounting information systems course at a single college cannot be counted on to generalize results. But this project's objective is not to make sweeping statements about the impact of using student-created assignments in an AIS course. Rather, we hope to present the idea to undergraduate AIS and other accounting faculty for their consideration, outline the benefits and drawbacks, and let faculty choose whether they shall try the technique.

Conclusion

In reviewing the information presented in this project regarding student-created assignments, the effectiveness of these assignments is assessed. Due to a small number of participants in the student survey and focus groups, the lack of student feedback makes it impossible to draw any conclusions; however, several of the students who did participate gave positive feedback regarding the usefulness of student-created assignments. While some still had concerns about their ability to complete the assignments based on limited experience and knowledge of the course material, comments frequently suggested that after developing and using these assignments throughout the semester, students felt that student-created assignments succeeded in reinforcing course content, although other projects may serve a similar purpose.

In examining the faculty survey results, only 10 percent currently use student-created assignments, although 23 percent find it highly important to develop and incorporate innovative teaching techniques in an accounting information systems course, and another 47 percent found it moderately important. Some of the disadvantages of student-created assignments from the faculty perspective include subjectivity in grading, insufficient time in the course to use such assignments, and limited depth of student knowledge; however, other faculty admitted that student-created assignments had never before been considered as a possibility and thought that they would be useful in their courses.

The small number of respondents does not allow us to generalize about the effectiveness of student-created assignments. Although some students and faculty feel these assignments are not the best representation of a student's understanding of the course content, many agree that student-created assignments present a unique way to engage students and allow them to demonstrate the knowledge they have obtained.

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APPENDIX A

FIGURE 1
TEACHING AND LEARNING TECHNIQUES USED IN AIS COURSES

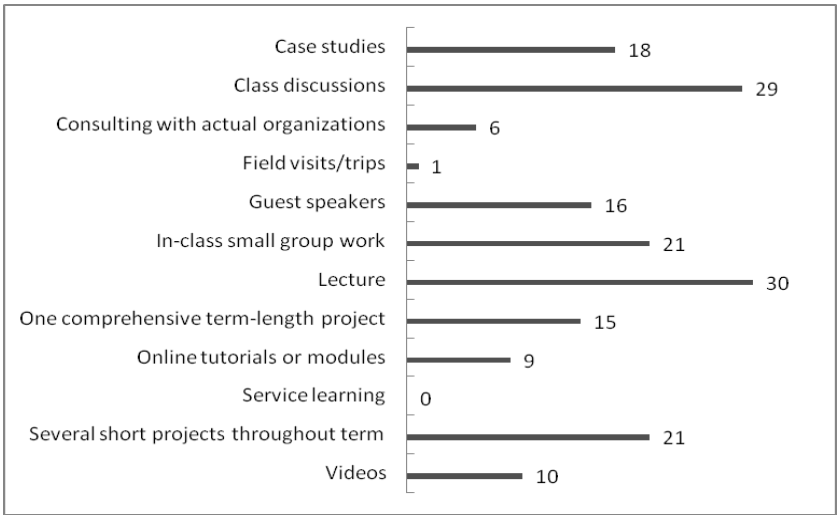
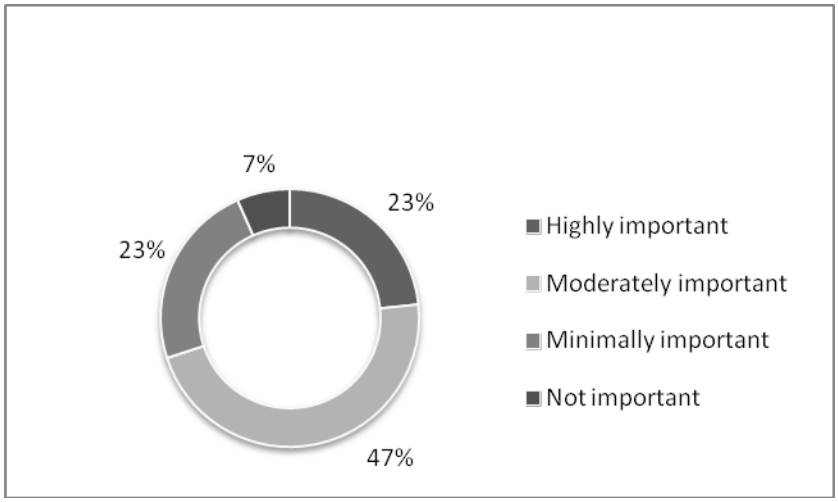


FIGURE 2
IMPORTANCE OF DEVELOPING/USING INNOVATIVE TEACHING AND LEARNING TECHNIQUES IN AIS COURSES



Client-Financed Projects: A Study of the Perceptions of Marketing Faculty at AACSB Accredited Schools

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An experiential-learning activity will develop students' soft skills (e.g., problem solving, analytical-, creative-, and critical-thinking skills, decision making, teambuilding, and communication skills). We examined the opinions of marketing faculty regarding the value of a client-financed project. Marketing faculty most strongly agreed with the following: (1) Business majors should do a CFP, $\bar{x}$ = 4.54 and (2) A CFP makes students active learners, $\bar{x}$ = 4.49.

INTRODUCTION

The Association to Advance Collegiate Schools of Business (AACSB) has urged business faculty to actively involve students in the learning process and encourage collaboration and participation among participants (July 1, 2009). Experiential-learning activities (ELAs) improve students' soft skills (e.g., critical-thinking, problem-solving, reflective-thinking, creativity, decision-making, planning, analytical-thinking, communication, and teamwork skills). Dewey (1938) proposed that experiential learning facilitates long-term learning and can provide students with knowledge and the ability to apply that knowledge in several situations.

Instructors need to adopt pedagogy more engaging than lectures because the business world demands that students possess certain soft skills (Kennedy, Lawton, & Walker, 2001). Practitioners criticize business schools because students are not prepared for the real-business world (Kelley & Gaedeke, 1990) and important skills are not being taught in the standard business school curriculum (Kelley & Parker, 1995).

Experiential exercises help students develop the skills necessary to use marketing theory to solve marketing problems (Bobbitt et al. 2000). Marketing educators need to change their teaching style because "we have new workplace needs, we have increasingly diverse students, and we have old pedagogical strategies that do not address the learning styles and backgrounds of our students" (Kennedy, Lawton & Walker, 2001, p. 151).

Given the importance of experiential learning to the learning paradigm, it is appropriate to measure marketing educators' perceptions regarding students working with real businesses to solve real problems.

The contribution this article makes is to provide the first look at the opinions of marketing faculty regarding the value of a specific type of experiential-learning—the **C**lient-**F**inanced **P**roject (CFP). We present our methodology and research results and discuss the study's limitations, implications for marketing education, and suggestions for future research.

For the purposes of our study, we define a ***client-financed project*** as a project that involves a real organization that wants help solving real problems, covers expenses incurred by the class, meets with the students, and shares company information. Finally, the client signs a formal contract with the instructor who supervises the CFP.

In some aspects, this study is similar to the Vincent and de los Santos (1988-1989) study. However, the Vincent study surveyed department heads, whereas our study investigated marketing instructors' opinions about client-financed projects.

Research Questions

Based on our review of the experiential-learning literature, the following research questions emerged to focus our study on the value and perceptions of the client-financed project:

1. What are the demographic characteristics of faculty who have recently supervised a client-financed project (CFP)?
2. How does marketing faculty conduct their CFP?
3. What are the perceptions of marketing faculty regarding the value of a CFP?

METHODOLOGY

Our population of interest consisted of all 460 United States business schools accredited by the **AACSB** listed on the AACSB website (**Revised January 31, 2008).** We randomly selected 230 business schools, and then randomly selected four marketing professors from each school for a sample of 920 professors. Following the approach used by Hult, Neese, & Bashaw (1997), we surveyed only Assistant, Associate, or Full Professors.

Our cover letter stated: **"A Client-Financed Project is defined as a project where the client provides funds to cover expenses incurred by the student-consulting teams."**
Using a similar method used by Koojaroenprasit et al. 1998, our questionnaire was designed specifically for this study because no previous studies were found that measured marketing professors' attitudes toward client-financed projects.

Section 1 of our survey dealt with demographic characteristics collected in other surveys of marketing faculty (Polonsky, Juric, & Mankelow, 2003; Simpson & Siguaw, 2000). Section 2 determined how the respondent conducted a client-financed class project. Section 3 had faculty respond to an attitudinal scale ranging from (1) "Very Strongly Disagree" to (6) "Very Strongly Agree" (Pelton Strutton, & Rawwas 1994). We used a 6-point Likert scale to increase response variability (Trocchia & Andrus, 2003) and to get a precise measure of agreement (Hannaford, Erffmeyer, & Tomkovick, 2005).

A mail the questionnaire was sent to 460 marketing professors and *SurveyMonkey.com* was used to email the same questionnaire to the other 460 marketing professors. Professors were randomly selected to determine if they received the questionnaire by mail or via *SurveyMonkey*. The cover letter and questionnaire sent via *SurveyMonkey.com* was identical to the material sent by mail. The *SurveyMonkey* cover letter contained a hyperlink to the questionnaire.

RESULTS

Marketing professors from 41 states returned a usable questionnaire. Of the 886 questionnaires successfully delivered to the sample, 201 completed questionnaires were returned, a response rate of 22.7%.

Characteristics of the Respondents

Approximately 72% of the 201 respondents were males and approximately 37% were 56 years or older. Full professors made up 37% of the sample, 30% were Associate professors and Assistant professors accounted for 33% of the respondents.

Nearly 40% of our sample have taught for less than 11 years and 36% have taught for 21 years or more. Nearly 96% of the respondents possessed a doctorate. Only 14% of the respondents had taught a doctoral course over the past three years, 68% had taught a Masters level course and 94% had taught an undergraduate class. From August 2006 through May 2009, 64 of the 201 respondents had conducted at least one client-financed class project and 24 had conducted 2 or more client-financed projects during this time period.

How the Respondents Conducted Their CFPs

Twenty-eight professors indicated the entire class consulted with only one client and 23 professors indicated their students consulted with different organizations. Twenty-eight respondents noted that they "required" the client to come to class two times during the semester and/or quarter. Approximately 62% of respondents indicated that the student teams contained 4 to 5 members. Finally, 50 respondents used peer evaluations and 6 professors indicated that peer evaluations comprised 40-50% of a student's total course grade.

Perceptions about the Value of a Client-Financed Project

Table 1 provides an overview of what marketing professors think about the value of conducting a client-financed project. The marketing professors were most in agreement about the following benefits of CFPs: 1) a client-financed project makes students active learners ($\bar{x} = 4.5$), and 2) every business major should work on at least one client-financed project during their business program ($\bar{x} = 4.5$), 3) CFPs help link educational experiences to business practices ($\bar{x} = 4.2$), and 4) a CFP improves a student's decision-making and critical–thinking skills ($\bar{x} = 3.9$).

Only 24 of the respondents agreed their students would not want to do a CFP. However, 53% of the marketing professors agreed that conducting a CFP was too much work for the teacher.

TABLE 1
MARKETING PROFESSORS' ATTITUDES TOWARD CLIENT-FINANCED PROJECTS (CFP)

	Topic	$\bar{x}$	Total Who Agreed[1] #	Total Who Agreed[1] %	"No Opinion" #	Total #
1	All business majors should do at least one CFP	4.54	139	80%	18	192
2	A CFP makes students active learners	4.49	148	82%	10	191
3	A CFP links business practices to education	4.22	147	80%	10	193
4	A CFP improves a student's decision-making skills	3.94	126	71%	13	191
5	A CFP improves a student's critical-thinking skills	3.87	124	70%	13	191
6	Dean wants marketing faculty to do CFP	3.84	81	68%	72	192
7	A CFP improves a student's reflective-thinking skills	3.77	114	64%	15	192
8	A CFP teaches students to acknowledge their responsibilities to fellow students	3.68	107	61%	16	192
9	A CFP is too much work for the teacher	3.53	93	53%	13	190
10	A CFP improves a student's writing skills	3.31	72	42%	17	190
11	A CFP helps faculty keep abreast of business practices	3.20	66	36%	15	191
12	Students do not want to do a CFP	2.41	24	14%	18	191

[1] 6 = Very Strongly Agree; 1 = Very Strongly Disagree

DISCUSSION AND RECOMMENDATIONS

Only 64 respondents indicated they conducted at least one CFP from Fall 2006 through May 2009. Additionally, 23% of the respondents had conducted only 1 or 2 CFPs over the three academic years. Another 11 respondents had conducted only 3 CFPs over the three-year time period. Only 4 out of 173 professors "Strongly or Very Strongly Agreed" with the statement "My students would not like doing a

Client-Financed Project." Our research results support the view that experiential-learning projects bring realism to marketing education and provide numerous benefits to students, however, we agree with Razzouk, Seitz, & Rizallah (2003) who note that real-world projects are not frequently utilized by educators. Others have suggested that marketing educators have wholeheartedly embraced experiential learning because it has become the focus in stimulating learning (Frontczak and Kelley, 2000; Elam and Spotts, 2004).

In the literature, the most frequently mentioned reason for not conducting a real-world project was because such projects require too much time and effort from the instructor (Lopez & Lee, 2005; Higgs, 2006; Lizzio & Wilson, 2004; LeBlanc & Kesten, 2007). Some instructors may avoid doing real-world projects because they consider such projects to be too big to manage and not worth the trouble (Goodell & Kraft, 1992). Other instructors may not integrate real-world projects into their courses because grading such projects requires considerable feedback and a heavy time commitment from the teacher (Razzouk, Seitz, & Rizkallah, 2003). Additionally, instructors may not implement a real-world project because the pedagogy is not hereditary, but a classic departure from the traditional lecture-based approach.

The following statements support the idea that some instructors think real-world projects are too much work: (1) "Too labor intensive to be doable given other teaching, research and service requirements," (2) "A lot of work for the faculty . . . absolutely no incentives or rewards," and (3) "too time consuming for an untenured faculty."

Our advice is to start with a small real-world project that is not too complex and that can easily be completed in one semester. One place to start would be to ask an operational area within your university that may want research conducted or you might conduct a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis for their operation.

There is evidence in the literature that suggests that students recognize the value of participating in a real-world project (Siegel, 2000). Several scholars have written about experiential-learning activities and included positive quotes from participating students.

1) "The biggest benefit of this class is that we learn by actually doing, rather than reading about information or being lectured to." (Ruyter & Crask, 1994, p. 77)
2) "A great project, the best assignment I ever had. It was great practice and very useful." (Bell et al., 1997, p. 619)
3) "The project ties the entire semester together in a cohesive manner with a hands-on approach. I retain more of what I am taught when I can physically apply it. I found the experience to be rewarding and still, two years later, can recall certain aspects that are pertinent in my life." (Munoz & Huser, 2008, p. 220)

Implications for Marketing Education

Nearly 81% of our respondents agreed that all business majors should do at least one CFP in their business program. Therefore, our study is helpful for marketing educators who are interested in expanding curricular offerings that benefit their students. We recommend that all marketing majors participate in at least one CFP.

Working with a real client will improve the students' communication skills and teach them how to behave in a professional manner. Possessing soft skills will give your marketing graduates an edge in today's tight labor market. During a job interview, discussing how specific problems were handled in their CFP will make that student a memorable candidate and may improve the likelihood of a job offer.

FUTURE RESEARCH

Some comments from the respondents suggest that future research should focus on the perceptions of marketing faculty regarding *client-based* projects and not use the term "*client-financed*." One respondent stated, "I would have answered differently (more strongly) had the question been 'client-based projects.'

Finally, one professor suggested "The same questions should be asked about client projects, not just those financially supported."

For our Likert statements, we used the phrase "Client-financed projects are ***the best way*** to…", and a number of respondents indicated their responses were influenced by the use of "the best way." Future research should not use the term "best" when surveying marketing faculty regarding their perceptions of client-based, real-world projects.

Finally, Business Deans should be surveyed regarding their perceptions of the value of client-based projects. Business schools that are currently accredited or attempting to achieve AACSB International accreditation should be promoting active experiential-learning approaches by their faculty (Elam & Spotts, 2004). For example, when asked to agree or disagree with the statement, "My Dean wants our marketing faculty to do client-financed projects," nearly 40% of 192 checked "No Opinion." These results may imply that many Deans are not encouraging their marketing faculty to use client-financed projects or these Deans may not think a client-financed project should be an essential part of the marketing curriculum.

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Breaking from the Mass Mentality: Towards Strategically Enhancing Business Students' Ethics and Etiquette for Success in the Future Global Environment

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If business students are to distinguish themselves from the mass mentality in the current environment, in order to create a better future for themselves and others, they need to see a link between their own ethics and etiquette, and creating and sustaining successful organizations, despite threatening trends and events that shape the current environment. This paper focuses on the application of ethics, etiquette, and strategic management responsibilities, in order to assist business students' chances for success in facing a challenging environment.

INTRODUCTION

Today's business students are facing an increasingly negative business environment. Intuitively, it resembles a mass mentality in action: the minimizing of worthiness and respect of individuals in society, with and without their knowledge. For example, with the current unemployment rate being so high in the global workforce, business students just starting their careers are experiencing the fallout from the world financial crisis, creating a so called, "Lost generation" (Coy, 2011). It is commonly assumed that there will be a "scarring" of these potential employees, who will lose their motivation and be deprived of work experience. When they finally get a job, it is thought that they will be put into lower paying positions they do not want or like (Coy, 2010), despite their possession of unique talents, skills, and interests.

The Mass Mentality Environment

The current business environment reflects people's livelihoods and destinies becoming uncomfortably intertwined with the masses. For example, the news has been inundated with stories related to major business failures and scandals shattering multiple reputations in business.

In 2008, the world turned "upside down." The global economy came close to falling apart, and governments around the world made major interventions to save their financial institutions that were "too big to fail." A lot of wealth and jobs were lost, and thousands of organizations failed. Many of the systems and institutions that once worked well, became either stretched to their limits or increasingly obsolete in an expanding global environment. Leadership failure and the relentless focus on short-term results were said to be the key factors contributing to this devastation. (Merill-Sands, D. 2009).

Experts agree that changes in lending standards and policies that enabled many to get mortgages that they could not afford, led to the bottom falling out in the economy. It is also believed that exotic financial instruments that dispersed risk among many who didn't understand it, rating agencies failing to catch the

poor quality of a lot of highly rated debt, rampant deregulation, and the reduction of safety nets also led to the current predicament.

Still, disruptive government and business practices continued on, such as predatory lending practices (aarp.org, 2010), lying about car malfunctions and bragging about savings from limited recalls (Silicon Valley / San Jose Business Journal, 2010) , hiking the prices of brand name prescription medication in anticipation of health care reform legislation that can curb drug costs (Barry, 2010), engaging in unjustified outsourcing and offshoring practices (Hamm & Herbst, 2009; Hindery, 2005), and increasing CEO compensation and executive bonuses (Verkshin & Kopecki, 2010), etc…despite the global economy downturn and the unethical lessons that it provided. (aarp.org, 2010).

Crackdowns and reforms, such as financial regulation in the U.S. Congress and abroad, seem to be weak to non-existent, perhaps, caving into policy-maker conflicts and financial industry pressures (Vekshin & Kopecki, 2010). This is helping to create a critical mass climate of distrust, reflected recently in extreme political spectacles, involving taxpayers and public workers (Bennett, 2011).

Furthermore, insensitivity among the masses is concurrently developing, with an increasing dependence on technology and social media. For example, people are seemingly indistinguishable, as they become dissidents from Facebook and Twitter directives, with no rules or accountability standards (Greeley, 2011); increasing their self-centeredness, anonymity, and frivolity, using social networking programs to exploit and indirectly sell their friends to advertisers (Stone 2011; MacMillan and Sheridan, 2011); and focusing on people such as, Charlie Sheen and Lindsay Lohan, as role models and major network news (Pinsky, 2011).

Also, there does not seem to be any serious or widespread engagement on issues related to declining educational capacity and intellectual achievement in society (Herbert, 2010). Many people are seeking to evade responsibility or ignore societal problems, as practices such as, drug trafficking, fake drug marketing, and the development of online fidelity marketplaces, seem to be flourishing, inadvertently funding the economy of Mexico (*Bloomberg Businessweek*, 2011) and the early retirement of fake drug inventors (Blum, 2011) and adulterer website creators, for example (Kolhatkar, 2011). Consequently, conditions are ripe for a critical mass to evade ethics and etiquette in the business environment.

The Stressful Workplace

This threatening business environment has also created increased challenges to the workload and its pace, emphasizing, in many cases, a crisis-driven style of operation. Executives and managers are delivering to higher expectations for performance in shorter time periods with less resources, following confusing corporate directives and reacting more to demanding situations outside of their companies, in the best interests of their companies, rather than to the existing, internal companies' missions and strategies. This has created huge disconnects inside these organizations, impacting and reducing their potential (Martin, 2002). For example, Foxconn, not too long ago, had a wave of employee suicides, thanks to the company trying to rapidly meet society's high demand for high tech gadgets and toys, at the lowest costs possible. Now, it has its first public relations strategy, suicide nets around its buildings to catch potential jumpers, as well as other programs to reduce the suicide rate at the company (Balfour and Culpan, 2010).

Many companies are demanding fast thinking rather than deep thinking. They are also asking their employees to work on multiple and overlapping tasks, which is resulting in "even smart people underperforming." Organizations are forcing employees to do much more with much less. This is said to be inducing and exacerbating "Attention Deficit Trait" in the workplace, which is leading to such problems as: increasing clutter, cutting corners, making careless mistakes, higher employee illness and turnover, and lower productivity (Hallowell, E. M. 2005, 55-62). Furthermore, less formal work places (e.g., the use of flextime and electronic commuting) is taking attention away from developing interactive and harmonious workplaces (Post and Post, 2005).

With the problems associated with an increased workload, workplace incivility is prevalent. Employees who are the targets "are likely to experience stress, distraction, and negative emotions, as well as lower job satisfaction, and sometimes even reduced creativity." Ignoring or minimizing the causes of

workplace incivility can lead to lower job satisfaction and performance which increases business expenses (Sidel, S. 2009). Furthermore, as expenses grow, the workplace is demanding that workers take more control over their own destinies, since many companies cannot afford to be very concerned with their employee's careers.

Knowledge workers, living longer in an increasingly service-oriented economy, have to be responsible for their own direction, when to change their course, and how to keep engaged and productive, to achieve their greatest satisfaction and to make their greatest contributions (Drucker, 1999). Current trends impacting workers include; the lack of creation of new growth jobs, increased choices and risks in employment security, health care, training, career, and retirement; increased stresses between work and family life, mismatches between skills and business needs, the changing nature of careers; a reduction in workplace community and commitment; and revolutionary changes in the structures and processes of many large corporations" (O'Toole & Lawler, 2006).

Declining Emotional Well-Being

Gallup's tracking of the U.S. general public's daily mood throughout 2008 and 2009 has revealed that several wellbeing characteristics have been affected by the unstable and volatile economy: Increases in worry and stress, the amount of time that people spend socializing is down, and obesity is on the rise. However, the ups and downs have been less traumatic for people who are engaged in their work. (Robison, J. 2010)

Based on the previous insights about the current environment and workplace, if business students are to create a brighter future for themselves and others in tomorrow's global business environment, an emphasis on honing their social skills and actions, not just their technical skills, seems to be very important in their careers. "A technical education can make a person wealthy and famous, but it does not teach that person what is best to do with wealth and fame (Arnn, 2009)."

Deception traps exist that cause unethical behavior to occur, even for the most careful business people and companies. These include "time pressures," "money," "everybody does it," "we won't get caught," "we didn't hurt them that bad," and "self enhancement" (Hoyk & Hersey, 2008). With rising levels of stress found in college freshmen, thanks to increasing economic problems, students taking prescribed psychiatric medication, and personal pressures put on themselves to succeed-knowing that their generation is likely to be less successful than their parents (Lewin, 2011), a bleak future is guaranteed for business students if they do not have the opportunities to reflect on the damaging intricacies of the global business environment, and constantly work to enhance their own lives for future success in their own careers.

THE IMPORTANCE OF ETHICS AND ETIQUETTE IN A MASS MENTALITY ENVIRONMENT

Developing Ethics and Etiquette as an Individual

"Your soul is the sum of all of the choices you make. It is where your beliefs and values reside…it is at the center of our relationships to others and is at the center of the business enterprise" (Chappell, 1993). "What we value, how we feel about ourselves, how we behave toward others, what we want to achieve, and what we are attracted to are core aspects of self awareness" (Whetton & Cameron, 2011). If business students do not develop a sense of self awareness (ethics) and become responsible for their own actions (etiquette), they should realize that they will empower other people and circumstances, in the environment, to take over their lives by default.

Personal ethics enables people to know what holds them back and what attitude they need to move forward. Thinking about what personal motives support goal setting to achieve purpose and passion can enable people to achieve self satisfaction and peak performance. It is especially important to know the authentic self during challenging and difficult times. In a confusing business environment with globalization pressures, deception traps and surprises, it becomes especially important to have and

maintain good morale, which supports resilience from the herd mentality; and to avoid such attitudes as; self doubt, anxiety, victimization, and frustration, which lessens self ideal.

Self leadership comes from social cognitive theory which recognizes that we influence and are influenced by the world we live in. A self leader is able to learn and experience tasks/events through observation and imagination. Understanding self and others' perceptions is also important in understanding personal effectiveness or the use of etiquette in the environment. (Neck & Manz, 2010).

With self leadership, people are more likely to figure out where they fit in the workplace. Having good etiquette, based on having good self esteem and a positive attitude, is also what successful companies look for (Harrell, 2003). In fact, having the right employees with emotional intelligence and engagement in the workplace helps businesses to adapt to changes in the downward economy more easily and efficiently, so that they can sustain productivity (The Gallup Management Journal, 2010; Kirhara, 2010). Being able to interact with others, become persuasive, and have sensitivity, are just a few of the examples of timeless social traits that are admired in doing business, which impact the livelihoods of all stakeholders related to an organization.

Dissatisfied employees who do not consciously practice ethics and etiquette, appear incompetent, lower company productivity, increase stress and anxiety among the rest of the employees, and even damage the best companies' brand images and positions (Gallup.com, 2010). Interestingly, despite the vision and values a company holds, the real test is in the ethics and etiquette of its managers and employees (Davidson, 2002).

People can check their personal ethics by encountering information about themselves that is inconsistent with their self concept or when they encounter pressure to change their behavior. The more discrepant the information or serious the implications are for self concept, the more rigid, risk averse, and defensive they become, in order to maintain the self concept. If the information is accurate and requested, the feedback is more likely to be understood and accepted. This can lead to increased self knowledge and personal change (Whetton & Cameron, 2011).

Ethical Self Leadership

> *"Think about the kind of person that you want to do business with and then be that person" (Huntsman, 2009).*

It is thought that people are born with a moral sense. "Our conscience tells us what is right and wrong and we also have feelings of sympathy. These natural senses are supposed to ensure that human beings are able to live and work together in an orderly way (Smith, 2009). Abraham Lincoln said that "people are just as happy as they make up their minds to be." It is said that unhappiness and immorality comes from self-manufactured thinking and having habitual attitudes towards situations. This process relies on fear and worry and it dissipates motivation and energy. Yet, because it is thought that the individual can self cultivate his/her feelings, he/she has the power to create his/her own happiness, morality, and proactiveness through practicing positive thinking (Peale, 1956). Success and happiness is known to come from having such "universally-shared values" as skill, courage, integrity, decency, commitment, and generosity. Finding a greater purpose in life, besides accumulating wealth, is often the result. "Decent, honorable people finish (their lives) in grand style and with respect "(Huntsman, 2009).

Thinking happiness comes just from materialism and for the sake of business financial concerns overlooks the problem of having unlimited growth in a world of limited resources (consumerism). In order to lessen problems such as human greed and the need for power, serving humanity in sustainable and generative ways, must be incorporated into self leadership. Today, it has never been easier to make money or to ignore traditional ethical values in doing so (Huntsman, 2009). Ethics and etiquette need to move to the forefront in business, emphasizing that employees deserve a decent and respectful work environment because of "who they are." Business students need to be reminded that ethical and moral outcomes must become an "aspiration" and more valued in organizational life, with "the intent to advance the well-being of people (and themselves) before money." What goes around does come around. This can

be helped by finding an "authentic sense of ethics and social responsibility" inside the self. (Giacalone & Thompson, 2006).

Starting with a clear understanding of destination, as a frame of reference, can help business students to become more effective and avoid achieving success that comes at the expense of losing something deeply valuable to them (Covey, 1989). Having self efficacy (e.g., the degree to which a person believes that he/she is capable of successfully performing a behavior, accomplishing a task, or achieving a goal) can also increase the motivation to engage in ethical self leadership activities to succeed (Bandura, A. 1997; 2012). Using self reinforcement to motivate ethical self leadership, is especially necessary in today's business environment because others do not have the time to do this, especially with increasingly autonomous jobs in a global workplace (Bandura, A., 1978).

"The adherence to an ethical code is best defined as how one honors a bad situation," like the economic environment downturn. A bad situation allows the self to dig deep into the reservoirs of his/her very being, to rise to levels of confidence, strength and resolve that otherwise he/she didn't think were possessed. In the "winner take all" atmosphere of the current business environment, arrogant and desperate businesspeople who rationalized their bad behaviors over good sense, have never lasted very long and their falls have been devastating. (Huntsman, J. M. 2009) Furthermore, it is believed that if more people were to adhere to an ethical code in their attitudes and practice etiquette conscientiously, it would lead to a more stable versus hostile environment, in which to live and operate.

ENABLING A STRATEGIC APPROACH TO ETHICS AND ETIQUETTE IN A MASS MENTALITY ENVIRONMENT: LINKING PROFESSIONALISM WITH THE STRATEGIC MANAGEMENT PROCESS

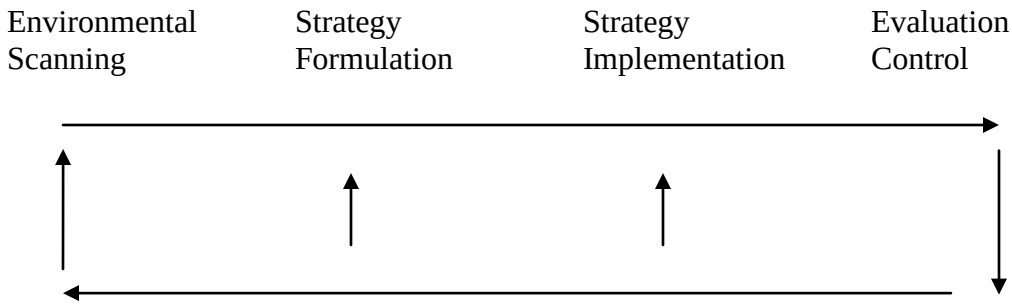
Developing a sense of ethical self leadership is not sufficient by itself. There is a sense of urgency to purposely and continuously manage it for a successful, long-term effect in the business environment. If business students can learn to understand how they shape their own ethics and to practice etiquette daily, they should be able to develop the ability to modify their thinking to better fit themselves into the future global workplace. (Stead & Stead, 2004).

Positive management education stresses the need and use of innovative, practice-based teaching and learning models that provide trust and hope for students, yet are aligned with modern environment and workplace changes (Karakas, 2011). The strategic management process is one such model that can help students to not only break away from the herd mentality, but learn to continuously work on their personal ethics and etiquette, in order to develop a better understanding of the impact and consequences on themselves and others in the environment.

The strategic management process, used by successful learning organizations to achieve and sustain a competitive edge, is an idea that can enable business students to avoid complacency, through practicing self examination and experimentation in a confusing business environment (Wheelen & Hunger, 2010). This is a systematic and dynamic process which is composed of the following steps, not necessarily taken as a step-by-step approach: (1) Environmental scanning, (2) Strategy formulation, (3) Strategy Implementation, and (4) Evaluation and Control.

When combined with ethics and moral scrutiny, the process highlights what one "should do" strategically, not just what one can do to enhance future personal and professional success (Thompson, Strickland & Gamble, 2010). In the following section, each step will be referred to in a step-by-step fashion below, in order to enhance understanding of its connection with ethical self leadership ideas.

FIGURE 1
THE BASIC ELEMENTS OF THE STRATEGIC MANAGEMENT PROCESS



Environmental Scanning: Encouraging Environmental Discretion for Personal and Professional Success

Becoming aware of experiences, learning from these experiences, and the perceptions others have, can influence a person's feelings of self worth and how he/she spends his/her time. Recognizing that these influences may or may not be in his/her best interests enables a business student to determine what is important to consider or not consider in shaping the direction that he/she wants to pursue and where he/she really fits. It is at this stage that one also considers the opportunities and threats from the external environment that are facing him/her and matches them to his/her authentic strengths and weaknesses, in order to get a realistic assessment of his/her standing in the global business environment.

Strategy Formulation: Choosing Ethical Experiences and What to Accomplish Based on Self Efficacy

Acknowledging that the attitude and behavioral choices that are made by an individual, will lead to getting a grip over certain mental and physical tendencies that tells a business student what he/she will/will not experience and what he/she will/will not accomplish. Self efficacy comes into play here, as one considers how the external and internal environments offer a conscientious assessment of what he/she should and should not be doing to achieve a sense of purpose and self satisfaction. Contingency planning can also be helpful in reducing the stress associated with sticking to a single direction (Rivers, 2008).

Strategy Implementation: Engaging in Etiquette and Using Self Rewards

People always act on their personal choices, despite facing challenges, having to make sacrifices, take on unattractive tasks, etc…as long as they achieve their desires. Business students who recognize that they are always self-starters, no matter what they want, are able to consider choices that are beneficial to their ethics and to others in the long term. They are also able to control their etiquette in situations and to use self- rewards to sustain these ethical choices.

Evaluation and Control: Reflecting on Ethics and Etiquette Practices That Are Successful and Getting Rid of Ethics and Etiquette Practices That Are Unsuccessful

At this point, sensitive business students who consider the consequences of their choices and the impacts of their choices, on their ethical values and others, are able to improve and sustain the most productive attitudes and behaviors, and to work on the elimination of the least productive attitudes and behaviors, since this element acts as a learning device to help adjust the ideas in the previous elements. In fact, business students can initially start their self assessment at this stage, by examining their existing self leadership tendencies and their consequences, before engaging in environmental scanning stage. The astuteness of a business student can improve, if he/she gets into the habit of using the strategic

management process as a systematic and dynamic approach to facing the global workplace and business environment.

APPLYING A STRATEGIC APPROACH TO ETHICS AND ETIQUETTE IN THE MASS MENTALITY ENVIRONMENT: A SHARED RESPONSIBILITY

The impetus to attempt and sustain a strategic self leadership approach to thinking about a business student's role in a changing business environment must be encouraged through education and its reinforcement in the classroom. Using a strategic management perspective, a business student must first be educated about this idea and then become actively encouraged and supported to engage in it through educators' actions and practitioners' examples in the business world. The following ideas are offered as ways in which to make this process happen.

Responsible Business Students

Business students can be exposed to ethical self leadership concepts and learn how to strategically managing themselves in the classroom. They can conscientiously commit to becoming their own self leaders, in order to increase resilience in the business environment, and to avoid having future attitudes such as; self doubt, apathy, passive resistance, and pessimism in the workplace. This attitude requires building, into daily life, certain strategies that reinforce strategically managing the self. For example, persuading business students to analyze and know their own competencies, understand and work on areas of self-improvement, and actively adding value to other people's lives, every day, is a good place to start. Self efficacy can also be improved by having business students set personal goals and consciously practice etiquette to achieve these goals, modeling their actions after successful friends, instructors, mentors, or business leaders.

Deliberately engaging business students' emotions in the strategic management process and making them gain practice in the fields in which they are planning to go into, can help determine business students' fit in certain positions versus others (Bandura, 1973). These actions can lead to business students having a better chance of experiencing self satisfaction and higher performance outside of the classroom. In order to enhance self leadership performance, business students can learn to manage themselves more carefully by observing themselves and giving themselves self rewards to continue the ethical ideas and etiquette mannerisms that seem to maximize their personal and professional success for themselves and others (Neck & Manz, 2010).

TABLE 1
BUSINESS STUDENT RESPONSIBILITIES AND THE STRATEGIC MANAGEMENT PROCESS

	BUSINESS STUDENT RESPONSIBILITY
STRATEGIC MANAGEMENT	
Environmental Scanning	Use environmental discretion
Strategy Formulation	Choose ethical experiences and accomplishments
Strategy Implementation	Use etiquette and self-rewards
Evaluation and Control	Reflect on ethics and etiquette

Responsible Business Educators

The changing nature of the business environment requires improved approaches in the business classroom. It has been recommended by experts that business degree programs become "more flexible, integrated, and experiential," mandatorily exposing students to actual business practices, earlier in the

learning process than ever before. It is important that business students are taught and rewarded to be self-sufficient, creative, curious, and courageous in facing the business environment (Bisoux, 2009). The classroom culture should support such values as: good hygiene, planning, commitment, standards, honesty, graciousness, empathy, and respect. The classroom instructor can support these values by developing a code of conduct in class, and being a role model that practices ethics and reinforces etiquette through such actions as: dressing professionally, planning sessions ahead of time, using rubrics and performance measures, relaying consistent messages, and treating students fairly.

Developing and implementing student-centered curricula that values, not just tolerates, ethical and etiquette in business is recommended. A global, humanistic versus organization-centered approach, that places ethics and etiquette at the core and understands the truth about the costs of thinking this way (making money versus whistleblowing) is also beneficial. Incorporating exposure through international study and experiences with both business and non-business instructors increases the business students' exposure to a global perspective. Infusing every aspect of coursework with ethics and etiquette practice, helps business students to be able to realize the implications of the ethical and unethical decisions they can make.

Reading books and articles about ethical problems and dilemmas, having role playing and simulation opportunities for decision making practice (Blood, 2006), and listening to personal testimonies about using etiquette in sticky situations, can touch students' emotions. New business leader role models must be found and other role models outside of the business world can also serve as examples of those practicing etiquette in their environments.

Offering internship opportunities that business students perceive as having significant to real world problem solving and social relations, and having supportive supervisors who give valuable feedback throughout the process is paramount to success (D'Abate, Youndt, and Wenzel, 2009). Business educators can also incorporate work experiences into their courses, visit students at work, and ask students to relate their ethics and etiquette experiences to course material and classmates (Marrs, 2009). Business and non-business representatives can be invited as guest speakers, panel discussants, and reviewers of business curricula.

Instead of portraying the future as doom and gloom, business educators need to provide an inspirational message of the future with business students seeing themselves creating it, by fulfilling their higher order versus materialistic goals for physical and social wellbeing. Concern for the community, quality of life, and resolving social problems must be emphasized. Balancing financial success and power with an important agenda for well-being becomes the message for making business decisions with good judgment. More discussion about ecologically sustainable organizations and making financial decisions that support them can also help (Stead & Stead, 2004). Developing skill sets, becoming more comfortable with the social intricacies of business, and advancing the well-being of mankind must become the major focus of the curricula (Marrs, 2009; Giacalone & Thompson, 2006).

Encouraging business students to initiate and take responsibility for their own education and futures (e.g., service learning through consulting projects, that revolves around how not what is done; starting their own consulting organizations; starting their own businesses, etc…), while providing solid structure and support along the way, can help to limit the passive regurgitation of classroom information, and increase business students' feelings of purpose and relevance in the business environment. (Robinson, Sherwood, DePaolo, 2010; Fairfield, 2010; Coy, 2010) Finally, educators, themselves, need to be mindful that they, too, need to continuously update their professional development in the current business environment.

Sabbaticals and other professional development activities, like participation in local business practitioner associations, enable business educators to incorporate practical knowledge regarding ethics and proper etiquette in business situations, into their lectures, assignments, and class discussions. (Blood, 2006). Opportunities, such as these, can go a long way in helping business students to appreciate the knowledge of how to have a sense of personal control and purpose in a herd mentality business environment.

TABLE 2
BUSINESS EDUCATOR RESPONSIBILITIES AND THE STRATEGIC MANAGEMENT PROCESS

	BUSINESS EDUCATOR RESPONSIBILITY
STRATEGIC MANAGEMENT	
Environmental Scanning	Exposure to business practices
Strategy Formulation	Ethics and etiquette business curricula
Strategy Implementation	Global business and humanistic experiences
Evaluation and Control	Balance financial success and well-being

Responsible Business Practitioners

The full costs of ethical and etiquette failures are not seen in annual reports, balance sheets, or income statements but they eventually do destroy companies and hurt their stakeholders (Thomas, Schermerhorn, Dienhart et al., 2004). Mindful company leaders know this. For example, recently Johnson & Johnson had a series of multiple medical product recalls that hurt its once trusted name. These product recalls have been blamed on such ideas as; placing importance on marketing versus science, a lack of oversight with organizational growth and decentralization, a ruthless pursuit of savings to increase profit, and skipping FDA approvals (Voreacos, 2011). Showcasing positive global business examples, on the other hand, can serve as powerful examples of realism and optimism in action for business students, despite other negative situations occurring (Charan, 2009).

Given the complexity of today's business environment, *companies that capitalize on learning about the environment and operating on solid information*, are the readiest to capitalize on the confusion that surrounds them and the resources that they need to successfully sustain their core competencies (Charan, 2008).

Kaiser Permanente tries to improve health care practice by hiring consultants to develop better, more efficient approaches to certain high value activities, creating core competencies in service-focused, versus research driven innovation. They practice human-centered design, using people's lives, thoughts, and feelings to understand problems that new products and services should address (McCreary, 2010).

At 1-800-GOT-JUNK, everyone in the company goes through a multi-step application process to make sure that everyone who is hired has a personality fit with the company and is not just a body (Ponder, 2009).

Companies that never lose sight of their customers through active communication and interaction can earn their trust. Urban Outfitters takes the time to study local tastes in clothing and uses a grow-slow strategy to succeed. It is using a "design-in-Europe" strategy to open up stores across Europe. Eventually, it plans to study and use a "design-in Asia" strategy before opening stores there (Arndt, 2010).

Groupon's Groupon Now is a new service that intends to eliminate perishable inventory of small business customers, and increase their business during their slow hours, in order to help keep them going. It will provide real time deals on its website and smart phone app. to get people to try different products and services (Stone and MacMillan, 2011).

Companies that work hard to keep their customers' stewardship are also good motivators for business students. For example, Google is also said to have a personal approach to making sales, presenting its search and advertising tools in a "usable way" to people and companies (MacMillian, 2010).

ING, the largest online direct bank and thrift in the U.S., prides itself on being an "anti-bank." It offers convenient banking services on-line and in café-settings, focusing on encouraging customers to save money, become more self reliant, and be more financially conservative. Offering simple products in a retail environment is seen as saving customers time and money, allowing them to see the value that comes from serving customers and staying connected with them (Talevich, 2010).

Companies that increase their environmental and social performance, besides economic performance, take actions to enhance the standards, measurement criteria, and reporting systems that are used to evaluated business performance. (Stead & Stead, 2004). For instance, PepsiCo's CEO is leading the company to redefine its strategic goals as "Performance with Purpose," integrating goals of human and environmental stability into its business strategies. Changing its portfolio to provide healthier food, in order to combat the obesity epidemic and setting high targets for reducing its consumption of resources in food processing, is an example (Merrill-Sands, 2009).

Timberland tries to do a variety of things to minimize its use of resources, participates in cross-brand collaborations, and interacts with stakeholders on a regular bases to share questions and criticisms about their impact on the environment. For example, despite guerrilla tactics being used on the company by environmental and activist groups, such as Greenpeace, Timberland has learned to work with these groups, watch personal agendas, and continue to learn how to stay committed to its ethics and etiquette in making the company a more responsible and sustainable organization (Swartz, 2010).

TABLE 3
BUSINESS PRACTITIONER RESPONSIBILITIES AND THE STRATEGIC MANAGEMENT PROCESS

	BUSINESS PRACTITIONER RESPONSIBILITY
STRATEGIC MANAGEMENT	
Environmental Scanning	Environment learning and use of solid information
Strategy Formulation	Never lose sight of customers and their trust
Strategy Implementation	Work hard to keep customers' stewardship
Evaluation and Control	Environmental, social, and economic performance

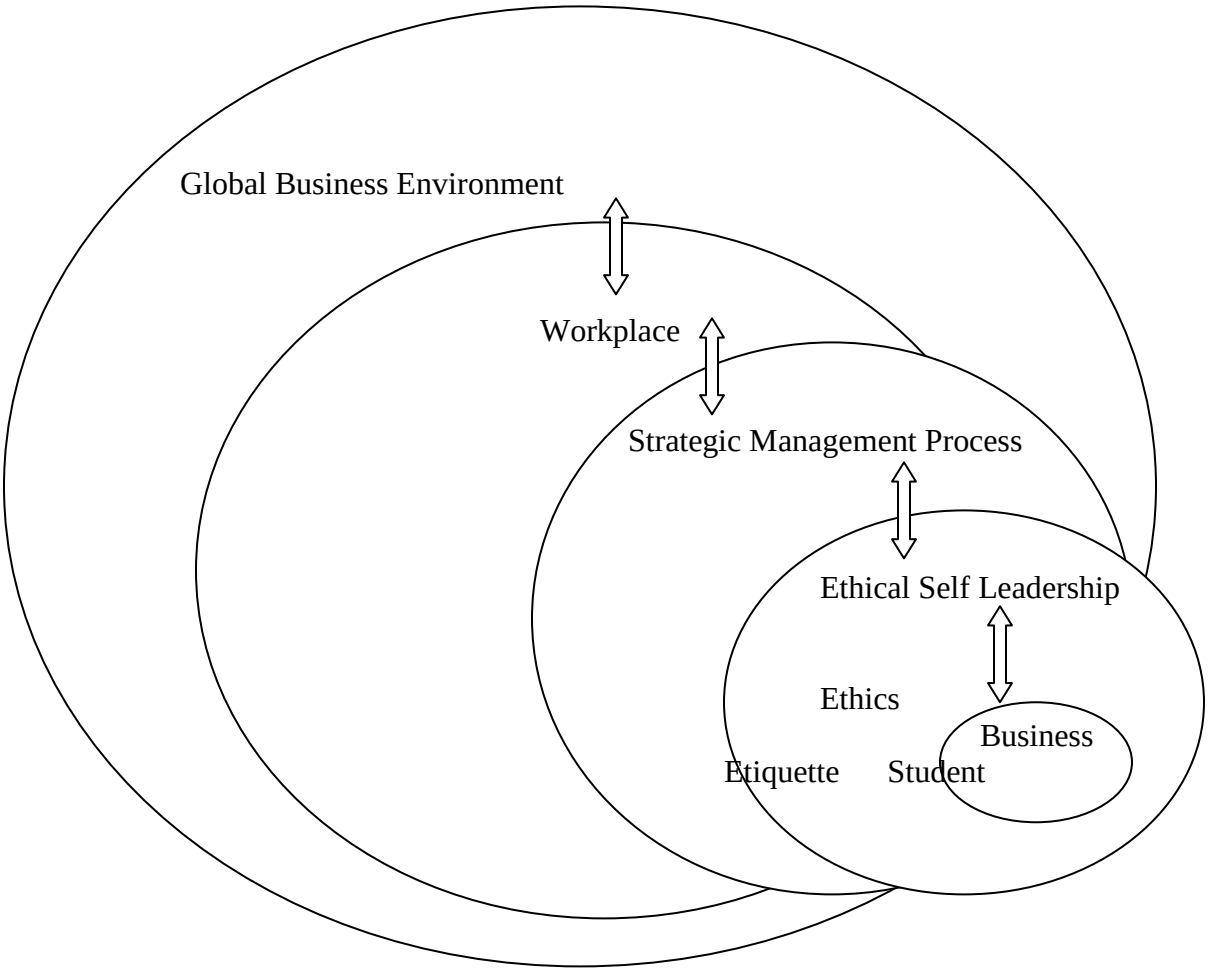
CONCLUSION

Confident business students question current business practices that are seen as a herd mentality in operation, and work hard to achieve their own internal set of productive goals (Canfield & Switzer, 2005), despite the odds, in the global business environment. They are also able to sustain respectability from applying ethics, and be respected for practicing etiquette, in daily life.

Although business students will experience uncomfortable interdependence with their future workplaces and business environment, they must be able to recognize, with the help of business educators' actions and practitioners' examples, that they can still become independent thinkers and take responsibility for their own actions, through developing ethical self leadership skills and following a strategic management approach.

Pursuing a satisfying life and making positive contributions to the global business environment is not impossible. Ultimately, a critical mass of business students realizing the benefits of these ideas by practicing daily ethics and etiquette, could dramatically alter the future global business environment.

FIGURE 2
A HOLISTIC VIEW OF THE INTERDEPENDENCIES THAT EXIST BETWEEN STRATEGICALLY ENHANCING STUDENTS' ETHICS AND ETIQUETTE; THE WORKPLACE; AND THE ENVIRONMENT



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College Students' Attitudes Toward Labor Unions: Implications for Employers

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This study replicates and extends the research on pre-employment predictors of attitudes toward labor unions, which subsequently influence willingness to join a union. The impact of a number of factors including family socialization, parental union attitude, work beliefs (Marxist and humanistic), and college major (field of study) is assessed on college students' attitudes toward labor unions. Selected demographic and attitudinal data were collected from a sample of 402 students representing several majors at a midsized Midwestern public university. The findings of the study strongly support the belief that family socialization and personal work beliefs are the most important predictors of college students' attitudes toward labor unions. Unlike prior studies, the impact of race on college students' attitudes toward labor unions was also assessed. Implications of these findings for employers and future research directions are also discussed.

INTRODUCTION

Recent trends show that the rate of unionization has been falling in most advanced countries such as Australia Britain, France, Germany, Japan, Netherlands, New Zealand, and the Unites States. In the United States, union membership rate declined from 30 percent in 1970 to 11.9 in 2011 (Bureau of Labor Statistics, 2012). This dramatic and continuous decline in union membership has been characterized as a crisis for the labor movement and a threat to its ability to serve as an economic and political voice for American workers (Rose & Chaison, 1996: 78). In 2011, the union membership rate for public sector workers (37%) was substantially higher than for private industry workers (6.9%) (Bureau of Labor Statistics, 2012), which indicates that public sector unions have not witnessed the same decline as the private sector.

The question is why union membership has declined? Major factors contributing to the decline in union membership include: the global context of industry, the practice of outsourcing jobs to non-union workers and to other countries, the decline in the manufacturing industry, the rise of undocumented or illegal workers, the introduction of progressive management approaches, and growing political and ideological opposition to unions (e.g., Bronfenbrenner & Juravich, 1998; Carrell & Heavrin, 2013; Gallagher & Fiorito, 2005; Gould, 2008; Henchek, 2006; Rosenfeld, 2006; Rosenberg & Rosenberg, 2006).

As the private-sector union membership rate declines, there is increasing interest in identifying the factors that shape the union attitudes and membership decisions of young adult workers, in general, and college students, in particular. This study intends to assess the extent to which parent's background (parental union attitudes and parent's participation in union activities), personal work beliefs (Marxist and humanistic), college major (field of study), and race are correlated with college students' attitudes toward labor unions using a public university in the Midwestern United States as a case study.

LITERATURE REVIEW

Union attitude has received considerable attention across many disciplines including management (e.g., Deshpande & Fiorito, 1989; Gallagher & Fiorito, 2005), psychology (e.g., Barling, Kelloway, & Bremermann, 1991; Kelloway, Barling, & Agar, 1996; Pesek, Raehsler, & Balough, 2006), and industrial relations (e.g., Haberfeld, 1995; Willoughby & Barclay, 1986). Considerable research has been conducted to determine why workers join labor unions or vote to certify unions (e.g., Brett, 1980; Gallagher, 1999; Haberfeld, 1995; Hester & Fuller, 1999; Kramer, 2008). Research addressing reasons for union formation suggests that workers unionize because of dissatisfaction with job and employment conditions, the instrumentality of unions in improving conditions, and the promotion of social advances for all workers (e.g., Brett, 1980; Gallagher & Fiorito, 2005; McHugh, 2007). Most of the studies that focus on individual-level predictors have shown relationships between willingness to join a union and workers' demographics, job attitudes, and union attitudes (e.g., Deshpande & Fiorito, 1989). The above studies demonstrate that employees' voting decisions were consistently predicted by union attitudes. As a result, union attitudes have received much interest as a predictor of union voting intention or other union related behaviors (e.g., Barling et al., 1991; Davy & Shipper, 1993; Gallagher, 1999; Haberfeld, 1995; Hester & Fuller, 1999).

In most of the studies, correlations between measures of pro-union attitudes and willingness to join have been consistently positive in samples of workers who vary by job type (e.g., Deshpande, 1992; LaHuis & Mellor, 2001; Premack & Hunter, 1988). Unfortunately, little is known about how perceptions of union instrumentality develop because research examining union voting intentions and voting behavior has used union instrumentality as an exogenous variable (Gordon, Barling, & Tetrick, 1995: 354). Given the central role attributed to individual attitudes towards labor unions, researchers recently investigated the *origin* of union attitudes.

Family Socialization and Union Attitudes

One of the factors that affect students' union attitudes is family socialization. Family socialization research examines the extent to which the behaviors and attitudes of parents influence children's attitudes and behaviors. Many researchers argue that children's attitudes about unions are influenced by their parent's union membership status as well as perceptions of parent's union supportive behaviors and attitudes (e.g., Kelloway & Watts, 1994; Kelloway et al., 1996). Bandura's (1977) theory of *social learning* argues that as children see their parents becoming more involved in union activities (e.g., attending meetings, holding office in a union, participating in a strike and discussing union related issues), they form their own attitudes toward labor organizations, which subsequently affects their willingness to join a union. Recently, studies suggest that family socialization may play a significant role in the development of perceptions of union instrumentality (Barling et al., 1991; Kelloway et al., 1996; LaHuis & Mellor, 2001; Pesek et al., 2006). Barling et al. (1991) model based on an examination of

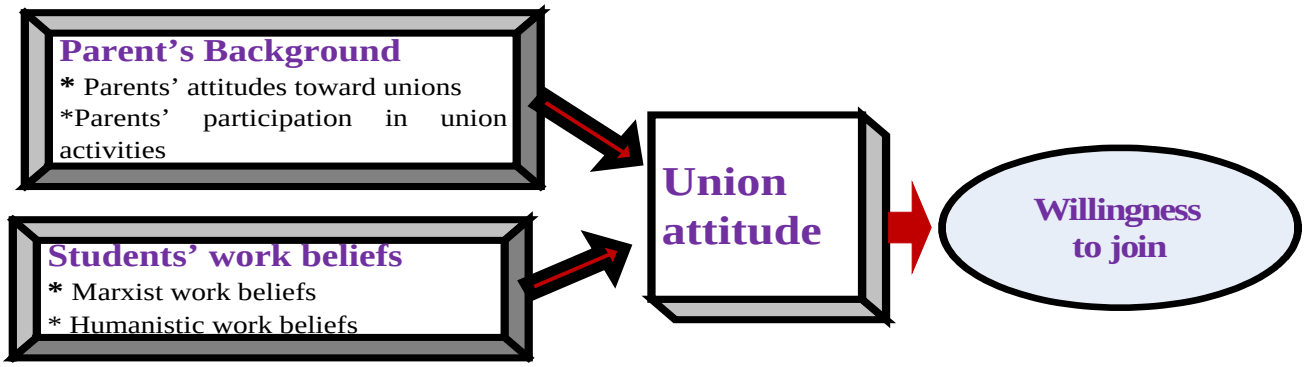
student data suggests that attitudes toward unions develop through family socialization processes. Two predictors of general attitudes towards unions are examined: perceptions of parents' general union attitudes and perceptions of parents' participation in union activities. The effect of perceptions of parents' union participation on an individual's general union attitude is mediated by the individual's perception of his or her parents' attitudes toward unions (LaHuis & Mellor, 2001).

Kelloway and Watts (1994) extended Barling et al.'s (1991) model using data from both parents and students (87 student-parent pairs) and concluded that college students' perceptions of parental union participation and attitudes were strongly related to parental reports of participation and attitudes. Consistent with Barling et al.'s (1991) conclusions, Kelloway and Watts (1994) contended that students' attitudes toward unions are shaped by their parents' attitudes toward labor unions and participation in union activities. Hester and Fuller's (1999) study reveals that family socialization (i.e., a child's perception of their parents' participation in union activities and their attitudes about unions in general) is positively related to the development of general union attitudes. The results suggest that union members who participate in union-related activities and who exhibit positive feelings toward unions are likely to have children who have positive attitudes about unions. These results support the role of family socialization in the unionization process and offer support for an analysis of student attitudes. Attitudes toward labor unions fulfill an important role in the unionization process as predictors of union related issues. Based on the above arguments, we hypothesize the following:

Hypothesis 1a: College students' perceptions of their parents' union attitudes will be positively correlated with their attitudes toward unions.
Hypothesis 1b: Parents' participation in union activities will be positively correlated with students' attitudes toward unions.
Hypothesis 1c: Students' union attitudes will be positively correlated with their willingness to join a union.

In our study, we adopted Barling et al.'s (1991) model of union attitudes as predictors of students' willingness to join a union. The model assumes that the more the students have pro-union attitudes and less antiunion attitudes, the more willing they would be to join a union or have the intention to join a union. This study assumes that pro-union attitudes would be positively related to willingness to join and antiunion attitudes would be negatively related to willingness to join. College students are expected to have little direct or personal experience with unions. Due to limited work experience, student's work beliefs and family socialization are less contaminated by work experiences and dissatisfaction (Barling et al., 1991: 728). We reasoned that student's willingness to join unions would be influenced by their attitudes (positive or negative) toward unions, which in turn are affected by parents' attitudes toward unions and their own work beliefs.

FIGURE 1
FACTORS AFFECTING STUDENTS' UNION ATTITUDES



Work Beliefs and Union Attitudes

Although family socialization (i.e., parental union attitudes and experiences) significantly affects college students' attitudes toward unions, it could also be argued that individuals' (e.g., students' own) *work beliefs* could also be significant predictors of college students' union attitudes (e.g., Barling et al., 1991; Pesek et al., 2006). Studies on students' union attitudes as predictors of willingness to join unions are consistent with family socialization models of Bandura (1977). Willingness to join is influenced by parents' attitude toward unions. Because college students are expected to have little direct (personal) experience with unions, their attitudes toward unions are mainly influenced by what they hear (see) from their parents. However, it could be argued that in addition to the effect of family socialization, college students hold their own personal and work-related beliefs that may predict union attitudes and willingness to join. This is because college students' attitudes or work-related beliefs are also affected by their friends, media reports, observation, and college experiences. Those work-related beliefs are likely to affect students' attitude toward unions (e.g., Barling et al., 1991; Buchholz, 1978; Kelloway et al., 1996; Pesek et al., 2006).

Buchholz (1978) argues that work-related beliefs could influence attitudes toward labor unions because these beliefs clarify and place limits on people's behavior. Two important work-related beliefs that may influence attitudes toward labor unions are Marxist and humanistic beliefs. According to Buchholz (1978), the Marxist work beliefs stress that workers should have a greater control over the workplace as a means of avoiding exploitation and alienation, while humanist beliefs stress the importance of individual growth and development. According to humanist beliefs, the experiences of individuals within the work environment are more important than the output achieved; work must have meaning and be fulfilling. Several studies show strong correlations between Marxist and humanistic work beliefs and union attitudes (e.g., Barling et al., 1991; Buchholz, 1978; Houghton, 2000; Kelloway & Newton, 1996; Kelloway & Watts, 1994; Pesek et al., 2006). We expect that individuals who exhibit Marxist work-related beliefs will demonstrate pro-union attitudes, which in turn may lead to willingness to join a union. The desire for meaningful work will lead to similar attitudes according to the humanistic view. Thus, the following hypotheses are proposed:

> *Hypothesis 2a: College students' Marxist work beliefs will be positively correlated with their attitudes toward unions.*
> *Hypothesis 2b: College students' humanistic work beliefs will be positively correlated with their attitudes toward unions.*

A recent study by Pesek et al. (2006) indicated that non-business majors were found to have more positive attitudes toward unions than business majors did. This is because "students in business majors typically are instructed from the managerial perspective" (Pesek et al., 2006: 1574). In light of the above research, we hypothesize that:

> *Hypothesis 3a: College students' majors will be correlated with their attitudes toward unions.*

Changing workforce demographics may also influence union attitudes. According to the U.S. Census Bureau (2012), among major race and ethnicity groups, black workers were more likely to be union members (13.5 percent) than workers who were white (11.6 percent), Asian (10.1 percent), or Hispanic (9.7 percent). Black men had the highest union membership rate (14.6 percent), while Asian men had the lowest rate (9.1 percent). Moreover, unions tend to benefit more minority (African American, Asian American, and Hispanics) and female workers. That is, Blacks and Hispanic unionized workers have a higher wage premium than do whites (Carrell & Heavrin, 2013; EPI, 2007). This evidence suggests that race may affect perceptions of union attitudes. In light of the above research, we hypothesize that:

> *Hypothesis 4: College student's race will be correlated with their union attitudes.*

Previous studies have ignored critical methodological issues that are relevant to the measurement of union attitudes. In some studies, samples were not representative of the general population of university students (e.g., Kelloway & Watts, 1994; Hester & Fuller, 1999; LaHuis & Mellor, 2001; Willoughby & Barclay, 1986), and in other studies, a relatively small and homogenous survey (Barling et al., 1991; Kelloway & Watts, 1994; Willoughby & Barclay, 1986) was used. A recent study by Pesek et al. (2006) tries to correct the problem of small and homogenous survey with a sample of 644 college students in a western Pennsylvania University. While the larger sample size provides a stronger statistical analysis than in previous research, the sample was not entirely random. The relative homogeneity of the sample used suggests a high degree of non-randomness in the data-collection process that might bias the test statistics adversely (Green, Salkind, & Akey, 2000).

RESEARCH DESIGN METHODOLOGY

Measures

The questionnaire that was used to collect the data consisted of thirty-one union related items. *College students' attitudes toward unions* were assessed using twelve items taken from Deshpande and Fiorito (1989) and LaHuis and Mellor (2001) [e.g., unions are an important positive force in our society]. *Parents' attitudes toward unions* were assessed using four items taken from Brett (1980) [e.g., unions are not obstacles to making companies competitive]. *Marxist work beliefs* and *Humanistic work beliefs* were assessed with four items each taken from Buchholz (1978) [e.g., the free enterprise system mainly benefits the rich and powerful]. *Parents' participation in union activities* was assessed with four items taken from Barling et al. (1991) [e.g., has one of your parents held office in a union?]. Finally, *willingness to join a union* was assessed with three items taken from Wagar and Rahman (1997) [e.g., I would join unionized organization where workers bargain collectively].

Students were asked to indicate the extent to which they agreed with 27 union related items; the order of items was random. Responses were based on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). Items that were phrased as negative are reverse coded in the analysis. In assessing the four items related to parents' participation in union activities, the respondents rated themselves on a 3-point scale (yes, uncertain, and no, scored 2, 1, and 0 respectively). As per the suggestion of Kelloway et al., (1996), these four items were later coded "0" (no, uncertain) or "1" (yes). In addition, each respondent was asked to provide selected background information, including college standing, major, gender, age, race, and the student's union membership status. Table 2 also provides a brief description of the variables included in the model.

Subjects and Procedure

We administered surveys to college students attending a public university in Minnesota. In this study, we employed a *multi-stage sampling procedure.* First, five college majors were selected – business, nursing, education, computer science, and communication studies. Next, 100 respondents from each major were randomly selected. In order to create a representative sample, the respondents were equally drawn from five majors. Out of the 500 (5x100) questionnaires, we received 402 usable responses for a response rate of 80.4 percent. We conducted the survey online using Zoomerang and provided incentives that encouraged respondents to take part in the survey.

Of the 402 respondents, 184 (45.8%) were male and 218 (54.2%) were female. The business and computer science subgroups were the only gender-balanced groups in the sample. The other groups were female-dominated. Nursing and education are traditionally female dominated occupations (Willoughby and Barclay 1986, 227). Female students outnumber male students in most majors; about 80 percent of the respondents were in the 18 to 25 year old age group. 21.6 percent of the respondents were from business 20.8 percent from education, 17.6 percent from nursing, 22.1 percent from computer science, and 17.6 percent from communication studies. In terms of college standing, 22.8 percent of the respondents were freshmen, 29.5 percent were sophomores, 27.0 percent were juniors, and 20.3 percent were seniors (see Table 1).

Statistical Analysis

In conducting this study, we conducted a number of statistical analyses such as descriptive statistics, Cronbach's Alphas, correlation matrix, regression analysis, and one way ANOVA tests.

TABLE 1
SELECTED PROFILE OF RESPONDENTS

Variables		**N**	**%**
Major	Business	87	21.6
	Education	84	20.8
	Communication studies	71	17.6
	Nursing	71	17.6
	Computer science	89	22.1
College Standing	Freshman	92	22.8
	Sophomore	119	29.5
	Junior	109	27.0
	Senior	82	20.3
Gender	M	184	45.8
	F	218	54.2
Age	Below 18	8	2.0
	18-25	322	79.9
	26-30	64	15.9
	Above 31	8	2.0
Race	Caucasian	344	85.4
	African American	17	4.2
	Spanish	19	4.7
	Asian American	22	5.5

FINDINGS

Table 2 displays the descriptions of the five composite variables, reliability coefficients (alphas), means, and standard deviations. Table 2 also provides the results of the calculations of the alpha coefficients, which were used to check the reliability of the variables. All alphas range from .73 to .87; this can be considered satisfactory (Nunnally, 1979). According to the analysis in Table 2, the overwhelming majority of the union related composite variables were rated somewhat in the middle (mean values ranging between 2.72 and 3.05 on a 5 point scale), with a s.d. of .72 or lower.

TABLE 2
DESCRIPTIVE STATISTICS AND CRONBACH'S ALPHAS

Composite Variables	High value means	Items (No.)	Alpha	Mean*	s.d.
Students' attitudes toward unions	Strongly agree that unions play important role on individual, organizational, and societal objectives.	12	(.87)	2.86	.31
Parents' attitudes toward unions	Strongly agree that my parents have positive attitudes toward unions.	4	(.75)	3.05	.48
Parents' participation in union activities	Has one of your parents participated in union activities?	4	(.81)	.27[a]	.72
Marxist work beliefs	Strongly agree that workers should have a greater control over the workplace as a means of avoiding exploitation and alienation.	4	(.71)	2.72	.67
Humanistic work beliefs	Strongly agree that individual growth and development as more important than productivity.	4	(.73)	3.02	.52
Willingness to join a union	Strongly agree that I am willing to join a union.	3	(.75)	2.96	.58

NB: *1 refers to 'Strongly disagree', 2 to 'Disagree', 3 to 'Indifferent', 4 to 'Agree' and 5 to 'Strongly agree'; [a]0 refers to "No", 1 to "Yes". N=402.

Table 3 presents the correlations between the variables included in the analysis. Although there are relationships between the variables included in the analysis, the extent of the relationship varies (Table 3). Table 3 demonstrates that students' attitudes toward unions was significantly correlated with parental union attitudes, parent's participation in union activities, willingness to join, race, and both types of work beliefs, but not with major, gender, and age. Student's willingness to join was significantly correlated with parent's attitude toward unions and parent's participation and both types of work beliefs, but not with major, gender, age or race. Race was found to be significantly correlated with parental union attitudes, but not with individual work beliefs.

TABLE 3
CORRELATION MATRIX

N	Variables	1	2	3	4	5	6	7	8	9	10
1	Major										
2	Gender	.03									
3	Age	-.04	-.04								
4	Race	-.02	-.05	.03							
5	Students attitude toward unions	.06	-.02	.05	.12**						
6	Parents' attitudes toward unions	.06	.05	.01	.11*	.67**					
7	Parents' part in union activities	.06	.06	.01	.25**	.47**	.54**				
8	Marxist work beliefs	.07	-.01	.07	-.06	.34**	.30**	.18**			
9	Humanistic work beliefs	.08	.04	.012	.08	.56**	.54**	.45**	.52**		
10	Willingness to join a union	.04	.01	-.01	.02	.63**	.44**	.34**	.27**	.63**	

** Correlation is significant at the 0.01 level; *correlation is significant at the 0.05 level (2-tailed); N=402.

In Table 4, we performed a regression analysis. The findings support three important points. First, as posited, the four composite variables were found to affect students' attitudes toward unions positively. Second, three out of the four composite variables show a statistically positive impact in explaining the change in students attitudes toward unions and are greater than or equal to ß= .10. Third, the four factors altogether explain approximately 51 percent of the variance in students' attitudes toward unions. These findings are consistent with the predicted relationships and provide support to the proposed model. This suggests that the more positive students' perceptions of their parents' union attitudes, the more aware they are that their parents have participated in union activities, and the more they have humanistic work beliefs, the more likely they are to have pro union attitudes, which subsequently affects their willingness to join a union. While Marxist work beliefs were in the hypothesized direction, it was not significant.

When we added the demographic variables of major, gender, race, and age to the model, the R^2 change was not statistically significant. (See Table 4, model 2). This further implies that the variables in Model 1 are among the main predictors of students' attitudes toward unions. Our findings support Hypothesis 1a in that parental attitudes toward unions (ß=.47, P<0.001) affect students' attitudes toward unions, and Hypothesis 1b in that parents' participation in union activities (ß=.10, P<0.001) affect students' attitudes toward unions. Moreover, our findings support Hypothesis 2b in that humanistic beliefs (ß=.22, P<0.001) significantly influence students' attitudes toward unions. The findings support studies (e.g., Barling et al., 1991; Kelloway & Watts, 1994; LaHuis & Mellor, 2001; Pesek et al., 2006).

TABLE 4
RESULTS OF REGRESSION ANALYSES ON STUDENTS' ATTITUDES TOWARD UNIONS

Variables	Model 1	Model 2
Parents' attitudes toward unions	.47***	.48***
Parents' participation in union activities	.10***	.10***
Marxist work beliefs	.06	.06
Humanistic work beliefs	.22***	.23***
Major		.01
Gender		.05
Race		.04
Age		.03
F	105.1***	52.2***
R	.72	.72
R^2	.51	.52
R^2 change		.01

[a] *Standardized Regression Coefficients are reported; *** p<.001; n=402.*

Parental Influence on Students' Attitudes Toward Unions

Table 5 shows that students whose parents were union members were found to have slightly higher union attitudes than students whose parents were not union members, although the difference was statistically significant. Moreover, students whose parents have participated in a strike or have held office in a union tend to have more positive attitudes toward unions than those students whose parents have not participated in a strike or have not held office in a union (see Table 5). Our findings suggest that students' perception of parental union attitudes and participation in union activities affect their attitudes toward unions.

The results of our survey revealed that approximately 35 percent of the respondents' parents were union members. This is not surprising given that Minnesota does not have Right-to-Work-Laws and is one of the more highly unionized states. Although union membership continues to decline, the percentage of Minnesota's workforce that is unionized (15.8%) is still greater than the national average of 11.9

percent (Bureau of Labor Statistics, 2012). The mean values of the composite variables of the current studies are slightly higher than other studies (e.g., Pesek et al., 2006; Willoughby & Barclay, 1986). Respondents were likely to have had greater exposure to unions than students might be that are from states where unions are not as strong. While parental union membership status was not found to be a significant predictor of students' union attitudes (Table 5), both parental participation in a strike and holding a union office were found to have a statistically significant influence on students' attitudes towards unions.

TABLE 5
ANOVA TESTS FOR PARENTAL PARTICIPATION IN UNION ACTIVITIES AND STUDENTS UNION ATTITUDES

Composite variable	**Parental Participation in union activities**											
	Union membership				**Strike participation**				**Holding office in a union**			
	Union members N=135		Nonunion members N=267		Parent did strike N=49		Parent did not strike N=353		Parent did hold office N=35		Parent did not hold office N=376	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Students' union attitudes	2.91	.56	2.82	.44	3.19	.46	2.81	.47	3.32	.38	2.81	.48
ANOVA Test	(1,400), F=3.7, NS[a]				(1,400), F=27.4***				(1,400), F=37.0***			

NS[a] refers to "Not Significant."

The Impact of Students Major on Attitudes Toward Unions

One goal of this study was to assess the effect of a students' field of study (i.e., major) on their attitudes toward unions. Some majors (e.g., education and nursing) are projected to be growth sectors for future union organizing. ANOVA tests were conducted to determine whether students' major significantly affects differences among the five composite variables.

Table 6 presents the means, standard deviations, and results of ANOVA tests for the different groups of majors on the union attitude scales. The findings reported here show that although there were slight differences in mean values of the five composite variables, students' majors did not show statistically significant differences. Although the mean values for business majors were lower across all five composite variables assessed, and the mean values for education majors were higher on three out of the five composite variables, no statistically significant differences were found across majors.

It must also be noted here that our ANOVA tests did not show a statistically significant difference in union attitudes between male and female students, although female students' attitudes in four composite variables were slightly more favorable than males (results not reported). These results are consistent with the regression analysis from Table 4 that demonstrated that gender did not show a statistically significant impact on students' attitudes toward unions.

TABLE 6
ANOVA TESTS FOR STUDENTS' MAJOR AND THE COMPOSITE VARIABLES

Composite variable	*Major*							
	Business N=87 (Mean)	***Education N=84 (Mean)***	***Comm. studies N=71 (Mean)***	***Nursing N=72 (Mean)***	***Comp. science N=88 (Mean)***	***ANOVA Test***		
						df	***F***	***NS***
Students' union attitudes	2.76 (.49)	2.91 (.46)	2.90 (.50)	2.90 (.50)	2.8 (.65)	(4,397)	1.48	NS[a]
Parental union attitudes	2.93 (.65)	3.13 (.63)	3.02 (.60)	3.09 (.65)	3.07 (.60)	(4,397)	1.42	NS[a]
Marxist work belief	2.60 (.72)	2.77 (.66)	2.81 (.75)	2.68 (.79)	2.81 (.70)	(4,397)	1.36	NS[a]
Humanistic work belief	2.91 (.58)	3.09 (.50)	3.00 (.66)	3.02 (.61)	3.10 (.50)	(4,397)	1.51	NS[a]
willingness to join a union	2.88 (.57)	3.03 (.55)	2.92 (.59)	2.95 (.66)	2.89 (.61)	(4,397)	1.142	NS[a]

NB: figures in the brackets refer to "Standard deviation"; NS[a] refers to "Not Significant"

Impact of Race on Students Attitudes Toward Unions

An interesting result of this study is that while hypothesis 4, students race affects their union attitudes was not supported in the regression analysis (Table 4), race significantly affects two of the five composite variables (college students' union attitude, and parental union attitudes) as shown in Table 7.

TABLE 7
ANOVA TESTS FOR RACE AND COMPOSITE VARIABLES

Composite variables	**Race**								**ANOVA Tests**		
	Caucasian N=344		**African American N=17**		**Hispanics N=19**		**Asian American N=22**				
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**df**	**F**	**Sig.**
Students' union attitude	2.82	.48	3.06	.53	2.97	.63	3.02	.47	(3,398)	2.70	***
Parental union attitudes	3.01	.60	3.44	.50	3.28	.71	3.12	.56	(3,398)	4.08	***
Marxist work beliefs	2.74	.71	2.54	.83	2.76	.76	2.55	.77	(3,398)	.91	NS
humanistic work beliefs	2.99	.57	3.26	.50	3.17	.61	3.09	.61	(3,398)	1.84	NS
willingness to join a union	2.90	.59	3.27	.72	3.01	.67	2,83	.60	(3,398)	2.37	NS

DISCUSSION AND IMPLICATIONS

One of the major goals of the current study was to assess the impact of family socialization (i.e., parental union attitudes and experiences) on college students' attitudes toward unions, which subsequently influence willingness to join a union. Our study's findings indicate that parental union attitudes and participation in union activities significantly predicted students' attitudes toward unions (Table 4). Thus, it supports previous research on the impact of family socialization on students' union attitudes and their willingness to join a union. We found the model of socialization proposed by Barling et al. (1991) useful for examining union attitudes among young people when their work experience is limited and their work-related attitudes are nascent. The findings reported here on the parents' union attitudes' effect on students' attitudes towards unions are generally consistent with those found in other studies (e.g., Barling et al., 1991; Kelloway, Barling, & Agar, 1996; Kelloway & Watts, 1994; Pesek et al., 2006).

In this study, we utilized several predictors of union attitudes prior to entry into the workplace. Parents' union attitudes were found to affect the change in union attitudes significantly. The magnitude of the coefficient for parental attitudes (ß=.47) suggests that perceptions of parental attitudes toward unions was the most important predictor of college students' own attitudes toward unions (Table 4).

We expected that parental union membership status would affect students' attitudes toward unions. Our findings, however, did not show significant differences in attitudes between students whose parents are union members and those who are not. Parents' union membership was found to be a weak predictor of college students' attitudes toward unions. However, parents' strike participation and holding office in a union was found to affect students' union attitudes significantly (Table 6). This suggests, "…the salient family influence may not be parental membership status but rather their attitudes toward organized labor" (Barling et al., 1991: 726).

An important question that may be raised is related to the use of self-report survey: How do students know their parents' attitudes toward unions and participation in union activities? The assumption is that students, in part, infer their parents' union attitudes from observing their parents' participation in union activities. Prior research demonstrates that students and parents did not differ on their reports of parental union participation and union attitudes (e.g., Kelloway & Watts, 1994). This suggests that students develop their union attitudes through social learning. As children, they see their parents become involved in union activities and discuss unions; this awareness results in students developing perceptions of, and attitudes toward, labor unions.

Humanistic work beliefs were found to influence student attitudes toward unions positively, which in turn influences student's willingness to join a union. Although humanistic and Marxist work beliefs were significantly correlated, Marxist work beliefs were not a significant predictor of student's attitudes toward unions. Prior research has indicated that both of these work beliefs predict attitudes toward, and involvement in unions (e.g., Barling et al., 1991; Kelloway & Harvey, 1999; Pesek et al., 2006). Our sample is college-educated students who arguably may have set a higher priority on aspiring to meaningful and fulfilling work as evidenced by their pursuit of a higher education than a non-college educated sample that may be more concerned with avoiding exploitation and alienation in the workforce. Further, one can argue that students who perceive their parents as being dissatisfied with their jobs would come to believe that work exploits people. Being dissatisfied with work would predict the development of the Marxist work belief. We did not collect data on parent's level of education or current job level.

Family socialization and work beliefs exerted substantial effect on college students' general attitudes toward unions. The results extend findings that parental socialization and work attitudes are of critical importance to unionization in college students who are not yet employed. This may suggest that the perceptions and attitudes of unions emerge during a young age, but solidify with age and experience.

It is interesting to note that while no statistically significant differences were found between business and non-business students regarding union related variables, students majoring in business tend to hold slightly less positive attitudes toward unions. It is conceivable that business schools spend more time emphasizing the importance of managerial training and the importance of effective communication with employees coupled with effective human resource policies as substitutes for unionization. Substitution policies have been used as an explanation for the decline in trade unionism (Beaumont, 1987). Further, we expected students majoring in education to hold attitudes toward unions that were more positive given that the education sector (37.1%) is the most unionized sector in the country (Bureau of Labor Statistics, 2012). As expected, students majoring in education scored slightly higher in three of the five composite variables, although the differences were not statistically significant. In our study, the overwhelming majority of respondents were, on the average, neutral in their perceptions about unions, i.e., most of them responded neither agree nor disagree to the items asked. Our finding is consistent with prior research by Willoughby and Barclays (1986) and Pesek et al.'s (2006) who found a high level of neutrality in opinions about unions among college students.

One possible explanation for college students' neutrality is that they have had little or no work experience. A number of research studies have indicated that workers join unions out of frustration and dissatisfaction with job and employment conditions and the beliefs that the way to remove that frustration

is through collective action (Brett, 1980; Carrell & Heavrin, 2013; Tolich & Harcourt, 1999). Most of the time, frustration and dissatisfaction are widespread among graduates during their early stage of their careers mainly due to their unrealistic expectations (e.g., Decenzo & Robbins, 2010). Thus, once students graduate and join the workforce, they will develop their own views about unions (Lowe and Rastin 2000).

Consistent with previous studies (e.g., Lowe & Rastin, 2000; Kelloway et al., 1996; Pesek et al., 2006; Schur & Kruse, 1992), females in general tend to be more supportive or exhibit pro-union attitudes and willingness to join unions that do men. One of the possible explanations for the gender difference is that unionization benefits women workers more than male workers (Bureau of Labor Statistics, 2008). Unions tend to reduce gender wage differentials- as women represented by unions receive higher pay than non-unionized women employees do (EPI, 2007).

Overall, our findings are consistent with the family socialization models. Perceptions of parents' general union attitudes and perceptions of parents' participation in union activities are the major contributors to students' attitudes toward unions. Our findings also suggest that family socialization effects will most likely occur prior to workplace experience. Second, consistent with prior studies, the more positive attitudes students have, the more willing they are to join a union. Third, unlike previous studies, this study is the first to test the impact of race on students' union attitudes, although the results need to be validated in further studies before generalizing the findings.

College students are candidates for labor market and organizing (LaHuis & Mellor 2001). Understanding the predictors of union attitudes is crucial. Since students' attitudes are important predictors of union voting behavior, knowledge of how they develop has implications for an understanding of the unionization process (Barling et al. 1991, 730).

The study found a high level of neutrality in perceptions of the college students' union attitudes. This finding has two implications for employers. First, although family socialization significantly affects students' union attitudes (before entry to labor market), college graduates tend to make a real decision (as to whether to join a union or not), when they confront the real work environment. This implies that if graduates (newly hired employees) are well treated during the socialization (first entry to the organization) and during their future career, they are less likely to join a union. This in turn demands the introduction of progressive HR management approaches, including competitive compensation packages, flexible working schedule, opportunity for advancement, tuition reimbursement, worker-friendly management policies, addressing concerns of workers, improving communication, establishing fair grievance procedures, creating safe and pleasant working environment, and competitive pay and benefits (e.g., Bryson, Gomez, Gunderson, & Meltz 2005; Carrell & Heavrin 2013; Fiorito, 2001; Heery & Simms, 2010; McHugh 2007; Rosenberg and Rosenberg 2006). Secondly, recruiters tend to focus on the positive aspects of jobs (e.g., Mathis & Jackson, 2011; Decenzo & Robbins 2010), resulting in graduates developing unrealistic job expectations. Young workers become frustrated because of their employer's inability to meet their expectations (Mathis & Jackson, 2011). Hence, managers and recruiters would benefit by providing realistic job previews during the hiring process.

FUTURE RESEARCH DIRECTIONS

The present study extends previous research in pre-employment predictors of attitudes toward labor unions. However, it has some limitations. First, some of the college students may not have a solid understanding of union related items, which in turn may affect their rating. Second, the 'race' variable is not proportional in that the three minority groups - African American, Asian American and Hispanic together comprise only 15 percent of respondents. That is, students in this sample are not an exact representation of workforce groups, nor do they represent all types of employees or education levels. Thus, while this study is an important step forward in understanding of pre-employment predictors of attitudes toward labor unions, it also leaves some questions for future research. First, unlike prior research, we empirically tested the effect of race on students' attitudes toward unions. Our findings show that race significantly affects two out of the five composite variables, which are related to union issues. The sample, however, was not proportional in regards to race (Table 7), calling for further validation of

the findings. Second, beyond limited evidence indicating that, as college students join the workforce, their union attitudes and willingness to join a union may change, more research is needed to determine how their attitudes change during the transition from college to work environment. This suggests that family socialization remains crucial until college students join the labor market. The extent to which family socialization influences students' union involvement remains an important question for future research. Thus, we suggest that longitudinal research is needed to examine if students' union attitudes change after graduation or when confronting the real work environment (Pesek et al., 2006). Third, previous research on pre-employment predictors of union attitudes indicates that parental attitude toward unions and their participation in strikes and union offices consistently and significantly influences students' union attitudes. The impact of parents' union membership status on students' union attitudes, however, has been inconclusive. Thus, further research should examine the impact of parental union membership status on student union attitudes.

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