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TO CONSOLIDATE OR NOT TO CONSOLIDATE, THAT IS THE QUESTION: OPTIMAL SCHOOL SIZE AND TEACHER INCENTIVE CONTRACTS

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ABSTRACT

Given the realities of ever-tightening public budgets and the directives inherent in the No Child Left Behind Act (2001) school districts have been required to do more (with more direct accountability) with less (funding) than ever before. These two forces are, of course, conflicting. One approach to the funding dilemma has districts consolidating schools in order to pool enrollment and resources, in an attempt to reduce pressure to increase class size that would likely reduce student achievement. Another is to create incentive contracts for teachers so that student achievement would directly affect teacher salary. We introduce monitoring technology into an agency-based model of teacher incentive contracting to determine optimal school size, bringing both sides of this debate together.

INTRODUCTION

Over the last few decades the US school system has received much attention from researchers and administrators on a variety of issues such as incentive pay and accountability (Holmstrom & Milgrom, 1991; Kane & Staiger, 2002); school size (Lee & Smith, 1997; Umphrey, 2002); school consolidations (Antonucci, 1999); curriculum decisions (Goodlad & Su, 1992); education accessibility (Dunn, 1992); and overall school reform (Allen & Dale, 1995). The No Child Left Behind Act of 2001 motivates further research in to these areas of study. We bring together several facets of these discussions by examining the cross implications of optimal school size and consolidations with incentive teacher pay and accountability in the classroom.

A general trend over the past century, and the main motivation for our inquiry, has been the wide-scale consolidation of elementary and secondary schools and districts. Enrollment per school has substantially increased since 1900, from 62.44 to 506.29 while the number of districts has correspondingly decreased; see Table 1.

Table 1: The Consolidation of Schools and Districts in the United States[a]				
Year	Enrollment	# of Schools	Enrollment/School	# of Districts
1900	15,503,000	248,279	62.44	-
1945-50	25,111,000	-	-	83,718
1980-01	40,877,000	85,982	475.41	15,912
2000-01	47,223,000	93,273	506.29	14,859
[a] Source: United States Department of Education (2002).				

While consolidation of disparate community schools is frequently justified by appealing to economies of scale, it has precipitated many difficulties. One such difficulty is the loss of teacher and curriculum control suffered by formerly localized school administrators and parents, losses that can be attributed to the increasing physical and bureaucratic distance between teachers, administrators, and parents.

To address these difficulties, various accountability schemes have been implemented in recent years, including incentive pay. The general premise of incentive-pay is straightforward: replace the eroded control structure with a formal incentive structure that optimally aligns teacher effort with administrative objectives. Unfortunately, even within incentive pay paradigms, any number of pervasive inefficiencies can arise when designing and implementing an incentive contract. For this reason, it is crucial that the design phase be guided by sound theory that is flexible enough to incorporate the relevant institutional features of the education system. Designing just such a framework and its implication on optimal school size is the focus of this paper.

Cutshall (2003) describes a number of recent political events that suggest a growing concern over the negative effects of consolidated schools, and thus a general call to open a serious dialogue about optimal school sizes. In particular, there is an important interaction between incentive contracts and optimal school size. Bard, Gardener, and Wieland (2005) provide an excellent review on the history of school consolidation in the US, issues, solutions, and the literature related to optimal school size (see also Barker and Gump (1964), Driscoll, Halcoussis, and Svorny (2003), Garbarino (1980), and Lee and Smith (1997)). One conclusion of Bard, Gardener, and Wieland is that the estimates of "optimal school size" range dramatically depending on researcher and time period. Indeed, their further conclusion that the literature lacks a cohesive model for the determination of optimal school size partly motivates this work. While some of this work is based on solid statistical analyses, others are case studies (i.e., Kirkpatrick (1998) notes that one of the poorest of New York City's sub-districts moved from among the worst rated to among the best by re-creating schools with 200-300 students each). We add to this discussion by presenting a model of optimal school size that incorporates the positive effects of incentive contracts and inspection (possibly by parents).

The remainder of the paper is organized into five sections. In the following sections of this paper, we present the context and background of the administrative realities surrounding decisions about incentive pay and school size, our principal-agent model of incentive contracting with an auditor, and finally an example that shows optimal school size based on reasonable numerical estimates of our model.

BACKGROUND

Debates regarding the effects of school consolidations are complex. There are multiple cost – benefit analyses in existence (see, for example, Nelson, 1985 and Bard, Gardener, & Wieland, 2005, among many others). Arguments for consolidating often concentrate on financial savings from the reduction in fixed costs associated with building and maintenance, as well as from reducing quasi-fixed costs, such as salary, pensions, and health care plans from redundant support staff. Consolidation often results in combined classes or the replacement of several part timers for fewer full time positions, especially for special offerings (such as guidance, art, music, etc) which reduces the number of faculty needed while increasing the variety of course offerings. Drawbacks to consolidation include "psychic costs" to reduced parental involvement in teaching and administrative decisions, increased travel time for students (and direct bussing costs), increased discipline problems, and elevated tensions between students and teachers (see Allen & Dale, 1995, for example).

One additional cost, of particular interest to policymakers and student advocates, is the erosion of superintendents' ability to monitor and influence teaching. This propagates a disconnect between outcomes the superintendent desires and outcomes the teachers produce; in short, moral hazard problems arise. In the language of principal-agent theory, moral hazard occurs when a principal (such as a superintendent) is unable to view all the actions taken by an agent (such as a teacher) that are relevant to the successful completion of the principal's objective.[1] Outcomes of the teacher's actions, such as student scores on standardized tests, are observable by the superintendent, but the underlying effort is not.

At first glance, the superintendent's inability to observe how teachers allocate their effort in the classroom may seem inconsequential. However, teachers under a myopic incentive contract often experience pressure to "teach to the test", which may increase standardized test scores in the short-term (e.g., by rote memorization) but may be inconsistent with long-term learning and retention. This outcome is a direct result of the superintendent's inability to monitor effort and effect corrective action.

The superintendent can employ one of two tools to assure its objective is met. First, a list of specific dictates could be issued that, if followed, would compel the teachers to assume an effort choice well aligned with the superintendent's objective. This prescription functions relatively well in small districts where compliance can be easily observed; the advent of consolidations, however,

has rendered this option infeasible because of prohibitively high costs of enforcing and monitoring the dictates.

The second option at the superintendent's disposal is to carefully construct an incentive-based system that induces the efforts that the superintendent desires. Such a system, when properly constructed, is self-enforcing, thereby greatly reducing the need for costly monitoring and enforcement. Correspondingly, such a system would be much better suited to the administrative needs of superintendents in the new age of consolidated schools. The principal-agent formulation of this decision problem is designed to deliver the least-cost contract the superintendent can offer to induce teacher participation and cooperation. The construction of this principal-agent model is the subject of the next section.

EMPIRICAL RESULTS OF INCENTIVE CONTRACTS

Unlike the debate concerning school consolidation, that of incentive contracts for teachers (also known as pay-for-performance or merit pay) has received much attention in the media. The theoretical literature (Datar, Kulp, & Lambert, 2001; Holmstrom & Milgrom, 1991; Kane & Staiger, 2002) indicates directions for handling multidimensional measures of performance, team production, and incongruence between effort and outcomes in contract design, but with a few notable exceptions this theory has not been followed. This fundamental disconnection of theory and design renders a portion of the empirical literature moot; badly designed incentive structures result in misallocated effort and unfavorable outcomes such as cheating, "teaching to the test," incorrectly classifying students as special needs to remove them from the testing pool, and so on. Poor results from poorly designed incentives are not a condemnation of incentive contracts, only poorly-designed incentive contracts.

Some evidence in favor of incentive contracts comes from more recent, individual merit-style contracts (Ding & Lehrer, 2000; Lavy, 2002; Lavy, 2004). Jacob (2002) provides a solid review of the recent empirical literature. In contrast, research that disparages incentive contracts often examines structures with targeted outcomes that were not in line with desired teacher behavior (such as being one-dimensional when multi-dimensional incentives were needed). In essence, it is the poorly written contracts that lead to poor outcomes, not that all such incentive-based contracts are bad.

What they fail to note, however, is that incentives are often interpreted very narrowly, and at the lowest teacher cost of compliance. For example, Glewwe, Ilias, and Kremer (2003) report that an incentive scheme designed to reward the teacher for higher student test scores did not increase teacher attendance or the frequency of homework assignments, but did, in fact, increase the student tests scores. Evidently, the teachers added test review sessions or some activity that specifically targeted the test, but nothing more -- a likely case of teaching to the test. None of these results are surprising. The incentive was to increase test scores, which it did, but was unlikely to actually

increase learning. These other items were not improved upon because they were outside the purview of the incentive structure.

Eberts, Hollenbeck, and Stone (2000) report that paying teachers to increase student attendance in an alternative schooling environment did indeed increase student attendance, though not necessarily to their educational benefit. In fact, the incentives resulted in more classroom parties and field trips (both low effort ways for the teacher to increase attendance), with little improvement in student achievement (although the selection effect of reducing drop-outs obfuscated their results).

Thus, teachers respond to incentives in the ways that we would expect if we recognized their strategic nature. Instead of condemning incentive contracts on the basis of outcomes of poorly designed contracts, there is a need to test contracts that provide incentives consistent with desired outcomes and optimal contract theory. Given that the debate over the efficacy of teacher incentive contracts is still under consideration by the public, we proceed with the assumption that well-designed teacher incentive contracts have the potential to create desirable teacher behavior and student outcomes.

THE CONTRACTING ENVIRONMENT

We begin the presentation of our baseline agency model with a number of basic assumptions about the decision environment. First, assume the teacher (agent) chooses effort levels *a* and *b*. We use *a* to denote the effort allocated to the teaching of testable knowledge, and *b* to denote the effort allocated to all other activities valued by the superintendent (principal), such as nurturing a love of learning or instilling higher-order thinking skills.

Second, assume that the teacher has one unit of effort to be divided among these two tasks, and further assume that the teacher exhausts this unit on these tasks. This assumption is not entirely innocuous because it eliminates moral hazard associated with total effort exerted. However, moral hazard associated with misallocated effort remains.[2]

Third, to reflect differences in teaching effectiveness, we suppose that teachers are classified into two types, high and low quality. Teachers, being human, will have an aversion to effort (aversion), which may vary with type. High levels of such aversion may be associated with low type teachers. A second issue is how these teacher types map into classroom use, captured by the strictly positive parameter *cs*. We define this parameter as "classroom shortcuts," noting that teachers are not able to significantly change daily classroom hours, as abandoning a classroom is a bit too obvious a way to shirk. What teachers can do, however, is to employ any of a vast array of classroom shortcuts that reduce their overall effort, but do not increase student learning. While many of these classroom shortcuts are time-honored practices employed even by the finest of teachers, and sometimes actually serve a useful purpose (allowing students some in-class time to work on assignments while the instructor is available for questions, for example), many of these practices can be easily abused so that teachers simply do not work (or transfer out-of-class work like grading to

in-class hours that should be used for instruction). Thus, even high quality teachers will have positive levels of *cs*. The amount of *cs* (along with teacher type) determines how a teacher's effort maps to student outcomes; higher values for *cs* map to lower levels of student performance, for a given level of effort.

We presume that the superintendent knows the proportion of high quality teacher type (*q*) and how each type transforms effort into student outcomes. We also assume that the superintendent cannot directly observe teacher type prior to contracting. Verifiable student outcomes, which we will denote as *X*, might be such things scores on standardized tests, which we assume are immediately observable. The other teacher induced outcomes (perhaps measured by post-secondary education aspirations and life-long intellectual curiosity) may be equally or more important than *X*, but are more difficult to measure in the short run and, as such, are not available for use with incentive contracting.

Fourth, assume that teachers have reservation wage, depending upon whether they are high or low quality teachers, which represents the opportunity cost of accepting the teaching position offered by the superintendent.

With these basic assumptions about the decision environment in hand, we turn to the preference assumptions of our model. We assume the superintendent has preferences over outcomes (*X* versus the harder to measure outcomes, which are simply considered to be 'all else' or the remainder of superintendent preferences) and wishes to minimize wages. We assume that teachers have preferences over wages and effort allocated to tasks *a* and *b*.

We now turn to some standard assumptions about the contracting environment. First, all utility weights are strictly positive. Second, the only permissible payments (from superintendent to teacher) are those stated explicitly in the contract and there is no black-market or kickbacks of any kind. Third, we assume that teachers are not internally motivated to allocate effort exactly as desired by the superintendent. Fourth, each teacher performs alone; that is, we assume away joint production. Finally, we make the following sequence of assumptions about the timing of the model: first, the teacher privately realizes his/her type and chooses to enter into a contract only when that type will provide recompense at or above the relevant reservation wage; second, given the teacher's type and the pending contract, the teacher divides their one unit of effort across tasks *a* and *b*; and third, the immediately observable outcomes *X* are realized, and the teacher is paid in accordance with the contract specifications. We assume that other outcomes are realized later and, hence, do not enter into the pay arrangement: it takes time for society to realize these other educational benefits.

In an optimal world, self reporting would mean no need for outside auditing of teacher performance. Before school consolidation, the small school system was well controlled by a single administrative unit. Once this control is supplanted by a distant administration, direct control diminishes. Within this "stretched out" bureaucracy, the superintendent needs a rule to enforce its dictates. Again, in an ideal world, self reporting would supplant the need for any auditors external to the classroom, however, this is untenable in the real world of education administration. Therefore,

we propose that the superintendent introduce an auditor to enforce the contract between the superintendent and the teacher. The auditor can be conceptualized in a variety of ways; some examples would be a task force, a review committee, a system of unit or department heads, or one of many other systems of review. In this optimal world, we make the assumptions that the auditor perfectly observes teacher effort levels.

The auditor and the superintendent observe different information prior to the payment phase of the contract. The auditor receives information about teacher effort levels *a* and *b*, as well as outcome *X*, while the superintendent does not directly observe effort levels and only sees outcome *X*, hence the auditor can deduce teacher type (high or low), while the superintendent cannot. It is the auditor's ability to obtain a more comprehensive information set that is crucial to the payment phase of the contract.

The auditor's role in the contract mechanism is to relay to the superintendent teacher-specific effort allocations. Therefore, the auditor's signal is used to ensure that the teachers receive their type-specific reservation wages. For example, suppose the auditor observes teachers allocating effort in the desired way; the auditor would then relay this compliance to the superintendent; and the teacher would receive the high-type payment. Conversely, if the auditor signals non-compliance (i.e., the teacher has not provided the correct allocation for their type), the teacher receives the low-type payment.

We assume the auditor is indifferent to student outcomes, *X*, serving only to impartially enforce contracts. Here, the auditor serves as a truth-telling technology, only to be hired when the gain in superintendent utility is greater than or equal to the auditor's salary. There are utility gains to this use of an auditor system. For instance, the high-type teacher is able to move from a uniform contract that pays all teachers identically to one where he/she can reap the rewards of high performance. There may even be utility gain by the low-type teacher, if the contract allows them to accept the lower wage for less effort. It is obvious that the superintendent gains utility, as now teacher types can be reflected in salary savings. To assess the total change in utility induced by the auditor, we must weigh each of these type-specific changes in utility by the expected number of teachers of each type; this will depend upon the model's parameterization (to be discussed in the next section). As long as the gains exceed the auditor's reservation wage the auditor will be hired.

This expected utility gain also limits the number of teachers a single auditor (or single system of auditors) can monitor. The auditor has a quadratic two-parameter ($A_{aversion}$ and $A_{exponent}$) utility function that describe its disutility from the number of teachers monitored. The superintendent then uses this model of audited teacher incentive contracts along with expected benefit from monitoring to choose the optimal auditor/teacher ratio. For the situation where a single auditor evaluates teachers, we express this optimal auditor/teacher ratio as optimal school size, which makes the auditor/teacher ratio the optimal number of classroom instructors per school. This aspect of our model permits us to comment on optimal school size.

A NUMERICAL EXAMPLE

When the superintendent cannot distinguish between teacher types a pooling contract is often used. Pooling is, however, a poor option for the superintendent because it entails high teacher wages for even low type teachers and has no incentive for teachers to align effort allocations with those of the superintendent. From the superintendent's perspective, the auditing technology results in a better effort allocation and a reduction in teacher wages. Both changes increase the superintendent's utility relative to the pooling option. Wages are lower for the low type because they can no longer keep their type hidden from the auditor.

To make this concrete we present the results of a specific parameterization, the values for which we list in Table 2. In this parameterization the teacher aversion-to-effort parameters ($A_{aversion}$) are 0.5 for both types. Classroom shortcuts (*cs*) are the exponent on effort in the teachers' production functions and are set at 0.50 for high types and 1.00 for low types (leading to output factors of $0.5^{0.50} = 0.707$ for high type teachers and $0.5^1 = 0.5$ for low type teachers). The superintendent has preferences for immediate, verifiable student outcomes (*X*) such that *X* receives higher weight in the superintendent's utility function (0.6) than do the other outcomes (0.4). High types are assumed to make up 75% of the teaching population, thus *q* equals 0.75. The auditor's aversion to teacher monitoring are characterized with ($A_{aversion}$) equal to 0.0001 as that job is envisioned to be nothing but monitoring and ($A_{exponent}$) equal to 2.

Table 2: Numerical Example Values	
Variable	Value
aversion$_H$	0.5
aversion$_L$	0.5
cs$_H$	0.5
cs$_L$	1
superintendent weight on observable outcomes	0.6
q	0.75
Aexponent	2
Aaversion	0.0001

Table 3 shows outcomes using these parameter values for both the pooling contract and the incentive contract with an auditor.[3] As discussed above, the superintendent receives higher utility from both types of teachers under the incentive contract with an auditor since the teachers no longer command information rents. Note how low-type teachers receive a lower wage than in the pooling

case whereas high-type teachers receive a higher wage than the pooling case; i.e., good teachers are rewarded and poor teachers are not.

Table 3: Contract Outcomes for the Numerical Example		
Variable	Without Incentives or Auditor (pooling contract)	With Incentive Contracts and Auditor
$b_{,H}$	0.556	0.538
$b_{,L}$	0.556	0.6
$wage_H$	0.294	0.31
$wage_L$	0.294	0.255

These simplified assumptions regarding teacher behavior and superintendent preferences can be used to determine optimal school size (teacher/auditor ratio). This derives from the interaction of the increasing monitoring costs and the superintendent's linear gain in expected utility from auditor-driven teacher compliance. This result is a significant break from the education literature, which takes an empirical approach to student performance and school size by looking at historical performance-size ratios and hypothesizing a de facto relationship. While this traditional empirical approach to discover the best performance-size mix is important and informative, the self-selection of poorer (and often times lower performing) districts to consolidate to cut costs makes this approach problematic.

The optimal school size with teacher incentive contracts occurs where the superintendent's utility function is maximized. There are many widely-varying recommendations for school size in the literature often conditional on the type of school being discussed. The strength of our approach is that we identify behavioral characteristics consistent with school sizes. For instance, our model can be modified to fit an individual policy maker's beliefs about auditing costs as well as preference weights on verifiable versus subjective teaching outcomes. Figure 1 shows the graphical details of our model's ability to represent returns to school size for the parameterization given in our example. Note that the model was calibrated to reflect the school size recommendations from the literature (200-300 students per school).

Figure 1: Superintendent Utility Based on School Size
Given Contract Enforcement with an Auditor
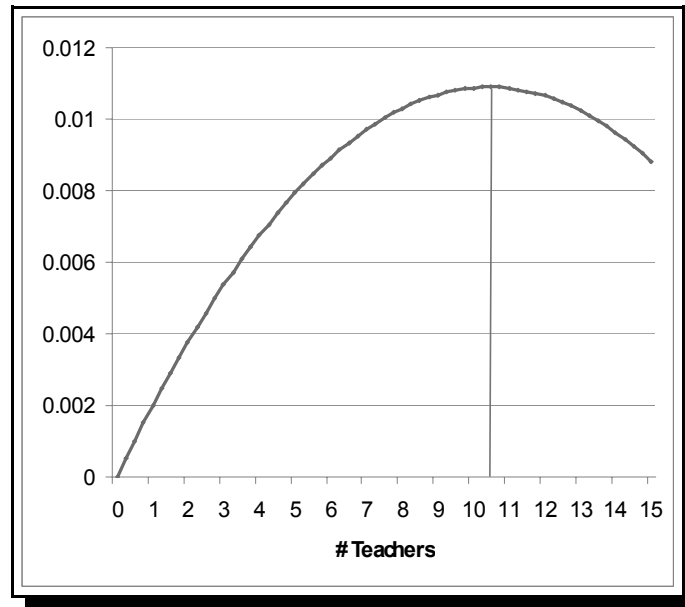
The approach of offering optimal contracts and having them enforced in decision-making units of optimal sizes is an important detail that must not be overlooked as the debate continues over consolidating small schools, reforming public education with vouchers and schools of choice, and trying to set standards and develop accountability among faculty and administrators.

DISCUSSION, CONCLUSIONS, AND TOPICS FOR FUTURE RESEARCH

Our primary argument is that consolidation of schools and districts creates control and monitoring problems for the educational process. Examining these issues of moral hazard and misallocated effort helps fill an important gap in the public debate on how to address the issues raised by consolidation. The policy implication that follows is not necessarily to create smaller, geography-specific ("neighborhood") schools. First, demographic fluctuations across and within neighborhoods may make such a structure unsustainable. Second, while settlement patterns may group student families by demography and socioeconomic status, it is not obvious that they will share attitudes toward school outcomes. A lack of cohesion within the constituent students' families in the presence of a consolidated district would undermine such a grouping, especially in the presence of a consolidated district. Un-consolidating school districts is also an unlikely solution

given political and financial realities. Given the current structure, however, other solutions are available that address these economic issues.

While "choice" in education is generally touted as a solution, our model allows us to examine the effects of these solutions on the issue of control within a well-defined framework. Voucher systems and charter schools (in their many forms) fit the model of control delineated here. These solutions address the control problem by allowing families with similar educational standards and focus to form coalitions across neighborhood lines. If these systems allow schools to come under more direct control by a group of "homogeneous" student families (in the sense of attitudes toward student learning, not demography, socioeconomic status, or geographical neighborhood), the "superintendent" of our model then takes on these families' attitudes. They have relatively precise preferences that are more uniformly enforced by direct oversight; the first-best of a smaller school and district. In this case the costs of inspection are borne by the community, and our model finds the limits of school size based on these costs. In contrast to the "psychic costs" argument prevalent in the education literature, we argue that this creates a monitoring efficiency, where the parents buy in and become part of the monitoring process.

In fact, proposed educational reform in Michigan extends a preexisting charter system to partition high schools into smaller ones: "$15 million for the 21st Century Schools Fund to help Michigan school districts replace large, impersonal high schools that have low academic achievement and high dropout rates, with small high schools that use relationships, discipline, and relevance to help at-risk kids achieve" (Granholm Signs Budget, 2008). This policy prescription is similar to that by the Bill and Melinda Gates Foundation (VanderArk, 2002). Our analysis indicates that, unless there is either a partition of students by parent interests, or initiation of an educational inspector, there is unlikely to be the increase in school quality desired.

While we feel our model provides a sound framing of incentive pay contracting with use of a monitor within the educational system, we recognize a number of other interesting realities that could be incorporated into our model. First, it may be interesting to add shirking (or moral hazard with respect to total effort) to the teacher's effort allocation problem. In general, however, teachers are not able to shirk in the same way as other workers (as leaving a classroom unattended is easily verified), which is why we introduced the ideas of positive levels of classroom shortcuts (*cs)* into our model with varying levels being used either constructively (by high type teachers) or negatively (by low type teachers). Including shirking would leave the basic results unchanged, but would require the superintendent to more heavily compensate both types to reduce shirking to a level where the marginal benefits of reducing shirking further is equal to the marginal cost of motivating the teacher.

A second interesting extension to our model would be the relaxation of the two-type assumption. We side-stepped this reality here as the focus of our presentation was to clearly highlight the auditor's contributions to the contracting environment and to demonstrate the model's

ability to prescribe (endogenously) an optimal school size (teacher-auditor ratio). Incorporating additional types would parallel the results here but with potentially higher inspection costs.

Two particularly interesting modeling extensions are deterministic student outcomes and auditor observations. In reality, teacher effort and quality can be obscured by events in student lives, the effects of other teachers, cheating on tests to manipulate student test scores, and so on. Moreover, no auditor can observe teacher behavior perfectly. Adding this fact to the model would substantially complicate the contracting details, which would then require a formalization of risk preferences. However, these complications would not change the fundamental importance of the auditor, the need for a contract, or the endogenous realization of maximum and optimal school sizes (though it may change the exact number). An approach similar to that in Banker and Datar (1989) would be a useful guide should the modeling of an imperfect auditor be a consequential consideration.

The auditor may be imperfect in another way. Specifically, they may succumb to temptations such as cronyism, where they have preferences over who receives the higher wage, and disobedience, where they have preferences over outcomes that are different from that of the superintendent. Either form of deviation would potentially destroy the auditing process, thus the contracting authority must be mindful of this reality when designing the contract.

One interesting form of incentive contracting allows the principal to allocate a "bonus pool" of money to deserving agents. One paper in particular, Baiman and Rajan (1995), would be a good guide for extending our model in this way. The necessary evaluation of relative (agent) performance could be conducted using the techniques found in Holmstrom (1982) as well as Banerjee and Beggs (1989). Although this is an appealing extension, we would expect many charges of cronyism under such a system.

Finally, one could involve a series of teachers for each student (joint production) and try to separate the contributions of individual teachers from the noise associated with accurately gauging other outcomes (observing whether they stay out of prison, become gainfully employed, go to college, etc). A similar notion would be to model joint production between the teacher and the auditor, for which the mechanisms described in Glover (1994) would be a good guide.

In the end, however, we feel the basic principal-agent model we present forms a sound framework for thinking about these problems and for evaluating the corresponding policy implications on school size.

ENDNOTES

[1] To be clear, superintendent is the traditional "principal" in a principal-agent model; "teacher" is the traditional "agent"; and "auditor," will refer to the intermediary between them.

[2] Moral hazard with respect to total effort can be modeled with this framework if the superintendent feels it necessary; however, it is our opinion that this will rarely be necessary as total effort measured as, say, an 8-hour

workday or 40-hour workweek would be relatively easy to enforce and would thus be a minor concern compared to the moral hazard problem associated with misallocated effort.

[3]   Wage outcomes here are normalized to a fraction. We have omitted the full model description for the sake of brevity and readability, an expanded version of the paper, including the formal model, is available in "School Consolidations and Teacher Incentive Contracts," SSRN working paper No. 1238586, August 2008.

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STRATEGICALLY PLANNING CAMPUSES FOR THE "NEWER STUDENTS" IN HIGHER EDUCATION

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ABSTRACT

The "traditional" 18 – 22 year old, residential college student makes up only 16% of the students enrolled in public and private two- and four-year institutions. More than half of today's students are older and are taking classes part-time. Over a million attend for-profit institutions and millions more participate in postsecondary education experiences offered by corporate universities. Most work full or part-time, have little interest in out-of-class activities, and are very savvy about computer-based technologies. These are the "newer students" of higher education and represent the largest market segment of those who will attend college in the foreseeable future. It would seem the drastic shift in market characteristics would be accompanied by strategic shifts in university planning. This paper considers how changes in college student body characteristics over the years have (or should have) prompted college leaders to alter their thinking about many aspects of campus offerings, facilities, operations, services, and pricing. We examined strategic plans of many universities and conclude that although many recognize the changing characteristics of the potential student population, many are pursuing strategies that may be strategically leading to their own downfalls.

INTRODUCTION

"If colleges and universities are to survive in the troubled years ahead, a strong emphasis on planning is essential (Kotler & Murphy, 1981)." Those words are as true today as they were almost 30 years ago when they were first written. Steadily changing student populations, rapidly deteriorating economic conditions, and continuously improving technologies will impact the "whom" and the "how" universities offer education.

This paper considers how changes in college student body characteristics should prompt college leaders to alter their strategic thinking about many aspects of campus offerings, facilities, operations, services, and pricing. The attributes and behaviors of colleges and universities that made them successful in the past may or may not be the same attributes and behaviors that will enable them to be successful in the future. In order to be competitive, survive, and flourish some institutions will need to strategically plan on becoming very different places than they are currently.

Three themes drive this conclusion: (1) population demographics, (2) the increased importance and changing characteristics of non-traditional students on college campuses, and (3) the economics of higher education. The implications from advances in computer and telecommunications technology will be considered throughout this discussion.

THEME ONE: DEMOGRAPHIC CHANGES MEAN STUDENT BODY CHANGES

Before considering the implications of demographic changes on strategic planning, it is useful to review characteristics of "traditional students" that were served for so long, in such large numbers, and who remain the focus of many universities' strategic planning processes and work product.

A consensus in higher education literature suggests traditional students:

- *Are mostly in the 18-22 age bracket and recent high school graduates (Strage, 2008);*
- *Are, for the most part, people of the majority culture--white, non-Hispanic (Strage, 2008);*
- *Plan to, or do attend school full time (Pascarella & Terenzini, 1998);*
- *Plan to, or do take instruction on a 'main' campus instead of at extension centers (Pascarella & Terenzini, 1998);*
- *Frequently seek a "residential learning experience" (Pascarella & Terenzini, 1998);*
- *Look for a "warm and fuzzy" campus environment where they can expect extensive contact with "Mr. Chips"-like faculty members and advisors and with fellow students (Strage, 2008);*
- *Are interested co- and extra-curricular activities such as watching or participating in intercollegiate athletics, bands, music and drama outlets, etc. (Lake & Pushchak, 2006);*
- *Want significant campus-based social and entertainment options (like fraternities and sororities, clubs, academic societies, etc.) (Strage, 2008);*
- *Are quite concerned about the "reputation" and/or "prestige" of the college or university (Pascarella & Terenzini, 1998);*
- *Can afford through personal resources, parent's resources, or through an ability to borrow, high tuition and fees as may be charged (Lake & Pushchak, 2006);*
- *May place high value on preparation for careers or vocations; but may also place high value on the arts and sciences, on the humanities, on liberal education; and may profess to have a "love of learning;"*
- *May be very aware of and interested in the college's record of placing graduates in good jobs and/or in high quality graduate programs in areas like law, medicine, science, etc (Lake & Puschak, 2006).*

Decline of "Traditional Student" Enrollment

Reasonable scholars may disagree about the degree to which "traditional" students have or do not have all of these characteristics, but one fact is undeniable: traditional students are no longer the majority on college campuses and their numbers will continue to decline. Today, traditional students comprise only 16% of college students (U.S. Department of Education, 2008), more than half are over the age of 25, and go to school part-time (Eduventures, 2008). Approximately a quarter are taking online courses and over a million attend for-profit institutions such as the University of Phoenix, Argosy University, DeVry University, and others (Russo, 2006).

U.S. demographic studies reveal that the significant and steady growth in high school graduates that began in 1992 and fueled great growth on college campuses, reached its peak in 2007-2008 (Prescott, 2008). From that point onward, the number of graduates, depending upon location within the U.S., will either stabilize (projected for 12 states) or decline (projected for 28 states) (U.S. Department of Education, 2008). All remaining 20 states are projected to have growth of less than 10%.

In the pool of individuals that represent the market for higher education programs offered by post-secondary institutions, the proportion of the market represented by traditional students is declining. At the same time the diversity of the individuals in the same pool is increasing. Diversity at the high school student level quickly translates into diversity at the college campus level. Between 2004-2005 and 2014-2015 the following changes are predicted to occur at the secondary school level (Prescott, 2008):

- ♦ *Hispanic graduates will increase by 54%*
- ♦ *Asian/Pacific Islander graduates will increase by 32%*
- ♦ *Black, non-Hispanic graduates will increase by 3%*
- ♦ *American Indian/Alaska Native graduates will increase by 7%*
- ♦ *White, non-Hispanic graduates will decline by 11%*

The realities of college and university enrollments are inextricably tied to the population statistics and demographics for the nation. From patterns and trends reflected in the above data, it is reasonable to suggest that the major group of students who found their way to campuses in the past—traditional students—will be fewer in number. To the extent that traditional students can be replaced, the replacements will be less traditional; and they will bring different cultural orientations, needs, and expectations with them. Campus leaders must not only grasp the significance of this demographic change, but be prepared to make the significant recruiting changes that will be necessary to compete in a totally different environment.

Strategic Impact of the Decline in "Traditional Student" Enrollment

The decline in the number of high school graduates and the diversification of the characteristics of future students will have a significant impact on "traditional student" enrollment, but not all institutions of higher learning will be affected the same way. Hundreds of colleges and universities have for decades depended upon high school graduates to go directly into higher education and fill their classes. If this population is declining, what happens on college campuses? We suggest the following: First, unless traditional students are replaced by other types of students, there will be plenty of empty college classroom seats, which will lead to financial peril for institutions. Second, the instinctual response by many college administrators will be to increase efforts to attract members of this diminished applicant pool, thus increasing competition for traditional students as well as the marketing or recruiting costs related thereto. Third, many of the traditional students remaining in the diminished applicant pool will likely seek to "trade up" by applying for admission to "better" schools that they would not have considered before—places from which they previously would have expected to receive only "rejection letters."

Table 1. Informal Classification/Taxonomy of Colleges and Universities (A Perception of Quality Scale)*		
Classification	Connotes	Comment
Tier 1	The best in the nation	Very strong reputation; "star" faculty; great facilities; the sources of new knowledge, innovations, and inventions; enormous breadth of programs (especially at the doctoral level); and highly-selective admissions
Tier 2	Excellent	Regional reputation; excellent faculty; breadth of programs; excellent facilities; appropriate accreditations; modest research outputs, selective admissions
Tier 3	Good	Local reputation; only <u>some</u> of a large number of programs offered may be noteworthy; adequate faculty; often very good facilities; teaching emphasis; slight interest in research; less selective admission policies
Tier 4	Fair	Limited reputation, faculty quality and credentials may be inconsistent; marginal facilities; no research; open admissions
Tier 5	Poor or Worse	"Diploma Mills" unaccredited by any reputable accrediting body; usually operating out of a P.O. Box; typically lacking any full time, qualified faculty members; limited or no substantive educational facilities.
*Community/junior colleges are not categorized in this exhibit.		

Like most products and services, colleges and universities are differentiated by perceived and real levels of quality. The academy typically refers to these differences as tiers. Table 1 offers a taxonomy for consideration as a framework for viewing institutions of higher learning.

For the top colleges and universities, "Tier 1" schools, the need for adjustment may be limited. The "Ivy-League" universities and venerable institutions like, Stanford, Duke, Rice, Northwestern, Emory, Vanderbilt, Chicago, etc. will always get all of the applicants they need; and their admissions committees will continue to be in a position to offer seats to only a fraction of those who apply. It is quite likely that such schools are always going to be insulated from the vicissitudes of demographic change. The same can be said for the nation's top public universities—places like Illinois, Michigan, Berkeley, North Carolina, Virginia, etc.

For many smaller, private/independent colleges or universities, and for many of the public universities that fall into Tiers 2 - 4, the challenge for campus leaders is often one of trying to strategically change a college in ways that make it more like that of their much more esteemed competitors and, therefore, making it more likely that a college can recruit the "better" students it hopes to attract. These strategic actions may be thought of as attempts to improve the value proposition for prospective students—promising more to students in exchange for the tuition and fees they will invest in their education. Many schools in tiers 2 – 4 are amassing debt to make these changes and improvements (for examples, see Gallagher, 2009; UC Newsroom, 2006; Phillips, 2009).

Altering product and service mix strategies are common tactics used by campus leaders in attempts to attract more traditional students, in a market segment where the population is declining and for which the competition is most intense. The product and service mix of a university is its programs, physical facilities, faculty members, and student support/development services. The intent of adjusting the quality of the product and service mix is to convince prospective traditional students that a given non-tier one college is more competitive with the higher tier schools than it may have been in the past. Campus leaders at Tier 2 - 4 institutions may find out the hard way that they may be chasing goals they are unlikely to attain. Clearly, the decline in the number of traditional students is more problematical for lower tier schools than for the elites because the demand for education in the top tier schools is inelastic. The demand in "lesser institutions;" however, is quite elastic. The top tier schools will cannibalize the 2nd tier schools to fill the seats at the tier one schools; and students who make the switch will be quite happy to adjust their aims-- even if the prices are higher. The tier 2 schools will cannibalize the 3rd tier schools to fill seats in their classrooms; and the 3rd tier schools will cannibalize the 4th tier schools to fill their classrooms seats. Even community colleges may hurt as four-years schools accept students they would not have accepted in the past who might have otherwise attended the two-year institutions. As these adjustments occur, and as students behave rationally by enrolling in the better schools that previously would not have admitted them, colleges and universities on the lower end of the "perception of quality" scale, will suffer enrollment shortfalls; thereby potentially placing them in

financial jeopardy. This will be especially so for schools that have spent money aimed at increasing enrollments of traditional students, but which have, in the past, shown little interest in attracting and serving non-traditional students.

THEME 2: CHANGING STUDENT EXPECATIONS - ATTRACTING "NEW" AND "NEWER" NON-TRADITIONAL STUDENTS BY UNDERSTANDING THEIR GOALS AND NEEDS

Based on the demographics cited, it is a near certainty that the "traditional" college student population is declining. It will likely become more difficult and more expensive to recruit traditional students who might actually agree to come to many campuses where they have always been the majority.   This means the relative importance of enrolling non-traditional students to fill seats formerly filled by traditional students will become more imperative than ever before. We have asserted colleges and universities in lower tiered schools will be impacted most by this change. To keep their financial heads above the water, many down-market institutions will have to recruit and admit larger numbers of students with different wants and desires than those they had previously relied on to fill their classes.   Thus, a logical question for these schools is, "Is it possible to recruit more non-traditional students to make up for what the campus will likely lose as traditional students choose to go elsewhere, or if they choose to skip a traditional approach to earning a degree altogether?" This section will address the strategic implications of answering that question.

"New" and "Newer" Non-traditional Students, Who are They?

If any institution wants to increase its attractiveness to potential non-traditional students, it is important for all of the "players" on a campus to know as much as possible about these segments (we argue) of the market for higher learning. When thinking about the non-traditional students, we were reminded of a line of dialog repeated many times in the old "Butch Cassidy and the Sundance Kid" film. The line was "Who are those people?" Well, for starters, the academic preparation of these students may be similar to those who have been admitted in the past, but their backgrounds, and current stations in life may be reflected in a much different set of expectations and needs that they required from the academic institution.

Societal, economic, and political changes all contributed to the rise of the "nontraditional" student. "The Allied victory in World War II, the decrease in blue-collar jobs, and changing gender attitudes encouraged members of minority racial groups, young people with low social-class standing, and women to attend college (Bean & Metzner, 1985)." Among the first waves of non-traditional students was the horde of returning military service veterans who, under the auspices of the "GI Bill," flooded college and university campuses following the close of WWII and after the Korean Conflict (Ogren, 2003). To differentiate among the cohorts of non-traditional students that

will be discussed in the following narrative, this group has been labeled the "NTS-1" group, or the original group of non-traditional students. When the GI's (the NS-1 group) came through the college doors, campus leaders made many modifications to accommodate them. Some of those campus adjustments became institutionalized and benefited other non-traditional students who came later. For example, financial aid and affirmative action increased the racial, class, and gender diversity of American campuses in the 1960s. As the cohort of returning veterans moved through the higher education system, their number soon abated and institutions re-focused upon what they had done in the past: mainly serving traditional students. The small number of remaining non-traditional students on campuses again experienced an education environment in which they were expected to "bend" to meet the schedules and policies of the institution instead of having the institution "bending" to meet the student's needs.

By about 1970 things began to change again. A much larger number of non-traditional students began to appear on college campuses. This development elevated the impact and the significance of this category of students to an unprecedented level. Higher education scholars gave the 1970s' – 1980s wave of non-traditional students the label of "the New Students in Higher Education." This cohort is referred to as the "NS-2" group in this paper. To be classified as a member of the NS-2 cohort of non-traditional students, one or more of the following descriptors would have to be observable in the student's status:

1. *Being older than typical college student ages (usually age 25 or greater);*
2. *Classified as a part-time student;*
3. *Not financially dependent on parents;*
4. *Work full time while enrolled;*
5. *Have dependents;*
6. *Are single parents; and*
7. *Are recipients of a GED or high school completion certificate. (National Center for Education Statistics, 2002).*

The differences in characteristics between traditional and "new non-traditional" students meant that the non-traditional student cohorts came to campuses with different needs and expectations of the institutions with which they became affiliated. The following list identifies typical wants and needs of this group.

♦ *New non-traditional students:*
♦ *Frequently want the ability to take instruction during the evening, on Saturdays, or on the weekends;*
♦ *Are interested in less than full-time study;*

♦ *Often seek off-campus classes (at extension centers) where they can take instruction at sites that are closer to either their home or work;*

♦ *Seek "discounted" tuition because they feel they don't ask for, or need, many campus services which are in place largely to serve traditional students;*

♦ *Seek "student-friendly" course transfer-in policies (because they often started course work years ago elsewhere; and/or because they move around a lot due to job transfers);*

♦ *Want access to ways of earning credits for "life experience" or "work experience" so as to short-cut the time to degree-completion;*

♦ *Expect eligibility for institutional financial aid;*

♦ *Want institutions to sensibly offer all of the classes that make it possible for a student to earn full degrees in selected areas solely by studying part-time, or in the evening, or on Saturdays, or in weekend or off-campus classes;*

♦ *Expect to have campus support services, such as counseling; food service; bookstore; bill paying, transcript requests; advising; and tutoring assistance, available when and where non-traditional students are on the campus—at night, Saturdays, etc;*

♦ *Have only limited interest in the out-of-class opportunities such as student clubs, student government, theatricals, fraternities/sororities, and athletics that are available and of interest to the "traditional" students;*

♦ *Believe that a college or university's "reputation" and its high-quality or "star" faculty is of some importance to them; but the convenience of learning and having the chance to get to degree-completion as fast as possible is more important for them (This is of the sharpest points of divergence between the traditional and non-traditional student);and*

♦ *Are highly-focused upon what their program will do to establish them in a career and/or enhance their path along a career they've already chosen to pursue.*

Soon, it wasn't hard to find professional articles appearing in many venues that suggested how campus leaders should adapt what they did to meet the needs of this growing student population group (See Aslanian, 1980; Brazziel, 1989; Levine & Nidiffer, 1996; Pascarella & Terenzini, 1998, and London, 1992). Over time the "new students" in higher learning"—first the NS-1 group and, later, the NS-2 group--were no longer the oddities on campuses that they once were. They became fully-assimilated into the life, work, and systems of the institutions where they studied. At many institutions, NS-1 and NS-2 students, despite their differences from higher education's first clientele, became the modern-day traditional students.

In the 1990s, as the millennium approached, yet a different group of non traditional students began to emerge. This group, to whom we refer as "newer students," is also discussed by Obligner (2003). She reported that the group included "Boomers, Gen-Xers, and Millenials." Further, she

asserted that each component of this triumvirate brought different traits and expectations to the table when then entered campuses and classrooms. The writers have, however, chosen homogenize this group and to call it the "newer students" cohort of nontraditional students and we've labeled the group as "NS-3" in this paper. The NS-3 cohort has some attributes in common with the NS-2 cohort, but this latest group to arrive on campuses brought their own unique characteristics with them. Given population demographic trends, it is likely that this latest group to appear in the higher learning marketplace will be both increasingly more significant in numbers and also more significant in terms of their likely influence on college campuses.

A profile of the characteristics of the "newer" students (NS-3 cohort) is described in the following list:

- *The "Newer Students in Higher Learning"*
- *Often are foreign born. If not foreign born, their parents are; and they may well be the first person in their family attempting a college experience;*
- *Often use English as their second language; having been reared with another language being the first language spoken in their homes;*
- *Frequently have meager financial resources;*
- *Often work minimum wage jobs; and do not have access to employer-sponsored employee tuition assistance programs; and*
- *Typically have extensive needs for remedial/developmental education (English language proficiency, writing skills, reading skills, study skills, math competency, etc.) in multiple areas.*

Along with these characteristics come a different set of expectations from the NS-3 non-traditional student. Table 2 compares the wants and needs of the NS-2 and NS-3 non-traditional students.

Table 2 Campus/Program Characteristics of Interest or Concern to Students: Comparing the "new" and "newer" non-traditional students		
Campus/Program Characteristics of Interest or Concern to Students	Importance to the NS-2 Cohort	Importance to the NS-3 Cohort
Out-of-class and/or extra-curricular activities (especially if they would require a student to come to a campus on a day of the week or at time of day when they would not plan to be on campus to begin with)	Low Importance	Not Important

Table 2 Campus/Program Characteristics of Interest or Concern to Students: Comparing the "new" and "newer" non-traditional students		
Campus/Program Characteristics of Interest or Concern to Students	Importance to the NS-2 Cohort	Importance to the NS-3 Cohort
Ability to classes full time instead of just taking classes on a part-time basis	Not Important	Important
Ability to enroll in day-time courses because they may work full or part-time in evening jobs. (This is a big point of difference between the "new" and the "newer" students	Not Important	Very Important
Want to have prior course work, perhaps from foreign institutions, evaluated for domestic course equivalency and then applied to domestic degree program requirements	Important	Very Important
Ability to live in housing in the community more than in college-owned or sponsored housing	Not Important	Low Importance
Expect or seek the ability to enroll in on-line or other media-based courses to minimize commuting time, trips to campuses, and time to degree completion	Very important	Very Important
A campus culture that permits students to quickly amass credits that will lead to degree completion (Concerns for quick completion may trump concerns about learning; Credentialism, not learning, may be the more sought-after value for this student group)	Important	Very Important
A teaching-learning system that utilizes computer-based and telecommunications technology in classes or used to deliver classes more conveniently available in distant locations	Important	Very Important
A setting where students and faculty members place high value on academic honesty and integrity	Low Importance	Not Important
An institution that accommodates varied religious traditions or customs	Low Importance	Very Important
The institution has excellent "customer service" standards	Important	Very Important

Strategic Implications for "New" (NS-2) and "Newer" (NS-3) students

Administrators who are accustomed to having traditional students making up the majority of the student population on their campuses are now faced with a multifaceted dilemma. Their future environment includes:

♦ *A diminished applicant pool from which traditional students can be drawn, formerly an institution's primary customer prospect;*

♦ *An intense need to replace traditional students with others so that campus economic imperatives can be addressed; and*

♦ *A realization that the market from which replacements might be drawn is segmented in ways that it has not been in the past (including a mix of NS-2 and NS-3 students).*

We will examine the strategic implications of replacing traditional students in two categories: recruiting and service mix.

Recruiting

Universities have become very sophisticated at targeted recruiting. They will need to become even more so if they want to succeed in recruiting and enrolling students from the "new" (NS-2) and "newer" (NS-3) non-traditional student segments of the market to replace likely losses from the "traditional" student cohort. For example, university Websites must become the center piece for recruiting because the newer non-traditional students (NS-3) use electronic sources as their first point of contact, if not their only source of information. Other web-based strategies will encompass embellishments for the campus: Facebook and MySpace pages, You-tube promotions, and campus tours, including even virtual reality sites as places where potential newer non-traditional students can be interested, informed, and, hopefully influenced.

Messages should also change to appeal to an older adult with more life experiences and responsibilities. Many of the NS-3 students are aware of the educational programs available to them, but have decided that the return on investment of their limited time and money does not justify enrollment. Emphasis on convenience and receiving credit for life experiences will be important to both the "new" and "newer" non-traditional student.

Strategies which target regional or local students as prospective enrollees will work for schools located in or near metropolitan areas. For schools not located in dense population areas, satellite learning centers may become necessary, which will also imply changes to the institutions service mix.

Service Mix

There are two key ideas for campus leaders to consider if they view NS-3 students as replacements for the diminishing number of traditional students. First, the NS-3 students may not want or need much of what institutions have traditionally included in their product/service mix (Dorm life, intercollegiate athletics, fraternities and sororities, co-curricular clubs, and other forms of campus life--like student government, drama and entertainment programming, fitness centers, etc.). Second, the NS-3 students may not be able to pay the prices that institutions have charged traditional students. Non-traditional students from either the NS-2 or the NS-3 cohorts may question

why they should pay, in the form of tuition and fees, for so many campus attributes and/or services that do not want or need but which heavily influence campus pricing models.

If these assumptions can be accepted as having some validity, then it follows that campus leaders need to re-think their concept of their product and of the aptness of the campus' product/services mix for this emerging segment of the higher education market. Leaders will have to consider cost-cutting measures that will bring costs (and therefore tuition and fees) into line with what the customers from the non-traditional segment of the market would likely be willing and able to pay.

Universities cannot assume that new, modern, or renovated on-campus living quarters will be attractive to the NS-2 or NS-3 groups as both tend to work full or part-time, have other family obligations, and general have little interest in on-campus activities or other aspects dormitory or campus life. Learning and growth opportunities outside of the classroom, such as intercollegiate athletics, fraternities and sororities, co-curricular clubs, student government, drama and entertainment programming, and fitness centers have little attraction for the same reasons.

What does interest the NS-3 student is convenience, flexible programming and/or class scheduling, credit for life experiences, career-focused learning, career development and placement services, and financial aid packages. Convenience includes access to necessary university resources: admissions, advising, registration, orientation, bill paying, libraries and computer labs, and parking. Flexible programming includes day, evening classes, and, perhaps, weekend classes. Credit for life experiences suggests innovative ways to award credit to those who have been in the workforce and actually "doing" much of what they are scheduled to study. Most non-traditional students, because of family circumstances and responsibilities, seek ways to advance their careers as quickly as possible. They have little time for classes that will not have an immediate benefit to them. For-profit universities exploit this need and have turned it into a billion dollar industry. Career focus may also mean reconsideration of how subject matter is learned (Blaylock, et. al, 2009). Finally, financial aid can no longer be made available only to full-time students. Universities may have to partner with lending institutions and employers to create new loans and tuition assistance programs for part-time students. Pricing differentials must also be considered because most non-traditional students are not interested in or willing to pay for many of the extra-curricular activities or services on campus on campus. An example might be health centers. No one would argue that health centers are not worthwhile or important, but non-traditional students seldom use them, so, they reason, why should they be required to pay for them?

The critical reader by now has concluded many of the above changes can occur on campuses with adoption of new technologies. Admissions are already done by many campuses on-line, often with a consortium of other institutions. As broad-band access becomes more readily available any type of interview can be done. Skype, Adobe Connect, and other conferencing technologies make meeting online almost as effective as meeting face-to-face. Distance learning systems are now pervasive in the for-profit education industry. Tier 2 – 4 schools have adopted such technologies

as add-ons, but they may now need to become a central focus. Quality of such courses is always important. Husson and Waterman (2002) have determined that selecting suitable faculty members for web-based delivery classes, providing them with training and support, carefully designing the learning environment, providing students with technical and academic support, and developing policies to run the system are the most important characteristics for a successful distance learning program.

To return to the question posed at the beginning of this section, "Is it possible to recruit more non-traditional students to make up for what the campus will likely lose as traditional students choose to go elsewhere, or if they choose to skip a traditional approach to earning a degree altogether?" The answer is yes, but institutions will be successful only if they change their mindsets about the students who will be the majority on campus and about the very different needs they will have. This is nothing short of a cultural change. A metamorphosis of this type may be lengthy and it may require turning loose of old traditions, but it will be an essential step for many schools whose survival will be "on the line."

THEME THREE: ECONOMICS

Campus Development

Strategic and long-range planning has become a central part of leadership on college campuses. Leaders must actively position their institutions within ever changing marketplaces by creating institutional environments designed to meet the needs and desires of future students. Planning goes beyond creating new programs or revamping current ones. It also entails infra-structure, support services, and program delivery options. Critical to any strategic plan are the assumptions upon which the plan is built.

Some universities and colleges seem to cling to assumptions true in the past, but which may be questionable now. Among these are

1)   *More students, just like those served in the past, would be drawn to newly-enlarged and modernized campus,*
2)   *Students would expect services and facilities to be as good as or better than those demanded in the past,*
3)   *Tuition can be increased on an average of 5% per year into the indefinite future, and*
4)   *Though possibly difficult, it is always possible to increase market share; but maintaining market share will be "no problem," and losing market share is not a plausible future outcome.*

Colleges and universities across the country (See Himmelspach, 2008; University of Alabama at Birmingham, 2007; Harvey Mudd College, 2007; University of Kansas, 2007; University of Wisconsin, 2007) have been engaged in extensive projects to create new and/or renovate old facilities. It would seem that they have adopted the philosophy of "If you build it, they will come." One is tempted to conclude that planners on these campuses, as they have invested heavily in major traditional bricks and mortar projects, have failed to notice the significant presence and success of on-line and virtual universities, or that planners have not perceived these programs as a market threat to their own institutions. One is further tempted to conclude that demographic changes, that clearly will affect the number and type of future students that will come to their campuses, were not perceived as relevant. Are some of these institutions headed toward committing a major error by erecting an ever-larger or ever improved physical plant? Even if gift and grant income could be obtained to fund many of the planned improvements, there are recurring costs (for utilities, maintenance, repairs, and maintenance staff) that could cause wonderful new teaching and learning spaces to become a financial albatrosses around the neck of any institution where projected increases in enrollment fail to materialize, or where enrollments actually decline.

Strategic Implications of Campus Development

Making decisions about the location and type of physical facilities needed to support college and university programs are, from the point of view of strategic planning, among the most significant decisions that academic leaders ever make. Apart from cost, facilities decisions are strategically important because they must support and be congruent with the institutional mission. If an institution has ambitions to grow, change, or improve, such aims have implications for the facilities and other resource requirements.

As higher education has evolved, and as new providers have entered markets, new approaches have emerged for providing physical facilities to support educational programming. Traditional institutions with long histories in their communities were developed under a model that includes elaborate and spacious grounds, punctuated with many specialized buildings, served by an extensive support staff, and accompanied by an expectation that students come great distances to partake of academic options offered. Consider such places as "Model 18" campuses—given that the model was developed in the 18th Century in the U.S. Campuses developed under this model were, and still are, very "place bound" which makes it difficult for institutions to respond to changing demographics that affect demand. Significantly, the Model 18 campus also carries with it substantial overhead costs that must be factored into institutional pricing strategies. This aspect can be problematical—irrespective of challenges an institution might face when demographics change.

Newer entries in higher education have entered markets with an entirely different physical facilities model. Think about institutions like the University of Phoenix, Argosy University, and

DeVry University/Keller Graduate School of Business as the exemplars of the newer entries that have seized upon a different approach to campus design. Having settled on a somewhat standardized design model, the newer entries have replicated the model in many cities across the country. We refer to these newer campuses as "Model 21" campuses—given that this concept of campus design emerged in the 21st Century in the U.S. The Model 21 campus design embeds value judgments that developers have made about what things are important to NS-3 students. A Model 21 approach has often been used, to a degree, by Model 18 campuses when such institutions have sought to expand their scope by offering courses in distant settings. Table 3 illustrates contrasts the elements of the newer (Model 21) campus facilities model with those of the traditional (Model 18) campus facilities model.

Table 3 Comparing the Physical Facility Attributes of Traditional College Campuses with an Emerging Model of New Campus Development			
Facility Attribute	"Model 21" - Newer Campus Models	"Model 18" - Traditional Campus Model	Comment
Ownership	Modest, leased space in office buildings	Extensive, buildings and grounds owned by the institution Model 21 allows easy entry and exits into and out of markets	
Reason for Location Choice	Site selection driven by an assessment of market potential	Site selection driven by an historical assessment of market; political and other factors	Model 18 campuses cannot easily adapt to changing demographics
Transportation Considerations	Critical site selection criteria are proximity to arterial roads and public transportation and/or ample parking	Transportation issues were not usually considered. The citing of many campuses pre-dated modern road system developments	Model 18 campuses may originally been located near heavy rail stations
Who Staffs?	Staffed by a Center Director and a small number of support staff who may be part-time employees	Staffed by extensive number of administrators and support staff members	
Library/Learning Resources	"Library" may be a room with a few computer terminals for on-line searches and a limited number of periodicals and reference works; little or no staff support	Extensive resources and many full time staff members to offer service	In Model 21 schools, students are told to use community libraries and libraries of other higher learning entities, thus shifting an institutional cost to others

Table 3 Comparing the Physical Facility Attributes of Traditional College Campuses with an Emerging Model of New Campus Development			
Facility Attribute	"Model 21" - Newer Campus Models	"Model 18" - Traditional Campus Model	Comment
Computer Utilities	Computer utility may be a room with a small number of computers	Extensive computer utility and staff to support it	In the new model, students are expected to have their own access to computers and connectivity at home or at work
Food Service	Vending machines provided under contract with outside supplier	Extensive food service operation offering food in multiple campus sites. Institution staff or outside vendor may provide the service	Offering high quality food service was once, and still is, an important competitive feature on Model 18 campuses
Physical Education/Health & Wellness Opportunities	None provided	Extensive facilities and full time staff provide these opportunities	
Maintenance	Provided by lessor or provided by lessee under contract with outside firm	Provided by an extensive maintenance staff on the institution's payroll	
Security	If provided—offered by part-time contract personnel	Extensive staff of full time campus security officers	
Faculty	Predominantly part-time, independent contractors	Mix of full time employees and part-time, independent contractors, and teaching assistants	Though diminished as a percentage of the total faculty, full-time, and often tenured, faculty members were the pride, and a major selling point, of Model 18 campuses
Marketing Slant	"The institution is where you are! It's convenient and close."	"Come to where we are and bask in the beauty and tradition of our campus." Model 21 institutions adopt the "Marketing Concept"; Model 18 institutions are pursuing the "Production Concept."	

Leaders on many campuses should use caution with respect moving ahead with campus development plans—especially if and where they involve significant commitments to infrastructure and brick and mortar projects. The arguments in favor of exercising caution include the following:

- ♦ *Projected decline in the pool of "traditional students," reported above suggests that college and universities farther down on the "Perception of Quality Scale" (Table 1) will be those that lose the largest number of students from that group. This will, of course, imperil the financial conditions on such campuses.*

- ♦ *College leaders, most especially those heading up Tier 3 and Tier 4 institutions, in a quest for institutional viability, will need to vigorously, recruit students in the NS-3 cohort to replace any traditional students that will be lost, most likely, to Tier 2 schools.*

- ♦ *If the NS-3 students recruited to replace lost traditional student enrollments on a campus cannot afford to pay the costs of their education in the same manner as did traditional students; or as did the NS-2 cohort, a college will most likely have to discount tuition more aggressively than usual to get the NS-3 students to enroll. Thus, in a situation where an institution was able to replace 200 lost traditional students with 200 NS-3 non-traditional students, discounting would reduce gross revenues; and per student profit margins will decline. The financial problem will be exacerbated if the 200 NS-3 students need extra services (such as more tutoring assistance in basic language skills) that would boost the expense side of the ledger. As can be seen, the loss of one traditional student will have to be made up for by recruiting more than one NS-2 or NS-3 student in order to get an institution in a state of financial equilibrium.*

- ♦ *If the NS-3 cohort is not buying what traditional colleges are selling, then campus leaders should think twice before building, creating, or offering more of the "same old thing" going forward into a changing higher education market place. It is imperative that campus strategic planners discern contemporary student needs and demands or else they will fail to develop facilities, services, programs, or other initiatives that will have high probabilities for success, financial or otherwise.*

- ♦ *The growth and success trajectory of on-line and more career-focused, for-profit institutions of higher learning strongly suggests that such institutions are going to continue to make in-roads into the market shares of traditional colleges and universities. More traditional colleges and universities, especially, those operating at the margins of higher education, must create strategies to fend off those incursions on their market share if they seek to survive going forward.*

- ♦ *Student interest in alternative schedules, in the ability to take on-line courses, and in taking instruction at distance learning facilities should be factored into a traditional college's future strategic plans even if these modalities have not been*

emphasized in the past. Institutions considering more traditional bricks and mortar expansions should pay special attention to the increased likelihood that these structures, representing part of their service mix strategies, may not be as successful as history suggests.

Increase in Higher Education Cost

Meeting the demands of a changing market by adding or adjusting product/service offerings is a costly proposition in most industries. This is true for higher education institutions as well. Like product/service mix changes made by private sector organizations, improvements to college and university campuses are costly too. On the typical campus, revenue comes from only four sources: 1) tuition and fee income; 2) sales from auxiliary services such as food service, housing, facilities rentals, and bookstore operations; 3) grant and contract income; and 4) donations and non-monetary gifts. Of the four sources, tuition and fee income is the most important on any campus.

An examination of recent institutional behavior seems to suggest that most college and university leaders are assuming that they can upwardly adjust their tuition and fees over the years to cover the increased costs of providing a more attractive value proposition for traditional students. From the 1996-97 to 2006-07 school years, tuition and fees at private four-year institutions increased 82.8% and 96% at public four-year schools (U.S. Department of Education, 2008). During that same period, the Consumer Price Index has increased 56.2% (InflationData.com, 2009). In other words, a belief exists on many campuses that there is no point at which consumers will say "no" to tuition and/or fee schedules. Apparently, college and university leaders don't believe that they can price themselves out of the market. Wrongly, they assume that the demand for higher education is inelastic. That is to say, students will continue to enroll in a college no matter how high tuition and fee charges ascend. In truth, demand for higher education may be very elastic. This leads to the inevitable conclusion that a high cost structure looms as a serious potential problem on many campuses.

An analogy can be made between the attitudes of many college leaders and the attitudes of many in the real estate industry. The mortgage market melt-down of 2008-2009 proved housing prices would not increase indefinitely going into the future. The correlated crisis in the financial system has brought additional, unwelcome changes in many sectors of society—including a reorientation of student and parent decision-making about spending money on college tuition. Black, writing in the *Chicago Tribune* (2009), reports that students who have applied for and gotten acceptance notices from elite schools are opting to enroll in less-prestigious schools for financial reasons. "Even as the amount of tuition loans rises, students deciding on colleges are increasingly weighing finances as a major factor, forcing many to opt for their second or third choice." Other students, who normally would have aimed to enroll in more selective, or more prestigious private institutions, have shifted their focus toward the less-costly public universities. One observer noted

that "…we have seen 60-65 percent of students applying to public universities…whereas, a year ago, it was just the inverse."

Strategic Impact of Increased Higher Education Costs

The extant and emergent stresses in the economy and in the financial markets during 2008-2009, and its likely extension into 2010, will surely test the elasticity/in-elasticity of demand argument with respect to high education. Campus leaders are encouraged to pay attention to the results of that test. What is the writers' guess? First, it is likely that campus financial conditions will get worse before they get better—especially among institutions that, historically, have been publicly-funded (i.e., the "state schools"). Until the millennium approached, higher education had, for decades, been the "favored child" of state legislatures; and funding from the legislatures flowed into state schools in predictable and generous ways. However, from about the early 1990s onward, competing social priorities began to eclipse higher education as the areas where public dollars were thought to be most need (Kane, Orszag, & Gunter, 2003). More often than not, expanded social services, public safety improvements (including prison expansions), health care improvements, environmental concerns, early childhood education, and other issues have been considered more worthy of funding than was pouring more funds into the coffers on the ivied college and university campuses. As a result of this shift in legislative emphasis, campus administrators had no riper place to turn, as they looked for revenue to replace diminishing state support dollars, than to tuition and fee structures. Tuition and fees have increased at a much higher rate than has inflation or state budgets (U.S. Department of Education, 2008). On some campuses, increases have been steady but more moderate. It is likely that this trend will continue wherein students and/or their parents (and not the state) will be expected to carry more and more of the cost burden for a student attending a state school (Kane & Orszag, 2003; Archibald & Feldman, 2006). The private universities have been just as prone to increasing tuition as have the public schools, but they have sought to mitigate the increases to a degree by being both more aggressive and sophisticated than the public school leaders in seeking private support from alumni and other donors.

Second, it is also likely that in response to ever-increasing tuition and fees, students (and their parents, employers, or whomever subsidizes students' school attendance) will begin to rebel against these rising tuition and fee charges. The rebellion will likely be fueled by cost-benefit analyses that could reveal that the projected income from jobs that might be assured to those who earn college degrees may not be high enough to justify the increasing expense of earning those degrees (Fish, 2009). If the projected rebellion does occur, it should be greatest among students who might normally pursue degrees in the social sciences, education, and fine arts and the humanities where salary incomes are lower than in business, medicine, law, engineering, and the hard sciences.

Third, rejection of the college degree as "preparation for the world of work" of work might be abetted by further disintegration of the domestic economy. When domestic job creation slows,

when unemployment rises, and when so many domestic jobs are out-sourced off-shore, a predictable adverse effect upon the perceived benefits of earning a college degree will become a matter of fact (Lyall & Sell, 2005; Fish, 2009).

Ip (July 2008) recently commented on this topic when he observed that "A four-year college degree, seen for generations as a ticket to a better life is no longer enough to guarantee a steadily rising paycheck…For decades the typical college graduate's wage rose well above inflation. But, no longer! In the economic expansion that began in 2001 and now appears to be ending, the inflation-adjusted wages of the majority of U.S. workers didn't grow, even among those who went to college…College-educated workers are more plentiful, more commoditized and more subject to the downsizings that used to be the purview of blue-collar workers only (Ip, July 2008)." Ip continues on by writing that workers today need to understand "… how insecure any job can be and how little a college degree by itself stands for…Employers are going to ask 'What else have you done in your life besides going to college?'"

As these realities begin to "sink in" with prospective students, it is quite logical to believe that the appeal of traditional degree programs will decline, especially at institutions where traditional degree programs are delivered in traditional locations, in traditional formats, and with traditional methods of instruction. At the very least, it is likely that when prospective students consider their options, a shift in student preferences will occur—away from four-year college and university programs and toward lower cost, shorter-term, career-focused programs, like those offered in community colleges. Other beneficiaries of a shift could be the for-profit, career-focused two- and four-year colleges. Tuition is not cheap in such schools, but they operate in ways that tend to compress the experience and minimize "time to degree" (and, therefore, minimize both out-of-pocket and opportunity costs for students). That is certainly a marketing advantage when consumers are price-sensitive. Those career-focused institutions also tend to do a better job in concurrently providing both distilled theoretical knowledge and hands-on training to their students. As noted, this combination is one that employers increasingly favor.

Finally, while elite colleges and universities will always have enough cachet to draw students irrespective of cost, many "down-market" schools don't, and won't ever share that lofty position in the pantheon of higher education institutions. Those colleges and universities in the lower tiers on the academic quality perception scale face a significant competitive challenge on many fronts that will influence their ability to do well—or maybe even their ability to survive—in the higher education market place in the years that lie ahead. If these same institutions, in addition to their other competitive challenges, persist with ever-increasing tuition and fee structures, they will surely drive themselves out of the market for students. They will especially drive themselves out of the market made up of the diminishing pool of traditional students.

About a decade ago, Levine (1998) observed that "…this is also a time of danger. It is not clear that higher education as it has evolved to the present day can survive unchanged into the future. Its present design and structure may not be sustained. It faces a radically different environment than

in the past…" We not only think that it remains a time of danger, but that the danger has increased because the environment is even more hostile than when Levine wrote those words. Previously venerable and admired institutions that fail to adjust their strategies to the realities of the contemporary higher education marketplace will be more vulnerable than ever before.

CONCLUSION

Shifting demographics, changing student attitudes and expectations, volatile economic considerations, galloping advances in technology, globalization, and increased competition within the higher education market place present significant, on-going challenges to college campus leaders who are responsible for charting the strategic directions for the future of the institutions which they lead.

Successfully coping with these changes requires campus leaders to engage in what Fullan (2001) calls "reculturing." Stop for a moment and think about how foreign the following tactical and implementation steps are within the academic strategies followed by a very large number of very traditional U.S. colleges and universities: highly career-focused curricula; tele-courses, internet/on-line courses and degrees, and other forms of non-face-to-face; credit-for-life experience programs; service learning experiences; off-site courses and degree programs in distance learning centers and employer workplaces; differential tuition pricing; inter-institutional collaboratives, etc. These and any number of other contemporary methods for delivering instruction, providing services, and otherwise working with students are hardly the sacrosanct and hallowed practices within most traditional institutions that currently work in the higher education market space. Yet, it is exactly that type of reculturing which is needed on many traditional college campuses to better strategically position themselves to compete in the marketplace for the kind of students who will be available and interested in pursing a degree. The strategic re-positioning would involve the adoption of many of the marketing, pricing, delivery methods and student services that have been mentioned in this paper.

Strategic approaches to responding to the projected declines in traditional student populations will yield opportunities for institutional survival and success, but only if academic leaders can release many of their fond and happy thoughts about the old alma mater that are, in reality, constraints.

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JOB ORDER COSTING: A SIMULATION AND VEHICLE FOR CONCEPTUAL DISCUSSION

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ABSTRACT

This paper offers a hands-on approach to teaching job order costing in introductory managerial accounting or in cost accounting. It is motivated by the belief that students would have a better appreciation of how goods and costs flow in a manufacturing firm through an experiential learning exercise as opposed to passive learning methods such as reading a text description or listening to a lecture. The exercise involves the simulated manufacture of a table from the purchase of raw materials through the sale of the finished product. Cost accumulation is illustrated using both actual and normal costing systems.

INTRODUCTION

Job order costing is typically covered in cost accounting and managerial accounting courses and appears in virtually all such textbooks (e.g., Hilton, 2005; Schneider, 2009). Students often have difficulty understanding job order costing because they do not have a good understanding of manufacturing processes. To overcome this lack of understanding, it would help for students to be exposed to an actual manufacturing operation. The exercise described in this paper allows the student to experience a manufacturing operation in the classroom. The exercise involves the manufacture of a custom-made table out of balsa wood and other materials. The process begins with the purchase of raw materials and ends with the sale of the finished product.

Although other approaches have used LEGO® blocks to teach management accounting terms and techniques (Roth, 2005; Morgan, Martin, Howard, & Mihalek, 2005; Burns & Mills, 1997), this simulation is different in two major ways: (1) it focuses solely and comprehensively on job order costing whereas previous articles have only superficially covered job order costing, and (2) by using the variety of materials called for in this simulation, the product and manufacturing process is more realistic, affording the students the ability to clearly see the differences between direct materials and indirect materials, direct labor and indirect labor, and other items that constitute manufacturing overhead. We feel that this is an extremely important differentiation not only in understanding traditional cost accounting, but in understanding activity-based costing, since the difference between the two methods lies with overhead. This method of teaching job order costing provides the student

with a hands-on experience and allows them to actively participate in the learning process. It is suitable for practically any classroom configuration with any number of students.

Two methods for increasing student interest discussed in the literature involve making the instruction fun and hands-on (Davis, 1993). The simulation described in this paper accomplishes both of those objectives. When students are interested in the topic, they are more likely to remember the lessons and key points (McKeachie, 1994). Simulations and role-play can be particularly effective teaching techniques by arousing interest, providing a concrete basis for discussion, and by illustrating the major principles from the lesson. Studies have shown active learning techniques such as simulations and role-play to be stronger than traditional methods of instruction in terms of knowledge retention, knowledge application, and motivational outcomes (Dekkers & Donatti 1981; McKeachie, 1999).

We have used this manufacturing simulation in undergraduate managerial and cost accounting classes, and in an MBA class to teach job order costing. The exercise reinforces cost and other concepts, such as types of costs and types of inventories, to which the students have been briefly exposed prior to learning about job order costing. The primary purpose of our exercise, however, is that it demonstrates how products flow through the factory and how the corresponding costs of making the product flow through the accounting system. The student sees first-hand how costs are accumulated and product cost is determined in a job order cost system. The exercise illustrates the use of source documents unique to job order costing such as the job cost sheet, time tickets, and materials requisition forms. The unique issues associated with how to charge manufacturing overhead to a particular job are also discussed, along with the procedures and concepts of an actual cost system versus a normal cost system.

OVERVIEW AND PURPOSES OF EXERCISE

We illustrate the flow of goods and costs in a manufacturing firm using a job order cost system by simulating a manufacturer of custom-made furniture. During a specified time period, we have a company working on three different pieces of furniture – table, bookshelves, and china cabinet. For simplicity, we fully demonstrate only the manufacture of the table. The process begins with the purchase of materials from a supplier and ends with the sale of the completed table to a customer. After the student has an understanding of the physical flow of the product through the factory and the corresponding flow of costs through the manufacturing accounts, the bookshelves and china cabinet are introduced through their already updated job-cost sheets. At the end of the period, it is assumed that the bookshelves are completed and in finished goods, and that the china cabinet remains in work in process inventory.

The simulation is divided into two parts; Part I illustrates the flow of the product through the manufacturing facility and the corresponding flow of costs through the accounting system, while Part II involves allocating manufacturing overhead to the job. Both an actual cost system and a

normal cost system are illustrated. Many different teaching opportunities present themselves throughout the simulation and are noted in our discussions.

The purposes of the exercise are:

♦ *To demonstrate how products flow through the factory.*
♦ *To demonstrate how the cost of making the product flows through the accounting system in a way that mirrors the physical flow of the goods through the factory.*
♦ *To demonstrate how manufacturing costs are accumulated and how unit cost is determined in a job order cost system.*
♦ *To demonstrate how manufacturing overhead is allocated; the unique issues associated with allocating overhead and how it is allocated in an actual cost system and in a normal cost system.*
♦ *To set the stage for a discussion of activity-based costing and comparison of traditional and ABC product costs.*
♦ *To actively engage the students, help form community in the classroom, and to make accounting fun.*

METHODOLOGICAL APPROACH

The instructor will need to provide the following supplies for the exercise:

♦ *Miniature bookshelves* to use as a prop in the finished goods (FG) inventory warehouse;*
♦ *Miniature china cabinet* (in incomplete form) to use as a prop in work in process (WIP) inventory;*
♦ *One piece (3/32" x 6" x 36") of balsa wood to serve as oak wood for a table base and legs [direct materials (DM)];*
♦ *One clear plastic sheet (8.5" x 11") protector (trimmed and separated) to serve as a glass top for the table [DM];*
♦ *One piece of non-adhesive felt (9" x 12") to protect the glass from the wood base [indirect materials (IM)];*
♦ *Glue [IM] to adhere the felt pads to the corners of the wood base;*
♦ *One small container of brown paste shoe polish for stain [IM];*
♦ *One piece of sandpaper [IM];*
♦ *One paper towel to rub stain on the table [IM];*
♦ *Ruler for measuring;*
♦ *Pencil for marking measurements;*
♦ *Cutting board;*

- ♦ *Knife and/or scissors to cut plastic paper sheet protector, felt, and wood (make sure that the knife/scissors is strong enough to accommodate the thickness of the wood);*
- ♦ *Masking tape to mark off the departments: Raw Materials (RM) Warehouse, two manufacturing departments – Cutting and Finishing, FG Warehouse. Masking tape may not be necessary if the classroom can be logically divided in another way. For example, we have used chairs to serve as the RM Warehouse and the FG Warehouse, and a table to serve as the manufacturing floor.*
- ♦ ** Miniature furniture may be purchased at a hobby store.*

We chose these particular materials to get a good mixture of direct materials and indirect materials. We use two examples of direct materials, and use indirect materials that are incorporated in the finished product (i.e., felt pads, glue, stain), as well as indirect materials that do not become part of the product (i.e., sandpaper, paper towel).

The instructor will need to select six students for the following roles:

- ♦ *One deliverer of the raw materials from an outside supplier*
- ♦ *One RM Warehouse Storekeeper*
- ♦ *Two direct labor (DL) workers:*
  --Cutting Department DL worker (DL worker A)
  --Finishing Department DL worker (DL worker B)
- ♦ *One FG Warehouse Supervisor*
- ♦ *One customer*

The instructor can act as the Production Supervisor as well as the Cost Accountant. Each of the students wears an 8.5" x 11" sign with their job title around their necks.

It is helpful to display a prototype of the table so the students have a visual of what they are trying to make. Also, in the interest of time, mention to the students that the table need not be made to perfection.
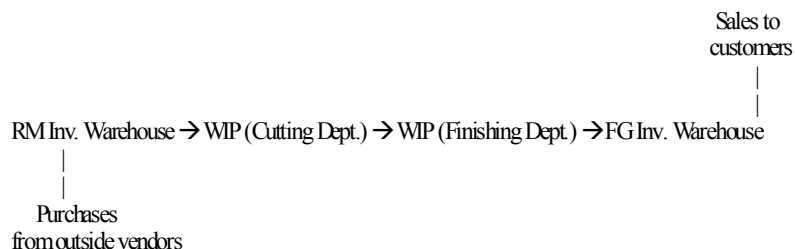
Students should be provided with the following five handouts:

- ♦ *"The Flow of Product Costs in a Manufacturing Company" (see Figure 1);*
- ♦ *"T-accounts for Assume Table is Finished and Sold" (see Figure 2);*
- ♦ *"Time Tickets & Materials Requisition Form" (see Figure 3);*
- ♦ *"Job Cost Sheets for Jobs #1, #2, and #3" (see Figure 4);*
- ♦ *"T-accounts for Assume Table is Finished and Sold, Bookshelves are Finished, and China Cabinet is Not Finished" (see Figure 5).*

MANUFACTURING PROCESS

The manufacturing facility encompasses the raw materials and finished goods warehouses, and the factory floor, where production takes place. The factory floor consists of two different manufacturing departments, the Cutting Department and the Finishing Department. A description of the factory floor follows:

```
                                                              Sales to
                                                              customers
                                                                 |
                                                                 |
  RM Inv. Warehouse → WIP (Cutting Dept.) → WIP (Finishing Dept.) → FG Inv. Warehouse
        |
        |
    Purchases
 from outside vendors
```

When purchased, raw materials are delivered to the Raw Materials Inventory Warehouse where they are stored until requisitioned for production. When requisitioned, raw materials are moved out onto the factory floor where actual production takes place; all materials there are considered work-in-process until production is completed. In the Cutting Department and in the Finishing Department, factory employees combine materials with their labor to produce finished products. The finished products are then moved into the finished goods inventory warehouse and stored until sold.

PART I

Part I of the simulation illustrates the flow of the product through the factory and the corresponding flow of manufacturing costs through the accounting system.

Teaching opportunity: Discuss the basics of a job order cost system and why it is being used in this particular manufacturing operation, as opposed to a process cost system.

The exercise commences with the following procedures:

Set up the classroom by designating space for the RM Warehouse, the factory floor containing two distinct departments for WIP (Cutting and Finishing), and the FG Warehouse.

Briefly review "The Flow of Product Costs in a Manufacturing Company" handout (see Figure 1), which presents the account entries needed throughout the manufacturing process from the purchase of raw materials to the sale of the products.

Figure 1 -- The Flow of Product Costs in a Manufacturing Company
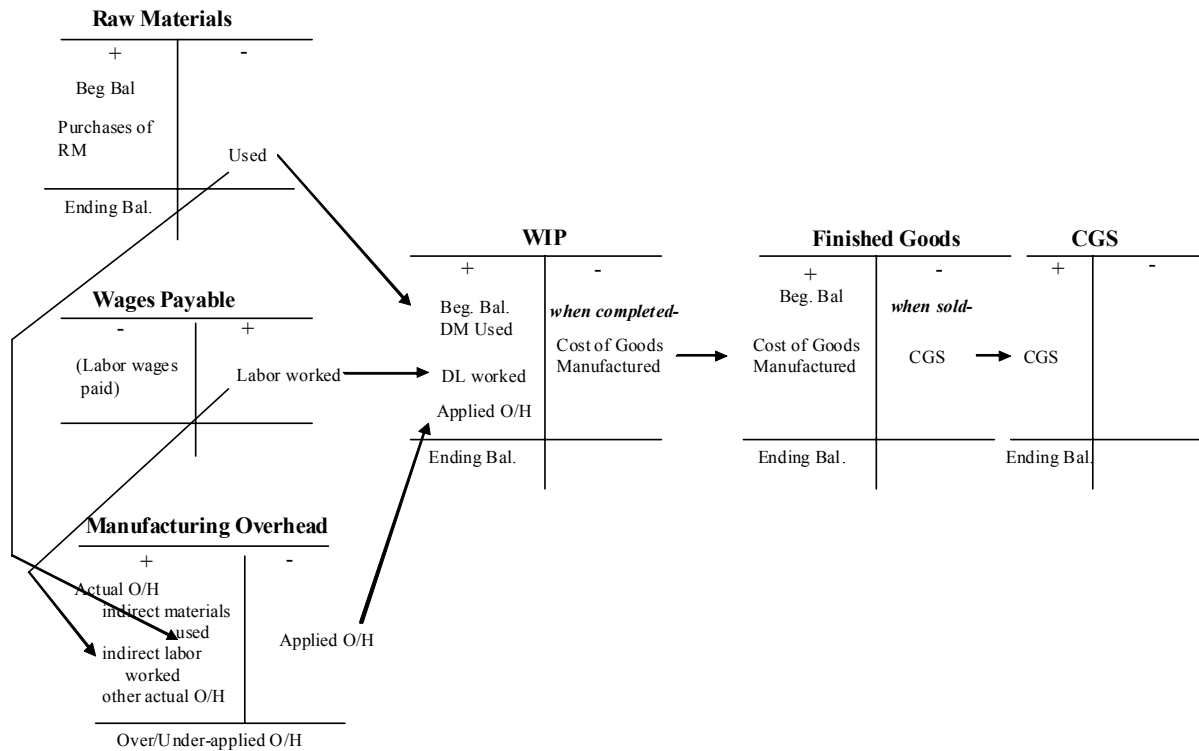
The "T-accounts for Assume Table is Finished and Sold" handout (see Figure 2) should be copied on the board or placed on an overhead projector so that throughout the manufacture of the table, the instructor can demonstrate how the movement of the product costs through the accounting records mirrors the movement of the product through the factory. All T-accounts will have $0 beginning balances.

Figure 2 -- T-accounts for Assume Table is Finished and Sold

At this time, the instructor begins to walk the students through the transactions and transitions that encompass the manufacturing process. The first transaction involves the purchase of raw materials. When purchased, raw materials (both direct materials and indirect materials) are delivered to the raw materials inventory warehouse where they are stored until taken out for production. Assume the company purchases $4,000 of raw materials and places all direct and indirect materials (wood, glass, stain, felt, etc.) in the RM Warehouse. The instructor updates the Raw Materials T-account on the board by adding $4,000 for the purchase from outside suppliers.

Next, the instructor explains the direct labor costs which involve two workers – one in the Cutting Department and the other in the Finishing Department. The job of DL worker A (Cutting Department) is to cut the wood and glass (i.e., sheet protector) for the table. DL worker A fills in his time ticket (see Figure 3), indicating he is starting work at 8:00 AM on Job #1. See Time Ticket #1 below.

Figure 3 -- Time Tickets & Materials Requisition Form

Time Ticket #1

Employee _____   Date _____

<u>Started</u>   <u>Ended</u>   <u>Time Completed</u>   <u>Rate</u>   <u>Amount</u>   <u>Job Number</u>

Supervisor _____

Time Ticket #2

Employee _____   Date _____

<u>Started</u>   <u>Ended</u>   <u>Time Completed</u>   <u>Rate</u>   <u>Amount</u>   <u>Job Number</u>

Supervisor _____

Materials Requisition Form

Job Number to Be Charged _____   Date _____
Department _____

<u>Description</u>   <u>Quantity</u>   <u>Unit Cost</u>   <u>Total Cost</u>

Teaching opportunity: Explanation of a time ticket.

```
┌─────────────────────────────────────────────────────────────────────┐
│                        Time Ticket #1                                  │
│                                                                        │
│   Employee: Student's Name                      Date _____            │
│                                                                        │
│    Started     Ended    Time Completed   Rate    Amount   Job Number   │
│    8:00AM                                                   1 (Table)   │
│                                                                        │
│                                                                        │
│   Supervisor: Instructor's signature                                   │
└─────────────────────────────────────────────────────────────────────┘
```

DL worker A then requests the materials (i.e., wood and glass) needed to begin work on the table – Job #1.

Teaching opportunity: *Explain the difference between DM and IM.*

The wood and glass are DM and are economically worth tracing. Accordingly, DL worker A fills out a Materials Requisition Form (see Figure 3), asking for wood and glass, and presents it to the RM Warehouse Storekeeper.

Teaching opportunity: Explanation of a Materials Requisition Form.

The completed Materials Requisition Form appears below:

```
┌─────────────────────────────────────────────────────────────────────┐
│                     Materials Requisition Form                         │
│                                                                        │
│     Job Number to be Charged  1                  Date  _____          │
│     Department Cutting                                                  │
│                                                                        │
│     Description        Quantity                 Unit Cost    Total Cost │
│     oak wood    48 sq. inches (one 6" x 8"board)  $3.00/sq. in.  $144.00│
│     3/8" glass  80 sq. inches (one 8" x 10" glass) $ .70/sq. in.   56.00│
│                                                                  $200.00│
│                 Authorized Signature Instructor's signature            │
└─────────────────────────────────────────────────────────────────────┘
```

The Storekeeper gives DL worker A the requested materials and sends the Materials Requisition Form to the Cost Accounting Department. The Cost Accounting Department (i.e., the instructor) completes the cost information on the form (i.e., unit costs and total costs), and begins to keep track of the entire job's costs via a Job Cost Sheet (see Figure 4 for the Job Cost Sheets). The DM cost is entered on the Job Cost Sheet upon receipt of the Materials Requisition Form for

that specific job. For the table, Job #1, the total DM cost entered is $200. In addition, the instructor updates the T-accounts on the board, moving $200 out of the RM Inventory account and into the WIP T-account. Once on the factory floor, all materials are considered WIP until the process is completed.

Figure 4 -- JOB COST SHEETS FOR JOBS #1, #2, and #3

JOB #1	JOB #2	JOB #3	
Table	*Bookshelves*	*China Cabinet*	
Job Cost Sheet	*Job Cost Sheet*	*Job Cost Sheet*	*TOTAL*
DM $200	DM $700	DM $2,000	DM
DL 75 (5hrs.@ $15)	DL 150 (10hrs.@ $15)	DL 525 (35hrs.@ $15)	DL
O/H	O/H	O/H	O/H
Total Cost	Total Cost	Total Cost	Total Cost

Teaching opportunity: Explanation of a Job Cost Sheet.

Next, DL worker A cuts the table, cuts the legs, and cuts the glass to the specified sizes. DL worker A begins making the table by cutting the wood to measure 6" wide and 8" long. Then, the student pokes a hole in the middle of the wood and cuts out a 2" wide and 4" long piece so that the student is left with a 2" frame that will serve as the base for the glass top. Using the 2" wide and 4" long piece, the student cuts four legs, each one approximately 4" long and 1/2" wide. Finally, DL worker A cuts the glass so that it measures 8'' wide x 10" long.

We assume that DL worker A works on the table for three hours (5 - 10 minutes real time), and then sends the table to the Finishing Department. DL worker A updates the time ticket to indicate the time spent working on Job #1 (i.e., until 11:00 AM) and sends the time ticket to the Cost Accounting Department. The instructor finishes filling out Time Ticket #1, charging the time to Job #1, as follows:

Time Ticket #1

Employee *Student's Name*   Date _____

Started	Ended	Time Completed	Rate	Amount	Job Number
8:00AM	*11:00 AM*	*3 hours*	*$15.00*	*$45.00*	*1*

Cuts wood and glass.

Supervisor *Instructor's signature*

Using Time Ticket #1, the Cost Accounting Department updates the Job Cost Sheet for Job #1 with $45 DL, and the instructor accordingly updates the T-accounts on the board, increasing Wages Payable and increasing WIP by $45. The instructor may wish to emphasize that the DL costs become part of WIP, rather than being treated as wages expense.

Once the cutting portion of the job is complete, the job moves to the Finishing Department. There, the job of DL worker B is to stain and assemble the table. First, the student stains the wood frame and the four legs. The legs are then attached to the frame by inserting them into thin slits that the student cuts in each corner of the table frame. Finally, the student cuts the felt into four ½" square pieces and glues each piece to the outside corners of the wooden frame. The glass is then placed on top of the 2" wood frame and the table is complete! DL worker B fills in his time ticket, Time Ticket #2, to indicate he is beginning work on the table (Job #1) at 11:00 AM, as follows:

Time Ticket #2					
Employee *Student's Name*			Date _____		
Started	Ended	Time Completed	Rate	Amount	Job Number
11:00AM					*1*
Supervisor: *Instructor's signature*					

DL worker B commences his work by obtaining the (indirect) materials required to assemble and stain the table (i.e., sandpaper, stain, paper towel, felt, and glue).

Teaching opportunity: Discuss the differences between direct materials and indirect materials and how they are handled in the costing of the product. Note there is no materials requisition form required in the Finishing Department because of the costs of charging such immaterial amounts to the specific job compared to the benefits that would be achieved by doing so.

Assume that DL worker B works on the table for two hours (5 minutes real time). He stains the table, assembles it, puts on the felt pads, glass, etc., and takes the table to the Finished Goods Warehouse Supervisor. DL worker B updates his time ticket to reflect time worked from 11:00 – 1:00 on Job #1 and sends the time ticket to the Cost Accounting Department. The completed time ticket appears below:

+---+
| ***Time Ticket #2*** |
| |
| Employee: *Student's name*   Date _____ |
| |
| Started   Ended   Time Completed   Rate   Amount   Job Number |
| *11:00AM   1:00 PM   2 hours $15.00 $30.00   1* |
| |
| *Stains and assembles the table.* |
| |
| Supervisor: *Instructor's signature* |
+---+

The Cost Accounting Department updates the Job Cost Sheet for Job #1 with $30 DL, and the instructor accordingly updates the T-accounts on the board, increasing Wages Payable and increasing WIP for $30.

To finish costing the job, we need to charge it with manufacturing overhead. The techniques for allocating manufacturing overhead to the job are discussed in detail in Part II of the simulation. For now, the Cost Accounting Department should charge the job with $125.00 of overhead (this will be the applied overhead amount using a predetermined overhead rate, as will be shown in Part II). The instructor updates the T-accounts on the board, crediting the manufacturing overhead account and charging WIP with $125 of overhead. At this point, the Production Supervisor (i.e., the instructor) informs the class that Job #1 has been completed and is being transferred from WIP to FG.

The Finished Goods Warehouse Supervisor lets the Cost Accounting Department know that Job #1 has been transferred in. Cost Accounting will then close out the Job Cost Sheet for Job #1, and the instructor accordingly updates the T-accounts on the board, transferring the costs of the table ($400) from WIP to FG. The instructor should point out that the $400 cost of the table results from $200 of DM, $45 of Cutting Department DL, $30 of Finishing Department DL, and $125 of manufacturing overhead.

Assume that the table is sold on account to a customer for $750. The customer (i.e., student) takes the table and returns to his seat. The instructor updates the FG and Cost of Goods Sold (CGS) T-accounts, transferring $400 from FG to CGS, and then also recognizes $750 of accounts receivable together with $750 of sales revenue.

The bookshelves and china cabinet are now introduced through their already updated job-cost sheets. Refer to Job Cost Sheet handout (Figure 4), where dollar amounts for DL and DM have already been charged to the jobs. At the end of the period, it is assumed that the bookshelves are completed and in finished goods, while the china cabinet remains in WIP inventory. Further, we assume that Job #2 (the bookshelves) has been charged with $250 of manufacturing overhead and Job #3 (the china cabinet) has been charged with $875 of manufacturing overhead. The job cost

sheets for all three of the jobs can now be completed. At this time, the instructor resets the room, placing the china cabinet in the WIP area and the bookshelves in the FG area (the table is no longer in the factory).

Using the data from the completed Job Cost Sheets, fill in the blank T-accounts on Figure 5, which assumes that the table is finished and sold, the bookshelves are finished, and the china cabinet is not finished. The WIP T-account should have an ending balance of $3,400, reflecting all charges to the china cabinet; the FG inventory should have an ending balance of $1,100, reflecting all charges to the bookshelves; the CGS T-account should have a balance of $400, reflecting the total cost of the table.

Figure 5 -- T-accounts for Assume Table is Finished and Sold, Bookshelves are Finished, and China Cabinet is Not Finished

THE BIG PICTURE

After Figure 5 is completed, we show how the information in the WIP T-account, the FG T-account, and the RM T-account relates to the Schedule of Cost of Goods Manufactured (CGM), the Cost of Goods Sold (CGS) Schedule, and the Income Statement, as follows:

Income Statement

Sales Revenue	$750	
- CGS (unadjusted)	(400)	(see calculation below)
Gross Margin	$350	

CGS

Beginning FG inventory	$0	
+ CGM	+ 1,500	(see calculation below)
- Ending FG inventory	(1,100)	(the bookshelves)
CGS	$400	(the table)

CGM

DM used	$2,900	
+ DL worked	+ 750	
+ Manufacturing overhead applied	+ 1,250	
+ Beginning WIP	+ 0	
- Ending WIP	(3,400)	(the china cabinet)
CGM	$1,500	($400 for the table + $1,100 for the bookshelves)

PART II

Part II of the simulation demonstrates the allocation of manufacturing overhead to the products. To complete the job cost sheets in Part I, the instructor just tells the students how much manufacturing overhead to charge to each job. In Part II, we discuss how the amounts are derived. We feel that this is an extremely important aspect of the simulation not only in understanding traditional cost accounting, but in a subsequent understanding of activity-based costing, since the difference between the two methods relates to the assignment of overhead costs.

Teaching opportunity: Explain the definition of manufacturing overhead and have the class identify items in the simulation that constitute manufacturing overhead.

Examples:

♦ *indirect materials (stain, glue, felt, sandpaper);**
♦ *indirect labor (Production Supervisor's salary, RM Warehouse Storekeeper's salary, Cost Accountant's salary);**
♦ *depreciation or rent for factory (i.e., classroom);**
♦ *depreciation or rent for equipment (i.e., scissors, knife);**
♦ *utilities on factory;**
♦ *maintenance on factory;*

- ♦ *property taxes on factory;*
- ♦ *insurance on factory;*
- ♦ **items encountered during the classroom simulation in Part I.*

Teaching opportunity: Note that indirect labor does not include the FG Warehouse Supervisor's salary because it is a period (selling) cost rather than a product cost.

Teaching opportunity: Discuss the difficulty of charging manufacturing overhead to the jobs.

Explain that it may be impossible because of no direct cause/effect relationship, or it may not be economically practical to trace to the specific job. Also, discuss how an activity base should be selected and the problems involved with using one plant-wide cost driver.

The exercise now continues by first demonstrating the use of an actual costing system where the actual overhead will be allocated using DL hours as the cost driver. Assume that total overhead for the period amounted to $1,500. Also, assume that only Jobs #1, #2, and #3 were worked on during the period, resulting in a total of 50 DL hours (5 hours for Job #1, 10 hours for Job #2, and 35 hours for Job #3). The plant-wide overhead rate is then computed as follows:

Actual Manufacturing Overhead Rate = $1,500 / 50 DL hours = $30 per DL hour

Teaching Opportunity: Discuss how actual manufacturing overhead is accumulated throughout the period and is added to the debit side of the Manufacturing Overhead account.

Now, the instructor fills out another set of Job Cost Sheets (see Figure 4). Overhead is allocated by multiplying the $30 rate by the actual number of hours incurred by each job, as follows:

Job #1	Job#2	Job #3	Total
DM $200	DM $700	DM $2,000	DM $2,900
DL 75 (5 hrs. @ $15)	DL 150 (10 hrs. @ $15)	DL 525 (35 hrs. @ $15)	DL 750 (50 hrs. @ $15)
O/H 150 (5 hrs. @ $30)	O/H 300 (10 hrs. @ $30)	O/H 1,050 (35 hrs. @ $30)	O/H 1,500 (50 hrs. @ $30)
Total $425	Total $1,150	Total $3,575	Total $5,150

Teaching Opportunity: Discussion of the problems associated with using an actual manufacturing overhead rate and why a predetermined rate is used more often.

Next, the instructor shows how overhead would be applied in a normal costing system, using a predetermined overhead rate. Suppose that at the beginning of the period, the company estimated that manufacturing overhead would amount to $1,000 and that a total of 40 DL hours would be worked on all three jobs. The predetermined overhead rate is then computed as follows:

Predetermined Manufacturing Overhead Rate = $1,000 / 40 DL hours = $25 per DL hour

At this time, the instructor fills out another set of Job Cost Sheets (see Figure 4) using the normal costing system. Overhead is applied by multiplying the $25 predetermined overhead rate by the actual number of hours incurred by each job, as follows:

Job #1	Job#2	Job #3	Total
DM $200	DM $700	DM $2,000	DM $2,900
DL 75 (5 hrs. @ $15)	DL 150 (10 hrs. @ $15)	DL 525 (35 hrs. @ $15)	DL 750 (50 hrs. @ $15)
O/H 125 (5 hrs. @ $25)	O/H 250 (10 hrs. @ $25)	O/H 875 (35 hrs. @ $25)	O/H 1,250 (50 hrs. @ $25)
Total $400	Total $1,100	Total $3,400	Total $4,900

Note: These overhead amounts were the ones used in Part I of this exercise. The instructor may wish to compare these costs to the ones assigned earlier by the actual costing system.

Since the applied overhead of $1,250 is less than the actual overhead of $1,500, we have $250 of underapplied overhead.

Teaching Opportunity: Discussion of overapplied and underapplied overhead and how these amounts are disposed of at the end of the period.

Using the most common approach for disposal of underapplied overhead, we close out the manufacturing overhead account in Figure 5 and add $250 to cost of goods sold.

Teaching Opportunity: Discussion of the possible benefits of using departmental overhead rates rather than one plant-wide overhead rate.

Let us assume that the Cutting Department is highly automated (capital intensive) and the Finishing Department requires a lot of manual labor (labor intensive). We can therefore get a more accurate measure of product cost by using machine hours as the allocation base in the Cutting

Department (since machine hours "drive" more of the overhead in the Cutting Department) and by using direct labor hours as the activity base in the Finishing Department (since direct labor hours drive most of the overhead in the Finishing Department).

INSTRUCTORS' EXPERIENCES

This simulation has proven to be highly successful. It is not only an effective teaching method in terms of student comprehension and retention, but it is fun and provides a break from the regular classroom activities. Since job order costing is normally covered fairly early in the course, using this simulation gets the students interested in the course material from nearly the very beginning.

The exercise takes approximately 75 minutes. Of course, the amount of time can vary according to how much discussion the instructor solicits on the various teaching opportunities that are cited in the paper. The simulation can supplement or take the place of a traditional lecture. Part I and Part II can be separated into different consecutive days.

Students who have experienced this exercise have found it to be educational and fun. Many students have asked for another simulation after being exposed to this one. At the end of the semester, students' course evaluations commented on how much they remember from the simulation and how it helped them to understand job order costing. Occasionally, we receive e-mails about the exercise. One example is from a student who was taking cost accounting after having had managerial accounting: "I just wanted to let you know that the way you explained inventory with that skit still sticks in my mind, and I never really understood the flow of DM, WIP, and FG until I was able to visualize it that day. It is definitely helping me a lot in my accounting class this semester!" Another example is the following email received from an MBA student: "I also wanted to tell you that I really enjoyed last nights (sic) class. You mentioned that you had never done it in that manner. I felt it was an excellent way to help us learn. I have never had a teacher who got the whole class involved and paying attention to Accounting. :) It has always been a rough and hard subject for me but by you presenting the material in such a way, I felt it helped me learn. So good job!"

To more formally assess students' opinions about this job costing simulation, we administered a survey to two sections of undergraduate students in introductory managerial accounting courses after exposure to the simulation. We asked the students to respond to nine questions regarding their views about the simulation and we used a five point scale where "Strongly Agree" = 5 and "Strongly Disagree" = 1. The results appear in Table 1.

Table 1: Data from Student Survey		Mean (n = 61)
1.	This simulation helped me to understand the flow of goods in a manufacturing organization and the corresponding flow of product costs in the accounting system.	4.33
2.	This simulation helped me to understand how direct materials and direct labor costs are accumulated in a job-order cost system.	4.33
3.	This simulation helped me to understand how overhead is allocated in a job-order cost system.	4.20
4.	This simulation helped me to understand how product cost is calculated in a job-order cost system.	4.21
5.	This simulation helped me to understand the difference between direct materials and indirect materials.	4.36
6.	This simulation helped me to understand the difference between direct labor and indirect labor.	4.33
7.	This simulation helped me to understand the difference between actual manufacturing overhead and applied manufacturing overhead.	4.10
8.	The content of this simulation was meaningful and relevant.	4.25
9.	Overall, I found this to be a valuable learning experience.	4.23

Response Scale
Strongly Agree   = 5
Agree   = 4
Neutral   = 3
Disagree   = 2
Strongly Disagree = 1

The mean values from the 61 students are all greater than 4.00 for all nine questions. The first seven questions deal with students' understanding of specific aspects of job costing, such as overhead allocation and the distinction between direct and indirect labor. The results indicate that students believe the simulation helps them to understand various concepts relating to job costing. The last two questions are very general ones dealing with their overall views about the simulation. The results show that students feel the simulation to be a meaningful, relevant, and a valuable learning experience.

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FACTORS INFLUENCING THE UNIVERSITY SELECTION OF INTERNATIONAL STUDENTS

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ABSTRACT

The number of international students pursuing secondary education at United States (U.S.) universities has been increasing over the past 25 years, and is expected to continue into the foreseeable future. However, these students have a plethora of choices among universities in the U.S. and foreign countries. Universities must distinguish themselves if they hope to obtain the most desirable students from around the world. Previous research by Agarwal and Winkler (1985), Lee and Tan (1984), Mazzarol and Soutar (2002), and McMahon (1992) has identified a number of factors that influence the choice of educational programs. This paper builds on existing research by re-examining some of those factors combined with additional factors and by examining the role of accreditation by The Association to Advance Collegiate Schools of Business (AACSB). Specifically, we examine whether students know the meaning of AACSB accreditation, as defined by the AACSB, and the relative importance of AACSB accreditation on the university choice of international students pursuing business degrees in a cross-section of public universities in the southeastern region of the U.S. Our study found that opportunities for post-graduate employment, availability of financial aid, institutional reputation, accessibility of information on the institution and AACSB accreditation of the institution were the most important factors for international students in the choice of educational institution. However, further investigation shows that international students may not fully understand the meaning of accreditation by The AACSB.

Keywords: Accreditation, Business Education, International Students

INTRODUCTION

The number of international students pursuing secondary education at United States (U.S.) universities has been increasing over the past 25 years, and is expected to continue into the foreseeable future. However, these students have a plethora of choices among universities in the U.S. and foreign countries. Universities must distinguish themselves if they hope to obtain the most desirable students from around the world. An investigation of the factors that are most important

in university choice is an important step in allocating resources to attract the most desirable international students. Our study found that opportunities for post-graduate employment, availability of financial aid, reputation of the institution, accessibility of information on the institution and AACSB accreditation of the institution were the most important factors for international students. However, further investigation shows that international students may not fully understand the meaning of accreditation by AACSB.

There were 565,039 international students enrolled in U.S. higher education institutions in 2004-2005 (eduPASS). These students represent more than two hundred countries and were equally divided between those pursuing undergraduate degrees and those seeking graduate/professional degrees (edupass.org). Florida (2005, 99) provides an overview of the impact of foreign scholars on the economy of the U.S.

i.   Foreign-born scientists and engineers made up nearly a quarter of the science and engineering workforce (22 percent) in 2000, up from 14 percent in 1990. Foreign-born engineers make up about 40 percent of all U. S. engineering professors.

ii.   Between 1990 and 2000, the percentage of international students among all bachelor's-degree holders in the U.S. increased from 11 to 17 percent; the percentage with a master's degree from 19 to 29 percent; and PhDs from 24 to 38 percent.

iii. By the early 2000s, nearly a third of all graduate students in science and engineering were from outside the United States, including more than half of all PhDs in engineering, computer science, life sciences, and the physical sciences.

The continued growth of international scholars as consumers of U.S. higher education programs highlights the need to better understand this phenomenon. Previous research has examined factors that "push" a student to pursue educational opportunities abroad and "pull" the student to a particular host county (e.g., Mazzarol and Soutar, 2002; Lee and Tan, 1984; Agarwal and Winkler, 1985; McMahon, 1992). Although Mazzarol and Soutar (2002) investigate factors influencing institutional choice, the research stream has not been extended to business schools in particular. We investigate the relevance of previously identified factors to foreign scholars in their choice of a business school, given that an international student has decided to pursue a business degree in the U.S. In addition, we investigate whether international students understand the meaning of The Association to Advance Collegiate Schools of Business (AASCB) accreditation and whether accreditation is a factor that international students report as important in the choice of a business school.

LITERATURE REVIEW

A significant stream of research has been amassed in an attempt to better understand the factors that influence the decision of individuals to pursue secondary education overseas rather than in their home country. While early studies commented on the post-World War II increase in international students, Cummings (1984) was one of the first to examine patterns of migration and immigration for secondary education. Subsequent research has increased the breadth of factors considered and the change across time.

McMahon (1992) examined the expansive phase of international education that occurred during the 1960s and 1970s. The study hypothesized and found that the decision to study abroad by students from 18 developing nations could be explained by both "push" and "pull" factors; however, there were differences for the lower and higher income subsets, as well as, longitudinally. The "push" model examines the dynamics of the home country, encompassing factors that cause the individual to seek an education abroad. "Push" model factors which were negatively correlated include the home country's relative economic strength and the lack of available educational opportunities in the home country. The degree of involvement in international trade and the government's educational emphasis were positively correlated "push" factors. The "pull" model examines the dynamics of the host country and the factors that make it relatively more attractive to international students seeking a non-domestic education. Results of tests of the "pull" model find that students' attraction to a host country was positively correlated with the relative size of the students' home country economy compared to the host country and the host nation political interests in the home country; whereas, host nation support via scholarships or other financial assistance was negatively correlated (McMahon, 1992).

Mazzarol and Soutar (2002) suggest that the decision process of a student wanting to pursue higher education in a foreign country consists of at least three distinct stages. In stage one, the decision to study internationally, rather than domestically is made. This initial decision is influenced by the "push" factors previously identified by McMahon (1992). The second stage involves the selection of a host country. The selection of a host country is influenced by: (1) host country knowledge and awareness, (2) recommendations of family and friends, (3) costs (monetary and social), (4) physical and economic environment, (5) geographic proximity to the home country, and (6) the presence of family and friends currently or formerly residing in the host country (Mazzarol et al., 1997, cited in Mazzarol and Soutar, 2002). Finally, in the third stage, the student decides the university at which to pursue a higher education. Again, a variety of "pull" factors determine this decision.

Mazzarol and Soutar (2002) reports the results of four separate studies undertaken and published by Australian Education International, Department of Education Training and Youth Affairs in which students from four countries (Indonesia, Taiwan, India, and China) were surveyed to examine factors which influence the selection of a host country. The results of these studies show

that at least fourteen factors, grouped into six categories, influence the decision to pursue an international education and these factors appear to be important, regardless of the student's home country. Two factors were significant in the decision to study abroad. First, students had the perception that an education abroad was superior to a domestic education. Second, they felt a greater awareness of "Western culture" could be achieved through international study. Factors which significantly influenced the student's choice of host country included: (1) the accessibility of information on the host country, (2) the student's existing perception of the host country, (3) perception of educational quality, and (4) whether the degree would be recognized when the student returned home. Further, recommendations from family and friends were important to the selection decision. Costs, monetary and social, were also a consideration in the selection decision; specifically, the availability of part-time work, a low crime-rate and the presence of an existing international student population representing the student's home country impacted the selection. Environment was ranked as important to the decision with environment encompassing not only the climate, but also perceptions of whether the host country was an exciting place to live and whether the host country would provide a studious environment. Finally, the presence of friends and relatives currently studying in the host country was important to the selection decision.

Mazzarol and Soutar (2002) also investigate the factors which influence the selection of an Australian educational institution for international and domestic students. This sample included primarily business majors (84 percent), which is reflective of the entire population of university students in which 71 percent were business majors at the time (Mazzarol and Soutar, 2002). In comparing domestic and international students it was found that the international students ranked six variables as more important in their selection of a host institution than local students. Those six variables "were the quality and reputation of the institution, the recognition of the institution's qualifications in their own country, the international strategic alliances the institutions had, the quality of the institution's staff, its alumni base and its existing international student population" (Mazzarol and Soutar, 2002:87).

CURRENT STUDY

We are not aware of any previous research that has examined the factors that foreign students consider when choosing a business school in the U.S. Therefore, we investigate the relative importance of "push" and "pull" factors previously identified as important and extend the assessment to include the relevance of AACSB accreditation in the student's choice of a business school. Although evidence suggests that accreditation is a significant factor in the selection of a graduate business institution for domestic students (Webb, 1993), its impact on the decision of international students has not been examined.

Moreover, research has shown that, recruiters perceive institutional accreditation to be an indication of the program's quality (Hardin and Stocks, 1995). Kim et al. (1996) found that salaries

were higher for students graduating from accredited programs. Given that the previous studies have found that it is important for the degree qualifications to be recognized in the student's home country it seems likely that students will perceive accreditation to be important. This is because accreditation is an internationally recognizable proxy for program quality.

The U.S. Department of Education does not accredit universities, but rather grants permission to accrediting agencies. These accrediting agencies may specialize in regional accreditation (e.g., Southern Association of Colleges and Schools), program type (e.g., American Association of the Collegiate Schools of Business), or educational type (e.g., Accrediting Council for Continuing Education and Training or Distance Education and Training Council). While there are other accrediting agencies such as The Association of Collegiate Business Schools and Programs (ACBSP), we choose to focus specifically on AACSB accreditation because we believe it has the highest "brand name" recognition to begin a research stream on the relative importance of accreditation to international students. Additionally, previous research (Hardin and Stocks, 1995) has shown that AACSB accreditation is considered important by the employers and Webb (1993) provides evidence that accreditation is a significant factor in the selection of a graduate business institution for domestic students. Most of the other listed agencies indicate that their accreditation assesses whether the institution complies with minimum quality standards. For example, "The DETC Accrediting Commission identifies and accredits distance education and training institutions that have attained and maintained the standards deemed necessary to operate a minimum level of quality" (Distance Education and Training Council website). However, "AACSB International accreditation represents the highest standard of achievement for business schools, worldwide" (AACSB website). Given the disparate meanings conveyed by accreditation (minimum standards versus highest standards) and its potential to impact the institutional selection process, we test whether participants know the meaning of AACSB accreditation, as defined by The AACSB.

METHOD

Participants

We desired a sample size of 42 or more survey respondents. The target sample size relates to an alpha level of 0.05 for analysis of variance and power of about 0.70 to detect a large effect (Myers and Well, 2003, p157). To achieve the desired sample size, students from eight university business schools in the United States were surveyed during the 2006-2007 academic year. The business schools selected represent a 'convenience sample' of the population of business schools in the U.S., as they were selected based upon the authors' current and former affiliations. International student program offices provided email addresses for international students who had declared business majors. Students were contacted via email requesting their participation in this study. This email assured the individuals of their anonymity, reminded them that participation was

strictly voluntary, and provided a link to the survey which was hosted on the Survey Monkey website. The initial email resulted in 22 responses. A reminder email was sent ten days after the initial email, which resulted in 28 responses. Hence, 50 respondents provided complete surveys.

Instrument

As mentioned previously, the objective of the present study is to investigate the factors that influence the decision of a foreign student to select a business institution in the U.S. In addition, we examine whether AACSB accreditation contributes to this decision by the students. The survey instrument (see Appendix A) included three sections. The first section included two questions, one addressing the decision factors and another question allowing respondents to give additional information about one of the decision factors. Section II assessed the respondent's understanding of accreditation, while the final section gathered demographic data. Participants were also provided with an open response question to indicate other factors that they deemed relevant to their decision process, which were not included on the survey instrument.

The first question in Section I asked the respondents to rate the importance of the 17 decision factors when selecting a business degree program. The instrument used a 6 point Likert scale, with 1 being little or no importance and 6 being extremely important. This is in contrast to the Mazzarol and Soutar (2002) study which used a 7 point Likert scale. Previous research (Lee et al., 2002) demonstrated that a cultural response bias exists when using Likert scales. In particular, Lee et al. (2002) found that participants from China and Japan were more likely to be indifferent to questions, as evidenced by the use of the scale mid-point than participants from the U.S. To minimize the risk of cultural disposition to the mid-point of the scale, a six point scale was used.

The instrument included factors that Mazzarol and Soutar (2002) identified as important for either the selection of a host country or host institution. The first factor in the instrument (the number of international students) was found to significantly influence the foreign scholar's decision to choose a particular institution in Mazzarol and Soutar (2002). Mazzarol and Soutar (2002) examined the accessibility of information about the host country using four separate factors, each of which was significant. Because our participant population has already decided to study in the U.S. we assess the single factor (accessibility of information on the institution). In addition, four factors that they found to be not important were included (tuition cost, accessibility of information, cost of living, and recommendations by non-family members (agents)). Four additional factors were added (availability of financial aid, athletic scholarships, AACSB accreditation, and the opportunity for post-graduation employment) to assess their impact in the decision process based on the authors' beliefs from their interactions with foreign scholars. Factor 15 (urban/rural setting) was included to incorporate the trade-off between 'an exciting place to live' and 'quiet studious environment' that were previously identified as important in the host country selection decision. Therefore, this instrument builds on previous research and provides a model that can be used in future studies.

After the participants assessed the relative importance of each decision factor they were allowed to progress to the next section.

In the second section, a multiple choice question was used to test the respondent's understanding of AACSB accreditation. The website of AACSB International states that "AACSB accreditation represents the highest standard of achievement for business schools, worldwide," and that institutions that earn this accreditation confirm their commitment to quality and continuous improvement through a rigorous and comprehensive peer review. The survey asked "Based on your understanding of AACSB accreditation, which of the following statements is true: (1) AACSB is the highest standard of excellence in Business Education (correct response); (2) AACSB represents the minimum standards required for Business education programs; (3) I do not know about AACSB accreditation."

RESULTS

Since the sample used in this study represents a convenience sample, the results cannot be projected onto the population as a whole. However, the results can be a first step in increasing our understanding of factors that might influence university choice among international students. Respondents to our survey represent 27 countries. Table 1 presents the countries represented in this sample and the number of responses (if greater than 1) from each country. The students responding provided a varied sample of nationalities.

Table 1: Number of Respondents by Country		
Argentina (2)	India (13)	Slovakia
Azerbaijan	Jamaica	Taiwan
Bangladesh	Japan (4)	Thailand
Brazil	Lebanon	Togo (West Africa)
Bulgaria	Mexico	Turkey (4)
Chile	Moldova	Uzbekistan
China (2)	Nepal	Vietnam
Croatia	Pakistan	No Response (1)
Czech Republic (3)	Saudi Arabia	
Fiji Islands	Serbia, Europe	
Number of respondents in parentheses if greater than one.		

The highest number of responses came from students that identified India as their home country. This is consistent with overall population of international students in the U.S., wherein,

students from India represent the largest proportion of the total international student population (eduPASS).

Demographic information reveals that respondents are evenly divided between the genders, with 25 males and 25 females. Most of the respondents were single (32 or 64%), 16 were married (32%) and two were divorced. All of the respondents were business majors with accounting majors representing the largest group (20.8% majoring in accounting). The breakdown of majors and the number in each major are presented in Table 2.

Table 2: Number of Respondents by Major	
Accounting (11)	Information Systems (6)
Management (8)	Economics (5)
Marketing (7)	International Business (4)
Finance (6)	Other Business Majors (3)
Number of respondents in parentheses	

Figure 1 provides a graphical representation of the responses to each factor split by whether the response indicated some degree of importance (points 4 through 6 on the Likert scale) or unimportant (points 1 through 3 on the Likert scale). Table 3 provides the descriptive statistics for the importance of each factor to the student's selection of a business school. Using t-tests to examine the difference between the mean response to each decision factor indicates that these factors can be divided into three groups. The most important decision factors are the opportunities for post-graduation employment, financial aid and reputation of the institution. These three factors are not significantly different from each other but significantly more important ($\alpha = .04$) than the second group of factors - all having a degree of importance to the students. The second group of decision factors includes accessibility of information on the institution, AACSB accreditation, tuition, cost of living in the area and public safety in the area. These five factors are not significantly different from each other, but significantly more important ($\alpha = .02$) than the third group of factors – all of which are relatively unimportant to the respondents. The number of international students at the institution and availability of athletic scholarships were the least important decision factors.

Figure 1: Percentage of Sample Responding to Each Question

Factors with a response between 1 to 3 on a Likert scale are classified as Unimportant and factors with a response between 4 to 6 are classified as Important
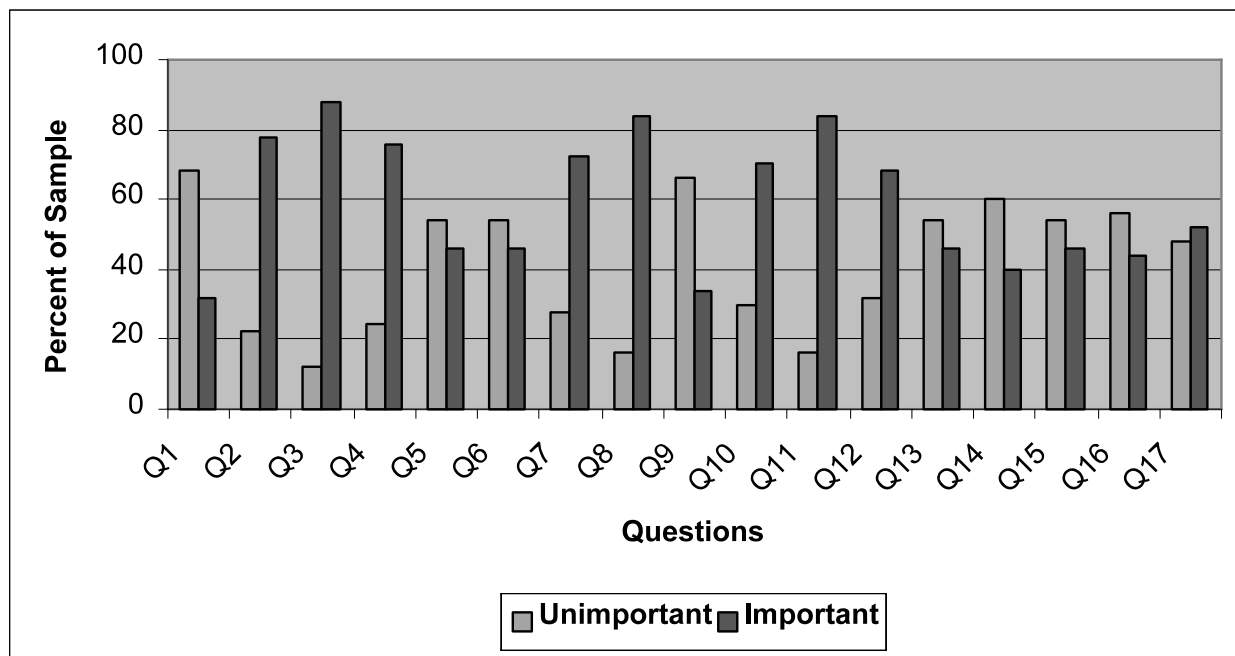
Table 3: Mean Responses by Factor					
Q#	Factor	Mean	Standard Deviation	Paired Samples T-test (2-tailed)	
11	Opportunities -post-graduation employment	4.98	1.50	0.73	
8	Financial Aid	4.90	1.54		0.72
3	Reputation of the institution	4.82	1.10	**0.04**	
2	Accessibility of information on the institution	4.50	1.43		0.78
4	AACSB Accreditation	4.42	1.72	0.65	
7	Tuition	4.26	1.90		1.00
10	Cost of living in the area	4.26	1.44	0.35	
12	Public Safety in the area	4.10	1.52		**0.02**
17	Recommendation by non-family members	3.46	1.43	0.57	
6	Friends/relatives already living in the area	3.28	1.71		0.94
15	Urban/rural setting	3.26	1.56	0.94	
5	Friends/relatives attending the university	3.24	1.76		0.88
13	Climate	3.20	1.63	0.83	
14	Public/private institution	3.14	1.64		1.00

Table 3: Mean Responses by Factor					
Q#	Factor	Mean	Standard Deviation	Paired Samples T-test (2-tailed)	
16	Recommendation by parents/relatives	3.14	1.58	0.21	
9	Availability of athletic scholarships	2.70	2.04		0.87
1	The number of international students	2.64	1.48		
(1= Little or no importance to decision; 6=Extremly important)					

Several analysis of variance (ANOVA) studies revealed some interesting information about the subjects. The ANOVA model used for all studies utilizes Tukey's HSD (a conservative test) for pairwise comparisons, which is appropriate for unequal group sizes. An ANOVA with decision factors 1-17 as the dependent variables and gender as the independent variable showed significant differences (α=0.044) between males and females only on their response to the importance of tuition amount. Females place more importance on the amount of tuition (μ=4.80; sd=1.61) than did the male respondents (μ=3.72; sd=2.05).

An ANOVA with decision factors 1-17 as the dependent variables and marital status as the independent variable showed significant differences between groups (married, divorced or single) and their responses to three of the questions (see Table 4)

Table 4: The Impact of Marital Status on Responses		
Question: How important were these factors in your choice of university/college?	Group Comparisons (mean and standard deviation)	Tukey's HSD
2. Accessibility of information on the institution	Married (μ=5.13; sd=0.96) & Single (μ=4.19; sd=1.53)	0.082
4. AACSB Accreditation	Married (μ=4.81; sd=1.64) & Divorced (μ=1.50; sd=0.71)	0.025
	Divorced (μ=1.50; sd=0.71) & Single (μ=4.41; sd=1.64)	0.047
16. Recommendation by parents/relatives	Married (μ=3.81; sd=1.47) & Single (μ=2.81; sd=1.57)	0.096

Accessibility of information was marginally more important to the married subjects than it was to the single subjects. AACSB accreditation was equally important to the married and single subjects, but not as important for those two individuals that were divorced. Recommendations by parents/relatives were considered more important by the married respondents than they were by the single respondents.

The mean response to whether or not AACSB accreditation was important was 4.42 making it more than marginally important. Table 5 reports the results of an analysis of variance between the importance of AACSB accreditation and the subject's understanding of AACSB accreditation. Tukey's HSD for post-hoc pairwise comparisons reveals that respondents that did not know what accreditation meant found it significantly less important than those that thought that it was the highest standard and those that thought that it was the minimum standard. There was no significant difference in the importance of AACSB accreditation between those that thought this accreditation to be highest standard (which it is) and those that thought this accreditation to be the lowest standard (which it is not).

Table 5: Importance of AACSB Accreditation by Groups	
Comparisons (means and standard deviations)	Tukey's HSD
Highest Standard (μ=4.94; sd=1.73) and unknown (μ=3.12; sd=1.38)	0.002
Minimum Standard (μ=5.31; sd=1.20) and unknown (μ=3.12; sd=1.38)	0.000
Highest Standard (μ=4.94; sd=1.73) and Minimum Standard (μ=5.31; sd=1.20)	0.726

The mean response to whether or not post-graduation employment opportunities are important was 4.98 making this the most important factor of this study. As can be seen in Table 6, an analysis of variance between the importance of post-graduation employment opportunities and whether or not the individual intends to return to his (her) home country revealed that all groups (those that plan to return, those that do not plan to return and those that are undecided) found post-graduation employment to be equally important.

Table 6: Post-graduation Employment Opportunities	
Comparison of the importance of post-graduation employment opportunities according to whether or not the individual plans to return to their home country.	Tukey's HSD
Yes (μ=4.69; sd=1.75) and No (μ=5.00; sd=1.63)	0.865
Yes (μ=4.69; sd=1.75) and Undecided (μ=5.13; sd=1.33)	0.690
No (μ=5.00; sd=1.63) and Undecided (μ=5.13; sd=1.33)	0.969

DISCUSSION

This study investigated the relative importance of 17 decision factors, including AACSB accreditation, to international students pursuing a business degree in the U.S. The factors that are found to be the most important include opportunities for post-graduation employment, availability

of financial aid, and reputation of the institution. These three factors are statistically more important than the second set of factors, which include accessibility of information, AACSB accreditation, tuition, cost of living in the area and public safety. However, the factors in the second group each have mean responses ranging from 4.10 to 4.50 meaning that respondents find these factors to be important to their decision regarding university of attendance. The remaining factors have mean responses ranging from 2.64 to 3.46 and although they are important to some respondents, they are found to be less important than the previously mentioned factors.

We find mixed results in comparing the results of this study to research using university students studying abroad in countries other than the U.S. The results of this study confirmed some of the findings observed by Mazzarol and Soutar (2002). The mean response for, 'accessibility of information on the institution' and 'reputation of the institution were consistent with previous research. The mean responses for factors 5 and 6, 'friends/relatives attending the university' and 'living in the area', respectively, were consistent with previous research in that they were less important than other factors in the selection of a host country. Further, the response on 'public safety in the area' was consistent with prior research.

On the other hand, some results contradicted those observed by Mazzarol and Soutar (2002). While 'the number of international students' was previously shown to be significant, we find that this is not the case for our participants. The results of this study find that 'tuition' and 'financial aid' were significantly important to the selection process while prior research found that those factors were only of moderate importance. The 'cost of living in the area' factor is slightly more important than the results of previous studies. The 'climate' in the area was found to be less important than the results of previous research. The responses on 'Recommendation by parents/relatives' and 'recommendation by non-family members' were not consistent with prior research, wherein we find that these factors were less important for our participants than participants in the Mazzarol and Soutar (2002) studies.

We find that while international students do not necessarily understand the meaning of AACSB accreditation, they do understand that accreditation is an important consideration in the selection of a business school. This may mean that AACSB International needs to better market the meaning of accreditation to potential students, to recruiting agencies, and international student information websites. For example, a web query provided a link to eduPASS.org. At this site (eduPass(b)) visitors are given the information that "The U.S. government does not monitor the quality of U.S. colleges and universities, as does the ministry of education in other countries. Instead, the U.S. Department of Education approves accrediting agencies. These accrediting agencies review a school's educational program for quality, and certify that the school meets a minimal set of standards." While this definition of accreditation as a minimum standard may be true for some accrediting agencies it is not in line with the definition provided by AACSB. Therefore, given that many international students may begin their search for a host country and host institution using an internet search it is easy to see how they may misinterpret the meaning of accreditation. In

addition, the colleges which are accredited by AACSB should emphasize the importance of this accreditation so that the prospective students consider this factor in their decision.

This study contributes to the existing body of literature on the decision factors of importance to international students in the selection of a host institution. We have extended the body of knowledge to specifically examine business school students. The information gathered on the impact of AACSB accreditation should be relevant to both institutions and the AACSB as an impetus to improve their marketing efforts.

Accessibility of information on the institution (mean of 4.50) was important to participants and this issue is one that can be easily addressed by universities. Besides making sure that they are listed on sites such as eduPASS.org, universities can provide links from their home page for prospective international students. Information can be provided about their institution, as well as the factors found in this study to be important to prospective international students.

LIMITATIONS AND FUTURE RESEARCH

As with all research, interpretation of this study's results is subject to several limitations, including: the use of a non-random sample and conducting the assessment after rather than before the participants had decided on a business school. In addition, it is hard to isolate the effect of AACSB accreditation given that schools that are accredited often have other factors which affect the school's 'attractiveness' to international students. While the results cannot be projected to the entire population of international students studying in the U.S., the information can provide insights into their business school selection criteria and provide the basis for further study.

The most important factor in our study was opportunities for post-graduation employment. Upon further examination we found no significant differences in importance when subjects are divided according to whether they plan to return home after graduation. Further research should be more specific and ask about opportunities in their home country and their host country. Given that this study and previous research on host country institution selection have surveyed students that were currently studying in the host country, there is possibly a self-selection bias impacting the relative importance of some factors. Future research could also examine this possible self-selection bias by examining the factors that students attending AACSB accredited institutions around the globe consider important in the selection of an educational institution. Further, future research could include experiments that isolate the effect of 'accreditation' on educational institution choice. In addition, research could focus on factors that students report to be important *apriori* (both at the undergraduate and graduate level, as well as, for traditional and non-traditional age undergraduate students). The results could then be compared to the factors inherent to the educational institution chosen. Finally, international students could be surveyed at the completion of their studies to determine which factors they felt should have been important in the selection of a U.S. educational institution.

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AUTHORS' NOTES

APPENDIX A
SURVEY QUESTIONS

The following is a list of the survey questions:

(Section I)

1.   Indicate how important each of the following factors were in your choice of university/college (on a scale of 1 to 6, with 1 being of little or no importance and 6 being of extreme importance).

- The number of international students
- Accessibility of information on the institution
- Reputation of the institution
- AACSB (Association to Advance Collegiate Schools of Business) accreditation
- Friends/relatives attending the university
- Friends/relatives already living in the area
- Tuition
- Financial aid
- Availability of athletic scholarships
- Cost of living in the area
- Opportunity for post-graduation employment
- Public safety in the area
- Climate
- Public/Private institution
- Urban/rural setting
- Recommendation by parents/relatives
- Recommendation by non-family members

2.   If you received recommendations from non-family members, please indicate the relationship (i.e. teacher, trusted friend, employer, etc.):

(Section II)

3.   Based on your understanding of AACSB accreditation, which of the following statements is true:

- ■   AACSB is the highest standard of excellence in Business Education.
- ■   AACSB represents the minimum standards required for Business education programs.
- ■   I do not know about AACSB accreditation.

(Section III)

4.   Gender

- ■   male
- ■   female

5.   Marital status

- ■   married
- ■   single
- ■   divorced
- ■   other

6.   Country of Origin

- ■   Mexico
- ■   Canada
- ■   India
- ■   France
- ■   Italy
- ■   other (please specifiy)

7.   Do you plan to return to your home country after completing your education?

- ■   yes
- ■   no
- ■   undecided

8.   What is your primary major?

- ■   Accounting
- ■   Economics
- ■   Finance
- ■   Management
- ■   Marketing
- ■   Information Systems
- ■   Other (please specify)

9.   What is your minor?

- Accounting
- Economics
- Finance
- Management
- Marketing
- Information Systems
- Other (please specify)

10.   Please provide any comments about other factors that you think were important to your decision that are not included in the above list.

CREATING ACTIVE LEARNING APPLICATIONS AND OPPORTUNITIES FOR AN ON-LINE LEADERSHIP COURSE

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ABSTRACT

This paper describes the creation of an on-line leadership course that retained as much of the rich, interactive nature of the face-to-face version as possible. The seven "best practice" design criteria offered by Chickering and Reisser (1993) are discussed as they relate to specific course design and instructional requirements for instructor orientation, course management organization and tool use, community building as well as the development of thematic modules and their associated assignments. Student comments provided by a case study of the on-line course (Griffin, 2007) are provided that support the efficacy of this approach.

INTRODUCTION

The growing popularity and acceptance of web-delivered education make it an attractive and desired option for expanding the educational opportunities available to students (Petrides, 2002; Rivera & Rice, 2002; Robinson & Stull, 2006). Not surprisingly, institutions of higher learning are actively expanding web-based distance education offerings as a means of capturing increased course demand and student population (Hunt, 2005, Rivera & Rice, 2002; Waits & Lewis, 2003). Northern Arizona University (NAU) is no different. The W. A. Franke College of Business (FCB) at NAU developed on-line course offerings to support a state-wide Bachelor of Science in Business Administration degree to meet the needs of Arizona's place-bound students. This article describes the development of one of these on-line courses, MGT 311 Leadership.

FCB has offered a successful face-to-face delivery of the leadership course based on adult and cooperative learning techniques for several years. The development of this course was innovative in its use of adult educational techniques that encourage students to actively construct leadership theory and gain practical leadership experience. The course also offered strong student interaction through extensive in-class small group discussion and critical analysis activities. Thus, the challenge was to develop an on-line version of the course that retained as much of the rich, interactive nature of the face-to-face experience as possible. After an extensive literature review

seeking guidance to address the challenge, we decided to design the on-line course based on the seven "best practice" design criteria for distance learning (Chickering & Reisser, 1993: DIIA, 2005) paraphrased below:

1. Encourage contact between students and the faculty.
2. Develop reciprocity, interaction, collaboration and cooperation among the students.
3. Encourage active and constructive-oriented learning.
4. Provide prompt feedback.
5. Emphasize time on task.
6. Communicate high expectations.
7. Respect students' diverse talents and ways of learning.

Additionally, course design required following the same master syllabus used to create the "working" syllabus of the face-to-face version of MGT311. FCB requires master syllabi that delineate learning outcomes and expected content to encourage consistency across multiple sections of the same course offered by multiple faculty. It was also decided to adopt the same text used in the face-to-face course, Leaders & The Leadership Process: Readings, Self-Assessments & Applications by J. Pierce and J. Newstrom (2006). The text was originally selected for its unique combination of conceptual and empirical readings, coverage of the major leadership research streams, self-assessment exercises, extensive vocabulary and the authors' perception that it helped students move beyond theory and empiricism to the practice of leadership. That said, the authors believe the design considerations discussed below allow the use of alternative text choices. The important consideration is establishing a tight linkage between the text chosen and the design of the on-line course.

COURSE DESIGN

The challenge, as noted above, was to create an on-line leadership course that provided a learning experience based on leadership theories that also incorporated an active learning environment rich in practical leadership application. To facilitate meeting this challenge we originally selected the WebCT course management system (an integrated set of web-course development tools) due to its ability to support the creation of both asynchronous and synchronous learning environments. The course management system was later transitioned to Blackboard Vista (Bb Vista) when the university adopted it as its new on-line course management system.

The seven best practices necessitated unique design and instructional requirements for instructor orientation, course management organization and tool use, community building, as well as the development of thematic modules and their associated assignments. Each of these areas is discussed below with the authors' rationale for the design and delivery of the on-line course.

Instructor Orientation

For at least the past ten years the expansion of distance education has necessitated faculty delivering distance education re-examine the way teaching and learning take place. What has evolved, in this alternative to the traditional classroom, is a new paradigm of teaching and learning. The development of this new paradigm was required because many of the established assumptions of teaching and learning practiced in the traditional lecture-based classroom do not hold for successful teaching and learning in the distance education environment (Palloff & Pratt, 1999).

Several key differences between the traditional lecture-based classroom and distance learning exist. These include faculty roles, use of technology, lesson organization, and the need for collaborative learning. In making the transition from the classroom to on-line instruction, faculty must concern themselves with multiple pedagogical, social, managerial and technical issues.

One issue is the role of the on-line faculty. The faculty's role has evolved from lecturer in a traditional classroom to a facilitator of learning in the virtual classroom (Simonson, Smaldino, Albright, & Zvacek, 2003). Lesson organization and design must adapt to a student-centered approach that shifts the focus from the faculty to the student learner. And it must be noted this move is currently in play in the face-to-face section of MGT 311 that inspired the design of the distance learning section.

Organizational issues such as lesson structure, use of visuals, and time allotment become increasingly important. The on-line faculty must be even more concerned with class structure and how to encourage a class to build "community." In addition, faculty must be concerned with student access and use of computer technology essential to the class. Does the student possess the access and knowledge required to be successful in the on-line classroom? It has been the authors' experience, especially in adult education, that this should not be taken for granted.

On-line faculty must be able to establish a collaborative learning environment. For an on-line class to be successful faculty must facilitate the creation of a playing field with equal participation between the facilitator and all students in the class. High levels of interaction among all involved in the virtual classroom insure a rich and powerful experience (Palloff & Pratt, 1999). Thus, there is a need to build a sense of community among participants.

Bd Vista Course Management System

The first step in creating (the web-based) MGT 311 was meeting and training with the university staff dedicated to helping instructors create and manage virtual classrooms. This process, which included both one-on-one advice and assistance sessions as well as a series of small classroom training sessions with fellow on-line instructors, encompassed approximately twelve hours over a two month period. Topics that were initially addressed included taking the specific course requirements and creating the virtual classroom using the latest in technology and learning

techniques. Once the course website was created, faculty training focused on how to manage the on-line course tools such as grading, testing, on-line communications, and other topics required to create an on-line learning community. However, it must be noted, instructor training did not stop once the course was offered. During the first pilot semester of MGT 311 the instructor continued to use the support staff as a valuable resource for questions and advice as issues came up.

In the Bd Vista course management system the course content is contained within a single course website and contains both synchronous and asynchronous tools to facilitate communication, therefore learning, in the on-line virtual classroom. The synchronous tool allows faculty to easily create and offer a chat room for the students to 'meet' virtually when time was a critical factor in meeting group assignment deadlines. The asynchronous tools include e-mail and discussion boards which allow faculty and students to meet virtually and interact yet provides flexibility in time and space. Thus, the on-line course was not designed to be a passive, electronic correspondence course. It was designed so that students became actively engaged in a transformative experience by learning new technology, working in a web-based environment, communicating in groups and with faculty, and reflecting on leadership as it pertains to their personal experiences. The importance of community to a web-based course cannot be overstated. The Bd Vista toolset allows faculty to create and nurture an active, collaborative approach to learning. The course sought to create a sense of autonomy, initiative, and creativity while encouraging questioning, critical thinking, dialogue, and collaboration.

While we used Bd Vista, there are several course management suites available that provide similar features for instructors preparing on-line versions of their courses. Bd Vista was chosen solely because it is the course management suite used by NAU.

Community Building

The goal in building the course was to simultaneously create a community where learning takes place among students themselves, between students and faculty, and collaboration in learning that will result from these interactions. MGT 311 was designed to foster active interaction involving both course content and communication, collaborative learning, socially constructed meanings, sharing of resources, and support between learners (Palloff & Pratt, 1999). It is this strong learning community that is the signature feature of MGT 311.

Students taking on-line classes using computers miles apart at different times of the day often feel isolated. This feeling of isolation can be overcome by creating an on-line community of learners who support one another. Community building is an important issue in distance learning because it impacts student satisfaction, retention, and learning. Community building refers to creating a sense of belonging, of continuity, of being connected to others and to ideas and values. A community of learners is a group of participants in a course with a shared purpose, good communications, and a climate with justice, caring, and discipline (Brown, 2001).

The expansion in distance education and recent innovations in technology have allowed for increasing interaction between and among learners and faculty. Multiple studies have concluded that increased levels of interaction result in increased motivation, positive attitudes toward learning, higher satisfaction with instruction, deeper, more meaningful learning, and higher achievement (Sutton, 1999).

Distance educators have identified four types of interaction: learner-content, learner-instructor, learner-learner, and learner-interface (Hillman, Willis, & Gunawardena, 1994; Moore, 1989). The interaction that takes place between the learner and the content is probably the most basic of the four types of interaction. The change we call learning takes place when the learner interacts with the content. Another type of interaction, learner-faculty, is regarded as essential by many educators, and as highly desirable by many learners (Moore, 1989). The faculty serves as an expert who, in the case of on-line learning, facilitates the instruction to stimulate students' interests and motivate students (Sutton, 1999).   Historically, learner-learner interaction has not been a significant part of education. Interaction has been limited to learner-content and learner-faculty. With the development of distance-education technology, this type of interaction has become easier to create and support. Learner-learner interaction can be an extremely valuable resource for learning, and is sometimes even essential (Moore, 1989). The fourth type of interaction that is unique to distance education, learner-interface, was added to Moore's (1989) three types of interaction by Hillman, Willis, and Gunawardena (1994). These authors describe the learner-interface interaction as the interaction that takes place between the learner and the technology. Students must use the technology to interact with the content, the faculty, and other students. In many distance-education classrooms, without learner-interface interaction, the other three types of interaction cannot take place (Sutton, 1999).

MGT 311 was constructed to facilitate the development of an on-line community that fosters active interaction involving both course content and communication, collaborative learning, socially constructed meanings, sharing of resources, and support between learners (Palloff & Pratt, 1999). In doing so, the course simultaneously created a learning community in which learning takes place between students themselves, between students and the instructor, and in a collaboration of learning that resulted from these interactions (Palloff & Pratt, 1999).

Thematic Modules

The on-line course, like its face-to-face parent, is an introduction to leadership that defines leadership and explores the basic theories and issues related to leadership in the Twenty -first Century. To accomplish this goal the on-line version was organized into six learning and theme-based modules over a sixteen-week academic semester. The course was structured by creating themes as building blocks to allow students to basically crawl, walk and then run as they accomplished the on-line delivery learning objectives. The rationale for the learning module

building blocks can be found in the learning environment. A student in an on-line course must first demonstrate a mastery of the computer skills and course web tools required for them to be successful in a virtual classroom. Once this can be instructor-verified by course assignments in the first module, the student can then be allowed to remain in the virtual classroom to fully participate. The six module instructional themes include: introduction to leadership, leadership traits and behaviors for success, leader-follower and situational dynamics, diversity in leadership, divergent thoughts in leadership, and the capstone self-assessment.

In Module One the student logs in and explores the course organization and layout, within a standard Bb Vista course site design. The course home page allows linkage to the virtual classroom with course content, syllabus, communications tools, grades, calendar, and resource support easily available. The students learn their way around the course which, in addition to navigational and course management tools, offers a module introduction, objectives, key concepts and terms, assignments, and an end-of-module quiz. This same organization is also used in subsequent modules. The modules are designed to be accomplished in numerical order. Successful module completion, as determined by faculty-set scores for end-of-module quizzes, allowed students access to subsequent modules.

During the first two weeks of the term Module One introduces leadership theory to the students and sets the stage for course organization and flow. Students are asked: What does the term leadership mean to you? How would you define leadership? How does it differ from management? What processes do we associate with leadership? They then explore and attempt to answer these questions in Module One.

Modules Two to Five are structured along similar lines with required readings, individual papers, group interviews and module quizzes. Module Two focuses on the themes of leadership traits and behaviors for success. Module Three focuses on the leader, follower and situational dynamics. Module Four delves into the relationship between diversity and leadership. Module Five explores several themes concerning divergent thoughts on leadership.

The last module, Module Six, is the capstone module of the course. There are two capstone assignments. One assignment is an individual assignment where the student writes a leadership self-improvement plan based on a personal assessment of their strengths and weakness as a leader. The final group project is to create a group critical assessment paper offering a judgment as to whether or not the group evolved over the process of the semester into a 'team' as defined in the text and its relationship to leadership.

Module Assignments

The Module One objectives and key terms and concepts focus on verifying the student has the prerequisite on-line skills to take the course. The student demonstrates the ability to successfully use the following WebCT tools: e-mail, topic discussion, assignment drop box, chat, and quiz. The

student e-mails the instructor within WebCT stating that she/he has read the course syllabus, understands and will comply with its requirements. The student posts an individual one-page paper on the definition of leadership and responds to at least two other student submissions. Next, the student posts a personal resume to the assignment drop box for review by the instructor. Lastly, the student contacts at least one fellow student and arranges a chat time to discuss perceived differences between leadership and management. At the completion of the module, a quiz is taken to validate that the student understands the module objectives and is ready to move to Module Two. The module quiz is ten questions taken from key words and concepts from the module reading(s). The module quizzes are graded and the student must score at least 80% to move to the next module.

The rationale for Module One individual assignments is clear and critical to a student beginning the course. In Module One, the student is welcomed as a member of the learning community known as MGT 311. The student not only demonstrates the ability to successfully use the WebCT tools, but also the faculty begins to facilitate and encourage contact between students and the faculty, initiates the development of reciprocity, interaction, collaboration and cooperation among the students, provides prompt faculty feedback, emphasizes time on task, communicates high expectations, and lastly, sets the stage for respecting student's diverse talents and ways of learning. Finally, before moving into Module Two, the faculty, at the conclusion of Module One, establishes student working groups.

In Module Two each student individually reads the assigned chapters, writes and posts a two-page double-spaced critical analysis of the readings from each chapter. This paper is not a summary but a critical analysis of the readings as they relate to the module objectives and key terms and concepts. The student will then post the paper to the chapter topic on the discussion board and comment on at least two other student papers from that topic. As noted above, the faculty, at the conclusion to Module One, establishes student working groups. Each group (consisting of four to five students) will then develop a group treatise or code of conduct, posted by each group to the group discussion board, as the first group assignment of the course.

In addition to the individual writing assignments common to Modules Two to Five, group interview assignments begin with Module Three and are conducted though Module Six. Each group member interviews a leader within their community. The topic for this interview depends on the module as it pertains to that leader's profession. The profession could be business, civic, education or military. On a rotational basis, one group member serves as the leader/recorder to consolidate the individual interviews into a summary paper of the interviews as they relate to the leadership theme of that module. The leader/recorder also includes at least two Internet sources concerning the leadership theme of that module. The group report is no less than four and no more than six double-spaced pages in APA style (APA, 2001) and is posted to the group discussion board for the module. The individuals conducting the interviews gain approval from the faculty for proposed interviewees and interview questions by corresponding in the topic discussion board. A link providing guidance to conducting interviews is provided. Once approved, the interviews are conducted and consolidated

by the leader/group recorder into a final product. Each member of the group must provide input and approve the final group report before posting.

The rationale for Module Two to Five group assignments is critical to a student meeting a key pedagogical goal of the course. This goal is the active construction and practical application of leadership theory in an on-line environment. Beginning with Module Two the five member student groups execute group projects and with each new module rotate the group leadership so each group student member will lead a virtual semi-independent working group at least once during the term.

The last module, Module Six, is the capstone module of the course. There are two capstone assignments intended to be a critical analytical discussion encompassing all material and experiences from the class. The first assignment is an individual assignment in which the student writes a leadership self-improvement plan. This includes an individual self-assessment of the student's own perceived strengths and weaknesses as a leader and their plan to improve as a leader. This assignment reinforces how important it is for a leader to fully understand their self-efficacy before they attempt to learn and understand those they may lead. The assignment also supports two key objectives of the course, being able to identify a student's own perceived strengths and weaknesses as a leader and their plan to improve. The second Module Six assignment is a final group project to create a group critical assessment paper offering a judgment as to whether or not the semi-independent virtual student group evolved over the process of the semester into a cohesive 'team' as defined in the text. The first rationale for this final group project was to have each group member conduct an assessment of their success or failure in evolving into an on-line community that fosters active interaction and communication, collaborative learning, socially constructed meanings, sharing of resources, and support between learners (Palloff & Pratt, 1999). The second rationale for this second module six assignment was to have students identify the challenges of leading a semi-independent working group.

The overall student reaction to the modular organization of MGT 311 was favorable. The students indicated the organization of the course supported their needs and expectations for a leadership course. These student reactions are highlighted in the next section.

STUDENT REACTION

Conducting a case study of MGT311, Griffin (2007) offered clear evidence students believed the on-line course lived up to their expectations and met their needs for an on-line leadership course. When presented the statement, "This course met my needs for a leadership course," 75% of the reporting students responded, "they strongly agree" and the other 25% responded, "they agree". When presented the statement "I would rate my overall experience in this class as a positive one," 67% of the reporting students responded, "they strongly agree" and the other 33% responded, "they agree" (Griffin, 2007).

"As we wind down this module, and this course for that matter, I feel we are all better leaders and followers because of this class" (Griffin, 2007).

Based on their course experience 77% of the reporting students reported "strongly agree" and 23% "agree" when asked if they would take another on-line course at FCB, and an identical 77% reported "strongly agree" and the remaining 23% "agree" when asked if they would recommend MGT 311 to someone interested in leadership instruction. The following responses represented the common themes "working together with my group helped me gain a better understanding of leadership and gave me much needed experience on assuming a leadership role," and, "great experiences throughout the course, I found myself thinking about and applying the theories and ideas throughout my work day" (Griffin, 2007).

The student feedback related to their perceptions, experiences and success in the course was supported by the literature. On-line courses and programs continue to increase in frequency in higher education. Students are increasingly demanding on-line access, and universities and colleges are working to meet the demand. With the increasing prevalence of Internet-based courses, it is important to examine students' experiences in order to provide an improved learning environment (Singleton, Hill &, Koh, 2004; Howland & Moore, 2002).

Students have identified several factors contributing to successful on-line courses. These included excellent course design, convenience, flexibility, learner motivation, time management, and comfort with on-line technologies (Singleton, Hill &, Koh, 2004; Howland & Moore, 2002).

The implications are clear. The on-line students of MGT 311 believed theoretical and practical leadership instruction can be offered effectively in a totally web-based learning environment. And based on the vast majority of student feedback, the MGT 311 students will both take more on-line courses and recommend this course to students interested in leadership instruction. As one representative student of the on-line section of MGT 311 put it, "we learned through hands-on experiences, living the chapters of the text, in a well structured course." MGT 311 will potentially open the door for many place-bound and time-bound students of leadership. However, the course may not be for everyone as noted earlier by the student who offered, "I feel I would have been able to gain much more from the class had it been offered in person" (Griffin, 2007).

PEDAGOGICAL LESSONS LEARNED

Central to the pedagogical course design was the incorporation of Chickering and Reisser's (1993) seven best practices/principles in learning. The first principle recommended the course design should encourage contact between students and the faculty. The course communications modes were chosen to encourage student contact and interaction. The communications modes included a discussion board, e-mail, and a chat capability. The discussion board served as the

primary classroom communications vehicle for posting comments and discussions related to text materials, self-assessments, chapter readings and required papers. Each student was required to not only post a total of sixteen analytical and critical chapter papers, but also post at least two responses to fellow student's postings. Students also used the chat and e-mail modes for synchronous and asynchronous communications within their groups to support intra-group interaction and engagement. Student feedback from the two capstone assignments indicated these modes of communications played a significant role in encouraging student engagement in the course. One student offered, "What helped us achieve such cohesiveness was constant good communication. We were able to bond with each other, which made our team work well." A second student described how as communications improved, so did engagement,

> *In the beginning of the semester working together was a little rough. We didn't really know each other and we were all apprehensive about expressing our true feelings to one another and giving an honest opinion. As the semester progressed we were able to work together more and our communication skills improved (Griffin, 2007).*

Group projects helped support the second principle of developing reciprocity, interaction, collaboration and cooperation among the students. As reported above, students indicated group projects were the primary vehicle for gaining practical leadership experience in the course. The following statements voice what was consistently reported by the students; "Working together with my group helped me gain a better understanding of leadership and gave me much needed experience on assuming a leadership role." And, "Today it is in a collaborative work group that true leaders immerge. It has become evident that all people have some leadership qualities that can be drawn from and used to make the whole group run smoother" (Griffin, 2007).

The third principle encourages active and constructive-oriented learning. Two examples of active learning were the rotation of leadership responsibilities and the conduct of the leadership interviews within the group projects. The students stated they actively learned leadership by practical application, "Leadership was learned through group work when each member became a leader at some point, and the other times worked with the leader to accomplish our goals." The conduct of three leadership interviews also proved to be an excellent example of active learning.

> *Specifically, one way I plan to improve my leadership abilities is by learning from the experienced leaders that I interviewed. I feel that one of the most interesting aspects of this course was the vast amount of knowledge I obtained from conducting my interviews. I was also able to learn from the interviews that were conducted by other students. I found that leaders with more experienced were far more*

understanding leaders and they exerted different leadership styles that were dependent upon the situation (Griffin, 2007).

The fourth principle encouraged faculty to provide prompt feedback. Course grading expectations were set in the first week of the course by providing the course syllabus. No student was allowed to continue in the class until each had e-mailed the faculty stating they had read, understood and was prepared to comply with the course syllabus. In addition, each student received a course grading rubric that explained the grading expectations for the course.

Principle five, emphasize time on task, was supported by setting suspense dates for both individual and group related work and assignments. In addition, the instructor managed when and how long a student could be in an individual module, keeping the student on task, by setting module time windows through the instructor controlled Web CT virtual classroom calendar. By controlling student module and assignment times the instructor could emphasize time management, a key leadership skill for these students of leadership.

The communication of high expectations was principle six. This was spelled out in the 'expectations for success' section of the course syllabus. This section of the course syllabus provided the students detail on such key topics as grading standards and scale, professionalism, virtual class attendance, and group and individual work. In addition, each student received a course grading rubric, for both individual and group assignments, that explained the writing expectations for the course. The grading rubrics specifically provided expectations related to paragraph construction and mechanics, grammar and spelling, quality of information, sources and citations and style of writing.

Lastly, principle seven called for respecting student's diverse talents and ways of learning. This was facilitated by the content of the course being presented in organized, manageable, and easily navigated segments known as modules. Student feedback validated that the course structure did facilitate learning, "It was a well-structured class and it allowed us to work in teams which is a big part of today's leadership" (Griffin, 2007). The first module was organized to initially insure each student could successfully work in an on-line course. Then the modules progressively built upon previously presented leadership theory and practical leadership application. The last module was a capstone project in two parts, a group and an individual self-assessment and plan for improvement.

SUMMARY AND RECOMMENDATIONS

In summation, it was found in MGT 311 that the pedagogical approach did play an important role in the overall effectiveness of offering leadership in a totally on-line format. The findings of the post-course study (Griffin, 2007) supported the incorporation of Chickering and Reisser's (1993) guidelines and suggestions for "best practices" in on-line learning. These included: encouraging

student-faculty interaction through e-mail and discussions, encouraging student cooperation through collaborative learning, applying real-world work to course content through the use of group projects, providing prompt, comprehensive feedback by the faculty, recommending completion times for each module, communicating high expectations, and respecting the diverse talents and ways of learning that each student may bring (Chickering & Ehrmann, 1996; DIIA, 2005).

We offer our experience in developing the on-line version to guide the future development of leadership instruction in the on-line learning environment. The expansion of distance education requires faculty delivering distance education to re-examine the way teaching and learning takes place (Palloff & Pratt, 1999). What has evolved in this alternative to the traditional classroom is a new paradigm of teaching and learning. The development of this new paradigm was required because many of the established assumptions of teaching and learning commonly true in the traditional classroom do not hold for successful teaching and learning in the distance-education environment. There are several key differences between traditional classroom and distance learning that include instructor roles, lesson organization, use of technology and the need for collaborative learning. In making the transition from the classroom to on-line instruction, faculty must concern themselves with these pedagogical issues (Palloff & Pratt, 1999).

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WHAT IS A BETTER PREDICTOR OF SUCCESS IN AN MBA PROGRAM: WORK EXPERIENCE OR THE GMAT?

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ABSTRACT

The goal of this study was to determine if work experience might be a better predictor of success than a GMAT score by examining how successful students have been in an MBA program in a suburban metropolitan university. Success in the MBA program was measured by overall GPA for students completing the program. The study also examined the benefits of offering a GMAT Waiver to individuals with significant and leadership experience. Other characteristics, such as age, gender, race, undergraduate GPA and undergraduate upper division GPA were also studied. Preliminary results indicated that significant leadership and administrative work experience were a better predictor than GMAT scores in predicting the overall success of students enrolled in an MBA program. There appeared to be very little correlation between GMAT scores and the overall GPA that students received in the program. The study should be beneficial to universities considering the criteria on which to place the most emphasis when making admissions decisions. Included in the paper will be a discussion of alternatives to offering the GMAT.

REVIEW OF THE LITERATURE

In a part-time program such as the one being studied in this paper, students are often older and have more significant leadership and management work experience than students admitted to a traditional MBA program. To maximize the number of admittances and improve the retention and graduation rates, it is important that those involved with the administration of MBA programs understand the likely predictors of graduate student performance to be able to make quality admission choices (Sulaiman and Mohezar, 2006).

More and more schools have recognized that the GMAT, including the GMAT Analytical Writing Assessment (AWA), should be waived for individuals with significant work experience (Braunstein, 2009). Fish and Wilson (2009) indicated that there also are other differences in factors, such as age, in predicting graduate performance in a part-time MBA compared to a one-year MBA program. This should be of particular interest to Clayton State University (CSU), because its 20 month is geared towards working professionals.

Sulaiman and Mohezar (2006) stated that the majority of graduate department admission committees compare total work experience and undergraduate GPA when making an admittance decision. The article by Sulaiman and Mohezar (2006) gave six hypotheses, one of which stated: "H_1: Work experience will predict student performance." They concluded that, "Those with longer previous work experience may more readily see the relevance of the management concepts taught. Thus, they would likely perform better than those with less work experience".

Some leading schools, such as Northwestern University's Kellogg School of Management, now base their enrollment on undergraduate academic records and work experience (Jones, 2005). As Kellogg's Julie Jones indicated in a 2005 *Business Week* article, it does not make a lot of sense to require the Chief Financial Officer of an organization, who had an undergraduate GPA of 3.7 as an accounting major, to take the GMAT. Jones (2005) added that Kellogg places a major emphasis on the value and range of work experience that applicants can bring to the program. Many executive MBA programs now waive the GMAT exam (Gloeckler, 2005). In fact, in 2005, only 12 of *Business Week*'s top 25 MBA programs required the GMAT. About one-third of the applicants for the North Carolina Kenan-Flagler Business School opted for a GMAT waiver instead of taking the GMAT (Gloeckler, 2005).

Among the issues that need to be addressed are the standards for granting a GMAT waiver (i.e., not requiring the GMAT) and the requirement of the Analytical Writing Assessment (AWA) when a GMAT waiver is granted. In an MBA program for working professionals, such as the one at CSU, work experience might be a better predictor of success in the MBA program than the GMAT score or undergraduate work experience (Adams, 2000). Adams (2000) also indicated that work experience appears to be a better predictor of success for MBA students than even the GMAT or undergraduate GPA. He did so using ANOVA analysis and pointed out that the percentage of MBA having significant work experience has risen over time.

It must be noted that, based on conflicting evidence about the GMAT as a predictor of success in MBA programs, the AACSB has stopped requiring GMAT scores for admissions into many types of MBA programs.

In addition, previous research has also shown that some characteristics such as race and gender might affect the predictive validity of GMAT (Gropper, 2007). David Gropper was the assistant dean and executive director of Auburn's MBA program when Auburn's MBA was ranked 26th of the nation's public institutions (Granger, 2005). He found that other factors, such as substantial career advancement, are better predictors of success in MBA programs. He also indicated that factors such as loyalty, stability, and time management may be better predictors of success in business and therefore in a non-traditional MBA program.

In another significant article, Rogers and Rjntner (2001) stated that the GMAT Analytical Writing Assessment (AWA) gave no indication of a writer's needs, and that the actual essays did not represent the type of content that MBA students usually had in their writing assignments. Rogers and Rjntner (2001) also pointed out that business school assignments usually concentrate

on relevant business topics such as employees, co-workers, consumers, investors, and the macro community, whereas the AWA is more of an analytical writing associated with the academic environment.

As shown in Table 1 (GMAC, 2008), as the age of applicants increases, the mean GMAT scores decrease, indicating that age is apparently an important factor. Many individuals in the CSU MBA program are over the age of 40.

Table 1: Comparison of different age groups on the GMAT	
Age	Mean GMAT Score
28 – 30 years old	551
31 – 34 years old	539
35 – 39 years old	516
40 – 49 years old	485
(See GMAC, 2008, Table 5)	

Further, research indicated that there are usually significant differences, in terms of gender and subgroups, relevant to how well the different groups score on the GMAT. The data shown in Table 2, shown below, must then be considered.

Table 2: Comparison of different age groups on the GMAT in 2007 – 2008		
U.S. Subgroup	U. S. Mean Total Score Men	U.S. Mean Total Score Women
White (non-Hispanic)	560	521
African American	453	418
(See GMAC, 2008, Table 6)		

Based on the above review of the literature, there appears to be evidentiary ground for not using or giving less weight to the GMAT variable when considering admitting decisions. There also appears to be evidentiary evidence indicating that other factors, such as race and gender, should be considered when reviewing the success of students in an MBA program. The literature appears to support the hypothesis.

DESCRIPTION OF DATA

Since Clayton State University began its MBA program with an on-campus cohort in the fall, 2007, 112 applicants have been admitted to the program. Sixty-one of those students completed their studies by the end of the summer term, 2009. Of those, 31 graduated in the spring, 2009, and

another 30 graduated in the summer, 2009. Cohort 1 began in the fall, 2007, with 35 students, and the GMAT was required. Thirty-one students graduated in the spring, and three of those students had a 4.0 overall GPA for the entire MBA program. The mean age of students in that cohort was 37.

Cohort 2, another on-campus cohort, began in the spring, 2008, with 24 students, and 17 completed their studies in the summer, 2009. Of that group, two students had an overall MBA GPA of 4.0. The mean age of that group was 31.

Cohort 3, an off-campus cohort, also began in the spring, 2008, with 14 students. One withdrew because of the death of her husband, but 13 completed their studies in the summer of 2009. The mean age of that group was 43. Of those 13, the GMAT was waived for 12 of them based on their work experience. The waivers were granted to individuals who had significantly increasing managerial responsibilities at a highly responsible level within an organization or to individuals who own their own businesses. Six of the 12 students receiving GMAT waivers completed their completed their studies in the summer, 2009, with a 4.0 overall GPA in the MBA Program. Comparative Descriptive Data for the three cohorts is indicated in Table 3 below.

Table 3: Comparative Data for Students Completing Studies by Summer, 2009				
Area	Cohort 1	Cohort 2	Cohort 3	Combined Cohorts
N	31	17	13	61
Mean Overall MBA GPA	3.68	3.72	3.88	3.73
Overall Undergraduate GPA	3.17	3.19	2.8*	3.1*
Upper Division Undergraduate GPA	3.41	3.38	2.85*	3.29*
GMAT Mean	449	431	470**	444**
Race (# of white students)	19	9	10	38
Gender (# of female students)	23	12	5	40
Age (at the start of MBA program)	37	31	43	37

*Undergraduate overall and upper level GPA for one student was not available
**In cohort 3, GMAT scores for all students with GMAT waiver except one were not available. The GMAT score for that student was older than 5 years old and therefore was not considered for the analysis but is used in calculating the mean.

ANALYSIS

Using a sample of the 61 recent graduates, the authors did a statistical analysis to determine (a) if work experience was a better predictor of success in the MBA program than GMAT scores and (b) what other variables might predict success in the program. The authors thus studied the effects of characteristics such as gender, race, and age on success, as measured by overall graduate GPA.

For cohorts 2 and 3, which began at the same time, took the courses in the same sequence, followed the same curriculum, and were taught by the same faculty, the only difference was that GMAT scores were required for cohort 2 and GMAT waivers were available for students in cohort 3. This will permit the authors to compare the two cohorts using two sample tests of our hypothesis. One would prefer to look at the regression analysis of the effect of GMAT on MBA overall GPA by adding GMAT waiver dummy variable and slope dummy. However, due to absence of GMAT scores for those who used GMAT waiver, that analysis is not possible. Hence, the authors used the t-test function in Microsoft Excel to compare the mean of the two samples: The one with GMAT waiver and the one without. Here is the hypothesis:

$$\begin{cases} Ho: \ m_1 \ \pounds \ m_2 \\ Ha: \ m_1 > m_2 \end{cases} \tag{1}$$

where m_1 is the MBA GPA mean for the MBA students with GMAT waiver and m_2 is the MBA GPA mean for the MBA students without GMAT waiver. The p-value for the test is very small (0.000238) which means we strongly reject the null hypothesis that those with GMAT waiver do worse than those without GMAT waiver. This also indicates that we have strong evidence that those with GMAT waiver do significantly better than those without GMAT waiver.

After finding out that the group of students with GMAT waiver did better in their MBA studies - as measured by overall MBA GPA – the authors tried to answer the following question: For the students without GMAT waiver, did GMAT score predict their success and was there any difference in their success based on their overall undergraduate GPA, age, race, or gender? To answer this question authors ran the following regression:

$$MBA\,GPA = b_0 + b_1\,GMAT\,Total\,Score + b_2\,Undergrad\,GPA + b_3\,Age\,at\,Start + b_4\,White + b_5\,Female \tag{2}$$

where variables White and Female are two dummy variables with values equal to one when the student's race and gender are white and female, respectively, and zero otherwise. The results of this regression analysis are reported in Table 4:

The adjusted R^2 indicates that about 20% of the variation in dependent variables can be explained by variations in independent variables. The coefficients for all variables except race (dummy variable White) are insignificant. When authors examined simple regression model with only GMAT score as independent variable the adjusted R^2 was only 3% and coefficient for GMAT score was insignificant. This suggests little or no connection between GMAT scores and success in MBA program as measured by MBA GPA..

A closer look at scatter plot of MBA GPA vs. GMAT scores also suggests that there is no connection between MBA success and GMAT scores (Figure 1). There is no evidence that MBA

GPA as a measure of success and GMAT are linearly related. Figure 2 depicts the plot of residuals of the regression model against the predicted values of MBA GPA.

Table 4: Determinants of Students' MBA GPA						
Regression: MBA GPA	b_0	b_1	b_2	b_3	b_4	b_5
	constant	GMAT Total Score	Undergrad GPA	Age at start	white	female
Coefficient	3.15566	-0.00003	0.14513	-0.00227	0.16960	0.10584
std error of coef	0.32729	0.00051	0.09791	0.00353	0.07066	0.07699
t-ratio	9.6418	-0.0531	1.4823	-0.6438	2.4003	1.3747
Significance	0.00%	95.79%	14.55%	52.31%	2.08%	17.63%
beta-weight		-0.0079	0.2284	-0.0868	0.3316	0.1889
standard error of regression		0.227936757				
R^2		28.83%				
adjusted R^2		20.56%				
number of observations		49				
residual degrees of freedom		43				
t-statistic for computing						
95%-confidence intervals		2.0167				

Figure 1: Scatter plot of MBA GPA vs. GMAT scores
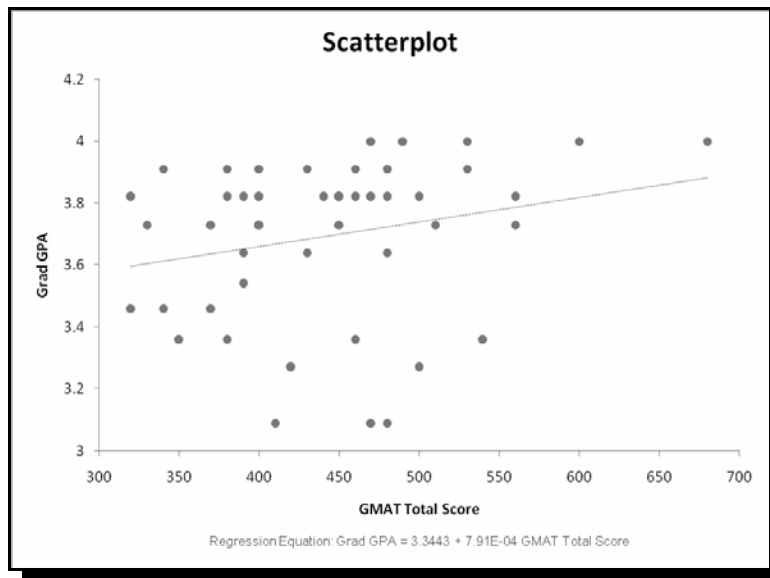
Figure 2: Scatter plot of MBA GPA vs. GMAT scores
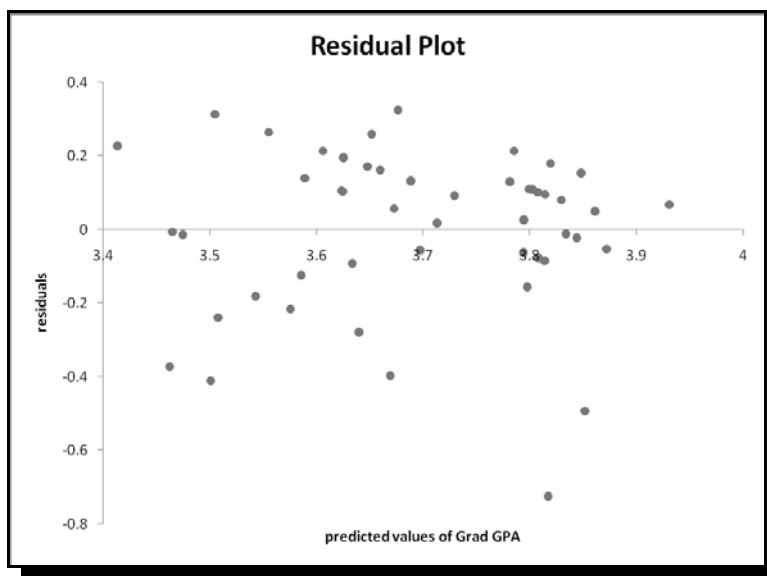
SUMMARY AND REFLECTION

Although the study involves a small number of individuals, it appears that work experience is a better predictor of the overall GPA in an MBA program than the GMAT exam. The CSU study confirms this, as did the study by Gropper (2007). The CSU study confirmed that there appears to be evidentiary grounds for not using or giving less weight to the GMAT variable when considering admitting decisions. This initial study appears to indicate that this university must thoroughly consider the positive effects of considering work experience as it relates to overall performance in an MBA program.

The university must still, however, have a means of knowing the skills of students with significant work experience. One possible solution would be to offer a provisional acceptance for those qualifying for GMAT waivers, and to then require an in depth writing assignment in the first course that the students took in an MBA program. By offering provisional entry, MBA candidates will be given the chance to prove they can perform at the MBA level. Since the GMAT is possibly not as good a predictor as work experience, having an in depth writing assessment in the first MBA course would still identify any writing weaknesses that students might have. MBA students take learning seriously and actively seek tutorial help when needed. By having the in depth writing assignment, students could still be evaluated on their writing skills and given additional help.

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FACTORS INFLUENCING STUDENT PERFORMANCE IN THE INTRODUCTORY MANAGEMENT SCIENCE COURSE

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ABSTRACT

The introductory management science course is a core requirement for many undergraduate students majoring in business. In general, it is considered to be a challenging course having high withdrawal and failure rates. The purpose of this paper is to examine factors that influence the performance of students in the introductory management science course. To evaluate these factors, a study was conducted over a two-year period covering around 300 students from business and other majors at Hampton University, Hampton, Virginia. Several independent variables related to student demographics, course structure, instructional methods, student motivation and effort, student aptitude and application, and student preparation were considered. Nine of these variables showed some significant relationship with the performance. Furthermore, a multiple regression model was constructed using stepwise method. Four independent variables were included in the final regression model: current class grade point average, average homework score, course utilization ratio, and completion of pre-calculus prerequisite. The final multiple-regression model explained around 51% of the variation. The results emanating from this paper could assist in re-designing and delivery of management science course material.

INTRODUCTION

There is a growing concern about the poor performance of undergraduate students in the introductory management science course, which is a core requirement in most business degree programs and a prerequisite for advanced courses. At Hampton University, business students are required to earn a C grade or higher in this course (Quantitative Methods) to fulfill graduation requirements. The number of students not meeting this requirement in their first attempt is high, with approximately one-third of the students earning less than a C grade, thus having to repeat the course. This exerts a financial strain on the students, lowers overall GPA, delays graduation, and causes overcrowding of management science classes.

The main motivation behind this study is to establish the underlying causes of higher failure rate in this course. The literature review shows that statistical techniques are extensively applied to model student academic performance in several courses. A number of researchers used statistical models to study factors influencing performance in accounting, economics, and finance courses. However, there is a lack of application of similar statistical techniques to analyze performance in management science courses. A small number of recent studies have been reported which analyze students' performance in such courses. Furthermore, these studies do not necessarily agree on the reasons for poor performance. Grossman (2001) provided several reasons for poor performance ranging from student lack of preparation to ineffective course design. Brookshire and Palocsay (2005); Peters et. al. (2002); and Mukherjee (2000) have studied management science courses and arrived at somewhat different causes of poor performance. This indicates that further investigation may be necessary to understand the root causes of poor performance and recommend corrective measure to improve students' performance in the management science course.

This paper attempts to highlight a wide range of significant factors which could be responsible for the poor performance in the management science course (Quantitative Methods) offered by the Department of Management at Hampton University. The study was conducted over two academic years covering around 300 students in 10 sections taught by a single instructor using a standardized course syllabus and grading criteria. In order to protect the confidentiality of student, personal identities were not disclosed and the study was approved by the University's Institutional Review Board (IRB).

The study initially considered a wide range of independent variables that could possibly influence the performance. Preliminary statistical tests resulted in elimination of the non-significant variables. A multiple regression model was developed relating nine independent variables to student performance measured by the simple average of tests and final examination scores. A final multiple regression model was created using stepwise method resulting in four independent variables as a predictor for student performance. These four variables were current class grade point average, average homework score, course utilization ratio (ratio of total hours earned by total hours attempted), and completion of precalculus prerequisite.

LITERATURE REVIEW

A number of studies have been conducted worldwide to assess the students' performance in various introductory undergraduate courses. The literature does not agree on a set of factors which influences the performance of the students in introductory college level courses. Certain factors are found to influence the performance at some institutions while not at others. A review of the literature highlighting the numerous factors that could possibly influence performance follows.

Student Demographics (major, age, gender, and race)

Most business majors are required to complete the introductory management science course. Students registered in a major that includes the introductory course are expected to perform better than students from other majors. Brookshire and Palocsay (2005) found significant difference in mean quality points for the management science course among students from different majors, although no conclusion was drawn for any particular major.

It is commonly believed that older students have a higher performance due to increased level of maturity and responsibility. Eikner and Montondon (2001) found that older nontraditional students had a higher success rate in an Intermediate Accounting I course. A highly significant positive relationship existed between age and grade in a financial accounting course (Munro, 2001). Age did not impact the performance in an introductory management accounting course (Monem, 2007) and among accounting graduating students (Al-Rashed, 2001). A study on mostly traditional students ages 19 to 23 taking an introductory management science course found no significant difference in performance (Brookshire and Palocsay, 2005).

An increase in percentage of female student attending universities has drawn the interest of researchers studying the relationship of gender on performance. The performance of males was higher in an introductory information systems course (Kruck and Lending, 2003). Monem (2007) found males marginally outperform females in an introductory management accounting course. The female students in an introductory accounting course studied by Sugahara and Boland (2006) performed significantly better than males. Gracia and Jenkins (2003) and Tho (1994) found females outperform males in accounting and finance courses. A similar study found females outperformed males in first year accounting and auditing courses, while no gender difference was found in the final year courses (Gammie et.al. 2003). Graduating female students performed better than male students in the accounting and business programs (Alfan and Othman, 2005). Other researchers have found no significant difference in the performance of male and female students (Brookshire and Palocsay, 2005; Eikner and Montondon, 2001; Al-Rashed, 2001).

The study of influence of race on performance has produced inconclusive results. Eikner and Montondon (2001) included the race variable (minority, non-minority) in their final regression model, but found it was not significant at conventional levels. While, Alfan and Othman (2005) found student's performance in accounting and business programs is dependent on their race.

Course Structure (class size, duration, timing, and length)

The introductory undergraduate courses are generally taught in large lecture classes, at different day times, and varying class duration and semester length. The effect of class size on performance has long been a topic of debate in the school systems with no conclusive results (Salvin, 1989). At the college level, introductory accounting courses taught in large lecture sections

had no significant impact on performance (Eskew and Faley, 1988). The performance of students in an introductory finance course was not affected by class size, duration of 75 or 150 minutes, and time of the day time class meetings, but students in evening classes performed lower than their day time counterparts (Wilson, 2002). According to Devadoss and Foltz (1996), students preferred 50 minute classes held on Monday, Wednesday, and Friday. In a larger study covering a wide subject area, Gibbs et. al., (1996) confirmed the hypothesis that students would perform less well in larger classes. Ewer et. al., (2002) found that students perform equally well in a four week and 16 week semester length.

Instructional Methods (instructor status and presentation style)

The course instructor plays a major role in student learning. College level teaching is a skill acquired through education and years of experience. Many introductory level courses are taught by adjunct or part-time faculty. Contrary to the general belief that courses taught by full-time tenured faculty would result in a higher performance, Wilson (2002) found that student taught by lecturers had a higher performance than those taught by tenured and tenure track faculty. Reporting on the performance in the introductory management science course, Brookshire and Palocsay (2005) found a significant difference in the performance of students taught by five different instructors, but further information of instructor status was not available. The use of audiovisual aids is helpful especially in large lecture classes. Powerpoint is a common aid used by many instructors from various fields of study, and is used extensively by conference participants. Its real effectiveness in improving performance is debatable. Most students say it helps in following the lecture while keeping the instructor focused on the topic. A study by Sugahara and Boland (2006) showed that student who prefer Powerpoint lectures scored lower on the final examination as compared to students who prefer the traditional whiteboard presentation.

Student Motivation and Effort (attendance, homework, and quizzes)

A motivated student will attend class regularly and participate in the assignments. By simply recording attendance, Shimoff and Catania (2001) found an increase in class participation and corresponding increase in overall academic performance. A study conducted by Devadoss and Foltz (1996) provides strong empirical evidence of the positive impact of class attendance on performance. Marburger (2001) has reported that performance in the Principles of Microeconomics examination was significantly affected due to absenteeism.

The role of homework on the performance of school grades has been studied extensively (Trautwein and Köller, 2003). At the college level, researchers have supported the usefulness of homework as a supplement to classroom learning and in improving performance especially in introductory courses. Sasser (1981) found the performance of college students in a freshman algebra course receiving homework was significantly greater than those not receiving homework. Kruck

and Lending (2003) found effort/motivation, measured by homework scores was significantly related to performance. According to Neilson (2003), the effectiveness of homework is related to time constraint. When there is no time constraint, it can be beneficial but its effectiveness lessens under time constraints especially experienced by working students. In an introductory operations management course, Peters et. al., (2002) found grading homework did not affect examination performance on quantitative questions but contributed significantly to performance on non-quantitative questions. The graded homework returned to students and once again reviewed before a test has shown to improve performance (Mukerjee, 2000).

The number of quizzes taken was significantly related to examination performance (Eskew and Faley, 1988). The use of random, extra credit quizzes increased attendance by about 10%, and improved examination performance (Wilder et. al., 2001). A study by Haberyan (2003) found weekly quizzes did not improve student performance in a college-level general biology course, but student preferred quizzes as it helped in the preparation for examinations.

Student Aptitude and Application (SAT, and current class GPA)

Currently, some universities are debating the requirement of SAT scores as part of the application requirements, and making it optional for applicants with high GPA and class ranking (Daily Press, 2007). Eskew and Faley (1988) reported that SAT (math and verbal) score contributed significantly to student performance in the introductory accounting course. According to Brookshire and Palocsay (2005), the SAT math score has significant bivariate correlation with performance in the management science course. The SAT scores predicted academic performance for male students but not for female students (Kruck and Lending, 2003). The SAT math and verbal scores had significant influence on immediate accounting tests (Bernardi and Bean, 2002).

The influence of current class GPA on performance has been widely studied by researchers. Gracia and Jenkins (2003) found previous GPA earned had a significant effect on current GPA in the accounting and finance program. Kruck and Lending (2003) found a significant relationship between collegiate GPA and overall performance in an introductory information systems course. Eikner and Montondun (2001) concluded that college GPA to date was significantly related to performance in an intermediate accounting course. The GPA earned at the end of sophomore year strongly influenced performance in the complete accounting program (Al-Rashed, 2001). The overall GPA (excluding management science, calculus, and statistics course grades) was found to be most significantly related to the grade earned in the introductory management science course (Brookshire and Palocsay, 2005).

Student Preparation (prerequisites, transfer, and course repetition)

The prerequisite courses are generally scheduled during the freshman/sophomore year to prepare students for advanced courses. The usefulness of these courses has often been questioned. Bernardi and Bean (2002) have found that performance in Intermediate Accounting-I has a positive impact on the performance in Intermediate Accounting-II suggesting the importance of introductory courses as an indicator of success in more advanced courses. This was corroborated by Al-Rashed (2001) who found grades in introductory accounting and finance courses had a positive correlation with performance of graduating accounting students. The prerequisites generally required for an introductory management science course are one semester each of calculus and statistics. Brookshire and Palocsay (2005) found performance in the management science course was significantly correlated with quality points in the calculus and statistics courses. Eskew and Faley (1988) found college-level math and statistics courses do improve performance in introductory accounting course. Eikner and Montondon (2001) found that performance in the first intermediate accounting course was significantly related to the grade in the first accounting principle course. Surprisingly, Kruck and Lending (2003) found taking a similar course or programming classes did not improve the performance in the information systems course. Core courses taken by business students did not have a strong positive relationship with the final cumulative GPA (Alfan and Othman, 2005).

Often, prerequisite courses are transferred from high school AP program or from previously attended institutes of higher learning. Munro (2001) studied the performance of students in a Financial Accounting course who were granted transfer credits for a prerequisite first level accounting course. The results indicate that students who completed the prerequisite course in-house performed better than those who received transfer credits from other institutes. Eikner and Montondon (2001) studied the performance of student who transferred courses from other colleges and found no significant difference in performance between transfer and traditional students, and those repeating a course performed marginally better.

Multivariate Analysis

The relationship between the student performance and explanatory factors has been established in the past by researchers using multivariate analysis (Eskew and Faley, 1988; Miller and Westmoreland, 1998). This approach has been replicated by researchers from different disciplines to correlate multi-factors with performance. Kruck and Lending (2003) developed a multiple regression model that used five independent variables to predict grades in an introductory information science course. Eikner and Montondon (2001) identified eight independent variables as potential performance indicators in the first intermediate accounting course and found three to be significant: college GPA, grade in the first accounting principle course, and age. Garcia and

Jenkins (2003) used multiple regression and principal component analysis to study the impact of around 20 independent variables on performance of a degree program in accounting and finance and found six were significant in explaining the variation in current performance. A multiple regression model was developed by Al-Rashed (2001) that related the final GPA of accounting students to 11 independent variables. After conducting a stepwise multiple regression analysis, Al-Rashed (2001) found a single variable (GPA) most significant, while the others had lesser degree of significance in predicting performance.

A few multivariate analyses have been conducted in the field of management science. Brookshire and Palocsay (2005) applied multiple regression analysis to determine significant factors that impact performance of students in an introductory management science course and found overall academic performance (GPA) had the strongest correlation with performance, while other variables included in the model (SAT math score, prerequisites, major, and instructor) had a lesser significance on the performance.

RESEARCH DESIGN AND RESULTS

The review of previous research across various fields identified a range of factors that could influence the academic performance in introductory business courses. As expected, the researchers differ on which factors are more important for the students' academic success. Furthermore, each research study considered different set of factors and used variety of measurements to assess the academic performance. In this study, we considered several previously reported along with some new factors together to investigate our basic research question *"What factors determine academic performance in an introductory management science course?"* Six different set of independent variables were considered that included student demographics, course structure, instructional methods, student motivation and effort, student aptitude and application, and student preparation. These sets are discussed later in this section.

The Course Details and Sample Size

The course studied for this research was a three credit hour introductory management science (Quantitative Methods) course required by all business majors and used as an elective by students from other majors. This sophomore level course is sequenced during the fourth semester and requires calculus and statistics prerequisites. The classes were taught by a single tenured professor on Monday, Wednesday, and Friday between 8:00 AM and 11:00 AM. A common course syllabus and grading scale was used covering deterministic and probabilistic models outlined in the sample course design by Borsting et. al. (1988). Powerpoint presentation was used as a teaching tool in all sections and made available electronically to students. The final score was complied as a weighted sum of three tests (45%), final examination (20%), homework (10%), quizzes (10%), class project

(10%), and attendance/participation (5%). A course grade was assigned according to the University's grading system. The tests and final examination consisted of a combination of multiple-choice questions (30%) and numerical problems (70%). Homeworks and quizzes were assigned at the end of each chapter and were graded and returned back to students. The class project demonstrated an application of a management science technique covered during the course. The attendance/participation score was computed based on the number of unexcused absences.

The course was studied over a two-year period covering 333 students in 10 sections taught during the fall 2005 to spring 2007 semesters. Out of 333 students, 297 were assigned a letter grade from A through F. The remaining 36 students (around 11%) withdrew from the course, or did not take the final exam.

Preliminary Statistical Analysis

The methodology follows the approach of Eikner and Montondou (2001). The variables identified in the literature review were analyzed separately in relation to performance using the t-test, ANOVA, and/or simple regression, and significant variables were included in the multiple regression model. Instead of using the final grade for performance measure as suggested by Eikner and Montondou (2001), or the final examination score (Sugahara and Boland, 2006), this study used the simple average of the three tests and final examination scores (AVGT). The tests and final examination, from which the AVGT is computed, are conducted in class under supervision and hence, expected to reflect the true performance of students. Trautwein and Köller (2003) have also recommended the use of *standardized achievement tests* instead of grades to measure the performance of students.

Student Demographics (major, age, gender, and race)

The student population included largely business majors along with a few non-business majors. An ANOVA test showed no significant difference (F=1.638, df=296, p=.1499) in AVGT for the different majors presented in Table 1.

Most of the students in the study group were African-American sophomores or juniors residing on campus. Since the sample was largely homogenous with respect to age and race, these variables were not analyzed further. Table 2 provides a distribution of males and females in the study group. The females outnumber males (54% versus 46%) reflecting a national trend of higher enrollment of female college students. The AVGT scores for female and male differ significantly (t = 2.621, p = .009) suggesting that female students' performance was significantly better than male students in the course.

Table 1. Student Major Groups.						
Semester	Accounting	Economics & Entrepreneurship	Finance	Management	Marketing	Others
Spring 2007	10	6	9	18	20	1
Fall 2006	6	4	6	21	11	2
Spring 2006	17	10	14	21	36	3
Fall 2005	8	8	12	34	20	0
Total	41	28	41	94	87	6
AVGT	77.91	76.04	81.00	76.74	79.59	76.50

Table 2. Gender Detail				
Gender	Sample Size	%	Mean AVGT	Std. Dev.
Female	161	54%	79.82	8.35
Male	136	46%	77.00	10.15
Total	297	100%	78.53	9.31

Based on the preliminary statistical analysis of student demographics, only the independent variable GENDER is included in the multiple regression model.

Course Structure (class size, duration, timing, and length)

The Table 3 presents a summary of descriptive statistics for each course section. Due to limited data sets, the class size was divided into two groups: small class ($\leq$ 30 students) and large class ($>$ 30 students). The AVTG for small and large classes is not significantly different ($t = -.994$, $p = .321$). All the classes were held on Monday, Wednesday, and Friday at 8:00 AM, 9:00 AM, 10:00 AM, and 11:00 AM for a duration of 50 minutes each. The t-test for sample pairs of different class meeting timings show no significant difference ($t = -0.009$, $p = 0.993$ to $t = -1.594$, $p = 0.118$) in the AVTG. Similarly, there was no difference found between Fall and Spring semesters' AVTG ($t = -.1965$, $p = .8442$). The class length and semester duration variables could not be tested as all 10 sections considered in the study met for 50 minutes each in the regular 15-week semester.

Based on the preliminary statistical analysis of course structure, none of the independent variables in this set were significant; hence none of these variables were included in the multiple regression model.

	Table 3. Class Size and Timing				
Section	Semester	Timing	Class Size	Mean AVGT	Std. Dev.
1	Spring 2007	8:00 AM	31	78.133	7.016
2	Spring 2007	9:00 AM	33	77.508	11.563
3	Fall 2006	8:00 AM	20	77.981	10.457
4	Fall 2006	9:00 AM	30	77.846	10.226
5	Spring 2006	8:00 AM	33	79.311	7.725
6	Spring 2006	9:00 AM	31	80.00	7.539
7	Spring 2006	11:00 AM	37	79.980	10.617
8	Fall 2005	9:00 AM	27	76.111	8.113
9	Fall 2005	10:00 AM	27	76.778	7.673
10	Fall 2005	11:00 AM	28	80.839	10.987

Instructional Methods (instructor status, presentation style, and textbook)

All the sections were taught by a single tenured professor using Powerpoint presentation. The presentations were available electronically to students through the University website. Since, all sections were taught by same professor using similar presentation style, the instructor status and presentation style variables could not be tested. The prescribed text book for the course was changed in the Fall 2006. A t-test for the two sample courses using the old book in Spring 2006 and the new book Spring 2007 showed no significant differences in AVGT (t = - .639, p = .525.)

Based on the preliminary statistical analysis of instructional methods, none of the independent variables in this set were significant; hence none of these variables were included in the multiple regression model.

Student Motivation and Effort (attendance, homework, and quizzes)

Class attendance was required and constituted part of the final grade. A simple regression analysis conducted separately for the number of days absent and percentage of days absent showed a significantly high (p<.001) relationship on the AVGT. The percentage of days absent had a stronger relationship (r-square = 0.09) with AVGT.

Homework was assigned at the end of each chapter to strengthen learning of conceptual and quantitative materials. All homework were collected, graded by the instructor, and returned back to the students. A simple regression analysis conducted separately for the number of homework submitted, percentage of homework submitted, and the average homework score showed a

significantly high (p<.001) relationship with AVGT. The average homework score had a stronger relationship (r-square =.238) with AVGT.

A short quiz followed the completion of each chapter. These were completed outside the classroom and were collected during the next class meeting, graded by the instructor, and returned back to the students. A simple regression analysis conducted separately for the number of quizzes submitted, percentage of quizzes submitted, and the average quiz score showed a significantly high (p<.001) relationship with AVGT. The average quiz score had a stronger relationship (r-square =.146) with AVGT.

As expected, all the motivation and effort variables were significant in the preliminary statistical analysis. Hence, the independent variables, percent of days absent (%ABS), average homework score (AHW), and average quiz score (AQZ) were included in the multiple regression model.

Student Aptitude and Application (SAT, current class GPA, and course utilization ratio)

As reported in many studies, the SAT scores are a good predictor of the performance during freshmen year of college. Since, the Quantitative Methods course is a sophomore level course, SAT scores were not included in this study. According to the business curriculum outline, all students must enroll in the Quantitative Methods course preferably during their sophomore year after completing at least 45 semester credit hours. An analysis of average hours attempted (96.65 hours) and the average hours earned (89.29 hours) up to completion of the course indicates that students were enrolling in this course much later in their curriculum, some even during their final semester. A number of students earned transfer credit hours that are included for total curriculum requirement but not included in the hours attempted and hours earned for class GPA computation. Hence, it was decided to compute the course utilization ratio of total hours earned to total hours attempted (HE/HA). This average value of HE/HA for this study was = 0.937 indicating a loss of hours due to withdrawal or failing grades. The current class GPA (including the Quantitative Methods course) and the course utilization ratio are reflective of the student's aptitude and application. A simple regression conducted separately for the current class GPA and course utilization ratio on AVGT, showed the former had a significant relationship (r-square =.404, p<.001) and the latter had a significant relationship (r-square = .119, p<.001). The GPA and course utilization ratio has significant relationship with AVGT indicating that higher values should lead to better performance. Hence, current class GPA (GPA) and course utilization ratio (HE/HA) were included in the regression model, and the SAT score was not included.

Student Preparation (prerequisites, transfer, and course repetition)

The curriculum requires two prerequisite courses in calculus and statistics to be completed prior to enrolling in the Quantitative Methods course. The AVGT for students who completed the Calculus and Statistics prerequisites earning a passing grade were significantly higher than students who did not complete the prerequisites (Table 4). The completion of Precalculus Mathematics I course which is a prerequisite for the Calculus as well as Statistics courses also had a significant impact on the AVGT.

Table 4. Statistical Test for Prerequisites			
Prerequisite	Completed	Not Completed	Significance
Calculus (P1)	Mean AVGT = 80.34 Std. Dev. = 8.83	Mean AVGT = 73.86 Std. Dev. = 8.94	t=-5.626 p<.001
Statistics (P2)	Mean AVGT = 79.40 Std. Dev. = 9.11	Mean AVGT = 73.90 Std. Dev. = 9.08	t=-3.806 p<.001
Precalculus Mathematics I (P3)	Mean AVGT = 79.37 Std. Dev. = 8.66	Mean AVGT = 72.23 Std. Dev. = 11.53	t=-3.534 p=.001

The School allows students to transfer non-business course credits (not quality points) completed at any accredited institution of higher learning. The focus of this research was on students who obtained transfer of the prerequisite MAT 130 - Calculus. There was no significant difference (t=-.821, p=.417) in AVGT between students who completed the calculus course on campus or at another institution. This contradicts results of Munro (2001).

Student repeating the course either withdrew from the previous course or received a lower grade than is necessary for their curriculum. There was no significant difference (t=1.186, p=.236) noted in AVGT between repeat and first time students. A similar analysis by Eikner and Montondon (2001) found marginal difference in performance.

Based on the preliminary statistical analysis of student preparation, the independent variables for completion of all direct and indirect prerequisites: Calculus (P1), Statistics (P2), and Precalculus Mathematics I (P3) were included in the multiple regression model.

Multiple Regression Analysis

Of the 22 independent variables analyzed by preliminary statistical methods, nine significant independent variables were included in the following multiple regression model.

$$AVGT = \beta_0 + \beta_1 GPA + \beta_2 GENDER + \beta_3 \%ABS + \beta_4 AHW + \beta_5 AQZ + \beta_6 HE/HA + \beta_7 P1 + \beta_8 P2 + \beta_9 P3 + \epsilon$$

Dependent variable

AVGT: the simple average of three tests and final examination scores.

Independent Variables

GPA: a continuous variable representing the current class GPA up to completion of the Quantitative Methods course.

GENDER: a dummy variable, Male = 1, Female = 0.

%ABS: is a continuous variable representing the percentage of days absent (excused and unexcused) during the semester.

AHW: a continuous variable representing the average homework score out of 10.

AQZ: a continuous variable representing the average quiz score out of 10.

HE/HA: a continuous variable representing course utilization ratio (total hours earned by total hours attempted) up to completion of the Quantitative Methods course.

P1:   a dummy variable for Calculus prerequisite. Completed = 1, not completed = 0.

P2:   a dummy variable for Statistics prerequisite. Completed = 1, not completed = 0.

P3:   a dummy variable for Precalculus Mathematics I prereq. Completed = 1, not completed = 0.

An analysis was conducted to determine the equation of the multiple regression model that best fits the data. The multiple regression results for the nine variables are shown in Table 5. The computed value of F = 34.214 and the P-value < 0.001 indicates that some of the independent variables have the ability to explain the variation in AVGT.

As shown in Table 5, only four out of nine variables have significant contribution to the regression model. It clearly shows that contribution of some variables is mostly explained by the other variable, as the regression model only considered variables which independently showed significant relationship with AVGT. For example, Precalculus Mathematics I (P3) is a perquisite for both Statistics (P2) and Calculus (P1). And the regression model shows that completion of P3 explained most of the variability as compared to the prerequisites P1 and P2. It is possible that a number of students who completed P3 had also completed P1 and P2 courses. Furthermore, a correlation matrix (Table 6) was developed showing the coefficient of correlation between pairs of independent variables. All the variables except GENDER and P2 appear to have a medium to strong correlation with AVGT. GPA has the strongest relationship and GENDER and %ABS have negative signs indicating an expected inverse relationship. A check for multicollinearity was

conducted to determine if there was any correlation among the independent variables. With the exception of HE/HA and GPA (0.752), all the coefficients are between –0.70 and 0.70 and should not cause a correlation problem (Lind et. al., 2006).

Table 5. Multiple Regression Results				
Test of Significance of the Regression Model				
Coefficient of multiple determination R2 = 0.5176.	R-square = 0.518.	ANOVA F = 34.2141, df = 296 Significance < 0.001.	Standard Error = 6.5666	N = 297
Test of Significance of the Intercept and Individual Variables				
Independent Variables	Coefficients	t Statistics	P-value	Significance
Intercept	72.329	10.81	<0.001	Yes
GPA	13.157	10.53	< 0.001	Yes
GENDER	-1.118	-1.41	0.1594	No
%ABS	-1.482	-0.31	0.7564	No
AHW	1.356	4.49	< 0.001	Yes
AQZ	-0.471	-1.07	0.2841	No
HE/HA	-42.541	-5.17	< 0.001	Yes
P1	0.758	0.70	0.4846	No
P2	1.285	1.17	0.2452	No
P3	2.916	2.05	0.0416	Yes

Table 6. Correlation Matrix										
	AVGT	GPA	GENDER	%ABS	AHW	AQZ	HE/HA	P1	P2	P3
AVGT	1									
GPA	0.636	1								
GENDER	-0.155	-0.13	1							
%ABS	-0.301	-0.35	0.210	1						
AHW	0.488	0.482	-0.147	-0.527	1					
AQZ	0.382	0.486	-0.088	-0.519	0.676	1				
HE/HA	0.345	0.752	-0.160	-0.354	0.391	0.384	1			
P1	0.313	0.356	-0.049	-0.111	0.147	0.184	0.248	1		
P2	0.216	0.268	-0.123	-0.054	0.098	0.127	0.228	0.223	1	
P3	0.248	0.159	-0.065	-0.147	0.131	0.097	0.088	0.540	0.099	1

The multiple regression output data was further analyzed by plotting the residuals versus predicted AVGT for each set of inputs. The scatter plot (Figure 1) shows the spread of residuals remains mostly constant except for few outliers at the lower AVGT values, thus fulfilling the homoscedasticity condition.

Figure 1. Residuals versus Fitted Values
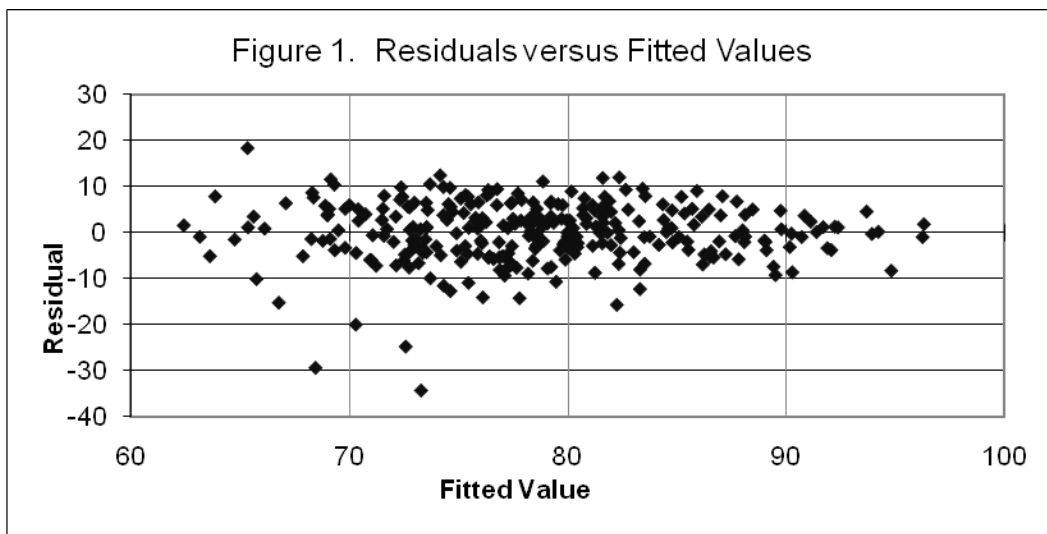
Stepwise Regression

As described in the earlier section, not all nine variables are contributing significantly to multiple regression model. The stepwise multiple regression (SPSS, Inc., 2003) was used to find the better and concise regression model from the set of independent variables under consideration. The multiple regression model summary is shown in Table 7 along with the variable coefficients (Table 8).

Table 7. Multiple Regression Model Summary					
Model	Predictors	R	R -Square	Adjusted R Square	Std. Error of the Estimate
1	GPA	0.636	0.404	0.402	7.198
2	GPS, AHW	0.669	0.447	0.443	6.945
3	GPA, AHW, HE/HA	0.702	0.492	0.487	6.666
4	GPA, AHW, HE/HA, P3	0.713	0.508	0.501	6.574

Model	Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	46.531	2.300		20.231	.000
	GPA	11.498	.813	.636	14.148	.000
2	(Constant)	43.750	2.294		19.071	.000
	GPA	9.436	.895	.522	10.545	.000
	AHW	1.200	.251	.237	4.784	.000
3	(Constant)	70.782	5.733		12.347	.000
	GPA	13.719	1.200	.759	11.429	.000
	AHW	1.261	.241	.249	5.231	.000
	HE/HA	-41.998	8.223	-.323	-5.107	.000
4	(Constant)	67.847	5.734		11.832	.000
	GPA	13.303	1.191	.736	11.165	.000
	AHW	1.213	.238	.239	5.092	.000
	HE/HA	-40.721	8.120	-.313	-5.015	.000
	P3	3.666	1.202	.127	3.050	.003

Table 8. Variable Coefficients

The final multiple regression model (Mode 4) is:

$$AVGT = 67.847 + 13.303GPA + 1.213AHW - 40.721HE/HA + 3.666P3.$$

DISCUSSION

Out of nine independent variables in the multiple regression model, four appear to be significant in explaining the variation in the measure of performance in the Quantitative Methods course. The current class GPA is the strongest predictor of performance. Students who have a high current class GPA have the aptitude to perform well. This matches the results of recent research across different fields (Brookshire and Palocsay, 2005; Kruck and Lending, 2003; Gracia and Jenkins, 2003; Al-Rashed, 2001; Eikner and Montondun, 2001).

Homework plays an important role in understanding the course material presented in the class and contributes 10% of the overall grade. It has been observed that homework is not taken seriously and has an average computed score of 7.03/10.00 (C-). The 85% of homework submitted was mostly done hurriedly prior to submission with help from other students. Even with the

deficiency in the quality of the homework, it is still a significant factor in assessing student progress. A decline in homework scores may be an early warning for instructor intervention.

The course utilization ratio measure the effectiveness of time spent at college. The average course utilization for this study was around 94% indicating a 6% loss in credit hours. Over the entire length of 125 hours needed to earn a degree, 7.5 hours were lost due to withdrawals or failing grades. It was hoped that the GPA variable would explain most of course utilization variability as lower course utilization generally meant lower GPA. However, course utilization is still a significant factor in explaining some of the variability in the AGVT despite GPA presence in the regression model.

The Quantitative Methods topics require application of basic math skills and some statistical background, and Calculus (P1) and Statistics (P2) are the recommended prerequisites. Out of the three prerequisites P1, P2, and P3 that were included in the multiple regression model, only Precalculus Mathematics I (P3) which is required for the Calculus (P1) and Statistics (P2) courses was found to significantly influence performance in the Quantitative Methods course. The Calculus (P1) and Statistics (P2) courses did not significantly influence the performance. It was observed that students did not take the prerequisites in the recommended sequence while many others repeated the Calculus (P1) and Precalculus Mathematics I (P3) courses several times to score the required grade (C or higher). Often, students have successfully completed the Quantitative Methods course without having the prerequisites.

Although GENDER was significant during the preliminary statistical analysis, it did not appear in the final multiple regression model ($p = 0.1594$). Past research has shown mixed results in performance between males and females. It is possible that the gender difference was also explained by either GPA or prerequisite Precalculus Mathematics I (P3).

The percentage of days absent (%ABS) is not significant ($p = 0.7564$). The average percentage of days absent was 12% of lecture meetings during the semester. Past research shows an impact of attendance on performance (Shimoff and Catania 2001; Marburger 2001; Devadoss and Foltz 1996). In this course, attendance accounted for 5% of the final course grade. Hence, some students with poor attendance record lost points on the course grade although they may have done fairly well at the tests and examination. Furthermore, students who missed classes have the opportunity to catch up during the instructor's office hours, homework application, and review sessions.

The average quiz score (AQZ) was not significant ($p = 0.2841$). The quiz score contributed 10% to the overall course grade. The objective was to provide an opportunity to learn the material by referring to the text and class notes while completing the quiz. But in actuality, students simple guessed the answers or sought help from others thereby diminishing effectiveness of the quiz. Hence, non submission of quiz did impact the overall course grade but did not influence the test and examination performance.

Can the final multiple regression model be used to predict student performance in the Quantitative Methods course? The scatter plot (Figure 2) of the predicted AVGT versus the actual AVGT shows most points fall very close to the line except for a few outliers at the lower AVGT values. It appears that the model provides a good fit and may be used to predict the performance of a student.

CONCLUSIONS

This study includes an exhaustive literature review of possible factors that could influence the performance of students in the management science (Quantitative Methods) course and identified around 22 such factors. After a preliminary statistical analysis, nine of these factors were included as independent variables in the multiple regression model. A stepwise regression analysis resulted in four significant ($p < 0.001$) variables: GPA, AHW, HE/HA, and P3. The remaining five factors although having influence did not independently contribute significantly to the predictive model.

An objective of this paper is to provide guidelines that may be used by faculty while advising students. Faculty teaching the Quantitative Methods course could do a prior analysis of student background to predict performance. The data for the independent variables could be drawn for the current semester and fitted to the final multiple regression model. The class GPA (GPA), course utilization ratio (HE/HA), and completion of prerequisite (P3) is available from student transcripts. The average homework score (AHW) will not be available at the beginning of the semester but a conservative estimate could be used. Student whose performance falls below normal could be advised to take appropriate action such as strengthening basic math skills, seeking tutorial help, improving study habits and class attendance, etc.

As part of the overall advising process, students must be urged to take courses in proper sequence to get the maximum benefit from their program. The Department may want to reconsider its prerequisite policy. Are Calculus (P1) and Statistics (P2) the necessary prerequisite courses, and if so, will a passing grade (D- or higher) be sufficient? Similarly, the instructor could review the grading policy with greater emphasis on homework as a means of increasing student participation. Since take home quizzes did not impact performance, it could be redesigned or eliminated. Class attendance was not significant for the multiple regression model, however, the correlation matrix (Table 6) shows somewhat strong correlation between attendance and homework as well as quiz grades. Therefore, a strict attendance policy may be necessary to ensure better performance.

This study has limitations. The final multiple regression model explains 51% of the variation in AVGT. Hence, additional factors may need to be included. For example, the current course load of student could possibly influence the performance. Students carrying a heavy course load may devote little or no time to this course. Although, no research was found that relates course load and performance in the management science course, studies in other subject areas have drawn inclusive results (Szafran, 2001 and Joy, 1981). Other factors that could influence student performance in the

management science courses are students' utilization of faculty office hours and attendance of review or recitation session, if available. Additionally, a review of end-of-semester course evaluations may shed further light into course or instructor factors that may be related to student performance.

The sample size of around 300 students was drawn from classes taught by a single instructor and may not reflect the performance over a larger group taught by multiple instructors within the University, or among different colleges and universities. A larger study including multiple instructors from different institutions would be required to arrive at a *general predictive model*. In such a study, the dependent variable may be affected by different independent variables at the individual student level and university level. The individual students will be *nested* within universities thus requiring the application of Multilevel Regression Analysis (Bickel, 2007). Such large data sets could also be analyzed using *data mining* techniques (Han and Kamber, 2001).

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MOVING TOWARDS A CULTURALLY DIVERSE ACCOUNTING PROFESSION

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ABSTRACT

This paper discusses the increasing diversity in the accounting profession. Evidence is presented substantiating that over one third of recent accounting graduates are from ethnic minority backgrounds, the majority of whom are Asian/Pacific Islanders. In our university specific data, we find an even higher percentage (71%) of ethnic minorities receiving accounting degrees, with Asian/Pacific Islanders as the majority group. We also show that over one fourth of new accounting graduates hired by accounting firms are ethnic minorities of which fifty percent are Asian/Pacific Islanders. However, a recent survey by the AICPA indicates that only 4% of partners in accounting firms are ethnic minorities, again half of whom are Asian/Pacific Islanders. Due to the predominance of this ethnic group, we discuss several Asian cultural values that are perceived to negatively impact success and how they can be viewed as positive attributes. Practical tactics are then prescribed for Asian/Pacific Islanders to be proactive in increasing the probability of attaining partnership. Finally, recommendations are made for diversity programs to ensure that accounting firms recognize the importance of promoting a diverse workforce to maintain their competitive edge.

INTRODUCTION

The U.S. population as a whole has seen a shift in demographics to increased minority representation. According to the 2005 census, the largest growth in the nation's population was attributed to Hispanics, up 21% from 2000. Not far behind were significant increases in the Asian population, up 19.2% from 2000 (Kronholz, 2006). Concomitant with the growing diversification of the general population, U.S. universities are educating a more diverse student population. According to the 2002 U.S. census, 17.5% of African Americans, 9.7% Hispanics, and 44% of Asian/Pacific Islanders hold a bachelor's degree (Ying, Lee, and Tsai, 2004).

The national trend towards increasing ethnic diversity transcends to the accounting profession. Within the discipline, Asian/Pacific Islanders account for the greatest change in new hires. Due to the marked increase of this particular ethnic group, this paper addresses both positive and negative influences of eastern cultural values on upward career mobility in the accounting profession and stresses the need for self awareness of an individual's ethnic heritage. In addition,

senior management needs to embrace inclusive leadership practices to effectively face the challenges of managing a culturally diverse workforce.

TRENDS IN ACCOUNTING GRADUATES AND THE PROFESSION

The American Institute of Certified Public Accountants (AICPA) has made efforts to increase the diversity of the accounting profession. In 1969, the AICPA Council formally launched a national program to integrate the accounting profession and established the Minority Initiatives Committee (MIC) to implement the following resolutions:

♦ *Encourage minority men and women of high potential to attend college and major in accounting.*

♦ *Provide educational opportunities for minority men and women to prepare them to enter the accounting profession.*

♦ *Encourage hiring of minority men and women in order to integrate the accounting profession in fact as well as ideal.*

Four decades after starting this national program, the accounting profession is becoming more culturally diverse. Table 1 reports the national trends in accounting graduates and hires from 1999 to 2007. Panel A indicates that the percentage of minority bachelor's and master's graduates increased from 23% in 1999-00 to 35% in 2006-07. Panel B presents evidence that 26% of the new accounting graduates hired by CPA firms in 2006-2007 were minorities, with Asian/Pacific Islanders comprising half of the total minorities hired (13% of the 26%). This is an increase from 1999-00, where total minorities were 20% and Asian/Pacific Islanders were 10%.

Table 1: National Trends in Accounting Graduates and Hires						
Panel A: Bachelor's and Master's Graduates						
	1999-00	2000-01	2001-02	2002-03	2003-04	2006-07
Asian/Pacific Islander	6%	8%	8%	7%	10%	8%
Black/African-American	9%	7%	8%	8%	7%	7%
Hispanic/Latino	5%	5%	5%	6%	7%	11%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	1%
Other (mixed race)	3%	5%	7%	7%	10%	8%
Total Ethnic	23%	25%	28%	28%	34%	35%
White	77%	75%	72%	72%	66%	65%

Table 1: National Trends in Accounting Graduates and Hires						
Panel B: New Accounting Graduates Hired by CPA Firms						
Asian/Pacific Islander	10%	8%	8%	9%	12%	13%
Black/African-American	3%	3%	3%	5%	3%	8%
Hispanic/Latino	7%	6%	6%	4%	8%	4%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	1%
Total Ethnic	20%	17%	17%	18%	23%	26%
White	79%	82%	82%	81%	76%	72%
Other/Unknown	1%	1%	1%	1%	1%	2%
Source: The Supply of Accounting Graduates and the Demand for Public Accounting Recruits - 2008						

The trend of increasing numbers of Asian/Pacific Islander accounting graduates is even more pronounced at our university, San Jose State University (SJSU). SJSU is part of the California State School System. Table 2 reflects the trend in accounting degrees awarded at SJSU from 1998 to 2008. The total minorities increased from 63% (1998-99) to 71% (2007-08). Most interesting is the increase in Asian/Pacific Islanders receiving accounting degrees from 48% in 1998-99 to 60% in 2007-08. In 2007-08, Asian/Pacific Islanders made up almost 85% of the total minority group.

Table 2: Trends in Accounting Degrees (Bachelor's) Awarded at San Jose State University										
	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Asian/Pacific Islander	48%	41%	44%	49%	41%	37%	52%	49%	54%	60%
Black/African-American	5%	5%	3%	1%	2%	3%	2%	2%	2%	2%
Hispanic/Latino	9%	12%	13%	9%	11%	10%	10%	8%	9%	9%
American Indian/Alaskan Native	1%	1%	0%	1%	1%	0%	1%	1%	0%	0%
Total Ethnic	63%	59%	60%	60%	55%	49%	64%	59%	66%	71%
White	23%	24%	30%	20%	25%	23%	16%	20%	21%	16%
Other/Unknown	14%	17%	11%	20%	20%	28%	20%	21%	14%	13%
Source: SJSU Office of Institutional Research Website (www.oir.sjsu.edu										

Table 3 reports the national trends in CPA firm demographics from 2003 to 2007. Panel A presents the professional staff demographics by firm size. For all firms, the percentage of minorities increased 1% from 10% in 2003-04 to 11% in 2006-07. Similarly, the percentage of Asian/Pacific Islanders increased 1% from 5% in 2003-04 to 6% in 2006-07. The results from Panel A indicate that the larger CPA firms tend to be more diversified than smaller firms. In 2006-07, firms with over 200 members were made up of 16% minorities, 10% of whom are Asian/Pacific Islanders. In

contrast, firms with less than 10 members, total minorities were 8%, with 4% being Asian/Pacific Islanders.

Panel B of Table 3 reports the demographics of CPAs by firm size. The results are slightly lower than those reported in Panel A. For all firms, the percentage of minority CPAs decreased by 1% from 8% (2003-04) to 7% (2006-07). However, the percentage of Asian/Pacific Islander CPAs remained constant at 4%. Similar to Panel A, larger CPA firms are more diversified than smaller firms. In 2006-07, firms with over 200 members had 12% minority CPAs, with 8% being Asian/Pacific Islanders. In contrast, firms with less than 10 members had 6% minority CPAs, with 3% being Asian/Pacific Islander.

Panel C presents partner demographics by firm size. For all firms, the percentage of minority partners remained at 5% from 2003 to 2007, where 2% were from Asian/Pacific Islander background. Contrary to Panels A and B, partner diversity does not increase with firm size. In fact, for firms with less than 10 members, 7% of partners were from minority backgrounds in 2006-07, compared to 4% for CPA firms with more than 200 members.

Table 3: National Trends in CPA Firm Demographics										
Panel A: Professional Staff Demographics by Firm Size										
	All Firms		<10		10-49		50-200		>200	
	2003-2004	2006-2007	2003-2004	2006-2007	2003-2004	2006-2007	2003-2004	2006-2007	2003-2004	2006-2007
Asian/Pacific Islander	5%	6%	4%	4%	3%	7%	4%	4%	11%	10%
Black/African-American	2%	2%	2%	2%	2%	3%	2%	2%	3%	3%
Hispanic/Latino	3%	3%	4%	2%	3%	2%	2%	1%	4%	3%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Ethnic	10%	11%	10%	8%	8%	12%	8%	7%	18%	16%
White	89%	80%	89%	91%	92%	87%	91%	91%	82%	59%
Other/Unknown	1%	9%	1%	1%	0%	1%	1%	2%	0%	25%
Panel B: CPAs Demographics by Firm Size										
Asian/Pacific Islander	4%	4%	3%	3%	2%	6%	3%	2%	7%	8%
Black/African-American	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Hispanic/Latino	3%	2%	3%	2%	2%	1%	2%	0%	3%	2%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Ethnic	8%	7%	7%	6%	5%	8%	6%	4%	12%	12%
White	92%	87%	92%	93%	95%	91%	93%	95%	88%	68%
Other/Unknown	0%	6%	1%	1%	0%	1%	1%	1%	0%	20%

Table 3: National Trends in CPA Firm Demographics										
Panel C: Partners Demographics by Firm Size										
Asian/Pacific Islander	2%	2%	2%	2%	0%	2%	1%	0%	2%	2%
Black/African-American	1%	1%	1%	2%	1%	1%	0%	0%	1%	1%
Hispanic/Latino	2%	2%	3%	3%	1%	0%	1%	0%	1%	1%
American Indian/Alaskan Native	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Ethnic	5%	5%	6%	7%	2%	3%	2%	0%	4%	4%
White	95%	91%	94%	91%	98%	95%	99%	96%	96%	80%
Other/Unknown	0%	4%	0%	2%	0%	2%	0%	4%	0%	16%
Source: The Supply of Accounting Graduates and the Demand for Public Accounting Recruits – 2005, 2008										

The evidence reported in Tables 1 and 3 indicate that the evolution towards diversity in the accounting profession has been restricted to the lower levels of CPA firms and with no concomitant increase to date at the partnership level. Chris Yahng, the 2005-2006 California CPA Society chair, represents the first Asian American to assume this leadership position. He is quoted as saying,

> *"While we have greater numbers of women and ethnic minorities filling the ranks*
> *of the profession than we did 30 years ago, we aren't seeing the corresponding shift*
> *into leadership positions" (Ascierto, 2005).*

During his term, one of his goals was to work with local chapters to identify and encourage future leaders that are more representative of the cross-cultural workforce.

The gender issue of attaining representative leadership roles in both the accounting profession as well as corporate America has long been of interest in research studies and the financial press. In a census of Fortune 500 companies, Catalyst (a women's research and advisory group) found that the number of women moving up the corporate pipeline has increased over the past decade (Dobrzynski, 2006). Similarly, the AICPA reports that the percentage of women partners in CPA firms has increased over the last decade from 12% to 19% (*New Accountant,* 2006). These results suggest that women appear to have broken the leadership barriers and have successfully climbed to the top of the corporate ladder.

Although women have made strides to crack the glass ceiling, only time will tell if the increasing number of ethnic minorities will reach the corner office at the appropriate proportionate rate. In the meantime, steps must be taken by employees and employers to prevent the development of a "bamboo ceiling" for the growing numbers of Asian/Pacific Islanders currently entering the accounting field.

Calegari and Jenkins (2006) find that cultural influences and ethnic background may be factors that impact success in the accounting profession. In a survey of accounting alumni, Calegari

and Jenkins find significant differences between ethnic groups in their perceived stress management, leadership, critical thinking, and communication skills. These skills are the very traits necessary to successfully climb to the top rung of the professional ladder. In this paper, we focus on the Asian/Pacific Islander group since they make up the majority of the total minority group.

ASIAN CULTURAL VALUES

While Asians face the same early problem as women in terms of being initially underrepresented in positions of power and responsibility in public accounting, they also face different hurdles to reach success which may be attributable to deeply ingrained eastern cultural values. Without question, individual differences do exist within any ethnic group and behaviors are not generalizable to any diverse group of people. However, prior studies have identified traditional Asian values profoundly impacted by the Chinese philosopher, Confucius. Five Asian cultural values emphasized in numerous sources include:

- ♦ *Respect for authority*
- ♦ *Collectivism*
- ♦ *Self-control/restraint*
- ♦ *Humility*
- ♦ *Educational and occupational achievement*

Respect for authority begins at a young age, when children are taught to respect adults and to speak softly. Confucius said, "A young man should serve his parents at home and be respectful to elders outside his home." This learned behavior transcends to adulthood with deference to anyone in a position of authority. In the classroom, respect for the teacher is manifested by not speaking up. In the workplace, the supervisor is given respect regardless of competence. Body language is also influenced by this particular cultural value. The custom of avoiding direct eye contact is considered an act in deference to authority.

Collectivism refers to a tendency to place the best interest of the group over that of an individual. In the workplace, this philosophy translates into group decision-making and consensus building. Individuals are discouraged from standing out or attracting attention.

This same tendency is also tied to deep rooted cultural values of self-control and humility. While hard work and diligence are encouraged, self promotion is a discouraged behavior. This attitude may be counterproductive to the climb up the partnership ladder where high profile and visibility are essential to success.

Education is highly revered in the Asian culture. Holding several higher education degrees is not atypical. However, achievement is defined as advancing through formal education programs as opposed to hands-on knowledge attained in the workplace.

Although knowledge in multiple disciplines is valued by the accounting profession, the emphasis in the 21st century is away from technical skills and towards strategic planning. These management skills can best be developed on the job as opposed to further education in a classroom setting.

TURNING CULTURAL VALUES INTO ASSETS

The aforementioned cultural values can be perceived as liabilities that negatively impact success. However, as the old adage states, there are two sides to every coin. Each of these values can be viewed as positive attributes as well. To achieve professional success, individual assessment is necessary to determine the strengths and weaknesses of their cultural values and turn them in a positive direction. Respect for authority generally results in a strong sense of loyalty. Loyalty to the firm as well as to the client is a valued asset in public accounting. However, the question remains is this attribute properly rewarded in terms of promotion?

Collectivism and self control are tied to the emphasis on harmony in the Asian culture. The strong desire to avoid conflict translates into an employee that is easy to work with in a collaborative setting.

The Asian culture also values humility as reflected in a famous Asian proverb, "the loudest duck gets shot." Although this attribute is counterproductive to individual recognition, the CPA firm may greatly benefit from employing a team player. A strong sense of teamwork often gets the job done, over and above self aggrandizement.

Finally, the high value placed on education in the Asian culture transcends into the workplace. The 21st century accountant needs the intellectual skills for critical thinking in order to succeed in the profession. The educational process should entail the development of creativity, innovation, and out-of-box thinking. This can be accomplished through projects, group work, and cases. Also, the inclusion of internships in the accounting programs provides students with valuable hands on experience in the business world.

An individual with an Asian background does not have to become a different person in order to thrive in the public accounting culture. However, to reach the top, development of cultural competencies is essential. This process requires identification of skills needed in the workforce that may be outside of the individual's cultural comfort zone. For example, strong communications skills are an essential attribute for achieving the rank of partnership. These skills needed to succeed (i.e. client presentations, marketing accounting services, conducting meetings) must be developed at an early stage in one's career. Each individual must identify their unique needs for development through self-assessment.

In summary, success is predicated on understanding an individual's strengths and weaknesses. This process of self assessment is important to any individual regardless of race or culture. With respect to the Asian culture, the emphasis on harmony, collectivism, and self control

may pose challenges in a predominantly Socratic workplace. In order to reach the partnership level, the individual not only must maintain the richness of their Asian heritage, but also arm themselves with new behaviors necessary to meet the challenges of public accounting. According to Huyn (2005), "Self-awareness is the first and most important step in breaking the bamboo ceiling."

INDIVIDUAL PRACTICAL TACTICS TO SUCCEED

Beyond the important issue of self-awareness, there are numerous practical tactics that Asian/Pacific Islanders should pursue early in their career in order to increase the probability of success in the field of accounting. These include the following:

- ♦ *Find and maintain mentor relationships*
- ♦ *Build a network*
- ♦ *R&R – Be resilient and be a risk taker*
- ♦ *Identify Asian friendly firms*

A mentor is someone who coaches you on office politics, workplace issues, and career building techniques on an ongoing basis. The goal is to find several mentors not necessarily of Asian descent. The most important aspect of a quality mentoring relationship is good chemistry. Seek out people that you respect and that possess qualities that you need to develop yourself. Be proactive in approaching potential mentors and setting up meetings. Establish milestones to monitor your success over periods of time. Utilize the mentor to obtain feedback regarding professional behavior and skills. The mentor can be viewed as a trusted advisor and help assess your development of technical, interpersonal, leadership and functional skills. Internal mentors can prove invaluable in helping you understand the political climate of the firm.

Networking is a time tested skill necessary to succeed in the American business world. However, the practice of networking may be uncomfortable to less acculturated Asians. Asking strangers for help goes against eastern values. However, networking is an essential aspect of reaching the corner office. This process may be facilitated through Asian Pacific organizations such as the National Asian American Society of Accountants. The mission of this organization, founded in 2004, is to help Asian American accountants advance business development opportunities. As part of the process, a system should be developed to organize and maintain contacts either through email, regular mail or phone calls. Cultivating a deep and broad network has a more positive impact on success. Networking is not just about job changes, but more importantly, potential clients for the firm. Asian heritage is a unique asset and should be used to build bridges between the cultural community and the business community. Minority advocacy groups can provide access to leadership training and other career development forums best suited to unique Asian cultural needs.

Career resiliency means the ability to weather enumerable storms over time and bounce back in the face of failure. Asians need to use their resiliency in overcoming failures as well as false judgments. Jeanne Dienfenderfer, a Korean American senior vice president at Verizon Communications offers the following advice. "Even if I had been discriminated against earlier in my career, I never felt like a victim. If it happened, I bounced back and remained assertive." High profile client assignments carry a certain amount of risk. Yet with that risk, there yields higher reward in promotion and recognition. Embracing the notion of shame in failure will only result in conservative actions ultimately leading to career roadblocks.

In the search for a best fit employer, due diligence is necessary to determine if the companies walk the talk. Communicate with people in the organization to determine if the company has opportunities for development that lead to inclusive leadership. Also, it is important to recognize current diversity trends in practice that may affect the Asian's ability to reach the top.

Implementation of these tactics takes time and effort by the individual. In addition, a key factor to their success will depend on accounting firms embracing the move towards increased diversification at all levels of the firm.

EFFECTIVE ACCOUNTING FIRM DIVERSITY PRACTICES

Accounting firms must implement diversity policies to help open the door to success for the growing numbers of ethnic minorities. Some firms have already initiated several measures towards diversity practices. In order to achieve inclusive leadership, all of the following are strongly recommended:

> ♦ *Specialized recruitment practices*
> ♦ *Support formal and informal mentor programs*
> ♦ *Provide effective training*
> ♦ *Open access to top assignments*
> ♦ *Ensure senior management buy-in to these practices*

Creating a strong recruiting program that promotes diversity is essential towards moving in the right direction. Past practices of getting referrals from employees, traditional outside organizations, and campus visits are not only passé but can foster increased homogeneity. Firms need to extend recruiting efforts into minority networking organizations and student cultural organizations. There is a long list of networking organizations specific to Asian ethnic backgrounds as well as other ethnic groups. Just sending recruiters to ethnic specific organizations is not sufficient. Hiring results must be closely monitored and successful efforts properly rewarded if the firm is committed to changing their demographics.

Upon hiring a more diverse workforce, the CPA firms must then create appropriate support groups to mentor junior minority professionals. One suggestion is to offer brown bag luncheons as a forum for discussions related to problems minorities are facing and strategies to overcome obstacles. Senior management should attend these sessions so that individuals have a chance to communicate their concerns and needs and management becomes aware of their unique challenges. Over time, formal mentor programs should be developed for those minorities that have demonstrated partnership potential.

Diversity training should be required for all levels from new recruits to partners. This practice may require hiring an internal diversity expert to coordinate initiatives for minorities. Top management however, should be held accountable for results by tying compensation and incentives to meeting the diversity goals established in the training sessions. The firms also need to provide specialized training programs for individual ethnic groups. The unique needs can be identified in the mentor sessions and programs can be tailored to address shortfalls. For example, if soft skills need sharpening in order to reach partnership level, then professional education should incorporate this skill set beyond merely traditional technical training.

In public accounting, reaching the partnership is highly dependent upon the client assignments and the engagement team. Top management needs to monitor the informal networks that may promote exclusivity in assignments. Efforts must be made to provide career-enhancing opportunities in a fair and equitable fashion to all qualified individuals. Minorities must be encouraged to accept stretch assignments if any resistance is observed.

Above all, senior partners must truly believe and commit to the idea that achieving inclusive leadership in the future by implementing effective diversity practices is a mission critical to survival. With the globalization of business, management and leadership teams need to be diverse so they can relate and respond to the issues that their clients are dealing with. Changing the traditional CPA infrastructure to one that supports upward mobility for Asians and other ethnic groups requires a positive buy-in from top tier management. The importance of moving towards diversity must be communicated from the top down in every manner, including: memos, meetings, training, compensation, recruiting. All partners must understand the reality that diversity and inclusive leadership is a business strategy for success and not just a politically correct program.

CONCLUSION

To maintain their competitive edge, companies need to recognize the importance of managing and promoting a diverse workforce. Based on the findings in the study by the AICPA, this statement rings loud and clear for CPA firms. The evidence is clear. The demographics of the accounting workforce are changing faster than human resources policies can keep pace. It is up to the partnership to abandon archaic policies about what motivates and retains people and initiate effective practices that fit the reality of their multicultural workforce.

By 2050, the prediction is that the majority of Americans will be from non-Caucasian backgrounds. Eventually, corporations will evolve inclusive leadership as a necessity for survival. In the meantime, individual Asians can be proactive to accelerate the move up the ladder to the partnership rung.

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