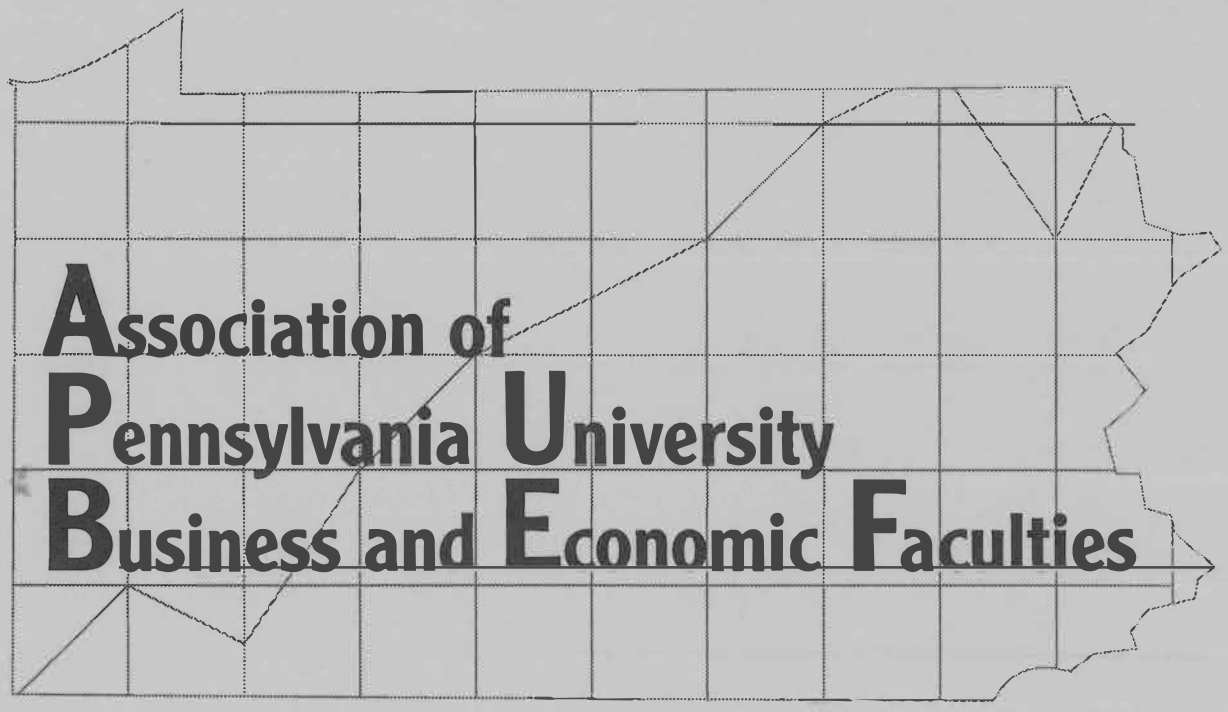

Association of Pennsylvania University Business and Economic Faculties

2001 Fall Proceedings

Edited by:

Rod Raehsler
Clarion University

Association of Pennsylvania University Business & Economic Faculties (APUBEF)

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APUBEF has been formed for the purpose of

(1) Fostering economic and business scholarship and fellowship among business and economic faculties in the State System of Higher Education in Pennsylvania.

(2) Speaking publicly and objectively on behalf of the economic and business conditions in Pennsylvania and acting as a spokesperson for the condition of economic and business education in Pennsylvania.

(3) Encouraging perfect freedom of economic and business discussion.

(4) And finally, fostering professional development of faculties, by encouraging them to engage in research and submitting papers for presentation to the annual meetings of the Association. Selected referred papers will be published in the *Pennsylvania Journal of Business and Economics*, which will be a broad-based forum to present scholarly research and views on a variety of business and economic topics.

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THE PENNSYLVANIA JOURNAL OF BUSINESS AND ECONOMICS: ISSUES AND FUTURE DIRECTION

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ABSTRACT

The Pennsylvania Journal of Business and Economics serves a diverse group of faculty and professionals with a common interest in the business discipline. While contributions are encouraged on a regional and national scope, the primary target of the Journal is the faculty from the fourteen Universities representing the State System of Higher Education in Pennsylvania. In particular our emphasis is towards members of the Association of Pennsylvania University Business and Economics Faculty (APUBEF).

The journal has recently seen a transition in Editors from Jim Rogers of Indiana University of Pennsylvania to Kevin J. Roth and Carole Anderson (co-editors) from Clarion University of Pennsylvania. This paper describes the initial and final submission guidelines. In addition, the paper highlights editor expectations and identifies several emerging issues related to the Pennsylvania Journal of Business and Economics. In particular, several proposals are made to facilitate the review process, improve overall communication, and move towards continuous quality improvement of the journal.

PENNSYLVANIA JOURNAL OF BUSINESS AND ECONOMICS

The Pennsylvania Journal of Business and Economics is published periodically by the Association of Pennsylvania University Business and Economics Faculty (APUBEF). The target audience consists of but is not limited to business or business related faculty and professionals from the fourteen SSHE schools including Bloomsburg, California, Clarion, Cheney, East Stroudsburg, Edinboro, Indiana, Kutztown, Lock Haven, Mansfield, Millersville, Shippenburg, Slippery Rock, and West Chester. The journal seeks articles from a wide diversity of business topics including Pennsylvania issues and pedagogical insights in both conceptual and empirical forms.

NEW EDITORS

Dr. Kevin J. Roth, Associate Professor of Administrative Science and Dr. Carole Anderson, Professor of Administrative Science will be assuming co-editorship of the Pennsylvania Journal of Business and Economics beginning the fall of 2000. Both Drs. Roth and Anderson are from Clarion University of Pennsylvania. The editors would like to thank Dr. Jim Rodger from Indiana University of Pennsylvania for his work as past editor of the journal.

FORMALIZING THE EDITORIAL REVIEW BOARD

The editors are currently proposing the inclusion of one participating member from each of the 14 State System schools to serve on a formal editorial review board. Other Colleges/Universities participating in APUBEF may also be included. Responsibilities will include receiving a journal submission from the editors and personally reviewing or distributing the paper to an appropriate colleague at that school. The intent is to try to match the journal content with a reviewer that has expertise in that subject area. Members will thus be responsible for coordinating the review process for a given paper and ensuring the process is completed in a timely fashion (4 weeks). Reviewers will ultimately be responsible for submitting review materials to the editors. Throughout the review process, all correspondence with the author(s) will be handled directly by the editors.

In addition, at the beginning of each fall term, the editorial board members will provide an updated list of business or business related dean, chair, and faculty listings for that particular school. Each year at the APUBEF conference, members will be able to provide input from their colleagues. Members will also coordinate posting of requests for papers each year. Editorial board members will serve annual terms and be requested each fall to continue or recommend a colleague from their institution to serve. Members will be listed in the journal as the "editorial review board" beginning spring of 2001.

CABELL'S DIRECTORY

The journal will appear in the forthcoming 2000 edition of the Cabell's Directory. This directory listing helps to ensure quality and a broad recognition of our publication. Exhibit-A provides specific information on the journal that will appear in the upcoming edition of Cabell's.

INITIAL SUBMISSION REQUIREMENTS

Authors interested in submitting an article must provide an original and three copies of their work that include an abstract but does not include author information. A separate page should be submitted with complete information on the author(s). All papers will continue to be subject to a double blind review process and review by the editor(s).

FINAL SUBMISSION REQUIREMENTS

Authors will be notified directly from the editor(s) upon acceptance or necessary revision of a paper. Any final recommendations made by reviewers/editors shall be incorporated into the final document submission. Final submissions generally will follow APA guidelines and submitted on disk along with a hard copy. The requirements for final submission are shown in Exhibit-B. In addition to the final submission, an author information form shall be submitted. This form is shown in Exhibit-C.

ARTICLE REVIEW PROCESS

The PJBE exists due to voluntary contributions of many. We will continue to rely on volunteers to coordinate a double blind review process for each paper. Because we exist as an instrument specifically dedicated to serving APUBEF members, we suggest that reviews be positive where possible and comments be directed toward producing a publishable product. While comments can be made directly on a submitted paper, we need the review forms completed to provide sufficient feedback to the authors. Any comments along with the review form will be anonymously sent directly to the author. A copy of the reviewer evaluation form is provided in Exhibit-D.

OUTCOMES

The editors anticipate several direct benefits from the proposed modifications identified above. The hope over time is to facilitate efficient and effective communication between editors and reviewers, review board members and reviewers, editors and authors and editors and the general target audience. In terms of the review process with the proposed editorial board structure, we anticipate more concise matching of papers with expertise and improved turn-around time for our authors. The overall objective is to achieve increased participation in the process and the journal itself (editors, authors, editorial review board, reviewers, book review authors, invited article authors, etc.). Ideally, we would hope to move towards the consistent publication of two journals each year with an emphasis on continuous quality improvement.

CLOSING COMMENTS

As the new editors, Drs. Roth and Anderson would like to encourage State System of Higher Education (SSHE) faculties to submit articles for review and possible publication in the journal. We strongly believe in the importance of successful publishing experiences for all SSHE system colleagues and perceive the APUBEF *Journal of Business and Economics* to be an appropriate, referred publication source. However, we also want to remind individuals that all publication activities are on a strictly volunteer basis. This is especially true of the individuals who have agreed to serve on the editorial review board and as reviewers. While we will endeavor to work in as prompt and efficient manner as possible to ensure a quick response to your submissions and ultimately two publications per year, please do not expect review and acceptance turnaround time to be short. This is a time consuming process and we must understand and allow for the fact that all individuals are extremely busy serving primarily as teaching faculty while actively pursuing a wide variety of professional activities, including research, professional development, and university and community service. While extremely important to the author(s), one cannot expect that reviewing a paper will be the reviewer's number one priority on the day that the paper is received.

In conclusion, Kevin and I look forward to the up-coming challenges of editing the APUBEF Journal of Business and Economics. We welcome and encourage all SSHE faculties to submit papers which you believe may be appropriate for publication.

EXHIBIT – A
CABELL'S GUIDELINES

Pennsylvania Journal of Business and Economics

Address for Submission
Kevin Roth
Carole Anderson
Co-Editors
Pennsylvania Journal of Business and Economics
Clarion University of Pennsylvania
Clarion, PA 16214-1232
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E-Mail: kroth@clarion.edu
Web:
Address May Change:

Circulation Data
Reader: Academics
Frequency of Issue: 2 Times/Year
Copies per Issue: Less than 1,000
Sponsor/Publisher: Association of Pennsylvania University Business and Economic Faculties
Subscribe Price: 0.00 US$ No Reply

Publication Guidelines
Manuscript Length: 6-10
Copies Required: One
Computer Submission: Yes, if accepted
Format: Corel WordPerfect 8.0 or Word
Fees to Review: 0.00 US$
Manuscript Style:
American Psychological Association

Review Information
Type of Review: Blind Review
No. of External Reviewers: 2
No. of In House Reviewers: 1
Acceptance Rate: 50%
Time to Review: 2-3 Months
Reviewers Comments: Yes
Invited Articles: 0-5%
Fees to Publish: 0.00 US$

Manuscript Topics
Accounting Theory & Practice; Auditing, Cost Accounting, Econometrics; Finance; Industrial Organization; Insurance

MANUSCRIPT GUIDELINES/COMMENTS

The APUBEF Journal is a refereed journal aimed at publishing the papers of faculty from the business and economics disciplines within the State System of Higher Education Universities in Pennsylvania, or from business and economics faculty at comparable institutions from within Pennsylvania and from surrounding states. While theoretical works are encouraged, most published papers are empirical or pedagogical in nature.

Manuscript Style

1. Papers must be submitted on a 3.5" micro-computer disk using Corel WordPerfect or Microsoft Word. Printer setup should be HP Laserjet. A high-quality hard copy of the paper must accompany your disk.

2. Use 10 point Times New Roman font for the body of the paper and all headings including the heading for references. Use 1" margins all around.

3. Single space the text. Double space between paragraphs and indent the first line five spaces using the tab key. Use full justification.

4. Spell-check before sending the paper and correct all grammatical errors. Also, edit the paper to address the comments and suggestions of the reviewers and editors.

Specific Requirements

1. Start the manuscript with the full title, centered in capitals, bold print. Following a space, each author and university should be identified, one author per line. No titles (Dr., Mr., Mrs., etc.) are to be used, nor should rank be indicated. Please, no fancy type-styles other than ones specified.

2. After the last author's name and affiliation, double space, center and type the heading **abstract**, bold and all caps. All papers must have an abstract of no more than 150 words, which provides a brief synopsis of the paper.

3. The next heading is **Introduction**, bold and all caps. Double-space before and after. All major headings MUST follow this format. Secondary headings MUST be in bold print, left justified, first letter capitalized then lower case, with a space above and below each heading.

4. Mathematical expressions and notations should be used judiciously and all symbols should be identified.

5. Tables should be arranged sequentially in the order in which the tables are first mentioned in the text and placed at the end of the manuscript. Type the word Table and its arabic numeral flush left at the top of the table, double space, then type the table title flush left above the table. The explanatory notes to a table such as probability tables, explanations of acronyms, etc. should appear below the table. Use the same 10 point Times New Roman font as used in the text and the tab function to construct the tables. If a "camera-ready" table is to be used, send the original and not a reduced copy for incorporations in the journal.

6. Figures (such as graphs, drawings, photographs, and charts) must be consecutively numbered in arabic numerals, with their captions in the order they appear in the text. All illustrations must be camera-ready; photographs must be of professional quality, and drawings must be prepared in ink. Illustrations should be identified on the back in light pencil with the name of the author and the figure number.

7. Footnotes and endnotes are permitted, but not encouraged. In most cases, the material they contain can be incorporated in the text. If footnotes are used, use the automatic footnote function (control F7) and specify Time New Roman 10 point font for their text. Endnotes should be same 10 point Times New Roman font as the text and placed after the references.

References

1. When citing references in the text, please use parenthesis, author's named, comma and data of publication, i.e., (Wilson, 1996. For up to three authors, cite each and use the "&" for 'and," i.e., (Dawes, Dowling & Peterson, 1992). For more than three authors, use the surname of the first author followed by "et al." comma and the year, i.e., (Cravens et al., 1988). Multiple reference citations in a parentheses should be arranged alphabetically and a semicolon used to separate them, i.e., (Cravens et al, 1988; Dawes, Dowling & Peterson, 1992; Wilson, 1996). Text citations must correspond accurately to the references in the reference list.

2. References should be listed alphabetically at the end of the manuscript. References with the same authors in the same order are arranged according to the year of publication, the earliest first.

3. An American Psychological Association format is used for the references.

For a journal article:
Buzell, R. D., Gale, B. T., & Sultan, R G. M. (1975). Market share - a key to profitability. Harvard Business Review. 75-1, 97-106.

For a proceedings article:
Gronroos, C. (1983). Innovative marketing strategies and organization structures for service firms. Emerging Perspectives on Services Marketing. Berry, L. L., Shostack G. L., & Upah, G. D. eds. Chicago, IL: American Marketing Association. 9-21.

For a book:
Czepial, J. A. (1992). Competitive Marketing Strategy. (258-263) Englewood Cliffs, NJ: Prentice-Hall.

For more information and examples please refer to the *Publication Manual of The American Psychological Association.*

EXHIBIT – B
PENNSYLVANIA JOURNAL OF BUSINESS AND ECONOMICS

Manuscript Style

1. Papers MUST be submitted on a 3.5" micro-computer disk using Corel WordPerfect or Microsoft Word. Printer setup should be HP Laserjet. A high-quality hard copy of the paper MUST accompany your disk.

2. Use 10 point Times New Roman font for the body of the paper and all headings including the heading for **REFERENCES**. Use 1" margins all around.

3. Single space the text. Double space between paragraphs and indent the first line five spaces using the tab key. Use full justification.

4. Spell check before sending the paper and correct all grammatical errors. Also, edit the paper to address the comments and suggestions of the reviewers and editor.

Specific Requirements

1. Start the manuscript with the full title, centered in capitals, **bold** print. Following a space, each author and university should be identified, one author per line. No titles (Dr., Mr., Mrs. etc.) are to be used,

nor should rank be indicated. Please, no fancy type-styles other than ones specified.

2. After the last author's name and affiliation, double space, center and type the heading **ABSTRACT**, bold and all caps. All papers MUST have an abstract of no more than 150 words, which provides a brief synopsis of the paper.

3. The next heading is **INTRODUCTION**, bold and all caps. Double space before and after. All major headings MUST follow this format. Secondary headings MUST be in bold print, left justified, first letter capitalized then lower case, with a space above and below each heading.

4. Mathematical expressions and notations should be used judiciously and all symbols should be identified.

5. Tables should be arranged sequentially in the order in which the tables are first mentioned in the text and placed at the end of the manuscript. Type the word Table and its arabic numeral flush left at the top of the table, double space, then type the table title flush left above the table. The explanatory notes to a table such as probability tables, explanations of acronyms, etc. should appear below the table. Use the same 10 point Prestige Elite font as used in the text and the tab function to construct the tables. If a "camera-ready" table is to be used, send the original and not a reduced copy for incorporation in the journal.

6. Figures (such as graphs, drawings, photographs, and charts) must be consecutively numbered in arabic numerals, with their captions in the order they appear in the text. All illustrations must be camera-ready; photographs must be of professional quality, and drawings must be prepared in ink. Illustrations should be identified on the back in light pencil with the name of the author and the figure number.

7. Footnotes and end notes are permitted, but not encouraged. In most cases, the material they contain can be incorporated in the text. If footnotes are used, use the automatic footnote function (control F7) and specify a Times New Roman 10 point font for their text. End notes should be in the same 10 point Times New Roman font as the text and placed after the references.

REFERENCES

1. When citing references in the text please use parenthesis, author's name, comma and date of publication, i.e., (Wilson, 1996). For up to three authors, cite each and use the "&" for "and", i.e., (Dawes, Dowling & Peterson, 1992). For more than three authors, use the surname of the first author followed by "et al." comma and the year, i.e., (Cravens et al., 1988). Multiple reference citations in a parentheses should be arranged alphabetically and a semi-colon used to separate them, i.e., (Cravens et al., 1988; Dawes, Dowling & Peterson, 1992; Wilson, 1996). Text citations must correspond accurately to the references in the reference list.

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For a book:

Czepiel, J.A. (1992). Competitive Marketing Strategy. (258-263) Englewood Cliffs, NJ: Prentice-Hall.

For more information and examples please refer to the Publication Manual of the American Psychological Association.

EXHIBIT - C
AUTHOR INFORMATION FORM

Information is needed to provide a footnote about each author of the form:

> Timothy L. Wilson, Case-WRU, is Professor of Marketing at Clarion University where he teaches Industrial Marketing and Graduate Marketing Courses. His present research interests primarily include the marketing of business services and after-sales services. This work was supported in part by a university sabbatical during the 1996 spring semester.

Thus, please provide for each author:

Author's Name -

Position -

University from which highest degree was obtained -

Present research interests -

Courses commonly taught -

Funding Source for this research (if applicable) -

EXHIBIT – D

REVIEWER EVALUATION FORM

EDITORIAL OFFICE OF THE PENNSYLVANIA JOURNAL OF BUSINESS & ECONOMICS

Paper Number Date Mailed for Review _____

Reviewer Number Date Review Needed

Circle the appropriate number by each evaluation statement that is relevant to this manuscript. Omit the statements that are inappropriate. Please add other items that would be appropriate in evaluating this manuscript. After completing all appropriate statements, calculate the "average" in the space provided.

	Strongly Agree						Strongly Disagree
With reference to the subject of this manuscript:							
1. The subject is conceptually and technically sound.	7	6	5	4	3	2	1
2. The subject of the manuscript is timely.	7	6	5	4	3	2	1
3. The subject of the manuscript is important.	7	6	5	4	3	2	1
4. Treatment of the subject is innovative.	7	6	5	4	3	2	1
5. The subject would be interesting to PJBE readers.	7	6	5	4	3	2	1
With reference to the overall presentation:							
6. The manuscript is well written.	7	6	5	4	3	2	1
7. The purpose and objectives of the manuscript are clear.	7	6	5	4	3	2	1
8. The purpose and objectives of the manuscript are successfully achieved.	7	6	5	4	3	2	1
9. The manuscript is well organized.	7	6	5	4	3	2	1
With reference to the presentation of the subject material							
10. The manuscript is practically-oriented, or highly theoretical. It is high quality research.	7	6	5	4	3	2	1
11. The manuscript if appropriate for the PJBE (useful and understandable to business and economics).	7	6	5	4	3	2	1
12. The manuscript indicates a thorough understanding of previous research and/or publications in this area.	7	6	5	4	3	2	1
13. The manuscript indicates a thorough understanding of current practices in this area.	7	6	5	4	3	2	1
14. Adequate supporting data and/or examples are properly presented.	7	6	5	4	3	2	1
15. The manuscript indicates how findings can be used in business practices.	7	6	5	4	3	2	1

16. The manuscript contributes to the reader's understanding of the subject as it applies to business.	7	6	5	4	3	2	1
17. The manuscript contributes new information to the body of knowledge on business or economics.	7	6	5	4	3	2	1

For Quantitative Manuscripts Only

18. Statistics used are appropriate.	7	6	5	4	3	2	1
19. The level of presentation is appropriate to the PJBE, i.e. not overly statistical or complex.	7	6	5	4	3	2	1
20. Sampling methodology is sound.	7	6	5	4	3	2	1
21. The research methodology is conceptually and technically sound.	7	6	5	4	3	2	1
22. Findings are appropriate given the research.	7	6	5	4	3	2	1
23. Findings are clearly presented.	7	6	5	4	3	2	1

Other statements (that help with evaluation:

24.	7	6	5	4	3	2	1
25.	7	6	5	4	3	2	1

Sum of all scores from above ratings:

Number of statements evaluated:

Average score (sum of scores/number of statements)

What is your overall evaluation of the paper? (Note: Acceptance with revisions will require further review by editorial board members or editor.)

_____ Accept as it

_____ Accept with minor suggested revisions

_____ Reject in its present form, but note manuscript has potential

_____ Reject

Send your written comments and this form (an original and one copy of each) to me. Your critique should be constructive (civil) and in sufficient detail so that the author can follow your line of reasoning. It would be helpful if the critique were related to specific evaluation statements (where applicable). Your comments should include an overall summary of your evaluation, strengths and weakness of the manuscript, and suggested changes. The intent of the comments is to give the editor a more complete appraisal of the manuscript and to provide useful information to the author for use in revising the manuscript. One copy of the evaluation form and comments will be sent to the author without your identity. DO NOT IDENTIFY YOURSELF BY NAME ON THIS FORM OR IN THE COMMENTS. Please return this form with your comments.

DATA ENVELOPMENT ANALYSIS AND EFFICIENCY IN THE STATE SYSTEM OF HIGHER EDUCATION

Steven Andelin
Pennsylvania State University
Schuylkill Haven, Pennsylvania, 17972

ABSTRACT

The method of data envelopment analysis (DEA) is described and is demonstrated using input and output observations relating to the fourteen universities in the Pennsylvania State System of Higher Education (SSHE). Data envelopment analysis is a modeling and computational technique for determining how well an autonomous operating unit converts its inputs to outputs compared to other units in a study. The purpose of DEA is to identify inefficient units and estimate the required changes in input and output levels to achieve efficiency. Among the universities in the State System of Higher Education, four are efficient and ten are inefficient. Two of the inefficient universities could be called near efficient. Estimates of adjustments to input and output factors are estimated for the inefficient units. There is only a moderate correlation between the size of a university, measured by student head count, and whether or not a university is efficient. Within the group of inefficient universities, there is a high positive correlation between student enrollment levels and the efficiency score.

INTRODUCTION

This study began while I was at Kutztown University of Pennsylvania with the question, "How are we doing?" To answer this question several methods of performance measurement were investigated. One of these methods was data envelopment analysis (DEA). The immediate purpose of this article is to show how DEA may be used to evaluate the performance of operating units in the public sector. We will describe some of the optimization models that are the basis of data envelopment analysis and then use these models to measure the relative efficiency of the fourteen universities in the Pennsylvania State System of Higher Education.

A fundamental perception in a definition of efficiency is that input factors are changed or transformed by a specific process into other factors called outputs. This abstraction, which views an activity as an input-transformation-output sequence, has been a fruitful starting point for investigations of process performance. Efficiency is a relative concept. Efficiency may be evaluated by comparing observed output levels to theoretical expectations of performance given the levels of the inputs. The theoretical approach has been useful in scientific and engineering studies of many physical systems and some small-scale production systems, but it has not been practical in the performance assessment of complex organizations. The alternatives to finding a theoretical benchmark for organizational efficiency are (i) comparison of an organization to its historical performance and (ii) comparison of an organization to several similar organizations operating under similar conditions at a point in time.

The evaluation of educational units by various performance metrics or indices is an established practice. A frequently used measure of efficiency in educational institutions is expenditures per student. This was the direction taken by the Carnegie Commission on Higher Education (1972) in their study of university and college performance. Implicit in the expenditures-per-student performance index is the association of operating costs or expenditures with inputs and students with outputs. This venerable index has the advantages of being easily calculated and understood. It provides a means for completely ranking educational units at any level of aggregation such as departments, schools, and school systems. The limitations of expenditures per student as a performance index are that it does not account for the multidimensional nature of organizational inputs and it gives little direction to administrators for policy formulation or corrective action. Several performance indices may be calculated to remedy the problem of multidimensionality. The use of some well-chosen indices may give a good assessment of performance trends for a single organization, but overall performance comparisons between different organizations can be difficult.

To remedy some of the problems of performance assessment, Charnes, Cooper, and Rhodes (1978) proposed a method they called data envelopment analysis. Data envelopment analysis is a modeling and computational procedure for measuring the efficiency of operating units when the input and output variables are multidimensional and the aggregation of variables is neither practical nor desirable. The purpose of DEA is to locate inefficient performers and estimate the amounts of input excess and output shortfall. DEA rates the efficiency of an organization with a score that ranges from zero to one. The methodology is based on empirical notions

of efficiency proposed by Koopmans (1951) and Farrell (1957). Efficient and inefficient units are identified directly from the input and output data of the operating units in a given study. The input and output combinations of the efficient units define the production frontier against which each unit's inputs and outputs may be evaluated. Unlike traditional econometric methods, data envelopment analysis requires very few assumptions about the relationship between the inputs and outputs. Because DEA is not dependent on estimates of input costs or output prices, the methodology has been a practical means for measuring the efficiency of public sector and non-profit organizations where the economic valuations of input and output factors are not practical.

Among its many applications, data envelopment analysis has been a means for evaluating the relative efficiency of various operating units of educational institutions. Bessent and Bessent (1980) studied the performance of elementary schools with DEA. Ahn, et al., (1989) compared a ranking of public universities in Texas obtained via DEA to a study of the same institutions commissioned by the Texas State Legislature. Ray (1991) examined public school districts in Connecticut using a DEA procedure. Sinuany-Stern, Mehrez, and Bomboy (1994) demonstrated the use of DEA in the assessment of academic departments within a single university.

Data envelopment analysis has evolved rapidly in both theory and application. The presentation of the methodology in this article is limited to a few of its core concepts. Seiford (1997) has prepared an extensive bibliography of papers and books on DEA. Critical evaluations of DEA are available in a collection of articles edited by Silkman (1986). Epstein and Henderson (1989) also have provided a critical review of data envelopment analysis. Ahn and Seiford (1993) have tested the sensitivity of DEA results to the selection of DEA model and to the data used in the assessment of a set of operating units.

AN OVERVIEW OF DATA ENVELOPMENT ANALYSIS

The common meaning of efficiency is success in producing as much of each output as possible from given amounts of inputs. Our interest here is to evaluate *in a relative sense* how well each organizational unit, in a specific collection of units, employs available resources to produce its outputs. Let us suppose there are n administratively autonomous organizational units in our study. Each *decision making unit* (DMU) in the collection is assumed to be sufficiently similar so that valid comparisons can be made. We associate with the units in the study a set of measurable inputs that contribute directly to measurable output production. For each decision making unit DMU_j (j = 1, 2, ..., n), let x_j be a p-dimensional vector of its inputs, and let y_j be a q-dimensional vector of its outputs. We will assume each unit exhibits constant returns to scale. Constant returns to scale means that if DMU_j is operated at a scale factor w_j, its inputs and outputs will be $x_j w_j$ and $y_j w_j$, respectively.

The problem of determining if a decision-making unit is efficient can be cast in the form of a linear programming model as shown by Banker, Charnes, and Cooper (1984). Specifically, we chose for each DMU_k an input shrinking factor θ_k and the weights $w_1, w_2, \ldots, w_n$ to

$$\text{minimize} \quad \theta_k \tag{1}$$

subject to

$$x_1 w_1 + x_2 w_2 + \ldots + x_n w_n + s_x = \theta_k x$$
$$y_1 w_1 + y_2 w_2 + \ldots + y_n w_n - s_y = y_k$$
$$w_1, w_2, \ldots, w_n \geq 0$$

where s_x is a p-dimensional vector of slack variables for the input relations and s_y is a q-dimensional vector of surplus variables for the output relations. Although θ_k is unconstrained in problem (1), an elementary analysis of this linear programming model shows that $0 \leq \theta_k \leq 1$. DMU_k is efficient when $\theta_k = 1$ in the optimal solution of (1) and all of the slack and surplus variables are zero; otherwise the unit is said to be inefficient. Typically we have $\theta_k < 1$ for the inefficient units.

The input shrinking factor θ_k is an efficiency score that indicates the maximum proportion of all inputs necessary to produce the observed outputs. A proportional reduction in inputs by amounts 1- θ_k may not be sufficient to move an inefficient unit to an efficient state. Further reductions in inputs and increases in outputs may be required as indicated by non-zero levels of the slack and surplus variables. The amount of input decrease $-\Delta x_k$ necessary to make an inefficient DMU operate efficiently is calculated by

$$\Delta x_k = (1 - \theta_k) x_k + s_x, \tag{2}$$

and the outputs would be increased by Δy_k according to

$$\Delta y_k = s_y. \tag{3}$$

The application of data envelopment analysis to a set of DMUs separates the collection into groups of efficient and inefficient units. Since all of the efficient units receive a unity score and the inefficient units usually have scores less than unity, the DMUs in a study can only be partially ranked by θ_k. All of the efficient units appear to perform equally well. Proposals have been offered for modifications to the DEA model (1) and other methods that would yield a ranking of efficient DMUs. (See, for example, Andersen and

Petersen, 1993 or Sinuany-Stern, et al., 1994.) The ranking of efficient units will not be considered here.

Problem (1) is an input-oriented model because adjustments are applied to the inputs via the multiplier θ_k. An implicit assumption in the preceding description of data envelopment analysis is that the primary administrative concern is the proper use of input resources. This is to say that the input levels are easier to control or adjust than the output levels. One can take the perspective that efficiency can be reached primarily through output expansion. To this end, we can develop another linear programming model with the adjustment emphasis on the outputs. The model is

$$\text{maximize} \quad \rho_k \tag{4}$$

subject to

$$x_1 w_1 + x_2 w_2 + \ldots + x_n w_n + s_x = x$$
$$y_1 w_1 + y_2 w_2 + \ldots + y_n w_n - s_y = \rho_k y_k$$
$$w_1, w_2, \ldots, w_n \geq 0$$

where ρ_k is an expansion factor for the output vector y_k. Problem (4) is an output-oriented model for data envelopment analysis. It can be shown that the relationship between θ_k in problem (1) and ρ_k in problem (4) is

$$\rho_k = 1/\theta_k \tag{5}$$

Therefore, an efficient DMU will have $\rho_k = 1$ and all slack and surplus variables at zero levels in the optimal solution to (4). Inefficient DMUs will yield optimal values of $\rho_k > 1$ in the typical case. According to equation (5), the ranking of inefficient units via ρ_k from the output-oriented model (4) will be the same as the ranking obtained from the input-oriented model (1).

DMUs found to be inefficient through the application of the output-oriented model (4) can be made efficient with output expansion Δy_k, where

$$\Delta y_k = (\rho_k - 1) y_k + s_y, \tag{6}$$

and by reducing input levels $-\Delta x_k$ according to

$$\Delta x_k = s_x. \tag{7}$$

Both of the optimization procedures, the input-oriented model and the output-oriented model, can provide useful information to administrators about the sources of inefficiency. The models show what adjustments to the inputs and outputs would be required to make an inefficient organization more efficient relative to the efficient units. The adjustments required to reach efficiency will depend on whether the primary administrative focus is on the input side of a process or on its output side.

A note of caution is in order for those who would use the results of a DEA study as an aid in designing programs or policies for improving organizational performance. The solution to an input-oriented model and the solution to an output-oriented model for an inefficient DMU should be considered separately. The solutions from the two different DEA modeling approaches cannot be combined in a meaningful way to arrive at plan for improving relative efficiency. In looking to the models for guidelines, the administrator must decide which is the better opportunity for efficiency improvement—input control or output expansion.

A *peer group* of efficient organizations can be associated with each inefficient unit by examining the weights w_j in the optimal solutions to either input-oriented model (1) or the output-oriented model (4). The peer group is identified by optimal weights that are non-zero. The input-oriented model and the output-oriented model both yield the same peer group for a given inefficient DMU. Because the decision-making units in a peer group are efficient and have similar input and output characteristics, this group may provide the administrators of an inefficient unit some examples of good operating practices or policies that could be emulated or adopted. The levels of the weights are a rough measure of how close an inefficient unit is to each of its peers.

INPUT AND OUTPUT DATA

The selection of input and output variables to use in the DEA optimization models described in the previous section is matter of singular importance if useful results are to be obtained. Several criteria and cautions have been offered for the choice of variables. For instance, the same kinds of measurements at positive levels must be available for all of the organizational units in the study. The selected input and output variables should be logically and statistically related. That is, observed increases (decreases) in the input variables should be associated with observed increases (decreases) in the outputs. One of the advantages of the DEA method is that one can consider simultaneously multiple input and output variables. However, the total number of input and output variables cannot be too large. For a given collection of n decision-making units in a study, the number of units found to be efficient tends to increase as the total number of input and output variables in the DEA optimization model increases. A rule of thumb, based on experience with data envelopment analysis, is that the total number of input and output variables should be no more than one-third the number of DMUs in the study. We should have $p + q < n/3$. Some direct experience with the units in the study or prior analysis may be needed to get an operationally meaningful and

parsimonious set of input and output variables. Correlation studies and principal components methods have been used in some applications of DEA to reduce a large set of candidate variables to a more practical number.

The *State System of Higher Education Factbook 1997-1998 Academic Year* (published in March 1998) was the primary source for the input and output observations. The inputs and outputs for our evaluation of the SSHE universities are as follows.

Inputs:
Full-time equivalent faculty (head count)
Full-time equivalent non-faculty employees (head count)
Physical facilities (square feet in thousands)

Outputs:
Full-time equivalent students (head count)
Degrees awarded (total of university degrees)

Observations of the input and output variables for the 14 SSHE universities are shown in Table 1. A correlation matrix of these data is reproduced in Table 2. The highly significant correlations between the variables are an indication that the assumption of constant returns to scale is plausible. However, additional analysis would be required beyond simple correlation calculations to firmly establish the assumption of constant returns to scale (Banker, Bardhan, and Cooper, 1996). These very high correlations could be interpreted as statistical evidence of common administrative policies and formula-based budgeting practices across the statewide university system.

The above input and output variables were selected for several reasons. (i) Physical quantities rather than dollar expenditures were chosen as the basis for the inputs and outputs to demonstrate the applicability of the DEA method to variables that are difficult to aggregate. (The power of financial data for measuring organizational performance is that it can be aggregated to any level desired because dollar values are effectively ratio metrics.) (ii) There is a logical and statistical relationship between the input and output variables. (iii) The choices for the input and output variables can stand as reasonable surrogates for other variables that could have been used. (iv) The data are readily available.

FTE Faculty. The available head counts for faculty at each SSHE institution are reported as full-time and part-time personnel. The full-time equivalent head count was calculated by assuming each part-time faculty member had a quarter-time appointment. The original data for faculty head counts are reproduced in the Data Appendix as Table A1. There are a few individuals at several of the universities who continue to hold faculty appointments but perform essentially full-time administrative positions. For the purposes of this study faculty members who are engaged in full-time administrative duties and have no regular academic responsibilities should be subtracted from the faculty head count and added to the number of non-faculty employees. Since it is not known how many "faculty-administrators" exist on each campus, the counts of FTE faculty may be biased upward and the counts of FTE non-faculty employees may be biased downward.

FTE Non-Faculty Employees. As with the faculty, the non-faculty employees are reported as full-time and part-time personnel. These employees are administrative, staff, and service personnel paid directly by the State System of Higher Education. The head counts maintained in the SSHE database do not include employees paid through contract service organizations such as food services. The reported counts of non-faculty employees could be biased to the extent that the various SSHE universities utilize different kinds and levels of contract services. Full-time equivalent non-faculty employees were calculated under the assumption that part-time employees worked half time. The original head count data for non-faculty employees are also listed in Table A1.

Physical Facilities. The measurement of the physical plant is recorded in Table 1 as thousands of square feet. This aggregate and rather rough metric should be considered as representative of the diverse facilities, equipment, and infrastructure comprising the physical components of the universities. The size of the physical plant, as measured, may be taken as a surrogate for operating expenditures that are not directly related to personnel.

FTE Students. The number of full-time equivalent students at each university is reported in the *State System of Higher Education Factbook*. An argument can be made for treating students as process inputs rather than outputs. The students are the main "raw material" ingredients that are transformed by the educational process. Administrators of schools and universities and researchers in education, particularly those who have adopted the philosophies and methods of the quality movement, tend to view students as an input factor. The FTE student head count is used as a process output in our study because this variable is related to many resource-consuming activities within the university. The number of student credit hours is directly proportional to the number of FTE students by definition. The production of student credit hours involves a consumption of personnel time, facilities and equipment, energy, and other input factors. Student credit hours, and therefore the number of FTE students, are reflective of education as a resource-consuming process and should be considered as an output variable for the purposes of this study.

Degrees Awarded. A conferred degree is an observable outcome or output of a university. For many students, perhaps most students, an earned degree is a marketable

commodity. A student with a completed degree is, in one sense, a finished product of the university. (We recognize fully that no degree should be treated as the finished product of an individual!) The number of degrees is the total of bachelors, masters, and doctorates awarded during the 1996-1997 academic year. Associate degrees are not included in the counts listed in Table 1 because these degrees would artificially inflate the output measures of the eight SSHE universities that grant them and possibly bias the DEA results. Only Indiana University of Pennsylvania supports doctoral programs. Indiana's 89 doctorate degrees in 1996-1997 were 3.1 percent of its total degrees granted. The inclusion of doctorate degrees in the total was not seen to be problematic.

The total number of input an output variables is five, a number that exceeds by one the rule-of-thumb recommendation. Combining FTE faculty and FTE non-faculty employees into a single variable, say FTE employees, would reduce the number of variables. Alternatively, a variable could be removed from the output set such as degrees awarded. All of the described variables have been used in the previously described DEA models, without combining or eliminating any of them, in order gain better insight into the administrative actions that may be needed for an inefficient unit to become efficient. The more complete information is obtained at the expense of possibly declaring one or more additional organizations efficient that otherwise would have been found to be inefficient.

RESULTS OF DATA ENVELOPMENT ANALYSIS

Twenty-eight linear programming models were solved, one for each of the 14 SSHE universities applying first the input-oriented model and then the output-oriented model. The linear programming problems were formulated and solutions obtained with the GAMS procedure in connection with the MINOS solver (Brooke, Kendrick, and Meeraus, 1988). The recommendations of Olsen and Petersen (1996) for DEA model formulation and solution were followed. The results of these optimization models are displayed in Tables 3 and 4. Among the 14 universities in the system, four were found to be efficient according to the previous definition of efficiency. In Table 3, those universities with an efficiency score θ_k of about .99 could be called *near efficient*.

Table 3 shows the amounts by which the inputs would need to be decreased for inefficient universities to achieve efficiency under the input-oriented model. The decreases are shown in physical quantities and as percentages of current levels. One may claim, and perhaps rightly so, that none of the inputs can be reduced over a short-term planning horizon. Tenured faculty cannot be easily dismissed, and other university personnel working under various contracts may not be terminated without specific cause. To the extent that personnel levels cannot be reduced, the DEA results should be interpreted as an indication of the magnitude of a problem. But, the personnel reductions suggested by the DEA input-oriented model could be a basis for the formulation of long-term policy pertaining to the replacement of personnel, the substitution of technology for personnel, and the hiring of part-time faculty and staff.

The reductions in facility space according to the input-oriented model shown in Table 3 also could be dismissed as unattainable. However, the calculated reductions can be understood from at least two perspectives. Taking one point of view, the required space reductions could be interpreted as an under utilization of facilities. The policy directive here would be to find new uses for or a reallocation of existing facilities that would raise institutional efficiency, particularly at universities where there is a relatively high level of facility under utilization as indicated by the model. At a university where facility reductions are indicated, hard questions should be asked about plans for any expansion in the scale of the physical plant. Alternatively, if we accept that the inventory of facilities, measured by floor space, is representative of other variables relating to the physical plant and equipment, then administratively controllable variables may be determined and appropriate actions taken.

Again referring to Table 3 and assuming the relevance of the input-oriented model, we see that the number of students does not need to be increased for an inefficient unit to become efficient. At seven of the inefficient universities, according to the results of the input-oriented model, the output of degrees should be increased. The relatively large requirement for increasing degree output at Clarion and Lock Haven could be due to lower student retention rates or to students taking a longer average time to graduate.

Table 4 reports the weights resulting from the solution of the input-oriented model for the inefficient universities. The non-zero weights in each row identify a peer group of efficient universities for an inefficient unit. To illustrate, consider the row for Clarion University. The composite university for comparison to Clarion is made up of California, East Stroudsburg, and West Chester with respective weights .367, .240, and .268. The optimal values of all other weights are zero in the DEA model for Clarion. The peer group for Clarion is then California, East Stroudsburg, and West Chester with Clarion most like California according to the values of the weights.

California and East Stroudsburg Universities appear most frequently in the peer groups of the inefficient units. Indiana University of Pennsylvania is efficient, but it is not a member of any peer group. The implication of our model is that the input and output characteristics of Indiana are sufficiently different that it is not like any of the other SSHE universities.

The number of FTE students is one means to describe the size or scale of a university. We can calculate a measure of the relationship between FTE student levels and whether or not a university is efficient using the point-biserial correlation coefficient. The point-biserial correlation coefficient r_{pbi} gives the correlation between a continuous variable (such as FTE students) and a dichotomous variable (such as efficiency versus non-efficiency). One method for calculating r_{pbi} begins by dividing the data into two groups. The first group is composed of the efficient universities according to the DEA results, and the second group includes the inefficient universities. The group means for the number of FTE students are calculated as well as the standard deviation of the student levels for all of the data taken together. A computational formula for r_{pbi} , provided by Guilford (1956), is

$$r_{pbi} = \frac{(m_1 - m_2)\sqrt{n_1 n_2}}{\sigma \quad N} \tag{8}$$

where m_1 and m_2 are the means of the continuous variable (FTE students) for group 1 and group 2, respectively; σ is the standard deviation of all observations in the continuous variable; n_1 and n_2 are the number of cases in group 1 and group 2, respectively; N is the total number of cases, $N = n_1 + n_2$. The correlation between FTE student levels and efficiency or inefficiency is .481. If we include Bloomsburg and Slippery Rock with the group of efficient universities and recalculate r_{pbi}, the correlation rises to .527.

Figure 1 is a plot of FTE students and the efficiency score θ_k for the inefficient SSHE universities. There is a positive relationship between FTE student counts and θ_k as seen in scatter diagram—efficiency tends to rise with increasing numbers of students. The usual product-moment correlation coefficient is not an appropriate statistic for the data plotted in Figure 1 because the relationship could be non-linear and a generally applicable distribution theory for θ_k is not yet known. We can use the Spearman rank-order correlation coefficient for evaluating the relationship between efficiency θ_k and FTE student head counts among the inefficient institutions. This correlation is .939.

There is at best only a moderate correlation between the number of FTE students and whether or not a university is efficient. Size does not appear to be a necessary determinate of efficient operating status for the universities in the State System of Higher Education. But, the efficiency score θ_k is highly related to student enrollment within the group of inefficient universities.

The results of the output-oriented model are summarized in Table 5. As with Table 3 the adjustments to inputs and outputs in Table 5 are given in physical units and as percentages of current levels. The table shows that relative efficiency cannot be achieved through growth alone. More specifically, an expansion of students and degrees awarded, without attention to input management, is *not* a sufficient strategy for bringing an inefficient university to an efficient operating level. To reach efficiency, several of the inefficient universities also would need to consider reductions in non-faculty staff and/or facilities. The number of faculty members is about right at all of the SSHE universities given the assumptions of the output-oriented model.

DISCUSSION

Data envelopment analysis has been applied to the universities in the State System of Higher Education to identify relatively efficient universities and to determine adjustments necessary to make inefficient units operationally more efficient. The principal conclusion of this analysis is that inefficient universities cannot reach efficiency by concentrating efforts strictly on either the management of input resources or increases in output results. For most of the inefficient universities, adjustments will be required on both sides of the educational process. The administrative choice of where to place emphasis for corrective action—resource management or expansion—will depend on institutional constraints, demographic trends, and long-term goals for the system of universities. The results of this study should not be summarily dismissed because of implementation difficulties. A DEA investigation can show at least the magnitude and possible sources of operating problems, and it may provide support for policy directives aimed at long-range improvement of individual units and the system of institutions collectively.

The greatest benefit of DEA is its assessment of inefficient decision-making units. For this reason most of the discussion of results in the previous section was directed toward the inefficient universities. The nature of the DEA results does not mean that the identified group of efficient universities should remain without any comment. The administrative implication of efficiency, according to the DEA models described in this study, is that an efficient unit can expand its input resources in proportion to an expansion of its outputs assuming the proportions in the output mix remain unchanged. If there are opportunities to expand student enrollments while maintaining graduation rates, personnel and facilities should be expanded proportionally. The fact that a university has been called efficient does not rule out the possibility of further improvements in the use of resources to accomplish its mission.

Perhaps there are many other input and output variables of administrative interest that could have been considered in our assessment of SSHE universities. We did not consider any

financial data. Measures of student achievement and outcome, other than the number of degrees awarded, were not treated. The main faculty activity implied by the data was classroom teaching. Other faculty outputs could have been used such as research, presentations, and published works. As previously noted, the total number of variables that can be considered in a DEA study, relative to the number of DMUs, is somewhat limited.

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Table 1. Input and output observations for universities in the State System of Higher Education.

		Inputs			Outputs	
k	University	Faculty (FTE)	Non-Faculty Employees (FTE)	Facilities (sq. ft. in thousands)	Students (FTE)	Degrees
1	Bloomsburg	391	425	1,842	6,815	1,469
2	California	300	323	1,339	5,158	1,191
3	Cheyney	99	133	1,087	1,193	259
4	Clarion	348	345	1,564	5,551	947
5	East Stroudsburg	261	281	1,411	4,765	1,016
6	Edinboro	400	361	1,828	6,306	1,289
7	Indiana	769	714	3,056	12,212	2,845
8	Kutztown	417	390	1,794	6,713	1,353
9	Lock Haven	210	212	1,095	3,346	560
10	Mansfield	176	189	1,280	2,680	581
11	Millersville	358	423	1,737	6,176	1,390
12	Shippensburg	338	400	1,755	5,894	1,215
13	Slippery Rock	376	399	1,690	6,392	1,320
14	West Chester	580	520	2,406	9,388	2,118

Table 2. Correlation matrix for input and output data.

	Inputs			Outputs	
	Faculty	Non- Faculty Employees	Facilities	Students	Degrees
Faculty	1.000	.977	.977	.994	.982
Non-Faculty	.977	1.000	.964	.988	.982
Facilities	.977	.964	1.000	.966	.971
Students	.994	.988	.966	1.000	.988
Degrees	.982	.982	.971	.988	1.000

Table 3. DEA results using the input-oriented model showing adjustments required to achieve efficiency. Personnel levels and degrees have been rounded up to the nearest integer. Values in parentheses are percentages of actual levels.

			Input Adjustments (decreases)			Output Adjustments (increases)	
k	University	θ_k	Faculty (FTE)	Non-Faculty Employees (FTE)	Facilities (sq. ft. in thousands)	Students (FTE)	Degrees
1	Bloomsburg	.998	1 (0.3)	5 (1.2)	4.5 (0.2)		72 (4.9)
2	California*	1.000					
3	Cheyney	.669	33 (33.3)	62 (46.6)	743.3 (68.4)		
4	Clarion	.943	20 (5.8)	20 (5.8)	89.5 (5.7)		302 (31.9)
5	E. Stroudsburg*	1.000					
6	Edinboro	.970	12 (3.0)	11 (3.1)	202.6 (11.1)		131 (10.2)
7	Indiana*	1.000					
8	Kutztown	.976	11 (2.6)	10 (2.6)	43.7 (2.4)		158 (11.7)
9	Lock Haven	.911	19 (9.1)	19 (9.0)	150.2 (13.7)		168 (30.0)
10	Mansfield	.845	28 (15.9)	30 (15.9)	506.7 (39.6)		
11	Millersville	.984	6 (1.7)	47 (11.1)	59.3 (3.4)		
12	Shippensburg	.968	11 (3.3)	48 (12.0)	56.3 (3.2)		65 (5.4)
13	Slippery Rock	.990	4 (1.1)	4 (1.0)	17.0 (1.0)		146 (11.1)
14	West Chester*	1.000					

* Efficient

Table 4. Optimal weights for the inefficient universities from the input-oriented DEA model. All of the other weights from the optimal solution (not shown in the table) are zero. The non-zero weights in the row for an inefficient university identify its peer group of efficient universities.

Inefficient Universities	Weights (Efficient Universities)			
	California w_2	E. Stroudsburg w_5	Indiana w_7	West Chester w_{14}
Bloomsburg	.959*	.393	.000	.000
Cheney	.051	.195*	.000	.000
Clarion	.367*	.240	.000	.268
Edinboro	.000	.049	.000	.647*
Kutztown	.167	.142	.000	.551*
Lock Haven	.000	.460*	.000	.123
Mansfield	.100	.447*	.000	.004
Millersville	.802*	.428	.000	.000
Shippensburg	.247	.969*	.000	.000
Slippery Rock	1.057*	.088	.000	.055

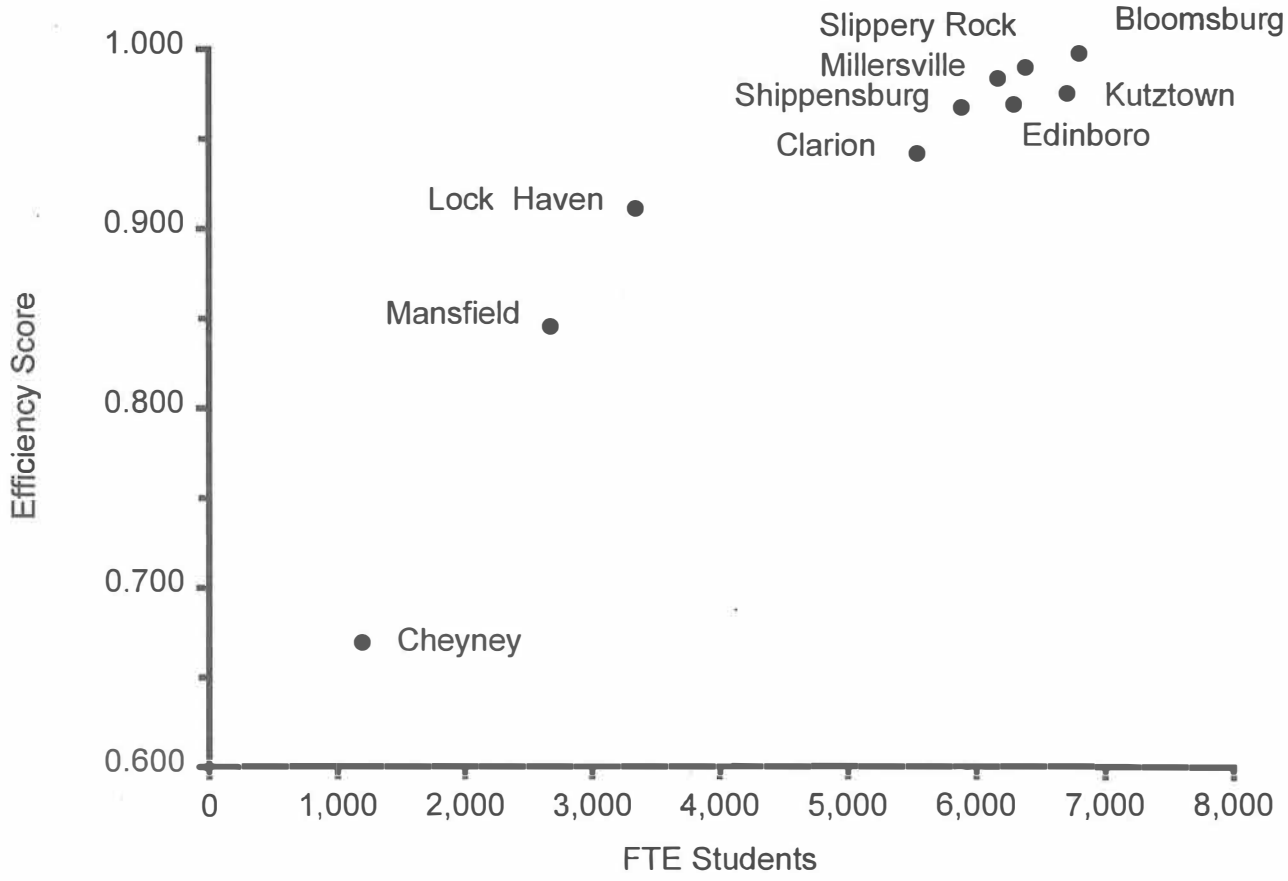
* Largest weight in the peer group (row).

Table 5. DEA results using the output-oriented model showing adjustments required to achieve efficiency. Personnel levels and degrees have been rounded up to the nearest integer. Values in parentheses are percentages of actual levels.

			Input Adjustments (decreases)			Output Adjustments (increases)	
k	University	ρ_k	Faculty (FTE)	Non-Faculty Employees (FTE)	Facilities (sq. ft. in thousands)	Students (FTE)	Degrees
1	Bloomsburg	1.002		4 (0.9)		17 (0.3)	76 (5.2)
2	California*	1.000					
3	Cheyney	1.495		27 (20.3)	573.2 (52.7)	591 (49.5)	129 (49.8)
4	Clarion	1.061				337 (6.1)	377 (39.8)
5	E. Stroudsburg*	1.000					
6	Edinboro	1.031			152.1 (8.3)	196 (3.1)	175 (13.6)
7	Indiana*	1.000					
8	Kutztown	1.025				168 (2.5)	196 (14.5)
9	Lock Haven	1.097			58.1 (5.3)	326 (9.7)	239 (42.7)
10	Mansfield	1.183			365.3 (28.5)	490 (18.3)	107 (18.4)
11	Millersville	1.016		38 (9.0)	32.1 (1.9)	100 (1.6)	23 (1.7)
12	Shippensburg	1.033		36 (9.0)		196 (3.3)	107 (8.8)
13	Slippery Rock	1.010				65 (1.0)	161 (12.2)
14	West Chester*	1.000					

* Efficient

Figure 1. FTE student levels and the efficiency score θ_k for universities identified as inefficient.



DATA APPENDIX

Table A1. Employees in the State System of Higher Education for October 1997. The head counts do not include employees paid through agencies or service organizations contracted by SSHE or its member universities.

k	University	Full-Time Faculty	Part-Time Faculty	Full-Time Non-Faculty Employees	Part-Time Non-Faculty Employees
1	Bloomsburg	391	32	403	43
2	California	289	43	313	19
3	Cheyney	95	17	126	14
4	Clarion	339	37	329	32
5	E. Stroudsburg	252	34	253	55
6	Edinboro	390	41	337	48
7	Indiana	750	74	685	58
8	Kutztown	408	36	370	39
9	Lock Haven	205	20	203	17
10	Mansfield	168	30	182	14
11	Millersville	331	109	396	54
12	Shippensburg	331	28	375	50
13	Slippery Rock	368	30	385	28
14	West Chester	536	175	485	69

CHANGING OPINIONS OF AN ACCOUNTING SURVEY COURSE BY NON-BUSINESS STUDENTS

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ABSTRACT

The purpose of this paper is to summarize and report the changing opinions of non-business students who have recently completed an introductory accounting survey course. The results of a class survey administered at the conclusion of such a course five years ago compared with the same survey administered two years ago indicates students are changing their opinions and conclusions as to how they benefitted from completing the course. The post survey results indicate a growing satisfaction with the quality of instruction and course materials. Increasingly, students see a benefit of a user-approach accounting course in terms of understanding how businesses operate as well as how to apply accounting concepts to their personal lives. As the user-approach to presenting introductory accounting in the survey course has been phased in, the students' perceptions of the need to learn accounting procedures has declined.

INTRODUCTION

The purpose of this paper is to review the changing opinions of non-business students as they complete an introductory accounting survey course. The results of surveys administered at the end the fall, 1995 and fall, 1998 semesters indicate students are changing their opinions about how they have benefitted from the introductory accounting material they have learned. Other survey findings are also compared, reviewed and assessed including the 1998 post survey by major and year.

EDUCATIONAL DILEMMA

In recent years practitioners and academicians have criticized accounting education as being too narrow in focus and too technical for the changing trend towards a more central accounting education. This trend would certainly seem appropriate for students who have no interest in being accountants and those students who want round, broad, practical, interesting, and simple presentation of accounting information.

The knowledge explosion has compounded a classic three-way educational dilemma:

1. Breadth of education
2. Depth of learning
3. Technical coverage (Nelson, 1995, 63)

For a detailed explanation of these three competing models of education, see Appendix A.

These factors can be related to a first year accounting course as well as other accounting courses, especially for a survey course.

THE EMPHASIS IN INTRODUCTORY ACCOUNTING EDUCATION

In recent years academicians have debated the content and approach of accounting education. A common criticism of traditional accounting education focused on its emphasis in teaching technical issues and a preparation perspective. The alternative approach that has received increasing acceptance is a user approach to accounting instruction. This approach seems entirely appropriate to non-business students who have no interest in being accountants, but who could benefit from a practical and interesting presentation about how to use accounting information in their lives. In teaching such a course to non-business students, faculty should consider altering what they teach as well as how they teach it. Similar studies have explored the relationship between the teaching method of accounting and student attitudes in a basic accounting course as evidenced by Marcheggiani, Davis and Sander (1999).

HISTORY AND INTENT

The introductory accounting survey course at our university was offered beginning in 1989. At that time it was offered as a scaled back version of basic financial accounting. The content of the course and the approach to teaching it changed very little

until 1995. Beginning in the fall, 1995 semester, the course was significantly altered from a preparation perspective to a user perspective. For details of the course content, see Appendix B. It was difficult for the faculty teaching the course to adapt to a classroom setting containing students who have no intentions of becoming accountants. In addition, there was the mission to serve the needs of non-business students primarily consisting of communication majors who were required to complete an accounting course.

This course was originally designed to better serve the communication majors and eliminate non-business students from enrollment in the first basic financial accounting course otherwise comprised of business majors. The Communication Department has recently eliminated the course as a requirement for the major but lists it as an option.

By 1995, our enrollment in the College of Business Administration had declined significantly. Our faculty felt that perhaps student interest in pursuing a business and hopefully accounting major might by encouraged by providing a rewarding educational experience in the introductory accounting survey course. However, our experience with students in this survey course indicates that these non-business students generally do not have the interest or aptitude to pursue the business curriculum. Accordingly, any methods we have applied to encourage interest in a business major has not resulted in any measurable success.

The intent of the course content since 1995 has been to present basic accounting to the non-business major by use of a strong user perspective.

SURVEY RESULTS

The results of a post survey completed at the end of the fall, 1995 semester included a breakdown by major indicating the percentage of the students finishing the survey course. See Appendix C. Communication majors were the largest group of majors making up 90% of the total students. Freshmen made up 67% of the total students. The students' most prevalent reason for taking the course was it was required in their program of study.

The results of the second post survey were obtained at the end of the fall, 1998 semester. See Appendix D. Communications majors again made up the largest group consisting of 59% of total students followed by educations majors with 20%, Juniors made up 39% of the total students with freshmen representing 10%. The students in this group were also enrolled in the course mainly because of their program requirements.
The students' conclusions about how they have benefitted from completing the course has changed over this three-year period. Specifically, student responses from 44% to 49% indicate a general improvement in their perceptions that completing the course has enhanced their understanding of basic accounting issues. Consistent with this change is a decrease from 23% to 16% of the respondents who did not understand accounting concepts at the conclusion of the course. This general improvement in student understanding of accounting has been obtained in spite of the fact that student responses indicate an increase from 20% to 23% in experiencing difficulty in grasping basic accounting techniques. Furthermore, as the user-approach has reached full implementation in the course, students completing the course and indicating they have learned detailed aspects of accounting and specific accounting procedures has declined from 39% to 27%. See Appendix E.

Baldwin and Ingram (1991) suggested that any changes in accounting education should start with a fundamental reassessment of the objectives and content of any elementary accounting course because it sets the tone for future accounting courses and should help to attract the "right" type of student to accounting. They recommend shifting from preparing accounting information to using accounting information, more conceptual and interpretive issues and less procedural issues, and an integrated informational process to decision-making. Williams (1991) observed that the proliferation of accounting standards was causing the traditional accounting curriculum to focus more on a technical and less on a business (or practical) direction. He suggested experimentation and innovation in accounting education following his notion that accounting should first prepare students to be good citizens and second, encourage a good understanding of business.

One reason for the noted improvement in student opinions concerning their understanding of accounting would then appear to be the user-perspective approach that has been phased into the course since fall, 1995.

Bonner (1999) proposed that accounting professors must alter both the content of their courses as well as their teaching methods. She asserts that the primary challenge in enhancing intellectual skills is for students to apply their skills to accounting situations. She believes that students must experience accounting material in order to really master it. An extension of this theory concludes that the more complex a topic or skill may be, the higher the level of active student learning that is required. Active student learning is defined as working cases and conducting research.

Another reason then for improved student comprehension in the survey course may then be due to the contributing benefit of homework assignments following the user perspective approach to introductory accounting material. Consistent with student opinions that the material in the survey course continues to be

technically difficult, more students have indicated homework assignments as the main strength of the course with an increase from 10% in the fall, 1995 post survey to 29% in the 1998 survey.

OTHER SIGNIFICANT SURVEY RESULTS

Other post survey comparisons are summarized in Appendix E. Among other conclusions, these summaries indicate a growing satisfaction with the quality of instruction and course materials. A notable comparison shows that students' opinion that the presentation and course materials must be improved has declined over the three-year period from 51% to 15%. Also, the students' opinion on changing course content declined over the same period from 32% to 24%. Survey responses also indicate a small increase (from 7% to 8%) in the number of respondents believing they had increasedtheir understanding of how businesses work. A more dramatic increase (from 0% to 14%) indicates that students see an application of accounting to their personal lives. Again as the user-approach has been implemented into the survey course, students appear to discern more relevance of accounting to their non-accounting lives.

In a survey of accounting instructors, Ingram and Howard (1998) found that the most important objectives were teaching concepts, teaching students to read and interpret financial statements, teaching students to make business decisions using accounting information and improving reasoning and thinking skills. Since the user-approach primarily develops an understanding of accounting following these objectives, it appears to be consistent that the 1998 post survey responses would indicate students had learned problem-solving (56%) and reasoning skills (25%). The least learned skills appeared to be oral communication (2%).

SURVEY RESULTS BY MAJOR AND YEAR

The results of the post survey for the Fall, 1998 included an analysis by major and year. Of the education majors, 58% indicated problem solving skills were learned. This was the highest percentage of any major. In addition, the problem solving skills learned increased by year with the senior education majors indicating 100%. Perhaps the field does not emphasize problem solving as much as other fields such as communication or that education majors are more able to learn problem solving.

As anticipated, sophomores in any major would consider majoring in any business field. However, an equal number in education at the sophomore level would consider majoring in accounting as well as another business field.

Communication majors through the junior year indicated homework as the greatest strength of the course. Freshman and sophomore education majors indicated the instructor as the greatest strength while junior and senior education majors indicated homework as the greatest strength.

Communication majors indicated material covered too fast as the greatest weakness of the course, while education majors indicated difficulty grasping accounting techniques as the greatest weakness regardless of year.

Communication majors suggest not requiring the course regardless of year, while education majors primary suggestion for improving the course according to freshmen and sophomores is to change course content. Junior and senior education majors suggest improving the quality of presentation/material and improving exams. Underclassmen tend to not realize appropriate course content for various reasons including lack of background. Many students indicated the course generally complied with their expectations and needs.

This section of the paper represents only a small sampling of the post data analysis by major and year for 1998. Since the post data was not gathered by major and year in the 1995 survey, additional comparisons cannot be made resulting in a limitation of the research.

SUMMARY

As we continue to implement and more intensely focus the user- approach in teaching basic accounting to non-business students, they continue to react favorably. Students increasingly indicate that they better understand accounting. Practical homework assignments appear to augment this improved understanding. Finally, students increasingly see the relevance of accounting to how businesses operate and to personal applications throughout life.

APPENDIX 1

Breadth of education refers to the number of broad general fields of study to which the student is exposed. It may be thought of as the liberal, general education component in the curriculum (arts, sciences, humanities, etc.) The number and breadth of the subjects covered is thought to affect the degree to which the graduate is "well-rounded."

Depth of learning means how comprehensively each subject is studied. Does the student receive merely a superficial, elementary exposure to a subject, or an in-depth exploration, including current issues and theory? Is the subject discussed at a declarative level (memorization) or a conceptual one (understanding)? Greater depth of learning invokes more higher-order, critical thinking in the education process.

Technical coverage refers to the amount of specialized, practical material to be taught. How many domain-specific rules is the student required to memorize in a particular field of specialization? Technical coverage prepares students to answer objective-type exam questions and to perform job-specific tasks, but does little to develop higher-order thinking.

Source: Nelson, 1995, 74.

APPENDIX 2

ACTG 201: Introductory Accounting Survey
Course Outline

1. Introduction
2. What is business?
3. Forms and Types of Business
4. What is Decision Making Anyway?
5. How We Make Decisions
6. Economic Decision Making
7. Qualities of Useful Accounting Information
8. Introduction to the Balance Sheet
9. Corporate Organizational Structure
10. Borrowing
11. Equity and Debt Investment
12. Introduction to the Income Statement
13. Introduction to the Statement of Owners' Equity
14. Rockwell 1994 Annual Report and Other Annual Reports handed out
15. Measurement of Reality
16. The Bases of Economic Measurement
17. The Statement of Cash Flows
18. How to Use the Statement of Cash Flows
19. Who Performs Financial Statement Analysis
20. Ratio Analysis: Calculations and Use Including Annual Reports handed out
21. Management Accounting: Its Origin, Development, and Future
22. Classifying Costs
23. Manufacturing Type Businesses
24. Business Planning - The Budgeting Process
25. Preparing a Master Budget

APPENDIX 3

Accounting 201: Introductory Accounting Survey
Post Survey Fall Semester 1995

Student Breakdown

Level	Number	Percentage
Freshmen	59	67
Sophomore	12	14
Junior 11	13	
Senior4	4	
Unknown	2	2
Totals 88	100	

Student Majors

Major	Number	Percentage
Communications	78	90
Undecided	2	2
Political Science	2	2
Computer Science	1	1
Psychology	1	1
Art	1	1
Management	1	1
Special Education	1	1
Elementary Education	1	1
Totals 88	100	

Reasons for Taking Course

Reason	Number	Percentage
Required	73	84
Parents own their own business	3	4
Learn more about accounting	2	2
No answer given	2	2
Thinking of majoring in accounting	2	2
Course was suggested	1	1
Learn Basic Accounting Fundamentals	1	1
Future job with the FBI	11	
Future job of owning own law firm	1	1
Elective	1	1
Experience taking course	1	1
Totals 88	100	

APPENDIX 4

Accounting 201: Introductory Accounting Survey
Post Survey Fall Semester 1998

Student Breakdown

Level	Number	Percentage
Freshmen	7	10
Sophomore	17	24
Junior 27	39	
Senior 13	19	
Unknown	6	8
Totals 70	100	

Student Majors

Major	Number	Percentage
Biology	1	1
Communications	41	59
Computer Science	1	1
Education	13	20
Geography	1	1
Political Science	1	1
Psychology	3	5
Rehab. Science	3	5
Social Sciences	1	1
Sociology	1	1
Spanish	1	1
Speech Pathology (CSD)	2	3
Undecided	1	1
Totals 70	100	

Reasons for Taking Course

Reason	Number	Percentage
Required	43	51
Course was recommended	10	13
To learn basic accounting skills	17	20
Thinking of majoring in accounting	2	2
General education requirement	7	9
Minor in business	1	1
Signed up by advisor	2	2
To have a variety of classes	1	1
No reason	1	1
Totals 84	100	

APPENDIX 5

Accounting 201: Introductory Accounting Survey
Post Survey Fall Semester 1995 and 1998

1. Now that you have completed the course, how have your conceptions of what a basic accounting course is all about changed?

Individual Responses	1995 Percentage	1998 Percentage
Learned more aspects of accounting	39	27
Complicated	13	11
Confused	11	14
Difficult material	8	12
Thought it would be more math	8	9
Did not like it	7	6
Learned more about business	6	10
Did not know what to expect	5	7
Other	3	4
Total	100	100

2. Did you get out of the course what you hoped to?

Individual Responses	1995 Percentage	1998 Percentage
Better understanding of accounting	44	49
Learned about running a business	7	8
Learned actg. applications for personal use	0	14
Hoped for nothing, received nothing	3	5
Didn't understand accounting	23	16
Other	23	8
Total	100	100

3. What skills have you learned as a result of completing this course?

Individual Responses	1998 Only Percentage
Problem solving abilities	56
Logical reasoning ability	25
Written communication skills	9
Oral communication skills	2
Other	8
Total	100

4. Describe how accounting knowledge and skills acquired during this course may be useful in your life.

Individual Responses	1998 Only Percentage
It helps in personal financial matters	39
It provides an understanding of the business world	26
It may be applied in my own business/career	18
Not useful at all	10
Other	7
Total	100

5. After completing this course would your consider:

Individual Responses	1998 Only Percentage
Majoring in accounting	1
Majoring in another business field	3
Minoring in business	1
Staying with current major	95
Total	100

6. Strengths of the course

Individual Responses	1995 Percentage	1998 Percentage
Instructor	36	28
Presentation techniques and materials	17	12
Accounting principles presented	15	12
Homework (included in grade)	10	29
Textbook	10	9
Learned how hard it is to be an accountant	1	7
None	7	3
Other	4	0
Total	100	100

7. Weaknesses of the course

Individual Responses	1995 Percentage	1998 Percentage
Textbook	27	15
Presentation techniques and materials	24	11
Difficulty grasping accounting techniques	20	23
Covered material too fast	15	19
Exams	11	4
Long class	2	16
None	1	6
Other	0	6
Total	100	100

8. Suggestions for improvement

Individual Responses	1995 Percentage	1998 Percentage
Change course content	32	24
Improve quality of presentation/materials	51	15
Improve exams	10	3
Don't make communication majors take class	3	34
Drop the course	2	1
Better student/teacher communication	2	1
Other	0	22
Total	100	100

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USING NEURAL NETWORKS IN ACCOUNTING RESEARCH

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ABSTRACT

Accounting information systems enable the process of internal control and external auditing to provide a first line defense in detecting fraud (Turpen and Messina, 1997). There are few valid indicators at either the individual or the organizational level which are reliable indicators of fraud prevention (Groveman, 1995). Recent studies have shown that it is nearly impossible to predict fraud. In fact, many of the characteristics associated with white-collar criminals are precisely the traits which organizations look for when hiring employees (Lord, 1997). This paper proposes the use of information systems to deal with fraud through proactive information collection, data mining, and decision support activities.

INTRODUCTION

Bookkeeping and record keeping methods were created during ancient and medieval times. the concept of double entry accounting began in the 14th century (Funk and Wagnall, 1994). While the concepts of accounting method rules and laws have changed significantly, one principle has remained constant. Accounting's primary purpose is to keep track of money and other assets (AICPA, 1999).

An accountant's first priority is to track all aspects of an organization's financial elements. The accounting profession is dictated by guidelines, rules, procedures and laws. It is assumed that it is the duty of the accountant to insure that the financial statements provided are an accurate view of the firm. It is also assumed that it is the auditor's responsibility to detect fraudulent behavior.

Unfortunately, auditor's assumed that their responsibility was to detect material misstatements within their client's financial statements, not to detect fraud per se. This difference in opinion has been labeled the "expectation gap" and it is used to describe the difference between what auditors assume their responsibility to be and what the public perceives it to be (AICPA, 1999).

In an effort to reduce the "expectation gap" the Accounting Standards Board (ASB) issues Statements on auditing Standards (SAS) which are serially numbered pronouncements which interpret the auditing standards that accountants are mandated to follow. Specifically, SAS #53 and SAS #82 are the important statements regarding fraud detection (AICPA, 1998).

SAS #82 was issued in February of 1997 and is effective for audits of financial statements for periods ending on or after December 15, 1997. Prior to SAS #82, SAS #53 dealt with finding "errors and irregularities" in financial statements. SAS #53 defines errors simply as mistakes and says that irregularities include both fraudulent financial reporting and misappropriation of assets. However, SAS #82 provides an expanded description of fraud, and covers both fraudulent financial reporting and misappropriation of assets.

The ASB considers the detection responsibility in SAS #82 to be the same as in SAS #53. However, the detection responsibility in SAS #82 has been clarified to use the term "fraud" rather than the term "irregularities". In addition, SAS #82 also covers both audit planning and performance and provides auditors with additional operational guidance on the consideration and detection of material fraud in conducting financial statement audits.

OBJECTIVES

Traditionally, audits have been a team effort in which new members learn from older members. Accounting information systems can be used to reverses these roles because the younger auditors are more at ease with using technology. O"Callaghan (1994) argues that the combination of effective hands-on training with theory helps end-users to develop good mental models of systems. Markovitch (1994) believes that end users which get good user support services should be more productive if the support services are planned around the user's (auditor) specific needs.

During the auditing process, auditors select audit procedures that are easiest to perform which take the least amount of time (O'Callaghan, Walker, and Sale, 1998). In reality, there are no auditing software applications for detecting and preventing fraud. Auditors may revert to word processors, spreadsheets, and calculators to decipher the firm's myriad of accounting information . However, more advanced information technology methods are available for deterring fraud. For example, artificial neural networks (ANN) could be used for data mining and detecting key indicators of fraud, decision support systems (DSS) could be used for decision making, expert systems (ES) could be used for rule bases and discriminant analysis could be used to predict fraud. Rarely, if ever are these tools employed.

The objective of this research is to apply several of these advanced methods in an effort to detect and predict fraudulent behavior. Discriminant analysis will be applied to survey data in order to predict fraud according to key indicators such as poor internal controls, weak ethics policies, changes in employee lifestyles, working conditions, morale, and downturns in the economy (Turpen and Messina, 1997). ANN will then be used to data mine which factors are indicative of fraud. A comparison will then be made between the two methodologies.

ISSUES IN DATA MINING

Salient issues ranging from performance to privacy exist in data mining. No consensus exists concerning the factors which influence the performance of data mining. Some writers argue data quality and people involved in the data mining are important; others emphasize data mining techniques applied in the data mining process. Another salient issue in data mining is privacy. When dealing with databases of personal information, the legal and ethical issues of invasion of privacy have to be addressed.

Regarding data privacy, current discussion is around guidelines for what constitutes a proper discovery. In the U.S. principles for fair information use related to the National Information Infrastructure (NII) can apply to the data mining discovery (Fayyad, Piatetsky-Shapiro, Smyth, 1996). Piatetsky-Shapiro (1995) argues that group pattern discovery does not invade privacy because its goal is to discover patterns about groups, not individuals. O'Leary (1995) has introduced the Organization for Economic Cooperation and Development (OECD) guidelines for data privacy, which have been adopted by most European Union countries. It is suggested in the guidelines that data about specific living individuals should not be analyzed without their consent, and data collection should be collected for a specific purpose or with the consent of the data subject or by authority of the law.

Regarding the performance of data mining, Frawley, Piatetsky-Shapiro and Matheus (1991) assert that databases can pose problems to knowledge discovery when the fundamental input to a data mining system is the raw data present in a database. As mentioned in the preceding section, the databases are usually dynamic, incomplete, noisy, and large. Contents in most databases are changing, time sensitive; relevant data attributes or fields can be absent; the inherent exactitude of data differs; the databases may be large with irrelevant information.

Regarding the performance of data mining in large databases, Musick (1999) has identified several barriers to effectively conduct large-scale data mining. First, typical data mining algorithms—simple naïve Byes, decision trees, and model induction algorithms—may lead to information loss when they are used to handle highly complex data. Second, if the quality of data mining models is poor, the cost of a mistake is high. Third, some difficulties exist in mining large-scale datasets because of

1) non-standard nomenclatures,
2) a variety of data types and models,
3) duplicative and erroneous data,
4) changing data content, and
5) critical pieces of information in different repositories.

Strategies which are recommended to overcome the barriers facing large-scale data mining include

1) building scalable I/O architectures and interfaces;
2) developing algorithms that work with non-traditional data types such as time sequences, protein sequences, or 3D structures; and
3) scaling algorithms by effective parallelization and controlled sampling or filtering.

According to Cabena, Hadjinian, Stadler, Verhees and Zanasi (1998), the main factors which make for a successful data mining project are summarized into three categories: the right people, the right application, and the right data. The right people include a sponsor, a user group, a consultant or someone who has experience, a business analyst with domain expertise, and a data analyst. The right application is composed of clearly understood organizational objectives, a solid cost-benefit analysis, a significant impact on business problems or opportunities, and an achievable deadline in less than three months. The right data means a clean supply of data, a limited set of data sources, and a solid analytical data model. Although a solid technology is important, successful data mining is far more about people, business issues, and data than about the underlying technology.

Likewise, Fayyad, Piatetsky-Shapiro and Smyth (1996) have identified three major factors related to the successful application of data mining. The first factor is the data quality. Although data mining techniques can be tolerant of certain types of noise, excessive noise can negatively impact the quality of the mined information. The second factor involves developing methods for establishing when and how to apply the appropriate techniques and determining how to best take advantage of the mined information. The third factor is selecting an appropriate data-mining tool.

Most recently, Nazem and Shin (1999) have classified issues which influence the performance of data mining into two broad categories: organizational and methodological. Some salient organizational issues closely related to data mining are objectives of data mining, information management, and data warehousing. Methodological issues involve the selection of methodology and appropriate search tools for the importance of the non-algorithm aspects of data mining such as design of data warehouses and data marts, integration of data mining with DSS or EIS, rule-base management, and methodologies for knowledge search and evaluation of return-on-investment.

FUTURE RESEARCH CONSIDERATIONS

Data mining is a tool designed to analyze massive data sets, to draw inferences from data and to describe relationships between variables for prediction, quantifying effects, or suggesting causal paths. Data mining and data warehousing are highly complementary. Salient issues such as privacy and data mining performance emerge. However, data mining is still in its infancy, and several important trends can be identified at this point. First, both the number of data sets and their volumes will continue to grow exponentially. Second, data mining tools will continue to grow in power, analytical sophistication, and ease of use (Peacock, 1998). Third, data mining, similar to data warehousing, is and will be continuously driven by applications. Most of these applications are aimed at understanding behavior. Data mining systems have quickly progressed from single-component tools to multi-component toolkits with loose connections to database management systems. Next generation systems will be tightly integrated with the database management system and be capable of mining data in the large database.

It seems that two forces—the need for data mining and the means to implement it—result in the popularity of data mining. The need is from customers' expectations. The means is from technical advances in artificial intelligence, machine learning research, database, and visualization technologies. There is a concern in knowledge accumulation in areas of methodology and techniques. A problem for the search of data mining exists because of the confidential nature of the work. Business organizations are unlikely to share their experiences from data mining exercises with others. Therefore, it is difficult to know exactly the choice of appropriate methodology and the mix of data mining techniques in the organization (Ballou & Tayi, 1999).

Further empirical research is needed in the relationship between data mining and data warehousing. How can data quality be enhanced in the data warehouse environments? How can the performance of data mining be enhanced in large-scale data warehouses? What factors impact the performance of data mining? In the same way, further empirical research is also needed in order to investigate issues dealing with personal information in data mining. How can we protect personal privacy and utilize data mining at the same time? What are the guidelines for the privacy in the data mining process?

METHODOLOGY

Sample and Survey

A survey questionnaire was utilized as a tool to gather information about fraud. This tool attempted to give insights into such questions as : "Who commits fraud?" and "How does the person act?" The survey consisted of 34 questions that measured both demographics and fraud related questions. All independent variable, fraud related questions were in a five point Likert scale format. The five questions were as follows. "How do you rate the morale within your place of employment?" This scale ranged from "Very Poor" to "Very Good". Internal controls

within your organization are used ("Never", "Rarely", "Occasionally", "Frequently", "Always"). "How is the attitude/morale in your place of business?" This scale ranged from "Very Poor" to "Very Good". In your fraud observations, the person (s) who committed the fraud increased their personal expenditures: ("Never", "Rarely", "Neither increased nor decreased", "Frequently", "Always". During periods of economic downturns, employee attitudes within your organization tend to be: ("Very Poor", "Poor", "Moderate", "Good", "Very Good").

The dependent variable, "In your work place experiences, have you encountered any incidents of fraud?" was answered as a nominal response of either "Yes" or "No". Several open-ended questions such as "In your opinion, who do you believe is responsible for fraud detection?", were included in the survey in order to add information richness from a qualitative and explanatory perspective.

The survey was distributed to approximately 500 accountants in the Maryland, Ohio, Pennsylvania, and West Virginia quad State area. These were distributed and filled out at various CPE seminars. Of the 500 surveys sent out, 410 were returned and used in the study.

RESULTS

In order to more closely approximate the training and testing methodology utilized by neural networks, the jackknife method of discriminant analysis was utilized. This "leave-one-out" principle is a sophisticated method based on estimation with multiple subsets of the sample. In other words, the discriminant function is fitted to repeatedly drawn samples of the original sample. The jackknife method yielded 50.4% of original grouped cases correctly classified. These results are shown in Table 1.

Table 1: Predicted Group Membership

	No Fraud Detected	Fraud Detected
No Fraud Detected	172	75
Fraud Detected	123	30
Ungrouped	10	0

50.4% of grouped cases correctly classified
172 + 30 / 400 = 50.4%
123 + 75 /400 = 49.5%

In comparison, the neural network method classified 75.9 % good parts. The training set consisted of 200 respondents. The data was normalized, and ran for one hour and twenty minutes before it resulted in 100 good parts. A weight was obtained, and the network was saved. The testing data set (composed of 210 respondents) was then placed into the saved network and run. After twenty-four hours, the neural network had achieved 75. 9% good parts.

Table 2: Percent Good Parts of Neural Net Testing

	Fraud / No Fraud
Correctly Identified	75.9%
Incorrectly Identified	24.1%
Total	100%

These results of the Neural Net testing are shown in Table 2.

CONCLUSIONS AND RECOMMENDATIONS

Discrininant analysis yielded 50.4% of original grouped cases correctly classified. No significant relationship was found (.149) between attitude, morale, internal controls, increases in expenditures and whether or not fraud was actually committed. Cronbach's
Alpha of reliability was .6626 and offered somewhat reliable results in this exploratory research.

Neural networks did a much better job of predicting fraud (75.9%) good parts than discriminant analysis (50.4%). Neural networks were able to find patterns in the training set and then correctly identify more than three fourths of similar patterns in the testing set.
Therefore, it can be concluded that neural networks outperform discriminant analysis by 25.5% in this data set.

LIMITATIONS

The survey asks the respondent to play two roles. One role is that of an auditor from outside the organization. The second role asks the respondent to assess the environment within the company. The result is respondent confusion. There may also be a degree of social desirability in which the accountant filling out the survey may not wish to divulge information because they may be afraid of managerial repercussions.

In the future, it may be worthwhile to create different surveys for different types of accountants (internal, external, auditors, etc.) and then to tailor the questions in a

manner that better identifies their perceptions of fraud. The present survey confuses the responding accountants as to whether the survey should be answered from an internal or external perspective.

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Available upon request

UNDERSTANDING COLLEGE STUDENT PERSISTENCE: EXPLORING MEASURES OF COMMITMENT IN SENIORS

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ABSTRACT

This study explores the utility of extending measures of commitment to an organization and fairness within an organization that have been developed through research in work organizations, to the context of students in college. Measures of commitment (affective commitment, calculative commitment, and moral obligation) have been found to predict workers' intentions (Hom and Griffeth, 1995), and measures of fairness (distributive, procedural, and interactive justice) have been related to employees' attitudes. The present effort investigates these questions on a sample of 585 graduating seniors. The measures appear to hold promise.

INTRODUCTION

In recent years, great concern has arisen about the numbers of students who "drop out" of their college or university education. Dropouts represent significant costs for the students themselves, who have invested time, energy, and resources into their education. In addition, dropouts mean lost revenues for universities, including tuition, fees, and potential housing fees. Furthermore, when students drop out of college, society potentially loses human capital.

Existing research in higher education sheds some light on why and how students decide to drop out (Tinto, 1993, 1998). Students who see themselves as integrated, both socially and academically, into an institution and as valued members of an institution are more likely to stay in college (Rendon, 1994). Tinto (1993) posits a mediated model in which students' levels of social and academic integration predict their feeling of emotional attachment to and membership in an institution, which in turn affects their likelihood of persisting through graduation.

While support exists for this model, measures of student attachment or feelings of membership are problematic. They vary widely between studies, and little consensus about acceptable measures has developed in the field. This results in problems with comparing studies and synthesizing results.

The first purpose of the present study was to suggest that well-validated and widely accepted measures of an individual's attachment to an institution developed in another venue may be useful as a basis for developing measures of students' emotional attachment to their university. The mature stream of research that focuses on employee turnover in work organizations has embraced measures of employee attachment or commitment, developed by Meyer et al. (1993). One purpose of the present study was to explore whether measures of commitment that derive from this stream of research on turnover in work organizations, can be modified and extended to study the attitudes and actions of college students.

Second, we wished to investigate whether a construct reported to be of importance in understanding the commitment of employees may have its analog for students. Research on organizational commitment, summarized by Hom and Griffeth (1995), suggests not only that employees' intentions to leave jobs are affected by their emotional attachment or commitment to their organizations; but also that commitment itself is strongly affected by employees' perceptions of the fairness with which they are treated in their organizations. At this point, the literature on student persistence is largely silent about how students' perceptions of fairness or justice at their university may affect their feelings of emotional attachment to their university. Thus, a second purpose of this study is to create measures of students' perceptions of fairness analogous to those used in research on work organizations, assess the reliability of these measures, and explore the relationship between students' perceptions of fairness and their levels of emotional attachment to their universities.

BACKGROUND

As noted above, Hom and Griffeth (1995) recently reviewed and summarized the major work on turnover in organizations, presenting a causal model that captures the major findings and predictions in the area. One purpose of the present study was to explore the extension of measures of variables of demonstrated importance in understanding withdrawal behaviors in work organizations, to withdrawal

of college students. We chose two major attitudes from the Hom and Griffeth model to investigate this question.

Commitment

First of all, Hom and Griffeth's (1995) extensive review of the literature on organizational turnover strongly supports the proposition that an individual's commitment is a major predictor of intentions to stay or leave the organization. Commitment, in general, is "...a psychological state that (a) characterizes the employee's relationship with the organization and (b) has implications for the decision to continue or discontinue membership" (Meyer et al., 1993). This appears to be similar to Tinto's reference to students' perceptions of how well they see themselves as "...integrated into the institution and valued members of it" (Tinto, 1998, p. 168).

Organizational commitment is a multidimensional construct. Within the area of work organizations, three types of commitment have been identified as separate concepts (Meyer et al., 1993). Affective commitment (AC) represents an individual's loyalty and emotional attachment to an organization. When affectively committed, people stay with an organization because they want to be associated with it. Calculative commitment (CC) represents the individual's beliefs about the costs of leaving an organization. When the perceived costs of leaving an organization are high, an individual is likely to stay with the organization because they believe they cannot afford to leave. Moral obligation (MO) represents an individual's belief that they "should" stay with the organization, that they have an obligation to remain. This form of commitment might occur when people believe that they "owe" their organization for some past action (e.g., tuition support) or when people feel that they have made a promise to stay with the organization. In studies of work organizations, all three types of commitment make significant and independent contributions to explaining employees' intentions to stay with their organization (Meyer et al., 1993).

Fairness

The literature on work organizations supports the proposition that a major factor in organization members' commitment is the member's perceptions of the fairness with which they are treated in the organization (Hom and Griffeth, 1995). Again, it has been found that fairness, like commitment, is multidimensional (Folger and Konovsky, 1989; Greenberg, 1990; Niehoff and Moorman, 1993). Three types of fairness have been identified and studied in the work organizations literature: distributive justice, procedural justice, and interactional justice.

Distributive justice (DJ) concerns employees' perceptions of the fairness with which the outcomes or rewards that the organization offers are distributed.

Procedural justice (PJ) represents an individual's perceptions of the fairness of the processes and procedures by which the organization operates.

Interactional justice (IJ) concerns individuals' beliefs about the fairness of the treatment they receive in the enactment or explanation of procedures and policies.

Research Questions

In this study, we wished to fulfill three purposes: (1) ascertain if the factor structure of commitment items obtained from students was similar to that obtained from employees of work organizations; (2) investigate whether the factor structure of fairness items obtained from students was similar to that obtained from employees; and (3) explore whether the relationship between obtained commitment and fairness composites replicates that obtained in work organizations.

METHODOLOGY

Research Design

The design of this study was based on taking measures from the literature on work organizations, creating close analogies of these items that would be meaningful to students, and assessing the measurement qualities in a database of student responses. This research was conducted as part of a larger study of student attitudes and perceptions, implemented by the Enrollment Management Committee of a state university.

The instrument designed contained measures of demographics, questions regarding the use and evaluation of various institutional services, and 65 items assessing students' experiences on campus and their attitudes about their university. Twenty-two of these were items we developed from the research on commitment and fairness in work organizations by creating close analogs to the original questions. In addition, two new items were created to tap aspects of fairness that we felt to be relevant for students, but which had no close comparison to work situations.

The analytic strategy was to factor analyze those twenty-four items, assessing similarity of the obtained structure to those commonly obtained from data on work organizations. When warranted, we then planned to create composite scales of variables and assess the relationships between commitment and fairness.

We planned to administer the instrument to all graduating seniors in one institution. The respondents for this study were seniors at a mid-Atlantic university who were enrolled in last-semester "senior seminar" courses or the equivalent, during Spring of 1999 and Spring of 2000. To collect the data, a member of the EMC asked the faculty member responsible for the course for cooperation, and came to a class meeting to distribute the surveys.

Measures

As discussed earlier, measures of commitment and fairness have been well validated in the research on withdrawal from work organizations. Here, we took items from that literature and adapted them to students. Tables 1 and 2 give the original items and adapted items used in this study. In most cases, the items were adapted by rewording job titles (e.g., "general manager" was changed to "administrators and faculty") or outcomes (e.g., "rewards" was changed to "grades"). We also added two new items to the group of questions tapping procedural justice, that the committee perceived as reflecting some special aspects of university life (i.e., fair access to classes, fairness of formal policies) believed to be important to students.

RESULTS

Analyses of the data in this study were conducted utilizing SPSS. The plan was to factor analyze the two groups of items (commitment, fairness) to investigate whether the measures conformed to patterns previously found in the work organization literature. Because of the exploratory nature of this study, principal components analysis was deemed appropriate (Tabachnik and Fidell, 19). Since similar factors in studies in work organizations have been found to be significantly correlated, an oblique rotation was selected. A priori, we selected a cutoff factor loading of .45 for including an item in a factor.

Respondents

Overall, complete data were obtained from 585 students. These represented graduating seniors from all four colleges in the university: college 1, 174 students; college 2, 192 students; college 3, 256 students; college 4, 27 students. The response rate for college 4 was significantly lower than the other three.

In 1999, responses were obtained from 237 students. With improvements in the process of communicating with faculty and obtaining their cooperation, an additional 413 were obtained in 2000.

Respondents averaged 23.6 years old, and were composed of 367 females (58.8%) and 268 males (41.2%). Ninety-one percent (378) reported their ethnicity as Caucasian.

Factor Analysis – Commitment Items

As discussed above, in the work organizations literature, previous studies have yielded three factors within the general concept of commitment: affective commitment (AC); calculative commitment (CC); and moral obligation (MO).

A principal components analysis was conducted of the ten items measuring commitment. Table 3 gives these results. The factor structure that appears in work organizations was not replicated here, as only two factors arise in these data. Although the AC and CC items separated as predicted, the MO items did not form a separate factor, and two MO items loaded on the AC scale, while one MO item did not load at .45 on any factor.

Table 3 also gives scale reliabilities for the retained scales. The reliability for the AC scale was high (alpha = .90), but the reliability of the CC scale was borderline (alpha = .62). This was likely to be due in part to the inclusion of only two items in this scale. Because this was an exploratory study, this scale was retained in further analyses.

Factor Analysis – Fairness Items

In the work organizations literature, three types of justice or fairness have been identified: distributive justice (DJ), procedural justice (PJ), and interactional justice (IJ). We factor analyzed the data from students to ascertain if this same factor structure was replicated here.

Table 4 gives the results of a principal components analysis of the fourteen items tapping justice. The factor structure of fairness items in work organizations was repeated in the student data, with three clear factors arising for DJ, PJ, and IJ. All items loaded on the factor that was intended. When the items within each factor were combined into scales, the resulting scale reliabilities ranged from .76 (DJ) to .89 (IJ and PJ).

Relationships Between Commitment and Fairness Scales

Table 5 gives bivariate correlations between commitment and fairness scales. All scales are significantly related.

The two commitment scales are correlated at roughly the same level as those reported in the organizational literature. For example, Meyer et al., 1993, reported a correlation of -.191 between affective and calculative commitment to an

organization ($p < .05$; the direction of one of their scales is reversed), comparable to the .124 correlation obtained here.

The justice scales were also correlated in ways similar to those found in the literature on work organizations. For example, Niehoff and Moorman (1993) reported intercorrelations of the three fairness scales ranging from .56 to .85. In the present study, we obtained values of .41 to .70.

We also note that perceptions of fairness had a strong and significant relationship with students' affective commitment to their universities. However, justice perceptions had a weaker and less significant relationship with their calculative commitment.

Discussion and Conclusions

The purpose of this study was to explore whether validated measures of withdrawal-related attitudes taken from research on work organizations, could be adapted to the study of student withdrawal from college. The answer to this question is that most of the measures appear to have promise.

Within the area of commitment, two of the three types of commitment appeared to have close parallels in students to commitment in workers. There was clear support for the existence of affective commitment in students – feelings of loyalty and emotional attachment to the university. There also seemed to exist the attitude of calculative commitment among students, that students are attached to the institution through a recognition that alternatives to staying are too costly. There was no support for the existence of a parallel to the moral obligation type of commitment among students.

Within the area of fairness, all three types of justice appeared to have parallels in students. Students clearly separated their attitudes about the fairness of the rewards and outcomes they received, the fairness of the processes and procedures of the university, and the fairness of the administration of those procedures. This is closely akin to the perceptions of workers. Reliability was high for all three of these scales.

Furthermore, relationships among the commitment and fairness measures were as expected. Studies that allow investigation of possible causal relationship between fairness and commitment would enlighten this possibility.

There are several limitations to the findings of this study. First, the data here are cross-sectional, and no inference about causality should be made. Also, the data here come from college seniors, and college students at other levels may not share their perceptions and mental structures.

Also, the measure of calculative commitment was somewhat weak. Future studies should include additional items that attempt to measure this aspect of the commitment of college students, in an attempt to improve the reliability and validity of the scale developed here.

In summary, these results are promising. It appears that the problem of student withdrawal can be studied in ways similar to those employed in studying employee turnover. Since that is an extensive and well-validated body of knowledge, this is likely to help us understand the sources of student turnover more quickly.

Future studies, however, could build upon these results. In addition to working to improve the measure of calculative commitment, the attitudes and perceptions of students at earlier stages of their college experiences should be investigated to give a more realistic picture of these constructs at a time when students are more likely to be considering leaving college. Ideally, longitudinal studies of students' attitudes and perceptions could be conducted to explore causal relationships between fairness perceptions, commitment, and outcomes such as dropping out. Finally, studies that compare matched samples of stayers and dropouts can also possibly illuminate the roles of these variables in student attrition.

In the meantime, university faculty and administration should continue to be aware of the importance of understanding a student's emotional attachment to an institution. Further, they should be cognizant of the possible effect of student's perceptions of the fairness of their actions and procedures on the retention of their students, through their effects on students' commitment to their universities.

Table 1. Original (Meyer and Allen, 1993) and Adapted Items: Commitment

Construct	Original Items	Adapted Items
Affective commitment	• I do not feel a strong sense of "belonging" to my organization (reverse scored). • I do not feel "emotionally attached" to this organization (reverse scored). • I do not feel like "part of the family" at this organization (reverse scored). • I would be very happy to spend the rest of my career with this organization.	• I feel strong sense of "belonging" to this university. • I feel "emotionally attached" to this university. • I feel like "part of the family" at this university. • If I could make my college choice over again, I would choose this university.
Calculative commitment	• If I had not already put so much of myself into this organization, I might consider working elsewhere. • Right now, staying with my organization is as much a matter of necessity as desire • Too much of my life would have been disrupted if I wanted to leave my organization now.	• If I had not already put so much of myself and my time into this university, I might consider attending school somewhere else (reverse scored). • Once I started at this university, staying here was as much a matter of necessity as desire. • Too much of my life would have been disrupted if I had decided to leave this university.
Moral obligation	• This organization deserves my loyalty. • I owe a great deal to my organization. • I do not feel any obligation to remain with my current employer (reverse scored).	• This university deserves my loyalty. • I owe a great deal to this university. • Once I started at this university, I felt an obligation to remain.

Table 2. Original (Niehoff and Moorman, 1993) and Adapted Items: Commitment

Construct	Original Items	Adapted Items
Distributive justice	• I think that my level of pay is fair. • Overall, the rewards I receive here are quite fair. • I consider my work load to be quite fair.	• The grades I received at this university were fair, compared to other students. • The grades I received were fair and based on my work. • The workload at this university was fair.
Procedural justice	• Job decisions are made by the general manager in an unbiased manner. • Employees are allowed to challenge or appeal job decisions made by the general manager. • My general manager clarifies decision and provides additional information when requested by employees. • My general manager makes sure that all employee concerns are heard before job decisions are made. • All job decisions are applied consistently across all affected employees. • All job decisions are applied consistently across all affected employees.	• Decisions made by administration and faculty at this university are made in an unbiased manner. • Students were allowed to challenge or appeal decisions made by administrators or faculty. • Administrators and faculty clarify decisions and provide additional information when requested by students • Administrators and faculty make sure student concerns are heard before making decisions. • At this university, decisions are applied consistently across all affected students. • At this university, decisions are applied consistently across all affected students. • Formal procedures and policies at this university are fair. • My access to faculty, courses, and resources at this university was fair.
Interactive justice	• When decisions are made about my job, the general manager is sensitive to my personal needs. • When decisions are made about my job, the general manager deals with me in a truthful manner. • When making decisions about my job, the general manager offers explanations that make sense to me.	• When decisions were made about me, administrators and faculty were sensitive to my personal needs. • When decisions were made about me, administrators and faculty dealt with me in a truthful manner. • When making decisions about me, administrators and staff offered explanations that make sense to me.

Table 3. Items, Factor Loadings, and Scale Reliabilities: Commitment Items

Item	Factor Loading	Factor/ Scale Name	Scale Reliability (alpha)
47. I feel like "part of the family" at this university.	.89	Affective commitment	.90
45. I feel a strong sense of "belonging" to this university	.89		
46. I feel "emotionally attached" to this university.	.87		
51. This university deserves my loyalty.			
52. I owe a great deal to this university.	.85		
48. If I had not already put so much of myself and my time into this university, I might consider attending school elsewhere (reverse scored).	.80 -.53		
50. Too much of my life would have been disrupted if I had decided to leave KU.	.85	Calculative commitment	.62
49. Once I started at this university, I felt an obligation to remain.	.82		

Table 4. Items, Factor Loadings, and Scale Reliabilities: Fairness Items

Item	Factor Loading	Factor/ Scale Name	Scale Reliability (alpha)
54. The grades I received at this university were fair, compared to other students.	.86	Distributive justice	.76
15. The grades I received were fair and based on my work.	.74		
55. The workload at this university was fair.	.70		
57. Formal procedures and policies at this university are fair.	.85	Procedural justice	.89
58. Decisions made by administration and faculty at this university are made in an unbiased manner.	.79		
59. Administrators and faculty make sure that student concerns are heard before making decisions.	.72		
60. Administrators and faculty clarify decisions and provide additional information when requested by students.	.70		
56. My access to faculty, courses, and resources at this university was fair.	.79		
61. At this university, decisions are applied consistently across all affected students.	.54		
64. When decisions were made about me, administrators and faculty dealt with me in a truthful manner.	.89	Interactive justice	.89
63. When decisions are made about me, administrators and faculty were sensitive to my personal needs.	.87		
65. When making decisions about me, administrators and staff offered explanations that make sense to me.	.83		
62. Students were allowed to challenge or appeal decisions made by administrators or faculty.	.61		

Table 5. Correlation Matrix

Variable	1	2	3	4	5
1. Affective commitment	1.00				
2. Calculative commitment	.12**	1.00			
3. Distributive justice	.37**	.16**	1.00		
4. Interactive justice	.44**	.11**	.41**	1.00	
5. Procedural justice	.54**	.09*	.55**	.70**	1.00

*** p < .05; ** p < .01.**

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AN INTERINDUSTRY ANALYSIS OF ECONOMIC VALUE ADDED AS A PROXY FOR MARKET VALUE ADDED

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ABSTRACT

The financial metric economic value added (EVA) is being used by a variety of companies around the world to help them assess their financial performance. However, there has been speculation that EVA is better suited to traditional manufacturing businesses than the growing number of knowledge-based businesses. This study empirically tests the relationship between capital-intensity and EVA's ability to serve as an effective proxy of market value added. The results do not support the assertion that EVA suffers from any industry-specific bias. They do, however, indicate that, in the majority of the industries studied, the marginal costs of using EVA as a proxy for market value added, instead of a readily available measure like net operating profits after taxes, are not justified by any marginal benefits.

Practitioner interest in shareholder value management has increased dramatically over the last decade. The increased interest stems largely from Stern Stewart consulting's promotion of Economic Value Added (EVA), their trademarked measure of economic profit. As Blair (1997) observes, "The aggressive marketing of EVA hypes it into absurdity from time to time..." Nevertheless, companies such as Coca-Cola, Briggs and Stratton, Monsanto, Equifax, and Unilever in the U.S.; Lloyds and the Burton Group in the UK; and Veba and Siemens in Germany are using EVA, or a similar measure, to help them gauge their financial performance.

While practitioners have embraced EVA, academicians have conducted few empirical studies on its ability to serve as a proxy for market-generated numbers. The results of the studies that have been conducted are mixed, and none of them compare the effectiveness of EVA at the industry level. This paper tests EVA's ability to proxy for market value added (MVA) across fifty-six industries.

EVA AND MVA DEFINED

EVA is Stern, Stewart & Co.'s trademarked name for economic profit. A firm's EVA for any year (t) is equal to the product of its economic book value of capital (C) at the beginning of the year and the difference between its return on capital (r) and its cost of capital (k):

$$(1)\ EVA_t = (r_t - k_t) \times C_{t-1}$$

A more intuitive way to think of EVA is as the difference between a firm's net operating profit after taxes (NOPAT) and its total cost of capital :

$$(2)\quad EVA_t = NOPAT_t - (k_t \times C_{t-1})$$

Stern Stewart reports that, when calculating EVA for their clients, they make up to 164 non-U.S. GAAP adjustments. These adjustments are intended to convert accounting profit into "an estimate of economic profit (Stewart 1998)." Some examples include capitalizing R&D and amortizing it, and adding goodwill back to the balance sheet.

While EVA is an accounting-based, single period measure of corporate performance, MVA is a market-generated number calculated by subtracting the capital invested in a firm (C) from the sum (V) of the total market value of the firm's equity and the book value of its debt:

(3) $$MVA_t = V_t - C_t$$

MVA is a cumulative measure of the value created by management in excess of the capital invested by shareholders. Although the calculation of MVA utilizes the book value of capital, which is subject to inflationary distortions, it provides an excellent measure of the company's ability to create wealth. Stern Stewart's Ehrbar (1997) agrees saying, "there is one measure, Market Value Added (MVA), that captures all the dynamics of corporate performance."

EVA is being used to design compensation schemes, make capital budgeting decisions, analyze securities, value companies, and measure corporate and divisional performance. We are focusing on EVA's ability to proxy for MVA because one of its primary attractions is its ability to proxy for market-generated numbers when none are available, such as at the divisional level. While there are numerous consulting firms marketing their own measures of economic profit,[1] we focus on EVA because it is the one that has received the most attention and because data is readily available from Stern Stewart.

LITERATURE REVIEW

Despite the acceptance of EVA among some of the world's largest companies and the widespread coverage of EVA by the business press, the academic literature on EVA is still very underdeveloped. The papers that have been published generally fall into one of four categories. First, there are the articles that, like the previous section of this paper, explain what EVA is and how it is being applied (see for example: O'Hanlon and Peasnell (1998), Barfield (1998), Delves (1998), McElroy (1998), Burkette and Hedley (1997), Spero (1997), Dillon and Owers (1997), Stern, Stewart, and Chew (1995), Birchard (1994), Rutledge (1993), and Thackray (1995)).

The second category of articles examines the non-U.S. GAAP adjustments made by Stern Stewart when calculating EVA. For example, McIntyre (1999) documents the difficulty of estimating the future benefits of adjustments like those that capitalize and amortize outlays such as R&D and advertising. He also illustrates the resulting uncertainty as to whether or not such adjustments move EVA closer to actual value added or further away. Young (1999), comes to the clear conclusion that "most companies that adopt EVA are probably better off making no adjustments at all."

[1] Some examples include KPMG Peat Marwick's Economic Value Management (EVM), Boston Consulting Group's Cash Flow Return on Investment (CFROI), and Marakon Associate's Discounted Economic Profits (EP).

The third category of articles debates the merits of EVA without any empirical testing. Instead, anecdotal evidence regarding the value of implementing a value management system is examined in light of the financial and psychic costs. For example, while Tully (1993) calls EVA "the real key to creating wealth," others like Spero (1997) and Thackray (1995) point out the high cost of implementing such a system and the frustration suffered by managers who cannot see the connection between their day-to-day decisions and the new financial metrics. Saint (1995) cautions financial managers that "you'd have to show that results including added economic value are significantly different from those incorporating available financial measures before you start using added economic value."

The articles in the fourth category are most relevant to this study because they report the results of various empirical tests used to measure EVA's ability to estimate market-generated numbers. Most of these studies use stock returns as the market-generated variable. Dodd and Chen (1997) compare EVA's ability to explain stock returns using a sample of 6,683 firm years between the years 1983 and 1992 and conclude that the traditional accounting measures residual income and operating income display a greater ability to explain stock returns than EVA. Clinton and Chen (1998) compare EVA's ability to explain stock returns with a host of other "traditionally reported, residual-based, adjusted, and cash-based" measures and report that EVA is the only measure that does not exhibit a consistent association with stock returns.

Utilizing tests of incremental information content, Biddle, Bowen, and Wallace (1997) find no evidence to support Stewart's (1991) claims that EVA dominates earnings in relative information content, on the contrary, they find that earnings generally outperfom EVA in this capacity. Lehn and Makhija (1996) examine the correlations for 241 firms, over four years, using data on stock market returns, EVA and MVA (expressed as returns on equity), and traditional ROA, ROE, and ROS measures. They conclude that EVA has a "slight edge as a performance measure."

In a letter to the editor of *Management Accounting*, Stewart (1998) criticizes studies that seek to determine EVA's ability to estimate value added by measuring its ability to explain *stock returns* calling them "meaningless and unimportant for the purposes of validating EVA". Rather, Stewart argues, it is EVA's ability to proxy for *MVA* that is important. Ross (1997) agrees saying "MVA is a far more revealing figure than a simple rise in total market capitalization, because the latter fails to consider the money investors put up."

The first empirical evidence of EVA's ability to proxy for MVA was provided by one of the developers of EVA, G. Bennett Stewart, III in his book *The Quest for Value*. Stewart reports an R-squared of 0.97 between changes in EVA (ΔEVA) and changes in MVA (ΔMVA) for 25 *groupings* of firms over the two-year period 1987-88. And, in their 1995 article, Stern, Stewart, and Chew report that changes in EVA over a five-year period explained 50% of the change in MVA over the same period. Thomas (1993) of BCG-Holt, which advocates an alternative measure called Cash Flow Return on Investment (CFROI), calculates an R-squared between MVA and EVA of just 4% for the 1000 firms in the Stern-Stewart 1000 database in 1988. After removing thirty-one "extreme" outliers, he finds the R-squared increases to 27%.

Kramer and Pushner (1997) compare EVA's ability to proxy for MVA and changes in MVA to the traditional accounting measure net operating profits after taxes (NOPAT) over 8,855 firm years. They find no clear evidence that EVA is the best proxy for MVA and that the market seems to be more focused on earnings than EVA.

Despite these mixed results, one thing that all of these articles have in common is that they are conducted at the aggregate level. No study to date has compared the effectiveness of EVA across industries. Nevertheless, there has been speculation that measuring EVA may be less useful in certain types of industries. Gary Hamel , a "corporate strategy guru,"[2] doubts that EVA's focus on the cost of capital will be as important in the types of industries common in an information economy:

> In an emerging knowledge economy, capital efficiency is even less a wealth driver. In the industrial economy, capital was everything. In the knowledge economy, it often means literally nothing, especially to companies like Microsoft and Amgen whose assets walk out the door every night (p.232).

Richard Barfield (1998) echoes this sentiment:

> Shareholder value added is much more at home in its heartland of traditional manufacturing businesses with tangible assets, than in today's businesses where intangible assets are king. The powerful engines of shareholder value growth are the intellectual capital, information systems and technology options. These do not appear on the balance sheet (p. 41).

[2] Fortune August 4, 1997.

This paper answers the question: Does the level of capital-intensity affect EVA's ability to serve as an effective proxy for market value added? In the process of answering this question, we are also able to test, at the industry level, Stewart's (1991) assertion that EVA is the "internal measure of operating performance that best reflects the success of companies in adding value to their shareholders' investments."

METHODOLOGY AND RESULTS

Our database, the Stern Stewart 1000 (SS1000) from 1978-1996, was purchased from Stern Stewart.[3] The SS1000 contains annual data on EVA, MVA, and various other accounting measures for 1,000 large, non-financial U.S. firms. We grouped the firms of the SS1000 into one of 56 industries according to the Standard & Poor's industry classification codes provided with the SS1000. The resulting list of industries and the number of firms in each industry are listed in Exhibit 1. (See Exhibit 1).

Levels of MVA

Since our objective is to determine if the level of capital-intensity affects the ability of EVA to serve as an effective proxy for MVA, we first need a measure of the strength of the relationship between EVA and MVA on an industry level. Using SAS, we performed ordinary least squares regressions for each firm (j) over every year (t), within each industry (i), to determine the strength of the relationship between the levels of EVA and MVA for that industry.

$$(4) \qquad MVA_{jt} = a + bEVA_{jt} + e$$

The industry-specific r-squared's (R^2_i) from these regressions represent the strength of the relationship between EVA and MVA within each industry over the period 1978-1996. We also regressed MVA on NOPAT in order to see if the results of Kramer and Pushner (1997) held up at the industry level or if those aggregated results were unduly influenced by a few industries.

$$(5) \qquad MVA_{jt} = a + bNOPAT_{jt} + e$$

The resulting test statistics appear in Exhibit 2. EVA is considered a superior proxy if $R^2_{MVA/EVA} > R^2_{MVA/NOPAT}$ and the sign of the coefficient on EVA is positive. This turned out to be the case in only thirteen of the fifty-six industries studied. Therefore, in the majority of the cases,

[3] The most current year of the SS1000 also appears annually in the *Journal of Applied Corporate Finance*, published by Stern Stewart & Co.

we found no marginal benefit to using EVA, instead of a readily available financial measure like NOPAT, as a proxy for MVA. (See Exhibit 2).

As Saint (1995), Thackray (1995), Spero (1997), and Kramer and Pushner (1997) point out, the marginal costs involved in calculating EVA and educating employees and analysts as to its meaning are significant. The results of this study indicate that, in the majority of industries, the marginal benefits of using EVA as a proxy for MVA, as opposed to a readily available measure like NOPAT, are not significant enough to justify the marginal costs. These industry-level results are consistent with the aggregate results reported by Kramer and Pushner (1997).

Turning to the question of whether or not the level of capital-intensity affects the ability of EVA to serve as an effective proxy for MVA, we used Compustat PC Plus to find the fixed asset turnover ratio (FAT) of each firm in the SS1000. The FAT ratio is then used as an indicator of capital-intensity. A low FAT is indicative of a more industrial business with large amounts of tangible assets, while a high FAT suggests a more knowledge-based business. These firm-specific FAT's were then used to calculate the median fixed asset turnover ratio of each industry (FAT_i). [i] Next, using ordinary least squares, we regressed the industry-specific r-squared's against the industry-specific median fixed asset turnover ratios in order to test for any relationship between the ability of EVA to serve as proxy for MVA, and the level of capital intensity.[4]

$$(6) \qquad R^2_i = a + bFAT_i + e$$

These results are shown in Exhibit 3. They indicate that EVA's ability to proxy for MVA is not FAT-dependent. Therefore, we found no support for the conjecture that the performance of knowledge-based businesses is less likely to be captured by EVA[ii]. (See Exhibit 3).

In order to control for any extreme volatility in market values, we conducted weighted least squares regressions with the inverse of the variance of MVA as the weights. EVA still outperformed NOPAT as a proxy for MVA in only twenty-four of the fifty-six industries. Also, weighting did not change the conclusion that EVA's ability to reflect the financial performance of a company is not dependent on the company's degree of capital intensity (see Exhibit 3).

[4] Three extreme outliers (food distribution, drug distribution, and industrial distribution services) were omitted from the sample when regressing the fixed asset turnover ratios against industry R^2's.

In the non-standardized models, large firms are given more weight in the regression because of the squaring of the error. Therefore, to control for size, we standardized all of our key variables (as advocated by Stewart (1991)):

$$(7) sMVA_{jt} = (MVA_{jt} / C_{jt}) x100$$

$$(8) sEVA_{jt} = (EVA_{jt} / C_{jt-1}) x100$$

$$(9) sNOPAT_{jt} = (NOPAT_{jt} / C_{jt-1}) x100$$

This improved the performance of EVA. Controlling for size, EVA is a superior proxy for MVA in thirty of the fifty-six industries. However, if EVA is the best internal measure of corporate performance, it should be an effective proxy for MVA regardless of size. Controlling for size, we still found no evidence of a relationship between capital intensity and EVA's ability to proxy for MVA (see Exhibit 4).

Changes in MVA

While the level of MVA is important because it represents a cumulative measure of wealth creation, changes in MVA (ΔMVA), which represent *incremental* gains or losses in shareholder wealth, are also of interest, especially when designing compensation schemes. Stewart (1991) agrees, "Changes in MVA over a period of time are likely to be as useful as the levels of MVA (if not more so) in assessing a company's performance." The industry-level results presented in Exhibit 5 show that EVA outperformed NOPAT as a proxy for ΔMVA in only eighteen of the fifty-six industries studied. (See Exhibit 5).

Finally, we regressed the industry-specific r-squared's against the industry-specific fixed asset turnover ratios in order to test for any relationship between the level of capital intensity and EVA's ability to serve as proxy for ΔMVA. These results are presented in Exhibit 6. Again, the OLS and WLS results are of low explanatory power and do not support the contention that the performance of knowledge-based businesses is less likely to be captured by a measure like EVA. (See Exhibit 6).

CONCLUSTIONS AND IMPLICATIONS

Overall, we found no evidence to support the conjecture that EVA is more "at home" in the realm of traditional manufacturing. However, while EVA does not suffer from any industry-specific bias, it is consistently outperformed as a proxy for market value added by NOPAT, a readily

available measure of financial performance. Therefore, in the majority of the industries studied, the marginal costs of using EVA as a proxy for market value added are not justified by any marginal benefits.

There is a need for further research to determine why MVA is tied more closely to profit than EVA. Is it the way EVA is being calculated, with the inherent problems of calculating the cost of capital, or is it the result of analysts' tendency to focus on earnings? Birchard (1994) believes that when considering using EVA as a measure of financial performance, "Wall Street's fondness for traditional analysis is another reason to proceed with care." And as Brossy and Balkcom (1994) point out: "How many analysts covering a company provided earnings estimates for the year? All. How many of those same analysts provide EVA or even free cash flow estimates? Very few."

While the strictly quantitative evidence regarding EVA's effectiveness to proxy for MVA is not encouraging, anecdotal evidence points to the need for further research to determine the behavioral aspects of implementing the EVA management system. While he isn't specific about whether it is positive or negative, William J. Cosgrove, corporate controller at Ford states, "Rest assured it's had quite a behavioral change (Birchard 1994)."

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Exhibit 1
Sample Statistics

Industry Name	Firms	Firm Years	Avg. MVA	Avg. EVA	Avg. NOPAT	Median F.A.T. Ratio
Aerospace	11	182	338.31	-72.726	357.08	6.19
Cars & Trucks	5	80	-5163.2	-651.665	1765.65	4.51
Auto Parts & Equipment	19	247	150.82	-62.821	138.79	4.23
Tire & Rubber	3	57	73.87	-59.899	218.26	3.20
Chemicals	45	677	558.8	-74.361	249.26	2.40
Conglomerates	8	126	4814.32	-57.944	861.07	4.25
Apparel	9	117	837.42	15.859	99.01	11.02
Appliances & Furnishings	26	372	527.47	-15.246	78.62	5.22
Beverages	10	178	4686.51	69.136	418.77	3.12
Personal Care	10	135	2896.16	14.005	335.87	5.06
Tobacco	6	90	5249.97	238.2	924.28	6.27
Glass, Metal & Plastics Containers	4	62	846.88	-41.521	172.31	2.22
Paper Containers	10	116	366.55	-24.955	87.18	1.90
Discount & Fashion Retailing	53	514	1476.29	-121.275	318.08	6.35
Electrical Products	13	188	1067.09	-141.284	238.36	4.83
Electronics	17	229	844.25	-12.966	159.56	5.59
Instruments	10	154	371.68	-47.399	90.31	5.83
Semiconductors	31	346	1122.06	7.895	133.57	2.62
Food Distribution	4	65	737.58	-7.814	112.23	15.11
Food Processing	30	480	1451.96	11.448	205.27	3.77
Food Retailing	17	220	985.05	4.979	150.59	5.25
Coal, Oil & Gas	53	670	641.39	-229.874	619.43	1.08
Petroleum Services	21	260	847.11	-46.3	74.61	1.45
Drug Distribution	12	157	692.26	4.911	118.45	16.28
Drugs & Research	30	414	4542.58	129.895	395.85	2.90
Health Care Services	35	254	750.36	-3.007	97.93	3.95
Medical Products	29	335	1807.87	11.091	180.86	4.60
Building Materials	11	189	790.79	-31.569	98.93	2.96
Eating Places	14	134	1381.04	7.694	159.62	1.96
Hotel & Motel	18	155	687.38	-33.452	94.74	0.70
Other Leisure	16	206	1479.01	-63.927	334.8	3.64
General Manufacturing	18	226	1314.96	-0.742	180.76	4.26
Machine & Hand Tools	9	153	995.96	-22.458	113.99	5.58
Special Machinery	25	381	292.2	-60.541	135.93	5.85
Textiles	13	153	320.46	-7.154	70.64	3.89
Aluminum	5	67	-600.28	-204.303	270.22	1.94
Steel	14	191	-147.81	-225.762	57.94	2.31
Other Metals	17	246	162.68	-45.613	75.46	2.09
Business Machines and Services	11	151	700.72	14.778	82.23	5.43
Computers & Peripherals	33	364	1536.61	-78.35	430.64	10.93
Computer Software and Services	58	473	1951.32	12.753	109.76	8.22

Forest Products	6	95	132.45	-233.394	375.83	1.30
Paper	17	275	285.53	-41.354	176.85	1.22
Broadcasting	27	200	974.14	-124.66	66.11	1.50
Publishing	27	340	1245.93	-10.3	144.5	3.38
Construct. & Eng. Services	5	92	508.81	-123.515	79.17	7.83
Industrial Distribution Services	8	131	604.13	-12.543	84.73	14.29
Pollution Control	5	58	2583.28	-53.645	292.38	1.00
Printing & Advertising	8	78	484.3	7.33	62.01	6.65
Other Services	26	229	565.16	-9.683	46.19	6.82
Telephone Equipment & Services	35	291	750.84	-155.076	530.71	1.58
Telephone Companies	12	169	2977.31	-226.18	1066.73	1.19
Airlines	10	162	241.73	-170.87	176.08	1.91
Railroads	8	118	-280.05	-271.777	514.72	0.46
Transportation Services	12	144	192.47	-48.594	121.28	2.95
Trucking & Shipping	7	108	190.68	-34.31	70.72	0.96
All Industries	996	12304	997.20	-60.91	261.16	4.50

Exhibit 2
Ordinary Least Squares ranked by R^2 on MVA/EVA

	MVA/EVA			MVA/NOPAT		
Industry	Coeff.	t	Adj.R^2	Coeff.	t	Adj. R^2
Tobacco	20.3231	25.56	0.8799	6.4796	30.024	0.9091
Beverages	40.2042	29.025	0.8262	18.9245	20.515	0.7011
Semiconductors	15.7132	31.892	0.7465	10.4498	41.671	0.831
Drugs & Research	25.3894	34.479	0.742	13.0037	53.016	0.87
Medical Products	28.5223	23.631	0.6253	12.2402	44.009	0.8517
Business Machines and Services	23.8594	13.948	0.5634	8.2989	15.512	0.6119
Computer Software and Services	23.3234	24.219	0.5537	19.6183	32.353	0.6814
Health Care Services	10.9453	15.209	0.4765	6.0661	27.062	0.7385
Food Processing	12.4311	19.924	0.4526	3.2568	7.443	0.1012
Eating Places	49.4421	10.39	0.4457	9.1354	33.311	0.8922
Machine & Hand Tools	31.9106	10.955	0.4392	20.0046	20.842	0.7403
Conglomerates	28.3809	9.568	0.4201	8.7371	26.098	0.8426
Apparel	21.1231	8.929	0.4043	12.2565	12.737	0.5774
Printing & Advertising	15.6785	6.999	0.3839	9.1568	19.04	0.8225
Computers & Peripherals	5.1146	13.996	0.3493	3.2096	17.759	0.458
Broadcasting	-2.6432	-9.874	0.3266	3.9566	9.976	0.3235
Food Retailing	11.1097	10.127	0.3168	6.6672	14.108	0.4703
Cars & Trucks	1.4655	5.645	0.281	-0.9619	-3.342	0.1091
General Manufacturing	13.3602	8.711	0.2497	8.3885	27.283	0.7637
Industrial Distribution Services	4.6405	6.217	0.2246	5.4852	10.425	0.4511
Food Distribution	11.0137	4.169	0.2038	7.5332	6.082	0.3564
Tire & Rubber	2.9798	3.674	0.1825	-1.2974	-2.423	0.08
Paper	5.147	7.76	0.1777	5.4722	12.292	0.3523
Building Materials	12.3305	5.791	0.1475	16.9338	15.043	0.5412
Other Metals	1.7998	6.474	0.1431	0.2993	1.06	0.0005
Auto Parts & Equipment	1.5008	6.264	0.1345	-0.0248	-0.142	-0.0039
Petroleum Services	5.157	6.281	0.1293	8.2108	22.162	0.6508

Textiles	6.641	4.854	0.1292	4.3058	7.44	0.2621
Special Machinery	1.4097	7.142	0.1163	1.1373	5.874	0.0804
Electronics	6.341	5.164	0.1012	6.9227	28.984	0.7841
Instruments	2.0572	4.251	0.1004	2.8355	6.884	0.2292
Trucking & Shipping	2.0278	3.302	0.0847	2.2143	2.294	0.038
Publishing	4.2636	5.347	0.0753	8.7027	26.431	0.6717
Railroads	1.5882	3.135	0.0702	-0.2093	-0.577	-0.0057
Other Services	3.8655	4.26	0.0699	9.1662	15.439	0.5057
Paper Containers	1.1336	3.031	0.0665	0.4319	1.125	0.0023
Pollution Control	-8.4167	-2.194	0.0627	7.4083	11.022	0.6789
Construct. & Eng. Services	0.9847	2.181	0.0396	2.956	3.886	0.1329
Discount & Fashion Retailing	1.6841	4.539	0.0368	3.9071	10.499	0.1739
Aluminum	0.6584	1.737	0.0296	-0.5873	-1.818	0.0337
Glass, Metal & Plastics Containers	-3.6133	-1.626	0.0263	6.1726	5.878	0.3548
Steel	0.5393	2.474	0.0262	0.4064	1.319	0.0039
Transportation Services	1.021	1.797	0.0154	0.9687	2.496	0.0348
Hotel & Motel	1.3654	1.511	0.0083	6.4244	12.052	0.4741
Personal Care	4.3146	1.391	0.0069	10.7816	22.787	0.7921
Appliances & Furnishings	1.2793	1.844	0.0064	5.1082	15.137	0.3751
Other Leisure	1.4541	1.517	0.0063	3.3336	8.121	0.238
Drug Distribution	1.5716	1.362	0.0054	4.9673	9.673	0.3694
Chemicals	-0.5066	-1.979	0.0043	1.922	13.432	0.2085
Coal, Oil & Gas	0.3971	1.61	0.0024	1.1313	9.276	0.112
Telephone Companies	-1.1728	-1.064	0.0008	3.5201	9.87	0.3566
Telephone Equipment & Services	0.2933	0.613	-0.0022	-1.112	-6.666	0.1291
Airlines	-0.144	-0.727	-0.0029	0.3952	1.997	0.0179
Aerospace	-0.3547	-0.622	-0.0034	1.6858	4.269	0.0856
Electrical Products	-0.0595	-0.141	-0.0053	3.7931	6.637	0.1863
Forest Products	0.1567	0.489	-0.0082	0.2221	0.824	-0.0034

Exhibit 3
Levels of Market Value Added

	OLS	WLS
Dependent Variable	$R^2_{MVA/EVA}$	$R^2_{MVA/EVA}$
Intercept	0.1080 (1.743)*	0.0926 (3.343)***
Median FAT	0.0278 (2.054)**	0.0069 (1.136)
R^2	0.0583	0.0055
N	53	53

* Significant at the 0.10 level
** Significant at the 0.05 level
*** Significant at the 0.01 level

Exhibit 4
Standardized Variables

	OLS	WLS
Dependent Variable	$R^2_{SMVA/SEVA}$	$R^2_{SMVA/SEVA}$
Intercept	0.1994 (4.153)***	0.1851 (4.5274)***
Median FAT	0.0056 (0.5356)	0.0012 (0.1479)
R^2	-0.0139	-0.0192
N	53	53

* Significant at the 0.10 level
** Significant at the 0.05 level
*** Significant at the 0.01 level

Exhibit 5
Ordinary Least Squares deltas – ranked by ΔMVA/EVA R^2

	Δ MVA/EVA			Δ MVA/NOPAT		
Industry	Coeff.	t	Adj. R^2	Coeff.	t	Adj. R^2
Semiconductors	8.9449	24.337	0.6411	5.691	24.868	0.651
Beverages	9.6014	15.684	0.5819	4.0476	10.726	0.3932
Conglomerates	9.3618	9.38	0.4123	2.1247	10.026	0.4453
Computer Software and Services	8.7132	15.921	0.3656	6.7062	16.202	0.3738
Machine & Hand Tools	11.2849	8.642	0.3265	6.8311	12.714	0.5138
Health Care Services	4.2146	10.495	0.3237	1.937	10.93	0.3419
Medical Products	5.9241	9.841	0.2316	2.3931	11.165	0.28
Aerospace	-1.8932	-5.902	0.1582	0.1428	0.555	-0.0039
Business Machines and Services	5.1856	5.298	0.1555	1.4496	4.295	0.1061
Tobacco	3.2361	4.005	0.1459	1.0738	4.277	0.1643
Apparel	7.1066	4.332	0.138	3.7342	4.695	0.1594
Drugs & Research	3.7713	7.215	0.1127	2.2607	9.49	0.1814
Publishing	1.8807	5.851	0.0923	0.1177	0.51	-0.0023
Printing & Advertising	2.9756	2.871	0.0903	1.7886	5.188	0.262
Paper Containers	-0.7796	-3.455	0.0889	-0.8886	-4.034	0.12
Steel	-0.3395	-4.16	0.0806	-0.6155	-5.572	0.1391
Aluminum	-0.4976	-2.546	0.0789	-0.0144	-0.082	-0.0158
Forest Products	-0.6721	-2.925	0.0751	-0.4716	-2.382	0.0479
Food Processing	1.4983	6.159	0.0721	0.1499	1.078	0.0003
Chemicals	-0.8462	-6.974	0.0669	0.4666	6.055	0.0509
Eating Places	6.1518	3.068	0.0635	1.3831	5.732	0.2044
Broadcasting	0.6702	3.575	0.0605	-0.5156	-1.795	0.012
Personal Care	2.1283	2.566	0.0406	2.3819	12.138	0.5258
Special Machinery	-0.5265	-4.09	0.0406	-0.1515	-1.205	0.0012
Coal, Oil & Gas	-0.6166	-4.98	0.0354	0.2775	4.28	0.026
Trucking & Shipping	0.8353	2.194	0.035	0.8761	1.436	0.01
Tire & Rubber	-0.9776	-1.59	0.0265	0.0658	0.168	-0.0177
Paper	0.9769	2.772	0.024	1.604	6.319	0.1252

Food Retailing	1.5839	2.416	0.0218	1.1131	3.471	0.0484
General Manufacturing	1.067	2.211	0.0173	1.1657	7.387	0.1951
Airlines	-0.2779	-1.948	0.0172	-0.1461	-0.99	-0.0001
Textiles	1.4735	1.795	0.0149	0.0645	0.171	-0.0066
Telephone Equipment & Services	-0.616	-2.005	0.0113	-0.0686	-0.589	-0.0025
Electrical Products	-0.4047	-1.686	0.01	0.3997	1.096	0.0011
Auto Parts & Equipment	-0.3169	-1.824	0.0096	-0.2372	-2.014	0.0125
Computers & Peripherals	0.5064	1.967	0.0082	0.1542	1.099	0.0006
Pollution Control	1.8442	1.14	0.0055	-0.4847	-0.99	-0.0004
Cars & Trucks	-0.1878	-1.162	0.0044	-0.3053	-1.886	0.0313
Electronics	0.6949	1.386	0.0041	0.9421	4.915	0.0945
Railroads	-0.5165	-1.148	0.0028	-0.3501	-1.125	0.0023
Glass, Metal & Plastics Containers	-1.2061	-1.067	0.0023	1.5314	2.422	0.0739
Hotel & Motel	0.629	1.16	0.0023	0.5526	1.22	0.0033
Industrial Distribution Services	0.2734	1.075	0.0012	0.1983	0.923	-0.0011
Discount & Fashion Retailing	0.0624	0.446	-0.0017	0.0575	0.375	-0.0018
Drug Distribution	-0.431	-0.833	-0.002	0.2444	0.835	-0.002
Appliances & Furnishings	-0.0782	-0.202	-0.0026	-0.1907	-0.796	-0.001
Other Services	0.2888	0.66	-0.0027	1.7304	4.495	0.0831
Instruments	0.182	0.696	-0.0034	0.7371	3.118	0.0543
Other Metals	-0.051	-0.366	-0.0036	-0.2233	-1.671	0.0074
Other Leisure	0.1787	0.49	-0.0038	0.6809	3.928	0.0673
Petroleum Services	0.0737	0.176	-0.0039	0.23	0.767	-0.0016
Building Materials	0.1097	0.147	-0.0053	1.0808	2.003	0.0159
Telephone Companies	-0.166	-0.276	-0.0056	0.8169	3.472	0.0621
Food Distribution	0.7372	0.794	-0.0059	-0.3832	-0.775	-0.0064
Transportation Services	-0.0392	-0.115	-0.0072	-0.2926	-1.246	0.004
Construct. & Eng. Services	-0.0893	-0.237	-0.0105	-2.2133	-4.46	0.1719

Exhibit 6
Changes in Market Value Added

	OLS	WLS
Dependent Variable	$R^2_{\Delta MVA/EVA}$	$R^2_{\Delta MVA/EVA}$
Intercept	0.0620 (1.639)*	0.0231 (3.148)***
Median FAT	0.0066 (0.800)	-0.0025 (-1.551)
R^2	-0.0070	0.0263
N	53	53

* Significant at the 0.10 level
** Significant at the 0.05 level
*** Significant at the 0.01 level

[i] An alternative specification would be to use the mean fixed asset turnover ratio. The median value was used to avoid any extreme variation caused by one or two companies. Since the fixed assets are booked at their purchase price, if any one firm had a particularly new or old capital stock, then their values would skew the mean value of FAT for the entire industry.

[ii] We also did the same analysis excluding industries with negative coefficients on the independent variable. This did not change the results.

STATUS OF THE MULTIDISCIPLINARY PRACTICE IN THE UNITED STATES

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ABSTRACT

The MDP issue has ripened. The accounting profession, the aggressor, is coming hard and fast at traditional turf of the more status quo oriented legal profession. The resolution of the MDP issue has not yet been formalized, but will have far reaching implications for service providers and their clients.

INTRODUCTION

The demand for a combination of professional consulting services has grown exponentially over the past decade because of increasing problems faced by managers. These problems have become more pervasive and more complex due to many factors including increased reliance on foreign markets, adaptation to technology, and tighter labor supplies; at the same time managers must juggle paralyzing financial constraints and imposing political and social expectations[1]. These problems are even more prevalent in small businesses that do not have the resources to possess internal expertise. As a result, consultants are needed to address a broad spectrum of modern business difficulties. Despite an array of market participants, two elite professions have emerged as formidable opponents in search for the top spot on the consulting pyramid: The legal and accounting professions.[2]

Resulting from fierce competition for a bigger piece of the lucrative consulting pie, the aggressor, the accounting profession, is directly challenging traditional rules with respect to the practice of law. The most evident manifestation of this challenge is the emerging multidisciplinary practice. The paper will highlight some history and provide current status of a multidisciplinary practice (MDP) in the United States.

HISTORICAL SETTING

When the American Bar Association (ABA) promulgated the Canons of Professional Ethics in 1908, there were no rules prohibiting lawyers from entering into partnerships with non-lawyers. In 1928, Canons 33[3]and 34[4] were introduced with some controversy. The Model Code of Professional Responsibility, promulgated in1969, continued the prohibition against lawyer and non-lawyer associations.[5] In 1983, the Model Code was replaced by the Model Rules of Professional Conduct[6], which continues the prohibition[7].

The legal profession has remained largely resolute[8] and has primarily sought refuge in the traditional practice of law[9]. On the other hand, the accounting profession has expanded its traditional confines. With much foresight, in 1909 Joseph Sterrett predicted:

> accountancy will merge with other existing professions . . . to form a composite profession including, perhaps, certain classes of work now conducted by engineers and absorbing certain kinds of work now carried on by the legal profession and taking up the burden of that somewhat shadowy individual, the business advisor.[10]

Toward the end of the 20th century, accounting firms began to offer services, styled "consulting services,"[11] and consequently now serve as comprehensive advisors. Do these consulting services include legal services?[12]

CURRENT STATUS

Over the last few years a lot has happened which has increased the tension between the legal and other service professions, especially the accountants.

Before 1989 the accounting profession was dominated by the Big Eight.[13] This group became the Big Six after Ernst & Whinney merged with Arthur Young and Touche Ross merged with Delloite, Hasking and Sells. The Big Six became the Big Five after the merger of Price Waterhouse and Coopers and Lybrand in 1998. Soon approval may come for the proposed merger of KPMG Peat Marwick and Ernst and Young, leaving an accounting oligopoly of four elite service providers. These huge accounting firms are well armed with "billions of revenues that make even the largest law firms appear as specks in the marketplace."[14] The Big Five have been called the world's largest law firms with Ernst & Young and Pricewaterhouse Coopers each employing more than 3,000 lawyers worldwide.[15] The qualitative nature of Big Five growth

is evidenced by their success in recruiting tax partners from leading law firms and prominent government lawyers, and in persuading law students to join their staffs directly after graduation rather than following a more traditional law firm career path.[16]

The legal profession has become quite concerned. The American Bar Association (ABA) created a commission on multidisciplinary practice in August, 1998, with directives to study and report on the extent to which and the manner in which profession service firms operated by accountants and others who are not lawyers are seeking to provide legal services to the public[17].

Most recently the ABA's governing body soundly rejected the idea of permitting lawyers to partner and share fees with non-legal professionals[18].

CONCLUSION

The fundamental issue involved with the delivery of legal services by a multidisciplinary practice is incredibly complex[19]. The MDP phenomenon is one about which there will be much further study, discussion and notoriety. Stay tuned to see how the dust settles!

ENDNOTES

1. See Greg Billhartz, "Can't We All Just Get Along?" Competing for Client Confidences: The Integration of the Accounting and Legal Professions, 17 St. Louis V. Pub. L. Rev 427, (1998).

2. Id. at 428.

3. Canon 33 provided that partnerships between lawyers and other professions or non-professional persons should not be formed or permitted where any part of the partnership's employment consists of the practice of law.

4. Canon 34 prohibited fee splitting with non-attorneys.

5. Disciplinary Rule 3-103(a) provides that a lawyer shall not form a partnership with a non-lawyer if any of the activities consists of the practice of law.

6. The Model Rules of Professional Conduct have now been adopted as the law in most states.

7. Rule 5.4, Professional Independence of a Lawyer, provides:

   (a) A lawyer or law firm shall not share legal fees with a non-lawyer, except that:

   An agreement by a lawyer with a lawyer's firm, partner, or associate may provide for the payment of money, over a reasonable period of time after the lawyer's death, to the lawyer's estate or to one or more specified persons;

   A lawyer who undertakes to complete unfinished legal business of a deceased lawyer may pay to the estate of the deceased lawyer that proportion of the total compensation which fairly represents the services rendered by the deceased lawyer; and

   A lawyer or law firm may include non-lawyer employees in a compensation or retirement plan, even though the plan is based in whole or in part on a profit sharing arrangement.

   (b) A lawyer shall not form a partnership with a non-lawyer if any of the activities of the partnership consist of the practice of law.

   (c) A lawyer shall not permit a person who recommends, employs, or pays the lawyer to render legal services for another to direct or regulate the lawyer's professional judgment in rendering such legal services.

   (d) A lawyer shall not practice with or in the form of a professional corporation or association authorized to practice law for a profit, if:

   A non-lawyer owns any interest therein, except that a fiduciary representative of the estate of a lawyer may hold the stock or interest of the lawyer for a reasonable time during administration;

   A non-lawyer is a corporate director or officer thereof; or

   A non-lawyer has the right to direct or control the professional judgment of a lawyer.

8. See "Tug of War," Int'l. Acct. Bull. 5 (March 25, 1998) which contends that one of the largest detriments to the legal profession is its own resistance to change.

9. The proposed definition of the practice of law found in the ABA Commission on Multidisciplinary Practice Final Report, Appendix A, June 8, 1999 provides:

   "Practice of Law" means the provision of professional legal advice or services where there is a client relationship of trust or reliance. One is presumed to be practicing law when engaging in any of the following conduct on behalf of another:

   (a) Preparing any legal document, including any deeds, mortgages, assignments, discharges, leases, trust instruments or any other instruments intended to affect interests in real or personal property, wills, codicils, instruments intended to affect the disposition of property of decedents' estates, documents relating to business and corporate transactions, other instruments intended to affect or secure legal rights, and contracts except routine agreements incidental to a regular course of business;

   (b) Preparing or expressing legal opinions;

   (c) Appearing or acting as an attorney in any tribunal;

   (d) Preparing any claims, demands or pleadings of any kind, or any written documents containing legal argument or interpretation of law, for filing in any court, administrative agency or other tribunal;

   (e) Providing advice or counsel as to how any of the activities described in subparagraph (a) through (d) might be done, or whether they were done, in accordance with applicable law;

   (f) Furnishing an attorney or attorneys, or other persons, to render the services described in subparagraphs (c) through (e) above.

10. J. Sterrett, "The Present Position and Probable Development of Accountancy as a Profession," J. Acct., Feb. 1909, at 268.

11. The American Institute of Certified Public Accountants defines consulting services in its statement on standards for Consulting Services 5 (1992), as professional services that employ the practitioners' technical skill, education, observations, experiences and knowledge of . . . activities related to determination of client objectives, fact-finding, definition of the problems and opportunities, evaluation of alternatives, formulation of proposed action, communication of results, implementation and follow-up.

12. See "Tug of War," supra note 8, listing "appraisals, financial planning, litigation support, alternative dispute resolution, and . . . international tax practice" as examples of such services now being offered by accounting firms. See also Geoffrey C. Hazard, "The Ethical Traps of Accounting Firm Lawyers," Natl. L.J. Oct. 19, 1998, at A27, describing accountants and other professionals as having sold legal services under different guises.

13. The Big Eight included Arthur Andersen, Arthur Young, Coopers & Lybrand, Deloitte, Hasking & Sells, Ernst & Whinney, KPMG Peat Marwick, Price Waterhouse, and Touche Ross.

14. John Gibeaut, "Squeeze Play," ABAJ, Feb. 1998, at 43.

15. David Seagull, "Rivals Call Law Firms to Account; Tax Advisors Hope to Cross a Line and Compete for Legal Clients," Wash. Post, Nov. 12, 1998 at F01.

16. ABA Commission on Multidisciplinary Practice, Updated Background and Informational Report, Dec. 15, 1999.

17. See "ABA Commission on Multidisciplinary Practice," Website at http://www.abanet.org/cpr/multicom.html.

18. American Bar Association, Recommendation, July, 2000 provides:

    RESOLVED, that each jurisdiction is urged to revise its law governing lawyers to implement the following principles and preserve the core values of the legal profession:

    1. It is in the public interest to preserve the core values of the legal

profession, among which are:

(a) The lawyer's duty of undivided loyalty to the client;
(b) The lawyer's duty competently to exercise independent legal judgement for the benefit of the client;
(3) The lawyer's duty to hold client confidences inviolate;
(4) The lawyer's duty to avoid conflicts of interest with the client; and
(e) The lawyer's duty to help maintain a single profession of law with responsibilities as a representative of clients, an officer of the legal system, and a public citizen having special responsibility for the quality of justice.
(6) The lawyer's duty to promote access to justice.

2. All lawyers are members of one profession subject in each jurisdiction to the law-governing lawyers.

3. The law governing lawyers was developed to protect the public interest and to preserve the core values of the legal profession, that are essential to the proper function of the American justice system

4. State bar associations and other entities charged with attorney discipline should reaffirm their commitment to enforcing vigorously their respective law-governing lawyers.

5. Each jurisdiction should reevaluate and refine to the extent necessary the definition of the "practice of law."

6. Jurisdictions should retain and enforce laws that generally bar the practice of law by entities other than law firms.

7. The sharing of legal fees with non-lawyers and the ownership and control of the practice of law by nonlawyers are inconsistent with the core values of the legal profession.

8. The law governing lawyers, that prohibits lawyers from sharing legal fees with nonlawyers and from directly or indirectly transferring to nonlawyers ownership or control over entities practicing law, should not be revised.

FURTHER RESOLVED that the Standing Committee on Ethics and Professional Responsibility of the American Bar Association shall, in consultation with state, local and territorial bar associations and interested ABA sections, divisions, and committees undertake a review of the Model Rules of Professional Conduct ("MRPC") and shall recommend to the House of Delegates such amendments to the MRPC as are necessary to assure that there are safeguards in the MRPC relating to strategic alliances and other contractual relationships with nonlegal professional service providers consistent with the statement of principles in the Recommendation.

FURTHER RESOLVED that the American Bar Association recommends that in jurisdictions that permit lawyers and law firms to own and operate nonlegal businesses, no nonlawyer or nonlegal entity involved in the provision of such services should own or control the practice of law by a lawyer or law firm or

otherwise be permitted to direct and regulate the professional judgment of the lawyer or law firm in rendering legal services to any person.

FURTHER RESOLVED that the Commission on Multidisciplinary Practice be discharged with the Association's gratitude for the Commission's hard work and with commendation for its substantial contributions to the profession.

19. See, "MDP loses the first round in the ABA," California Bar Journal, Aug. 2000.

THE REALITIES OF RETIREMENT ANNUITIES: A TAX AND FINANCIAL PLANNING PERSPECTIVE

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ABSTRACT

Over the past forty years, millions of middle class individuals have begun to use annuities as part of their retirement/estate planning. Information regarding the annuity has, in most cases, been left to the insurance/investment firm who issued the annuity contract. The result has often been biased and/or improper guidance to the annuitant. This has led to a condition where many unsuspecting Americans could suffer potentially severe financial problems as they begin to draw funds from their annuities during retirement years. Estates and beneficiaries can experience difficulties with the loss of undistributed amounts, which are likely to remain in the hands of the insurance/annuity company at the time of the death of the annuitant. Others who are beneficiaries will discover that unlike other forms of inheritance, they must pay federal income tax when they receive annuity survivor payouts. The goal of the author is to clarify seemingly confusing issues related to the use of annuities, and to offer some useful recommendations. This topic has been explored using current literature, and tax law references, to include several sections of the Internal Revenue Code, as well as related Treasury Regulations.

INTRODUCTION

The savings/investment device that we call an annuity is derived from the Latin word, "annus," which means *year*. The earliest forms of annuities were mechanisms that involved either yearly payments, or payments that were computed in terms of yearly amounts. As this device has become increasingly popular since the 1950s, the term annuity has come into standard usage. Annuities, today, rarely reflect yearly payments. The use of the term in the disciplines of Accounting and Finance, has been adapted to reflect a steady stream of cash payments, and this is a modern construct.

In current application, as an investment/savings vehicle, annuities are plans that are sold by annuity issuing entities, usually life insurance companies, to the purchaser/annuitant. Under such plans, the annuitant pays either a lump sum or a series of payments to the issuer. In turn, the issuer guarantees a series of cash payouts to be made by it, to the annuitant for a term which is defined in the annuity agreement. In some cases, the term of the payouts to the annuitant will be for a defined number of years. In other cases, the payouts will be made for the remainder of the annuitant's life, a "life annuity." In many cases, the annuitant can specify a beneficiary who will continue to receive payments when the annuitant deceases.

The manner of holding/investing the accumulated amounts that are in the annuitant's account can vary. The most common applications are: (1) the accumulated amounts are held in a general account of the annuity company. These amounts would be invested in low risk vehicles, such as certificates of deposit, or U.S. Treasury Notes/Bonds. In this approach, the accumulated funds of many annuitants are pooled into one general investment account. (2) A different approach has become popular since the advent of the IRA and other forms of retirement investment vehicles, the *variable annuity*. In this type of account, each annuitant's account is separate. In that account, the accumulated funds of the annuitant are invested in stock or bond mutual funds. The designation of the which mutual funds are to be used for a specific annuitant, will usually be decided on by that annuitant.

The growth/appreciation of the annuitant's account will occur tax deferred under current federal tax law. The annuitant will pay federal income taxes on a portion of the amounts received from the annuity company during the payout phase of the agreement. If the agreement contained designations of beneficiaries, the beneficiaries will also encumber federal income taxes as they receive payouts from the annuity company. This latter point is an aspect of tax law respective to annuity agreements that is not normally understood by annuitants.

THE ESSENTIAL PROBLEMS WITH ANNUITIES

The issues of concern regarding annuities fall into three fundamental categories: (1) the grab by many annuity companies of undistributed balances, (2) the tax grab by the IRS (which involves the combination of estate taxation of the annuitant/decedent's estate which must include the value of the annuity account, and income taxation of the decedent's

beneficiaries for payouts that they receive from the decedent's annuity), and (3) the complexities resulting from (1) and (2) regarding intelligent estate planning for the annuitant.

Undistributed Balances

Item (1) relates to the legal disposition of undistributed balances that may exist at the end of the annuity payout stream. Annuity companies must present the relevant details of the annuity agreement to their clients/annuitants. However, the right of the company to take over undistributed balances is not usually understood by most annuitants. Also, it is appropriate at this point to clarify, "undistributed balance." This is the combined amount that has been contributed by the annuitant and growth (interest, capital appreciation, etc.) on the contributed amount that exists in the annuitant's/annuitant's estate account when the annuitant, or successively, the beneficiary has received the defined number of payouts. What if the beneficiary deceases, can he/she designate a beneficiary of his/her estate, such that the sequential beneficiary can continue to receive amounts accumulated but not distributed to beneficiary #1 before his/her death? These are issues with seemingly simple answers. However, complexities lay beneath the surface.

Unfortunately, the most common answers are:

- If amounts in the annuitant's account are undistributed at the end of the contract payout stream, payments cease. In essence, the annuity company keeps whatever remains.
- If the contract allowed for designation of a beneficiary, any undistributed balance at the end of the sequential payout stream, to the beneficiary, will stop. Once again, the annuity company will keep the remainder.
- Because most annuity contracts that allow for beneficiary designation do so with only one generation of beneficiary allowed, the designation of sequential beneficiaries, in the will or other device of beneficiary #1, will not be honored. The receipt of payouts by beneficiary #1 are in context of the agreement between the original annuitant and the annuity company. Unless sequential beneficiaries were designated in the original agreement, it is difficult to justify further beneficiary designations. The key point is that unless beneficiary #1 was the rightful owner of the original annuity contract (he/she contributed the funds/premiums that established the account for the original annuitant), beneficiary #1 would not be in privity to that agreement. Therefore, he/she would have no right or right of claim to modify the agreement.

Annuity agreements might be best viewed as a game of chance where the players are the annuitant and the annuity company. Will the annuitant live long enough to re-coup his/her contributions and/or appreciation thereof through the payout stream? Generally both parties, the annuitant and the annuity company understand that if the annuitant and his/her beneficiary decease before the account is exhausted, the company will win. It will keep the remainder. On the other hand, if the annuitant and his/her beneficiary live beyond the original actuarial projections that were built into the contract, the annuitant/beneficiary win. Whether one might consider either of these scenarios to be unfair, they reflect the rules of the game. However, the game is played by some who do not fully understand that they and their loved ones could loose substantial wealth, if the annuity company wins.

To complicate these concerns, annuities are often created in the process of a retiree determining the manner by which he/she will withdraw funds from his/her employer sponsored pension plan. Also, annuities are often created by the conversion of the following: (1) cash value of life insurance during the lifetime of the insured, (2) life insurance proceeds received by a beneficiary, (3) retirement accounts, such as IRAs, and 401(k)s, (4) savings or other long term investment accounts with a bank or brokerage firm, or (6) an amount inherited. Annuities have become a common solution to such problems. These various circumstances have resulted in a virtual proliferation of the annuity. The 403(b) retirement account was not mentioned, because in order for a retirement plan to properly qualify under the IRC as a 403(b), it must be structured as an annuity. Clearly, there exists several ways in which annuities can be created. Hence, the disposition of accumulated balances is a significant issue.

Taxation

The other major area of concern is that of taxation. In this regard, it is important to recall that the annuity device discussed in this paper is fundamentally a derivative of life insurance. Therefore, the growth (interest, capital appreciation, etc.) in the annuitant's account occurs on a tax deferred basis. This is similar to the growth of cash value under a life insurance policy. This is simple to understand. However, other issues regarding annuities and taxation are rather complex.

Individuals who own annuities should be concerned and plan appropriately to deal with what appears to be a significant "tax grab" by the U.S. Treasury. This author does not consider each separate aspect of the tax grab to be unfair, relative to other aspects of our tax system. However, in sum, the various phases of the tax grab are considered to be inconsistent with other treatments of other income related items by the Internal Revenue Code.

The tax grab has three phases. Phase #1 (reasonably fair) occurs during the lifetime of the annuitant. He/ she must pay income tax on a portion of each event in the payout stream. The amount taxed is limited to the growth/appreciation component of the account. A portion of each payout that represents the amount originally contributed by the annuitant will not be subject to the income tax. This latter point is consistent with the recovery of capital doctrine. This aspect of the taxation of annuities is not objectionable since it follows the same theme as expressed by similar tax treatments throughout the Code. Income from whatever source (except excludable items) is subject to income tax (IRC Section 61(a)). However, in this paper, this aspect of taxation is considered as Phase #1 of a tax grab, because there is a piling-on effect created by phases 2 and 3.

Phase #2 occurs when the annuitant deceases. The balance in the annuity account becomes subject to estate taxes as part of the annuitant's estate (IRC Sections 72, 2039). This is true in all cases, except when the annuity agreement specifies that the agreement terminates at death, a life annuity. In the event of a life annuity, there technically is no annuity account at death. Therefore, an annuity valuation can not be included in the estate of such a decedent. (Code Sections 2033, 2039)

However, when the annuity is not a life annuity, the balance of the annuitant's account would be subject to two taxation events. These two applications of current tax law comprise the components of the tax grab that appear to be unfair. First, the undistributed balance of the annuitant's account must be included in the gross estate. It is subject to estate taxation. Second, after the death of the annuitant, amounts paid out to his/her beneficiary will be subject to inclusion as gross income on the income tax return of the beneficiary.

Should it be considered as unfair that the undistributed amounts must be included in the gross estate of the annuitant? According to section 2033, all property in which the decedent held the incidents of ownership at the time of death must be included. This section has been held by the courts to be valid regarding such items as life insurance as well as other forms of property. As noted above, annuity agreements are fundamentally life insurance derivatives. Therefore similar treatment applied to both life insurance and annuities is consistent.

However, Phase #3 of the tax grab borders on being blatantly unjust. This phase, as noted, involves the taxation of payouts received by the beneficiary of the annuitant. The tax treatment of these payouts should be compared with two items of note. One, when virtually any item of property is passed on at death, the property received by the beneficiary is excluded from income taxation. This holds with virtually all forms of property received, including the proceeds of a life insurance policy (Code Section 2042). This is significant since annuity payouts to a beneficiary must be taxed on the growth/appreciation portion of each payout amount (Code Section 2039).

When other forms of property (investments, real estate or collectibles, for example) are received by a beneficiary as inheritance, the property is valued for tax purposes at its fair market value at the date of death of the decedent (stepped-up basis) (IRC Section 1014(a)). In essence, the U.S. Treasury forgives any taxation on the increase in value of the property. Further, if during one's lifetime, he/she were to dispose of property held for longer than one year at a gain, long term capital gain tax rates would apply (IRC Sections 1221, 1222). With annuities, the "stepped-up basis" convention is not applied. The beneficiary is taxed on the current market value differential of the payouts, as compared to the actual contributions into the annuity that were made by the annuitant/decedent. With annuities, the U.S. Treasury is not forgiving the growth/appreciation factor as it does with transfers at death of other forms of property. Also, the tax rate applied to the payouts will be the ordinary incremental rate applicable to the beneficiary. The more favorable long term capital gains treatment cannot be applied.

Under current tax law, the rate of estate taxation for the first dollar after consideration of the unified credit, for a decedent would be approximately 37%. If we assume, an annuity plan with a value according to IRC guidelines (Section 72) that is $200,000, the rate of estate tax would be approximately 39% on that $200,000 amount. Regarding the income tax impact on the beneficiary, consider two scenarios. First, a married individual with two children, wages of $60,000, the wife is a homemaker, with a normal range of itemized deductions ($10,000), and he and his wife file a joint return. The tax on this person receiving annuity payouts of $18,000 per year, where $9,000 of this amount is subject to income tax, is additional income taxes of $1,863. (Exhibit A). Second, a single individual with wages of $60,000, itemized deductions of $10,000, and only one dependent (him/herself). Assuming the same $18,000 of annuity payouts received, where $9,000 is taxable, the resulting additional income taxes attributable to the annuity payouts would be $2,520. (Exhibit B) This means that in addition to the value of the annuity account being taxed by an amount of approximately $78,000, as part of the decedent's estate, that there would also exist the yearly income tax consequences to the beneficiaries as noted.

The Survivor as Beneficiary

In order to understand the survivor annuity rules, one should become comfortable with the notion of an "annuity." The term is not precisely defined by the Internal Revenue Code for qualified retirement plan purposes. Because both ERISA

and the IRC place several requirements on pension plans in order that a plan becomes a "qualified" plan, this application of survivor annuity rules is quite important. In this regard, a qualified plan can make periodic distributions directly from its trust to a participant or beneficiary, or the trust can purchase an annuity contract from an insurance company which makes periodic payments directly to the participant or beneficiary.

Generally qualified plans subject to IRC Section 412 (i.e., pension plans including money purchase and target benefit plans) are required to provide benefits to married participants and their spouses in the form of a qualified joint and survivor annuity (QJSA) (or qualified pre-retirement annuity for the surviving spouse (QPSA)) unless the participant, with the consent of the spouse elects otherwise (IRC Section 401(a)(11)). These plans must provide single life annuities to single participants, unless the annuity is declined. Plans not otherwise required to provide a QPSA because they are not subject to IRC Section 412 must require that a married participant's balance (if not distributed prior to death) will be paid to the surviving spouse, unless waived by the spouse.

STRATEGIES

With retirement annuities, such as the 403(b), are there ways to mitigate the grab by the annuity company of undistributed amounts, and the "tax grab" that could affect the estate and/or beneficiaries of the annuitant? A direct answer to this question is that some strategies can be attempted. However, working with 403(b)s and other retirement annuities can be difficult for a few reasons. First, in order to reduce or eliminate the ability of the annuity company to retain undistributed balances, will require cancellation of the annuity contract, and rolling over the balance of the account into a traditional IRA or another qualified retirement plan. Most annuity companies will attempt to discourage this strategy, and this resistance can be problematic.

If a qualified rollover is conducted, all growth/appreciation amounts in the original annuity account will transfer to a traditional IRA (or other qualified plan) without taxation or penalties. Income taxes must be paid when rolling over to a Roth IRA, and this is discussed below. The key is conducting the rollover properly. In a traditional IRA, the transferred amounts would continue to grow on a tax deferred basis. A rollover to a Roth IRA has different tax consequences as discussed below. The significant benefit of the rollover strategy is avoidance of the grab of the undistributed amounts, as discussed above. Also, the annuitant will have greater flexibility in the design of a succession of beneficiaries. Further this general strategy also allows for avoidance of the annuity "tax grab," discussed above.

At the time of death, IRA balances must be included in the gross estate of the decedent (IRC Section 2039). However, the amounts that are passed-on to beneficiaries of the estate will be inherited at "stepped-up value" (IRC Section 1014(a)). Beneficiaries will not be subject to income tax on amounts received, as they would be in the case of annuity payouts.

There are two fundamental strategies that are recommended here. These approaches to dealing with the issues discussed above, should be considered as alternatives to retaining the annuity account. Other strategies are also possible.

- *Rollover the annuity account balance into a traditional IRA.* There will not be taxation on the transfer, and no tax penalties (IRC Sections 401(a)(31), 403(b)(10)). The account will grow tax deferred.
- *Rollover the annuity account balance into a Roth IRA.* The annuitant will pay normal income tax on the growth/appreciation portion of the funds transferred. (IRC Section 408A). Individuals interested in this rollover strategy must be cognizant of certain limitations as noted in IRC Section 408A(c)(3)(B) Once in the Roth IRA, the account will grow tax free. This is significantly different from the tax deferred quality of amounts in a traditional IRA.

Regarding the IRA options, the following is important to consider:
In 1992 massive changes to both the substance and form of IRC Sections 402 and 3405 were enacted, effective for distributions after December 31, 1992. The basic thrust of the changes in IRC Sections 402 and 3405 and the addition of IRC Section 401(a)(31) is to require that there be a nondiscretionary 20% withholding with respect to distributions from qualified retirement plans which are not transferred directly to another qualified retirement plan or an IRA, and to create similar requirements for distributions for Section 403(b) annuities. This was a significant change from the prior law which generally required withholding on distributions from qualified retirement plans, but permitted the participant (or other distributees) to elect out of withholding. The other major change in the noted legislation was eradication of the distinction between a "partial distribution" and a "qualified total distribution." This distinction, was replaced by a mechanism aimed at permitting any distribution which is an "eligible distribution" to be rolled over or directly transferred to an IRA or another qualified retirement plan, as noted above.

A qualified retirement plan must provide that if the distributee (the participant or spouse) of any eligible rollover distribution elects to have the distribution paid directly to an eligible retirement plan and specifies the eligible retirement plan to which the distribution is to be paid (in the form and at the time the plan administrator may prescribe), the

distribution will be made in the form of a direct trustee-to-trustee transfer to the eligible retirement plan specified (Treas. Reg. 1.401(a)(31)-1). An eligible retirement plan for this purpose is an IRA or IRA annuity, a qualified plan (other than a defined benefit plan), or a Section 403(a) annuity. (IRC Section 401(a)(31)(D)). However, a qualified retirement plan is not required to accept a direct transfer.

The decedent's IRA cannot be transferred to a nonspouse beneficiary if such other beneficiary was not properly recorded before death, although part or all of the IRA can be moved to a new IRA in the name of the decedent. However, an individual (or individuals) or a trust may be a designated beneficiary of an IRA (PLRs: 9810031-33, 199903050). The designated beneficiary may receive payments over his or her lifetime or over the lifetime of the beneficiary of the trust, in the event that the primary beneficiary is a trust entity. One technique used for larger IRAs particularly, is to divide the IRA into one IRA for each beneficiary (typically each child). The beneficiary is designated, and on the IRA owner's death, distributions can be made over the life of one beneficiary, without regard to the lives of the other beneficiaries. Also a beneficiary can normally control the investments of his/her IRA.

Effective for distributions after December 31, 1992, IRC Section 403(b)(8) provides that any amounts distributed from a Section 403(b) annuity contract in an "eligible rollover distribution"" may be rolled over to an IRA or another section 403(b) annuity. IRC Section 403(b)(10) requires that a Section 403(b) annuity have distribution requirements similar to those in IRC Section 401(a)(31) for direct rollovers and adds that any amount transferred in a direct trustee-to-trustee transfer in accordance with IRC Section 401(a)(31) will not be includable in gross income for the taxable year of the transfer.

Private Annuities

For those who might plan on purchasing an annuity from an insurance /annuity company, creation of the Private Annuity should be considered. In essence, the potential annuitant will purchase an annuity program from another individual. In doing so, the annuitant will pay/transfer to the issuing party substantial monies or property. The issuing party will, in compliance with the annuity agreement, make payouts to the annuitant for life. At the death of the annuitant, the issuing party will retain all undistributed funds and property. Because this is a life annuity program, there will be no funds/assets from the private annuity to be included in the annuitant/decedent's gross estate.

In order for this idea to be practical, the potential annuitant must have an adult child/children or a trust, or some other individual who can be thoroughly trusted. Further, appropriately experienced legal counsel must be involved to properly draft the annuity agreement in accordance with state law. The agreement must also be compliant with the respective sections of the Internal Revenue Code.

Here is how the Private Annuity works:

1. The property may be removed from the annuitant's estate, saving not only estate taxes but administration expenses as well.
2. If appreciated property is transferred, which is often the case, the gain is not immediately recognized. The transferor, if he had wished to obtain a commercial annuity, would first have had to sell the property and pay tax, and would be left with a smaller amount with which to buy the commercial annuity.
3. If the property is no longer suitable for retention as an investment and diversification of the investment is desired, the obligor may sell the property without necessarily realizing gain if the annuity promised is equal in value to the property transferred.
4. If the present value of the annuity payments equals the value of the property transferred, therefore there will be no gift tax.
5. The annuity payments received will be larger than the yield of the property transferred since part of the payments will be a return of capital.
6. The reportable income factor in the annuity payments will ordinarily produce less tax liability for the annuitant than the tax on the yield of the property transferred.
7. To the extent that income from the property transferred, or substitute property, in the case of a sale, becomes taxable in a lower tax bracket, there can be family income tax savings.
8. To the extent that the annuitant's cash flow is increased and the annuitant can count on the annuity to provide a continuing stream of funds, this may make it possible to develop a gift program that will in turn further reduce estate tax.
9. It permits the owner of a closely held business to transfer interests in it to family members or key employees, keeping the business within the "family," and possibly realizing a better return than on a sale to outsiders, in the sense that the present value of the annuity payments might be worth more.
10. An installment sale within the family may also defer capital gains and, if business property is involved, may keep it "within the family." However, the installment sale gives the seller notes that will be includible in the seller's estate if death occurs before they are paid off. Also, with an installment sale, any recapture income is

taxed in the year of sale, whereas with a private annuity, recapture income is taxed as payments are made.

11. The annuitant is freed of investment and management responsibilities as to the property transferred.
12. It is especially useful to a surviving spouse as a means of disposing of marital deduction property so as to take it out of the surviving spouse's estate. This takes on added importance if business property, or other investment property with high appreciation potential is involved.

As has been shown, the reduction and deferment of taxes may be an important advantage of the private annuity.

Additional Considerations Regarding Private Annuities

1. Appraisal. Get an independent appraisal of the property. This will have a bearing on the economic reality of the transaction for income and gift tax purposes.

2. The annuitant's health. The annuitant's health may be a factor in weighing its economic reality and could adversely affect the obligor's cost basis in determining his tax liability on a sale of the property. A written health report is desirable.

3. Insurance on obligor. The annuitant may want to take out insurance on the obligor. However, no mention should be made of insurance in the basic annuity agreement, as this might be construed as making the obligation "secured," with adverse tax consequences.

4. Insurance on the annuitant. The obligor may want insurance on the annuitant's life.

5. Additional annuities barred. It is wise to bar the obligor by contract from issuing any annuity while one remains in force.

6. Corporate obligor. If a close corporation issues an annuity in exchange for stock and the annuity is worth more than the stock, there may be a claim that the excess value is taxable as a dividend.

7. Grantor trust rules. Where an individual sets up a trust and transfers property to it in exchange for an annuity, there is a risk that the grantor may be taxable on the trust income under the grantor trust rules if the trust income is too closely tied to the annuity payments and is the only source of payment.

8. Valuation of annuity. The value of the annuity generally is determined under tables pursuant to Code Sec. 7520. These tables use an interest rate equal to 120 percent of the federal midterm rate in effect for the month in which the transfer in exchange for the annuity is made. Low interest rates make private annuities even more attractive.

It is also important to consider that this particular strategy, or other strategies, might not be appropriate for everyone who considers the annuity as a component of their financial plan. In this regard, it is noteworthy that even though the private annuity appears to involve an installment sale, adherence to IRC Section 453(b)(1) regarding installment sales would not be correct. The IRS holds that Section 453 is not applicable, and therefore, Section 72 is the reference section for Private Annuity transactions (Malman, Solomon, Hesch, 1994).

The application of IRC Section 72 to Private Annuity sales, has been developed in a series of cases and rulings as an application of cash basis accounting rules regarding a contingent payment obligation. The annuitant will report the gain ratably over his/her life instead of reporting the gain in the year of transfer. Regarding the income tax treatment of the payouts received by the annuitant, each payout has three components. Each must receive different tax treatment, as follows:

- Tax-free return of basis: This follows the recovery of capital doctrine, which is prevalent in tax law.
- Capital Gain: Taxpayer calculates this amount by subtracting his basis from the present value of the annuity account, and dividing the product by his life expectancy. After his basis is fully recovered, the entire payout (except the ordinary income portion) is treated as capital gain.
- Ordinary Income: Taxpayer calculates this amount by subtracting the basis return and the capital gain amounts from the total payout amount.

CONCLUSIONS

As discussed, there are several important applications of the annuity as an investment/savings device. However, its use can be tricky because of the various cautions, including the "tax grab," and the grab of undistributed balances that have been explored in this paper. Clearly, there are pitfalls in annuity usage. But the annuity can also be of great value if overall financial planning considers a broad range of issues. In this regard, it is worthy of note that certain applications of irrevocable trusts, including the QTIP and other forms of trusts, can be used as the designated beneficiary in some annuity agreements. The trust can then distribute the funds to different beneficiaries of the trust in a way designed by the grantor/annuitant. This use of the trust model can be helpful in cases where beneficiary distribution of undistributed balances would otherwise be problematic. It can be useful as the beneficiary designation of an IRA. Recall that the IRA can be of value as the transferee entity in an annuity rollover.

Overall, the annuity provides annuitants with a relatively convenient venue for savings and protecting funds in a tax deferred structure. Some annuitants may find these aspects of convenience and security worth the trades-off, in the form of the potential disadvantages of annuity ownership that have been explored in this paper.

EXHIBIT A

TAX CALCULATION WITHOUT ANNUITY PAYOUTS

Wages	$60,000
Itemized Deductions	(10,000)
Dependency Exemptions (4 X 2,800)	(11,200)
Taxable Income	$38,800

Applicable Tax Rate:
15% on full amount of $38,800

TAX CALCULATION WITH ANNUITY PAYOUTS

Wages	$60,000
Taxable Portion of Annuity Payouts	9,000
Itemized Deductions	(10,000)
Dependency Exemptions (4 X 2,800)	(11,200)
Taxable Income	47,800

Applicable Tax Rate:
15% on first $43,850
28% on remaining $3,950

Tax on $9,000 of annuity payouts is $1,863
(15% X 5,050) + (28% X 3,950)

EXHIBIT B

TAX CALCULATIONS WITHOUT ANNUITY PAYOUTS

Wages	$60,000
Itemized Deductions	(10,000)
Dependency Exemptions	(2,800)
Taxable Income	$47,200

Applicable Tax Rate:
15% on first $26,250
28% on remaining $20,950

TAX CALCULATION WITH ANNUITY PAYOUTS

Wages	$60,000
Taxable Portion of Annuity Payouts	9,000
Itemized Deductions	(10,000)
Dependency Exemptions	(2,800)
Taxable Income	$56,200

Applicable Tax Rate:
15% on first $26,250
28% on remaining $29,950

Tax on $9,000 of annuity payouts is $2,520
(28% X 9,000)

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Sections of the Internal Revenue Code:
- Section 61
- Section 72
- Section 401
- Section 402
- Section 403
- Section 408
- Section 412
- Section 453
- Section 1014(a)
- Section 1221
- Section 1222
- Section 2033
- Section 3039
- Section 2042
- Section 3405
- Section 7520

U. S. Treasury Regulations:
- Regulation 1.401
- Regulation 20.2033
- Regulation 20.2039

Private Letter Rulings (PLRs):
- 9810031
- 9810032
- 9810033
- 199903050

LEADERS, LEADERSHIP CHARACTERISTICS AND THEIR ROLE IN MERGERS, ACQUISITIONS & REORGANIZATIONS

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ABSTRACT

Mergers, acquisitions and reorganizations are a common occurrence in business and are a part of many corporate strategies to increase shareholder wealth. There should be similar styles of leadership for managers that are successful at leading mergers, acquisitions or reorganizations. This investigation researches leaders and their.leadership styles of leaders known for leading firms through mergers, acquisitions and reorganizations. This research looks to identify the characteristics of leaders who were successful and identify the characteristics of those whose leadership style caused problems and negatively impacted the corporate change. Key styles are identified for those successful at leading a company through change. This investigation and its findings can form a beginning basis for further future study of leadership characteristics and their impact on corporate change like mergers, acquisitions and reorganizations. This is not an empirical study but and exploratory study.

LEADERSHIP DURING CORPORATE CHANGE

In the financial press there are regular stories about "Company X is purchasing Company Y in an all stock transaction valued at...", "Company Z has announce a restructuring which will eliminate X-thousand jobs and close Y-plants with an estimated savings of...". These stories make great press and the news is often greeted with a run up in the stock price as Wall Street applauds the move as a hint of increased future earnings. What separates the good from the bad in the realm of mergers, acquisitions or reorganizations? Will the firm, and its stakeholders, reap long-term benefits or will this change provide a short-term solution? In particular, what role does a leader and their leadership characteristics play in the success of corporate changes?

This author believed before researching this topic that there was a relationship between leadership styles and successful mergers, acquisitions and reorganizations. The thought was that a collaborative style with a firm, but fair, leader was more likely to succeed short-term and long-term leading corporate change. This is similar to a Democratic Style of leadership. To contrast that, it was thought a dictatorial approach would cause undue stress during the process of change and negatively impact the firm's ability to reach long-term goals for the company after the merger, acquisition or reorganization. This is similar to an Autocratic Style of Leadership (Pride, et al., 1991).

Business textbooks continue to print snapshots applauding the efforts of Mr. Dunlap while he was CEO of Scott Paper. Brigham et al. (1999) noted how Dunlap enriched himself, by over $100 million, and enriched the shareholders of Scott Paper as he cut the company's payroll and manufacturing then sold what was left to Kimberly-Clark. Dunlap received praise and ink from many corners for his management style that simply looked to increase shareholder value to the potential detriment of other traditional stakeholders of the firm such as employees and the towns in which the firm operated (Byrne, 1999). What the textbooks fail to mention is what happened at Mr. Dunlap's next stop Sunbeam Corp. Sunbeam manufactured home appliances such as mixers, blenders, and gas grills. At Sunbeam Mr. Dunlap used his same tactics of cutting jobs and plants but no suitor emerged to buy the firm. When it became evident Dunlap needed a strategy to grow the firm on its own, his cuts had taken the heart out of the business and he was fired after a few consecutive quarters of poor performance. Many critics felt this was Dunlap's comeuppance and exposed the flaws in his methods of management (Byrne, 1999).

This prompts the thought of what role do leadership styles of leaders play in mergers, acquisitions and restructurings. Each is a different type of change, and is a separate item, but all involve a change to the corporation. Often the hardest task is to integrate dissimilar cultures when merging, or acquiring, and managing the conflicts that arise between the cultures of the new CEO versus that

which is in place prior to their arrival. A CEO will often bring in their own management team, which they've grown accustomed to working with through changes at other firms (Byrne, 1999). Also the goals of the change will impact the leadership and their approach. Is the goal short-term to cut jobs and liquidate or sell off the firm? Is the goal to change the culture with a goal of long-term growth and continued independence of the firm?

In taking a look at leadership through change, this research will begin with a definition of different leadership styles from a management text perspective. To follow will be recent examples of leaders of corporate changes and their style of leading. The goal is to hopefully find a thread running through the leader's styles that have succeeded and a thread linking those that did not succeed. Leadership, like any organizational behavior, is not easily quantifiable but open to opinion and personal values. What one may see as a "bad" leader may appear to another as adequate or even "good". It is hoped that certain traits or styles emerge which can lead to future continuing study of leadership characteristics and their role in the success of mergers, acquisitions, and reorganizations.

Leadership Styles

See Table 1: Summary of Leadership Styles. This table is a summary of the leadership styles discussed in this research.

Any group, or corporation, has different types of leaders. According to Rue & Byars (1980), there are formal leaders, which are appointed and informal leaders, which can be chosen by the group. Formal leaders are the focus of this investigation. Formal leaders describe CEO's who are chosen by the board of directors to lead the day-to-day operations of a firm. The CEO reports to the board of directors that are elected to represent the wishes of the shareholders, or owners, of the firm.

In defining different types of leaders, McGregor coined the term's Theory X and Theory Y (Rue & Byars, 1980). Theory X leader is an authoritarian leader who looks to control those they lead. This person sees people as naturally lazy and in need of guidance, and direction, or they won't produce. A Theory Y leader looks to let those they control play a role in the course of their tasks. This leader feels all people are good and want to work hard and achieve. Instead of direct guidance, the followers work best when they feel empowered. As Rue and Byars (1980) point out, this research was important in that is showed a link between a leader's view of human behavior and their leadership behavior. Another view is Livingston who proposed the self-perpetuating prophecy or "Pygmalion in Management" idea (Rue & Byars, 1980). If a leader expects high performance from their subordinates, it will happen. Conversely, if a leader does not expect high performance from their subordinates the performance of the group will suffer. The behavior of the leader regarding the achievement of goals and objectives is directly related to the output of their subordinates.

From Pride, et al. (1991), there are three main types of leaders. These will be used to analyze the styles of the leaders in this research with an eye to looking for similar styles for those who succeed at leading corporate change. The first style is Autocratic. This leader handles all decisions. Communication is one-way travelling from the top down. The leader believes that workers only work for pay and not for the satisfaction of a job well done. The leader distrusts the workers as discussed above in Theory X (Rue & Byars, 1980). Workers work hard when the leader is present but performance slacks off when team is left alone. The second style is Laissez-faire (Pride, et al., 1991). Here the leader lacks confidence in their ability to lead and communication is horizontal. Decisions are left to the group and in this case an informal leader can appear to take over the leadership of the group. This style of leadership finds low productivity and low quality of output (Rue & Byars, 1980). The final style is Democratic (Pride, et al., 1991). Here the leader works with the group to make decisions and is similar to Theory Y discussed earlier (Rue & Byars, 1980). The leader is careful to explain why a decision is being made and what outcome is expected. Team members are asked to provide ideas and input for how the team is run. Communication travels up and down and the team works hard and feels empowered (Pride, et al., 1991). The traits for the followers of a Democratic Leader are high productivity and high quality of output.

Further study has fine-tuned the definition of leadership styles. Popper, et al. (2000) point out the idea of Transactional Leaders and Transformation Leaders. A Transactional Leader looks to identify the expectations of their workers and looks to link the team's effort to a reward that meets those expectations. This author equates this approach to meeting lower needs and does not address issues of self-esteem or accomplishment. A Transformational Leader looks to empower workers and encourages them to exceed expectations for output (Popper, et al., 2000). The output of the team is greater than could be produced as individuals. This author equates this approach with recognizing and working to meet the team's higher level needs such as esteem and self-actualization. Popper, et al. (2000) point to the components of a Transformational leader. The first component is Charisma and that is further broken down to an idealized and an inspirational portion. The idealized portion says the leader puts the needs of others ahead of their own. They use power for the good of the group and not personal gain. They follow high moral standards and

set high goals. The inspirational portion of charisma has the leader's inspiration coming from enthusiasm and optimism. The leader fully explains why the group should work hard and what outcome is expected. A third trait is the leader coaches and mentors and treats each individual as a special person. The final trait is the leader encourages the followers to think and bring up their own ideas. The leader challenges the group to reframe problems and look for better methods to do the job.

Popper, et al. (2000) further looks at the charisma component where a Socialized and Personalized Charismatic Leader emerge. The Socialized Charismatic Leader looks to use their power to serve others. The socialized leader uses open communication and follows a clear moral path guiding their work. The Personalized Charismatic Leader uses their power for their own good. The personalized leader uses one-way communication and can rationalize morals when needed to justify breaches in ethics to gain an expected outcome (Popper, et al., 2000).

A summary of the various leadership styles includes Autocratic where the leader handles all decisions and generally does not trust workers for their input. Another style is Laissez-faire where the leader does not trust their own skills and instead defers control to the group. Another style is Democratic. This leader encourages two-way communication and empowers workers to take and active role in decisions of the team (Pride, et al., 1991). A Transactional Leader identifies the group's needs and links efforts and rewards to those needs. Transformational Leaders empower the team to provide input and looks to have the team output exceed that could be produced as individuals. A part of a Transformational Leader is charisma. Charisma can be Socialized or Personalized. Socialized Charismatic Leader uses power for gain of others, uses open communication and sets clear moral guidelines for themselves and the team. A Personalized Charismatic Leader communicates one-way, uses their power for their own gain and will rationalize morals if they must break a moral guideline to accomplish a goal (Popper, et al., 2000).

Leading the Corporation Through Change

"Hired gun" is a term often used to describe a leader who is brought in to facilitate sweeping change in the form of layoffs, plant closures and other changes that appear necessary to bring the companies earnings in line with expectations of shareholders and Wall Street. It is easier for an outsider to order these unpopular changes, as they don't have emotional ties and political capital in the organization. Turnaround artists get a start in one organization; build a history of success, which will bring them future opportunities at larger and more visible companies. Gaines (1997) points out that many of these specialists prefer to work in the background and exist in relative anonymity. The turnaround manager often operates as a hired consultant under the consulting firm's name. An example is Victor Palmieri who operates out of Palmieri Co. of New York. His past successes are Penn Central Transportation and Baldwin-United Corp.

The challenge in a turnaround, or integration of another firm, is to promote long-term growth of the company. It is much easier to gut the firm, pretty up the accounting statements and look for a buyer. Most leaders have stock options tied to increases in the firm's value under their watch so the short-term approach can be popular with shareholders and enriching for the leader and his team (Byrne, 1999). A true challenge is to actually change a company's culture with an eye to changing the way of thinking to promote future growth. It is difficult to remove layers of bureaucracy built up over time and re-instill an entrepreneurial spirit (Slater, 1999).

SUCCESSFUL CHANGE: LOU GERSTNER AT IBM

A Fallen Business Icon: IBM

As of this writing, Mr. Gerstner is the CEO of IBM. He was brought in to turn around an icon of American business. IBM was losing record amounts of money under the prior leaders. In the past IBM had a license to print money, as they would lease the equipment, write the software, provide service, and replace the equipment with the next generation of equipment after the lease expired with a new lease at a higher payment. To this day, a pc using an Intel processor with a Microsoft operating system is referred to "IBM compatible" pc. IBM didn't see the pc as a dominant force in computing. This error allowed other leaner firms, like Compaq, to enter the pc market and eventually gain control and market share (Slater, 1999).

Another problem was IBM's structure. If your business had an IBM mainframe and IBM pc's, you had to deal with separate sales reps. IBM also had a policy of lifetime employment for its workers and strict rules for behavior in other areas of behavior. For obeying these guidelines, IBM treated their workers well with country club memberships and other perks. However, over time this culture became obsessed with obeying the rules and not realizing what was going on in the real world of computing (Slater, 1999).

Time for a Change

IBM hired Mr. Gerstner in 1993. Gerstner was known for his past turnaround skills but the knock on him was he couldn't lead a business to long-term growth (Slater, 1999). This is a common perception of executives known for wholesale changes through reorganization, mergers or acquisitions. They are seen as specialists who come in

with a fat contract tied to increases in the stock price. They often sell the company or leave before the downside of these changes impact the firm (Byrne, 1999). Mr. Gerstner's prior experience was turning around the credit card division of America Express and eventually moving to second in command. Gerstner wanted to run his own show and got his chance in 1989 when Kohlberg, Kravis & Roberts came calling. KKR had just bought RJR Nabisco in the largest leveraged buyout in history. They needed someone to come in and run the firm when they outbid a group led by former CEO Ross Johnson. This was not an easy job since sales of assets were necessary to reduce debt but the remaining assets had to earn sufficient returns to justify the high purchase price (Slater, 1999).

Understanding the Culture Before Changing

Gerstner wanted to change if needed but also keep and build on the solid traditions of the firm. If change was needed, it needed to be done fast. Explain the reason for the change and move quickly to avoid dissension and debate (Slater, 1999). Open communication is a characteristic of a Democratic Leader (Pride, et al., 1991). Gerstner also felt it was imperative to move slowly to allow time to learn the business before announcing changes. His sources for learning were the employees, customers and the competition. Through this learning experience, Gerstner decided IBM's size and range of products was an advantage and should be leveraged for future growth. IBM could meet a broad range of computing needs from mainframes to mini-computers as well as consulting and maintenance. Instead of breaking up the firm, which was discussed by prior administrations, Gerstner felt IBM could become a customer's one-stop-shop for information technology (Slater, 1999). Despite all his positives in stabilizing the firm, Wall Street chastised Mr. Gerstner for not moving fast enough. He didn't espouse an expansive vision of where he wanted IBM to go. Gerstner felt it was more important to have a strategy based on customer needs utilizing sound business principles. Gerstner even went so far as to state that the time for talking at IBM had passed. It was important for IBM to worry about performing then talking after something has been accomplished (Slater, 1999). Sticking to a path regardless of external criticism is a trait of Socialized Charismatic Leader (Popper, et al., 2000). After Mr. Gerstner's first year in office the company posted it's first quarterly profit in over a year. Wall Street applauded and the stock price rose. There remained critics among the analysts and others in the technology industry who felt Gerstner was moving too slowly (Slater, 1999).

Focus on the Customer

Mr. Gerstner was concerned by another aspect of the IBM culture, which put an emphasis on meetings, forming committees to look at the same problem, then meeting some more. He has a sign on his desk, which reads, "A desk is a dangerous place from which to view the world." Ask customers what they need and learn what your competition is offering (Slater, 1999). Open communication with the team and customers is a trait of Democratic Leader (Pride, et al., 1991) and also a key of Transformational Leaders (Popper, et al., 2000).

What IBM found was that customer's wanted solutions to their problems and not technology. They weren't worried about technical specs of the equipment but does what you are selling help me do my work and solve my problems? Mr. Gerstner decided to hold a meeting in Chantilly, VA of IBM's customers Chief Information Officers. They asked the clients what do we do right? What do we do wrong? What can we do better? They found customers wanted one IBM rep for all products and not different ones for each product line. This led Gerstner to let the customers help decide the product mix and this way IBM could give the people what they want (Slater, 1999).

Setting the Stage for Future Growth

Mr. Gerstner was blunt in saying he wanted to cut down on the time it took for IBM to make a decision. A goal was to get this immense firm to think entrepreneurially by reducing bureaucracy and layers of the firm. Gerstner felt this was important to foster innovation and keep the firm working on fresh ideas. Newton's first law, a body in motion tends to stay in motion unless acted upon by an outside force, can become true for large corporations, governments and non-profits. Entrepreneurial spirit tries to be the force to knock the firm off the safe track of inertia. While he warned against moving too fast, Gerstner wanted management to have "a massive dose of constructive impatience (Slater, 1999)."

These changes helped IBM reduce its reliance on sales, which can fluctuate, and boosted service revenue (Slater, 1999). As Rocks (2000) points out, the consulting and service income continues to be a large portion of IBM's bottom line. As firms who relied on selling hardware reported disappointing earnings, IBM announced larger than expected earnings thanks to the consulting division. This area has been promoted at the behest of the customer who asked for solutions and not machines. Gerstner saw an opening in E-business to help transfer mainframe data onto networks and in turn be able to access this data on the web. Some of the first converts to this idea were Charles Schwab investment services and American Airlines (Slater, 1999). The E-business area, and consulting in general, have grown and become an important part of IBM's revenues and profits (Rocks, 2000). Recognizing the changing nature of computing and information allowed IBM to change early and this could be a future source of

revenue (Slater, 1999). An area where Gerstner succeeded was recognizing and meeting the needs of all IBM's stakeholders. Gerstner recognized the shareholder's interest while also enriching the employees and the areas IBM operated in through corporate giving leading to a win for all stakeholders (Post et al., 1999).

Gerstner: Summary of Leadership Characteristics

In summary, Mr. Gerstner's leadership style can be seen as Democratic. He kept his management team involved and solicited their input in decisions. This empowered the team and kept them focused on the goal of returning the firm to profitability. The open communication style is a trait of a Democratic Leader (Pride, et al., 1991). Gerstner also exhibits the traits of a Transformational Leader. Gerstner lead the wholesale changes to the firm's culture and methods successfully. He took the time to first learn about IBM and its businesses before making any changes. Gerstner taught IBM to listen to its customers. From this they learned customers wanted the integrated solutions that only a large company could offer. He looked to keep the positives of the past corporate culture but eliminated items that caused it to move slowly and miss changes in its markets. By giving in on some items, for instance the dress code, Gerstner showed empathy and got employees on board for the tough changes that followed (Popper, et al., 2000). For this situation, these leadership styles were successful. The impact on IBM has been a return to profitability.

UNSUCCESSFUL CHANGE: AL DUNLAP

Building a Reputation

Business textbooks, such as Brigham et al. (1999), still include case studies applauding Mr. Dunlap's efforts while leading Scott Paper. The Philadelphia based business was a long time member of the business community with headquarters and plants throughout the Philadelphia region. The stories of Dunlap speak in glowing terms of how he slashed jobs, closed plants, changed losses into profits and sold the company at a premium for the shareholders to competitor Kimberly-Clark. Mr. Dunlap also reaped great riches as his compensation package was tied to increases in the stock price through stock options (Brigham et al., 1999). During his 18 months at Scott Paper, Mr. Dunlap oversaw the elimination of 11,000 people and all corporate philanthropy was cut. Research and development and facilities maintenance were also slashed. The share price increased and Dunlap's legend as a manager grew. When Scott sold out to Kimberly-Clark, its stock price was up 225% (Byrne, 1999). A forgotten side of this story was Scott's reputation in the community. Scott was located near Philadelphia for 166 years before it's passing in 1995. Scott was a solid neighbor and good corporate citizen. They emphasized corporate responsibility to the community and built employee loyalty. Scott was loyal to all stakeholders. Many in the Philadelphia region, whether employees or not, mourned Scott's passing as they would the death of a relative. One person described Scott's demise like "it was like a blow to the head" (Warner, 1995).

Act II: Sunbeam

After his "success" at Scott Paper, Sunbeam Corporation was the next stop for Mr. Dunlap. A few large shareholders controlled Sunbeam. They looked to Dunlap as the savior of their investment. Dunlap had earned nicknames for his past exploits and the one that stuck was "chainsaw" for his style of cutting overhead and production facilities. Sunbeam is a consumer product firm that produces and markets lower cost consumer goods like electric blankets, blenders, toasters and gas grills. Some who followed Sunbeam in the investment community recognized there were problems at Sunbeam but these were not cost control problems. As such, Dunlap did not seem to be the correct medicine for the problem. A coworker of Mr. Dunlap's who worked with him on a few of his restructurings felt his management style came from the military as Dunlap was a graduate of West Point. He looked to tear down an executives' self-esteem, make them feel worthless, and then build their esteem up again in the future. This maintained his control and put the fear of Dunlap's wrath in his subordinates' minds (Byrne, 1999). The only feedback provided by Dunlap was negative and one-way communication is a trait of an Authoritarian Leader (Pride, et al., 1991). At Sunbeam he hired people who worked with him at Scott. He further molded his senior management team handpicking his Chief Financial Officer who was well versed in massaging the numbers to impress analysts (Byrne, 1999). This behavior shows a Personalized Charismatic leader who communicates one-way and can rationalize moral breaches if needed to reach a goal (Popper, et al., 2000). Those who followed him to Sunbeam did so for the potential personal riches from stock options (Byrne, 1999). This is similar to a Transactional Leader who feels the only reason people work is for personal enrichment and not the satisfaction of a job well done (Popper, et al., 2000).

Mr. Dunlap's leadership style was not flexible which is a trait of an Autocratic Leader (Pride, et al., 1991). As reported by Byrne (1999), every problem he encountered at every firm was too many workers and too many plants. This resembles the saying, if the only tool you have is a hammer, all the problems look like nails. Koenig (1998) compared Dunlap to a doctor in the 18th-century who would treat any ailment by letting blood from the patient. To Dunlap, every company was a patient and the only cure

was a bloodletting or translated to business language, layoffs and plant closings. The script at Sunbeam seemed to mirror the one Dunlap wrote at Scott Paper. Cut the size of the workforce and shutter plants. Pump up the sales figures by using discounts, and other sales tools, to increase sales volume. Use creative accounting such as overbooking charges for "restructuring" after announcing layoffs or plant closings. The goal was to impress Wall Street, get the stock price up and sell the company in 12 to 18 months. Mr. Dunlap created a culture where it was miserable to work and the only thing that mattered was increasing the stock price. As for a moral code, it was weak at best (Byrne, 1999), which is a trait of a Personalized Charismatic Leader (Popper, et al., 2000).

Beginning of the End

Sadly, Mr. Dunlap began to believe his own press and the myth of his management skills. Dunlap held a high opinion of himself and became known for his large ego. He was vilified in local press near Philadelphia for his impact on Scott Paper and the impact on the towns in which it operated (Warner, 1995). Dunlap wrote a book titled "Mean Business". It appeared to some at Sunbeam that Dunlap was more interested in attending autograph sessions for his book than properly managing Sunbeam. Dunlap chose Coopers & Lybrand as the consultants for Sunbeam based on his experience with them at prior career stops. Coopers formulated the formal plans for job and plant cuts that were then announced to Wall Street. Later on Coopers researched and wrote a plan to integrate two firms Dunlap decided to buy and add to Sunbeam. It seems Coopers understood what their client wanted and were not about to let sound business sense interfere with their consulting fee. Eventually sales began to slow and Sunbeam began to play games with vendor payments to meet the quarterly profit estimates for Wall Street (Byrne, 1999). This ability to rationalize morals to meet goals is a trait of a Personalized Charismatic Leader (Popper, et al., 2000).

During Dunlap's tenure, Sunbeam did try and market itself as a merger target after the initial cuts to workers and plants. When no buyer appeared, executive defections followed which is consistent with a Transactional Leader as Dunlap only recruited those who were interested in working for personal gain (Popper, et al, 2000). Since they weren't going to get rich quick, they jumped ship to avoid dealing with Dunlap's tirades and the pressure to produce under unrealistic conditions. An irony for Mr. Dunlap at Sunbeam is that potential buyers of Sunbeam were scared off after talking to Kimberly-Clark executives. Window dressing moves at Scott increased sales but bloated customer inventories. Sunbeam was a mature business like Scott and acquiring firms reverted to "caveat emptor", or "buyer beware", and steered clear of buying Sunbeam from Dunlap (Byrne, 1999).

Curtain Falls on the Chainsaw

As quarterly results continued to disappoint, Mr. Dunlap confronted the board of directors with an ultimatum regarding himself and his CFO. If the board didn't support them, they would resign and the board should buy out their lucrative employment contracts. Dunlap and his team wisely extended their employment contracts during the honeymoon of Sunbeams increased stock price by negotiating unbelievably rich employment contracts. The truth was under the surface was a terrible riptide of trouble that would threaten to bankrupt the firm. At the time of the contract extensions the board believed Sunbeam was becoming a sequel to the miracle at Scott Paper. The board started asking questions and began to see evidence of the other troubles at Sunbeam. They began to see the trouble was worse than Dunlap knew or understood. Sales were at such a low level, and earnings so sick, that Sunbeam threatened to miss minimum requirements of their loan agreements. Sunbeam was close to being in default of these loan covenants, which could lead to bankruptcy. After this fact finding, the board chose to fire Dunlap (Byrne, 1999).

A quick update on Sunbeam's fortune after Mr. Dunlap was fired. The stock dropped below $10 per share in the middle of 1998, after a high of $52 during the honeymoon with Dunlap, and has remained in single digits since (SOC Chart, 2000). Altaner (2000) reported that Sunbeam later sued the successor of Coopers-Lybrand, which helped formulate the plan Dunlap used to restructure the firm. Sunbeam contends that the report was prepared quickly, not based on sound business practices and the only point was to please Dunlap to ensure earning present and future consulting fees. The suit further states the "plan was 'superficial at best,' and merely rubber-stamped Dunlap's statements (Altaner, 2000)." The attempt to undo what Dunlap did in such a short time continues years later for those at Sunbeam.

Dunlap: Summary of Leadership Characteristics

In summary, Mr. Dunlap leadership style was Autocratic as he led by fear and threat. He did not trust those who worked for him (Pride, et al., 1991). Dunlap felt that the only reason people would work is for personal enrichment not the satisfaction of a job well done. This is more of a Transactional Approach that looks to the workers as only needing to satisfy lower level needs and not the higher needs of esteem and sense of accomplishment. Dunlap exhibits the characteristics of a Personalized Charismatic Leader. The Personalized Charismatic Leader uses their power for their own gain. They communicate one-way and

can rationalize their morals to justify breaches in ethics if the breach can lead to personal gain (Popper, et al., 2000). For this situation, these leadership styles were unsuccessful. Continuing the military analogy, Dunlap only worried about winning the battle but in the end lost the war.

While his name continues to appear in business textbooks, Mr. Dunlap has not worked since the Sunbeam debacle. For a man with such a high opinion of himself, the shattering of his reputation and a silent phone are true justice.

THE LEGEND OF SUCCESSFUL CHANGE: JACK WELCH AND GE

Leading What Started With Edison

One of the famous, most quoted, and most imitated managers of recent time is Jack Welch who has been CEO of General Electric (GE) for almost 20 years. When he was elevated to the job, Wall Street wondered if the company of Edison could survive under an aggressive, super-confident, tough manager. Now as he plans to retire next year the same group worries if GE can survive without him (Murray, 2000).

Many firms have chosen to sell off divisions in an effort to "return to core business". Welch has grown GE through acquisitions and divestitures. This is different in the era of the "new economy" as GE is a good, old-fashioned conglomerate playing a role in markets from light bulbs, electric generation, locomotives, to credit cards and television networks (Murray, 2000). Examples of GE's purchases under Welch are: RCA and its key property the NBC Television Network, leasing operations from Chase Manhattan for GE Capital, Thomson S.A. medical equipment. Examples of operations Welch sold off include: housewares division to Black and Decker, Radio stations RCA owned, Ladd Petroleum (Gaughan, 1996). GE rose in value from $13 billion to $560 billion during Welch's time at the helm (Moore & Brady, 2000). The financial markets have grown accustomed to Mr. Welch's profitable management of GE. The new CEO will have to maintain the trust of the market to avoid the stock sliding after the change at the top takes place (Murray, 2000).

The System is Larger Than One Person

Mr. Welch feels it is a waste of time worrying about GE after he retires. He feels that under his watch the company has developed a culture and a way of operating that has good people heading the key business units and the firm's success is larger than one-person (Murray, 2000). He's said, "You almost can't screw this thing up, it's so big and powerful (Moore & Brady, 2000)." The glue holding this all together is the manager's. Numbering roughly 600, these managers run the business units. GE also works hard at training future managers and updating management practices as needed (Murray, 2000). This is a characteristic of Transformational Leadership as key people are mentored and trained to lead in the future (Popper, et al., 2000). The managers are seen as employees of GE and not employees of any one unit. You aren't a manager of the locomotive division but a manager for General Electric. Mr. Welch and his senior management team oversee the training and assignment of the managers from GE's Connecticut headquarters. The managers are moved like pieces in a game of chess and are moved to assignments with the goal being to expand and utilize their management skills. Mr. Welch took a senior management group that rarely communicated in the past to one that meets quarterly (Murray, 2000). This open communication and empowerment are traits of a Democratic Leader (Pride, et al., 1991) and Socialized Charismatic Leader (Popper, et al., 2000).

Murray (2000) said, "Mr. Welch has been a combination of charismatic preacher, all-knowing judge, internal ombudsman and hard-driving coach." This is similar to how a Transformational Leader inspires the group with enthusiasm (Popper, et al., 2000). Welch's feels management can succeed as long as they don't settle for mediocrity, meet the group's goals, embrace change and don't hang on to tradition if it slows you down. Welch gets to the point in meetings and does not waste time. His style is stick to what's the issue, what are the facts; let's decide which way to go. Welch is very attuned to the customer and asks their opinions when he meets them at conferences or GE gatherings. He gathers information regarding suggestions, complaints and ideas for improvement and passes these on to the appropriate area for review. Welch feels his role as CEO is that of an "orchestra leader..., but the players in the orchestra are all first-rate. This job is not that hard, because you have so many good people who know their jobs (Murray, 2000)." As for his replacement, Mr. Welch realizes the next leader faces tough decisions as to what divisions to keep and what divisions to shed (Moore & Brady, 2000). Welch feels nothing is unending "But the concept of an operating system with social architecture that shares learning is inbred in every person that's here (Murray, 2000)." As for Welch in retirement, he will be fine; it was widely reported he signed a contract to write his memoirs with a record advance of several million dollars.

Welch: Summary of Leadership Characteristics

A review of Mr. Welch's leadership style starts with his being a Democratic Leader. He solicits the input of subordinates and empowers them to reframe their work. GE under his leadership has shown high quality effort and

high results associated with a Democratic Leader (Pride, et al., 1991). He is a Socialized Charismatic Leader. His statements downplaying his role in the success show he used his power for the good of the group. Welch started holding management meetings and that is in line with the open communication of a Socialized Charismatic. Finally Welch exhibits the characteristics of a Transformational Leader. He communicates with the group and has put a system in place to mentor and train the future managers of the firm. As stated earlier he encourages an open discourse and encourages subordinates to look for better ways to get the job done (Popper, et al., 2000). For this situation, these leadership styles were successful.

SUCCESSFUL NEW ECONOMY CHANGE: JOHN CHAMBERS AND CISCO SYSTEMS

Growth Through Acquisition

Cisco Systems is a large company who is lumped into a group called "new economy" companies. John Chambers, the current CEO, was promoted from within Cisco's ranks. He has taken the firm on a buying spree, acquiring 51 firms in 6 ½ years. The pace has quickened with 21 of these purchases in the past year. Cisco is the preeminent manufacturer of routers that direct computer traffic over a network. Cisco realizes their industry is constantly changing and it is tough to stay current developing all of your products in-house. So Cisco decided to strategically fill the gaps in their product mix by buying other firms. Cisco manages to have most of its mergers succeed from a financial perspective whereas many other firms do not succeed. Cisco has learned from its mistakes and has continued to tweak the acquisition process during a period of explosive growth. In 1999, Cisco bought its largest company to date when they bought Cerent Corp., a maker of fiber-optic equipment (Thurm, 2000). Let's look at how Cisco handled the merger of Cerent.

Mobilize the Forces

The idea to buy Cerent began when Mr. Chambers ran into Mr. Russo, Cerent's CEO. Both began their careers as salesmen at large technology firms. Cerent offered a product that Cisco lacked in the growing area of fiber-optic transmission of data. They also had something Mr. Chambers desired for Cisco and that was a large customer base. Cisco relied on its customers for product ideas and what they needed for their networks (Thurm, 2000). This open communication with customers is characteristic of a Democratic Leader (Pride, et al., 1991) and Socialized Charismatic Leader (Popper, et al., 2000). The deal was put together, $6.3 billion dollars in Cisco shares, and Cerent's employees were told to gather for a meeting. Most felt it was to discuss details for the upcoming initial public offering. Word leaked out as the workers on the loading dock got a box of coffee mugs with "Welcome to the team" on them with the Cisco logo. Cisco starts on the integration of an acquired firm even before the ink dries on the deal. Ms. Gigoux is the in-house specialist who leads a "SWAT" team. Cisco goes to the firm to be acquired and begins working on the process of integrating the new workers into Cisco. Cisco lost only 4 out of 400 employees from Cerent during the transition (Thurm, 2000). Mr. Russo announced the acquisition and the details to the Cerent team. Initial grumbling was offset when the employees converted their Cerent shares to Cisco shares post acquisition at Cisco's market value at the time when most realized they had become instantly wealthy. After the meeting, the SWAT team and Ms. Gigoux swung into action. They handed out information to each employee with details about Cisco. The Cisco team stayed at Cerent and offered follow-up information in succeeding days. This was excellent as it gave Cerent's people time to cool off from the shock of the buyout and let emotions cool to ask questions with a cool head regarding changes to their benefits (Thurm, 2000). The open communication is characteristic of a Socialized Charismatic Leader and a foundation of a successful Transformational Leaders (Popper, et al., 2000).

The head of the "SWAT" team, Ms. Gigoux, joined Cisco through an acquisition. She worked for Kalpana Inc., which Cisco bought in 1994. Gigoux worked for nine months integrating Kalpana's workers into Cisco. Now Cisco uses workers added from its prior mergers to help integrate new acquisitions. They play a key role in dealing with the anxiety which left alone can lead to employees leaving. Dealt with properly keeps defections to a minimum, which helps Cisco realize full value on its purchase (Thurm, 2000). Giving each individual value and dealing openly with their feelings is a trait of Transformational Leaders (Popper, et al., 2000). All the work at Cerent was successful, as Cisco only had to reassign about 30 jobs. These people remained employed but had new tasks. An example was in order processing which Cisco already covered. So the Cerent employees who were in order entry now performed follow-up calls with customers to ensure quality service (Thurm, 2000). The ability of staff to feel empowered and reframe is a mark of a Transformational Leader (Popper, et al., 2000).

Don't Rest on Your Laurels

Cisco learns from its mergers and constantly updates its acquisition manual. The timing snafu of the coffee mugs became a new update to the manual so in the future Cisco would be sure to consider changing the timing for delivery of goodies to acquired firms. A key for Cisco is its openness and its immediate and ongoing communication. A survey shows one-third of management or key

employees leave after a firm is acquired. By contrast, Cisco looks to be open and supportive during the transition (Thurm, 2000). Open communication is a trait of Socialized Charismatic Leaders (Popper, et al., 2000). Through its hard work, Marks (2000) reports that 9 or 14 CEO's stayed on with Cisco after their firms were bought.

Chambers: Summary of Leadership Characteristics

To summarize, Mr. Chambers' leadership style is that of a Democratic Leader. The open style of communication used for success in Cisco's mergers is that of a Democratic Leader (Pride, et al., 1991). The high quality work of the "SWAT" team shows they are empowered and take pride in a job well done for Cisco. Chambers also exhibits traits of a Socialized Charismatic Leader with the main trait here being open communication. They also avoid saying what is convenient during a merger and stick to telling the truth so later on the acquired firm is not surprised. Chambers is a Transformational Leader as well. The additional traits shown here are constantly learning from past mergers and updating the Cisco handbook to help in the future. Using workers acquired in mergers empowers them, makes them a part of the Cisco team and allows them to reframe the merger process to continue to tweak an already impressive integration system (Popper, et al., 2000). For this situation, these leadership styles were successful. The impact on the firm is by employing sound leadership, with a focus on dealing with the workers as people and not just a number, allows Cisco to succeed at acquisitions where so many others have failed.

A MESS FOR THE SUCCESSOR: ED CRUTCHFIELD AT FIRST UNION

"Fast Eddie"

Mr. Crutchfield was the CEO of First Union Corp. for 27 years. Taking over the top slot at the tender age of 32, he set about building the Charlotte, North Carolina bank into a national powerhouse. Through the years he led First Union on 90 acquisitions. The bank grew to the 6th largest in the nation and earned Crutchfield the nickname of "Fast Eddie". Beginning with the acquisition of First Fidelity, of Philadelphia, and followed by the purchases of CoreStates Financial and the Money Store, it is widely accepted that First Union overpaid and this led to costly write-offs for the firm. While to err is human, there are lessons to be learned (Mollenkamp, 2000).

In 1995, First Union acquired First Fidelity based in the Philadelphia region in what was the largest bank merger to date. The combined firm would boast 2,200 branches from Connecticut to Florida. The key for First Union was to move north with minimal overlap. Mr. Crutchfield planned to offer non-traditional services in First Fidelity's area such as mutual funds and annuities. The Wall Street community was not so impressed. First Union's stock traded in a lower range than its super-regional bank peers such as Chase, Citicorp and its Carolina neighbor NationsBank (Gaughan, 1996). First Union bought the Money Store, Inc. and CoreStates Financial Corp in 1998. Money Store proved to be a disaster with CoreStates only marginally better. Money Store dealt in loans to customers with poor credit standing and marketed themselves through familiar television ads starring hall of fame baseball players Phil Rizzuto and Jim Palmer. Money Store customers have exhibited past difficulties with credit. For a significantly higher rate they can obtain loans. These loans were then bundled and sold to investment markets, which provides cash for future loans. In hindsight, it seems First Union gets an "F" for its research of Money Store before buying it. First Union did not grasp the differences in accounting at a sub-prime lender like Money Store (Mollenkamp, 2000).

The CoreStates acquisition was also causing difficulty. CoreStates was headquartered in Philadelphia and was the successor to Philadelphia National Bank after it merged with other institutions to form a regional bank. CoreStates overlapped with many of the old First Fidelity locations. To meet regulatory scrutiny, First Union had to sell off branches and what remained seemed weak for the price paid (Mollenkamp, 2000). It is the author's opinion that First Union failed to realize that CoreStates was not known for high quality customer service. CoreStates last acquisition was regional rival Meridian Bank. Customers left and CoreStates didn't realize the gains it expected when it bought Meridian. CoreStates customers in turn left First Union in significant numbers as First Union grappled to integrate the inherited antiquated systems. No one had the nerve to tell Crutchfield that there were serious problems with Money Store and CoreStates acquisitions (Mollenkamp, 2000). This points to a Laissez-faire approach of management by Mr. Crutchfield as First Union left the integration to others and was not active in staying informed and managing the transition (Pride, et al., 1991). A sudden retirement elevated Mr. Thompson to president from the investment-banking division (Mollenkamp, 2000).

Trouble for the New Guy

According to Mollenkamp (2000), one of Mr. Thompson's first changes was to form a new operating committee. It included 13 high level managers who were to report to him what was happening in the banks many operation areas. The point of the meetings were to learn what was happening and take a cold, hard look at the bank as it now stood after all the acquisitions. This would be helpful managing problems and planning for the future of First Union. Thompson exhibits the traits of a Democratic Leader (Pride, et al., 1991) and Socialized Charismatic

Leader (Popper, et al., 2000) with open communication and empowering team members. One of its first targets was to learn what was happening at the Money Store. What was the problem and how bad could it impact First Union? The answer was the Money Store threatened to "suck the life (Mollenkamp, 2000)" out of the company.

When Mr. Crutchfield resigned due to an illness, Mr. Thompson moved up to CEO. Instead of moving slowly, Thompson took the findings of his committee and discussed them with the board of directors right after the shareholders meeting where he was installed as CEO. Through further investigation, it was decided the Money Store was hopeless. It should be sold or shuttered. Due to the negative factors impacting the sub-prime lending market there was a glut of these type assets for sale and no buyer could be found. Thompson went to the board with the recommendation they close the Money Store and First Union should sell off its mortgage servicing and credit card business units as well. The cost was one of the largest ever for a bank and the charge against earnings totaled almost $3 billion. The board approved the recommendation for reorganization and it was publicly announced the following day (Mollenkamp, 2000).

Crutchfield: Summary of Leadership Characteristics

To summarize, Mr. Crutchfield exhibited Laissez-faire approach of leading his last few acquisitions. In particular, the decision to leave the Money Store's management in control cost First Union the ability to learn the business and possibly act on the problems before Money Store's closure was the only option (Pride, et al., 1991). Earlier in his career, Crutchfield may have been a Transformational Leader with Socialized Charismatic Leader characteristics based on the firm's growth and his popularity in the organization (Popper, et al., 2000). During the Money Store and Future Bank fiascos, no one questioned or reframed the situation due to his legend in First Union. The followers were not empowered to offer suggestions especially if it seemed they were second-guessing the leader. For this situation, these leadership styles were unsuccessful.

Mr. Thompson has to be admired for diving in and not treading lightly. The early evidence shows he is exhibiting Democratic Leadership qualities. He has convened management meetings where the members are told to look at the operation with a critical eye (Pride, et al., 1991). This open communication is a hallmark of Democratic Leaders and the beginning foundation of becoming a Transformational Leader with Socialized Charisma qualities (Popper, et al., 2000). Thompson made it over the first hurdle and now must lead First Union towards a path of growth with the remaining assets.

SYNOPSIS OF LEADING DURING CORPORATE CHANGE

Defining good and bad leadership is not an exact science. It is open to interpretation of the reviewer. If you are solely looking to increase share price, you may ignore the negative aspects of a Dunlap as long as your shares increase in value. If you are an employee in a firm being acquired, you are more likely to appreciate the open communication and thorough style of Chambers and Cisco Systems. By looking at the examples above, key behaviors can be recognized that help leaders succeed when merging, acquiring and reorganizing a firm.

See Table 2: Summary of Leadership Styles and Results. This table is a summary of the leadership style employed and outcome.

A profile of successful leadership characteristics for mergers, acquisitions and reorganizations emerges from the leadership styles that worked leading change in these examples. The similar traits for those successful at leading corporate change starts with a Democratic style (Pride, et al., 1991) as exhibited by Gerstner at IBM (Slater, 1999), Welch at GE (Murray, 2000) and Chambers at Cisco (Thurm, 2000). This is similar to Theory Y that McGregor proposed where the leader uses open communication and empowers the team to suggest and play a role in their tasks. The Democratic Leader feels "I'm ok, you're ok" and by working together the group can exceed what it could accomplish as individuals (Rue & Byars, 1980).

The next similarity these successful leaders exhibit is Socialized Charismatic Leader characteristics. Gerstner at IBM (Slater, 1999), Welch at GE (Murray, 2000) and Chambers at Cisco (Thurm, 2000) all utilized open communication emphasizing a give and take with the team. The leader does not abuse their power for personal gain and they set an example by following a clear moral path. In these examples the strength of the successful leaders is open communication that leads to empowerment and achievement (Popper, et al., 2000).

Another similarity is these successful leaders have characteristics of a Transformational Leader. Gerstner at IBM (Slater, 1999), Welch at GE (Murray, 2000) and Chambers at Cisco (Thurm, 2000) were successful in part as they lead by being enthusiastic about the task at hand. Through open communication they kept the team aware of its goals and what is expected after completing the change (Popper, et al., 2000). Team members are coached and mentored to train the next generation of team leaders. The team is also asked for its input and is encouraged to reframe the methods being used. The team continues to look for more efficient methods to accomplish its goals (Popper, et al., 2000) (Whetten & Cameron, 1998).

A final link of the successful leaders is a focus on the customer for input and direction for the firm. Gerstner at IBM (Slater, 1999), Welch at GE (Murray, 2000) and Chambers at Cisco (Thurm, 2000) all focused on the customer for input on how to improve their firms. This is a separate item but is similar to the open communication and reframing encouraged by a Democratic (Pride, et al., 1991) and a Transformational Leader (Popper, et al., 2000). Not only is the team encouraged to reframe but the team is also expected to ask and look for the customers' input. Cisco bases some of its acquisitions on customer suggestions (Thurm, 2000). IBM looked to its customers who didn't want separate units but instead one representative to sell solutions, not technology (Slater, 1999).

APPLICATION

Application of these findings can be for a business to look for specific leadership styles when preparing to hire, or promote, a leader for process of change. Styles of a leader are important to recognize when hiring CEO's in an era of Mergers, Acquisitions and Reorganizations.

These successful leadership styles include Democratic Leadership styles (Pride, et al., 1991) promoting open communication and empowering team members to offer suggestions and play a role in the direction of the team. Another style of a successful leader is being a Transformational Leader with Socialized Charismatic Leadership qualities. The Transformational Leader takes the team and will accomplish more than could be accomplished as a group of individuals. The Socialized Charismatic component communicates openly and works for the gain of the group with a clear moral path (Popper, et al., 2000).

In sum, the chances of a merger, acquisition or reorganization succeeding can be enhanced by the style of its leader. Recognizing the impact of leadership style on the success of a change can be invaluable for firms and can allow management to look for a leader whose style mirrors these styles, which are successful. A match of leadership style to task can improve the chance of a successful change.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research would include expanding the number of leaders and firms analyzed. Management level employees who worked through a merger, acquisition or restructuring could be interviewed regarding their feelings on how the change was led by senior management. Examples of firms from southeastern Pennsylvania, which could be studied, further include; Scott Paper purchased by Kimberly-Clark, Meridian Bank purchased by CoreStates in turn purchased by First Union, and AMP purchased by Tyco International.

A research instrument would need to be developed to characterize these leadership types as discussed before. A questionnaire regarding style of leadership would be developed and utilized when interviewing the management who has gone through the process of change via merger, acquisition or reorganization.

A specialized measure for measuring a successful corporate change would need to be developed. One component to measure may be stock prices, which could be tracked to add a quantitative aspect to the research. Look at the price before the change, during and especially afterwards for two years. In the case of an acquisition, look at the share price of the acquiring firm to gauge the acquisitions impact downstream. During any change there is a "honeymoon" with Wall Street and this period is not an accurate indicator of leadership's effectiveness on long-term appreciation in value. Further information can be found researching the corporate communication during period of change. This communication can point to what management's intentions were and future reports can check the outcome of these intentions.

Correlation analysis would be used, as a statistical process to show if a relationship exists between leadership style and mergers and acquisition success. Taking the findings of the styles and comparing them to the measure of success would be used to test a correlation between the leader's style and the success of the change.

The goal of future research is to look at corporate change to learn from past mergers, acquisitions and reorganizations to help lessen the human cost associated with future changes.

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Table 1

Summary of Leadership Styles

Styles Utilized in this Research
• Autocratic
• Laissez-faire
• Democratic
• Transactional
• Transformational
• Socialized Charismatic
• Personalized Charismatic
Other Styles Discussed
• Theory X
• Theory Y
• Pygmalion in Management

Table 2

Summary of Leadership Styles and Results

Leader	Lou Gerstner	Al Dunlap	Jack Welch	John Chambers	Ed Crutchfield
Style/ Outcome	Successful	Unsuccessful	Successful	Successful	Unsuccessful
Autocratic					
Laissez-faire					
Democratic					
Transactional					
Transformational					
Socialized Charismatic					
Personalized Charismatic					

USING DATA ON STUDENTS' PERCEPTIONS AND ATTITUDES TO EXPLORE WHY COLLEGE STUDENTS PERSIST

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ABSTRACT

"Dropping out" by college students results in high costs for both universities and society in general. In most universities significant variance exists between dropout rates for different colleges and majors. Insight into why rates vary within a particular university could enlighten the determination of why dropouts occur and the potential financial impact to the institution and its subunits. In this study, we used an action inquiry strategy to explore student attitudes and perceptions of services in different colleges and departments in one state university. Action technologies are one means of conducting systematic inquiry into organizational phenomena. They differ from "positivist" research strategies in that they apply theory directly in the field, with scholars and practitioners collaborating to define issues of interest and methods.

INTRODUCTION

The satisfaction and emotional attachment of graduates of a university can influence an institution's financial position in several ways. First, satisfied graduates are more likely to donate to their university (Baade and Sundberg, 1993). Second, satisfied graduates contributed to a positive institutional reputation in their communities, which in turn may result in larger future income streams. Third, in the case of some universities, satisfying and retaining pre-graduating students can contribute to performance measures that result in greater resources for a university in the form of increased funding from centralized sources, such as state government.

In the present study, we examined the satisfaction, attitudes and perceptions of seniors, based on the presumption that these attitudes are important to a university's financial future. We describe a specific data collection effort that was aimed at providing this information to the university and its subunits (colleges, administrative departments) to be used in improving services and conditions in the institution. We explored differences in emotional attachment between students in different colleges on one campus of a major state university system, and assessed relationships between these attitudes and various perceptions students held about their college experiences. By doing so, we have developed ideas regarding the actions this particular university could take that are likely to improve students' satisfaction and emotional attachment to the institution, and result in more favorable future revenue streams.

Action Technologies in Research

Action technologies, a broad term that encompasses action science, action research, and action learning, are strategies of organizational research that have at their foundation, the idea that "knowledge is to be produced in service of action" (Raelin, 2000). Action technologies attempt to apply theory directly in the field, to improve organizational performance. According to Kaplan (1978), "one of the prime objectives of action research is to modify and extend the emerging theory in light of knowledge gained through experience."

This approach has incorporated some of the work of the Enrollment Management Committee (EMC) of the university described in this study. At this university, the EMC is a subcommittee of the Faculty Senate charged with helping to understand the causes of student attrition. Recognizing the importance to the university of emotional attachment both in existing students and in graduates, the EMC took on the task of better understanding the levels of emotional attachment and its correlates, as well as differences in those levels between colleges and departments. It was intended that the information thus gleaned could be used to improve organizational policies and practices.

BACKGROUND

The Causes of Student Departure

Tinto (1998) reviewed past research on the relationship between student departure and individual and organizational

factors. Most 'dropouts' do not fail out of college. The most likely reasons for students dropping out are academic boredom, a sense of irrelevance, limited or unrealistic expectations of the college experience, academic under-preparedness, social transition difficulties (including homesickness); uncertainty about a major area of study or future career, a feeling of incompatibility with the environment of the institution, and social isolation from other members of the university community. It should be noted that students who feel a healthy bond with the institution do not normally experience these problems (Tinto 1998).

According to Tinto (1998), the absence of sufficient contact with other members of the university community is the single most important predictor of voluntary student withdrawal. Research has shown the importance of student interaction as a key predictor of whether a student will persist beyond the first year (e.g., Anderson, 1988; Benjamin, 1990). Academically and socially involved students, those that bond with other students and the environment of the institution will likely be successful in their college pursuits. As an individual realizes his/her interactions bringing forth positive results, emotional attachment between the successful student and the institution will take shape. The key is that the student realizes a degree of success in his/her endeavors.

Academic and social interaction can influence persistence in different ways. An example is the experience of the learning community. In such cohorts, students form their own supportive peer groups. These groups tend to extend outside of the classroom. The overall experience adds, in a positive way, to the student's environment of academic and social support. These elements lend comfort and confidence to the student within context of the student's role at the institution (Tinto, 1998).

Important contact may take two forms: between the student and faculty, and the student and other students. Both types of contact contribute to a student's likelihood of persisting. According to Tinto (1998), student-faculty contact appears to be a particularly important factor. This is especially true for contact outside the classroom. However, formal, in-class activities probably act as precursors or signals to the receptivity of faculty to extra-classroom contact. Student persistence also appears to be related to student-student contact. Students who fail to form attachments of some sort become more isolated and are more likely to withdrawal (Tinto, 1998).

As noted, key to maintaining a solid tuition revenue stream is a low rate of student attrition built on institutional policies that foster strong emotional bonding of the students to the institution. The relationship of the emotional attachment of students to their likelihood of staying until graduation, makes understanding the status and correlates of emotional attachment a critically important priority.

METHOD

Research Design

The research design called for developing a survey instrument that would be completed by about-to-graduate seniors. The instrument would be completed by seniors in a last-semester required course. The instrument, described in more detail in Hogan (2000), was developed by members of the Enrollment Management Committee of the university under study. This particular population, known as "persisters" was of interest because they represent both existing students and soon-to-be graduates. Thus information they provided reflects both satisfaction and attitudes of real students as well as precursors of alumni attitudes.

Survey Administration

Every college at the subject university requires the completion of some sort of last-semester senior class. A list of these classes in Spring of 1999 and again in Spring 2000 was developed, and faculty in those courses were asked by a member of the Enrollment Management Committee for their voluntary compliance with the administration of the survey during their class time. Arrangements were made for a graduate assistant or a member of the committee to go to the appropriate classroom and ask students to complete the survey.

Sample

In total, we received 649 completed surveys. The mean age of respondents was 23.6; 268 (42.2%) of the respondents were male. 91.3% of the sample indicated their ethnicity as Caucasian. Generally, these demographics are generally representative of the population of the university as a whole.

Respondents came from all four undergraduate colleges of the university: College 1, 174 students; College 2, 192 students; College 3, 256 students; College 4, 27 students. These numbers do not represent an accurate profile of this university's students. College 4 was underrepresented in both years of this study, due to various problems with faculty in that college. College 3 students were not approached in 1999.

Measures

In the present study, we were interested in assisting one college within the university in understanding the levels of

factors associated with retention expressed by its students. Also, we attempted to gain insight into some of the reasons that its students might differ from students in other colleges. To do this, we developed three general types of measures: (1) to measure the involvement of students with faculty and with other students; (2) to assess the emotional attachment of students to their university directly; and (3) to assess information about students' evaluations of their programs and their previous thoughts about leaving the university.

First, we developed measures of student involvement specifically for this study. We included 16 items that assessed various aspects of students' contact with professors and other students. These items were brainstormed by the entire Enrollment Management Committee, with items that had been used in prior research serving as a starting point. We also provided 5 items that attempted to measure students' levels of aspiration, attendance at classes, and 3 items that assessed students' perceptions of their readiness for their future careers post-baccalaureate. The items can be seen in Table 1.

These 24 items were factor analyzed using Principal Components Analysis, oblique rotation (Tabachnick and Fidell, 1996). This resulted in a 4-factor solution (Table 1). The items for each factor were averaged into a composite scale, each possessing acceptable reliability (Table 1).

Second, we also measured students' emotional attachment to the university with six items (Table 2). Development of this measure was described in an earlier paper by Hogan (2000). She argues that the concept of emotional attachment of students is very similar to the concept of "affective commitment" in work organizations, which has been studied extensively, and for which validated measures are available. She created an analog to this measure that is applicable to students. Thus, emotional attachment of students was obtained by assessing students' "affective commitment," representing an individual's feelings of loyalty and belonging to an organization. Research on employees in work organizations strongly suggests that an individual's affective commitment is a strong predictor of not only their intentions to stay, but other variables that represent their emotional attachment, such as their citizenship behavior and post-employment evaluations of the organization (Hom and Griffeth, 1995). We expected this measure to be related to a student's involvement with faculty and with other students, as well as with outcome measures.

For contrast, we also obtained a measure of students' "calculative commitment", which is their attachment to an organization due to their perceptions of the opportunity costs associated with leaving, measured with two items. Research on work organizations supports the idea that an individual's level of calculative commitment to an organization predicts their intentions to stay with the organization, but less strongly than his/her affective commitment. Furthermore, calculative commitment does not predict an employee's emotional attachment. Thus, we expected calculative commitment to be weakly related to students' previous intentions to withdraw, and did not expect it to be related students' involvement with faculty and students, nor with their evaluation of their college experience.

These two sets of items were factor analyzed, and the resulting factor loadings appear in Table 2. Reliabilities of both scales were adequate.

Finally, we included items that assessed students' perceptions of how well their college experiences had prepared them for post-graduation life (see Table 3; reliability was acceptable), and a single item that asked them to report previous thoughts of withdrawal ("At some time since I started attending this university, I have considered leaving college").

Analyses

All data were entered into an Excel spreadsheet, and analyzed with SPSS version 10.0. The plan for the analyses reported here was to (1) assess correlations among involvement, commitment, and outcome measures; and (2) assess differences on various measures between one particular college and other colleges at the university. Since these comparisons were not hypothesis-driven, we report ad-hoc tests of significance of differences, when they exist.

RESULTS

Table 4 presents descriptive statistics of all variables, and their intercorrelations.

In general, the correlations follow the pattern anticipated. As expected, affective commitment is closely related to faculty and student involvement, as well as to students' evaluations of how well they believe themselves to be prepared for their future careers and (negatively) to previous thoughts of quitting college. Of all variables in this study, affective commitment is the most highly correlated with both outcome measures.

Also as expected, calculative commitment is less closely related to other variables. It is significantly related at a .01 level only to affective commitment, and is not statistically related to either outcome measure. This follows the pattern observed among employees in work organizations. These results replicate the general pattern of findings present in the research literature on work organizations, as well as previous findings in student retention.

Table 5 presents information that forms the core of the action research that represents the focus of this study. Means of one college on the constructs of interest, are compared with means of the other colleges at the same university.

The college of interest differs significantly from the other colleges in three aspects: contact with faculty, students' evaluations of advisement, and students' perceptions of their preparation for future careers. In all three of these aspects, the college of interest is rated significantly more negatively than the other colleges.

However, this college does not differ significantly from other colleges in students' reports of involvement with other students, affective or calculative commitment, and their previous withdrawal thoughts. This result occurs despite strong correlations between almost all variables in the full data set, as discussed above. To investigate this, we inspected the correlations among these variables only within the college of interest (available from the authors). In this particular college, the correlations generally follow the same pattern as was observed in Table 4, but are slightly lower in value and significance.

To summarize, variables such as affective commitment and faculty contact are significantly correlated in both College 1 and the entire data set. Students at College 1 differ from those in other colleges only in perceptions of faculty contact, advisement, and preparation for the future. However, students in College 1 do not differ significantly from students in other colleges at this university in their ratings of social content, affective commitment, and previous withdrawal thoughts. We do observe, however, that although the differences do not achieve statistical significance, they are all in the direction that one would expect, based on the correlations given earlier.

DISCUSSION AND CONCLUSIONS

The results obtained in this study generally support previous findings of attachment in work organizations and in higher education.

The information we obtained about students' attitudes within one particular college at one university, paints a picture of students who are not significantly different from their colleagues in other colleges, at the same university, regarding (1) their attachment to the institution or their social activities, nor (2) how much they have thought about withdrawing. However, they are considerably more negative about faculty contact, advising, and their opinions about their future preparation.

Tinto (1998) points out a possible explanation for this finding. He discusses how interaction with other students may substitute for interaction with faculty in the formation of emotional attachment. Students within this college may be compensating for a perceived lack of faculty contact by replacing it with contact with fellow students. This contact with peers may result in emotional attachment as measured in this study, but in fact may have a different quality, reflecting more social connection than professional socialization.

It is also intriguing that the students in College 1 rated their preparation for their future careers more negatively. Since career preparation is more likely to occur from faculty, and highly unlikely to occur from fellow students, this pattern may point to a group of students who are loyal to their university but who lack confidence and networks that might be critical to their success.

Thus, action research can lead to discovering interesting patterns, and to designing more focused efforts to understand problems. The research described here followed from ideas published in academic journals, and with further investigation may lead to improving outcomes for college students in this college. If indeed students in this college are receiving inadequate professional socialization, measures could be taken to encourage and reward greater faculty involvement with students.

Conclusions

When considering the importance and underlying causes of the emotional attachment of students to an institution in a university setting, the policies and procedures that affect the day to day lives of students and their learning environment are significant. When a student perceives that the institution cares about his/her personal and academic welfare, the seeds of attachment will be sown. Actions, policies, and procedures of the institution, its subunits and individual members can strongly affect the attachment students feel.

It is important that institutional policies and procedures not merely be in place, but also be both meaningful and workable. Also, they should be administered by dedicated individuals who believe that the welfare of the institution is naturally correlated to the welfare of each student. Institutional policies should effectively deal with important issues of student life and learning in such a way as to contribute toward an atmosphere that encourages the bonding of students to the institution.

The processes of formulating and revising policies should involve consideration of a mix of ideas including those that have been thoroughly studied over several years and which are available in credible literature. Issues that creatively deal with the contemporary concerns of today's campus environments should also be considered in the process. It is

equally important that even the most caring administrator or faculty member should not consider his/her perceptions and experiences out of the context of the available literature, or the context of the environment of his/her institution. To do so, could heighten the probability that new policies might only replicate the misguided efforts of another caring administrator, at another university. It is important to objectively understand how the issues noted here and in other research relate to the causes of student attrition, in order that an institution can work toward developing realistic solutions.

Regarding widely accepted studies of how a university environment affects a student's perception of his/her place in that environment, we can consider the work of Tinto, Gardner, Upcraft and others. Of particular value here, is that these great contributors to our understanding of retention related issues are constantly being reexamined. They have engaged in numerous efforts of further study of their own precepts, as have others, in a continuum to improve our understanding and the practical application of possible remedies to the respective complex problems that are experienced in varied ways at all schools. Neither private nor state universities have been spared the problems associated with student attrition.

Table 1. Factor Loadings and Scale Reliability: Involvement, Aspiration, Attendance, and Preparation Items

Item	Factor Loading	Factor/ Scale Name	Scale Reliability (alpha)
28. I often attended campus activities.	.78	Attendance at social activities	.77
29. I belonged to clubs/organizations.	.76		
30. I kept well informed of academic and social events and activities.	.75		
25. I have won awards or received special recognition while a student.	.63		
31. There were a sufficient number of weekend activities for students.	.85	Availability of social activities	.78
32. There were sufficient opportunities to meet and socialize with other students.	.80		
33. Campus activities reflected my needs and interests.	.73		
5. I interacted positively with faculty members outside the classroom.	.78	Contact with faculty	.76
14. Faculty were fair and unbiased in their treatment of individual students.	.72		
16. Faculty provided timely feedback about my progress in courses.	.64		
6. I knew where to go and/or whom to contact if I had any problems on campus.	.64		
18. The instruction in my major field(s) was excellent.	.46		
9. My academic advisor was knowledgeable about requirements for my major(s).	.95	Advisement	.95
10. My academic advisor was knowledgeable about other academic requirements.	.94		
7. My academic advisor was approachable and helped me set goals.	.92		
8. My academic advisor was available.	.92		
11. I often interacted outside the classroom with fellow students and classmates.	.72	Aspirations	.63
12. My future educational and occupational aspirations are high.	.69		
13. I was able to experience intellectual growth here.	.58		
19. I usually got to class on time.	.86	Attendance at class	.56
20. I usually missed no more than 3 hours of class time per course per semester.	.81		

Table 2. Factor Loadings and Scale Reliability: Commitment Items

Item	Factor Loading	Factor/ Scale Name	Scale Reliability (alpha)
45. I feel a strong sense of "belonging" to this university.	.89	Affective commitment	.73
46. I feel "emotionally attached" to this university.	.89		
47. I feel like "part of the family" at this university.	.88		
44. If I could make y college choice over again, I would choose this university.	.76		
51. This university deserves my loyalty.	.75		
52. I owe a great deal to this university.	.65		
48. If I had not already put so much of myself and my time into this university, I might consider attending school elsewhere (reverse scored).	.62		
49. Once I started at this university, staying here was a matter of necessity as much as desire.	.80	Calculative commitment	.62
50. Too much of my life would have been disrupted if I had decided to leave this university.	.73		

Table 3. Factor Loadings and Scale Reliability: Items Related to Preparation for Future

21. My college experiences are preparing me for my career.	.88	Preparation for future	.81
23. Coursework in my major will be useful in my everyday life when I graduate.	.78		
24. My college experiences are preparing me for graduate or professional school.	.73		

Table 4. Correlation Matrix and Descriptive Statistics

Variable Name	Mean S.D. (n)	1	2	3	4	5	6	7	8
1. Attendance at social events	3.87 1.58 (623)	---							
2. Availability of social events	3.58 1.35 (602)	33**	---						
3. Contact with faculty	5.16 .97 (628)	24**	27**	---					
4. Advisement	5.15 1.75 (632)	08	13**	39**	---				
5. Affective commitment	3.79 1.50 (621)	31**	45**	47**	16**	---			
6. Calculative commitment	4.80 1.50 (622)	09*	07	05	-09*	12**	---		
7. Preparation for the future	5.46 1.09 (622)	26**	23**	57**	30**	44**	04	---	
8. Previous withdrawal intention	3.24 2.33 (640)	-06	-14**	-19**	-09*	-30**	01	-15**	---

Note: All correlations in hundredths.
* p < .05; ** p < .01; *** p < .001.

Table 5. Means of Student Involvement, Affective and Calculative Commitment, and Outcome: College 1 vs. Other Colleges

Construct	Mean College 1 (n)	Mean Other Colleges (n)	F (df)	Significance
Attendance at social activities	3.77 (168)	3.90 (455)	.871 (1,621)	n.s.
Availability of social activities	5.67 (174)	5.82 (469)	1.51 (1,621)	n.s.
Contact with faculty	4.94 (174)	5.24 (454)	12.24 (1,626)	.001
Advisement	4.91 (172)	5.24 (460)	4.57 (1,630)	.033
Affective commitment	3.72 (170)	3.81 (451)	.475 (1,619)	n.s.
Calculative commitment	4.96 (171)	4.74 (451)	2.67 (1,620)	n.s.
Preparation for future	5.28 (169)	5.53 (453)	6.51 (1,620)	.011
Consideration of leaving KU	3.08 (173)	3.30 (467)	1.09 (1,638)	n.s.

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THE RELATIONSHIP BETWEEN ACCOUNTING INFORMATION AND MARKET-DETERMINED RISKS: A NEW LOOK

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ABSTRACT

This study develops a linear measurement structural equation model to study the relationship between accounting risk measures and market determined risk measures. Use of this model may reduce the risk of potential loss of information and/or erratic invalid inferences as reported in the accounting and finance literature.

Extant literature in this area of research has employed conventional regression models which give inconsistent and conflicting results about the relationship between accounting risk measures and market-determined risk measures. This study differs from previous research in that the model introduced here takes specifically measurement error and multicollinearity problems endemic to this area of research into consideration. Secondly, besides contemporaneous relationship, incremental information content of accounting risk measures is also examined.

Overall, compared with traditional regression approach this study finds that the new model produces much more clearcut and interpretable evidence about the relationship between accounting risk measures and market determined risk measures. All the significant financial constructs proxied by the accounting risk measures have the expected signs indicated by theoretical and/or analytical results given in the accounting and finance literature.

INTRODUCTION

Investment portfolio theory, such as CAPM, is generally stated in terms of the prices of financial assets. It says nothing about how these prices are determined by 'real' variables.

According to Financial Accounting Standards Board, the objective of financial reporting is to provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions. Capital market-based accounting research has been widely used to establish a link between market-determined risk measures and accounting-based risk measures. Such link, if soundly established, will enable users to use accounting information to assess and/or improve the estimates of market-determined risks, thereby establishing the usefulness of accounting information. There are several areas where such a link could prove useful: Areas where such a link might be useful: 1) Financial managers generally require the estimate of systematic risks of alternative projects to use CAPM for project evaluations. However, only 'real' variables are available; 2) The estimation of divisional risks and cost of capital for performance evaluation with no historical returns available; and 3) Investors need accurate estimate of the systematic and total risks of assets to obtain desired risk level in investment decisions.

Unfortunately, this area of research has been plagued with multicollinearity, omitted variables and measurement error problems. Consequently, inconsistent results have been reported in the accounting and finance literature. It is not clear that accounting information is indeed useful in improving the estimate of, or assessing market-determined risks. The objective of this presentation is to introduce a linear structural equation model to assist in managing such problems.

THE MODEL

In this section, the general LISREL model developed by Joreskog and Sorbom (1982) will be applied to the specific situation in linking the accounting risk measures and market determined risk measures. There are two parts to the model: the measurement model which specifies the relationship between the observed variables and the underlying financial constructs (latent variables) they attempt to measure and the structural equation model which links dependent market determined risk measures to the underlying independent latent variables.

The measurement model:

Notation: X = observed accounting proxy risk measures, Y = observed market-determined risk measures, ξ = underlying latent variables measured by X, η = underlying latent variables measured by Y.

$$X = \Lambda_x * \xi + \delta \quad (1)$$

$$Y = \Lambda_y * \eta + \varepsilon \quad (2)$$

Where δ and ε represent errors of measurement in X and Y respectively, Λ_x and Λ_y represent regression coefficient matrices for X on ξ and Y on η. In this study, it will be assumed that the market determined total risk is estimated without error from time series returns, whereas the systematic risk will be estimated from a model similar to equation (1) above. So, we have Λ_y = Identity matrix, ε = 0-matrix and Y = η

The structural equation model which relates the independent financial constructs with the dependent market-determined risk variables is:

$$\eta = \Gamma \xi + \zeta \quad (3)$$

where Γ is the structural parameter matrix which link the financial constructs to the market-determined risk measures. We assume that ξ, δ and ζ are uncorrelated.

With the above assumptions and specification and assume multivariate normal distribution for the observed variables one can obtain the maximum likelihood estimates of the parameters in Λ_x and Γ and the error variances in δ and ζ by minimizing the following function:

$$F = \ln |\Sigma| + tr(S\Sigma^{-1}) - \ln |S| - (p+q)$$

Where Σ is the population convariance matrix, S is the sample covariance matrix of the observed variables, tr is the trace of a matrix, i.e., sum of the diagonal elements of a matrix, p = number of X variables and q = number of Y variables.

Maximum likelihood method not only give the parameter estimates, it also gives the standard errors of the estimates. Thus, hypotheses about the parameters can be tested using the t-statistics.

DESCRIPTION OF SAMPLE

The Standard and Poor's Industrial Compustat 1985 tape was used to obtain necessary financial data, and the University of Chicago Center for Research on Security Prices (CRSP) 1985 monthly security return tape was used to estimate each firm's market determined risk measures. Of the 3,211 firms listed on the tape, only 574 firms had a complete twenty year data base (January 1966 - December 1985) of monthly returns. The Compustat tape has a total of 2,322 firms listed, of which 875 firms use the calendar year as the fiscal year. Of these 875, firms 395 firms are also listed on the CRSP tape. Therefore, 395 firms constitute the basic sample used in this study. To examine the stability of the relationship the data is broken down into two subperiods: 1966 to 1975 and 1976 to 1985.

THE RESULTS

Exhibit 1 lists the financial constructs and their respective observed proxy accounting risk measures. Exhibit 2 shows the structural parameter estimates and t-statistics for the twenty year period with SYT as systematic risk and STD as the total risk. Exhibits 3 and 4 show the same results for period one (1966-75) and period two (1976-85) respectively. For both total and systematic risks it is clear from the exhibits, only size and profitability show consistent strong results with expected negative structural parameter estimates; whereas leverage shows expected (though, for systematic risk, weak) relationship.

CONCLUSION

For the two periods covered in the sample, the first period (1966 to 1975) saw the Vietnam War era, and the second period (1976 to 1985) span the severe recessional period of the late seventies and early eighties. Thus, it is no surprise that the results for the two periods were not as strong and consistent as one might expect. However, for financial leverage, size and profitability we did find encouraging consistent results, which is much more clear cut and interpretable that those reported in the extant accounting and finance literature.

Finally, another interesting application of this model will be to use it as a tool for variable selections. The measurement model provides measurement errors for the proxy measures. This could potentially be used as a guide for selecting the best measure for various research applications.

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Exhibit 1

Financial constructs	Observed accounting risk proxy measures
Financial leverage (LV)	(long-term debt+preferred stock)/total assets (X_1) (total debt – accounts payable – income taxes payable)/market value of common equity (X_2) Total debts / total assets (X_3)
Cyclicality (CY)	Earnings available to common stockholders beta (X_4) Sales beta (X_5) Operating income beta (X_6)
Operating leverage (OP)	Regression coefficient of operating income on sales (X_7) Regression coefficient of total cost on sales (X8) Average change of net plant assets / total assets (X_9)
Size (SZ)	Average log of total assets (X_{10}) Log of total sales (X_{11}) Log of earnings available to common (X_{12})
Growth (GR)	Log of total asset relative (X_{13}) Log of sales relative (X_{14}) Log of earnings available to common relative (X_{15})
Variability (VA)	Coeeficient of variation of earnings available to common (X_{16}) Coeeficient of variation of sales (X_{17}) Coeeficient of operating income (X_{18})
Profitability (PF)	Operating income / sales (X_{19}) Operating income / total assets (X_{20}) Return on common equity (X_{21})
Liquidity (LQ)	Current assets / total assets (X_{22}) Current ratio (X_{23}) Working capital / total assets (X_{24})
Efficiency (EF)	Sales / common equity (X_{25}) Sales / invested capital less minority interest (X_{26}) Sales / total assets (X_{27})

Exhibit 2

Structural Parameters (1966-1985)

	LV	t-sta	CY	t-sta	OP	t-sta
SYT	.113	1.272	-.099	-1.179	-.055	-1.421
STD	.249	2.991	.001	.009	-.006	-.166

Exhibit 2

(continued)

	SZ	t-sta	GR	t-sta	VA	t-sta
SYT	-.371	-3.777	.067	.721	-.025	-.313
STD	-.601	-6.282	-.019	-.222	.143	1.912

Exhibit 2

(continued)

	PF	t-sta	LQ	t-sta	EF	t-sta
SYT	-.362	-3.755	.014	.332	.061	.786
STD	-.167	-1.909	.013	.331	-.019	-.267

Exhibit 3
Structural Parameters (1966-1975)

	LV	t-sta	CY	t-sta	OP	t-sta
SYT	.266	3.0739	.0085	.0862	-.0752	-1.8591
STD	.288	3.7045	.0004	.0047	.0117	.3597

Exhibit 3
(continued)

	SZ	t-sta	GR	t-sta	VA	t-sta
SYT	-.4104	-4.0092	.0433	.5375	-.0874	-1.0883
STD	-.6350	-6.5920	.0283	.3937	.0987	1.3833

Exhibit 3
(continued)

	PF	t-sta	LQ	t-sta	EF	t-sta
SYT	-.2477	-2.7734	.0776	1.7168	.1495	1.9219
STD	-.1670	-2.1166	.0441	1.1201	.0548	.7957

Exhibit 4
Structural Parameters (1976-1985)

	LV	t-sta	CY	t-sta	OP	t-sta
SYT	.0286	.3241	.0684	.6973	-.0884	-1.5825
STD	.1414	1.7363	.1002	1.1036	-.1076	-2.0022

Exhibit 4
(continued)

	SZ	t-sta	GR	t-sta	VA	t-sta
SYT	-.3013	-2.8684	.0381	.3948	.1460	1.5722
STD	-.4979	-4.9868	-.0952	-1.0644	.3231	3.6880

Exhibit 4
(continued)

	PF	t-sta	LQ	t-sta	EF	t-sta
SYT	-.3229	-3.0717	-.0942	-2.0821	-.0836	-1.0403
STD	-.1053	-1.0927	-.0327	-.8353	-.0695	-.9357

FACULTY AND STUDENT PERCEPTIONS ON WEB-SUPPLEMENTED COURSES

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ABSTRACT

The use of web-supplemented courses involves not only the technical aspect in providing instruction and information to the students, it also involves the pedagogical challenge to create on the web interesting educational activities with which the students can work. The purpose of this paper is to investigate whether the web-supplemented course sites provide enough course related information, activities to assess student comprehension, communication means, and windows for students to check his/her progress. This paper examines the adequacy and effectiveness of these activities in helping accelerate student comprehension of the course materials and investigates the student's perception on web-supplemented course materials and tools. Future research and suggestions for developing web-supplemented course material are provided.

INTRODUCTION

There seems to be a great deal of excitement and discussion in the literature about the use of the Internet in the classroom. In particular, today's technology is giving teachers access to more online instructional tools and more information to both students and teachers than ever before. In a recent article by Stith (2000), students were found to have said that they learned valuable computer and Internet skills on the web and that the web had helped them in the lecture course. The answer to the question of whether the web usage has increased students' grades however, is still not known. Owston (1997) indicated that the issue becomes further complicated when the web is used as a tool for learning, as opposed to a medium for delivering predetermined content. Because when we no longer have the tool to use, we have taken away with us some unique skill or ability that could have been acquired only with that tool. Owston (1997) added that the evidence on how the Internet can promote improved learning is not as forthcoming. In fact, there is a debate in the instructional design literature whether there are any unique attributes of media that can promote improved learning. Furthermore, in spite of some pedagogical shifts and criticisms against formal education in the last five decades, Cuban (1993) concluded that "there has yet been no clustering of research findings or written observations to challenge the picture of enduring dominance of teacher centered curriculum ..." (pg. 235). However, Berry (2000) stated that in the fast-paced Internet economy, knowledge is a source of competitive advantage and must be ubiquitous and continuous. He also indicated that knowledge management and e-learning are merging and leaving the traditional concept of classroom training behind. Three years earlier, Owston (1997) emphasized that with the advancement of the Internet, there is a promising indication that the web is a viable means to increase access to education. A year later, Zhao (1998) concluded that the development of an educational web (eWeb) represents one of many attempts to translate the technological possibilities of the Internet, particularly the web, into more effective learning. Sherry, Billig, Tavalin and Gibson (2000), provided an attempt to reach a common ground solution to the issues and concerns regarding the use of web technologies in education. They concluded that a key for web technology strategy in education is to keep a central focus on online professional and learner-centered exchanges that examine student work and products, and that the give and take among students, teachers, and professionals helps all participants understand their own thinking strategies and the contexts of others.

Concerns and suggestions for strategic uses of the web in education were also expressed in an article by Butler (1997). He indicated that the web enables instructors to provide individuals who cannot participate in traditional classes with access to a wide array of educational materials. However, he realized that most education still takes place in a classroom environment. Thus, it is important to consider how the web can be used to support classroom-based education. He proposed three conceptual framework for understanding how the web can be used to support classroom based education: 1) Web as a tool for bringing the world to the classroom. 2) Web as a tool for supporting classroom activities, and 3) Web as a tool for opening the classroom to the world. Other strategic uses of

the web were suggested by Anju and Gillani (1997), which include: 1) Web use as a resource for the identification, evaluation, and integration of a variety of information. 2) Web use as a medium of collaboration, conversation, discussions, exchange of artistic, and communication of ideas. 3) Web use as an international platform for the expression and contribution of artistic and cognitive understandings and meanings, and 4) Web use as a medium for participating in simulated experiences, apprenticeships, and cognitive partnerships. In a concise statement, Bostock (1997) described how important it is to mix the media and instructional design for the purpose of creating a rich environment for active learning and not for the purpose of tight web integration.

Interaction is a necessary ingredient for many media, and good web-based courses will use email, newsgroups, web conferencing, and other media to achieve it. Creating a web-based course is not a simple task (Hansen and Frick, 1997). There are a number of web education software packages available that help educators and teacher to create web-based course. With WebCT, or an equivalent package such as Blackboard, teachers are not bogged down in learning HTML language or even learning FTP procedures (Stith, 2000). WebCT (http://www.webct.com) is a program that facilitates the creation of web-based courses. It is a client/server application, which allows users to access the program (residing on the server) through the use of a client (in this case a web browser). This provides a great deal of flexibility (Partow-Navid & Slusky, 1999). In addition, WebCT systems give college professors the tools to create online lessons. The platforms include such materials as a communication element for online chats, an electronic gradebook, study guides, assessment tools and lecture notes provided by educational publishers (Pearson Education 1999). Students and instructors can use WebCT without installing any new software.

This research began in the Fall of 1999, with the intention of studying the effect of web-supplemented courses on the student learning activities. It was limited to only the classes using WebCT at Indiana University of Pennsylvania (IUP), and hence, some of its conclusions may be viewed as addition to the conclusion reached by Anju et. Al. (1997), Butler (1997), and Owston (1997), Zhao (1998), Sherry et. Al. (2000), and Stith, (2000), and many other researchers.

Following this section, this paper is organized as follows: section II, a survey methodology is presented, section III, Analysis Methodology and Results, present some suggestions for developing a web-supplemented course using WebCT, and finally, in section IV, the conclusion, final remarks, and future research are provided.

SURVEY METHODOLOGY

Faculty and students from four unrelated departments volunteered to answer the preliminary survey and to estimate the time it takes to complete the questionnaire. The questionnaire was refined from their many helpful suggestions. The final version of the survey contained two questionnaires a faculty version and a student version.
The faculty questionnaire, consisting of 37 questions and an estimated completion time of ten minutes, was then distributed to all registered faculty and academic professionals using the campus mailing list of IUP during the Fall semester of 1999. The last returned responses were collected at the end of January, 2000. The response rate was very low at about 12.42% or 97 returns out of the 781 survey questionnaires that were distributed. Thus, a sample of size of 97 was used in this study.

The student questionnaire, consisting of 13 closed questions, two opened questions and an estimated completion time of six minutes, was then distributed to the faculty who were using WebCT as a course supplement and volunteered to distribute the survey. The survey was conducted in nine undergraduate courses with a total of 331 students in the Fall semester 1999 and in two undergraduate courses that were taught by the same faculty with a total of 71 students in the Spring semester 2000.

Influencing factors that were considered in this survey include some aspects of faculty perception in encouraging students to use the Internet information technology and some factors of student perception on web-supplemented resources. The subject opinions for all variables were scaled using the Likert scale.

The following terms were used to describe the faculty perceptions on how effective web-supplemented resources are in encouraging the students to use the Internet information technology:

1. *Content*: provide syllabus and course-content related information on the Internet.
2. *Communication*: conduct Internet interaction through email, chat, bulletin board, and other Internet communication methods.
3. *Assignment*: conduct quizzes, exams, and other assignments on or through the Internet.
4. *Information*: provide homework and other assignment information on the Internet.
5. *Research*: ask students to do research on the Internet.

The faculty perceived effectiveness of the above factors were scaled from 1 = not effective to 5 = very effective.

There were two groups of questions on the student-questionnaire: (1) in what aspect do the web-supplemented resources help the students access information for the course, and (2) how do students like the web-supplemented resources to access course information. The following terms were used to describe the student perception on how web-supplemented resources helped the students access course information:

1. *Download*: easy to read and to download related course materials.
2. *Communicate*: easy to communicate and get course related information from the instructor.
3. *Quiz*: easy to do quizzes.
4. *Link*: easy to find related course links to other web-sites provided on the web.

The student opinion on the above factors were scaled from 1 = strongly disagree to 4 = strongly agree with 5 = do not know.

To measure how students liked the web-supplemented course, the questionnaire contained questions on: (1) what part of the web-supplemented resources they utilized the most, (2) how much time they spent accessing the online information in a week, and (3) how literally the student like the web supplemented resources. There are many facilities available on the web for students to use. However, in this survey we limited the questions to address the tools that might be used by the students the most, such as (1) course content; (2) bulletin board; (3) Frequently Asked Questions (FAQ); (4) calendar of course events; and (5) quizzes and survey. We also included an open-ended question of other facilities that they used when they worked on the web-supplemented resources. The student opinion on how they used the above facilities were scaled from 1 = seldom to 5 = very often.

There were two questions that measured the length of time they spent accessing the online information in a week: (1) the time spent to study and answer course related quizzes or assignments on the web, and (2) the time spent obtaining other related information from the web. The answers were scaled from 1 = less than 1 hour to 3 = more than two hours. There was only one question that asked how the students liked having some course related activities on web-supplemented resources. The answers were scaled from 1 = do not like to 3 = like it very much.

ANALYSIS METHODOLOGY AND RESULTS

A correlation analysis which shows the relationships among the influencing factors on the use of the Internet technologies by faculty is presented in this section. The Pearson correlation coefficients were used to measure these relationships and the Fisher' Approximate Z-test was used to test for the significances of the strength of these relationships. The association between these influential factors and their use by faculty on the students perception of the web-course material were tested using the Chi-square test statistic to test for independence and homogeneity. Other descriptive statistic results used to compare the two semester's survey results and for testing the equality of ranks or homogeneity among various groups of respondents were also obtained. The students perception on web-supplemented course material for both groups, the Fall semester of 1999 group and the Spring semester of 2000 group were compared along with how well each group liked the web-supplemented course on the basis of: (1) what part of the web-supplemented course resources they utilized the most, (2) how much time they spent accessing the online information in a week, and (3) how literally the student liked the Web-supplemented course.

The Faculty Perception on Encouraging Students to Use the Internet

Table 1 shows correlations among variables that are associated with encouraging students to use the Internet information technology to access the information. The closer the correlation values to one (positive or negative) the stronger the linear relationship between the two variables (positively or negatively). The value in parentheses in each cell of the table represents the observed level of significance (p-value) which assesses the probability as to whether the correlation coefficient value is this large. Table 1 indicates that there is only one pair of variables that are not highly correlated, the rest are significant at the 5% level of significance. For example, Content is highly correlated to Communication. The correlation coefficient (r) for this pair is given by r = 0.53250 with an observed level of significance given by p-value = 0.0001 which indicates that the probability of obtaining a correlation coefficient value at least as high as 0.53250 when there is really no correlation between the two variables is 0.0001. Thus, the null hypothesis of no correlation between the two variables is resoundingly rejected. Therefore, the faculty perceive that the effectiveness of providing syllabus and course related information on the Internet is highly correlated with the possibility to provide internet communication or interaction (through email, chat-room, and bulletin board) between student and faculty. The availability of information on the Internet will not necessarily be effective for the student without student-faculty Internet communication or interaction.

Content and Communication are highly correlated to Assignment, Information, and Research. These correlations

reveal that providing syllabi and other course related information on the Internet is highly correlated with providing homework and other assignment information on the Internet. The faculty perceive that the availability of all information (related to the course content as well as to the assignment) will support the student to do course assignments (quizzes, exams, and research). These correlations also reveal that student-faculty online communication (through email, chat-room, and bulletin board) are highly correlated to Assignment and Research. As the information online becomes available, the faculty also notice that student-faculty online interaction is important in supporting the students to do the online course assignments. Therefore, the correlation between Information with Assignment and Research is also significant. However, the correlation between Assignment and Research is not significant. This correlation reveals that the (ordinary) assignments will not necessarily be closely related to the research assignment. Most of the assignments are closely related to what is covered in the course content, textbooks, or reference books and most of them are created as a means to exercise the student to comprehend the course content. On the other hand, research assignments cover beyond the course content.

Seventy-seven and a half percent of the faculty believe that providing syllabi and course-related information on the Internet is somewhat to very effective. For the same degree of effectiveness, the percentage to conduct Communication, to provide Information, and to ask students to do Research on the Internet are 72.84%, 79.49%, and 86.05% respectively. However, the percentage of faculty who support conducting Assignments on the Internet is only 46.58% and the rest (53.42%) believe that conducting assignments on the Internet or ranges from less effective to not effective at all.

Table 2 shows that most of the faculty support providing information on and obtaining information from the Internet is somewhat to very effective in encouraging students to use the Internet. The students will use the Internet if the course related information is available on the Internet or if the students have to use the Internet to obtain the information for their research. The information may be posted on the web site by the faculty or can be obtained from student-faculty interactive communication on the Internet. But most of the faculty do not support conducting the quizzes, exams, and other assignments on the Internet. From faculty comments and responses, they reveal the following reasons why conducting assignments on the Internet is not effective: (1) The idea of the Internet is the information is open for everybody, therefore, if the Internet assignment is not conducted during class time, then the assignment has to be treated as an open-book assignment. (2) To be able to assign quizzes, exams, or other knowledge assessments on the Internet with the proper control as in-class assignments, then the assignments have to be conducted in the computer lab with a computer for each student. (3) There are some types of questions that may not be conducted easily in on-line and on-time interactive type tests such as, fill-in the blank and essays. (4) The students may be intimidated by the clock on timed assignments; the ticking down clock looks faster on the computer since it is posted all the time. (5) Unlike paper written questions that can be traced back a few pages for clues, depending on the computer speed, application, and type of question, the students may not easily trace back the questions they have done.

Perception on Whether Web-Supplemented Course Materials Help the Students

Correlations among the variables that were used to indicate whether the web-supplemented course materials help the students are shown in Table 3. All pair-wise correlation coefficients are significantly different from zero at the 1% level of significance.

The variable Download is highly correlated with the Communicate. Thus, the students agree that the ability to read and download related course materials from the Internet is highly correlated with the possibility to communicate or interact (through email, chat-room, and bulletin board) with their instructor online. The availability of course materials on the Internet will help them only if they can communicate easily with their instructor online. The availability of course materials on the Internet will be more meaningful to the students and they will be encouraged to obtain more course related information from the Internet if the instructor communicates the materials properly.

The correlation coefficients in Table 3 reveal that the students perceive that web-supplemented course facilities (i.e., to read and download related course materials, to communicate with their instructor, to do quizzes, and to link to other web sites to obtain course related information) are correlated to each other significantly. The students also believe that the web-supplemented course facilities help them in those areas that may not be available in the class course.

Table 4 shows that 74.32% of the Fall-1999 students believe that the web-supplemented course helped them to read and to download related course materials. Only 18.73% of the students disagree and only 6.95% of the students do not know whether or not the web-supplemented course helped them in that facility. For Spring-2000, the percentages are: 92.96% agree, 0.00% disagree, and 7.04% do not know.

Almost the same percentage of students agreed, disagreed, and did not know whether the web-supplemented course facilitated them to communicate and get course related information from their instructor. However, the percentage of students who agree is slightly lower for whether the web-supplemented course helped them to do quizzes and to find related links to other web-sites. The percentages are 62.42% and 48.03% in Fall-1999 respectively. For all categories, the Spring-2000 student percentages who agreed are far greater than the Fall-1999 students especially for Quiz.

From the students written responses, most of them mentioned that the web-supplemented course facilitated them to do quizzes when they felt ready to take the quiz (convenient time in their comfortable room). However, that statement may only be true for those students who have their own computer with a proper Internet connection. For those who do not have a computer, they have to arrange for a special computer lab time reservation to take the quiz. There are some problems that may occur while the students are taking the quiz: the Internet connection freezes or is lost while they are taking the quiz, or the students forgets to click the save-button every time they select the answer. All of the problems related to the quiz could affect the quiz grade.

The percentage of the students who agree that the web-supplemented resources helped them to find a link is lower than that of any other facilities. The possible reasons for the lower percentage to find a link: (1) the web-supplemented course was not specifically created to have enough links to course related web-sites, (2) it provides some general links, the links that are available may not be the one that the students are looking for, therefore, (3) the students have to find their specific and favorites links by themselves.

What Part of the Web-Supplemented Course Resources They Utilize the Most

The percentage usage of web-supplemented course resources that the students utilized the most during a given semester increased dramatically as indicated by the survey's results of the Spring Semester 2000 when compared to that of the Fall 1999 semester. Table 5 shows that the Spring-2000 students who utilized the Course Content, checked FAQ (Frequently Asked Questions), and observed the course Calendar more than 11 times in a semester almost doubled since the Fall semester of 1999. Interestingly, the percentage of students who utilized Bulletin Board more than 11 times in a semester increased more than eight times. However, the percentage of students who utilized quizzes more than 11 times in a semester is about the same. By comparing the percentages, it shows that the Spring-2000 students put more effort and times to access the web-supplemented resources for almost all available facilities.

The Course content, FAQ, and course calendar are available all the time and their information is basically the same during the semester. The students can access these facilities once and get them all by downloading or printing them. Even though the percentage of these activities show that the students are persistent in accessing the information, just like reading the book often, the more the students access these facilities will not necessarily reflect their effort to master the same information.

The increasing number of the students involved in the discussion of the Bulletin Board is encouraging. The bulletin board offers them an open and restricted place to exchange ideas on any topic of the course. The instructor may be involved in the discussion as a moderator, to elaborate and conclude any discussion, or to expand the discussion to different topics. The percentage of students participating in on-line quizzes did not increase as expected. The students are allowed to access each quiz once. Immediately, after completing the quiz, the student can observe his/her grade. If there is a problem related to the quiz, they may email the instructor to resolve the problem. The system also provides a list of all course work grades for each student. Based on these grades, the student may calculate his/her current overall standing for the course. On the open-ended questions, most students mentioned that one of the reason they often visit the web is to check their grades.

How Much Time and How the Students Like the Web-supplemented Course

The Spring-2000 students spent more time working on their assignments as well as getting related information from the web-supplemented site than the Fall-1999 students. Table 6 shows that 71.83% of students during the Spring-2000 spent more than one hour per week working on course assignments and 26.76% were getting other course related information from the web. The percentages for the Fall-1999 students are 43.94% and 16.16% respectively.

Most of the students like having the web-supplemented course site. Table 6 shows that in Fall-1999, 80.60% of students liked the web-supplementation and 97.18% in the Spring-2000 admitted that they liked working with the web-supplemented site an increase of 16.58%. These percentages also show that the more time they spend on the web-supplemented site, the more they like the facilities.
The test statistic used in Table 7 is the Chi-square test statistic for independence. Based on the Chi-square value

and a level of significance of 5% we should conclude that assignment is dependent of the ability to download the course related materials, and hence there is an association between the two categories. The students spend more time working on assignments on the web because the web provides them with the ability to read and download the course materials. Hence, since the students can read or download the course material from the web to study before taking the quiz or doing other Assignments, eventually they spend more time on the web. This association is supported by the significant association between Get Information with Quiz and Link. The students spend more time on the web getting the course-related information for their preparation to take the quiz or to link to another site for more information. These significant associations show that the students spend more time on the web because the web helps them to be prepared for the course.

The percentage of students who like using the web increased from Fall-1999 to Spring-2000. This situation is supported by the significant associations between how much they liked the web with how the web helped them to Download, Communicate, Do Quiz, and Link to other sites. The Chi-square statistics for those associations are very large. These associations show that the students like using the web because it helps them to painlessly do different activities related to the course. This statement is supported by the length of time the students spend on the web-supplemented site (see Table 6), the percentages of time they spend also show that the more they spend time on the web-supplemented site, the more they like the web-supplemented site.

In general, the reasons that may increase the student percentages on most of the measured factors between the Fall-1999 and the Spring-2000 are: (1) in Spring-2000 the instructor and web-supplemented staff have more experience to assist students in using the web-supplemented course facilities, (2) newer facilities were available including new computers with faster processors, bigger bandwidths and faster networking plus reduced down time in the computer labs, and (3) more students have had web-supplemented course experience on the class list.

SUGGESTION FOR WEB-SUPPLEMENTED COURSE DEVELOPMENT USING WEBCT

The default facilities available in WebCT are actually enough to conduct the online course completely. Therefore, developing the Web-Supplemented Course using WebCT package is not complicated. It is easier than if you develop your web from scratch using HTML, Netscape Composer, FrontPage or another programming language. The following are some to do list tips:

1. Before you begin to develop your web site, it is advisable to attend a WebCT workshop. Make sure that the WebCT administrator creates a new WebCT template where you can start to develop your site.

2. Plan in advance what facilities you are going to utilize in WebCT. The initial main facilities (represented in icons) are: Course Content, Bulletin Board, Private Mail, FAQ, Calendar of Course Events, Online Quizzes and Survey, Course Tools and Other Useful Links, and General Tools and Other Links. You may delete, update, or add facilities. Any information posted in WebCT is available to be copied, down-loaded, or printed by a registered member of the course.

3. Prepare the information using any document type: text, audio, video, Word, Excel, Access, PowerPoint, etc. Make sure that the students are able to access and open the document using available software in the computer lab. Upload them into the WebCT system and adjust them to the WebCT template accordingly.

4. In Course Content you can post your syllabi and summary of chapters as a study guide. Students love to have summary of chapters in the form of transparencies that they can print as a handout.

5. Bulletin Board is a threaded discussion. You can discuss or post information to everybody listed in the course. Limit your involvement as a moderator, facilitator, commentator, or problem solver by offering limited comments or answers only when necessary, i.e., to conclude or focus the discussion or to start a new one

6. Private Mail is also a threaded message. However, unlike Bulletin Board, in Private Mail you can specify the destination of your message to one, several, or all of the registered members.

7. The initial content of the FAQ icon consists of information about WebCT. You may replace this with information related to the course.

8. In the Calendar of Course Events, you may post information for each date of the course, then hyperlink to more detailed information when that date is clicked.

9. To record quizzes into WebCT format is laborious work. However, if the test bank is available in WebCT format, then it only takes a few minutes to upload and adjust them to your needs. It is possible to have Fill-in-the-Blank and Essay types of question, but most of

the students and faculty prefer Multiple Choice and True/False questions. You can set the date, time, duration, and the number of questions for each quiz. You can also set the system to randomly select the questions from the question bank, set the system to automatically grade the quiz and allow the student to see his/her grade as soon as he/she submits it. You literally may observe how each student does while he/she is taking a quiz.

10. Under the Course Tools and Other Useful Links, initially there are five other facilities. The most important is Online Chat. However, chat room is best with a small group or at most five students. You can set up a meeting with your students using chat room. To address a large group of students, Bulletin Board is better. By default, there are four different chat rooms available, one general chat room for your course, and one general room for all courses in the university system.

11. In General Tools and Other Links there are six other facilities, three of them are important: (a) Change Password, usually faculty set the student account with their user-name as password, the student may change his/her password using this facility; (b) Student Presentation, the student may place their presentation materials (i.e., transparencies) in this facility and make the presentation (in the classroom) directly from WebCT; (c) View Your Marks and Course Record (in my experience, the students love this facility). Make sure you create the student record in Numeric data type, this allows you to calculate and present the statistical calculation and graphic of the record.

12. There are a lot of default facilities that you may not need or you may need to create for your course. It does not take much effort to add or delete any facilities along with their icon representation. You can choose the template, image, or icon from any data source or you can create them yourself.

13. You and the students can compile a cluster of related information available in Bulletin Board and Private email to be saved or printed separately. In addition, as faculty, you have the opportunity to compile and save all information for the course in a compressed file that could be extracted later.

For the students, the most useful facility is View Your Marks and Course Record. Students can observe their course marks and record of the course. They can statistically compare their standing in the course with other students, calculate their current grade, or find out on what part of the course they need to work more. They also find that the Bulletin Board and Private Mail are interesting to use. They like the web-supplementation because the web helps them to easily read and down-load the course materials, communicate privately with the instructor or other students in the class, do the quiz whenever they feel ready during the allowable time, and find related links. Most of them spend more than one hour taking quizzes and more than one hour doing other things (read and down-load course materials, communicate with others in the class list, find related links) per week in the web. In addition to class meetings and doing other assignments for the course, a total of more than two hours for course work in the web per week obviously will help the student to comprehend the course materials than if they study by themselves for the course.

For the faculty, to be able to easily create and present course materials on the web using the WebCT package is really helpful. In addition, they can keep track of and set the course progress, track the students' progress, conduct private online communication with the students, and post each student's progress and grade privately (since IUP will mot permit faculty to post grades in the hallway anymore). Under IUP's regulation, they can schedule one third of the class meeting online giving them the opportunity to do other jobs and freedom to the students to study by themselves.

SUMMARY

The intention of this paper was to examine the adequacy and effectiveness of various Web-supplemented course materials and activities that help accelerate student learning and to investigate the students' and faculty's perception of web-instructional tools such as WebCT. It was clear from the survey results and the accompanying analysis that the availability of information on the Internet may not necessarily be as effective for improving the students' learning without student-faculty Internet communication or interaction. Even though the percentage of these activities show that the students are persistent in accessing the information, just as is the case with traditional textbook-reading activities, it was evident that the more time the students spend accessing these facilities may not simply translate itself into course benefits of better learning and stronger grasp of the subject matter. On the other hand, the faculty perception that effective use of the web amount to simply providing syllabus and course related information has changed dramatically since the Fall semester of 1999 as evidenced by the increase of the students' usage of the Web-based instructional tools. It was clear that more instructors are using the Internet to provide supplemental course material and that these materials are not limited to syllabi. More internet communication or interaction (through email, chat-room, and bulletin board) between

student and faculty were also clearly very important to help students use web-supplemented course materials effectively. Thus, faculty attempts to translate the technological possibilities of the Internet, particularly the web, into more effective learning was shown to be progressing rapidly and to assess the success of these attempts, a controlled environment where course performances using web and non-web supplemental material could be compared is definitely a need to be considered in future research.

Table 1
The Correlation Among Variables that Encourage Students to Use the Internet

Variable Names	Content	Communi-cation	Assign-ment	Informa-tion
Communi-cation	0.53250 (0.0001)			
Assignment	0.32789 (0.0049)	0.41143 (0.0003)		
Information	0.48866 (0.0001)	0.44323 (0.0001)	0.56576 (0.0001)	
Research	0.36314 (0.0010)	0.21946 (0.0520)	**0.14370 (0.2314)**	0.36604 (0.0011)

Table 2
The Faculty Perception on Using the Internet Effectiveness

Variable Names	Not to Less Effective	Somewhat Effective	Yes to Very Effective
Content	22.5%	41.25%	36.25%
Communication	27.16%	33.33%	39.51%
Assignment	53.42%	12.33%	34.25%
Information	20.51%	24.36%	55.13%
Research	13.95%	25.58%	60.47%

Table 3
The Correlation Among Variables that Help Students

Variable Names	Download	Communicate	Quiz
Communicate	0.63052 (0.0001)		
Quiz	0.60983 (0.0049)	0.58521 (0.0003)	
Link	0.69380 (0.0001)	0.65073 (0.0001)	0.59768 (0.0001)

Table 4
The Student Perception on How the Web-Supplemented Course Help Them (Fall-1999 and Spring-2000)

Table 4 (a)

Variable Names	Disagree	Agree	Do not Know
Semester	Fall-99	Fall-99	Fall-99
Download	18.73%	74.32%	6.95%
Communicate	15.52%	77.61%	6.87%
Quiz	20.00%	62.42%	17.58%
Link	15.20%	48.03%	38.78%

Table 4 (b)

Variable Names	Disagree	Agree	Do not Know
Semester	Spring-00	Spring-00	Spring-00
Download	0.00%	92.96%	7.04%
Communicate	1.41%	90.14%	8.45%
Quiz	5.64%	91.55%	2.82%
Link	2.82%	67.61%	29.58%

Table 5
The Web-Supplemented Course Resources the Students Utilize the Most (Fall-1999 and Spring-2000)

Table 5 (a)

Variable Names	Between 0-7	Between 8-11	More than 11
Semester	Fall-99	Fall-99	Fall-99
Course Content	57.99%	19.44%	22.57%
Bulletin Board	81.09%	10.58%	8.33%
FAQ	90.82%	7.21%	1.97%
Calendar	78.20%	13.78%	8.01%
Quizzes	33.33%	10.16%	56.51%

Table 5 (b)

Variable Names	Between 0-7	Between 8-	More than 11
Semester	Spring-00	Spring-00	Spring-00
Course Content	35.21%	23.94%	40.85%
Bulletin Board	9.86%	19.72%	70.42%
FAQ	87.33%	8.45%	4.23%
Calendar	53.52%	26.76%	19.72%
Quizzes	19.72%	23.94%	56.34%

Table 6
The Time Spent and How the Students Liked the Web-Supplemented Course (Fall-1999 and Spring-2000)

Table 6 (a)

Variable Names	< 1 hour	1 - 2 hours	> 2 hours
Semester	Fall-99	Fall-99	Fall-99
Assignments	56.06%	31.21%	12.73%
Get information	83.83%	13.47%	2.69%
	Do not Like	Like it	Very Like it
Semester	Fall-99	Fall-99	Fall-99
Course on Web	19.39%	57.27%	23.33%

Table 6 (b)

Variable Names	< 1 hour	1 - 2 hours	> 2 hours
Semester	Spring-00	Spring-00	Spring-00
Assignments	28.17%	57.75%	14.08%
Get information	73.24%	19.72%	7.04%
	Do not Like	Like it	Very Like it
Semester	Spring-00	Spring-00	Spring-00
Course on Web	2.82%	59.15%	38.03%

Table 7
The Dependency Between the Time Spent and How the Students Like the Web-Supplemented Site with the Web Facilities that might Help Them

Variable Names	Assignments	Get Information	Like Course on the Web
Download	**9.573 (0.048)**	4.802 (0.308)	**32.494 (0.001)**
Communicate	1.008 (0.909)	4.721 (0.317)	**21.304 (0.001)**
Quiz	7.019 (0.135)	**13.645 (0.009)**	**40.977 (0.001)**
Link	6.987 (0.137)	**11.969 (0.018)**	**30.356 (0.001)**

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APUBEF

Thursday, October 5, 2000:

12:00 p.m. - 1:00 p.m. **Registration**

1:00 p.m. President APUBEF **Welcome**
Jonathan K. Kramer, Kutztown University

1:00 p.m. – 2:15 p.m. **Session 1**

Moderator: Willard Robinson, Indiana University of Pennsylvania

Understanding College Persistence: Exploring Measures of Commitment Among Seniors
Eileen A. Hogan, Kutztown University

The Relationship Between Accounting Information and Market- Determined Risks: A New Look
Ronald Woan, Indiana University of Pennsylvania

The Value of an International MBA Program
Theodore A. Hartz, Dean of the College of Business, Kutztown University

2:15 p.m. – 3:30 p.m. **Session 2**

Moderator: Roger Hibbs, Kutztown University

Forgotten Elements of System Design
Louise Burky, Indiana University of Pennsylvania

An Interindustry Analysis of Economic Value Added as a Proxy for Market Value Added
Jonathan K. Kramer, Kutztown University
Jonathan Peters, CUNY-Staten Island

3:30 p.m. – 4:00 p.m. **Coffee Break**

APUBEF

Thursday, October 5, 2000 (cont'd):

4:00 p.m. – 5:20 p.m. **Session 3**

Moderator: Eileen Hogan, Kutztown University

Changing Opinions of an Accounting Survey Course by Non- Business Students
Charles J. Pineno, Clarion University
Randon C. Otte, Clarion University
Susan G. Patton, Clarion University

Utilization of Data Mining Techniques to Detect and Predict Accounting Fraud: A Comparison of Neural Networks and Discriminant Analysis
James A. Rodger, Indiana University of Pennsylvania
Parag Pendharkar, Pennsylvania State Capital College
James Solak, Indiana University of Pennsylvania
Kustim Wibowo, Indiana University of Pennsylvania

The Impact of a Changing Delivery System on Higher Education
Ronald Tarullo, California University of Pennsylvania
Susan Mongell, California University of Pennsylvania

6:00 p.m. **Dinner**

Special after-dinner presentation: A Comprehensive Financial Strategy for You
William M. Liberman of Wienken and Associates

8:00 p.m. **Executive Board Meeting**

8:30 p.m. **APUBEF Social Hour**

APUBEF

Friday, October 6, 2000:

8:00 a.m. – 8:30 a.m. Registration & Coffee and Donuts

8:30 a.m. – 9:45 a.m. **Session 4**

Moderator: Louise Burky, Indiana University of Pennsylvania

Using Data on Students' Perceptions and Attitudes to Explore Why College Students Persist
Eileen Hogan, Kutztown University
Norman Sigmond, Kutztown University

The Status of Multi-Disciplinary Practice in the US
Dennis Ames, Indiana University of Pennsylvania

Is "Dressing Down" Really Being Practiced in the Accounting Profession?
Stan Yerep, Indiana University of Pennsylvania
Bill McPherson, Indiana University of Pennsylvania

9:45 a.m. – 11:00 a.m. **Session 5**

Moderator: John McGrath, University of Pittsburgh at Johnstown

Start-up Companies and the Information Content of Dividends
Soga Ewedemi, Clarion University
Chin Yang, Clarion University
Woodrow Yeaney, Clarion University

Special Student Presentation: Leaders and Leadership Characteristics and Their Role in Mergers, Acquisitions and Reorganizations
Gregory Young, Kutztown University

An Analysis of Management Information Systems Professionals' Roles in Business Communications Tasks and Tools
Kustim Wibowo, Indiana University of Pennsylvania
Bill McPherson, Indiana University of Pennsylvania

11:00 a.m. – 11:30 a.m. **Business Meeting**

APUBEF Annual Fall Business Meeting
Jonathan K. Kramer, President

APUBEF

Friday, October 6, 2000 (cont'd):

11:30 a.m. – 12:30 p.m. **Session 6**

Moderator: Soga Ewedemi, Clarion University

Faculty Information Resources: Factors That Need to be Considered
Kustim Wibowo, Indiana University of Pennsylvania

A Study of Efficiency in the Pennsylvania System of Higher Education
Steven Andelin, Pennsylvania State University- Schuykill

Pennsylvania Journal of Business and Economics: A Fresh Perspective
Carole Anderson, Clarion University
Kevin Roth, Clarion University

12:30 p.m. – 1:30 p.m. **Lunch**

1:30 p.m. – 3:00 p.m. **Session 7**

Moderator: Ron Tarullo, California University of Pennsylvania

Special Presentation: The State of the Union
William E. Fulmer, President of APSCUF

Why Strikes Occur: Evidence from the Capital Markets
Jonathan K. Kramer, Kutztown University
Thomas Hyclak, Lehigh University

The Realities of Retirement Annuities: A Tax and Financial Planning Perspective
Norman Sigmond, Kutztown University

3:00 p.m. **Concluding Remarks**