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EDITORIAL NOTES

We would like to give special thanks to Louise Burky, James Rogers, and Parag Pendharkar for providing a smooth transition in the editorship of our Journal. Several of the papers included in this edition were in various stages of review and/or acceptance under their leadership as prior editors. We thank them for the guidance, leadership, and commitment they have provided in furthering the interests of our publication and our organization.

As we continue to move forward in terms of quality assurance, our reviewers and review process become increasingly important. We thank our authors for their patience and our reviewers for their commitment to rigorous and timely reviews. With the printing of this document, we have established forty-one reviewers currently representing eleven different institutions. Of those, thirty-three different reviewers have participated in the review process, several of which are first time reviewers for our publication. We must continue our commitment to expanding the base of authors, reviewers, and participating institutions if we are to meet our quality objectives. We have completed the successful process of ensuring that our Journal will be listed in the most recent edition of Cabell's. This provides evidence of our concern as an organization for continuous improvement and dedication to producing the highest quality publication for our constituents.

This edition of the *Pennsylvania Journal of Business and Economics* includes six papers representing both timely and useful topics in the business discipline. The articles offer a mix of topical coverage including pedagogical, technological, and mainstream managerial issues of key importance to both educators and practitioners. While the number of papers in this edition is reduced, we are also planning on a fall publication to provide increased opportunities to our authors. Several papers are currently in the latter stages of our review process.

As editors, we ask that you continue to encourage your colleagues to consider our Journal for submission of their research. We will continue to move towards improved quality in our publication, improved communication with contributors, strengthening of our publication process, and increased recognition for our review participants.

We provide thanks to the review board members who have helped match reviewer expertise with our paper submissions and have greatly facilitated the overall review process. In addition, we would like to thank the following reviewers for their diligence, time, energy, and expertise with the review of papers included in this edition and/or papers currently in process.

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INTERNET RECRUITING: INSIGHTS AND RESEARCH DIRECTIONS

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ABSTRACT

Many companies are beginning to discover the usefulness of the Internet as a viable alternative or supplement to traditional recruiting methods. This paper examines recent developments in the area of Internet recruiting and presents the findings of an exploratory examination of organizations engaged in this activity. The study is designed to gather input from human resource managers regarding the value of the Internet in their recruiting programs. Results are based on a structured questionnaire administered to a selective group of human resource executives. Findings suggest that while Internet recruiting has increased and future prospects appear promising, technical and cost limitations are still prevalent. Questions are posed regarding the future direction of research related to Internet recruiting.

INTRODUCTION

The popularity of the Internet/World Wide Web has grown exponentially both in terms of consumer use and as a medium for business. Current diverse applications include the posting of information via news releases to e-commerce and the promoting and selling of products and services online. Of particular interest in this paper is the rapid growth in Internet activities and services which relate to recruiting efforts by human resource professionals. Such activities appear to have the potential to revolutionize the recruitment component of the human resource process.

The human resource professional has a number of optional recruiting tools and techniques available. Approaches such as telecommuting, hiring people from downsizing companies, campus recruiting, internal talent searches, and in-house employee referrals have each been successful as effective recruiting tools and strategies. A promising recruiting medium that has recently emerged is the use of the Internet where job announcements can be easily posted and qualified candidates for available positions can be identified. This process of on-line recruiting is often referred to as "cybercruiting." Cybercruiting provides the human resource professional with access to a larger pool of candidates than the more traditional recruiting practices of posting position announcements in professional or trade journals and regional newspapers. When coupled with the more traditional recruiting techniques, cybercruiting allows an organization to focus efforts on an untapped segment of potential candidates for a comparatively moderate financial investment. This has helped to establish the technique as an attractive alternative or supplement to the traditional recruiting methods.

The timing of the Internet/human resource synthesis seems appropriate particularly considering the recruiting struggles companies have recently experienced. Improving economic conditions of the late 1990's have resulted in a situation where many U.S. companies are increasingly unable to find qualified employees. The national unemployment rate, seasonally adjusted for September 2000 is 3.9% (U.S. Department of Labor, Bureau of Labor Statistics, 2000). This number reflects a steady, downward trend with the expectations that resulting labor market shortages will continue into the near future. As competition for qualified people intensifies and labor market shortages continue to emerge, organizations will be forced to use more creative and innovative approaches to attract and retain the human resources they need.

LITERATURE REVIEW

A review of the literature provides evidence that the Internet has begun to permeate human resource practices in a meaningful way. For example, Hansen

(1998) reports a rapid growth of Internet recruiting documented in a 1998 American Management Association survey of human resource professionals. In this survey, member groups indicate that "although electronic and online recruiting accounted for only 13% of their efforts for the years prior to 1997, the increase in growth has mushroomed 35% for the 1997-1998 years." Similar findings are reported in a J.W.T. Specialized Communication study where 70% of human resource personnel surveyed are currently using the Internet for job posting as compared to 21% in 1996. In addition, large-scale recruiting firms such as Heidrick and Struggles International Inc. and Korn-Ferry International Inc. are supplementing traditional employee search techniques with Internet based techniques (Murphy, 2000).

One of the key advantages of Internet recruiting is that job advertisements may be posted less expensively on the Internet than in traditional media forms. The Internet has the potential to deliver these cost savings while increasing the overall customer reach. Supporting this claim is a number of "how-to" articles that have recently appeared (Wilson, 1996; Maynard, 1997; King, 1996; and Cafasso, 1996). These authors extol the merits of using the Internet to assist in the recruitment of qualified individuals as well as teams. For example, in the cover story of Nation's Business, Maynard (1997) cites the fact that there is a significant cost differential for placing a 60-day classified-ad listing with Internet recruiting services as compared to the high cost of running a weekend ad in a local paper. Additionally, these Internet advertisements were described as having the potential to be viewed by individuals worldwide as compared to the relatively limited distribution of a local newspaper.

Several alternatives exist for implementing a program of Internet recruiting activity. The first, and perhaps most popular strategy, is to subscribe to an Internet recruiting service provider, often referred to as third-party recruitment sites. Sites such as CareerWeb (www.cweb.com), CareerMosaic (www.careermosaic.com), Online Career Center (www.ccc.com), and MonsterBoard (www.monsterboard.com) are well known job-opportunity cyber locations where available positions are posted for a nominal subscription fee for the listing organizations. The selling point for this service is the high number of job seekers who access the sites on a daily basis. For example, CareerMosaic boasts that it receives over 300,000 queries every day while the MonsterBoard is much more conservative at 75,000 job seekers per day. Greengard (1998) provides evidence of the widespread appeal by noting that according to Electronic Recruiting News, over 2,500 Web sites offer job postings with more than 1.5 million resumes online. Two minor limitations are associated with this strategy. First, it excludes many employed job hunters who for whatever reason wish to keep their resumes off the web to prevent their current employer from discovering their job search activities. Second, this approach often results in a high-volume of resumes from unqualified applicants.

In addition to these numerous third-party recruitment sites, there are also print media sites, USENET newsgroups, and Listserve which function in a more traditional manner for listing job opportunities. To avoid significant decline to a revenue source they have long dominated, many newspapers and magazines are now publishing electronic versions of their publications, including the recruitment section. Ads on these sites are identical to the print version and are published for a nominal fee or offered free as an incentive for purchasing print ads. The principle advantage of this type of recruiting strategy is that many job seekers feel comfortable using the more familiar newspaper of a specific geographic location. As of November 1996, 150 U.S. newspapers ran ads from their classified pages on the Internet, up from 10 in 1995 (Maynard, 1997).

Job-oriented groups make up a small, but very active, portion of the over 15,000 special interest forums that are USENET. Placing jobs on a newsgroup is fast, inexpensive, and effective. Newsgroups are still a favorite among active job seekers, but the lack of order or a detailed search mechanism and recent domination by headhunters make these sites less attractive than their Web counterparts. Finally, Listserves, or direct e-mail lists, are less well known than other on-line recruitment resources but can be extremely valuable tools. Information is sent to one central e-mail address and then automatically distributed to everyone who "subscribes" to that Listserve. This precise targeting is especially effective for diversity, college, and skill-specific recruitment. Depending on the Listserve there may be a charge for submitting job openings.

Another method for announcing available positions is the creation of a position-posting section on the organization's web site. This allows the company to sell itself to potential employees by including pages that address or include the mission and vision statements, the merits of working for the organization, and information about the geographic region of the posted- position. This allows the job seeker the advantage of learning about the organization prior to making a decision as to whether or not to submit an application for the advertised position. An additional organizational benefit is that they can control the flow and amount of information to be posted.

An Austin Knight (1997) survey on Internet recruiting demonstrated that "aggressive Internet recruiters are seeing dramatically better results than their more cautious counterparts." The study found that companies that have been posting jobs for more than 6 months and those that have posted over 50 jobs to date were making hires at a faster rate than less aggressive firms. The "aggressive" companies have filled an average of 20 positions as a direct result of their on-line job listings, while 10% have made over 50 hires. This compares to only 3 hires made by companies that posted less than 50 jobs. The study further reveals that not only were the "aggressive" companies hiring more people from the Web, but they also received an average of seven more responses per posting, while rating the quality of those responses considerably higher.

For these "aggressive" companies it was noted that the cybercruiters were more likely to post jobs on their corporate Web sites than rely on third-party recruitment sites. In comparing data to an earlier Austin Knight survey completed in 1996, there was an increase of 400% in the number of companies that had their own corporate Web sites. The underlying logic for this expansion is the belief that most individuals using job-posting board services are people who are actively looking for a new job, but in a tight employment market companies need to appeal to a broader base of individuals. Ben Klau, Austin Knight's Manager of Interactive Services, was quoted as saying "Corporate homepages are better able to meet this challenge by providing information of value to both the active and passive job seeker alike." (http://www.austinknight.com/press.htm)

A significant limitation associated with this web-site recruiting strategy is that the potential employee must be actively seeking employment with the specific organization in order for them to visit the organization's home page. Hildebrand (1998) offers several approaches that can minimize this impact. The first approach is designed to promote the web site address through company letterhead, business cards, brochures, coupons, lobby windows, trade show handouts, building signage, and newspaper advertising. A second strategy suggested by Hildebrand (1998) is to use current Internet technology to the organization's advantage. This is accomplished by purchasing banner advertising on career and job-posting sites, registering with on-line directories and indexes, purchasing a keyword from search engines so that the web site address pops up whenever someone does a search for specific job categories.

A final cybercruiting strategy involves a slightly different approach in which the employer searches the web for resumes of qualified individuals that have been posted on either free job boards or on personal web sites. Historically, this has been a relatively inefficient and time-consuming activity. Recently developed software, however, has enabled employers to identify potential employees through a technique called "resume spidering" (Ouellette, 1998). This "spider" software "crawls" through the World Wide Web overnight, looking for new resumes posted on free job boards, personal Web sites and the many Usenet news groups dedicated to job and resume posting. An automated greeting from the client-company is e-mailed to the candidate. This type of Web searching service is in its early stages, but the service is expected to proliferate in the future. Early users of the search agents agree that this technique provides a competitive advantage to recruiters because of the overnight response to new postings. In addition it significantly reduces the amount of time the human resource manager needs to spend searching sites for appropriate job candidates. The subscription service costs approximately $500 per month and permits members to post job openings.

Several other unique and novel recruiting trends have recently emerged. One such trend is referred to as the "human auction". During the summer of 1999, Monster.com launched Monster Talent Market where job seekers posted their skills and resumes while

companies "bid" by offering positions with specific salaries and benefits. The potential employee had the luxury of waiting for the bid price (combination salary and benefit package offer) to reach what they felt appropriate in today's job market. This emerging art has become known as "e-cruiting."

Another recent strategy employed by recruiters is to monitor chat rooms or newsgroups where employees discuss a variety of topics. The right comments, concerns, and/or buzzwords lead to a job offer from an e-cruiter. Additionally, companies have been known to offer games with prizes as a means of identifying qualified job candidates. As a result of a high score on a particular game, the contestant is often recruited for employment in the organization.

Niche marketing in the recruiting process has also taken hold as more and more specific recruiting sites appear. Such sites cover a broad and diverse range of interest areas including Christian jobs, bilingual jobs, six figure jobs, models, MBAs, and morticians.

With all of these strategies, there is still the concern that the employer may miss some well-qualified individuals who do not own or have access to the technology necessary to receive the position announcements or post their resumes. Recent trends to purchase common-use computers by public libraries helps to reduce the impact of this argument. In addition, many organizations are supporting the use of "JobShop" kiosks in malls where large numbers of individuals are able to review position announcements. This concern appears to be diminishing given the growing public availability of computers.

Recruiting can be a complex and costly process. Adding Internet recruiting strategies to the conventional mix of activities has the potential to increase rather than decrease the amount of time and effort necessary to successfully identify the best qualified job candidate. While it is true that the Internet appears to have the potential to reach greater numbers at reduced costs in comparison to traditional marketing efforts, the evolving recruiting strategy should be viewed as a complement to more traditional recruiting practices. The immediacy and interactive dimension it adds to the recruiting process is where the true value-added dimension makes its impact.

While it is true that business practices must change as technology changes, one has to be cautious to ensure that the newer practices are more efficient and effective than previous practices. What is lacking in this technology driven change to recruiting practices are studies which evaluate the effectiveness of the technique in comparison to more traditional methods. Cost issues associated with cybercruiting must also be addressed before this method will become an exclusive and preferred recruiting technique.

METHOD

For this study, a questionnaire was designed to determine the level of Internet recruiting activity and its usefulness. It was completed by sixty four individuals who at the time of the study were highly placed human resources executives/administrators in organizations located in the Mid-Atlantic geographic region. The study was conducted during the fall semester of 1998.

An analysis of the results demonstrated that almost 80% of the respondents were currently using Internet recruiting with over 78% of the respondents working for organizations that employed over 5,000 individuals. Over 65% of those human resource executives indicated that their organizations used the Internet to recruit for executive, administrative and managerial positions, professional specialties, and technicians and other support personnel. To a lesser extent, these executives used Internet recruiting to recruit service, sales, precision production, craft and repair workers, general laborers, and administrative support personnel, including clerical employees.

Many of these executives, 78%, used a third-party recruiting service; while the same percentage, 78%, also posted jobs on the company homepage (although not necessarily the same 38 individuals). Approximately, 50% of the respondents scrolled resume databases. Of those using a third-party recruiting service, 54% indicated they paid a fee for the service. Only 18% of respondents indicated they had cut back or eliminated other recruitment sources as a result of using the Internet for recruiting purposes. Those who indicated specific cutbacks cited newspaper advertising and employment agencies. One individual made the comment that "print advertising rarely brings in good candidates anymore and it costs a fortune. In addition, Internet brings good candidates for free."

Although a significant number of respondents were using the Internet as a recruiting tool, they did not indicate that it had any noticeable impact on affirmative action beyond increasing the number of applicants. Several respondents indicated that it was too early to determine any measurable difference in actual hiring results. It was suggested that using the Internet did, however, afford organizations the opportunity to expand the message that they are equal employment opportunity employers.

In addition to cybercruiting, the respondents used many of the traditional recruiting sources including newspaper advertising, job fairs and conferences, public and private employment agencies, executive search firms, college/university recruiting, and employee referrals. Recruiting sources such as direct mail, television and radio were not as widely employed.

User Comments

Comments about the problems associated with Internet recruiting varied widely. Several respondents noted problems associated with lower than desirable response rates. Several others indicated it was too time consuming to search databases, work through the maze of information, and keep up with the proliferation of alternative sites. Others commented on the technical aspects of the Internet suggesting they lack some of the necessary interfaces with their internal systems for efficient use. Examples of this limitation included the fact that sites often required a different format for data, security concerns resulted in limited access, and a general lack of internal technical competency in web page development and maintenance. Other respondents were concerned with the large number of applicants who were deficient in meeting job specifications. Several individuals also noted that Internet recruiting has not been proven to be as cost-effective as anticipated.

A number of additional comments by respondents centered around the posting of job vacancies on the Internet, the importance of focusing and targeting job applicants, and designing a home page that is simple to use. Respondents highlighted the importance of ensuring that advertisements are as detailed as possible to reduce the number of unqualified applicants, and researching the organization to ensure the candidate pool matches organizational needs when using a third party recruiting source.

Although this individual study was relatively small in size, the results do suggest serious consideration of this emerging alternative as a possible recruiting supplement. Results also imply the need for documentation and further research on a number of different human resource fronts.

DISCUSSION AND FUTURE RESEARCH DIRECTIONS

Numerous articles on Internet recruiting or cybercruiting have appeared in popular business periodicals and trade publications over the past few years. By and large, these articles provide many anecdotes or recommendations on "how-to use" the Internet for recruiting purposes. It is also evident from the literature that usage of and spending on Internet recruiting continues to grow. For example, Forrester Research estimates recruiters spent $205 million online last year and are projected to spend over $1.5 billion in 2003 (Hays, 1999). Is this spending cost effective? Are companies just "jumping on the bandwagon" or have they seriously and thoughtfully incorporated cybercruiting into their recruitment strategy? Unfortunately, to date, little formal systematic research has been conducted regarding the overall effectiveness of cybercruiting to support this increasing emphasis.

Previous research (Kirnan et al, 1989; Breaugh, 1981; Decker and Cornelius, 1979; Gannon, 1971) has shown that different recruitment techniques are related to specific employee outcomes. For example, employer referrals and other informal recruitment methods have been shown in some studies to be highly effective recruitment sources when measured against employee turnover and performance. Future research will need to determine if cybercruiting also yields high levels of effectiveness? And, if so, for what job categories and industries is it most effective?

Newspaper advertisements have not always fared well in previous research. Some studies (Breaugh, 1981; Gannon, 1971) have shown that individuals hired through newspaper advertisements tend to be unpredictable, unstable and/or low

performing employees. Will cybercruiting experience the same fate? While searching the classified section of a major metropolitan newspaper with its myriad advertisements can be a numbing experience, most Internet recruiting services offer certain advantages. For example, 270,979 job opportunities were listed at monsterboard.com. on January 17, 2000. Initially, a job seeker may be overwhelmed with so many opportunities, but the service is structured such that the job seeker is able to more narrowly focus on a specific job category and geographic area. Although this may be an obvious advantage for Internet recruiting over traditional newspaper ads it does not guarantee a better outcome for the organization. Better data regarding outcomes are needed.

As noted earlier in this paper, there are alternative Internet recruiting strategies or approaches. Are they all equally effective? Is one approach preferable over another in certain situations or job categories? Is the multiple site approach the best way to go? Is there room for executive recruiters in the Internet age? Will executive search firms be needed to find high quality candidates who are currently employed and not in the job market? Will the Internet as a recruitment tool drive out the use of all other recruitment methods? While this scenario is unlikely, the growth of Internet recruiting likely will lead to a reallocation of recruiting resources (human and financial) within the organization, no doubt with Internet recruiting receiving a much bigger piece of the pie. As stated earlier, 18% of the respondents in this study indicated that they had either cutback or eliminated other recruitment sources as a result of using Internet recruiting.

Also, as long as protected minorities have fewer resources and less access to computers than non-minorities, firms may have to use more aggressive methods to recruit minorities or risk charges of unlawful discrimination. As Holger et al (1998) note, the possibility that ethnic minorities could successfully challenge on-line recruiting as an unfair employment practice is a realistic threat to the universal implementation of electronic hiring processes. Even if future research demonstrates that cybercruiting is correlated to lower turnover rates and better performers, sole reliance on the Internet to fill job vacancies may still be unwise. This has been the case with employee referrals that have been shown to lead to better organizational outcomes. Firms where protected minority group members were underrepresented in their work force as compared to their availability in the labor market have been required to use more aggressive methods for recruiting protected minority group numbers. If protected minority group members are underrepresented in the employer's work force, using cybercruiting as the sole recruitment method similarly may actually worsen this situation.

Numerous organizations have been using Internet recruiting for a number of years. It now seems appropriate to seek empirical evidence from these organizations to determine if employees who have been hired through cybercruiting exhibit quality differences (in terms of performance and turnover) in comparison to those recruited via the traditional information methods. Of course, even if cybercruited employees are not any better than employees recruited through other sources, cybercruiting may still offer a key advantage if the costs per hire are less than the alternatives.

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EMPLOYER RETALIATORY DISCHARGE FOR EMPLOYEE CLAIM FILING FOR PENNSYLVANIA WORKERS' COMPENSATION BENEFITS

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ABSTRACT

The employment relationship between the employer and an employee in Pennsylvania is governed by the legal doctrine of at-will employment which allows discharge without stating a cause. However, the doctrine is not absolute and an employer may be subject to liability if the employer terminates an employer for a "wrong" reason. Whether employer retaliatory discharge for employee claim filing for workers' compensation benefits constitutes a legally actionable public policy exception to the Pennsylvania at-will doctrine is the paper's central focus. Pertinent implications for Pennsylvania employers are addressed.

INTRODUCTION

Prior legal developments pertaining to public policy exceptions to the doctrine of at-will employment in Pennsylvania has generated substantial legal uncertainty. A significant legal controversy has centered on whether employee filings for Pennsylvania statutory-provided employment benefits constitute protected actions that enable aggrieved dismissed employees to institute retaliatory lawsuits against offending employers. Prior Pennsylvania appellate court cases have reached conflicting legal conclusions. In Highhouse v. Avery Transportation[1], an employee who was allegedly dismissed for filing for unemployment benefits was permitted by the Pennsylvania Superior Court (an appellate court) to initiate a lawsuit against his former employer. Conversely, in Shick v. Shirey[2], the same Pennsylvania appellate court refused to permit a wrongful discharge cause of action against an employer that allegedly terminated an employee for filing for workers' compensation benefits. Moreover, a U.S. federal district court that construed Pennsylvania law on this legal issue interjected more confusion by predicting in Pettinger v. American Can Co.[3] that a cause of action for retaliatory discharge of an employee for filing for workers' compensation benefits would be recognized by Pennsylvania state courts. The unsettled state of law in this area has imposed significant hardship on both employees and employers – neither being certain of their respective legal rights.

AT-WILL EMPLOYMENT DOCTRINE IN PENNSYLVANIA

Most Pennsylvania employees in the private sector do not work under the terms and conditions of a written contract. Consequently, the specific terms of the employment relationship regarding such matters as duration and/or grounds for termination are not expressly stated. Thus, although employers may not terminate employees for improper reasons (e.g., advocating unionization or firing on a proscribed discriminatory basis), employers are, nevertheless, free to simply dismiss at-will employees without stating a reason or cause. Pennsylvania has historically recognized this unfettered right of employers to discharge at-will employees, for no reason, in the absence of a contractual or statutory prohibition.[4]

The Pennsylvania state law presumes that employment is at-will. Generally, no Pennsylvania common law cause of action for termination of an at-will employee can be maintained against an employer.[5] At-will employees may be terminated for good cause, bad reason, or no reason at all.[6] As stated in Clay v. Advanced Computer Application Inc.,[7] "Exceptions to this rule have been recognized in only the most limited of circumstances, where discharges of at-will employees would threaten clear mandates of public policy."[8] Employees are rarely successful in Pennsylvania state courts when attacking employers for

wrongful discharges in Pennsylvania when their employment relationships are determined to be at-will.

Wrongful discharge of at-will employees was initially recognized by the Pennsylvania State Supreme Court in 1974 as being actionable in Pennsylvania in the landmark decision Geary v. United States Steel Corp.[9] Although Geary lost his lawsuit based on other grounds, the Pennsylvania Supreme Court stated:

> [T]here are areas of an employee's life in which his employer has no legitimate interest. An intrusion into one of these areas by virtue of the employer's power of discharge might plausibly give rise to a cause of action, particularly where some recognized facet of public policy is threatened. The notion that substantive due process elevates an employer's privilege of hiring and discharging his employees to an absolute constitutional right has long since been discredited. But this case does not require us to define in comprehensive fashion the perimeters of this privilege, and we decline to do so. We hold only that where the complaint itself discloses a plausible and legitimate reason for terminating an at-will employment relationship and no clear mandate of public policy is violated thereby, an employee at-will has no right of action against his employer for wrongful discharge.[10]

Geary, a salesman for fourteen years, had been discharged after he voiced opinions that his employer's new tubular products for the petroleum industry were inadequately tested and unsafe. He had continued to express his reservations after being ordered by his employer to follow directions. Even though the product was subsequently withdrawn from the market, Geary was fired, nevertheless, due to his complaints and demeanor. The employee had bypassed the employer's chain of command and created a nuisance that the Supreme Court found to constitute a plausible and legitimate reason for the termination, leaving Geary without relief. The Pennsylvania Supreme Court determined that no clear mandate of public policy was present and that any implications of such were outweighed by the company's legitimate interest in preserving normal operational procedures from disruption.

A post-Geary review of Pennsylvania state court case law indicates that at-will doctrine exceptions based on a clearly mandated public policy are extremely rare. Only in those circumstances where the plaintiffs successfully demonstrate that state or federal statutes or the Pennsylvania constitution have applied to plaintiffs' cases, and that their terminations resulted from their duty to act in accordance with applicable laws, were dismissed employees successful in prevailing against their offending employers.[11]

Employee plaintiffs have stated a cause of action based on the public policy at-will exception in the state courts in Pennsylvania in limited instances. In Reuther v. Fowler & Williams Inc.[12], the employee was fired for electing to serve on a jury. Since individuals are required by statute in Pennsylvania to serve when called for jury duty in order to have citizens available for trials, the dismissed employee was permitted by the Pennsylvania Supreme Court to pursue an action against the employer after being discharged for having chosen to fulfill the required jury obligations. Likewise, a violation of a clearly mandated public policy was found in the case of Hunter v. Port Authority,[13] wherein public employment was denied to an individual on the basis of a prior conviction for which a pardon had been granted. The Pennsylvania Supreme Court found that to do so constituted a violation of the Pennsylvania Constitution and would not be permitted. Another lawsuit that did not uphold the right of an employer to fire an at-will employee due to a violation of public policy is Field v. Philadelphia Electric Company.[14] In Field, the employee had reported nuclear safety violations and was subsequently discharged. Since federal law mandated such disclosures, the Pennsylvania Supreme Court permitted the at-will employee to bring suit against the employer. In distinguishing Geary, the Supreme Court noted that the employee was an expert, knew about nuclear regulatory regulations, and knew that the company's actions were not in compliance. Furthermore, the court found it significant that the risks of radiation were clear. Additionally, the Pennsylvania Supreme Court found a violation of public policy in the case of Kroehn

v. Bedway Sec. Agency, Inc.[15] An employee had been wrongfully discharged for refusing to submit to a polygraph test. Pennsylvania had adopted an anti-polygraph statute that permits employers to require employees to submit to a polygraph under very limited circumstances, none of which applied to the dismissed employee. Consequently, the Pennsylvania Supreme Court held that the employee's suit against the offending employer should not be dismissed.

THE UNEMPLOYMENT COMPENSATION–BASED PUBLIC POLICY EXCEPTION

As previously noted, the Superior Court in Pennsylvania in 1995 added a fifth scenario to the rare victories for dismissed at-will employees in the case of Highhouse v. Avery Transportation.[16] Although Pennsylvania state courts have not previously determined whether an employer's firing an at-will employee for submitting a claim for unemployment compensation constitutes a violation of public policy, the Pennsylvania Superior Court indicated that if the facts as stated by the employee could be proven, a tort claim for wrongful discharge could be established.

The employee who sporadically had driven charted buses for the employer in the Highhouse case maintained that he had quit his former job to accept a full-time position with the employer. Furthermore, he claimed to have attempted to find out what the employer's policy was regarding unemployment benefits due to the seasonal nature of the job. Evidence indicated that for a four-month period there was virtually no work for the employee. Nothing was ever guaranteed by the employer regarding the duration of employee's employment. The employee was not paid a salary but did receive a commission of twenty percent of the price charged to customers for each chartered trip for which he drove. In order to make ends meet, the employee applied for and received unemployment compensation during his unemployment, but thereafter his driving assignments were cut back. The employee further claimed that comments from management indicated that in order to succeed at the employer he would have to stop applying for unemployment benefits.

During a subsequent period of unemployment, the employee again applied for unemployment compensation benefits. Later, the employer allegedly informed the employee that all drivers would be taking a federally mandated drug test, and that he could take the test at his own expense, but that he would work only in emergency situations. When the employee inquired about his lack of a Christmas bonus as received by the other drivers, he was allegedly told that his unemployment check was his Christmas bonus. Understanding this conversation with his employer to mean that his employment had been terminated and that taking the test would be wasted money, the employee claimed that he had been fired, either actually or constructively.

While the Pennsylvania trial court rendered judgment in favor of the defendant employer, the Pennsylvania Superior Court reversed, holding that "constructive discharge of an at-will employee may serve as a basis for tort recovery if the employer has made working conditions so intolerable that an employee has been forced to resign."[17] The Pennsylvania Superior Court determined that "if the employer discharged (the employee) because he had made a claim for unemployment compensation during a period when he was not working and earning income, the discharge will constitute a violation of public policy and will support a tort claim for wrongful discharge."[18] The Superior Court concluded that the right of an employee to receive unemployment compensation is a benefit granted by the state, enacted to alleviate the hardships attendant upon unemployment. Moreover, the Superior Court noted that the Pennsylvania Unemployment Compensation Law mandates that agreements to waive, release, or commute rights under this law are invalid.[19]

THE WORKERS' COMPENSATION–BASED POLICY EXCEPTION

Conversely, two weeks following the Pennsylvania Superior Court's decision in Highhouse in 1995, a Pennsylvania trial court in Shick v. Shirey[20] held that Pennsylvania state law did not recognize a wrongful discharge claim against an employer arising from an employee's firing in an alleged retaliation for filing for workers' compensation benefits. The trial court dismissed this lawsuit prior to trial, holding that the employee failed to state a recognized cause of action in Pennsylvania.

In Shick, the employee had worked for the employer for approximately two years as an at-will employee. In the course of the employment, while pushing a cart, the employee injured a knee. The injured employee then received workers' compensation benefits for approximately two and a half months. When the employee was released to return to work, the employer allegedly informed the employee that he no longer had a job due to the pursuit of his workers' compensation claim. The employee further alleged that he was unable to find gainful employment and requested lost wages and lost insurance benefits.

In this lawsuit the Pennsylvania trial court concluded that although a previous Pennsylvania Superior Court ruling mentioned the possible existence of a cause of action for discharge of an employee in retaliation for filing a workers' compensation claim,[21] the Superior Court's recognition merely constituted dicta and was not binding on the trial court. The trial court in Shick stated that the prior ruling only acknowledged that "developing Pennsylvania law suggested there can now be a cause of action for retaliation for filing workers' compensation claims." "This is a far cry from establishing a cause of action,"[22] the trial court judge penned. The decision in Shick concurred with two previous cases rendered at the trial court level in Pennsylvania. In both Deitz v. Round Hill Foods, Inc.[23] and Elliott v. Horizons Unlimited,[24], the Pennsylvania trial court held that a cause of action for retaliatory discharge of an at-will employee who files a workers' compensation claim does not exist in Pennsylvania.

In Shick, the Pennsylvania Workers' Compensation Law was acknowledged as being completely overhauled in 1993 without mentioning a wrongful discharge cause of action as a remedy. The aforementioned Pennsylvania trial court characterized the Pennsylvania Workers' Compensation Act as being strictly for compensation for work-related injury, and that if the current state of the law was to be changed to further the interests of workers, Pennsylvania state lawmakers were to do it – not Pennsylvania judges.

FEDERAL CASE LAW CONSTRUING PENNSYLVANIA WORKERS' COMPENSATION-BASED PUBLIC POLICY EXCEPTION

Federal courts when addressing the issue of workers' rights in Pennsylvania have adopted a much more expansive approach than the Pennsylvania state courts. Specifically addressing the issue of whether or not a cause of action exists when an at-will employee is fired for filing a workers' compensation claim, a federal district court judge in Pennsylvania held that the state courts of Pennsylvania would recognize a cause of action for retaliatory discharge of this nature in the case of Rettinger v. American Can Co.[25] However, while discussing the more liberal federal decisions, the Pennsylvania trial court judge in Shick denounced the federal judges for their judicial activism in finding exceptions in Pennsylvania employment law where none exist. This judge commented: "These federal court opinions, which had appeared to be an oasis for the plaintiff, were nothing more than a mirage in the desert of judicial activism."[26]

CURRENT PENNSYLVANIA LAW REGULATING EMPLOYEE DISCHARGE FOR FILING FOR WORKERS' COMPENSATION BENEFITS

Somewhat predictably, given the apparent general posture of the Pennsylvania Superior Court that reflected an adoption of an approach of "judicial conservatism" rather than "judicial activism" in its Shick v. Shirey decision, the Superior Court (the intermediate appellate court) decided that Pennsylvania does not recognize a cause of action for firing someone for filing for workers' compensation benefits because the Pennsylvania Workers' Compensation Act does not contain any language prohibiting it.[27] The split three-judge panel upheld the Pennsylvania trial court and ruled that a terminated employee could not successfully sue the former employer, after being fired from a job for filing for workers' compensation benefits. Superior Court Judge Eakin, authoring the opinion for the majority, stated: "We will not engage in the kind of judicial activism [the employee] requests, given the clear judicial expressions advising the contrary."[28] He further noted: "Such express statutory language is not found in Pennsylvania's Workers' Compensation Act," and "We agree that the exercise of judicial restraint is the better course of action in this situation . . . ."[29]

Allowing employers to be the masters of their own businesses constitutes, according to the Pennsylvania Superior Court, an equally compelling public policy argument against recognizing such a cause of action. Specifically, the Superior Court decided:

> "We are therefore disposed to follow the reasoning of those courts that have rejected the judicial creation of a cause of action absent an express retaliatory prohibition and, instead, have looked to their legislatures to provide the solution."[30]

This intermediate appellate court opted to focus on the right of the employer to operate the employer's business and to emphasize what had been previously suggested in prior rulings – that judicial modification of the at-will doctrine was ill-advised.[31]

In an abrupt turnabout, the Pennsylvania Supreme Court in 1998 overturned the Shick decision rendered by the Pennsylvania Superior Court. The Supreme Court in its Shick v. Shirey decision ruled that an at-will employee who was allegedly fired in retaliation for pursuing rights under the Pennsylvania Workers' Compensation Act states a claim for wrongful termination.[32] The decision, in a sense, constitutes a monumental about-face that may portend the opening of the door for Pennsylvania court sponsored expansion of public policy exceptions to encompass matters not specifically expressed in Pennsylvania statutory language.

The aggrieved employee in Shick v. Shirey essentially argued to the Pennsylvania Supreme Court that a clear mandate of public policy is discharged by prohibiting an employer's retaliatory termination of an individual for exercising one's statutory workers' compensation rights.[33] Alternatively, the defendant employer, asserted that the Pennsylvania Workers' Compensation Act assumes that an injured employee can be rightfully terminated to make room for an able-bodied individual who can perform the work. An unreasonable burden would be incurred if the employer could not immediately replace a crucial worker, not knowing when, or if, the injured worker would return. Furthermore, the employer contented that the Pennsylvania Supreme Court was without authority to recognize a common law cause of action for wrongful discharge.[34]

The Pennsylvania Supreme Court in its decision stated that only a few circumstances are recognized in Pennsylvania which constitute a violation of public policy sufficient to trigger an exception to the at-will employment doctrine. Nevertheless, the Supreme Court repudiated the defendant employer's argument that only the Pennsylvania legislature could establish public policy. Specifically, the Supreme Court enunciated that:

> "We reject the narrow view espoused by Shirey [employer] that what is cognizable as public policy is only that which has been legislatively enacted.[35]

The Pennsylvania Supreme Court decreed that the broad remedial purpose of the Pennsylvania Workers' Compensation Act would be defeated if employers were permitted to lawfully fire employees in retaliation for pursuing their statutory rights for workers' compensation benefits. Adopting the reasoning of the Supreme Court of Indiana, the Pennsylvania State Supreme Court quoted with approbation:

> The [Indiana Workmens' Compensation] Act creates a duty in the employer to compensate employees for work-related injuries (through insurance) and a right in the employee to receive such compensation. But in order for the goals of the Act to be realized and for public policy to be effectuated, the employee must be able to exercise his right in an unfettered fashion without being subject to reprisal. If employers are permitted to penalize employees for filing workmens' compensation claims, a most important public policy will be undermined. The fear of being discharged would have a deleterious effect on the exercise of a statutory right. Employees will not file claims for justly deserved compensation — opting, instead, to continue their employment without incident. The end result, of course, is that the employer is effectively relieved of his obligation.[36]

This Pennsylvania Supreme Court decision firmly establishes that employees in Pennsylvania do not have to relinquish their rights to seek full damages for wrongful retaliatory discharges from their employers in exchange for claiming workers' compensation benefits that are quickly received and constitute relatively certain restitution for injuries incurred in the course of employment.

IMPLICATIONS FOR PENNSYLVANIA EMPLOYERS

The management of the workforce personnel by Pennsylvania employers is governed by the doctrine of at-will employment. Pennsylvania employers can legally terminate their employees at their pleasure, with or without cause, unless constrained by statutory or contractual provisions to the contrary. The termination of employment relationships for any or no reason by employers is not an absolute privilege but is constraint by "dictates of public policy." As a consequence of the Pennsylvania Supreme Court's Shick v. Shirey[37] decision, Pennsylvania employers are confronted with a more expansive spectrum of Pennsylvania governmental propagators of public policy exceptions to the at-will employment doctrine that now includes not only the Pennsylvania legislature but also the Pennsylvania state courts. In addition to previous Pennsylvania state court-recognized public policy exceptions that render legally impermissible employer terminations of employees for filing unemployment compensation claims, refusing to submit to polygraph tests, serving on juries, and reporting employer violations under statutory employee duties, the Pennsylvania Supreme Court in its Shick v. Shirey[38] decision has now proscribed employer retaliatory discharges of employees for filing workers' compensation claims.

Continued expansion of Pennsylvania state court-recognized public policy exceptions to the at-will employment doctrine could significantly modify the employers' management of their employment relationships with their workers. Arguably, the door has been opened for the Pennsylvania state courts to articulate additional public policy exceptions; however, it appears quite doubtful that the floodgates have been opened so as to signify a dramatic shift in the state of the law in Pennsylvania on the doctrine of employment-at-will. Confirming the aforementioned assessment is the concurring Pennsylvania Supreme Court opinion in Shick v. Shirey[39] that concludes: "The at-will employment doctrine remains the law in Pennsylvania and exceptions are extremely limited."[40] Most recently, in April 2000, the Pennsylvania Supreme Court in McLaughlin v. Gastrointestinal Specialists, Inc.[41] strongly reaffirmed its continued steadfast resistance to any attempt to weaken the presumption of at-will employment in Pennsylvania by expanding the public policy exception to encompass federal statutory-based causes of action.

When contemplating what could constitute Pennsylvania state court-recognized public policy exceptions to the at-will employment doctrine that will entitle terminated employees to institute wrongful discharge suits against offending employers, prudent Pennsylvania employers should be cognizant of any Pennsylvania statutory-based remedies available to terminated employees. The absence of employee remedies for employment dismissal under specific Pennsylvania statutes should not be construed by Pennsylvania employers to indicate that no public policies against their conduct exist. Quite the contrary, the Pennsylvania Supreme Court has declared that the Pennsylvania state courts are empowered with independent authority to discern public policy. For instance, the Supreme Court ruled:

> [I]n order to set forth a claim for wrongful discharge a Plaintiff [Employee] must do more than show a possible violation of a federal statute that implicates her own personal interest. The Plaintiff [Employee] in some way must allege that some public policy of this commonwealth [Pennsylvania] is implicated, undermined, or violated because of the employer's termination of the employee. Public policy of the Commonwealth must be just that, the policy of this Commonwealth.[42]

Accordingly, Pennsylvania employers are afforded substantial protection in Pennsylvania state courts from wrongful discharge lawsuits pursuant to public policy exceptions allegedly arising out of employer violations of federal statutes, but may be confronted with greater

federal government enforcement initiatives and with greater litigation in federal courts by at-will employees terminated by employers allegedly in violation of federal statutory and case law.

Pennsylvania employers should be especially wary of implementing workforce continuous improvement strategies that necessitate discharging employees solely for exercising their Pennsylvania statutory conferred rights arising out of their employment. More specifically, retaliatory discharges of employees for filing workers' compensation claims for work-related injuries are actionable against offending Pennsylvania employers. Any employer assumption that "injured employees [under the Pennsylvania Workers' Compensations Act] will be discharged to make room for able bodied individuals who can do the work" has been implicitly rejected by the Pennsylvania Supreme Court in Shick v. Shirey.[43] Likewise, Pennsylvania employers' needs for fluid work forces and hardships imposed by being unable to immediately permanently replace crucial employees injured on the job apparently did not constitute for the Pennsylvania Supreme Court persuasive arguments for rejecting the recognition of a common law cause of action for wrongful discharge against offending employers by employees who are terminated for filing of Pennsylvania workers' compensation claims.[44]

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RE-EVALUATION OF INVESTMENT IN ACCOUNTS RECEIVABLE VIS-A-VIS CHANGE IN CREDIT TERMS AND CREDIT STANDARDS

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ABSTRACT

An acceptable approach to quantifying incremental investment in accounts receivable appears to remain elusive. This paper outlines the several attempts to forge a consensus as to the appropriate determination of the cost of incremental investment in receivables so as to evaluate the impact of a change in credit terms on incremental profits. The controversy partly stemmed from using sales figures rather than cost values to calculate the incremental investment in receivables. This paper proposes a solution which utilizes sales figures appropriately as suggested by Dyl for existing sales whose collection is delayed, while cost figures will be used for incremental investment in all assets necessary to generate a positive or negative increase in sales. To the extent that this approach considers investment in other assets, and that it is not limited to the incremental investment in accounts receivable, it presents a more complete analysis of incremental costs which should be accounted for in determining incremental profits.

INTRODUCTION

One aspect of Working Capital Management that requires further refinement deals with the preferred method of computing the cost of investment in accounts receivable. Although calculating the incremental profits when comparing the current credit terms with proposed credit terms has its logical appeal, the process is hindered by a lack of agreement as to the most appropriate approach to determining the incremental investment in receivables. As a result, most finance texts, for obvious reasons, discuss the change in credit terms without providing any quantitative analysis of the impact of a change in credit terms on incremental profits.

This paper outlines the several attempts to establish an acceptable method which would correct perceived misconceptions and flaws in previous methods proposed. Also, the paper points out the current position of the discourse. In addition, an alternative modification is suggested. This recommended approach is based primarily on the premise that the opportunity cost, k_r, applicable to incremental investment in receivables for the existing sales may be entirely different from k_a, the opportunity cost of additional investment in other assets. Furthermore, our proposition accounts for the additional investment in other assets, due entirely to a change in credit terms.

Some may argue that the additional investment in other assets such as inventory has been accounted for by including a variable cost factor in the computing formula. In this paper, it is asserted that when the Average Collection Period attributable to new sales is applied to variable cost, only the investment in receivables and not in other assets is considered. The incremental investment in assets, in the absence of excess capacity, involves more than accounts receivable. It may in fact span the entire asset column including short-term and long-term. The liquidity versus profitability principle suggests that the cost of investment in accounts receivable may not be the same as the cost of investing in other asset items in view of the differences in the level of liquidity and hence non-identical risk levels. It is contended that opportunity cost ex ante, has to be commensurate with the level of risk.

Perhaps an example will assist to highlight the appropriateness of applying different cost levels based on risk differential for a company. If it would be cheaper through a program of outsourcing to purchase or be supplied with finished goods in order to meet the demand for the incremental units required because of the change in credit terms, the structure of investment in the different asset items will be different and the "weighted" opportunity cost will be different. This reference to "weighted" opportunity cost has been used here to emphasize the relative distribution of scarce resources to different assets items. Conversely, a

where

I_S = incremental investment in accounts receivable due to change in credit standards
V = percentage variable cost of new sales
C_N = average collection period for the new sales
S_N = annual dollar sales attributable to the new customers

2. The incremental annual profit (P_S) expected from a change in credit standards

$$P_S = S_N (1-V) - B_N S_N - R(I_S) \quad 5)$$

where B_N = percentage bad debt associated with S_N and
R = the firm's required annual rate of return

3. Incremental investment associated with lengthening the credit period:

$$I_P = (C_n - C)\, S/360 + V[C_n(S_n)/360] \quad 6)$$

where I_P = incremental investment associated with lengthening of the credit period offered by the firm
C_n = new average collection period after the change
C = current collection period on credit sales to existing customers
S = level of sales to existing customers
S_n = increase in annual sales expected to result from the change in the credit period

4. Change resulting in shortening of the Credit Period:

$$I_p = (C_n - C)(S + S_n)/360 + V[C(S_n)/360] \quad 7)$$

where I_p = reduction in accounts receivable investment
C_n = new average collection period after the change
C = current collection period on credit sales to existing customers
S = level of sales to existing customers
S_n = change in annual sales expected to result from the change in the credit period

and

5. Incremental annual profit expected from a change in credit period

$$P_P = S_n(1 - V) - B_n(S_N) - R(I_P \text{ or } I_p) \quad 8)$$

Dyl however, commended Oh for raising the question of opportunity cost associated with the delay in collecting receivables as a result of a change in credit terms. He criticized Oh for the oversight in distinguishing between the change in credit standards and change in credit terms. In both cases, change in credit standards and change in credit terms, Dyl argued that Oh's approach overstates the investment in receivables.

Hill and Riener (10) following the lead by Atkins and Kim considered the impact of cash discount using a capital budgeting framework and proposed the present value of cash flows as

$$PV = p(1 - \delta)\, S\, (1 + i)^{-M} + (1 - p)\, S\, (1 + i)^{-N'} \quad 9)$$

where
p = fraction of net sales paid on average on day M
$(1 - p)$ = fraction of net sales paid on average on day N'
S = total sales
δ = cash discount for early payment
i = opportunity cost per day of the firm's funds

Of Hill and Riener's approach, Sachdeva and Gitman (17) wrote, "is completely reconcilable with the heuristic approach if it is recognized that the heuristic approach uses a binomial approximation for compound interest factors" (17, p. 45).

Similarly, Sachdeva and Gitman (17), with simplifying assumptions, proposed

$$\Delta NPV = \Delta Z/K \quad 10)$$

where ΔZ is the incremental value added at the end of each day and K is the daily discount rate.
Alternatively, they proposed an accept/reject decision based on future value at a specified time (17, p. 46). Walia (20) distinguished between explicit cost and opportunity cost arguing with an example that the results in textbook approach are inconsistent as

company may choose to invest in assets other than accounts receivable in order to accommodate any increase in sales necessitated by a change in credit terms, and then through factoring or other arrangements, maintain the same level of investment in receivables.

Oh made a reference to the different levels of risk when he proposed a Capital Budgeting analysis for evaluating investment in accounts receivable. He wrote, "the differences in risk for the two types of investment must be considered. Certainly the risks involved in accounts receivable differs from those of any other investment" (15, p. 36).

This study does not evaluate the Net Present Value approach as an acceptable alternative.

LITERATURE REVIEW

Oh (15, p. 32) contended that the textbook treatment understated the investment in receivables. The three relevant equations are stated below: Marginal Profitability (MP),

$$MP = (S_2 - S_1)/ P \bullet (P - VC) \quad 1)$$

Incremental Investment in Receivables (ΔI),

$$\Delta I = (VC/P) (S_2/T_2 - S_1/T_1), \quad 2)$$

and Marginal Opportunity Cost (MOC).

$$MOC = (\Delta I) (K) + (D_2S_2 - D_1S_1) VC/P. \quad 3)$$

where S_1 = the current level of annual credit sales
S_2 = the forecasted level of credit sales

ΔI = change in investment in average accounts receivable valued at the incremental cost to the firm

VC/P = variable cost to price ratio
T_1 = (365 days/ACP_1)
T_2 = (365 days/ACP_2)
K = the firm's before tax cost of capital
$(D_2S_2 - D_1S_1)$ = change in bad-debt losses
D_1 = percentage of current credit sales levels that are bad-debt losses
D_2 = estimated percentage bad-debt losses

Oh observed that equations 2' and 3' shown below discussed by Gitman (9, Chapter 9),Phillippatos (16, Chapter 11), and Van Horne (19, Chapter 17) do not reflect the marginal concept:

$$\Delta I = (ATC_2/P) (S_2/T_2) - (ATC_1/P) (S_1/T_1) \quad 2'$$

and

$$MOC = (\Delta I)(K) + (D_2S_2) (ATC_2/P) - (D_1S_1) (ATC_1/P) \quad 3'$$

Equations 2' and 3' used the Average Total Cost to Price Ratio - ATC/P rather than the variable Cost to Price in equations 2 and 3.

Oh argued that equations 2) and 3) understate the value of incremental investment in receivables on account of VC/P. Instead he proposed

$$\Delta I = (S_2/T_2 - S_1/T_1) \quad 2"$$

and MOC $$= (\Delta I) (K) + (D_2S_2 - D_1S_1) \quad 3"$$

asserting that "the additional investment in accounts receivable is no longer deflated by...(VC/P)...."(p. 34). In the conclusion of his paper, Oh suggested a capital budgeting framework to evaluate investment in receivables. It is evident from Oh's discussion of the Capital Budgeting approach, that a practical application may be cumbersome. He points out that while usual capital budgeting analysis involves discrete cash outlays, investment in accounts receivable appears to represent a "continuum of outlays" (p. 35).

Atkins and Kim (1, p. 72) criticized Oh's proposition regarding using sales rather than cost values, contending that the proposed equations 2" and 3" would overestimate the opportunity expense of credit-lengthening strategies. They argued that Oh's result is not supported by NPV criterion. However, Atkins & Kim, pointing out that Oh saw the decision as an investment evaluation exercise, presented a Capital Budgeting approach.

Dyl (5) in criticizing Oh argued that a distinction should be made between changing credit period versus changing credit standards. He showed the following five equations for incremental investment in accounts receivable:

1. Change in Credit Standards:

$$I_S = V[C_N(S_N)/360] \quad 4)$$

simultaneous changes of a given magnitude give different results from sequential changes of the same magnitude. He contended that the inconsistent results may stem from the fact that explicit cost is used in computation when opportunity cost was the relevant cost. He wrote, "For purposes of decision making, the relevant cost should be the higher of the explicit and implicit costs of the variables involved" (20, p. 77).

DISCUSSION

It would appear that the greatest obstacle in determining the impact of a change in credit terms on incremental profits is quantifying the investment in receivables. Oh argued that investment in receivables computed on cost price understate the incremental investment. He observed that Gitman, Phillippatos, and Van Horne recommended an adjustment based on the Average Total Cost to Price ratio as indicated in equation 2' and 3'. Oh reasoned that incremental investment based on costs assumed that an investment in receivables is the cost of inventory converted to accounts receivable. He, however, argued for "cash outlay on accounts receivable valued at selling price" (15, p. 34). Oh therefore proposed equations 2" and 3" using Sales rather than Cost values in substitution for equation 2 and 3 or 2' and 3'.

Dyl on the other hand believed that most of the confusion in calculating incremental investment in receivables stems from a failure to distinguish a change in credit standards from a change in credit terms. He contended that in either case, Oh's approach overstates investment in receivables.

Dyl attempted to deal with this problem by suggesting that on account of the delay in collecting the receivables due to liberalization of terms, it was not necessary to multiply the first expression in equations 6 and 7 by the variable cost. He wrote, "...the first term on the right side of the equation. This term includes not only the firm's 'cost investment' in S, but also the portion of S that represent profit. This treatment captures the opportunity cost associated with the delay in the receipt of these profits" (5, p. 68/9).

Dyl's explanation, rationalizing what appears to be inconsistency in the treatment of the two terms with respect to cost since only the second term is multiplied by the variable cost, is convincing in that the delay in payment is not limited to "cost investment" but on the entire sales price. Dyl correctly observes that the "treatment captures the opportunity cost associated with the delay in the receipt of these profits". In this paper, a solution consistent with delay of payment for existing sales is proposed, while at the same time recognizing that additional asset investment for new sales will be determined at cost.

PROPOSITIONS

This proposition utilizes sales amount for the first term and cost value for the second term in equations 6 and 7. Consequently the incremental interest expense due to slow receipts of existing sales should be approximately the first term multiplied by k_r, the opportunity cost of accounts receivable. Similarly, the second term will be multiplied by k_a, the opportunity cost of additional investment in assets. However, since the term will no longer be limited to the delay in the receipt of accounts receivable, the term will change

to

$V(\Delta S)$

The new term $V(\Delta S)$ is a function of the incremental sale and at cost for the year. Hence, $V(\Delta S)$ is the incremental investment in assets as a result of additional sales for a year. This incremental investment in assets may now be multiplied by k_a, the opportunity cost of incremental investment in assets due to incremental sales to obtain the relevant cost. For both equations 6) and 7), the proposition requires that they are amended because of the cost differential of investment in different assets relative to risk level. In effect, it is proposed in this paper that the cost of incremental investment in assets resulting in liberalizing the credit terms will consist of:

	i)	the cost of delay in receiving existing sales proceeds $k_r(ACP_n - ACP_o)(S_o/360)$
plus	ii)	the cost of additional investment is assets to generate sales over and above existing sales: $k_a(V)(\Delta S)$

Combining both will give ΔCA_I, incremental cost of investment in assets resulting from the liberalization of the credit terms:

$$\Delta CA_I = k_r (ACP_n - ACP_o) S_o/360 + k_a(V)(\Delta S) \quad 6'$$

where k_r = the opportunity cost of investment in receivables

k_a = the opportunity cost of investing in assets required for additional sales
V = the percentage variable cost associated with incremental investment in assets when credit terms are liberalized
ACP_n = average collection period after the change in credit terms
ACP_o = average collection period for existing sales
ΔS = change in annual sales

One advantage of this proposition is the distinction between the cost of delay in collecting sales proceeds for existing sales as opposed to the cost of additional investment in assets. As a result of a change in terms resulting in additional sales, additional investment is not limited to receivables, but will also extend to cash, inventories and perhaps plant and equipment in the absence of excess capacity. While the additional investment in assets is captured in V, the percentage variable cost, neither the Average Collection Period nor the daily sales will explicitly affect the second term since investment is not limited to receivables.

Similarly, for tightening the credit terms, equation 6 should be altered to

$$\Delta CA_t = k_r(ACP_n - ACP_o)(S_o + \Delta S)/360 + k_a V(\Delta S)] \qquad 7'$$

where V = the percentage variable cost associated with incremental negative investment in assets when credit terms are tightened.

This treatment, will ensure that all incremental costs associated with the change in terms are accounted for, and the amount of outstanding accounts receivable will not be a surrogate for additional investment in assets.

For a change in credit standards, equation 4) will now be defined as Cost of investment in assets and is modified to

$$CA_s = k_a(V)(\Delta S) \qquad 4'$$

in keeping with the modification to the second term in equations 6' and 7'.

While V may be an accounting figure in many instances, it will have to be determined strictly on costs that are truly variable. Moreover, this formulation will ensure that fixed costs which may become variable costs at higher levels of sales will not be overlooked. Furthermore, equation 6′ is no longer defined as incremental investment in receivables as in equation 6. Rather, it is the cost of liberalizing the credit terms. Since the opportunity cost for the first term may be entirely different from that of the second term, we have k_r and k_a respectively the opportunity cost of delay in receiving payments on existing sales and the opportunity cost of additional investment in assets to generate the additional sales. At first glance one may reject distinguishing between the two opportunity costs purely on the basis of the definition of opportunity costs, but by evoking the risk/return trade off, it would be obvious why the two costs may not be equal.

The formulation suggested here permits the continued use of incremental profits equation which takes into consideration the contribution margin, allowance for bad debt, incremental investment in receivables and the Net Cost of Cash Discount. However on account of the new definition of equations 6′ and 7′, the cost of incremental investment in assets due to liberalizing or tightening the credit terms, the incremental profits equations of Brigham (3, Chapter 21) shown below:

$$\Delta P = (S_n - S_o)(1-V) - k(\Delta I) - (B_nS_n - B_oS_o) - (D_nP_nS_n - D_oS_oP_o) \quad 11$$

will now be amended to:

$$\Delta P = \Delta S(1 - V) - \Delta CA_l - [B_nS_n - B_oS_o] - [D_nP_nS_n - D_oP_oS_o] \qquad 11'$$

for liberalizing the credit terms and

$$\Delta P = \Delta S(1 - V) - \Delta CA_t - [B_nS_n - B_oS_o] - [D_nP_nS_n - D_oP_oS_o] \qquad 12)$$

for tightening the credit terms

where

ΔCA_l = the cost of incremental investment in assets due to liberalizing the credit terms.
ΔCA_t = the cost of incremental investment in assets due to tightening the credit terms
ΔP = incremental profits

B_o = Bad debt as a percentage of old sales

B_n = Bad debt estimated on forecasted sales

S_n = forecasted sales

S_o = Old sales

ΔS = $S_n - S_o$

D_n = Percentage proposed cash discount

D_o = Percentage old cash discount

P_o = Percentage old sales on which discount is taken

P_n = Percentage of forecasted sales on which discount is expected

Other than 1) the modification discussed in formulating 6′ and 7′ which distinguishes between the opportunity costs for the two terms in the equation, and 2) treating the second term as investment in assets and not just in receivables, the formulations remain essentially the same as outlined by Dyl. This proposed formulation indicates that reference to V as variable cost requires the specific definition of what constitutes variable costs for new sales. It eliminates the assumption that the opportunity cost of the delay in collecting accounts receivable in the liberalizing terms scenario can be offset by using sales rather than the cost figures in determining the investment in accounts receivable.

For those who prefer to separate out investment in accounts receivable from investment in other assets, $k_a V(\Delta S)$ in equation 6' may be rewritten as

$$k_a V(\Delta S) = k_r ACP_n V(\Delta S) + k_a V(\Delta S)$$

where k_a and V will be redefined respectively, as the opportunity cost and percentage variable cost associated with incremental investment in assets other than accounts receivable. In that event, 6' may be rewritten as

$$\Delta CA_I = k_r(ACP_n - ACP_o)\, S_o/360 + k_r ACP_n V(\Delta S) + k_a V(\Delta S) \quad 6"$$

Similarly, equations 7' and 4' respectively may be modified to

$$\Delta CA_I = k_r(ACP_n - ACP_o)(S_o + \Delta S)/360 + k_r ACP_o V(\Delta S) + k_a V(\Delta S) \quad 7"$$

$$CA_s = k_r ACP_n V(\Delta S) + k_a V(\Delta S) \quad 4"$$

CONCLUSION

In this article, the problem encountered in determining the incremental investment in accounts receivable has been outlined. An alternative treatment is proposed. Most problems involving the computation of incremental investment in receivables treat opportunity cost of investment in receivables as if it is equal to the opportunity cost of investment in assets required to generate the increase in sales due to a change in credit terms and or credit standards. In this paper, we have proposed that investment in accounts receivable should be considered separately from investment in other assets. Moreover, we have indicated that the opportunity costs for both investments need not be the same. It is possible to accommodate increase in sales resulting from a change in credit terms and/or credit standards by outsourcing the manufacture of widgets and investing in account receivable, or producing the additional widgets and factoring receivables.

Other than distinguishing between the two investments and applying the relevant opportunity cost, the proposition is essentially based on Dyl's equations. Hopefully, this paper will stimulate discussions that will lead to an accepted quantitative approach to evaluating the impact of a change in credit terms and/or credit standards on incremental profits.

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USING INTERNET-BASED PORTFOLIO SIMULATIONS IN A VARIETY OF COURSES

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ABSTRACT

Internet-based portfolio simulations are being used almost exclusively in investments and portfolio management courses. However, when the benefits of incorporating a portfolio simulation into a course are examined, it becomes clear that they are not course-specific. The exercises discussed in this paper demonstrate how the scope of today's Internet-based portfolio simulations makes them a valuable pedagogical tool for a variety of courses.

INTRODUCTION

Portfolio simulations are typically thought of as useful supplements for investments and portfolio management courses. Stock-Trak, Inc. and Investment Challenge, Inc., leaders in the Internet-based portfolio simulation business, report that in the 1997/1998 academic year, almost 90% of the classes in which their simulations were used were of the investments/portfolio management type. The purpose of this paper is to demonstrate how portfolio simulations can be used successfully in other courses.

PORTFOLIO SIMULATIONS

Innovations in information technology have facilitated the creation of portfolio simulations that utilize market-generated prices to provide students with a realistic investment experience. There are currently four commercial, Internet-based, portfolio simulation companies advertising on-line: Virtual Stock Exchange, Mock Market, The Collegiate Investment Challenge, and Stock-Trak.

Virtual Stock Exchange is an equities-only simulation that allows students to trade NYSE, AMEX, & NASDAQ-listed stocks and mutual funds over the Internet. The Collegiate Investment Challenge allows students to trade equities and options via the Internet. Mock Market offers several packages, with varying access to a wide range of domestic and international equities and derivative securities.

Stock-Trak allows trading in a wide range of domestic and international equities and derivative securities via the Internet, fax, or telephone. In this paper, we discuss using portfolio simulations in the context of Stock-Trak because it is the most comprehensive simulation we are aware of, it appears to be the market leader[1], and we have used it successfully over the last couple of years. Nevertheless, the exercises discussed throughout this paper can be used with other simulations after only minor modifications.

Overview of Stock-Trak

Stock-Trak allows students to buy and sell common and preferred stock, stock options, mutual funds, index options, index futures, commodity futures, financial futures, financial futures options, foreign currency futures, foreign currency futures options, commodities, commodity futures options, U.S. Treasury and agency securities, and corporate bonds. In addition to buying and selling common stocks, students can sell short and purchase on margin.

All trades are executed as market orders; limit and stop-loss orders are not available. Transaction costs are charged for each trade. For example, the commission for stock trades made over the phone is $50 plus $5 per 100 shares. Trades placed via the Internet are discounted at a flat rate of $25. To help students monitor their portfolios, they can check their accounts via the Internet at any time and receive periodic hard-copy statements. If the students are registered as part of a group, their portfolios are ranked based on total portfolio equity and they can check their

portfolio class ranking daily via the Internet (www.stocktrak.com). The cost per student is $17.95 as of the writing of this paper.

The instructor sets the length of the simulation and the initial balance ($100,000 - $500,000) in each account. Using Stock-Trak does not require the instructor to take any special training; rather, he or she is given a free account and encouraged to learn by doing. Instructors receive feedback on their students' trades through weekly Professor Summaries and bi-weekly statements that are mailed to the instructor for distribution to the students.

Benefits of Using Portfolio Simulations

Modern portfolio simulations allow students to experience first-hand the risks and rewards of trading a diverse selection of securities. The realism of the trading process – talking with brokers and/or placing orders over the Internet – allows students to take "textbook knowledge" and immediately apply it in a "real world" setting. This experience is often lacking in courses taught solely with a textbook. Also, students gain an appreciation for the toll transaction costs can take on returns, something often missing in textbook problems where transaction costs are often assumed away.

Before placing orders, students must be able to read and interpret the financial tables provided in publications like the Wall Street Journal and Barron's. This teaches them how and where to find information rather than learning to rely on having it given to them as part of the assignment.

Students also gain an appreciation for the value of timely information. The class rankings motivate students to stay abreast of what is happening in the financial markets so that they can finish the simulation with a portfolio value at or near the top of the class. They begin regular monitoring of information sources like The Wall Street Journal, Barron's, CNNfn, Bloomberg Financial News, Moneyline, Wall Street Week, and The Nightly Business Report.

Not only are students ranked against each other, but also against benchmarks such as the S&P 500 and a money market portfolio. This reinforces the idea that in practice, portfolio managers are judged by their ability to beat not only their peers, but market indices as well.

In recent years, there has been a dramatic increase in the volume of "real world" trading taking place over the Internet. Companies like Charles Schwab, E*Trade, and Merrill Lynch are changing the way investors purchase securities. An internet-based portfolio simulation helps familiarize students with on-line trading procedures and prepare them to use an on-line trading account.

Perhaps the biggest benefit of using a portfolio simulation is the enthusiasm it creates both in and out of the classroom. Once the simulation begins, it becomes common to observe students engaged in out-of-class discussions about their portfolios and to get stopped by students excited to share their latest trading experience. This type of enthusiasm for the subject matter of a course greatly enhances the students' learning experience.

Of course, as we will point out in subsequent sections, some of these benefits may be lost depending on how the instructor customizes an assignment. However, it has been our experience that if one of these benefits is lost, it is because we have designed the assignment in such a way that a new benefit takes its place. It is also important to note that none of the aforementioned benefits are course-specific. Despite this, portfolio simulations are seldom used outside of investments and portfolio management courses. Therefore, the marginal benefits of expanding the use of portfolio simulations to other courses will be considerable.

STRUCTURING ASSIGNMENTS

While the specifics of an assignment differ for each course, there are some elements that we make common to all of them. First, we think it is important to structure assignments so that the performance of the student's portfolio cannot hurt, but may possibly help their grade. For example, we offer bonus points to the top several performers. With respect to grading student participation in the simulation, there are plenty of valid criteria on which to grade without penalizing students for the vagaries of the market. Some examples include: the number of trades made and the diversity of the

instruments traded, the quality of the analysis performed, the level of portfolio diversification achieved, and the degree to which the portfolio selected meets some predetermined goal.

We also make writing an important part of the exercise. Throughout the simulation, we have students maintain a journal of their trades. After the trading period ends, students are required to reflect on the overall experience by preparing written answers to a series of questions. Examples include:

> How would you grade your overall performance?
> What was your greatest success story?
> What was your worst mistake?
> If you had already completed this course before you started the simulation, how would it have changed your strategy?

The sample assignments included in the following sections are single-stage projects meant to illustrate one way a portfolio simulation can be used for each course. As instructors become familiar with portfolio simulations, more complex, multi-stage projects can be developed. By including sample assignments, we hope to encourage instructors to consider an alternative, and in our experience, effective way of conveying course content.

Financial Markets and Institutions

In many Financial Markets and Institutions texts, students are introduced to the various financial markets chapter-by-chapter.[2] Reading about financial markets is valuable, but requiring students to trade securities in each market greatly enhances their understanding of how these markets operate. An assignment like the one in Appendix A requires students to become familiar with the various symbols and styles of quoting prices in each market. In the course of trading, they also learn about trading procedures and transaction costs in each market.

Students are also required to explain, in writing, their rationale for selecting each security. This makes them think about how changes in things like interest rates, inflation, and monetary policy affect different markets. In addition, the globalization of financial markets becomes apparent when international events begin impacting portfolio values. If portfolio insurance strategies are covered in the course, students can attempt to insulate their portfolios from negative events.

What usually happens during the simulation is that expectations and outcomes do not always coincide, and students begin asking questions. They look for answers in the course content and from the instructor. The result is a feedback loop where students learn about the markets so they can trade, and as a result of trading, revisit the material looking for greater clarification. As this process repeats itself, they learn valuable lessons about why financial markets and institutions exist and how they operate.

Personal Financial Planning

In a personal financial planning course students learn to prepare comprehensive financial plans based on their client's goals and level of risk tolerance. Student understanding of several elements of the planning process can be greatly enhanced using a portfolio simulation. For example, students can manage liquid assets and invest to meet client-specific goals using the wide array of securities available for trading.

The first step toward preparing an assignment for students in personal financial planning is to create a set of client goals and their corresponding tolerance for risk. In some cases, students like to use themselves (often non-traditional students) or their parents as the client. For the other students, we create fictitious clients. In a large class, this could become overwhelming. However, following a template like the one in Appendix B, instructors can create any number of clients by changing relatively few variables.

Once a client is assigned to a student, they must select securities that they believe will meet their client's future financial goals. This exercise gives students a hands-on feel for the difficulty of selecting among thousands of alternative securities. Completing an assignment like the one in Appendix B, they also get to apply what they are taught about maturity matching, risk vs. expected return, diversification, and portfolio tracking.

Multinational Financial Management

The financial markets have become increasingly global over the past twenty years. Most large "American" firms operate globally. However, most American-born undergraduates have limited exposure to exchange rate issues and even fewer have any experience evaluating political and economic risk factors. Integrating a realistic portfolio simulation into the course helps convey to students the interrelatedness of the world's financial markets.

Most international financial management texts begin with a multi-chapter overview of the international financial environment.[3] The principles covered in these chapters permeate the course. Incorporating a portfolio simulation helps to provide students with a strong foundation in international financial markets and reinforces these lessons throughout the course.

For example, a thorough understanding of exchange rates is important to anyone studying multinational financial management. By tracking the impact of exchange rate fluctuations on the value of their portfolios, students gain a first-hand understanding of the complex interaction between exchange rates and security prices. When managing a portfolio during an international crisis such as the Asian currency crisis of 1997/98, suddenly, far off events become very personal as students experience the impacts on the value of their portfolios.

Using a portfolio simulation can also improve the instructor's ability to teach about the alternative markets for international securities. For example, Stock-Trak provides students with the opportunity to buy and sell international securities such as American Depository Receipts (ADRs), international mutual funds, stock in U.S. Multinationals, and foreign currency derivative securities.

Successful completion of an assignment like the one in Appendix C helps provide students with a thorough understanding of the global financial markets. This assignment requires them to trade on exchanges with securities valued in foreign currencies, convert their security prices using exchange rates, and closely monitor the activities of the international financial markets.

CONCLUSION

Incorporating a portfolio simulation into a course can turn even passive, unmotivated students into active learners with a vested interest in learning about the financial markets. Despite the fact that the benefits of using a portfolio simulation are not course-specific, the current trend is to utilize them almost exclusively in investments and portfolio management courses. This paper demonstrates the flexibility of simulations and encourages the extension of these benefits to other courses.

When properly integrated into a course, portfolio simulations provide an excellent way to create enthusiasm for course content and demonstrate the relevance of textbook material to the "real world." Instructors should utilize them in the courses where they believe they will provide their students the most benefit based upon their backgrounds and the structure of the curriculum.

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1.Based on Virtual Stock Exchange's web-site it is currently being used at 65 colleges/universities while Stock-Trak reports it is currently being used at 314. The Collegiate Investment Challenge and Mock Market do publish this information.
2.Some examples include: Madura, *Financial Markets and Institutions*; Kidwell, Peterson, and Blackwell, *Financial Institutions, Markets, and Money*; Mishkin and Eakins, *Financial Markets and Institutions.*
3.Some examples include: Madura, *International Financial Management*; Baker, *International Finance: Management, Markets, and Institutions*; O'Brien, *Global Financial Management.*

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Appendix A: Sample Assignment for Financial Markets and Institutions

By now, you should have sent in the registration form for the portfolio simulation. Trading on our accounts will begin [date]. The goals of each of you will be to maximize your portfolio wealth and to trade at least one of each type of security listed in the table below. You will receive bi-weekly account statements and can access daily class rankings via the Internet.

The winner at the end of the semester will receive 8 extra credit points to be applied to the final exam. Second place will receive 6 points and third will receive 5. You are required to make at least 40 transactions throughout the semester and trade each type of the following instruments at least once:

Instruments:	Instrument Traded	Date
Common Stock		
Preferred Stock		
Stock Options		
Mutual Funds		
Index Options		
Index Futures		
Commodity Futures		
Financial Futures		
Foreign Currency Futures		
Foreign Currency Futures Options		
Financial Futures Options		
Commodity Futures Options		
Commodity Spots		
U.S. Treasury Bonds		
Agency Securities		
Corporate Bonds		

Keep a journal with the following information on each transaction:

Date
Dollar amount
Description of the security
Direction of the trade (buy or sell)
Design (how it fits into your grand scheme)

Example:

1/20/01 Sold short 5,000 shares of PCsoftware at $5 per share on published rumors that Microsoft is going to buy the only software company it doesn't already own. PCsoftware's stock has gone from $3 to $5 a share on the rumor. However, I believe the federal government is about to block the acquisition on antitrust grounds. When this happens, I think the stock price will settle back down into the three dollar range. This short position will allow me to profit from the resulting fall in PCsoftware's stock.

Trading will cease [date] and your journal must be handed in on [date]. It must be typed on 8 1/2 x 11 paper. Each entry should be single-spaced, in chronological order with double spacing between entries. Include a completed copy of the table shown above.

Appendix B: Sample Assignment for Personal Financial Planning

Your **clients** are **30** years old and **married**. They have a risk aversion of level of **18** based on a scale of 1 to 25, with 18 being average. Their after-tax income is of **$72,000**/yr. and their goals are:

1. To put **$10,000** away today to with the goal of having **$20,000** in **6** years (12.2% annual return) for a down payment on a condominium.

2. To *put* **$14,000** in a fund today with the goal of having **$35,000** for a child's education in **15** years (6.3% annual return).

3. To establish an emergency fund equal to **three** months worth of after-tax income.

4. To put **$5,000** away today with the goal of having **$6,200** to put towards the purchase of a new car in **2** years (7.2% annual return).

5. To put **$10,000** away today with the goal of having **$55,000** to start their own business in **10** years (18.6% annual return).

6. To put **$30,000** away today with the goal of having **$4,000,000** for retirement at *age* **65** (15% annual return).

7. To put **$2,000** away today with the goal of having **$2,020** for their child's braces which will be put on in 6 months (2% annual return).

8. To speculate with **$11,000** with the goal of turning it into as much money as possible by May 7, 1999.

Your clients just inherited **$100,000**. Using the securities available for trading, create a portfolio that is appropriate for meeting their stated goals. Your grade will be based on the type of security(**ies**) (assume diversification is desirable) selected to meet each goal, and the neatness and completeness of your journal. When selecting securities, consideration should be given to the term of the investment relative to the term of the stated goal, the security's risk characteristics relative to those of the clients, and the likelihood that the returns generated will be sufficient to reach the stated goals.

Help your clients track their investments by creating a spreadsheet they can use to quickly review their investments. Update the spreadsheet on a weekly basis and make changes to the portfolio when necessary. The spreadsheet will be an important element of your journal. It should also include a list of the security(ies) chosen to correspond to each of the clients' goals and a paragraph describing each trade.

Construct an initial portfolio by [Date]. Then, as your knowledge of managing cash and investments increases throughout the semester, you may want to change your selections. Do not be afraid of picking the "wrong" security at the beginning of the simulation. Track all changes on the spreadsheet and in your journal.

Final exam bonus points will be awarded to three students who maximize the value of their speculative money (8 points for first, 6 for second, and 5 for third).

Appendix C: Sample Assignment for Multinational Financial Management

By now, you should have sent in the registration form for the portfolio simulation. Trading on our accounts will begin [date]. Using your account, complete the following:

Select one security from each of the following categories for inclusion in your "primary" international portfolio:

A) Direct purchase of a foreign stocks on a foreign exchange
B) A U.S. multinational corporation
C) An American depository receipt (ADR)
D) An International mutual fund
E) A Foreign currency future
F) A Foreign currency option
G) A Foreign currency futures option

For the foreign stock, multinational corporation, and ADR (**A**, **B**, and **C** above), calculate the share of revenue/profit/return that is generated in foreign markets. How do these firms service these markets (direct foreign investment, joint partnership, etc.)?

Obtain the annual report of the international mutual fund you chose for your primary portfolio (**D** above). What is the stated objective of this fund? Examine the list of stocks currently being held by the fund. Does it appear to you that the composition of the portfolio is consistent with the fund's stated objective? What was the fund's annual return in the most recent year?

For the derivative securities in your primary portfolio (**E**, **F** and **G** above), explain why you bought or sold those particular derivatives with respect to your expectations regarding the underlying currency and how you formulated those expectations.

With the remainder of your trades you goal is to use your knowledge of international finance to maximize the value of your portfolio by trading securities A-G above. The student with the highest portfolio value at the end of the simulation will receive 8 extra credit points to be applied to the final exam. Second place will receive 6 points and third will receive 5. As you know, your registration fee entitles you to 100 transactions. You are required to make at least 40 transactions throughout the simulation.

TOTAL QUALITY MANAGEMENT PRACTICES AMONG ORGANIZATIONS IN BELIZE, CENTRAL AMERICA: AN EXPLORATORY STUDY

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ABSTRACT

Employees of Belize, Central America, organizations were asked to rate their employers on perceived quality service practices. This survey included questions regarding the importance placed by the organization on customer service, including communication competencies, and post-service satisfaction surveys; evaluation and improvement of work flow processes, including documentation of work flow processes, process variations, and problem prevention; and total stakeholder involvement. Kendall's tau_b correlation and regression analyses were used to identify the relationships among three basic quality management concepts and the organizational criteria that would indicate the presence of the concepts among Belize organizations. Results indicated only partial use among Belize organizations of criteria representative of leading quality management practices. Consequently, areas for organizational development and employee training were identified. A future survey is suggested among a larger group of randomly selected Belize organizations to further support these initial findings.

INTRODUCTION

The emphasis on quality for operations management is not really new. Quality management can be traced from the time of Egyptian pyramid building, to craftsmanship of the Middle Ages in Europe, and to the more recent past of the Industrial Revolution (Provost & Norman, 1990; Wolek, 1999). However, in the 1980s and 1990s the emphasis on quality in the West has almost become an obsession (Evans & Lindsay, 1996). It is now a well-known fact that the obsession of quality can be attributed, in most part, to the contribution made by W. Edwards Deming toward the rebirth of a Japanese post WWII-economy (Yashida, 1989).

The focus on quality is not just limited to the industrialized world, however. Even the developing world is striving to adopt the quality-focus in manufacturing and services. For example, Djerdjour (2000) discusses the attempts of companies in the Fiji Islands to implement quality systems in the telecommunications, manufacturing, and shipping industries. Cheng and Chan (1999) report on the results of a study that indicated mainland and Hong Kong Chinese workers are motivated by the actual improvements in their daily work routines after practicing total quality management. The results of a study by Azaranga, Gonzales, and Reavill (1998) on the effects of total quality management, work teams, and just-in-time on large manufacturing companies in Mexico indicated that top management involvement, employee involvement, and training simultaneously impact quality, productivity, customer satisfaction, and employee morale. Bilich (2000) conducted research focused on the management of quality as a fundamental component to be considered by commercial banks in Brazil in the formulation of their financial strategies. Lee (1998) stated that Korean business firms have been forced to shift their strategy from being low-cost manufacturers to being high-quality producers. This shift is due to two factors: foreign manufacturers from developed nations are now providing high-quality products at reasonably low prices, and Korean consumers are becoming more quality conscious.

The paper focuses on a small developing nation in Central America—Belize. Belize, formerly known as British Honduras, is located south of Mexico on the coast of the Caribbean Ocean. The 1997 estimate of this English-speaking country's population is 224,663 (Belize, Microsoft Encarta, '99). In this paper,

the attempt is made to understand how well the organizations in Belize recognize and implement the concepts of quality management.

The rest of the paper is organized as follows: first, the background and definition of total quality management are investigated and three research questions representing the three basic concepts of quality management are presented. Second, the methodology for collection and analysis of data are described. Third, the results of the investigation are presented; and lastly, the implications of the investigation process and its findings are discussed. It must be emphasized here that this is the first study of its kind for the country of Belize, and therefore, the main focus of this paper is exploratory in nature.

LITERATURE REVIEW

In order to assess how well Belize organizations understand and apply the concepts of quality management, it is important to understand how the concept of quality management is identified, as well as the type of criteria, which might indicate its presence and strength in an organization's operations. In the last two decades, the term "total quality management" (TQM) has become very popular. In this paper, the terms TQM, TQ and quality management are used interchangeably.

Various authors define total quality differently. There is no clear consensus as to how TQ is defined. Aune and Kanji (1998) define total quality management (TQM) as a "management approach of an organization centered on quality, based on the participation of all its members and aiming at long term success through customer satisfaction and benefits to all members of the organization and to society" (page S6). They further state that:

> The TQM concept has three main elements, and three main tasks: (1) Four principles for leadership: customer focus; continuous improvement, basically process oriented; 'total' participation; societal learning. (2) A quality system and system thinking as a basis for quality management. (3) A toolbox for efficient and effective quality (process and product): control, assurance, improvement (continuous) and innovation (breakthrough) processes, products and systems (page S6).

Kanji (1998) bases his definition of TQ on a set of TQM principles and core concepts. He indicates that TQM involves continuous performance improvement of individuals, groups and organizations. The emphasis on continuous improvement is what differentiates TQM from other management processes. In order to improve their performance, people need to know what to do and how to do it, have the right tools to do it, be able to measure performance, and to receive feedback on current levels of achievement. TQM provides this by adhering to a set of general governing principles that emphasizes delighting the customer, involves people-based management, stresses continuous improvement, and advocates management by fact.

McManus (1999) holds the belief that quality is more of an attribute than it is a set of tools. Society is culturally predisposed to focus on the tangible, and therefore tends to define quality by the tools that are a part of any successful quality process. This includes checksheets, control charts, cause-and-effect diagrams, and flow charts. Because education in the use of these tools has involved the team approach process, people usually associate teams with quality. This association is important because quality and teams go together; however, the misuse of one or both can lead to negative results that drag both down. McManus defines a team as "any group of people who depend on each other and interact with each other to accomplish a goal" (page 32). McManus further emphasizes that using teams without a supportive infrastructure and without training for effective quality tool training will be ineffective and frustrating for employees.

Galetto (1999) indicates that to help to avoid failure, a company has to recognize that quality is a competitive factor that needs to be integrated in all activities of a company and that a company should give due importance to quality in each phase of the product development cycle.

As stated before, there is no clear consensus as to how TQM is defined. "The differences among frameworks proposed by writers such as Deming, Juran

and Crosby" have led to this ambiguity (page 394, Dean and Bowen, 1994). Each of these three quality management gurus presents a somewhat different framework for TQ. For example, the key concepts underlying the Deming's management method include: (a) visionary leadership, (b) internal and external cooperation, (c) constant learning, (d) process management, (e) continuous improvement, (f) employee fulfillment, and (g) customer satisfaction (Anderson, Rungtusanatham, & Schroeder, 1994). Juran's teachings, however, focus on a three-prong approach: quality planning, quality control, and quality improvement (Dean & Bowen, 1994).

Crosby (1979) defines quality management more in terms of financial investment and savings. Cosby authored a book titled Quality is Free, in which he proposed that savings resulting from investments in quality would more than pay off the cost of investment in quality. Cosby also coined the term "zero-defect" and popularized the phrase, "Do it right the first time." Figenbaum (1956) was the first to coin the term "Total Quality Control (TQC)," which later metamorphosed into TQM; and Figenbaum popularized the slogan, "Quality is everybody's job." However, over a period of time the teachings of these gurus evolved into somewhat of a unified approach, and the distinction between their teachings began to blur.

Summarizing the development of the TQM concept and principles, Evans & Lindsay (1996) state that TQM involves:

1. Complete understanding and satisfaction of customers' needs.
2. Leadership in quality--responsibility of top management.
3. Statistical reasoning with factual data must be the basis for problem solving and continuous improvement.
4. All functions of work must focus on continuous improvement to achieve institutional goals.
5. Cross-functional work teams best perform problem solving and process improvement.
6. Continuous learning, training, and education are the responsibility of everyone in the organization.

Dean and Bowen (1994) identify the three principles of TQ as: customer focus, continuous improvement, and teamwork. They state that most of what has been written about TQ is explicitly or implicitly based on these three principles. Based on a similar synopsis of the quality management principles, Tenner and DeToro (1992) present a three-step model for implementing TQM, which includes customer focus, process improvement, and total involvement. Based on the general acceptance of these three basic principles among quality researchers and practitioners, the present study incorporated the Tenner and DeToro model to formulate three basic research questions and to develop the quality management questionnaire used in Belize.

Research Questions

1. What importance do Belize organizations place on customer service?
2. What importance do Belize organizations place on continuously improving workflow processes?
3. What importance do Belize organizations place on total stakeholder involvement in achieving continuous improvement? Stakeholders are everyone who is affected by the organization's operations.

METHODOLOGY

Participants

Participants were 25 Belize business representatives from a variety of industries, including hotel-restaurant, banking, utilities, product sales, medical services, and consulting services. Gender balance among participants was about equal, and all participants held managerial or supervisory positions except three females. All participants were enrollees in fall 1998 management training seminars held in Belize City and sponsored by the Belize Institute of Management.

Procedure

Immediately following a management-training seminar, participants were asked, on a voluntary basis, to complete the 24-item, four part, total quality management (TQM) survey developed by the researchers (see Appendix). Questions were based on the three basic principles of quality management, as

summarized by Tenner and DeToro (1992) and Dean and Bowen (1994). Part one of the questionnaire covered participant demographic information. Part two addressed strength of organizational focus on quality customer service. Part three of the questionnaire covered organizational focus on workflow processes; and part four, addressed organizational focus on total stakeholder involvement. All of the 25 seminar participants voluntarily completed the quality management survey.

Overall, the quality management questionnaire represented basic quality management principles. Participants were asked to state the importance his/her organization placed on (a) customer focus, (b) total stakeholder involvement, (c) communication competency, (d) post-service customer satisfaction surveys, (e) evaluation and improvement of work flow processes, (f) documentation of work flow processes and their variations, and (g) problem prevention.

Participants rated their organizations on a five point scale: 1, minimum importance or focus, to 5, maximum importance or focus placed by the employer.

RESULTS

Participant Demographics

Part 1 of the survey covered demographic information about the participant and about the participant's organization. Survey items were designed to extract information about the type of business where the participant worked, number of total employees of the organization, the site where the employee worked, the participant's job title or position, and the number of years with present employer, gender, and age category.

The 25 Belize business participants represented the following business types: hotel-restaurant (n=8), banking (n=6), telecommunications (n=3), product sales (n=3), medical services (n=2), consulting (n=2), and electric utilities (n=1).

Participants' organizations ranged in size from 7 to 450 employees, with a mean of 136. Participants' years with the company ranged from 1 to 24, with a mean of 6.76 years. Participant status included top-level managers (n=7), middle-level managers (n=7), and lower-level managers or supervisors (n=8), and non-managers (n=3). Twelve participants were between ages 20 and 34; 12 were between 35 and 45, and 1 was between age 46 to 55. Participants consisted of 13 males and 12 females.

Total Quality Management Concepts

Means and standard deviations for measures of each quality management concept are reported in this section of the paper. Kendall's tau_b correlation between each of three quality management concepts and their related variables are also reported. Given the small sample size and the interval nature of data, Kendall's tau_b correlation is preferred over Pearson or Spearman rank-order correlation statistics. Regression analyses were conducted to provide further understanding of the relations between the quality management concept and its associated criteria. Since the data was collected using a Likert-type scale, pure statisticians can question the validity of employing regression analyses; however, such concerns are not raised in the field of social sciences where hardly any continuous data are available.

Focus on total customer service. Research question 1 asked, "What importance do Belize organizations place on customer service?" To assess the strength employers place on customer service, participants were asked about (a) flexibility their employers were willing to allow when an employee must deal with customer conflicts/complaints, (b) company emphasis on conducting post-service satisfaction surveys, (c) company training of employees in the areas of listening skills, dealing with difficult situations, and resolving conflicts, and (d) company efforts toward soliciting customer suggestions.

As indicated in Table 1, participants perceived their employers' focus on customer service to be strong (4.48 on a scale of 1, minimum, to 5, maximum). Based on the literature, expectations are that if an organization is focused on customer service, it will be conducting certain activities. Allowing employees some flexibility in serving customer needs, conducting post -service surveys, providing training in listening skills, handling difficult situations, resolving conflict, and soliciting customer suggestions are some of the main activities expected to significantly contribute to total customer service (Tenner and DeToro 1992;

Denton, 1992). As Table 1 shows, participants perceived that their employers place heavy focus on customer service. However, the average scores received by all underlying variables do not reflect a true emphasis on customer services. The underlying criteria received an average of 3.76 or lower and turned out to have low r-values. Hence, they do not appear to have explanatory power. That is, contrary to the participants' perception that their organizations focus on customer service, the data reveals that the organizations are not engaged in practices leading to high customer service focus.

Furthermore, three criteria in particular appear to be overlooked by the organizations: (a) training in handling difficult situations (r = .129), (b) training in conflict resolution (r =. 133), and (c) soliciting customer suggestions (r = .218). These criteria were also not significant at the 0.05 level.

To further clarify the relationship between perceived employer focus on customer service and variables indicating its presence in the organization, a regression analysis was performed. Table 2 presents the results and indicates that only 51.4% (Adjusted r^2 = .351) of the variation in the dependent variable, total customer service, may be explained by the set of predictor variables. This supports the conclusion made above that the Belize organizations are not necessarily engaged in practices leading to superior customer focus. It must be noted that the beta values and the respective t-statistics are not presented in the table, as the intent here is to understand the explanatory

Table 1
Descriptive Statistics and Kendall's Tau_b Correlation for Total Customer Service and Underlying Criteria (N=25)

	Measure	Response Mean	Standard Deviation	Correlation with Research Question 1	Sig (2-tailed)
Research Question 1	Customer Service Focus (CFOCUS)	4.48	0.71	1.000	
Underlying Criteria	Flexibility allowed service repr. (EFLEX)	3.76	1.13	0.492	0.008
	Post service customer survey (POSTSAT)	3.48	1.19	0.370	0.043
	Listening skill (LISTEN)	3.32	1.18	0.421	0.021
	Handling difficult situations (DIFFSITU)	3.36	1.22	0.129	0.481
	Resolving conflicts (CONFRSLV)	3.29	1.02	0.133	0.481
	Solicit customer suggestions (CUSTSUGG)	3.28	1.54	0.218	0.230

power of the underlying variable as a group rather than to develop a predictor model. Additionally, in many cases individual t-statistics for betas get influenced (underestimated) due to the presence of multicolinearity among the predictor variables and may lead to misleading conclusions. Mulicolinearity does not affect the F-test and therefore, is more appropriate.

Table 2
Summary of Regression Analysis for Variables Predicting Total Customer Service Among Belize Organizations (N = 25)

Dependent Variable	CFOCUS
Independent Variables Included	EFLEX, POSTSAT, LISTEN, DIFFSITU, CONFRSLV, CUSTSUGG
Independent Variables Not Included	None
R Square	0.512
Adjusted R Square	0.340
F Statistic	2.972
Significance	0.036

Once again, to answer research question 1, participants perceived their employers to be strongly focused on quality customer service. However, participants did not indicate that their employers were practicing those activities expected to represent a strong focus on customer service.

Focus on continuous process management. Research question 2 asked, "What importance do Belize organizations place on continuous improvement of work flow processes?" To assess the perceived importance participants' employers placed on continuous process improvement, participants rated employers emphasis on (a) systematic, ongoing evaluation of work flow process, (b) process documentation, (c) documenting process variations, (d) problem presentation (equipment maintenance, detecting employee stress, etc.), and (e) hardware/equipment upgrades.

Table 3 indicates that participants perceived their employers' efforts toward continuous process improvement to be only in the moderate area (3.88 on a scale 1, minimum, to 5, maximum focus). Evidence of continuous process improvement would logically involve certain underlying variables or criteria, such as a) ongoing evaluation of workflow, b) documentation of workflow process and process variations, c) steps toward problem prevention, and d) regular updates of hardware and equipment.

Survey results indicated a strong and positive relationship between continuous process improvement and its underlying variables: On-going evaluation of workflow (r =0.71), problem prevention (r = .682), documentation of process variations (r = .541), process documentation (r = .483), and updating hardware/equipment (r = .348). What do these strong and highly significant correlation values imply? They simply mean that the survey participants felt that their organizations only moderately focused on continuous improvement, which is supported by their moderate rating on the underlying activities. Or stated differently, unlike the research question 1, the participants' perception of only a moderate level of organizational focus on continuous improvement was in congruence with their moderate rating of the organizational practices leading to continuous improvement.

A regression analysis further clarified the relationship between perceived employer focus on continuous process improvement and the variables that might predict the presence of this focus. As Table 4 indicates, 73.6% (Adj. r^2 = .663) of the variation in the predicted variable, continuous process improvement, may be explained by the set of predictors.

To answer the research question 2 regarding the importance placed on continuous improvement of work flow processes, participants perceived their employers to be moderate in practices of continuous process improvement and moderately engaged in most activities representing that concept. The organizations in Belize must attempt to engage in activities that would lead to higher focus on continuous improvement.

Table 3
Descriptive Statistics and Kendall's tau_b correlation for Continuous Process Improvement and Underlying Criteria (N = 25)

	Measure	Response Mean	Standard Deviation	Correlation with Research Question 2	Sig (2-tailed)
Research Question 2	Continuous process improvement of workflow (IMPRVWF)	3.88	0.97	1	
Underlying Criteria	Ongoing evaluation of workflow (EVLUATWF)	3.48	1.08	0.713	0.000
	Documentation of workflow process (DOCPRC)	3.4	1.29	0.483	0.000
	Documentation of process variation (DOCPVRTN)	3.21	1.12	0.541	0.002
	Problem prevention (PROBPREV)	3.64	1.04	0.682	0.000
	Hardware/equipment updates (UPGRADES)	3.6	1.04	0.348	0.047

Total stakeholder involvement. Research question 3 asked, "What importance do Belize organizations place on total stakeholder involvement in achieving continuous improvement?" To understand the importance that participants felt their employers placed on involving people affected by the organizations' operations (stakeholders), the following criteria were represented in the survey: (a) external (non-employee)stakeholders, (b) employee empowerment for organizational decision making, (c) soliciting employee suggestions, (d) acting on employee suggestions, and (e) encouraging cross-functional cooperation among employees.

As presented in Table 5, participants rated their employers only slightly above moderate (3.42 on a scale of 1, minimum, to 5, maximum) on total stakeholder involvement. Total stakeholder involvement would include external (non-employee) constituents, as well as employee input, in the decision making and operations of the firm. Participants indicated, however, negative relationships between stakeholder involvement and two criteria for internal stakeholders: acting on employee suggestions (r = - .236), and emphasizing cross-functional cooperation (r = - .209). Employee empowerment for organizational decision-making (r = .135) and employee suggestions (r = .005) were positive but

Table 4
Summary of Regression Analysis for Variables Predicting Continuous Process Improvement of Work Flow Among Belize Organizations (N = 25).

Dependent Variable	IMPRVWF
Independent Variables Included	EVLUATWF, DOCPRC, DOCPVRTN, PROBPREV, UPGRADES
Independent Variables Not Included	None
R Square	0.736
Adjusted R Square	0.663
F Statistic	10.035
Significance	0.000

weak. It must be noted that barring the external stakeholder involvement criterion, all other correlation values were not significant at the 0.05 levels. Hence, definite conclusions cannot be made from the analysis.

A regression analysis (Table 6) indicated that 59.9% (Adj. $r^2 = .487$) of the variation in perceived employers' focus on total stakeholder involvement could be accounted for by the set of predictor variables.

In answer to research question 3 regarding employer focus on total stakeholder involvement, results indicate employers were least involved in this area of TQM, particularly in criteria regarding internal stakeholder involvement. However, this area needs to be investigated more closely in future research.

Table 5
Descriptive Statistics and Kendall's tau_b correlation for Total Stakeholder Involvement and Underlying Criteria (N = 25)

	Measure	Response Mean	Standard Deviation	Correlation with Research Question 3	Sig (2-tailed)
Research Question 3	Total stakeholder involvement (INVLMNT)	3.42	0.95	1	
Underlying Criteria	External stakeholder involvement (EXSTK)	3.25	0.97	0.716	0.000
	Employee empowerment (EMPWRMNT)	3.28	0.94	0.135	0.455
	Employee suggestions (EMPSUGG)	3.56	0.96	0.005	0.997
	Acting on employee suggestions (ACT_SUGG)	3.36	0.95	-0.236	0.190
	Cross-functional cooperation (CROSS_FN)	3.64	0.81	-0.209	0.258

Table 6
Summary of Regression Analysis for Variables Predicting Total Stakeholder Involvement Among Belize Organizations (N = 25).

Dependent Variable	INVLMNT
Independent Variables Included	EXSTK, EMPWRMNT, EMPSUGG, ACT_SUGG, CROSS_FN
Independent Variables Not Included	None
R Square	0.599
Adjusted R Square	0.487
F Statistic	5.375
Significance	0.003

DISCUSSION

Contrary to the perceptions held by the employees of organizations in Belize, analyses of data indicate that organizations are doing poorly in most areas of customer service, continuous process improvement of workflow, and total stakeholder involvement. Based on the survey results, it is quite obvious that organizations in Belize can be helped in many areas of TQM. Areas specifically targeted for training emphasis are (a) handling difficult situations and resolving conflict in the area of total customer service, (b) all areas of stakeholder involvement, and (c) documenting work flow processes, preventing employee and equipment problems, and updating equipment in the process improvement area.

Perhaps businesses in settings outside the United States define quality service by different criteria than do organizations in the Western world. Thus, certain quality management practices that are important to an international business setting may be overlooked in this study. Belize, however, depends heavily on trade with the Western world. Consequently, meeting the total quality expectations of Westerners may be significant for continuous success in trading, partnerships, and business relations in general.

Future research should explore how Belize businesses define the variables that constitute TQM; and to further support the initial findings of this exploratory study, future research should incorporate a larger, randomly selected sample of businesses. Additionally, research is needed which focuses in depth on TQM practices within a particular organization or field of service.

Finally, the results of this study are not conclusive regarding the precise practices of Belize organizations toward achieving total quality management, as the sample was non-random and small. However, these exploratory findings do indicate a need for further study and an opportunity for management training and/or organizational development within the developing nation of Belize, Central America.

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SURVEY OF QUALITY SERVICE

This survey is being conducted in cooperation with the Belize Institute of Management (BIM) and Indiana University of Pennsylvania (IUP). The BIM and IUP are interested in understanding the *quality* management practices of Belize businesses. Your responses will be completely confidential. The survey is designed to take less than 10 minutes to complete. Please answer each item as completely as possible.

I. Demographics Section

Please complete the following statements, or circle the correct answers, as indicated:

1. Type of business where you work? _____

2. a. Number of total employees in your organization _____
   b. Number of total employees at your site _____

3. Your job title/position_____

4. Number of years with your present employer_____

5. You consider yourself
   a) a top-level manager _____
   b) a middle-level manager _____
   c) a lower-level manager/supervisor_____
   d) other _____

6. Your gender Male _____ Female _____

7. Your age category a) 20-34 ___ b) 35-45 ___
   c) 46-55 ___ d) over 55 ___

II. Organization Section

Using the scale provided please rate your organization on the following

	Min.		Moderate		Max.
8. Importance placed on customer focus					
9. Importance placed on "flexibility" of the service representative/provider/employee in dealing with customer Conflicts/complaints	1	2	3	4	5
10. Importance placed by your organization on conducting post-service satisfaction survey by phone/mail/e-mail/on-site survey	1	2	3	4	5
11. Importance placed by your organization on training employees in the areas of:					
a) Listening skills	1	2	3	4	5
b) Dealing with difficult situations	1	2	3	4	5
c) Resolving conflicts	1	2	3	4	5
12. Importance placed by your organization on soliciting customer suggestions	1	2	3	4	5

III. Process Improvement Section

	Min.	Moderate			Max.
13. Importance placed by your organization on continuously improving the work-flow process					
14. Importance placed by your organization on systematic on-going evaluation of the work-flow process	1	2	3	4	5
15. Importance placed by your organization on process documentation	1	2	3	4	5
16. Importance placed by your organization on documenting process variation	1	2	3	4	5
17. Importance placed by your organization on problem prevention (equipment maintenance, detecting employee stress, etc)	1	2	3	4	5
18. Importance placed by your organization on hardware/equipment upgrades	1	2	3	4	5

IV. Total Involvement Section

	Min.	Moderate			Max.
19. Importance placed by your organization on total stakeholder (customers, employees, community, suppliers, etc.) involvement in achieving continuous improvement? (A stakeholder is anyone who will be affected by the organization's operations.)					
20. Importance placed by your organization on improvement of external (non-employee) stakeholders	1	2	3	4	5
21. Importance placed by your organization on empowering employees for organizational decision making	1	2	3	4	5
22. Importance placed by your organization on soliciting employee suggestions	1	2	3	4	5
23. Importance placed by your organization on acting on employees suggestions	1	2	3	4	5
24. Importance placed by your organization on cross-functional cooperation among employees	1	2	3	4	5

Thank you for completing this survey. If you are interested in receiving a summary of the results, please write your name and address on the following lines:

TOWARD UNRAVELLING THE CLOSED-END FUND PUZZLE

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ABSTRACT

This study investigates empirically the determinants of closed-end fund discounts/premiums. Three types of closed-end funds, government bond funds, corporate bond funds and domestic equity funds, were investigated separately. Contrary to past findings and popular belief, current sample shows that bond funds were selling on average at significant discounts. The results indicate that different types of funds have different determinants: for government bond funds and domestic equity funds, the determinants consist of both accounting data and market data; for corporate bond funds, the determinants consist of accounting data only. Two accounting variables, total net asset value and net asset value total year-to-date return were significant in all three models. The highly significant t-statistics for variables in the regression equations and the high explanatory power of the models developed, as measured by R-squares and adjusted R-squares, unambiguously show rational investor behavior consistent with market efficiency.

INTRODUCTION

A closed-end fund (CEF) is an investment company. Just like the more popular open-end mutual fund, a CEF's assets are the diversified portfolio of publicly traded stocks and other securities that it owns and manages. When a CEF is organized, a fixed number of shares are issued at initial public offering just like any other public company. Those shares then trade on stock exchange and new investors in the fund obtain their shares by buying them from existing investors who are looking to sell just like any other public company. An open-end fund, by contrast, issues new shares to each new investor and puts no limit on the number of shares the company can issue. Investors who desire to sell their open-end shares actually have their shares redeemed by the mutual fund.

While open-end fund shares are purchased and redeemed at their net asset values (NAVs), the market value (MV) of a share (share price) of a CEF is set by the market and may or may not correspond to the NAV of the fund's portfolio. This can result in a CEF's stock price trading at a discount from or premium to the NAV. In fact, closed-end funds are generally traded in the market at discounts and only occasionally at premiums. This phenomenon persists in spite of the fact that the net asset values of both types of funds are readily determinable. This is the well-known closed-end fund puzzle.

Various researchers have demonstrated that the discounts/premiums on closed-end funds represent market inefficiency. Weiss (1989) conducted an initial public offering (IPO) event study and found that closed-end stock funds, generally, were initially issued at premiums to NAVs and then were selling on average at discounts from NAVs after 10 weeks. While the average discount of 10.02% on CEFs after 24 weeks of issuing was found to be statistically significant, the bond funds were trading at statistically insignificant average discount of .012%. Thompson (1978), Anderson (1986), Brauer (1988) and Byrley (1991) demonstrated that simple trading rules could be used to exploit the changes in discounts/premiums to earn positive abnormal returns. These results seem to provide an exception to the semi-strong form of efficient-market theory.

Lee, Shleifer & Thaler (1991), in a somewhat provocative article, suggested that the one-factor capital asset pricing model is not adequate to account for the market behavior of closed-end funds. They proposed another factor, individual investor sentiment, to account for the additional systematic risk investors bear when investing in stocks that are subject to irrational swings of individual investor (noise-trader) sentiment. They claimed that closed-end funds, like small firm stocks, are owned mostly by individual investors. When these individual investors are optimistic, the discounts narrow or premiums result; when they are pessimistic, the discounts widen or premiums decline. They used historical data to support their claim. It seemed that

their noise-trader sentiment argument had killed two birds with one stone: the small firm effect and the closed-end fund puzzle. However, Chen, Kan & Miller (1993) and Abraham, Elan & Marcus (1993) disputed this claim. Other researchers have attempted to identify potential fund characteristics that could rationally explain the closed-end fund puzzle. The results are mixed and inconsistent. These studies will be reviewed in the next section. In short, the closed-end fund puzzle remains a mystery. Brealey & Myers (2000) consider the puzzle as one of the "10 unsolved problems that seem ripe for productive research" (p.1010).

The primary objective of this paper is, in response to the call made by Brealey & Myers (2000), to investigate empirically the potential determinants of closed-end funds' discounts/premiums. Our goal is to shed additional light on the puzzle and not to offer a formal solution. Our investigation differs from earlier studies in several important ways: 1) government bond funds, corporate bond funds and equity funds are investigated separately; 2) recent theoretical development about the puzzle is considered, 3) additional data provided by Morningstar, Inc. are used, 4) data are more current and 5) stepwise regression and adjusted R-square (R_A^2) are used in combination to select variables to reduce potential multicollinearity and overfitting problems. In section one the variables to be included in this investigation are presented in conjunction with a brief review the relevant past studies done in this area. Section two describes the data. Section three presents the empirical results and section four provides conclusion.

VARIABLE SELECTION AND RELEVANT PAST STUDIES

Accounting variables such as expense ratio, turnover ratio, historical performance, unrealized capital gains, size, foreign stock ownership and market variables such as diversification and variances of securities in a fund have been proposed to explain the closed-end equity fund puzzle. Past studies (on equity funds exclusively) using various combinations of the variables have given inconsistent and mixed results[i]. It is fair to say that none of these studies have offered convincingly satisfactory results. This section reviews these studies and proposes that proxy variables need to be included in the current study.

Expense ratio

Ingersoll (1976) argues that larger expense ratio should lead to larger discount. He treats management expenses as a deadweight loss and believes that discounts represent the capitalized value of these expenses. However, Malkiel's (1977) empirical study did not support Ingersoll's argument. Brauer (1984,1988) indicated that open-ending of a significantly discounted closed-end fund involves significant benefit to shareholders and that expense ratios are proxy measures for managerial resistance to open-ending of closed-end funds. Thus, the higher the expense ratio, the less likely the fund will be open-ended and hence the larger will be the discount. His results seem to show that larger expense ratios reduce the likelihood of a closed-end fund becoming open-ended. Furthermore, Brauer (1984) stated that, "because the reported net asset value does not include the capitalized value of future expenses, it overstates the true net asset value" (p.501), which is similar to Ingersoll's argument. In a cross-sectional study of discounts, it seems reasonable to assume, *ceteris paribus*, a positive relationship between expense ratios and discounts.

Regardless of whether expense ratios indeed cause discounts, it obviously can not explain the observed wide swings of discounts over time; neither can it explain why closed-end funds are initially issued at premiums and some seasoned funds are also selling at premiums.

Turnover ratio

Boudreaux (1973) argued that turnover ratio serves as proxy for investors' expectation of future fund alteration of present portfolio. If investors expect the alteration to result in a better portfolio than that presently held, the fund will, *ceteris paribus*, sell at a premium to the net asset value; if they expect the alteration to result in a worse portfolio than that presently held, the fund will, *ceteris paribus*, sell at a discount. Thus, he hypothesized that turnover ratio would correlate positively with the absolute values of discounts/premiums. His empirical results seem to be consistent with his hypothesis. Malkiel (1977), on the other hand, indicated that the strong form of the efficient market theory suggests that larger turnover should, *ceteris paribus*, sell at a larger discount since a

high turnover is considered doubly harmful: it increases transaction costs and taxes payable by the shareholders, but is unlikely to improve portfolio performance even before taxes and transaction costs. His data supported his argument. In this study, larger turnover ratio will be assumed to lead to larger discounts.

Historical performance

Both Boudreaux (1973) and Malkiel (1977, 1995) included measures of the funds' historical performance in their respective studies: Boudreaux (1973) used annual growth rate of net asset value per share, return-to-variability of net assets and return to volatility on net assets for the period, whereas Malkiel (1977, 1995) used historical returns over five-, three- and one-year periods. Both found no significant relationship between fund discounts/premiums and their chosen historical performance measures. In this study, net asset value total year-to-date return and 12-month yield, income ratio and α (alpha: the value-added or subtracted by a fund manager) will be used as historical performance proxy measures.

Diversification

Thompson (1978) indicated that: "Theories based on demand for diversification by small investors imply that poorly diversified funds will sell at discounts to compensate (via higher returns) for excess residual variance and well diversified funds, perhaps, at premiums."(p.152) Camp & Enigk (1981) argued that discounts arise from the penalty imposed by the closed-end investment company stock buyers directly on the stockholders and indirectly on the portfolio managers for their retention of unsystematic risk. Camp & Enigk use ($1-R^2$)- the percentage of total variation in fund return which is not explained by benchmark index return variation- as measure of the level of retention of diversifiable risk. They hypothesized that the larger ($1-R^2$), the larger the average discount. They found weak, though statistically significance (at .075 level).

In direct contrast to Camp & Enigk's argument, Kim (1994) uses Merton's option pricing theorem to develop a model that explains closed-end fund discounts. His results implied that discounts should increase with funds' degree of diversification, i.e., the more diversified a fund is, the larger the discount. He cited the studies by Brauer (1984, 1988) and Brickley & Schallheim (1985) as indirect support to his theoretical implications. Malkiel[ii] (1977), however, found no significant relationship between diversification and discounts/premiums in his data. Market model residual standard deviation, systematic risk β and R^2 -same R^2 in Camp and Enigk's ($1-R^2$)- will be used as measures of degree of diversification in this study.

Unrealized capital gain (UCG)

Malkiel (1977, 1995) showed that the theoretical limit of the impact of the percentage of a fund's total assets represented by unrealized capital appreciation on the discounts is at most 6.48%, less than most recent discounts of many closed-end funds. Obviously, UCG could not explain why premiums exist. According to his argument, *ceteris paribus*, discounts should be positively correlated with UCG. His empirical tests did not contradict his argument. In this study the variable used will be "Potential Capital Gain Exposure" from Morningstar.

Size

Malkiel (1995) stated that industry personnel mentioned that size of a fund is a potential explanatory variable. However, he did not hypothesize the directional effect of the size variable. It seems intuitive to assume that the larger the fund's size, the smaller the discount. Malkiel (1995) did not find a significant result for the size effect. Total net asset value of a fund will be used as a proxy measure of size in this study.

Foreign Stock Holdings

Due to limitations on new nondomestic investment in the equities of certain foreign companies, the price of some funds investing in foreign securities could be driven to premiums over their NAVs. As a result, discounts are hypothesized to be negatively correlated with ownership of foreign stocks in the fund's portfolio, *ceteris paribus*. Malkiel (1995) found no significant result. Foreign stock holdings provide additional diversification and hence will be assumed to be negatively related to a fund's discount in this study. Morningstar provides the percentage of foreign stock ownership for domestic equity funds and this will be

used as one of the determinants for the domestic equity funds' discounts/premiums.

Variances of securities in a fund portfolio

Kim (1994)'s result implies that the discount increases, *ceteris paribus,* with the average variance of securities in the portfolio. He cited the empirical study by Brickley, Manaster & Schallheim (1991) to support his theoretical implication. In this study the implication of Kim's results will be tested. β-quotient as defined by Camp & Enigk (1981) will be used as surrogate measure of the average variance of securities in a fund's portfolio. In the following section the CEF data source to obtain the variables described above will be described.

DATA

Data for closed-end funds as of May 1997 were obtained from Morningstar, Inc. Morningstar publishes such data semi-annually in June and December. It provides a rich set of data including, but not limited to, past performance based on market prices as well as NAVs for various time periods, several risk measures including Morningstar's own measure, expense ratios, turnover ratios, leverage factors, etc. The variables used in this investigation were obtained either directly from the data or derived from it. Those variables that appear in the final regression equations are listed and described in Exhibit I. The funds used in this study were obtained by using Morningstar's search engine based on investment objective types. 29 government bond funds, 32 corporate bond funds and 37 domestic equity funds were obtained. Funds with unavailability of data were excluded from the following discussions[iii].

RESULTS AND DISCUSSIONS

Table 1 presents summary statistics for the discounts/premiums of government bond funds, corporate bond funds and domestic equity funds. The one-sample t-tests show that the average discounts of all three types of funds are significantly different from zero. Notice that the first two types of bond funds have surprisingly large average discounts. For the government bond funds, the discounts range from 2.1% to 13.9% with an average discount of 9.33%; for the corporate bond funds, the discounts range from -6.3% (premium) to 14.44% with an average discount of 6.86%. Only two corporate bond funds were selling at premiums. This is in sharp contrast with Weiss' (1988) data whose bond funds had an average discount close to NAV after 24 weeks from IPO and Abraham, Elan & Marcus' (1993) data which had an average of -1.05% (premium) for bond funds. It is widely believed (Abraham, Elan & Marcus, 1993) that bond funds, due to fixed interest payments, are generally traded at prices close to their respective NAVs. For the domestic equity fund, the discounts range from -32.9% (premium) to 33.28 with an average discount of 7.9%, which is almost 2% higher than the 6% discount average reported by Malkiel (1995) and the 6.14% discount average reported by Abraham, Elan & Marcus (1993). Twenty one percent of the domestic funds were selling at premiums. The relatively large standard deviation of 13.73 for the domestic equity funds indicates that the discounts/premiums have large cross-sectional variation.

Cross-sectional stepwise regressions were first run with discounts/premiums as dependent variable. Variables not in the equation were then tried until R_A^2

Exhibit 1
Description of variables

Variable symbol	Description
Y	Fund discount/premium = (NAV – MV)/ NAV*100
X_1	Net asset value total year-to-date return
X_2	Net assets: a fund's total net asset value
X_3	Turnover ratio: the lesser of purchases or sales divided by the fund's average monthly assets
X_4	Expense ratio: the percentage of assets deducted each fiscal year for fund expenses
X_5	R^2: percentage of a fund's variance accounted for by the benchmark index
X_6	α (alpha): a fund's excess return - benchmark index excess return
X_7	β-quotient = β/R equivalent to standard deviation of a fund portfolio divided by benchmark index standard deviation
X_8	Income ratio: a fund's net investment income/average NAV
X_9	Potential capital gain exposure: unrealized capital appreciation
X_{10}	12 month yield: 12 month income distributions/ending NAV
X_{11}	Market total return: 12 months' return based on fund's market price
X_{12}	Percentage of foreign stock holdings
X_{13}	β (beta): the systematic risk of a fund

Table 1
Summary statistics for discounts and premiums (-) as percentages of net asset values

Types of funds	Minimum	Maximum	Mean	Median	Standard deviation	t-statistics
Government bond	2.10	13.90	9.33	8.70	3.65	11.15
Corporate bond	-6.27	14.44	6.86	8.17	4.98	7.67
Domestic equity	-32.91	33.28	7.89	11.59	13.73	2.93

Table 2
Multiple regression result for government bond funds

Variables	Coefficients	t-statistics	Probability	VIF
Constant	-9.90	-3.172	.010	
X_1	-2.01	-4.329	.001	1.26
X_2	-.0046	-2.837	.018	1.20
X_3	.025	5.315	.000	2.62
X_4	-1.238	-2.559	.028	1.96
X_5	22.266	4.562	.001	3.36
X_6	.756	1.775	.106	3.28
X_7	4.524	3.456	.006	2.06

$F_{(7,10)}$=11.734, Probability = .000, R^2=.891, R_A^2=.815

Table 3
Multiple regression result for corporate bond funds

Variables	Coefficients	t-statistics	Probability	VIF
Constant	40.47	7.359	.000	
X_1	1.895	3.990	.000	1.06
X_2	-.011	-4.005	.000	1.12
X_8	-4.299	-5.993	.000	1.85
X_9	-.117	-2.122	.043	1.71

$F_{(4,27)}$=19.831, Probability = .000, R^2=.746, R_A^2=.708

could no longer be increased and no variables could be removed without decreasing the R_A^2. The resulting final regressing equations and their accompanying statistics are presented in Table 2 through Table 4 for government bond funds, corporate bond funds and domestic equity funds respectively. One common observation that can be made is that all the variance inflation factors (VIFs) are relatively small, indicating no serious multicollinearity problems for variables in the three regression equations.

Table 2 presents the regression results for government bond funds. The model fits the data extremely well with a R^2 of .89 and R_A^2 of .82 indicating that the selected variables explain a large portion of the cross sectional variation in discounts with only 11% left unexplained. The overall F-test ($F_{(7,10)}$ = 11.734, Probability < .000) shows highly significant result. These variables include historical performance measures (X_1, X_6), size (X_2), expense ratio (X_4), diversification (X_5, X_{13}), β-quotient (X_7) and turnover ratio (X_3). The highly significant F-test indicates not all the regression coefficients are zero. The individual two-tailed t-tests show that, with the exception of alpha (X_6), all variables are highly significant. Except for the expense ratio, the coefficients for all variables have expected signs[iv]. The coefficient for expense ratio has negative sign which is counterintuitive. Note that the coefficient for the diversification variable (R^2) has positive sign consistent with the theoretical implication of Kim (1994) and contradicting the argument given by Camp & Enigk (1981) and others. When these variables were used to predict December 97's discounts/premiums, a R^2 of .84 and R_A^2 of .73 were obtained with little changes in the significance levels of the variables, indicating very good prediction.

Table 3 presents the regression results for corporate bonds. The model has a R^2 of .75 and R_A^2 of

.71. Though the model has less explanatory power as measured by R^2 than the government bond funds, it fits the data very well; the overall F-test ($F_{(4,27)} = 19.83$, Probability < .000) is highly significant. Historical performance (X_1, X_8), size (X_2) and unrealized capital gain (X_9) are significant determinants. However, the negative sign[v] of the coefficients for unrealized capital gain and the positive sign of the coefficient for net asset value total year-to-date return (X_1) is counterintuitive.

Table 4 presents the regression results for the domestic equity funds. All earlier studies relevant to this research used equity funds. The model has a R^2 of .82 and R_A^2 of .76. This R^2 is much higher than all those reported so far. Again, these results indicate the high explanatory power of the selected variables in explaining the closed-end fund puzzle. The overall F-test ($F_{(7,19)} = 12.44$, Probability < .000) indicates highly significant relationships between the selected variables and the discounts/premiums.. Historical performance (X_1, X_{10}, X_{11}), size (X_2), foreign stock ownership (X_{12}) and beta (X_{13}) are significant determinants. The positive sign of the coefficients for net asset value total year-to-date return (X_1)[vi] and size (X_2) is perhaps counterintuitive. In this case, however, size might be surrogating for diversification. That being the case, the positive sign would be expected from the results of Kim (1994).

CONCLUSION

The empirical results given in the last section have shed additional light on the closed-end fund puzzle. First, contrary to past findings and popular belief, both types of bond funds have statistically significant average discounts. In fact, all 29 government bond funds and 29 out of 32 corporate bond funds in my sample were selling at discounts. Second, the size and historical performance variables that have been found to be statistically non-significant in the past, play a significant role in all three models. Third, the relationship between the selected variables and the discount as indicated by $R^2$and F-tests is much stronger than those that have been reported in the past. By separating bond funds from equity funds, a clearer picture emerges. Compared to earlier findings, the discounts/premiums phenomenon seems to have reversed with bond funds selling at discounts larger than or comparable to equity funds for the current data set. Furthermore, all the models fit the data very well, indicating the proposed variables do explain a large portion of the cross-sectional variation of closed-end fund discounts/premiums. Also, all the variables in the regression equations have highly significant t-statistics. These results are consistent with market efficiency and inconsistent with the noise-trader argument by Lee, Shleifer & Thaler (1991). At the least, one could say that the information provided by Morningstar seem to be useful in explaining or assessing the closed-end fund discounts/premiums.

However, a caveat is in order. Due to high correlations among some of the independent variables, e.g., turnover and unrealized capital gains, a different set of variables could potentially explain the closed-end fund puzzle equally well. That the coefficients of some of the variables have unexpected signs might indicate that some important variables may have been omitted in the model thereby invalidating the *ceteris paribus* condition. The unexpected sign could also result from small sample size or measurement errors. Also, one

Multiple regression result for domestic equity funds

Table 4
Multiple regression result for domestic equity funds

Variables	Coefficients	t-statistics	Probability	VIF
Constant	33.282	4.171	.001	
X_1	1.065	3.528	.002	2.11
X_2	.0081	3.350	.003	1.27
X_4	2.349	1.625	.121	1.42
X_{10}	-2.296	-4.011	.001	1.52
X_{11}	-.640	-6.066	.000	2.12
X_{12}	-.673	-5.304	.000	1.59
X_{13}	-18.753	-2.634	.016	1.85

$F_{(7,19)}$=12.441, Probability = .000, R^2=.821, R_A^2=.755

should read the results with caution realizing that the relationships might have just happened to occur in this data set and might not have reflected the fundamental truth that will hold across other samples. This concern is alleviated somewhat by the high adjusted R-squares (R_A^2); the highly significant F-and t-statistics; and the fact that two variables, size (net assets) and historical performance (net asset value total year-to-date return) are highly significant in every model. Further research is necessary in order to find a consistent pattern so that a rigorous theory could be developed. In addition, another market study, such as IPO study by Weiss (1988) or simple trading rule study by Byrley (1991), may shed further light on the market efficiency theory and the closed-end fund puzzle.

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[i] Most of the variables, for example, were found to be statistically non-significant in Malkiel's two studies cited in the paper; only X_3, X_9 and restricted stock were found to be significant.

[ii] No description of proxy measures for diversification and size was given by Malkiel.

[iii] SPSS performs list-wise deletion automatically when there is any missing data among the variables. The resulting sample consists of 18 government bond funds, 32 corporate bond funds and 27 domestic equity funds.

[iv] The simple correlation between X_3 and X_4 and Y are non-significant at -.22 and -.28 respectively

[v] The simple correlations between X_1, X_9 and Y are non-significant at .204 and .247 respectively. The correlation between X_8 and X_9 is -.641, which causes the unexpected sign for the X_9. However, in the absence of rigorous theory, no variables are dropped as long as they increase R_A^2.

[vi] The simple correlation between X_1 and Y is non-significant at -.087. The simple correlation between X_1 and X_{11} is .612, which causes the unexpected sign for X_1.

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