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### A Study to Determine the Opinions of Information Technology Professionals Related to the Value of "Soft Skills" in Technical Work Environments

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**A STUDY TO DETERMINE THE OPINIONS OF INFORMATION  
TECHNOLOGY PROFESSIONALS RELATED TO  
THE VALUE OF "SOFT SKILLS" IN TECHNICAL WORK ENVIRONMENTS**

**A Research Paper**

**Presented to the Graduate Faculty of the  
Department of Occupational and Technical Studies  
Old Dominion University**

**In Partial Fulfillment  
Of the Requirements for the Degree of Master of Science  
in Occupational and Technical Studies**

**by**

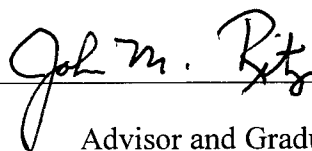
**Jan Walker**

**April, 2001**

## Approval Page

This research paper was prepared by Jan Walker under the direction of Dr. John Ritz, in OTED 636, Problems in Occupational and Technical Studies. It is submitted in partial fulfillment of the requirements for the Degree of Master of Science in Occupational and Technical Studies.

Approved April, 2001

A handwritten signature in cursive script that reads "John M. Ritz". The signature is written in black ink and is positioned above a horizontal line.

4-29-01

John Ritz

Advisor and Graduate Program Director

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## CHAPTER I

### INTRODUCTION

Amongst educators and business leaders alike, much discussion occurs on topics related to the “high skill economy”, the need to “upskill” employees, and the value of “learning organizations”. However, becoming more skilled, in the traditional sense of training, has meant learning to do certain tasks related to operational and technical proficiencies. Such training has included programs designed to enhance an employee’s knowledge of keyboarding skills, word processing methods, programming languages, or use of computerized manufacturing equipment. Indeed, development of such “hard” skills has become an important mission of economic development centers, community colleges and others concerned with workforce development throughout Central Virginia.

Where then, does the “softer” side of employee development rank in terms of importance? With more and more emphasis being placed on the need to stay current with changing technologies and technical know-how, what attention is given to the value of soft skills - - those skills relating to communications, interpersonal relationships, leadership and other such high-level cognitive activities? While local community college systems show evidence of embracing the need for such development (through newly introduced programs related to “leadership” and “team building”), have business professionals followed in this pursuit of soft skill development? In particular, have those employed in the most technically-focused work environments, Information Technology departments, accepted the value of soft skills - - or do they rely on technical expertise alone as the measure of one’s value to the organization?

## STATEMENT OF THE PROBLEM

The problem of this study was to determine the opinions of Information Technology professionals related to the value of “soft skills” in technical work environments.

## RESEARCH GOALS

The goals of this study were to answer the following questions:

1. Do Information Technology professionals consider “soft skills” vital to their ability to perform successfully in their careers?
2. How important do soft skills rate today as compared to five years ago in the workplace?
3. What types of soft skills do Information Technology professionals need to develop to enhance their careers?
4. What types of soft skills training are currently being offered in Information Technology environments?
5. What is the overall opinion of Information Technology professionals related to soft skill training programs?

## BACKGROUND AND SIGNIFICANCE

A study of trends in the United States indicates that changes in business environments throughout the 1980s and 1990s represent a transformation into a new era of employability, where assets of a company relate less to the physical inventory and

more to the intellectual properties of its employees. For this reason, ideas associated with professional skills, and how these skills are developed, are in need of appraisal and revision (Smith, 1996). In particular, the notion of “hard” and “soft” skills need to be evaluated in light of the new business setting - - one of ceaseless change in technology, continuous process improvement, and persistent reorganization and “right” sizing.

Traditionally, “hard” skills were those recognized as providing the most value to the organization, and in Information Technology environments include skills related to software development and operational system configurations. However, according to one study conducted by Motorola’s Corporate University, such skills now have a shelf life of approximately two years. In contrast, the so-called “soft” skills - - the ability to communicate, interact with others, problem solve, make decisions - - are proving to be the skills which endure, enabling employees to deal more effectively with change, uncertainty and team dynamics. The argument can therefore be made that such “soft” skills represent the core assets of a workforce and provide as much value as technical know-how.

According to a survey conducted by RHI Consulting in 1995, 150 Information Technology executives of the nation’s 1000 largest companies responded as follows:

*How important are an individual’s “soft skills”?*

Very important:	46%
Somewhat important:	39%
Somewhat unimportant:	3%
Not at all important:	7%
Not sure/Don’t know:	5%

The main reason provided by executives rating soft skills as “very important” was the shift towards PC-based, client/server environments - - a shift requiring Information

Technology professionals to work more closely with the end user (Dizdarevic, 1996). For Information Technology professionals, the transition from a backroom service provider to a project manager/team leader/quasi salesperson dealing directly with the end user has required much adjustment, not the least of which has involved improving communications and creating stronger bonds with both technical and non-technical teams. Complex projects, such as implementing new programming languages, deploying sophisticated databases, and executing electronic data interchange capabilities require collaborative efforts between the technical staff and users throughout the organization (Berry, 1998).

Given the new relationship between Information Technology professionals and the users they serve, better communications can often mean the difference between a project's success and failure. Chris Lofgren, chief technology officer for Schneider National, explains "you get to a point with projects where you are starting to manage a change process, not just an IT process; issues around management and leadership become crucial to the successful integration of those IT services to the company" (Berry, 1998).

However, in spite of this link to the company's overall success and profitability, do today's Information Technology professionals accept this edified notion of the value of soft skills, or are they skeptical, believing that soft skills are too "touchy-feely" and not relevant to one's success as a technical professional? This study looks at that question, as well as others associated with soft skills in the technical arena, through a survey of Information Technology professionals in companies throughout the Central Virginia area.

## LIMITATIONS

The limitations of this study are identified as follows:

1. Collection of data involved the use of a survey randomly sent to Information Technology Managers in companies throughout the Central Virginia area. Since participation was voluntary, answers to the survey may reflect attitudes of respondents who are more pro-training in general, since they chose to participate by completing a survey associated with soft skill development. Information Technology professionals who are less supportive of such efforts may have chosen to discard the survey altogether.
2. The primary focus of the survey was to determine the value placed on soft skills, and does not make the determination as to whether soft skills were actually in place and effectively used in the companies surveyed.

## BASIC ASSUMPTIONS

This study incorporated the following assumptions:

1. The respondents were representative of Information Technology professionals throughout the Central Virginia area.
2. Information Technology professionals are experiencing a shift from backroom support roles to business-oriented front-line contact with users throughout the organization, a shift that requires increased communications and use of soft skills.

## PROCEDURES

A survey was developed to collect attitudes of Information Technology professionals as to the value of soft skills in the performance of technical work. The survey was forwarded to companies within a 60-mile radius of Lynchburg, Virginia, providing a random sampling of companies of various sizes throughout Central Virginia. Organizations were selected from the author's existing clientele (author is an independent management consultant/trainer) and business listings provided by the Lynchburg Chamber of Commerce directory.

## DEFINITION OF TERMS

The following terms were used throughout this study.

1. Soft Skills – Those skills associated with activities such as problem solving, interpersonal communications, leadership, and decision making.
2. Hard Skills – Specific, measurable skills associated with tasks and operational functions of a job. Examples include word processing skills, keyboarding skills, programming languages, and database management.
3. Information Technology Professional (IT) – Employees (both management and non-management) in departments responsible for the management of information using both hardware and software technologies; referred to in abbreviated form "IT" throughout the remainder of this document.

## OVERVIEW OF CHAPTERS

Chapter I introduced the problem of the study which was to determine the opinions of Information Technology professionals related to the value of “soft skills” in technical work environments. In conducting this research, it was the author’s desire to determine if IT professionals agree or disagree with the emerging interest in soft skill development by educators, trainers, and many business/community leaders. The remainder of Chapter I presented research goals reflecting the framework by which the research would be conducted, along with the background and significance of the study’s topic. Limitations, assumptions, and procedures associated with the survey instrument were outlined, as well as the definition of terms used throughout the study.

Chapter II provides a review of the literature relating to soft skill development in technical work environments, with focus on the ideas and concerns of both training professionals and Information Technology management regarding the value of soft skills in the technical workplace. Chapter III explains the methods and procedures used during the research. Chapter IV presents the actual data collected and the analysis of this data as it relates to the research topic. Chapter V is the conclusion of the study with a summary of the findings and recommendations for further action.

## CHAPTER II

### REVIEW OF LITERATURE

Presented in this chapter is a review of the literature available on the emerging importance of soft skills in the workplace, with particular emphasis placed on technical environments. Information is presented in relation to the goals as outlined in Chapter I with an initial look at how the business world perceives soft skills currently, along with a look at what skills are considered “soft”, what training is currently taking place for soft skill development, and what is the overall opinion of IT professionals concerning the quality of those training efforts.

### CURRENT PRECEPTIONS OF SOFT SKILLS

With his best-selling book, *Emotional Intelligence* released in 1995, Daniel Goleman brought the debate of the value of soft skills to the forefront of companies striving to deliver the ultimate “do more with less” dictates of modern business. In his work, Goleman contends that success and ability can not be determined solely by intelligence, and that emotional traits such as self-awareness, motivation, self-control, and social skills (teamwork, leadership, and communications) matter, too. Perhaps what is most unique about this message is Goleman’s ability to support his arguments by research in neurology and the behavioral sciences. His follow-up book, *Working with Emotional Intelligence* (released in 1998), provides additional analytical support through a series of managerial studies, the results of which assert that emotional intelligence is twice as important as either IQ or technical expertise in predicting business success. In addition, Goleman argues that emotional intelligence can be taught, a message targeted to

educators and the educational system, as well as trainers in the business arena (Goleman, 1998).

Further evidence of the value of soft skills was recently detailed in the Sunday business section of *The Roanoke Times*, with an article titled *Hottest Tech Jobs Require More Than Know-How*. Here again, we see the suggestion that emerging industries dealing with a tight labor supply are searching for more than the latest computer savvy expertise. In this article, the list of soft skills includes a command of ideas, words and images. Employers are described as using a “right brain-left brain” standard to fill jobs in the new technology industries. For instance, web developers versed in the latest programming languages also need a knack for the art of understanding human habit to create a company’s Web pages” (Fest, 2000). In essence, it is not enough to understand how the computer works; the program developer must also consider how the user interacts with the computer.

Perhaps the growing acceptance of the value of soft skills directly arises from a hard look at performance gaps. A study conducted by Hagberg Consulting Group (McGee, 1996) presents findings suggesting that approximately one-third of Chief Information Officers lack solid communication, motivational, and other so-called soft skills, thereby limiting their effectiveness as corporate leaders. This 12-year study of leadership traits was based on data collected on 2,500 CIOs and other technology managers. The peers, subordinates, and bosses of these executives were asked to assess them in 47 skill and personality-trait categories. In addition to citing soft skill problems and gaps, the study also found that there was a 50% greater likelihood that executives having problems related to soft skills were in technical positions. This gap is

understandable, given that IT managers spend their careers absorbing technical knowledge, while often paying little attention to diplomacy and leadership skills. The results of this study reflect the historical practice of promoting based on technical expertise, a concept proving to not fair as well in today's changing technological environments. Many CIOs focus on managing the execution of a technology plan, but fail in critical steps such as building alliances with co-workers and working to understand users - - the elements that can lead to success or failure in a complex IT project.

More evidence that soft skills have surfaced as an issue in the IT profession can be seen by looking at current hiring practices. IT recruiting professionals have experienced a new focus by IT managers, who are now aiming to hire the soft skills along with the technical skills. "Identifying soft skills will be an absolutely critical issue in the future," says Greg Rich, an IT recruiting manager at Cargill, an agricultural company in Minneapolis (Isaacson, 1998). Rich goes on to say that the focus in hiring has shifted to hiring on potential, rather than skill. This shift in hiring practices is reflected in a survey conducted by RHI Consulting, a specialized staffing service that provides information technology professionals on a short- and long-term basis. In the RHI survey, 150 executives were polled from the nation's 1,000 largest companies, with results showing that eighty-five percent of respondents said they were looking for well-developed soft skills when evaluating job candidates. In addition, sixty-eight percent said soft skills are more important today than they were five years ago. The reason offered for this emerging trend was that information technology staff were moving closer to the end users, and that consequently, they needed to have strong interpersonal skills (Disdarevic, 1996). The result - - soft skills continue to gain recognition as valuable attributes for the

IT professional. David Tighe, Canadian area manager for RHI Consulting says, “the single most common requirement of management hiring is to seek out individuals with very good interpersonal communication skills and business sense.” That outlook is indeed supported by the RHI survey, where twenty-seven percent said interpersonal skills are the most important factor for reaching management levels in the IT field, with advanced technical skills ranked second, and customer service orientation ranked third (Solomon, 1999).

### WHAT ARE “SOFT” SKILLS?

No doubt, job seekers with advanced technical skills are in demand in today’s employment market, and the list of technical skills considered the “hottest” shift in ebbs to the rapid explosion of technical advances. However, with the growing awareness of the need for soft skills (also referred to as social, interpersonal, people skills), what are the non-technical skills sought in the IT profession? In a publication read by many IT professionals, the newsletter *InfoWorld* listed the following soft skills in general headings (Battey, 1997):

- Being a Team Player: Getting along with co-workers and end-users; including conflict-resolution skills.
- Communication Ability: Being able to talk to non-technical people both inside and outside the company.
- Understanding the Business: Having a clear view of the organization’s overall goals; including understanding how the software will be used and contribute to the company’s success.

Another such list, as published in *People Management* (Strebler, 1997) sought to define soft skills as primarily interpersonal in nature, with the following headings:

- Communications: listening, asserting, influencing, persuading, diplomacy

- Interacting with Others: supporting, sharing, cooperating, encouraging
- Working with people: giving and receiving feedback, teamworking, appraising, confronting constructively, coaching, and developing.

A survey of chief information officers conducted by the *Fairfield County Business Journal* asked respondents to list the single most important soft skill for an information technology job candidate. (1999) Their responses:

Interpersonal Skills	33%
Written/Verbal Skills	27%
Ability to work under pressure	21%
Overall business acumen	14%
Professional image	2%
Don't know/not sure	3%

Other competencies listed frequently as soft skills include self-awareness, self-confidence, commitment and integrity, the ability to connect on a personal level, the ability to initiate and accept change, critical thinking, ethical decision-making, collaboration, empowerment, facilitation, and presentation skills.

## CURRENT TRAINING EFFORTS IN THE AREA OF SOFT SKILLS

While soft skills have generally meant such interpersonal skills as leadership, teamwork, and managing change, the growing business demands are making soft skills more bottomline in necessity. Joanne Sujansky, owner of Pittsburgh's Training Connection, supports this statement by saying "it's not really soft skills; now it's critical: it's a must do" (Schooley, 2000). Sujansky points out a 4 percent unemployment rate and a lack of qualified employees as a major barrier to company growth, which has led businesses to turn to training in an effort to improve the contribution of the employees they do have. In general, these efforts to develop soft skills can be found in three

prevailing forums: 1) integration of soft skills into educational curriculum at the college and university level, 2) development of in-house corporate programs, and 3) use of external training consultants.

In looking at the first common forum – integration of soft skills into educational curriculum – much can be found as evidence of a new emerging focus on soft skill development. Colleges are building opportunities for soft skill development into MBA programs, engineering programs, and IT programs - - the new emphasis spurred by a demand by businesses to get more from their employees than just technical know-how. Business schools are updating their programs to prepare students for the current trends in corporate America - - trends which include flatter management structures, increased complexity in business, and the need to work well with people of different backgrounds (Selis, 1996).

Ohio State University is one such example of an institution changing its MBA program to reflect the need for soft skill development. As described by Joseph Alutto, Dean of OSU's Max M. Fisher College of Business, "Business told us the technical skills of our MBA students aren't a problem. Where they need to improve is leadership, teamwork, communication and the global context of business." As part of the changes, Fridays are now reserved for programs and activities involving teamwork, problem-solving, executive roundtables, and the like. Additionally, the number of "specialization areas" offered within the MBA program is reduced from more than a dozen short-course areas to five in-depth concentrations: corporate financial management, investment management, marketing management, operations and logistics, and a combination of three

minors. These changes are the direct result of feedback provided to OSU business school officials by executives, students and alumni.

Other institutions are following suit. Cornell University has added soft skills which include negotiations, group dynamics, and how to work through a process with a diverse group to reach a solution. Several professors teach in both the business and engineering schools – in essence, they are engineers who now teach management, according to Steven Sharratt, Assistant Dean of External Relations. At Northwestern University, a shift is also seen in the efforts to assign projects to students which require group interaction, again emphasizing the soft skills involving teamwork (Dutton, 1994). “We need to build bridges between the techies and the managerial types,” says Mier Russ, a professor at Franklin University’s MBA program. Franklin’s MBA program uses what it calls “whole-brained thinking”, encouraging students to go beyond their precise, quantitative ways and expand their interpersonal and non-quantifiable skills and flexibility needed to excel in business. As part of this effort, Franklin is making a conscious effort to include more oral and written presentations in its courses, again in response to corporate feedback. Tufts University’s Gordon Institute also has shifted its focus, as described by Arthur Winston, Senior Associate Director - - “there is virtually no place left in a technical company where the stereotypically introverted engineering genius can function as a recluse concerned only with his or her own projects of interest. Technical companies have no alternative but to expect each member of the project team to be ready to play a more versatile and responsible role in corporate strategy” (Tobias, 1998). In Tuft’s program, like so many others, elements such as cross-functional collaboration and

multidisciplinary problem solving have grown essential to the success of the technical student.

The second forum for soft skill development is found inside the companies themselves - - through development of in-house corporate programs. Emergence of corporate “universities” illustrates the growing commitment of the learning organization, while suggesting that soft skill development is earning its place as a higher priority than historically granted. A leading example is found at IBM, where extensive training programs are offered with an emphasis on soft skill development and personal growth. Robert Hall, who manages education and training encompassing sales, professional development and customer-service operations for IBM Global Services, develops and coordinates the delivery of program curriculums in conjunction with the School of Management at Georgia Tech (Tobias, 1998). In this effort, IBM has increased training budgets, with much of the increase devoted to the development of soft skill training.

Another technology leader, Hewlett-Packard also shows signs of embracing the values of soft skill development. Bruce Hatz, corporate staffing manager at Hewlett-Packard explains that in selecting candidates for employment, he appraises the potential for long-term professional development and the candidate’s ability to adapt to the Hewlett-Packard human-relations environment. In particular, Hewlett-Packard strives to develop skills related to group activities: collaborative problem solving, persuasive communication, cooperative decision making, team-oriented execution, creative leadership and sensitivity to corporate and customer thinking (Tobias, 1998). Hatz says that it takes a lot of soft skill know-how and a continuous openness to personal growth to be successful in moving up the corporate ladder at Hewlett-Packard - - a concept

supported by the company's extensive selection of training programs focused on development of those two traits.

The employer giant Procter & Gamble Company has recently implemented an in-house program called RapidLearn, aimed at providing a combination of computer-based training and workshops for more than 110,000 workers for the development of both technical and non-technical soft skills (such as leadership, teamwork, and management). In total, there are more than 60 soft skill courses, making up about half of the RapidLearn offering. P&G's investment in soft skills training underscores a growing interest in this area (Tobias, 1998).

The trend of soft skill development can also be seen at Allied Signal Aerospace Inc., a company who has allocated larger budgets to the support of training, with approximately 40 hours of instruction a year devoted to "soft" subjects such as leadership and personal development (Fillon, 1997).

The third commonly seen forum for delivery of soft skills to employees comes in the form of external training consultants, who deliver either customized or "off the shelf" workshops for companies on a contract basis. All one needs to do is to look in any local business directory at the growing number of such independent training firms to understand that the demand for such services is rising. According to one survey, the growth in the training market continues to rise, with a 22% increase in 1997, and an additional 23% increase in 1998. Revenue for training companies reached \$4.67 billion in 1998, with 39% of that resulting from the delivery of soft skill training (Cowles Simba Information, 1999).

While larger companies are building internal corporate universities, small and mid-size companies are relying more heavily on external training support. A.E. Schwartz and Associates, a training company, has developed a training program called management job coaching, where the “coach” or instructor comes to a company on either a biweekly or monthly basis and works with a group of managers to develop management skills. Such “coaching” roles by external facilitators are gaining acceptance as a viable approach to mentoring the leadership within organizations. Blessing/White Inc. is another such company, having introduced several coaching programs designed to help technical managers motivate their employees to solve problems, develop and manage teams, manage change, and encourage self-management (Mateyaschuk, 1998).

In the area of online training, SkillSoft Inc. has quickly emerged as one of the industry’s leaders in providing online training opportunities, with a growing segment of their business focused on soft skill development. SkillSofts’ range of subjects, as well as a powerful customization-authoring tool makes it attractive to perspective clients (Matevaschuk, 1998). Another provider of online training services, International Data Corporation, predicts that U.S. spending on online soft-skill training will outpace online IT education by 2003 (Cohen, 1998).

In support of external training alliances, Greg Netland, President of the IT division at New Boston Systems states that “the companies we work with want employees who can tackle problems on their own and communicate with multiple departments and the end user.” Netland says he believes firmly that these skills can be developed, and employs the use of external seminars, public speaking courses, and even acting classes to assist his IT professionals in developing their skills. A word of caution is added, however,

when Netland says “if you manage someone who isn’t a great manager, you can’t send them to a class and expect them to be a good manager a week later. Expect nine months to a year of ongoing support and training before you see results” (Caruso, 1998). This last statement brings us to a final look in the literature review, which focuses on how successful the current training efforts are perceived to be amongst the business and IT professionals.

### THE QUALITY OF CURRENT SOFT SKILL TRAINING

As described in the above section, more and more universities are working directly with corporate IT departments to design curricula with a new focus on business skills. Many large employers are creating their own internal curriculum to address the needs of business skills, and an explosion of independent training consultants reflect the ever-increasing demand for workshops and seminars focused on soft skill development. But, are these programs perceived successful by those who use them?

On the college level, the report card seems mixed. While new awareness has taken hold as to the importance of soft skills, these new skills tend to be integrated into curricula slowly, as confirmed by concerns expressed by executives working with the University of Wisconsin to overhaul their IT curriculum (Crowley, 1998). However, both sides remain enthusiastic that efforts are moving in the right direction.

In the areas of internal and external development of workshops, critics focus on the lack of tailor-made materials. People want to feel that training is custom designed with their needs in mind. The critics often complain about unconvincing applicability between off-the-shelf materials and the user (Barron, 1998). The solution to this concern

is for trainers, both internal and external, to become better at customizing materials to suit the individual audiences.

In general terms, soft skill training - - whether on campus, internal, or external - - receives similar criticisms from the world of business. Soft skills training has typically been a narrow and focused process, with courses built around a specific skill such as active listening, problem solving or team building. Critics argue that to truly develop the emotional intelligence rallied by Goleman and others, companies must focus on the broader parameters of organizational and behavioral change. While skills training is an important part of the process, companies need to help employees understand which skills are most important, and provide support for developing these skills over time (Caurdon, 1999). This ongoing support is often the missing link, with unrealistic expectations from management that a day of training will somehow reverse years of behavioral programming. Behavior modification is the real goal, and a long-term investment in the employee is essential.

One consultant described it this way: “in one day of training, I can provide an awareness of what emotional intelligence is and why it matters. In three days, people can be taught specific skills that can be applied right away. But it will take five days of training plus a lot of ongoing support for people to understand their own emotional makeup, learn the necessary skills, practice the new behaviors and experience the kind of transformation that impacts the company” (Caurdon, 1999). Companies must be willing to commit the time necessary for the new soft skills to take hold.

## SUMMARY

Given the multitude of descriptions used to define soft skills, a prevailing question remains: how do we measure the existence of such skills and their effective application within the workplace? As cited by one IT executive at Georgia-Pacific, “we measure it in our annual customer satisfaction survey. We’ve seen a steady increase in customer satisfaction, and we can attribute that at least partially to the improvement in IT’s soft skills”. Another chief technology officer, Chris Lofgren who is employed by Schneider National, a trucking company with more than 3,500 employees and 320 IT managers, states his belief that productivity gains are actually results of enhanced soft skills. Lofgren says “we see reduced cycle times to deliver new capabilities, a direct result of better communication, more effective decision-making, and overall improved project management (Fillon, 1997).

Now that the hard numbers are coming in to support the soft skills, employers are becoming more willing to commit to the development process. In essence, soft skills - - and their subsequent development - - have come of age. This chapter has sought to review literature concerning the emerging views of IT professionals as to the value placed on soft skills, as well as provide a look at training efforts currently underway to support development of these skills. Chapter III, Methods and Procedures, describes the design and use of a questionnaire intended to collect views of IT professionals in the Central Virginia area in regards to the topics addressed in this literature review and outlined in the goals of this research paper.

## CHAPTER III

### METHODS AND PROCEDURES

This research study was descriptive in nature, utilizing a survey aimed at soliciting attitudes of IT professionals as to the value of soft skills in the performance of technical work. Chapter III describes who the participants were, as well as how the data were collected and analyzed.

### POPULATION

Since the focus of this research was on IT professionals in the Central Virginia area, participants were selected from companies within a 60 mile radius of Lynchburg, Virginia. In part, companies were selected through use of the author's client list (author is an independent consultant in the area of management development). In addition to the use of these known professionals, companies were also selected at random through listings provided by the Lynchburg Chamber of Commerce. Participants were all IT professionals from both management and non-management levels within the organization. All participation was voluntary, with the expressed commitment that all responses would remain anonymous. In total, 187 surveys were distributed to six different organizations.

### INSTRUMENT DESIGN

The survey used in this research was designed by the author and contained two sections: Section I collected general demographic information about the participant and Section II provided questions on soft skills related to technical work environments.

Section I focused on establishing a general knowledge of the participant in terms of whether they had management responsibilities, the size of their company and IT division, and how long they had worked in the IT profession. Section II focused on the specific attitudes each participant had concerning the value of soft skills within the workplace. These questions used a 5-point Likert scale, with headings for each question varying according to information being sought in support of the original research goals. The actual instrument used is shown in Appendix B.

## METHODS OF DATA COLLECTION

The survey was distributed in one or two ways: either 1) through contact with division administrators within companies selected, who in turn distributed the surveys to members of their staff, or 2) through direct contact with known IT professionals by the author. Each survey had a cover letter explaining the purpose of the instrument; a copy of which is provided in Appendix A. Each survey also included a stamped envelope addressed to the author of this research report, which could be mailed directly to the author's business address. In some circumstances, the participants chose to forward their responses back to their respective IT administrators, who then returned the surveys to the author's business address. In other instances, the participant chose to mail the survey directly to the author. In all cases, confidentiality was maintained through use of the sealed envelopes and numbers assigned to each organization identifying the source of each survey.

## STATISTICAL ANALYSIS

After the surveys were collected, the answers were tallied and a median determined for each question's sub-topics, as well as percentages for each of the question's sub-topics to determine general trends of thought towards soft skills in the technical work environment.

## SUMMARY

The survey used in conducting this research was designed specifically to pinpoint attitudes associated with the original research goals, and the subsequent data were analyzed. Chapter IV will present the results of this analysis.

## CHAPTER IV

### FINDINGS

This chapter is a presentation of findings determined through the research reported in this paper. The statistical results of the findings are derived from data collected by surveying IT professionals in the Central Virginia area regarding their attitudes towards the importance of soft skills in technical work environments.

### SURVEY RESULTS

A total of 187 surveys were distributed, with 62 completed and returned - - resulting in a 33% response rate. Demographic data collected indicated a median organization size (in terms of number of employees) of 498, and a median IT division size of ten IT professionals. 12 surveys were received from managers, reporting a median of 22 years IT experience; 50 surveys were received from non-management employees, with a median of 16 years experience reported.

Information collected during the survey is presented on the following pages in a question by question format. Data are presented to detail the median(s) determined for each soft skills sub-topic, as well as an overall median (referred to as the “Overall Median”) for each question. In addition, percentages are shown to reflect the responses received for each sub-topic within each question.

### Intent of Question 1

Question 1 asked the respondents to rate “soft skill” topics in terms of their value for the Information Technology professional, using a scale of 1 = not at all important, 2 = somewhat unimportant, 3 = not sure/don’t know, 4 = somewhat important, 5 = very important. Shown below is the actual number of responses received for each rating (as indicated beneath the appropriate rating headings 1 - 5), as well as the calculated median for each sub-topic and a total median for the question (the “overall median”).

	1	2	3	4	5	Sum	Median	Overall Median
Creative Problem Solving				4	58	62	4.935	
Verbal Communications		2		16	44	62	4.645	
Written Communications		1	3	21	37	62	4.516	
Effective Decision Making			3	12	47	62	4.710	
Team Building			4	30	28	62	4.387	
Conflict Resolution		6	8	26	22	62	4.032	
Change Management			8	30	24	62	4.258	
Effective Leadership		1	9	24	28	62	4.274	
Presentation Skills		5	9	24	24	62	4.081	
Working with Integrity			4	12	46	62	4.677	
Value of soft skills for Information Technology professionals								4.452

Percentages of responses are indicated below:

	1	2	3	4	5
Creative Problem Solving				6%	94%
Verbal Communications		3%		26%	71%
Written Communications		2%	5%	34%	60%
Effective Decision Making			5%	19%	76%
Team Building			6%	48%	45%
Conflict Resolution		10%	13%	42%	35%
Change Management			13%	48%	39%
Effective Leadership		2%	15%	39%	45%
Presentation Skills		8%	15%	39%	39%
Working with Integrity			6%	19%	74%

### Intent of Question 2

Question 2 asked the respondents to rate “soft skills” in terms of importance today as compared to five years ago in the IT workplace, using a scale of 1 = not as important, 2 = about the same 3 = not sure/don’t know, 4 = somewhat more important, 5 = much more important. Shown below is the actual number of responses received for each rating (as indicated beneath the appropriate rating headings 1 - 5), as well as the calculated median for each sub-topic and a total median for the question (the “overall median”).

	1	2	3	4	5	Sum	Median	Overall Median
Creative Problem Solving	1	25		12	24	62	3.532	
Verbal Communications		14	4	24	20	62	3.806	
Written Communications		12	2	32	16	62	3.839	
Effective Decision Making		22	2	14	24	62	3.645	
Team Building	1	15	4	28	14	62	3.629	
Conflict Resolution		16	10	22	14	62	3.548	
Change Management		10	6	22	24	62	3.968	
Effective Leadership	1	15	4	26	16	62	3.661	
Presentation Skills		16	8	24	14	62	3.581	
Working with Integrity	1	19	4	14	24	62	3.661	
Importance of soft skills today as compared to five years ago								3.653

Percentages of responses are indicated below:

	1	2	3	4	5
Creative Problem Solving	2%	40%		19%	39%
Verbal Communications		23%	6%	39%	32%
Written Communications		19%	3%	52%	26%
Effective Decision Making		35%	3%	23%	39%
Team Building	2%	24%	6%	45%	23%
Conflict Resolution		26%	16%	35%	23%
Change Management		16%	10%	35%	39%
Effective Leadership	2%	24%	6%	42%	26%
Presentation Skills		26%	13%	39%	23%
Working with Integrity	2%	31%	6%	23%	39%

### Intent of Question 3

Question 3 asked the respondents to rate which skills they felt they needed to further develop to enhance their own careers, using a scale of 1 = have no need to further develop, 2 = could use some development, 3 = not sure/don't know, 4 = definitely need some development, 5 = development is a high priority for me. Shown below is the actual number of responses received for each rating (as indicated beneath the appropriate rating headings 1 - 5), as well as the calculated median for each sub-topic and a total median for the question (the "overall median").

	1	2	3	4	5	Sum	Median	Overall Median
Creative Problem Solving	10	30		22		62	2.548	
Verbal Communications	6	32	2	18	4	62	2.710	
Written Communications	12	30	4	16		62	2.387	
Effective Decision Making	12	30	2	18		62	2.419	
Team Building	16	24	8	12	2	62	2.355	
Conflict Resolution	4	26	12	18	2	62	2.806	
Change Management	10	28	10	14		62	2.452	
Effective Leadership	3	33	4	20	2	62	2.758	
Presentation Skills	4	28	4	22	4	62	2.903	
Working with Integrity	26	26	6	6		64	1.875	
Skills needed to further enhance career development								2.500

Percentages of responses are indicated below:

	1	2	3	4	5
Creative Problem Solving	16%	48%		35%	
Verbal Communications	10%	52%	3%	29%	6%
Written Communications	19%	48%	6%	26%	
Effective Decision Making	19%	48%	3%	29%	
Team Building	26%	39%	13%	19%	3%
Conflict Resolution	6%	42%	19%	29%	3%
Change Management	16%	45%	16%	23%	
Effective Leadership	5%	53%	6%	32%	3%
Presentation Skills	6%	45%	6%	35%	6%
Working with Integrity	41%	41%	9%	9%	

### Intent of Question 4

Question 4 asked the respondents to indicate which skills (if any) have been available for training within their organization, using a scale of 1 = never offered, 2 = seldom offered, 3 = not sure/don't know, 4 = offered occasionally, 5 = offered regularly. Shown below is the actual number of responses received for each rating (as indicated beneath the appropriate rating headings 1 - 5), as well as the calculated median for each sub-topic and a total median for the question (the "overall median").

	1	2	3	4	5	Sum	Median	Overall Median
Creative Problem Solving	12	16	10	12	12	62	2.935	
Verbal Communications	10	8	8	18	18	62	3.419	
Written Communications	6	12	6	20	18	62	3.516	
Effective Decision Making	12	6	20	12	12	62	3.097	
Team Building	6	14	10	19	13	62	3.306	
Conflict Resolution	14	6	12	18	12	62	3.129	
Change Management	4	8	4	28	18	62	3.774	
Effective Leadership	4	8	6	22	22	62	3.806	
Presentation Skills	6	14	14	16	12	62	3.226	
Working with Integrity	12	6	28	6	8	60	2.867	
Skills that the organization has provided to the organization								3.266

Percentages of responses are indicated below:

	1	2	3	4	5
Creative Problem Solving	19%	26%	16%	19%	19%
Verbal Communications	16%	13%	13%	29%	29%
Written Communications	10%	19%	10%	32%	29%
Effective Decision Making	19%	10%	32%	19%	19%
Team Building	10%	23%	16%	31%	21%
Conflict Resolution	23%	10%	19%	29%	19%
Change Management	6%	13%	6%	45%	29%
Effective Leadership	6%	13%	10%	35%	35%
Presentation Skills	10%	23%	23%	26%	19%
Working with Integrity	20%	10%	47%	10%	13%

### Intent of Question 5

Question 5 asked the respondents to rate the quality of any in-house and/or external training they had received, using a scale of 1 = very poor, 2 = somewhat poor, 3 = no training received, 4 = good, 5 = very good. Shown below is the actual number of responses received for each rating (as indicated beneath the appropriate rating headings 1 - 5), as well as the calculated median for each sub-topic and a total median for the question (referred to as the “overall median”).

	1	2	3	4	5	Sum	Median	Overall Median
In-house training	4	2	16	34	6	62	3.581	
External training	4		34	20	4	62	3.323	
Quality of training received								3.452

Percentages of responses are indicated below:

	1	2	3	4	5
In-house training	6%	3%	26%	55%	10%
External training	6%		55%	32%	6%

### SUMMARY

Results of the survey were presented in this chapter on a question by question basis. The statistical medians were calculated and presented, along with the percentages of responses received for each question’s sub-topics. Chapter V summarizes the research of this paper; analyzes the results of the information provided in this chapter; draws conclusions; and makes recommendations.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATION

The purpose of this chapter was to summarize what has been accomplished through this research. Conclusions were derived to answer research goals established for this study. Recommendations were then developed based on the information presented by the study.

#### SUMMARY

Today's educators and business leaders are concerned with the ever-increasing need to "upskill" employees, with traditional efforts being focused on the development of "hard" skills related to operational and technical proficiencies. Development of such skills has indeed become an important mission of economic development centers, community colleges and others concerned with workforce development throughout Central Virginia. This research project sought to answer the systemic question of what attention is given to the value of soft skills – those skills relating to communications, leadership, problem solving, and other such high-level cognitive activities? In particular, do Information Technology professionals value the development of soft skills - - or do they rely on technical expertise alone as the measure of one's marketability in today's economy?

The problem of this study was to determine the opinions of IT professionals related to the value of "soft skills" in technical work environments. The goals of this study were to answer the following questions:

1. Do Information Technology professionals consider “soft skills” vital to their ability to perform successfully in their careers?
2. How important do soft skills rate today as compared to five years ago in the workplace?
3. What types of soft skills do Information Technology professionals need to develop to enhance their careers?
4. What types of soft skills training are currently being offered in Information Technology environments?
5. What is the overall opinion of Information Technology professionals related to soft skill training programs?

A total of 187 surveys were distributed, with 62 returned resulting in a 33% response rate. The Information Technology professionals participating represented six companies in the Central Virginia area. The data collected from this questionnaire were analyzed and arranged by question, using a Likert 5-point scale format for each question and its sub-topics. Analysis of this data served as the basis for the conclusions and recommendations of this study.

It is acknowledged that one of the limitations of this study was that the primary focus of the survey was to determine the value placed on soft skills, and does not make the determination as to whether soft skills were actually in place and effectively used in the companies surveyed. In addition, collection of data involved voluntary participation and therefore may reflect attitudes of respondents who are more pro-training in general, since those less supportive of such development efforts may have chosen to discard the survey altogether.

## CONCLUSIONS

Responses to the survey support the following conclusions as they pertain to the study's original goals:

1. Do Information Technology professionals consider “soft skills” vital to their ability to perform successfully in their careers?

Question 1 of the survey addressed this issue, in which a total of 89.8% of all respondents stated the belief that soft skills were rated either “somewhat important” or “very important”. The overall median for this question was 4.452 indicating “somewhat important”. The strongest responses were associated with the sub-topic of problem solving, where 100% of responses placed it in one of the two “important” categories, with a median of 4.935, “very important”. The second strongest response was associated with effective decision making, where 95% rated this skill as “somewhat important” or “very important”, resulting in a median response rate of 4.710, “very important”. The conclusion - IT professionals do indeed consider soft skills vital to their ability to perform well in the technical workplace, with a particularly strong agreement concerning the importance of problem solving and effective decision making skills.

2. How important do soft skills rate today as compared to five years ago in the workplace?

Question 2 of the survey addressed this issue, and a total of 66.1% of those responding rated soft skills as either “somewhat more important” or “much more important” today as compared to five years ago. Less than 1% stated that they felt soft skills were “not as important” as compared to five years ago. Here, the overall median for the question was 3.653, “somewhat more important”. In this question, the sub-topics rated as more important were change management (median of 3.968), followed closely by both verbal and written communications (with medians of 3.806 and 3.839 respectively). Conclusion – IT professionals see an ever-growing importance for soft skills applications in the technical workplace, with change management and general communication skills topping the list of importance.

3. What types of soft skills do Information Technology professionals need to develop to enhance their careers?

Question 3 surveyed each IT professional’s own personal view of their need for professional development, and a total of 74.8% responded that they felt some need for further development of soft skills. The overall median for this question was a 2.5, “not sure/don’t know”. The areas most often cited as in need of development included verbal communications (87%), effective leadership (86%), presentation skills (86%), and creative problem solving (83%). It is important to point out that few IT professionals gave “high priority” to development of any sub-topics (2.1%), but when doing so cited verbal communications and presentation skills as the sub-topics requiring

personal development. Conclusion – IT professionals recognize the need for personal development in the areas of soft skills; however, few consider such development a top priority.

4. What types of soft skills training are currently being offered in Information Technology environments?

Question 4 of the survey sought information about what type of training exists in these technical environments today, and the response was split.

Approximately 50% responded that soft skill training was not available (or they were at least unaware of such training), and the other 50% said that some training in soft skills does take place. The overall median for this question was 3.266, “not sure/don’t know”. The prevailing sub-topics cited as being offered most often were change management (74%) and effective leadership (70%). The lowest cited skill training opportunity was the sub-topic of working with integrity, where 77% stated they did not know of any training on this topic. Conclusion – IT professionals have mixed views on the availability of soft skill development, with many admitting that they just simply do not know what is available.

5. What is the overall opinion of Information Technology professionals related to soft skill training programs?

Question 5 asks each participant to rate the quality of training received in the areas of soft skills development. 65% stated that training received in-house

was rated as “good” or “very good” quality. The median for internal training was a 3.581, “good”. Experience with outside vendors was somewhat limited, with 55% stating no such training was available. For external training, the median response rating was a 3.323, “no training received”. Conclusion – IT professionals rate soft skills training received as primarily good in quality, although experience with both internal and external opportunities were limited.

Overall, the conclusions determined by this survey support the view that IT professionals recognize the importance of soft skills in the technical workplace, and most IT professionals agree that they personally could benefit from professional development in the areas of soft skills. At the same time, however, little real opportunity exists for such training - - although the quality of training that does exist is generally thought to be good. These conclusions point to several significant opportunities for trainers and organizations, as described below.

## RECOMMENDATIONS

Based on the results of this questionnaire and the subsequent conclusions drawn above, the following recommendations are suggested:

1. The organizations participating in this survey should make more information available as to what type of training currently exists within their companies in regards to soft

skills development. This “marketing” of current opportunities could have an immediate positive impact on the IT professional’s ability to upgrade soft skills required in the technical work environment.

2. Additional opportunities for training should be accessed by comparing what is available versus what developmental needs were cited on a company by company basis. It is anticipated that many of these opportunities will involve training in the areas of creative problem solving, effective decision-making, general communications, and effective leadership.
3. As a performance management consultant, the author of this paper intends to enhance programs currently offered to include more workshops devoted to creative problem solving, effective decision-making, and general communications. Extensive leadership programs already exist, but will be more actively marketed to the IT sectors. Increased marketing to technical environments will include web page development as a compliment to more traditional methods of developing market visibility.
4. The researcher will conduct additional follow-up with each company, encouraging the return of any remaining surveys so that a larger response rate can lead to further analysis of the data.

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## APPENDICES

Appendix A – Copy of the Cover Letter

Appendix B – Copy of the Survey

## APPENDIX A

Jan Walker  
The LEAD Group  
PO BOX 41133  
Lynchburg, VA 24506

Dear IT Professional,

The attached survey is part of a research project designed to determine the opinions of Information Technology professionals as to the value of “soft skills” in technical work environments. As I’m sure you know, much has been written about the changing roles of the IT professional - - the shift from “backroom techie” to frontline business analyst - - and this survey aims to collect your thoughts of IT professionals in our own community.

As a professional in the Central Virginia region, your input can bring much value to our research, and I ask that you take just a few minutes to complete the enclosed form. All responses remain anonymous, through use of the enclosed envelope to be sealed upon your completion.

Thank you in advance for your participation in this survey. To ensure that your input is included in the research, I request that your responses be returned **no later than April 10, 2001**. Meanwhile, please contact me directly with any questions you may have. You can reach me in my office at 804-845-3616.

Sincerely,

Jan Walker

## APPENDIX B

Information Technology Professionals

Attitudinal Survey Regarding

“Soft Skills”

Conducted by Jan Walker  
Old Dominion University, 2001

**COMPANY DEMOGRAPHICS INFORMATION:**

*(Used for statistical information only; all responses remain confidential)*

Do you manage/supervise other employees? ☐ Yes ☐ No

How many employees are in your company? \_\_\_\_\_

How many employees are in your Information Technology

Division/Department? \_\_\_\_\_

How many months/years have you worked in the field of Information  
Technology? \_\_\_\_\_

(Pre-entered code to identify each company)

**Instructions:** A 5-point scale is used throughout this survey to record your responses to each question. **Please note that the scale's headings change from question to question**, so careful attention must be given to each question's corresponding heading to ensure accurate recording of your response. With each question, please circle the number of the most appropriate response, base upon you personal attitudes.

**Question 1:**

Rate the "soft skill" topics listed below in terms of their value for the Information

Technology professional.

Scale: 1 = not at all important, 2 = somewhat unimportant, 3 = not sure/don't know, 4 = somewhat important, 5 = very important

Creative Problem Solving	1	2	3	4	5
Verbal Communications	1	2	3	4	5
Written Communications	1	2	3	4	5
Effective Decision Making	1	2	3	4	5
Team Building	1	2	3	4	5
Conflict Resolution	1	2	3	4	5
Change Management	1	2	3	4	5
Effective Leadership	1	2	3	4	5
Presentation Skills	1	2	3	4	5
Working with Integrity	1	2	3	4	5

**Question 2:**

How important do soft skills rate today as compared to five years ago in the IT workplace?

Scale: 1 = not as important, 2 = about the same, 3 = not sure/don't know, 4 = somewhat more important, 5 = much more important

Creative Problem Solving	1	2	3	4	5
Verbal Communications	1	2	3	4	5
Written Communications	1	2	3	4	5
Effective Decision Making	1	2	3	4	5
Team Building	1	2	3	4	5
Conflict Resolution	1	2	3	4	5
Change Management	1	2	3	4	5
Effective Leadership	1	2	3	4	5
Presentation Skills	1	2	3	4	5
Working with Integrity	1	2	3	4	5

**Question 3:**

Of the skills listed below, which ones (if any) do you personally feel you need to further develop to enhance your own career?

Scale: 1 = have no need to further develop, 2 = could use some development, 3 = not sure/don't know, 4 = definitely need some development, 5 = development is a high priority for me

Creative Problem Solving	1	2	3	4	5
Verbal Communications	1	2	3	4	5
Written Communications	1	2	3	4	5
Effective Decision Making	1	2	3	4	5
Team Building	1	2	3	4	5
Conflict Resolution	1	2	3	4	5
Change Management	1	2	3	4	5
Effective Leadership	1	2	3	4	5
Presentation Skills	1	2	3	4	5
Working with Integrity	1	2	3	4	5

**Question 4:**

Of the skills listed below, which ones (if any) have been available for training for you within your organization?

Scale: 1 = never offered, 2 = seldom offered, 3 = not sure/don't know, 4 = offered occasionally, 5 = offered regularly

Creative Problem Solving	1	2	3	4	5
Verbal Communications	1	2	3	4	5
Written Communications	1	2	3	4	5
Effective Decision Making	1	2	3	4	5
Team Building	1	2	3	4	5
Conflict Resolution	1	2	3	4	5
Change Management	1	2	3	4	5
Effective Leadership	1	2	3	4	5
Presentation Skills	1	2	3	4	5
Working with Integrity	1	2	3	4	5

**Question 5:**

In general, of the training you have received on soft skill topics such as those listed in this survey, how would you rate the quality of the training?

Scale: 1 = very poor, 2 = somewhat poor, 3 = no training received, 4 = good, 5 = very good

In-house training (conducted by employees of your company)	1	2	3	4	5
External training (conducted by outside trainers/public workshops)	1	2	3	4	5

***Thank you for your input!***