A CORRELATIONAL EXAMINATION OF AFRICAN AMERICAN MALES AND

THE DECISION TO BECOME INFORMATION TECHNOLOGY PROFESSIONALS

by

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Abstract

This quantitative correlation study was to examine what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional. Identifying factors that contribute to computer literacy or lack thereof among African American men provided insight into the strengths and weaknesses in organizations, society, and educational systems to gain a better understanding of the relationship of computer literacy levels and the decision of African American males to become an IT professionals. Recommendations for future research could possibly uncover ways to add to the representation of African American males in the information technology industry.

Dedication

I would like to dedicate this study to my Lord and Savior Jesus Christ, who is the head of my life and the light of the world. I dedicate this to my beautiful wife Dara who encouraged me, pushing me all the times I needed it, and every time I didn't know I needed it, I love you so much. To my understanding and wonderful children who have been great through this journey and at times fell asleep on my office floor waiting "a few more minutes" To Quaderha and Justin who always was old enough to understand and be supportive. To Elliott Jr. who began to start his sentences with "When you finish your work, can we…" To Essence who would scream every time I walked toward my home office door "Daddy, please don't do any more work!" To my mother, who showed me that many might struggle in life, but very few struggle with class and integrity, you are truly an amazing woman. To my Dad, who will forever be "17 times smarter" than me, thank you for all you have done. To my second Dad, thank you for being a good friend, and going out of your way to help me every time you could, even when you could not. To my sister Vivian, who will be reading this, and registering for her Doctorate classes as soon as she finishes reading these words… right?!? To my brother Issac for fighting so many of my battles and being the big brother that every little brother needs. To my brother Anthony, for being a big brother while being the little brother when we all acted younger than you did, you are wise beyond your years. To my Big Brother James, I miss you so much, that I could write a million words and it would not be close to expressing how much I wish you were still here with us. To my cousin Mike that was always there for every important milestone in my life, even if we debated about every one of them. To my grandmother who told me she "was betting on me" when so many people had written

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me off. To my many wonderful aunts, uncles, cousins, and very few true friends (all 5 of you). Lastly, but one of the most significant, to my Grandfather Sterling (Paul John) Key, one of the wisest men I ever knew. I have encountered so many Doctors, Professors, even Astronauts, and yet to encounter someone with your wisdom. You said it best "an ignorant person, is a terrible thang"

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Table 1 Information Technology Related Occupations

Occupation	Description
Computer Programmer	Computer programmers write, test, and maintain the detailed instructions, called programs that computers follow to perform their functions.
Computer Scientist	*Computer scientists* work as theorists, researchers, or inventors. Their jobs are distinguished by the higher level of theoretical expertise and innovation they apply to complex problems and the creation or application of new technology.
Computer Software Engineer	Computer software engineers apply the principles of computer science and mathematical analysis to the design, development, testing, and evaluation of the software and systems that make computers work.
Computer Support Specialist	*Computer support specialists* provide technical assistance, support, and advice to customers and other users. This occupational group includes *technical support specialists* and *help-desk technicians.*
Network and Systems Administrators	*Network* and *computer systems administrators* design, install, and support an organization's computer systems. They are responsible for local-area networks (LAN), wide-area networks (WAN), network segments, and Internet and intranet systems.
Computer Systems Analyst	Computer systems analysts solve computer problems and use computer technology to meet the needs of an organization. They may design and develop new computer systems by choosing and configuring hardware and software.

Source: Bureau of Labor Statistics, 2008

Table 2 Highest Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grades 9 - 11 (Some High School)	6	1.8	1.8	1.8
	Grade 12 0f GED (High School Graduate)	39	11.6	11.6	13.4
	College 1 - 3 years (Some college or technical school)	129	38.5	38.5	51.9
	College 4 years (College graduate)	129	38.5	38.5	90.4
	Graduate School (Advanced Degree)	32	9.6	9.6	100.0
	Total	335	100.0	100.0	

Table 3 Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial/Accounting	38	11.3	11.3	11.3
	Law Enforcement	5	1.5	1.5	12.8
	Transportation	1	.3	.3	13.1
	Entertainment	2	.6	.6	13.7
	Marketing	22	6.6	6.6	20.3
	Sanitation	2	.6	.6	20.9
	Entrepreneur	3	.9	.9	21.8
	Real estate	19	5.7	5.7	27.5
	Food Service	5	1.5	1.5	29.0
	Executive/Senior Managerial	35	10.4	10.4	39.4
	Managerial	51	15.2	15.2	54.6
	Medical/Dental	13	3.9	3.9	58.5
	Engineering	15	4.5	4.5	63.0
	Construction	3	.9	.9	63.9
	Machinist	5	1.5	1.5	65.4
	Plumber/Electrician	3	.9	.9	66.3
	Retail	17	5.1	5.1	71.3
	Administrative	41	12.2	12.2	83.6
	Maintenance	2	.6	.6	84.2
	Teacher	18	5.4	5.4	89.6
	Professor	8	2.4	2.4	91.9
	IT/Computer Professional	27	8.1	8.1	100.0
	Total	335	100.0	100.0	

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Table 4 Employment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed for wages	292	87.2	87.2	87.2
	Self-employed	16	4.8	4.8	91.9
	Unemployed for more than 1 year	2	.6	.6	92.5
	Unemployed for less than 1 year	16	4.8	4.8	97.3
	A student	3	.9	.9	98.2
	Retired	4	1.2	1.2	99.4
	Unable to work	2	.6	.6	100.0
	Total	335	100.0	100.0	

Table 5 Computer Ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	300	89.6	89.6	89.6
	No	35	10.4	10.4	100.0
	Total	335	100.0	100.0	

Table 6 Number of Computers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No computer in the household	35	10.4	10.4	10.4
	1	162	48.4	48.4	58.8
	2	104	31.0	31.0	89.9
	3	27	8.1	8.1	97.9
	4 or more computers in the household	7	2.1	2.1	100.0
	Total	335	100.0	100.0	

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Table 7 Hours of Computer Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No access to a computer	1	.3	.3	.3
	1 – 4 hours a day	4	1.2	1.2	1.5
	4 – 8 hours a day	9	2.7	2.7	4.2
	8 – 12 hours a day	320	95.5	95.5	99.7
	12 or more hours a day	1	.3	.3	100.0
	Total	335	100.0	100.0	

Table 8 PC Knowledge Required

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	116	34.6	34.6	34.6
	No	219	65.4	65.4	100.0
	Total	335	100.0	100.0	

Table 9 Computer Ability Influence on Career Path

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	16.1	16.1	16.1
	No	276	82.4	82.4	98.5
	Somewhat	5	1.5	1.5	100.0
	Total	335	100.0	100.0	

Table 10 Computer Literacy Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No computer Literacy	6	.3	.3	1.8
	Very Low Computer Literacy	18	1.2	1.2	7.2
	Low Computer Literacy	33	1.2	1.2	17.0
	Moderate/basic Computer Literacy	90	2.4	2.4	43.9
	High Computer Literacy	188	43.9	43.9	100.0
	Total	335	100.0	100.0	

Table 11 Descriptive Statistics

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			Statistic	Std. Error
Computer Literacy Level	Mean		46.27	.663
	95% Confidence Interval for Mean	Lower Bound	44.96	
		Upper Bound	47.57	
	5% Trimmed Mean		47.55	
	Median		51.00	
	Variance		148.149	
	Std. Deviation		12.172	
	Minimum		0	
	Maximum		56	
	Range		56	
	Interquartile Range		15	
	Skewness		-1.352	.133
	Kurtosis		1.451	.265

Table 12 Tests of Normality

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Computer Literacy Level	.224	337	.000	.798	337	.000

a Lilliefors Significance Correction

Table 13 Pearson Correlation

		Computer Literacy Level	Hours of Access
Computer Literacy Level	Pearson Correlation	1	.326(**)
	Sig. (2-tailed)		.000
	N	337	337
Hours of Access	Pearson Correlation	.326(**)	1
	Sig. (2-tailed)	.000	
	N	337	337

** Correlation is significant at the 0.01 level (2-tailed).

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Table 14 Pearson Correlation

		Computer Literacy Level	Education Level
Computer Literacy Level	Pearson Correlation	1	.277(**)
	Sig. (2-tailed)		.000
	N	337	335
Education Level	Pearson Correlation	.277(**)	1
	Sig. (2-tailed)	.000	
	N	335	335

Table 15 Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.926(a)	80	.545
Likelihood Ratio	90.776	80	.193
Linear-by-Linear Association	23.866	1	.000
N of Valid Cases	335		

a 114 cells (92.7%) have expected count less than 5. The minimum expected count is .01

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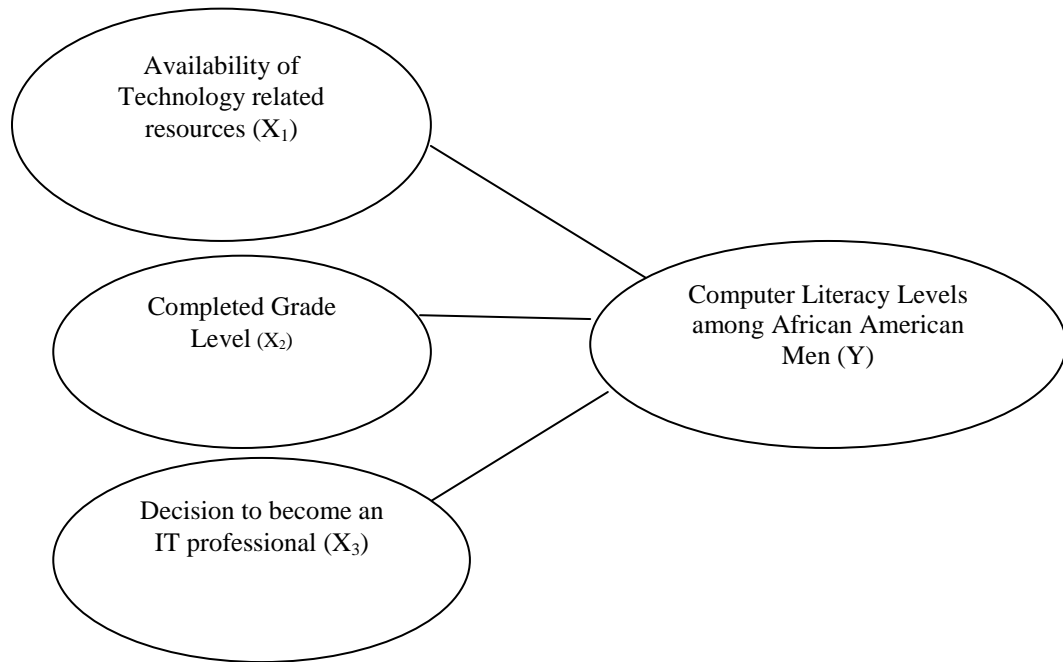
CHAPTER 1. INTRODUCTION

The number of African American (Black) men in the workforce has declined over the last several years while there has been a significant increase in the demand for information technology (IT) professionals in organizations. Walstrom, Schamback, Jones, and Crampton (2008) asserted despite claims of a slowing market for IT professionals, the demand for IT professionals continues to grow more than 300% faster than other occupations creating a talent shortage. Roach (2006) explained African Americans account for less than 6.5% of the Information Technology professionals in the United States. Hawkins and Paris (1997) asserted there is a wealth of documentation that shows there is a significant gap of computer literacy between white and black members of society that will have long lasting effects including economic disenfranchisement and an inability to sustain a career. This dissertation presented to what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional.

Background of the Study

Information technology (IT) is an essential element of the workplace in organizations in the United States. Maheshwari, Pierce, and Zapatero (2008) confirmed that minorities make up less than 5% of the IT workforce, despite the high demand for IT professionals and attractive salaries. As the lack of African American men as IT professionals continue to grow, so does the discussion about the lack of computer literacy among African American men. Researchers continue to find statistically significant differences in the levels of computer literacy among African American men and white

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American, Asian American, and other races (Carvin, 2006). Hawkins and Paris (1997) concluded black students have less access to computers than white American students do and those black students that have access are using substandard equipment compared to their white counterparts.

Carver (1994) explained a lack of resources, training, and poverty all contribute to making African Americans *information poor* in a society that requires individuals to be *information rich*. There can be many reasons behind the lack of computer literacy among African American males ranging from lack of resources to lack of training and education. Williams-Green (2001) stated, "The number of trained and educated African American IT professionals seems to be growing at a snail's pace, if at all" (p. 136). By 2016 there will be an additional 489,400 technology-related jobs, representing an increase of 38% from the 1,278,200 technology related jobs in 2006 (U.S. Bureau of Labor Statistics, 2008).

African American men have the opportunity to take advantage of an industry that has a need for professionals but there is not a strong representation of this minority group in the IT professional industry. Researchers (Roach, 2006, Grose 2007, Williams-Green, 2001, & Kamal, 2005) concluded there are many factors that may contribute to low or high computer literacy levels among African American men, which can have a variety of effects. This research study examined factors that may or may not contribute to computer literacy levels, and how that influenced the decision of African American males to pursue a career as an IT professional.

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Statement of the Problem

The problem addressed as part of this study was that African American males are not participating in the job market as IT professionals. As the population in the United States continues to grow, there are also an increasing number of job opportunities. However, Grose (2007) acknowledged there are a disproportionately low number of African American men in IT and that number continues to drop which represents a 26% decline of African American men in IT-related professions in the last decade. Carver (1994) explained that according to U.S. Census projections, by the year 2000 there would be a 29% expansion in the workforce, but because of lack of computer literacy "significant numbers of African American males will not be able to participate substantially in this employment explosion" (p. 543).

Williams-Green (2001) asserted it was alarming that the need for African American IT professionals is growing but current data continues to show African Americans entering information technology based careers remain low. The purpose of this study, therefore, was to examine the potential casual factors contributing to computer literacy (or the lack thereof) and then to further assesses the relationship between computer literacy levels and the decision to become an IT professional. Malveaux (2000) stated, "Even when technology is not the focus, technology is a factor in all 21st-century employment" (p. 33). The results of this study showed how the contributing factors toward computer literacy could influence the decisions of African American men to pursue IT related careers and possibly reduce the underrepresentation of African American men in IT-related professions in the United States. There is current literature about computer literacy among African American men citing reasons such as low

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income, perceived usefulness, and negative perceptions as reasons for lack of computer literacy; however, they fail to correlate possible contributing factors toward computer literacy, such as grade level and lack of technology related resources to the decision to become IT professionals. There is also a failure to focus on a specific industry that has a high demand for professionals. The results of this study showed that computer literacy levels does not affect the decision of African American males to pursue a career as an information technology professional despite the continued growth and high demand for trained professionals.

Purpose of the Study

The purpose of this quantitative correlation study was to examine what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional. Kamal (2005) asserted the IT industry in America has a severe shortage of trained IT professionals because new professionals are not being trained fast enough to keep up with the growing demand. The shortage IT professionals remains one of management top concerns with some referring to the shortage as a national crisis (Walstrom, Schambach, Jones, & Crampton, 2008). Identifying factors that contribute to computer literacy or lack thereof among African American men provided insight into the strengths and weaknesses in organizations, society, and educational systems to gain a better understanding of the relationship of computer literacy levels and the decision of African American males to become an IT professionals. Recommendations for future research could possibly uncover ways to add to the representation of African American males in the information technology industry.

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Rationale

Hall and Damico (2007) defined the digital divide as "the difference in access and use of digital technology between White communities and communities of color, especially African American communities" (p. 80). Cross (2001) stated "African Americans must advocate and implement pre-college experiences that provide quality technology and training for all young people with the goal of eradicating the digital divide" (p. 104). This study was more than the basic identification of computer literacy levels among African American men, but a correlational examination of factors that may or may not cause high or low computer literacy levels among African American men and the decision to become an IT professional. With further research, it is a possibility that an increase of African American males in IT will create a greater representation of African American men as information technology professionals.

Research Questions

The relationship between factors that may or may not cause high or low computer literacy levels among African American males and the decision to become an IT professional were answered by examination of the following questions:

RQ1: To what extent, if any, is there a relationship between the availability of technology related resources and computer literacy levels among African American males?

RQ2: To what extent, if any, is there a relationship between the completed grade level of African American males and computer literacy levels among African American males?

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RQ3: To what extent, if any, is there a relationship between the decision to become an IT professional and computer literacy levels among African American males?

The hypotheses used to develop the research questions are:

$H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males.

$H1_a$: There is a correlation between the lack of availability of technology related resources and the level of computer literacy among African American males

$H2_0$: There is not a correlation between the highest completed grade level and computer literacy levels among African American males

$H2_a$: There is a correlation between the highest completed grade level and computer literacy levels among African American males

$H3_0$: There is not a correlation between the decision to become an IT professional and computer literacy levels among African American males

$H3_a$: There is a correlation between the decision to become an IT professional and computer literacy levels among African American males

Significance of the Study

The problem addressed as part of the proposed study is that African American males are not participating in the job market as IT professionals. African Americans make up less than 7% of the Information Technology professionals in the United States. The potential contributions to the body of knowledge in this field are:

1. The ability to understand the factors identified that contributes to computer literacy levels among African American men, and provides insight into how to

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slow or stop the lack of African American men in IT the workforce because of computer illiteracy.

2. The opportunity to reduce the underrepresentation of African American men as IT professionals by identifying key factors among that can possibly allow them to meet acceptable levels of computer literacy to qualify and desire to seek IT related jobs

3. The ability to build upon seminal work of African American computer literacy research and the lack of African American IT professionals in the United States to establish a relationship or fail to establish a relationship between contributing factors of computer illiteracy and the lack of African American men that pursue Information Technology careers.

Definition of Terms

Being aware that all terms in this document are not universally, applicable or can have multiple meanings the definition for the following terms are:

African American. A person or persons born in the United States that is a descendant of African slaves brought to the United States during the slave trade. This does not include people of color who were born outside of the United States or persons that came from Africa to the United States willingly after the abolition of the slave trade (*Merriam-Webster Online Dictionary, 2008*)

Computer Literacy. The conceptual knowledge related to basic computer terminology and skills necessary to perform tasks on various applications and basic operating systems functions (Hindi, Miller & Wenger, 2002).

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Digital Divide. African Americans greater inabilities to have access to the internet and computing technology compared to other races in the United States (Malveaux 1999).

IT Professional. A worker that has higher skills or greater knowledge of basic IT skills that work in positions or have job responsibilities that specialize in Information Technology (Vinaja, 2006).

Assumptions and Limitations

There was an assumption the participants are interested in the research study and responded honestly. The researcher assumes that the participants in the study will be representative of the general population. There was an assumption the participants in the study will give their perspectives, perceptions, and input solely based on the period-of-time under exploration. The topic for this dissertation was to fill a gap in existing research about the various effects of low computer literacy levels among African American men which is also known as the digital divide. This research did not indicate the African American men are the only group of individuals with low levels computer literacy, but the research solely focused on this minority group in America.

The following assumptions were applied for this study:

1. The existing scholarly and peer reviewed research on computer literacy levels is accepted and has proven validity within the research community

2. The African American men that participating in the survey are able bodied individuals capable of working

3. All participants are African American men living in the United States

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4. Computer literacy levels are determined by the level of understanding an individual has about and how to use a computer.

Defining limitations for this study established the boundaries, exceptions, reservations, and the qualifications inherent in every study.

The limitations of this study were:

1. The nature of IT is evolving and one of consistent change which makes some data time sensitive

2. The study is limited to African American Men

3. The results for this study are not universally applicable due to the selected group of individuals

Nature of the Study

Studies about the computer literacy levels among African American men attribute factors such as insufficient means, limited access to technological resources, and lack of opportunity as reasons for the large differences of computer literacy levels between this group and other groups in America (Brown, 2000; Cross, 2001; Dennis, 1998; Edward, 2005). Employing a quantitative research design provided answers to the research questions that established or failed to establish the relationship low computer literacy levels among African American males and their decision to pursue careers as IT professionals in the United States. Descriptive and correlation statistics were used to answer the research questions on the status of the subjects as well as to determine to what degree, if any; quantifiable relationships exist between contributing factors toward computer literacy of African American males and the decision to become IT

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professionals. The use of cause-comparative statistics determined if there was a relationship and the strength of those relationships

Organization of the Remainder of the Study

The remainder of the study is comprised of four additional chapters. Chapter 2 is a review of scholarly and peer reviewed literature focusing on the nature of Information Technology, African American men computer literacy levels/gaps, tools for measurement of computer literacy levels, and the shortage of IT professionals. Chapter 3 is the description of the use of the quantitative research methodology for this study. Chapter 4 is the analysis of data collected for this study using quantitative methods including descriptive and correlation statistics. Chapter 5 is the discussion of the conclusions, implications, and recommendations for future studies.

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CHAPTER 2. LITERATURE REVIEW

Information Technology (IT) is an essential element of the 21st century workplace and this technology requires manipulation by individuals that have an understanding of computers, software, and other technological tools for organizations to reap the benefits of IT. Nelson (1990) explained that technology in the workplace has become common to many organizations but successful utilization of technology depends on the individuals just as much as the technology.

This chapter provides a review of scholarly and peer reviewed literature focusing on the nature of Information Technology, African American men computer literacy levels/gaps, defining computer literacy, and the shortage of IT professionals. Proper review of the current literature will provide the foundation to synthesize key elements of the empirical information to find a correlation, or fail to find a correlation between contributing factors toward computer literacy levels among African American men and the decision to become an IT professional.

Purpose of the Study

The purpose of this quantitative correlation study was to examine what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional. Kamal (2005) asserted the IT industry in America has a severe shortage of trained IT professionals because new professionals are not being trained fast enough to keep up with the growing demand. The shortage IT professionals remains one of management top concerns with

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organizations, society, and educational systems to gain a better understanding of the
relationship of computer literacy levels and the decision of African American males to
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uncover ways to add to the representation of African American males in the information
technology industry.

Information Technology Overview

Information Technology is the study, design, development, implementation, and
support or management of computer-based *information systems*, particularly software
applications and hardware (ITAA, 2003). Information technology is more than the
combination of information and technology; it is a partnership between technology and
information to provide a meaningful result. Pyoria (2005) explained information
technology is essential to the informational labor process in organizations. The ability to
utilize information technology and other technological advancements require a
reasonable computing skill level also referred to as computer literacy skills.

Definition of Computer Literacy

The term *computer literacy* continues to evolve and change just as the
technological element of the computer itself, but the basic concept of computer literacy is
over 20 years old. Salem and Gratz (1989) asserted the precise meaning of computer
literacy remains a topic of debate because definitions include the awareness of

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computers, to the ability to cope with new technology, to actually programming/using a computer. A common interpretation of computer literacy is that a person can identify a computer and perform some of the basic functions. Childers (2003) explained the Nation Science Foundation held a conference in 1980 with teachers and computer scientist in an attempt to define computer literacy acknowledging it was a multifaceted idea. The concept of computer literacy is that a person has a basic understanding of how a computer works, but does not mean the individual has an understanding of the intricacies of how the various components that make up a computer operate. Stephens (2005) explained, before 1980, people viewed someone as computer literate if they had proficiencies in both programming and using technology. Stephens (2005) further elaborated the definition has changed to become the ability to use computer applications without the underlying technical knowledge of what makes the computer work. Talja (2005) explained that computer literacy is a demonstration of a basic set of computer skills and competencies. In this context, an example of computer literacy would be an individual's ability to identify a computer, turn it on, and recognize the software/operating system on the computer. As technology continues to evolve by technological advances and innovations of computing technology, the definition of computer literacy will evolve and skills identified with computer literacy may change. McDonald (2004) stated, "The definition of computer literacy continues to change as technological innovations are adopted by the marketplace" (p. 19). For example, in the late 1980's some personal computers required a floppy disk present and the user turn on a switch located in the back of the computer. Just a few years later the operating system was located on the hard drive and the utilization of push buttons to turn computers on and

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off. The battle for operating system and application software dominance between Microsoft, IBM, Apple, and others rapidly forced changes in the way computers looked and worked. The skills or knowledge of computers associated with computer literacy will continually change but the basic premise of computer literacy has remained consistent over the last 20 years. According to Creighton, Kilcoyne, Tarver, and Wright (2006), "To be considered a person who is computer literate, a person would be a confident user of computer systems and software, be able to utilize the computer and its software to meet one's needs either at home or work"(p. 16). The term computer literacy evolves as well as the debate over the meaning as well as the very context in which people use the term computer literacy.

The term computer literacy has been subject to much scrutiny over the years because of the evolutionary nature of computing technology and the various elements it entails. Spence (1995) argued that computer literacy is more than the basic operation of a personal computer, but it is mastery of various computer and electronic interactive communication with knowledge acquisition.

This contradicts the implied and generally accepted meaning of computer literacy because of the requirement of some level of mastery; however, this fails to indentify the evolutionary nature of computing technology with an underlined assumption that mastery of these skills are not subject to innovation or evolution of technology. The term computer literacy is subjective and continues to lack a single universally applicable definition. Karsten and Roth (1998) stated, "Any measure designed to capture computer literacy has weaknesses, serving at best as an approximation of an individual's actual computer literacy" (p. 17). An individual may legitimately believe they are computer

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literate because of the ability to turn on a computer, recognize the operating system, and manipulate specific software, but some may argue children as young as 5 years of age can make the same claim without a genuine understanding of computer technology. Angel (1994) asserted the very term computer literacy is part of the problem in defining computer literacy because the term does not have the dimension needed to identify the level of computer knowledge needed to use the computer effectively and adequately.

The argument for a universal definition for computer literacy continues today, but the implied and generally accepted definition of a person having a general understanding of a personal computer is consistent with the knowledge of computing technology today. Childers (2003) acknowledged computer literacy is a generalized assessment of computing abilities that encompasses a very basic understanding how computer function without any particular area of mastery. The inability to define computer literacy universally did not change the fact that computing skills are increasingly essential to organizations and the demands of society. Despite the various arguments and discussions to determine the best way to define computer literacy, the literature suggests that computer literacy requires some level of knowledge of computing technology. The levels in which an individual or organization determines their definition of computer literacy varies on a case-by-case basis. Stephens (2005) stated, **"**computer literacy can have different meanings to different people and still be computer literacy" (p. 33). In this study, *computer literacy* is the conceptual knowledge related to basic computer terminology and skills necessary to perform tasks on various applications and basic operating systems functions (Hindi, Miller, & Wenger, 2002).

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Computer Literacy

Computer and information technology has evolved from an optional element of the work place to a necessity for organizations to operate efficiently and remain competitive. Organizations require individuals that are computer literate to perform basic operational tasks even if their jobs are not in technology related professions. Smith and Necessary (1996) asserted, "Computers play a key role in business, and the question of what constitutes computer literacy is more crucial than ever" (p. 188). Finding computer literate professionals to work in non-technology based jobs is difficult and forced many universities and accrediting bodies to recognize the need for computer literate individuals entering the workforce. Selber (2004) acknowledged that many colleges and universities are embracing the need for individuals to demonstrate computer literacy at the urging of accrediting bodies and corporate employers. A candidate that has the knowledge for a position must also possess the ability to use the tools of the organization to make the knowledge useful and effective. Edwards (2005) explained computer/information literacy is no longer optional in the workplace but needed to carry out the most basic tasks including filling out the application to get the job. Many organizations such as Home Depot, Best Buy, and others have computer terminals located in most stores for applications to apply for positions. Computer literacy is an essential element in the workplace, such as reading, and writing and communication skills. Hughes (1996) acknowledged that in the 21st century the majority of U.S. jobs would require daily computer use. Without the ability to use a computer or understand the requirements to complete the most basic computer based tasks it is unlikely for that candidate to get or keep the job. Many jobs use computer based means to communicate such as email and

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instant messaging. The inability to communicate internally or externally with follow employees or customers can greatly impair the ability to complete basic tasks. Mallough and Kleiner (2001) asserted computer literacy as well as some other technical abilities is necessary for successfully obtaining many employment opportunities. In traditionally non-technology related industries such as Law and Healthcare, the rapid adaptation of technological tools and resources make computer literacy essential to complete tasks such a research, billing, logs, and other important details. According to Kurbanoglu (2003), "The use of computer technologies has become inevitable for almost all the professions in the modern societies. Hence, information and computer literacy skills have become the necessary intellectual ingredient of an individual's life" (p. 636). The need for computer literacy skills grows proportionally with innovation changing the requirements for organizations frequently leaving behind those that cannot or have not acquired the necessary skills demanded in the workforce.

Computer Literacy Among African American Men

Researchers suggest there is evidence that African American males significantly lack computer literacy skills when compared to other nationalities because of limited computer and Internet availability, also known as the *digital divide* (Malveaux, 1999). Valadez and Duran (2007) explained the digital divide based studies show White and Asian Americans have more than 20% greater access to computer and internet usage causing societal consequences. Carver (1994) acknowledged the lack of computer literacy skills and computing resources among African American men will hinder them from being a part of the information age and making any significant contribution to information-based societies. Computer literacy levels among African American have not

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increased in the proportion of internet and computer usage. Failure to increase computer literacy levels among African American men in an innovative society forces them out of the job market because of an inability to meet computer literacy demands of the workplace. Cross (2003) asserted computer literacy for African Americans is an absolute necessity in order to compete successfully in the work force of the 21 century. It is important to note that African Americans are not the only ethnicity that needs computer literacy skills in the workplace, but research on the computer literacy levels shows statically significant differences among African American men. Hawkins and Paris (2007) explained the documented research of the digital divide is a strong indication of African American underachievement in the 21st century technology based workplace. African American men are at a disadvantage compared to other social groups seeking employment because of their lack of resources and computer literacy training. According to Smith (2005), "White households (46.1%) are twice as likely to have internet access in comparison to African American (23.5%) households" (p. 14). African American men do not have as much access to utilize computers as much as White and Asian groups. A lack of confidence with information technology may hamper academic and career success (Smith, 2002, p. 1). A lack of confidence in technology is one of several reasons cited for the small number of African American men in technology related professions (Haynes 2000; Smith, 2002). Some studies suggest this lack of confidence with technology among African American men is a result of the digital divide in the United States.

The Digital Divide

As the need for technology evolved from a luxury to a necessity in 21st century society studies began to emerge concluding disproportionate differences between White

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Americans and African Americans computer usage and skills (Hacker and Mason, 2003; Jackson, Von Eye, & Wenger, 2002; Koss, 2001). Malveaux (1999) defined the digital divide as the difference between African Americans greater lack of access to the internet and computing technology compared to other races. Hacker and Mason (2003) acknowledged that African Americans were 18% below the national average for home internet access. The lack of resources and access to the internet and computing technology among African American men affects their ability to make a difference in a competitive technological workplace. Loube (2003) stated, "Internet usage and computer ownership is already becoming essential for participating in the information economy" (p. 437). Without the fundamental understanding of how the internet or computer technology works, there is a distinct disadvantage to African American men with a desire to be a productive element in a technologically dependant society. For example, several organizations have abandoned traditional applications and replaced them with a website or a computer terminal that requires some level of computer knowledge to complete the application. Kuhn and Skuterud (2004) explained less access to computer and internet resources correlate with longer unemployment rates and durations among African Americas. Many African Americans do not have access to a computer or technology based resources outside of public schools creating a larger problem for some African American adults that have graduated or no longer attend public school. Brown (2000) explained that whites have more access and greater use of technology than African Americans increasing their likelihood of failing to reach their full potential in a technology dependent society. Koss (2001) asserted that in the 21st century, the United States has more computers than any country in the world but the lack of computer and

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internet availability among African Americans continues to rise affecting economic growth opportunity. Low levels of education among African American men correlates with the inability to gain knowledge of computers and computing skills, especially if public schools are the only access to computers they have.

African American Men and Technology

Many studies suggest the digital divide does influence African Americans ability to compete in the global marketplace, but there is also acknowledgement that some African Americans have no interest in technology even when resources are available. Carver (1994) acknowledged that there are vast differences in the primary usage of computers among white and black public schools with a large percentage of African American student computer use focused on remedial or enhancement of basic skills therefore setting an environment in which African American males have embedded disadvantages in a technology based informational society. Negative thoughts or depictions of the use of technology can deter some African Americans males from desiring to use technology even when resources are available for them to use. Tumposky (2001) argued some African Americans have equal access to computers and technology but there is a disinterest in technology because of a lack of positive messages about technology in their pop culture. There are many movies, images, and negativisms associated with the use of technology that discourages some African American males from using technology. For example, the role of someone using a computer in television programs or movies associate that person as being a *nerd* or someone that some African Americans may not view as cool. Kendall (1999) concluded that some African American men had a negative view of computer skills at times associating computer skills with

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masculinity and homosexuality. Negative views and experiences with technology can push some African Americans to use technology only when they deem necessary or if there is a specific reason that would yield a benefit from its use. Jackson, Eye, Biocca, Barbatsis, et al. (2005) acknowledged in a sample of African American males with access to the internet and aspirations to pursue a career in entertainment or sports had less interest in utilizing the internet for academic purposes or proficiency because of perceived uselessness in obtaining their goal. This failure to recognize that technology is an essential tool for communication, networking, and increasing knowledge about their interest creates a self-imposed disadvantage, even when pursuing careers of a nontechnical nature.

The Information Technology Industry

The IT industry continues affect the productivity and competitiveness or most organizations today. It is difficult for any business to operate effectively without the use of IT. Elliot (1992) explained information technology is changing everything, replacing the industrial model completely changing how organizations do business. When most people consider IT the first thing that comes to mind are tasks such as email, telephony communication, live chat, instant messaging, but these essential items barely scratch the surface of what information technology can do for an organization. Elliot (1992) stated, "IT condenses time and space, it literally closes the time and space gaps between customers' demands and enterprises' fulfillment" (p. 23). For example, businesses can correspond with other businesses around the world via email, live chats, and video conferencing to eliminate the lag times and cost associated with conventional mailing methods and face-to-face meetings. In the 21st century traditionally non-technical

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professions or industries, greatly benefit from advancements in information technology. Stiroh (2002) stated, "At the industry level, industries that produce or use IT most intensively have shown the largest increases in productivity growth after 1995" (p. 30). The IT industry is large and has a broad spectrum of specialty skills desired by employers ranging from field technician to custom programmer. An organization that provides IT service may have a need for knowledgeable technicians that can fix software or hardware technology related problems, while the programmer may work for a non-technical organization to create custom software programs to help minimize cost and maximize efficiency. Chong, Chen, and Chen (2001) asserted the IT industry has been essential to organizations hoping to gain a competitive advantage while rapidly improving business performance.

As organizations continue to make strides in efficiency and productivity utilizing IT related resources, the dependency of IT grows changing corporate culture and infrastructure. For example, organizations are shifting from conventional advertising outlets such as radio, television, and newspapers to Web sites, online advertisements, and specific online target groups to maximize marketing efforts at a fraction or traditional marketing cost. Fenelle (1996) argued, "The value of technology and the need to move forward is no longer a subject of debate" (p. 56). Information technology is a component of all businesses and an industry that continues to drive change and innovation faster than the world has prepared for causing a high demand for IT professionals that exceeds the available talent in the United States.

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IT Professionals

The IT professional is a knowledge worker that has a specialized knowledge about one or more aspects of information technology. Vinaja (2006) defined IT professionals as workers that have higher skills or greater knowledge of basic IT skills that work in positions or have job responsibilities that specialize in Information. Information technology professionals are as diverse in specializations and career levels as medical professionals are. For example, there are doctors who specialize in cosmetic surgery, cardiovascular surgery, internal medicine, and many other specializations. Information technology professionals can specialize in software programming, hardware, networking, enterprise infrastructure and much more. Despite the specialization or area of an IT professional, it is important to have the skills required to perform the tasks related to the position. Witt and Burke (2002) stated, "Technical proficiency reflects the degree to which the IT employee performs the core substantive tasks central to his/ her job" (p. 40). Information technology professionals require more than a basic understanding of technology; they must demonstrate a level of mastery in one or more technical areas specific to the position. Table 1 shows a few popular IT related occupations with a brief synopsis of the skills required for the position.

Table 1

Information Technology Related Occupations

Occupation	Description
Computer Programmer	Computer programmers write, test, and maintain the detailed instructions, called programs that computers follow to perform their functions.
Computer Scientist	*Computer scientists* work as theorists, researchers, or inventors. Their jobs are distinguished by the higher level of theoretical expertise and innovation they apply to complex problems and the creation or application of new technology.

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Computer Software Engineer	Computer software engineers apply the principles of computer science and mathematical analysis to the design, development, testing, and evaluation of the software and systems that make computers work.
Computer Support Specialist	*Computer support specialists* provide technical assistance, support, and advice to customers and other users. This occupational group includes *technical support specialists* and *help-desk technicians.*
Network and Systems Administrators	*Network* and *computer systems administrators* design, install, and support an organization's computer systems. They are responsible for local-area networks (LAN), wide-area networks (WAN), network segments, and Internet and intranet systems.
Computer Systems Analyst	Computer systems analysts solve computer problems and use computer technology to meet the needs of an organization. They may design and develop new computer systems by choosing and configuring hardware and software.

Source: Bureau of Labor Statistics, 2008

All positions are technical in nature and require specific skills of the individual with the possibility of some skill overlapping into multiple occupations. Luftman and Kempaiah (2007) acknowledged the need for IT professionals is one of the fast growing needs for organizations because of advances in technology, needs for application development, and retirement of *baby-boomers*. The increased demand for skilled IT professionals has created an IT professional shortage, which is costing organizations and the economy billions of dollars each year

The IT Professional Shortage

The information technology industry is struggling to find professionals to meet the needs of the 21st century technology based workplace. Long (1998) acknowledged that industry experts predict the shortage of IT professionals could last more than 20 years as technology advances exponentially. IT professionals require high levels of computer literacy to meet or exceed job requirements and organizations are suffering because of the inability to find people that can fill these positions. Lerman (1998)

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explained the shortage of IT professionals "is preventing the development and marketing of new products, lowering sales, and costing the country hundreds of thousands of jobs" (p. 82). The shortage of IT professionals is a rapidly growing problem for organizations rely on information technology to compete with other organizations locally and abroad. Cales (2000) asserted the shortage of IT professionals in the workplace reduces the economy by $105.5 billion a year affecting productivity of companies in the United States by $4.5 billion a year. The shortage of IT professionals is weakening a struggling economy because of the inability to fill these positions and in many cases by outsourcing these jobs to other countries. Wadhwa, Gereffi, Rissing, and Ong (2007) acknowledged than many companies in the United States attribute the increase in outsourcing due to a shortage of skilled professionals in the IT industry. Some argue that the shortage of IT professionals is due to a lack of interest in IT related careers by students pursuing higher education. According to Walstrom, Schambach, Jones, and Crampton (2008) "computing related enrollments are the lowest they've been since the late 1970's, a time period that pre-dates many computing related curriculums" (p. 43). The basic computer related skills students learn in grades 1 through 12 is not enough to meet the requirements basic requirements of entry level IT professionals, most positions require higher-level education to qualify for these positions. Zhang (2007) concluded only 1 out of 17 schools anticipated growth in IT/IS enrollments while 16 other schools reported declines in IT/IS enrollments up to 50%. The IT professional has a universal appeal of intelligence, but not in the same glamorous light as the high-powered business executive, of powerful accountant in a large firm, but often negatively portrayed on television. Zhang (2007) acknowledged the geeky image of people in IT related professions could have a negative

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effect of students' attitudes when considering an IT major. There are many possible reasons that students do not select IT related careers but the result is a severe shortage of IT professionals in the workplace. More than 10% of positions remain unfilled because of the ability to find qualified IT professionals (Lewis, 2006). The shortage of IT professionals greatly influences the ability to compete in a global economy. The number of IT related opportunities continue to rise increasing the shortage of IT professionals, which is negatively affecting the economy in the United States. According to Chapple (2001), "In a time of low unemployment and reportedly severe labor shortages in IT, employment in IT occupations within the U.S. is increasing much more rapidly than employment overall" (p. 143). The lack of African American men in IT contributes to a growing IT professional shortage and the possible underutilization of millions capable individuals with the right resources and training. Moody, Beise, Woszczynski, and Myers (2003) asserted that organizations and educational institutions should consider deploying different strategies to incite more ethnic minority participation including more education about the IT profession, mentoring, and early preparation. African American men can benefit from the proper foundational setting for a career as an IT professional in the 21st century technology driven workplace.

African American men as IT Professionals

According to Grose (2007), African-Americans comprise just 6.5% of IT managers and professional staff, though they represent 11 percent of the overall U.S. workforce. This evidence suggests that large margins of African American men are not qualified or selecting IT based careers. Many believe the lack of African American men in IT is because of the lack of resources and low computer literacy levels. Morgan (2002)

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suggested that if African Americans were aware of opportunities and rewards of a computing related career it can positively influence the lack of representation of the African American community in IT related professions. There is little representation of the rewards of an IT professional in an African American community when compared to other role models such as entertainers, athletes, and other famous familiar faces. Payton (2004) stated, "Despite professional organizations that facilitate recruiting these groups, there is a negligible number of mentors and role models to engender retention and career progression" (p. 4). There is a high demand for IT professionals, but capable African American men continue to overlook these positions because of the lack of motivation, direction, and community role model showing the rewards of such a career. Roach (2000) asserted in 1998 there were 346,000 unfilled IT positions nationwide and with African Americans only making up 6 percent of the IT professional population over 325, 240 positions were likely to go to whites and other racial groups. Many African American men lack the resources to consider IT related careers in early stages of life that transform to disqualification and lack of required computing skills. According to Carver (1994), lack of resources and opportunities will hinder African Americans from large-scale participation in the Information Age, but "young African American males will be most significantly affected" (Para 4). If more African American men have increased access to resources and exposure to computers and technology, they can create a significant reduction in the IT professional shortage reducing the levels of poverty and disenfranchisement among African American men. Hall and Damico (2007) acknowledged that lower rates of computer use by African Americans correlates to higher rates of poverty and low levels of education resulting in academic and economic gaps.

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Many African American men are missing opportunities for employment, namely in IT which can raise the economic position of African Americans and affect the IT professional shortage in the United States. The disproportionate number of African American IT professionals continues to decrease despite the substantial increased demand for IT professionals in the United States. Smith (2004) explained that Hispanic, Asian, Native, and White Americans continue to increase their presence in the IT workforce and the presence of African Americans continue to decline in an inversely proportionate direction to IT professional demand. Many African American men are lacking computer literacy skills to take advantage of the plethora of new IT related careers, which adversely affects the ability to reduce the IT shortage in the United States workforce. Dennis (1998) asserted there is a dramatic increase in the demand for IT professionals in Virginia but there is a "notable lack of African American participants" (p. 39). The presence of African American men in IT-related careers could reduce or possibly eliminate the IT professional shortage if they had the computing skills and resources to make the same impact on the IT industry as they do in many other industries in the United States.

Haynes (2000) argued, "African Americans remain under-represented and underemployed in all career fields" (Para 3). The under representation of African Americans in IT continues affect organizations and the economy. Studies on African American low computer literacy levels suggest various reasons for apparent gaps between computer literacy levels of African Americans and other social groups but most studies acknowledge the long-term consequences of an inability to acquire computing skills. Consequences of African American Men lacking computer skills affect the African American community as well as the United States economy and ability to compete in a

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global market place. The lack of computer literacy skills among African American men is a growing problem in an information technology based workplace. A low level of computing skills prevents African American men from capitalizing on the IT professional job shortage, which affects African Americans, as well as the entire United States of America.

Research Framework

There are many research methods researchers utilize to find answers, create knowledge and reject or fail to reject null hypotheses. As new research methods emerge, there is a growing debate among researchers and scholars about which research yields the most valid results. Mangan, Lalwani, and Gardner (2004) explained people have different views of the world and those views of the world can greatly influence a researcher's methodology selection and approach to research. Among the most popular research methods are qualitative, quantitative, and mixed method approaches. All three methods are effective in finding answers to various types of research questions, but proper method selection is essential in ensuring the validity of the researched conducted. Oulton (1995) emphasized researchers selecting quantitative, qualitative, or mixed method approaches should make his or her method selection based primarily on the problem or question the research seeks to answer.

Quantitative Research Methods Overview

Quantitative research methods have a strong foundation in statistics and figures with an emphasis on objectivity that makes data collection efficient and relatively easy to classify. Despite the strong objective nature of quantitative research, this method falls short of providing a complete view of reality and often criticized for lacking depth and

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the meaning needed to make results useful to those in which the research will be beneficial. Lee (1992) explained there is no single approach that presents a true view or complete picture of reality, but researchers find themselves in a one-dimensional reality that is a cross between being scientific and human. If a researcher decides to select a quantitative method for his or her research it is important to have a complete understanding or explicit idea in which he or she plans to pursue. Naslund (2002) stated, "Issues such as the nature of the problem and the goals of the researcher should guide the research methodology" (p. 321). Quantitative research methods require an idea or belief from the researcher as well as an expected outcome, but the researcher must remain objective to ensure the validity of the work. For example, if a researcher believes 20 year old women are smarter than 20 year old men, the sample should be equal, the questions the same for both genders, as well as the method for collecting the data. If the sample of women is smaller than the sample of men because of beliefs the researcher has can lead to bias, and invalidate the data rendering the study useless. There is no guarantee or assurance that researchers using quantitative methods do not encounter validity issues with the collected data. There are several strengths and weaknesses a researcher must consider before selecting quantitative research methods.

Quantitative Methods Weaknesses

There is increasing scrutiny and criticism toward the quantitative research method because of one or more weaknesses identified by researchers seeking to get in depth answers and more insight to problems that fall outside of the constraints of a purely quantitative study. Cahill (1996) elucidated that quantitative research is not universally applicable and often lacks the descriptive material that brings the information to life. For

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example, a quantitative study may show there is a statistically significant difference between test scores of 15-year-old boys and 15-year-old girls, but this information falls short on explaining why there is a statistically significant difference. The difference could be because girls do not suffer the same anxiety as boys before taking test, causing a lack of focus among many other possible causes. This information may prove valuable for a researcher attempting to show girls do better on test than boys; however, this information does little for a school principal seeking to improve the test scores of boys in the school within that age range.

The ability to have control over experimental environments in controlled settings is a distinct advantage of quantitative studies, but it can also be a severe weakness with this approach. Researchers that oppose strictly quantitative approaches believe this limits outcomes and fail to create an accurate holistic view of reality, which can sometime prove, misleading and inaccurate. Davis (1998) described quantitative research as inaccurate for some research purposes because of hypotheses tested in controlled environments based on validity, reliability, generalization, and replication assuming the concept of reality is in an unchanging world, which is not only inaccurate but also misleading. If a quantitative study finds that women prefer to wear flat shoes as opposed to high heel shoes for a period of 2 hours or more, the results may drastically change if a new comfortable shoe technology is introduced that makes high heel shoes as comfortable as flat shoes. The study mentioned above may have neglected to consider comfort as a primary reason for the selection of flat shoes. A change in construction or design of the shoe can cause the study to show an inaccurate reality of what type of shoe

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women prefer to wear. The weaknesses of this approach does not outweigh the potential

benefits when using a quantitative approach

CHAPTER 3. METHODOLOGY

Introduction

This chapter provides an explanation of the quantitative methodology used for this research, which includes an overview and reasoning for selection of quantitative methods, research design, sample population, setting, instrumentation/measures, data collection methods, data analysis, validity and reliability, as well as any ethical considerations.

Purpose of the Study

The purpose of this quantitative correlation study was to examine what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional. Kamal (2005) asserted the IT industry in America has a severe shortage of trained IT professionals because new professionals are not being trained fast enough to keep up with the growing demand. The shortage IT professionals remains one of management top concerns with some referring to the shortage as a national crisis (Walstrom, Schambach, Jones, & Crampton, 2008). Identifying factors that contribute to computer literacy or lack thereof among African American men provided insight into the strengths and weaknesses in organizations, society, and educational systems to gain a better understanding of the relationship of computer literacy levels and the decision of African American males to become an IT professionals. Recommendations for future research could possibly

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uncover ways to add to the representation of African American males in the information technology industry.

The relationship between contributing factors toward computer literacy levels of African American males and the decision to become an IT professional was answered by examination of the following questions:

RQ1: To what extent, if any, is there a relationship between the availability of technology related resources and computer literacy levels among African American males?

RQ2: To what extent, if any, is there a relationship between the completed grade level of African American males and computer literacy levels among African American males?

RQ3: To what extent, if any, is there a relationship between the decision to become an IT professional and computer literacy levels among African American males?

The hypotheses used to test and respond to the research questions were:

$H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males.

$H1_a$: There is a correlation between the availability of technology related resources and the level of computer literacy among African American males

$H2_0$: There is not a correlation between completed grade level and computer literacy levels among African American males

$H2_a$: There is a correlation between completed grade level and computer literacy levels among African American males

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H3$_0$: There is not an association between the decision to become an IT professional and computer literacy levels among African American males

H3$_a$: There is an association between the decision to become an IT professional and computer literacy levels among African American males

Research Design

The research method for this study was a quantitative research method. There are myriads of quantitative studies that are reliable, and valid that has earned the respect among scholars and peers. The success and acceptance of quantitative research is largely due to its objective nature and statistical foundation. Quantitative researchers have the ability to define research problems clearly based on fact or belief. Eldabi, Irani, Paul, and Love (2002) explained quantitative research has a logical structure that is formed by researcher thoughts and expectations identified in a hypothesis or hypotheses. When a researcher conducts quantitative research correctly, there is a high level of reliability because of the controlled settings required for experiments. Leydens, Moskal, and Pavelich (2004) asserted quantitative research uses prescribed procedures ensuring reliability and validity in a controlled setting with precise controls and manipulations. Quantitative research minimizes, in many cases eliminates, subjectivity and requires an objective position from those conducting the study. The strong reliance on statistical evidence and numerical values allows the researcher to verify data empirically without the direct communication of the participants.

Johnson and Onwuegbuzie (2004) explained one of the strengths of the quantitative approach is the researcher's ability to construct experiments that eliminate

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influence of subjects, which can greatly increase credibility by a realistic demonstration of cause and effect relationships. The ability to gather data quickly utilizing efficient data collection methods is another distinct advantage of quantitative research methods. Researchers can utilize email, telephone, websites, and other electronic means to collect data from large populations and at the same time, categorize the responses and assign numeric values. Sogunro (2002) asserted quantitative instruments provide efficient means for collecting data in laboratory experiments and questionnaires. A researcher can send an email questionnaire or provide access to a webpage and get valuable information from thousands of participants that are translated into tangible data in a short time at a relatively low cost.

Why the Quantitative Research Method

The quantitative research approach was the best method for this study because it uses statistical analysis of numerical data. The research problem was very specific and concise and did not require interaction of subjects but instead sought to generalize and determine if there was a relationship between computer literacy levels and the decision to become an IT professional. The researcher used a quantitative research approach determined if there is a casual relationship or failure to establish a relationship. The research question does not require an in depth explanation of why organizations are seeking computer literate individuals. In many cases, a subjective view provides greater insight, but the research questions in this study seek to determine relationships as opposed to the reasons behind the relationship. Based on the conceptual framework for this study shown in figure 1 the quantitative research method was the best approach to

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find a correlation if any between computer literacy levels of African American men and the decision to become IT professionals.
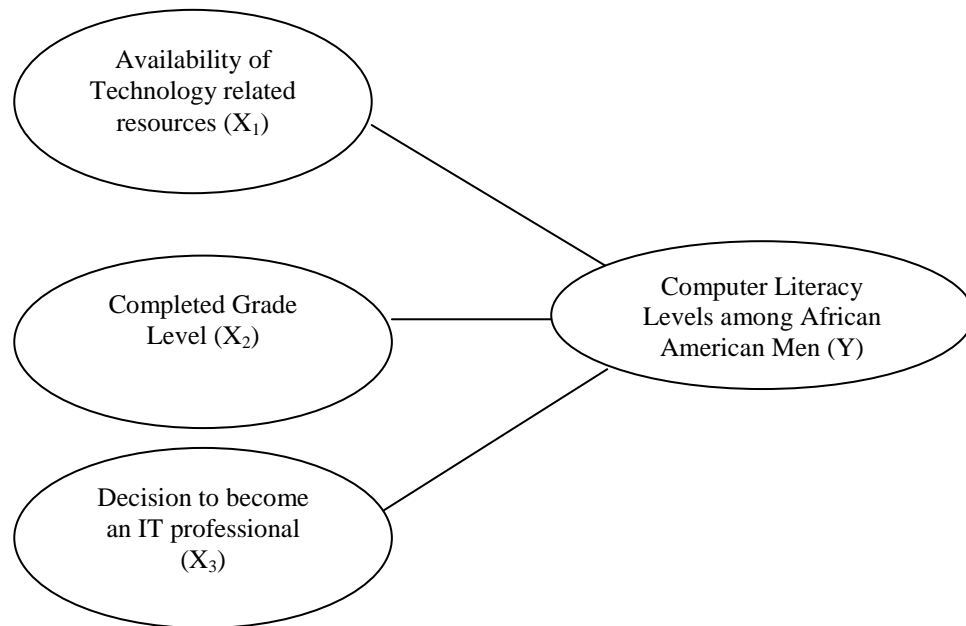

Figure 1. Conceptual Framework

Sample

The population of this study was from the National Forum for Black Public Administrators membership list, which consist of a largely African American population of over 2500 members representing 45 states in various professional disciplines. There are 1025 male members of this organization. Based on a confidence level of 95% and confidence interval of 5, the required sample size was 280 participants to generalize the findings to the population. A systematic sampling method was applied for this current study. Fowler (2002) explained systematic sampling is a precise method and mechanically easier to create. Cooper and Schindler (2006) explained using systematic sampling allows the researcher to utilize a simple sampling method with great flexibility.

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For this research study, the researcher used a systematic sampling method randomly starting at a unit between 1 and k and every kth unit thereafter.

Instrumentation / Measures

The researcher used self-administered online surveys to collect quantitative data. A two-part survey served as the instrument for this study. The original survey is a Digital Literacy Self Assessment constructed by Debra Revere of the University of Washington. The Digital Literacy Self-Assessment has several sections for potential and existing Health Services students to assess their knowledge of computer-based technology in the following areas:

1. General Computer Knowledge

2. File Management Knowledge

3. System Maintenance and Security Knowledge

4. Word Processing Skills

5. Communication Skills (email, listserves)

6. Web Skills

7. Databases, information searching, and Information Integrity

8. Spreadsheets

9. Presentation Skills

The original survey was applied to assess computer literacy levels of potential and existing students in the Health Services program at the University of Washington since 2005. Each question has a point range from 0 to 3 based on the answer with max of 30 possible points in each section. For students that have 16 points or more, they are considered computer literate, 10-15, some literacy, below 10, low or no computer

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literacy. The modified survey (shown in Appendix C) has a 5-point scale with questions from all the questions from the General Computer Knowledge section and some questions from the Communication Skills and Web Skills section. The first portion of the survey was developed by the researcher to collect demographic information such as age range, sex, race, employment status, access to computers, household income, occupation and highest completed grade-level to establish or fail to establish possible relationships with computer literacy levels and the decision to become an IT professional. The second part of the survey focused on basic computer knowledge utilizing a 5-point Likert-type scale ranging from "*I cannot perform the task" to "I can perform the task easily*." This study required the need to determine the respondent's computer literacy level to determine if there is a relationship or a failure to establish a relationship between household income, grade level, and other contributing factors of computer literacy and the decision to become IT professionals. Cooper and Schindler (2006) asserted Likert-type scales are popular and "probably more reliable and provide a greater volume of data than many other scales" (p. 339).

Data Collection

The researcher contacted the executive director of the National Foundation of Black Public Administrators to request permission to use the membership list to contact members of the organizations for this study. The Executive Director agreed to assist the researcher in any possible way to complete the survey, including direct access to the membership coordinator to assist the researcher with any information needed including membership lists, information about the organization, or any other details that may arise.

The Executive Director also requested a copy of the findings at the completion of his study to share and publicize to the members and other officers of the organization.

The executive director from the NFBPA offered to place a link to the survey on the member's website, which increased the likelihood of response from participants. The researcher constructed the email and directed participants to the customized page containing the terms and conditions, acknowledgement of consent, and survey instrument. The consent page consisted of the following:

1. Agreement to the terms and conditions to participate in the study

2. Acknowledgment they are at least 18 years of age

3. The option not to agree to the terms and conditions and not participate in the study

The data collection method for this study took place online utilizing the 3rd party provider Surveymonkey.com. The researcher conducted the surveys online, which made gathering the results easier than attempting to collect the data in person because the participants are located throughout the United States in 350 jurisdictions. Fowler (2002) explained one of the major issues with self-administered surveys is getting respondents to return completed questionnaires. The participants were responsible for filling out the surveys completely without any assistance and the researcher by going to the website specified for data collection. The researcher emailed the invitation to participate in the survey and there was a link on the NFBPA membership page for members to go to as well. All participants received a full confidentiality and disclosure statement that explained the purpose of the study, the use of the data, and the option of including an email address if they desire to receive a copy of the study upon completion. The

researcher assured participants that any information obtained in the survey would not be sold, or given to any third parties for any reason. Participants were not required to provide any personal information such as their name, social security number, or specific address. Statistical Package for the Social Sciences (SPSS) version 15 for Windows was the selected software to organize and analyze all collected data.

Data Analysis

This research study consisted of parametric and descriptive statistical tests for the data analysis. The researcher used inferential statistical analysis in this study such as Chi-Square and Correlation tests. The researcher used descriptive statistical analyses in the proposed study are variances, frequencies, and normality. The researcher entered, coded, and verified all data for this quantitative research study.

Chi-square was applied to test the variables within the first hypothesis for independence and between observed and expected values. Cooper and Schindler (2006) explained Chi-square test is helpful in cases of one sample analysis and two independent samples displaying actual counts as opposed to percentages. In the proposed study, it could show or fail to show the dependency of computer resources and computer literacy levels. Correlation tests provided a description of the type of relationship between variables. For this research study, the independent variables were as follows:

Availability of technology related resources (X_1). For this research study, the availability of technology related resources was measured by the average number of hours a participant has access to a working/operational computer with or without internet access that has Windows or Mac operating system, Microsoft Word or other word

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processing software, and Microsoft Excel or other spreadsheet software on a daily basis. Valid interval-based responses are between 0 and 24 hours.

Completed Grade Level (X_2). For this research study, completed grade level was measured as the participant's highest completed grade level in a formal public or private educational institution from grades 1 through 20 (post graduate), representing interval (scale) data.

Decision to become an IT Professional (X_3). For this research study, the decision to become an information technology professional represented the participants nominal-type decision to choose a career, or not, that is based on computer or technology based skills recognized as an information technology based job.

For this research study, the independent variable was:

Computer Literacy Levels among African American Men (Y). For this research study, computer literacy levels of participants ranged from very low to very high. The researcher counted scores using Likert-type scale responses in the survey. *I cannot perform* the task was equal 0 with 1 point for each corresponding response with *I can perform the task very easily* 4. Computer literacy levels were as follows:

0 – 10 = No computer literacy

11 – 19 = Very low level of computer literacy

20 – 29 = Low level of computer literacy

30 -39 = Moderate level of computer literacy

40 and above = High level of computer literacy

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Validity and Reliability

To ensure the validity and reliability of the data there was a small field test (shown in Appendix D) with a small focus group to solicit feedback from the participants. There was a section for feedback, comments, and concerns at the end of the survey. The purpose of the comments, questions, and concerns section helped the researcher gain insight from participants on wording, length, readability, and question comprehension.

Ethical Considerations

The participants of the survey were anonymous and the survey did not have any identifiable information on the survey. Participants had the option of requesting a copy of the study by filling out a separate research-study request form. That form also informed the participant their email address is not for sale or redistribution to any vendor or third party and strictly used to email the requested copy of the study. The researcher informed participants that information from the research process is confidential and that a computer program received the information and coded responses. The researchers did not request any identifying information regarding the participant. The web site used for the study is password protected, the answers will be securely stored, and the results accurately reported. Upon completion of this project, the information will be backed up to a portable drive with encryption and secured in a locked fireproof safe in the researcher's office.

The researcher explained the participant rights and provided the contact information for the Capella Human Research Protections Office, the School of Business, and The Mentor supervising the project. A complete copy of all terms and conditions are in Appendix E.

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CHAPTER 4. DATA ANALYSIS AND RESULTS

Introduction

Amaratung, Baldry, Sarshar, and Newton (2002) explained the main strengths of quantitative research are reliability, validity, and the ability to remain objective without being inferred subjectively through sensation, reflection, or intuition. The objective of this research was to examine the possible relationships between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional.

This chapter provides an analysis of the data collected in this quantitative correlational study of computer literacy levels among African American males and their decision to become information technology professionals. The researcher collected demographic data from African American male participants and basic technical information to determine the computer literacy level of each subject.

Purpose of the Study

The purpose of this quantitative correlation study was to examine what extent, if any, a relationship exists between factors that may or may not cause high or low computer literacy levels and the decision to become an IT professional. Kamal (2005) asserted the IT industry in America has a severe shortage of trained IT professionals because new professionals are not being trained fast enough to keep up with the growing demand. The shortage IT professionals remains one of management top concerns with some referring to the shortage as a national crisis (Walstrom, Schambach, Jones, and Crampton, 2008). Identifying factors that contribute to computer literacy or lack thereof

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among African American men provided insight into the strengths and weaknesses in organizations, society, and educational systems to gain a better understanding of the relationship of computer literacy levels and the decision of African American males to become an IT professionals. Recommendations for future research could possibly uncover ways to add to the representation of African American males in the information technology industry.

This research was conducted to examine the relationship between factors that may or may not contribute to low or high computer literacy levels of African American males and the decision to become an IT professional were answered by examination of the following questions:

RQ1: To what extent, if any, is there a relationship between the availability of technology related resources and computer literacy levels among African American males?

RQ2: To what extent, if any, is there a relationship between the completed grade level of African American males and computer literacy levels among African American males?

RQ3: To what extent, if any, is there a relationship between the decision to become an IT professional and computer literacy levels among African American males?

The hypotheses used to test and respond to the research questions are:

$H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males.

$H1_a$: There is a correlation between the lack of availability of technology related resources and the level of computer literacy among African American males

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$H2_0$: There is not a correlation between the highest completed grade level and computer literacy levels among African American males

$H2_a$: There is a correlation between the highest completed grade level and computer literacy levels among African American males

$H3_0$: There is not an association between the decision to become an IT professional and computer literacy levels among African American males

$H3_a$: There is an association between the decision to become an IT professional and computer literacy levels among African American males

<div align="center">Reliability and Validity</div>

A preliminary analysis was conducted on the computer literacy levels variable to ensure normal distribution using descriptive statistics and tests of normality. Upon confirming normality, correlation statistical tests were used to examine to what extent, if any, relationships existed between access to computer-based resources and computer literacy levels among African American males and completed grade level and computer literacy levels among African American males.

Description of the Sample

The sample population for this study was from the African American male population from the National Forum of Black Public Administrators (NFBPA). The organization has over 2500 active members from over 45 states and 350 jurisdictions. There were 1025 surveys sent to African American male subjects. Out of 1025 possible participants there were 338 ($N = 338$) subjects that were surveyed which yielded a response rate of 32.97%. There was an exclusion of incomplete surveys, leaving 335 participants

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The participants were required to provide consent electronically, shown in Appendix A with safeguards in place to eliminate subject less than 18 years of age and those that failed to agree to the terms and conditions of the voluntary survey. The post-hoc power analysis with an observed Alpha level of 0.05, Observed effect size of 0.5 and 335 valid cases, one-tailed (directional) hypothesis has an observed power of 0.998 and 0.995 for two –tailed (non-directional) hypothesis.

Survey Instruments and Measures

The instruments in this study were able to provide sufficient information required to answer the research questions and hypotheses. The demographic portion of the survey (shown in Appendix B) provided general information on the participants. The computer literacy portion of the survey (shown in Appendix C) assessed the participant's computer literacy level. The computer literacy assessment was derived from a Digital Literacy Self Assessment constructed by Debra Revere of the University of Washington to assess computer literacy levels of potential students wishing to enroll in the Heath Services program.

Measures of Assessment and Demographic Data

The demographic portion of the survey instrument was applied to capture participant data such as age group, ethnicity, individual income range, household income range, education completed, occupation, employment status, computer ownership/access, and influence computer skill had on career choice. The sample consisted of 1025 randomly sampled participants with 338 responses. One response was omitted and two responses were not completed. Therefore, 335 survey responses were completed for this study ($N = 335$).

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Table 2 provides a breakdown of the education completed by participants in the study. Over 80% of participants had higher education with 48.1% achieving at least a 4-year degree.

Table 2

Highest Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grades 9 - 11 (Some High School)	6	1.8	1.8	1.8
	Grade 12 0f GED (High School Graduate)	39	11.6	11.6	13.4
	College 1 - 3 years (Some college or technical school)	129	38.5	38.5	51.9
	College 4 years (College graduate)	129	38.5	38.5	90.4
	Graduate School (Advanced Degree)	32	9.6	9.6	100.0
	Total	335	100.0	100.0	

Participants indicated their occupation in the study. Table 3 provides a breakdown of occupations for applicants. The participants were able to select more than one occupation. The responses showed only 8.1% of participants had an IT related profession and more than 25% of respondents were in a managerial position.

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Table 3

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial/Accounting	38	11.3	11.3	11.3
	Law Enforcement	5	1.5	1.5	12.8
	Transportation	1	.3	.3	13.1
	Entertainment	2	.6	.6	13.7
	Marketing	22	6.6	6.6	20.3
	Sanitation	2	.6	.6	20.9
	Entrepreneur	3	.9	.9	21.8
	Real estate	19	5.7	5.7	27.5
	Food Service	5	1.5	1.5	29.0
	Executive/Senior Managerial	35	10.4	10.4	39.4
	Managerial	51	15.2	15.2	54.6
	Medical/Dental	13	3.9	3.9	58.5
	Engineering	15	4.5	4.5	63.0
	Construction	3	.9	.9	63.9
	Machinist	5	1.5	1.5	65.4
	Plumber/Electrician	3	.9	.9	66.3
	Retail	17	5.1	5.1	71.3
	Administrative	41	12.2	12.2	83.6
	Maintenance	2	.6	.6	84.2
	Teacher	18	5.4	5.4	89.6
	Professor	8	2.4	2.4	91.9
	IT/Computer Professional	27	8.1	8.1	100.0
	Total	335	100.0	100.0	

Table 4 provides a breakdown of employment status of participants. Over 87%

(e.g., 87.2%) of participants (*n*=292) were employed for wages at the time of the study.

Another 10.8% of participants were self-employed or unemployed for less than 1 year.

Over 95% of the participants in the study were employed or have been employed within

the last year.

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Table 4

Employment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed for wages	292	87.2	87.2	87.2
	Self-employed	16	4.8	4.8	91.9
	Unemployed for more than 1 year	2	.6	.6	92.5
	Unemployed for less than 1 year	16	4.8	4.8	97.3
	A student	3	.9	.9	98.2
	Retired	4	1.2	1.2	99.4
	Unable to work	2	.6	.6	100.0
	Total	335	100.0	100.0	

The participants of the study had to complete the survey electronically. Table 5

provides a breakdown of participants that owned computers with the assumption they

have at least 8 hours of access to the computer daily. Table 6 provides the number of

computers owned by participants.

Table 5

Computer Ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	300	89.6	89.6	89.6
	No	35	10.4	10.4	100.0
	Total	335	100.0	100.0	

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Table 6

Number of Computers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No computer in the household	35	10.4	10.4	10.4
	1	162	48.4	48.4	58.8
	2	104	31.0	31.0	89.9
	3	27	8.1	8.1	97.9
	4 or more computers in the household	7	2.1	2.1	100.0
	Total	335	100.0	100.0	

Participants that did not own a computer provide the number of hours they had access to a computer a day. Table 7 displays the hours of access participants had a computer available to them. The researcher coded participants that owned a computer as having 8 to 12 hours of computer access a day. Over 98% of participants had at least 4 hours of access to a computer on a daily basis.

Table 7

Hours of Computer Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No access to a computer	1	.3	.3	.3
	1 – 4 hours a day	4	1.2	1.2	1.5
	4 – 8 hours a day	9	2.7	2.7	4.2
	8 – 12 hours a day	320	95.5	95.5	99.7
	12 or more hours a day	1	.3	.3	100.0
	Total	335	100.0	100.0	

Participants were asked to indicate if they were required to have knowledge of computers when they started their position. Table 8 showed that 34.6% of participants required some knowledge of PC's to perform their jobs.

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Table 8

PC Knowledge Required

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	116	34.6	34.6	34.6
	No	219	65.4	65.4	100.0
	Total	335	100.0	100.0	

Participants of the study indicated if their ability or inability to use a computer

influenced their decision in pursuing an IT related career path. Table 9 showed that over

80% of respondents did not feel that computer ability or inability had any influence on

their career path.

Table 9

Computer Ability Influence on Career Path

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	16.1	16.1	16.1
	No	276	82.4	82.4	98.5
	Somewhat	5	1.5	1.5	100.0
	Total	335	100.0	100.0	

Computer literacy levels were determined by assigning point values to each

response from participants. Responses ranged from 0 to 4 with a maximum point value of

56 points. The respective point values to determine Computer literacy levels were as

follows:

0 – 10 = No computer literacy

11 – 19 = Very low level of computer literacy

20 – 29 = Low level of computer literacy

30 -39 = Moderate level of computer literacy

40 and above = High level of computer literacy

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Over 80% of the participants had a moderate to high level of computer literacy as shown in Table 10.

Table 10

Computer Literacy Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No computer Literacy	6	.3	.3	1.8
	Very Low Computer Literacy	18	1.2	1.2	7.2
	Low Computer Literacy	33	1.2	1.2	17.0
	Moderate/basic Computer Literacy	90	2.4	2.4	43.9
	High Computer Literacy	188	43.9	43.9	100.0
	Total	335	100.0	100.0	

Data Analysis

Correlation and cross-tabulation analysis were used to analyze the collected data in this study. The data was exported from the surveymonkey.com website into an Excel spreadsheet. The researcher imported the data into SPSS to conduct descriptive and correlation statistical tests.

Findings Relevant to Research Question 1

To determine if value of computer literacy level followed a normal distribution, the researcher conducted descriptive statistics and tests of normality shown in Table 11 and 12.

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Table 11

Descriptive Statistics

			Statistic	Std. Error
Computer Literacy Level	Mean		46.27	.663
	95% Confidence Interval for Mean	Lower Bound	44.96	
		Upper Bound	47.57	
	5% Trimmed Mean		47.55	
	Median		51.00	
	Variance		148.149	
	Std. Deviation		12.172	
	Minimum		0	
	Maximum		56	
	Range		56	
	Interquartile Range		15	
	Skewness		-1.352	.133
	Kurtosis		1.451	.265

Table 12

Tests of Normality

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Computer Literacy Level	.224	337	.000	.798	337	.000

a Lilliefors Significance Correction

The researcher tested for normality using descriptive statistics in SPSS. Lobato

and Velasco (2004) acknowledged researchers customarily test for normality by using the

Skewness-Kurtosis test. The Skewness is -1.352 which has a range between -2 and +2

indicating data is normally distributed. For the data collected representing the variable

computer literacy (Y), Kurtosis is 1.451, which is the peakedness of distribution with a

range between -2 and +2 indicating normal distribution.

Based on both variables meeting the assumptions of normality, the researcher

used SPSS to calculate the Pearson Correlation test shown in Table 13 to indentify to

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what extent, if any, there was a significant relationship between computer access and computer literacy levels of African American males.

Table 13

Pearson Correlation

		Computer Literacy Level	Hours of Access
Computer Literacy Level	Pearson Correlation	1	.326(**)
	Sig. (2-tailed)		.000
	N	337	337
Hours of Access	Pearson Correlation	.326(**)	1
	Sig. (2-tailed)	.000	
	N	337	337

** Correlation is significant at the 0.01 level (2-tailed).

The researcher used SPSS to calculate the Pearson Correlation test shown in Table 13 to indentify to what extent, if any, a significant relationship between completed grade level and computer literacy levels of African American males. Cooper and Schindler (2006) explained the Pearson correlation coefficient r varies over a range of $+1$ though 0 to -1 and the closer $+/-1$ the stronger the relationship and the closer r is to 0 signifies weak or no relationship. The results showed that there was a weak correlation between hours of access and computer literacy levels $N = .337$, $r = .326$, $p=.000$. The results showed there was a statistically significant relationship between the hours of access available to a computer and computer literacy levels among African American males. Based on $H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males the null hypothesis can be rejected. Furthermore, the alternate can be accepted based on $H1_a$: There is a correlation between the lack of availability of technology related resources and the level of computer literacy among African American males.

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Findings Relevant to Research Question 2

Table 14

Pearson Correlation

		Computer Literacy Level	Education Level
Computer Literacy Level	Pearson Correlation	1	.277(**)
	Sig. (2-tailed)		.000
	N	337	335
Education Level	Pearson Correlation	.277(**)	1
	Sig. (2-tailed)	.000	
	N	335	335

** Correlation is significant at the 0.01 level (2-tailed).

The results shown in table 14 indicated there is little or no correlation between completed grade level and computer literacy levels of African American males. The results $N = .337$, $r = .277$, $p=.000$ indicated there was a statistically significant relationship between completed grade level and computer literacy levels of African American males. Based on $H2_0$: There is not a correlation between the availability of completed grade level and the level of computer literacy among African American males the null hypothesis can be rejected. Furthermore, the alternate can be accepted based on $H2_a$: There is a correlation between completed grade level and the level of computer literacy among African American males.

Findings Relevant to Research Question 3

The researcher used SPSS to conduct a Chi- Square test shown in Table 15 to indentify to what extent, if any, a significant relationship between the decision to become an IT professional and computer literacy levels of African American males.

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Table 15

Chi-Square Test

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.926(a)	80	.545
Likelihood Ratio	90.776	80	.193
Linear-by-Linear Association	23.866	1	.000
N of Valid Cases	335		

a 114 cells (92.7%) have expected count less than 5. The minimum expected count is .01.

The results of the Chi-Square test in table 14 there was no statistically significant relationship between the decision to become an IT professional and computer literacy levels of African American males. The results of the Chi-Square tests indicated a *p* value is greater than .05 (*p*=.545) Based on H3$_0$: There is not an association between the availability of the decision to become an IT professional and the level of computer literacy among African American males the null hypothesis can be rejected. Furthermore, the alternate cannot be accepted based on H3$_a$: There is an association between the availability of the decision to become an IT professional and the level of computer literacy among African American males.

In summary, there was a weak positive relationship between computer access and computer literacy levels and little to no relationship between completed grade level and computer literacy levels. The Chi-Square test revealed there is no association between computer literacy levels and the decision to become an IT professional. Chapter 5 summarizes the conclusions, limitations of the research, and recommendations for future research based on the analysis of the data collected.

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CHAPTER 5. CONCLUSIONS AND RECOMMENDATIONS

Introduction

The inspiration for this research was the lack of African American males as information technology professionals. There are theories about a digital divide and some opposing views that suggest there is a digital divide does not exist. This research did not entail an examination of the digital divide, but one of the supposed results of the digital divide, which was the lack of African American males as information technology professionals. For this quantitative study, there was an examination of the relationship between computer literacy levels among African American males and their decision to become an IT professional

This chapter will summarize the findings, conclusions, and the recommendations of this quantitative study.

Review of Research Purpose and Objectives

The primary reason for this quantitative research study was to examine, to what extent, if any, the relationship between factors that may or may not contribute to low or high computer literacy levels among African American males and the decision to become an IT professional. The objectives of the study was to examine the relationship between completed grade level and computer literacy levels, and access to resources and computer literacy levels, as well as the examination of a possible association between computer literacy levels and the decision to become an IT professional. The research met the objectives by conducting research utilizing a series of correlation and other tests on the data collected from voluntary participants.

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Review of Research Methods

This research was conducted using the quantitative research method to answer all research questions in this study. There was a field test to ensure the validity and reliability of the survey instrument. The original survey was modified by adding demographic questions that related to the study. There was a modification the original scoring criteria to determine computer literacy levels based on a 5-point Likert scale as opposed to the original 3-point scale. The ability to assign numerical values to data collected was essential to answer the research questions and data analysis.

Review of Research Questions

This quantitative study provided answers to the following research questions:

RQ1: To what extent, if any, is there a relationship between the availability of technology related resources and computer literacy levels among African American males?

RQ2: To what extent, if any, is there a relationship between the completed grade level of African American males and computer literacy levels among African American males?

RQ3: To what extent, if any, is there a relationship between the decision to become an IT professional and computer literacy levels among African American males?

Review of Hypotheses

The hypotheses used to develop the research questions were:

$H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males.

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H1$_a$: There is a correlation between the lack of availability of technology related

resources and the level of computer literacy among African American males

H2$_0$: There is not a correlation between the highest completed grade level and

computer literacy levels among African American males

H2$_a$: There is a correlation between the highest completed grade level and

computer literacy levels among African American males

H3$_0$: There is not a correlation between the decision to become an IT professional

and computer literacy levels among African American males

H3$_a$: There is a correlation between the decision to become an IT professional and

computer literacy levels among African American males

Summary of Findings and Results

The study of computer literacy among African American males has been the focus

of many studies. Many researchers (Brown, 2000; Creighton, et al, 2006; Edwards,

2005) examined computer literacy among African Americans concluding there was a lack

of African American computer literacy, which could possibly reduce the lack of

opportunity including the ability to secure technology-based occupations. Some opposing

researchers (Pyoria, 2005) suggested possible inaccuracies or misrepresentation of the

digital divide. Many of the digital divide studies were of a mixed or qualitative

methodology which some may view as subjective and lacking validity. The researcher

conducted this quantitative study to build upon the existing gaps in African American

computer literacy research including the digital divide. After reviewing the literature, the

researcher decided to focus specifically on the African American male population

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because of studies suggesting males have lower computer literacy levels than females because of a variety of factors.

Summary of Research Question 1

Research question one examined the relationship between access to computer resources and computer literacy levels of African American men. To answer this question participant indicated on the survey if they owned a computer. If participants owned indicated they owned a computer it was assumed they had access to that computer at least 8 to 12 hours per day. If participants indicated they did not own a computer, they were asked to indicate how many hours they had access to a computer.

Based on the data collected in this study, 89.6% of participants indicated they owned at least one computer. More 99% of participants that did not own a computer indicated they had access to a computer at least 4 hours a day. The combination of participants that owned a computer and participants that had access to a computer was 98%.

The computer literacy levels among African American males in the study revealed that over 80% of participants had at least a basic/moderate computer literacy level. Out of the 335 participants in this study, less than 2% had no computer literacy. Fifteen percent of participants had very low, to low levels of computer literacy.

The majority of the population in this study had at least 4 hours of access to computers and basic to high computer literacy levels. The data analyzed to answer this question suggests that the majority of the population has access to a computer and a reasonable knowledge of computers and or computer literate.

Summary of Research Question 2

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Research question two examined the relationship between completed grade level and computer literacy levels of the surveyed population. To answer the research question participants were required to indicate their level of education. The range of education was from grade school to post graduate. All participants had at least some high school education. Over 85% of the participants had some college and 48% of participants had four or more years of college. Less than 2% of the population did not complete high school. The results of the data analysis revealed that slightly more than half of the participants had some high school and college but less than a four-year degree.

The computer literacy levels among African American males in the study revealed that over 80% of participants had at least a basic/moderate computer literacy level. Out of the 335 participants in this study, less than 2% had no computer literacy. Fifteen percent of participants had very low, to low levels of computer literacy

The education level varied among participants and had close to an equal distribution among participants that had a four or more years of college level education and participants that had less than four years of college education. The data analyzed in this study indicated more than 80% of participants graduated high school and were computer literate.

Summary of Research Question 3

Research question three examined the relationship between computer literacy levels among African American males and their decision to become IT professionals. To answer the question the participant indicated if their ability or inability to use a computer influenced their decision to choose an IT related career. More than 65% of participants in

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the study indicated they were not required to have knowledge of personal computers when they started their positions. The population of Accounting, administrative and IT professionals made up 31.6% of the participants. Traditionally these fields require knowledge of computers, word processing, spreadsheets, or other technology based skills. Approximately 35% of participants indicated they needed some knowledge of computers when they started their position. More than 87% of participants were working for an organization at the time of the survey and 4.8% were self-employed. Out of 335 participants 276 (82.4%) indicated their computer ability or inability did not influence their decision to pursue an IT related career.

The computer literacy levels among African American males in the study revealed that over 80% of participants had at least a basic/moderate computer literacy level. Out of the 335 participants in this study, less than 2% had no computer literacy. Fifteen percent of participants had very low, to low levels of computer literacy

The results of the data analyzed yielded results that showed 87.2% of participants had jobs. More than 80% of participants were computer literate and their computer abilities or inabilities did not influence their decision to become IT professionals.

Summary of Hypotheses

$H1_0$: There is not a correlation between the availability of technology related resources and the level of computer literacy among African American males. The evidence suggests that the null hypothesis should be rejected indicating that a correlation exists between the availability of technology related resources and the level of computer literacy among African American males ($N = .337$, $r = .326$, $p=.000$).

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H2$_0$: There is not a correlation between completed grade level and computer literacy levels among African American males. The evidence suggests the researcher should reject the null hypothesis and that a correlation exists between completed grade level and the level of computer literacy among African American males ($p < .05$, $N = .337$, $r = .277$, $p=.000$).

H3$_0$: There is not an association between the decision to become an IT professional and computer literacy levels among African American males. The evidence suggests the researcher should not reject the null hypothesis as no association exists between the decision to become an IT professional and the level of computer literacy among African American males ($p < .05$, $p=.545$).

Conclusions

The primary purpose of this research was to examine the extent to which, if any, factors may or may not contribute to low or high computer literacy levels among African American males and their decision to become IT professionals. Previous studies on the digital divide and the underrepresentation of African Americans in information technology professions indicated these issues were due to the lack of resources, education, income level, mentorship, and other possible factors discussed in the literature review. The researcher focused on two factors cited in many studies as contributing to low computer literacy levels among African Americans, which were education and availability to technology related resources. Previous studies also cited these factors as possible reasons for the lack of African Americans in information technology based professions.

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This research study was an examination of these factors for relationships to fill the gap of knowledge correlating possible factors leading to high or low computer literacy levels and the decision to become an IT professional. The research in this study did not attempt to prove or disprove the existence of a digital divide or the underrepresentation of African Americans males in IT related professions. The researcher sought to examine factors cited for contributing to computer literacy levels among African American males and the decision to become IT professionals.

Despite the economic problems in the United States, there are more attractive career openings in technology-based professions (Teitelbaum, 2008). Hughes (2008) asserted there is an expansion in the need of IT technology in the United States but the United States does not have the trained IT professionals to answer the call and meet the demand. The African American men in this study were from over 45 states in many different professions, and all had some high school education, but more than 80% had higher education. This would suggest that there is not a lack of education among this population. The percentage of college-educated males in this study suggests there is not a lack of education among this African American male population.

One of the contradictory findings to previous digital divide studies was that 98% of the African American male population surveyed had at least 4 hours of computer access per day. In this survey population 89.6% of participants owned computers with almost half of those owners having more than one computer in the household. The evidence suggested there is no lack of technology related resources among this population. These findings in this study alone do not indicate there is not a digital divide, but there are some suggestions for future studies outlined later in this section.

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Tumposky (2001) argued some African Americans have equal access to computers and technology but there is a disinterest in technology because of a lack of positive messages about technology in their pop culture. In this study, many of the participants were computer literate, educated, and had access to a computer, but only 34% of participants had positions that required some knowledge of a PC. Only 8% of the participants worked in IT based positions. While 16% of participants indicated that their computer abilities influenced their career path, over 80% of participants indicated their computer abilities had no influence on their career path. The evidence in this study suggested that the computer abilities or inabilities African American males in this population had no influence on their decision to become an IT professional. The evidence suggests that African American males are not opting for IT related careers because of reasons beyond computer literacy and lack of resources.

Summary of Key Findings

The notable findings from this quantitative are as follows:

1. Roughly 98% of participants in this study had at least 4 hours of access to a computer on a daily basis

2. Over 80% of participants in this study had a education beyond high school

3. The majority of participants in this study owned computers

4. Almost 90% of participants in this study indicated their computer abilities or inabilities did not influence their decision to pursue an IT based career

5. Less than 10% of participants in this study had IT related careers.

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Limitations of the Study

This was a quantitative research study limited to the restraints and disciplines of the research method. For some questions, it would have been beneficial to gain insight into the answers respondents selected. For example, 82.4% of respondents indicated their computer abilities did not influence their decision to pursue and IT career, but an understanding of what may have influenced their decision could prove helpful. Participants were not required to indicate when they completed their education, which could have provided insight into technology based tools available and possible choices at their time of graduation. Some participants many have not pursued IT based positions because programs were not offered at their learning institutions. This study could have benefited from participants perception of information technology. For example, does an IT career appear boring, uninteresting, unfulfilling, or other reasons? Some qualitative questions could have provided further insight, but at the expense of the possibility of subjectivity and bias from the researcher.

Recommendations for Future Studies

There are many studies on the lack of education, resources, computer literacy, among African Americans, but many do not examine possibilities outside of economic conditions. The purpose of this research was to go beyond the identification of computer literacy levels among African American men and examine if these computer literacy levels were impairing the population from entering into the IT industry. The evidence suggests that computer literacy or lack thereof is not the reason African Americans make up less than 7% of professionals in the IT industry. The evidence in this study also suggests that computer literate African American males have more than sufficient access

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to technology related resources but are not selecting careers in IT. One recommendation for researchers is to find out why these educated, computer literate professionals are not taking advantage of careers in the IT industry.

The scope of this quantitative research study was limited to African American males. Some of the potential recommendations for future study would be the following:

1. Expand the scope of the participants to include African American women examining the same relationships and associations as conducted in this study

2. Conduct a similar study on Hispanics, Asians, or another minority male group to examine any statistical significance between African Americans in this study

3. Add a qualitative element and conduct a mixed research study to gain insight into why qualified African Americans are not selecting IT based career paths

Further research can provide greater insight and possibly reduce the underrepresentation of African Americans in IT. Future research can provide information about training, perceptions, and possibly lack of information about the field.

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APPENDIX A. ELECTRONIC CONSENT FORM

2. Consent Form

* 1. Please make your selections below

☐ Yes, I agree to participate in this correlational study of Computer Literacy Levels among African American men and the Decision to become Information Technology Professionals, and I have sufficient information to make this decision about participation. I have read the description of the study; understand the purpose of my participation, and my role in the study. I am aware that my participation will be kept confidential and am free to discontinue this process at any time. By agreeing to participate, I can now access the survey.

☐ Yes, I am at least 18 years of age

☐ No, I do not agree with the terms and do not wish to participate in this survey

.

3. Demographic Questions

This section asks basic questions about you. Please read all the questions and select the answer that best describes you.

* 1. What is your age group?

○ 18-25

○ 26-30

○ 31-35

○ 36-40

○ 41-45

○ 46-50

○ 51-55

○ 56 and over

* 2. Are you Male or Female?

○ Male

○ Female

* 3. What is the highest level of education completed?

○ Never attended school

○ Grades 1 – 8 (Elementary)

○ Grades 9 -11 (Some high school)

○ Grade 12 or GED (High School Graduate)

○ College 1 to 3 years (Some college or technical school)

○ College 4 years (College graduate)

○ Graduate School (Advanced Degree)

* 4. What is your yearly income

○ Less than $10,000 per year

○ $10,000 - $20,000

○ $20,000 - $30,000

○ $30,000 - $40,000

○ $40,000 - $50,000

○ $50,000 - $60,000

○ $60,000 -$70,000

○ $70,000 – 80,000

○ $80,000 - $90,000

○ $90,000 - $100,000

○ More than $100,000 per year

* 5. What is your total Household Income

○ Less than $10,000 per year

○ $10,000 - $20,000

○ $20,000 - $30,000

○ $30,000 - $40,000

○ $40,000 - $50,000

○ $50,000 - $60,000

○ $60,000 -$70,000

○ $70,000 – 80,000

○ $80,000 - $90,000

○ $90,000 - $100,000

○ More than $100,000 per year

* 6. What is your current marital status?

○ Married

○ Divorced

○ Widowed

○ Separated

○ Never been married

○ A member of an unmarried couple

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* 7. What is your race?

○ American Indian or Alaska Native

○ Hawaiian or Other Pacific Islander

○ Asian or Asian American

○ Black or African American

○ Hispanic or Latino

○ White or Caucasian

○ Other

* 8. What is your Employment Status?

○ Employed for wages

○ Self-employed

○ Out of work for more than 1 year

○ Out of work for less than 1 year

○ A homemaker

○ A student

○ Retired

○ Unable to work

＊9. What is your occupational field?

○ Financial/Accounting

○ Law Enforcement

○ Transportation

○ Entertainment

○ Marketing

○ Sanitation

○ Real estate

○ Food Service

○ Executive/Senior Managerial

○ Managerial

○ Medical/Dental

○ Engineering

○ Construction

○ Machinist

○ Plumber/Electrician

○ Retail

○ Administrative

○ Maintenance

○ Teacher

○ Professor

○ IT/Computer Professional

○ Other

＊10. How many computers are in your household?

○ No computer in the household

○ 1

○ 2

○ 3

○ 4 or more computers in the household

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∗ 11. How many hours a day do you have access to a computer

◯ No access to a computer

◯ 1 – 4 hours a day

◯ 4 – 8 hours a day

◯ 8 – 12 hours a day

◯ 12 or more hours a day

∗ 12. Did your current or most recent position require you to have a knowledge of computers when you started?

◯ Yes

◯ No

∗ 13. Did your ability or inability to use a computer impact your decision of choosing your career path?

◯ Yes

◯ No

∗ 14. Does your current or most recent position require you to have a high level of knowledge about computers?

◯ Yes

◯ No

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4. Computer Literacy Assessment

Please take your time and read each question fully. Answer each question honestly and to the best of your ability. For each question, select a answer that best describes your skill level ranging from Strongly Disagree to Strongly Agree.

* 1. Please Select one answer for each row.

	I cannot perform the task	I can perfom the task with assistance	I can perfom the task	I can perfrom the task somewhat easily	I can perform the task very easily
I can turn a computer on and turn off	◯	◯	◯	◯	◯
I understand and use the functions of the left and right mouse buttons	◯	◯	◯	◯	◯
I know how to adjust monitor properties (resize, change display properties)	◯	◯	◯	◯	◯
I can name one input device and one output device	◯	◯	◯	◯	◯
I know what an "icon" is and what to do with it	◯	◯	◯	◯	◯
I know how to use a mouse to "drag" an item	◯	◯	◯	◯	◯
I know what a cable modem is used for	◯	◯	◯	◯	◯
I can identify Microsoft Word , Microsoft Excel or other Word processing and Spreadsheet applications.	◯	◯	◯	◯	◯
I know how to compose, send, reply, and forward email messages	◯	◯	◯	◯	◯
I have used Internet Explorer, Firefox, or other web browsers to access the Internet	◯	◯	◯	◯	◯
I know how to reboot my computer without pressing the power button or unplugging it	◯	◯	◯	◯	◯
If I obtain new software on a CD or via download, I know how to run the basic installation	◯	◯	◯	◯	◯
I know how to open up more than one program at a time and move quickly between them	◯	◯	◯	◯	◯
I know how to save my files to a hard drive or removable device	◯	◯	◯	◯	◯

Computer Literacy Self-Assessment Survey Field Test

1. Did you read the terms and conditions outlined in the form above? (PLEASE DO NOT ANSWER THE QUESTIONS SIMPLY REVIEW THE TERMS AND CLICK NEXT TO GO TO THE NEXT PAGE)

◯ Yes, I read the terms and conditions of the agreement and wish to continue to the consent form

◯ No, I DID NOT read the terms and conditions of the agreement and DO NOT wish to continue to the consent form

2. Consent Form

1. Please make your selections below (PLEASE DO NOT MAKE A SELECTION SIMPLY REVIEW THE CHOICES AND CLICK NEXT TO GO TO THE NEXT PAGE)

☐ Yes, I agree to participate in this correlational study of Computer Literacy Levels among African American men and the Decision to become Information Technology Professionals, and I have sufficient information to make this decision about participation. I have read the description of the study; understand the purpose of my participation, and my role in the study. I am aware that my participation will be kept confidential and am free to discontinue this process at any time. By agreeing to participate, I can now access the survey.

☐ Yes, I am at least 18 years of age

☐ No, I do not agree with the terms and do not wish to participate in this survey

3. Demographic Questions

This section asks demograpic questions about you. Please read all the questions and select the answer that best describes you.(PLEASE DO NOT ANSWER THE QUESTIONS SIMPLY REVIEW THE QUESTIONS AND CLICK NEXT TO GO TO THE NEXT PAGE)

1. What is your age group?

◯ 18-25

◯ 26-30

◯ 31-35

◯ 36-40

◯ 41-45

◯ 46-50

◯ 51-55

◯ 56 and over

2. Are you Male or Female?

◯ Male

◯ Female

3. What is the highest level of education completed?

◯ Never attended school

◯ Grades 1 – 8 (Elementary)

◯ Grades 9 -11 (Some high school)

◯ Grade 12 or GED (High School Graduate)

◯ College 1 to 3 years (Some college or technical school)

◯ College 4 years (College graduate)

◯ Graduate School (Advanced Degree)

4. What is your yearly income

◯ Less than $10,000 per year

◯ $10,000 - $20,000

◯ $20,000 - $30,000

◯ $30,000 - $40,000

◯ $40,000 - $50,000

◯ $50,000 - $60,000

◯ $60,000 -$70,000

◯ $70,000 – 80,000

◯ $80,000 - $90,000

◯ $90,000 - $100,000

◯ More than $100,000 per year

5. What is your total Household Income

◯ Less than $10,000 per year

◯ $10,000 - $20,000

◯ $20,000 - $30,000

◯ $30,000 - $40,000

◯ $40,000 - $50,000

◯ $50,000 - $60,000

◯ $60,000 -$70,000

◯ $70,000 – 80,000

◯ $80,000 - $90,000

◯ $90,000 - $100,000

◯ More than $100,000 per year

6. What is your current marital status?

◯ Married

◯ Divorced

◯ Widowed

◯ Separated

◯ Never been married

◯ A member of an unmarried couple

7. What is your race?

◯ American Indian or Alaska Native

◯ Hawaiian or Other Pacific Islander

◯ Asian or Asian American

◯ Black or African American

◯ Hispanic or Latino

◯ White or Caucasian

◯ Other

8. What is your Employment Status?

◯ Employed for wages

◯ Self-employed

◯ Out of work for more than 1 year

◯ Out of work for less than 1 year

◯ A homemaker

◯ A student

◯ Retired

◯ Unable to work

9. What is your occupational field?

◯ Financial/Accounting

◯ Law Enforcement

◯ Transportation

◯ Entertainment

◯ Marketing

◯ Sanitation

◯ Real estate

◯ Food Service

◯ Executive/Senior Managerial

◯ Managerial

◯ Medical/Dental

◯ Engineering

◯ Construction

◯ Machinist

◯ Plumber/Electrician

◯ Retail

◯ Administrative

◯ Maintenance

◯ Teacher

◯ Professor

◯ IT/Computer Professional

◯ Other

10. How many computers are in your household?

◯ No computer in the household

◯ 1

◯ 2

◯ 3

◯ 4 or more computers in the household

11. How many hours a day do you have access to a computer

◯ No access to a computer

◯ 1 – 4 hours a day

◯ 4 – 8 hours a day

◯ 8 – 12 hours a day

◯ 12 or more hours a day

5. Request for a copy of the survey

If you would like to be notified of the final results of the study, you are welcome to leave you email address for a copy to be sent to you. (PLEASE DO NOT FILL IN ANY INFORMATION SIMPLY REVIEW THE TERMS AND CLICK NEXT TO GO TO THE NEXT PAGE)

1. Email Address (only if you want a copy of the final results)

Please note: Your email address will not be used for any other reason

2. Please feel free to provice any comments, questions, or concerns

Computer Literacy Self-Assessment Survey Field Test

6. What did you think of the survey?

Please take this opportunity to provide your feedback on the survey, including thoughts on wording, understandability, length, or anything that came to mind

1. Your thoughts, comments, and concerns on this survey are greatly appreciated.

7. Thank you!

Thank you for your time and participation in this survey!

APPENDIX E. TERMS AND CONDITIONS

1. Survey Terms and Conditions

CAPELLA UNIVERSITY
225 South 6th Street, 9th Floor
Minneapolis, MN 55402

GRADUATE SCHOOL RESEARCH STUDY:

Doctoral Dissertation Title:

A CORRELATIONAL EXAMINATION OF AFRICAN AMERICAN MEN AND THE DECISION TO BECOME INFORMATION
TECHNOLOGY PROFESSIONALS

Terms and Conditions of Participation

Background: This is a request for you to participate in this research study. This consent form consists of an
agreement of your willingness to participate in the study. This study is part of the dissertation and research study
titled above. Dr. Lawrence Ness PhD supervises this research effort. This is a quantitative study to examine the
extent, if any, to which a relationship exists between factors that may or may not cause high or low computer
literacy levels and the decision to become an IT professional.

There are no incentives provided in exchange for participation, but there is a hope this study can provide insight
into the strengths and weaknesses in organizations, society, and educational systems to gain a better
understanding of the relationship of computer literacy levels among African American men and the decision to
become an IT professional.

Risk/Benefit: There are no known risks associated with this study. Your participation and personal information will be
unknown to the researcher and is completely anonymous. The benefits which may be reasonably expected to result
from this study is increased knowledge of relationships or lack thereof between computer literacy level among
African American men and how it influences or fails to influence the decision to become an IT professional.

Voluntary: Your participation in this research is voluntary. You have the option of discontinuing your participation of
the survey at any time without any consequences. Your opinions are important and respected.

Purpose: The purpose of this research is to examine the extent, if any, to which a relationship exists between
factors that may or may not cause high or low computer literacy levels and the decision to become an IT
professional. If you are between the ages of 18 – 72, African American, have been employed or currently employed,
living in the United States and have the ability to access this web site you meet the standards for being part of the
research project.

Confidentiality: Information from the research process is confidential. A computer program will receive the
information and code your responses. Not even the researchers will be provided with any identifying information
regarding you, unless you choose to be in communication with the researcher and or request a copy of the
completed study. The web site will be password protected, the answers will be securely stored, and the results will
be accurately reported. Upon completion of this project, the information will be backed up to a portable drive with
encryption and secured in a locked fireproof safe in the researcher's office.

If you choose to participate in this survey, it will take about 10-15 minutes from start to finish. There are sections
of this survey to complete 1) the general computer literacy questionnaire and 2) demographical/background
information. Your responses will be agreement on a 5 point Likert scale ranging from (0 I cannot perform the task – 4
I can perform the task very easily). The other questions deal with background information.

Questions:If you have any questions about your rights as a research participant or any concerns about theresearch
process, or if you'd like to discuss an unanticipated problem related to the research, please contact the Capella
Human Research Protections Office at: 1-888-227-3552, extension 4716. Your identity, questions, and concerns will
be kept confidential. For any other questions and/or concerns,you may contact the researcher at
elynn@optonline.net or 732 300-5569. Also feel free to contact the supervisor of this research project at
lawrence.Ness@Faculty.Capella.edu or at 1-888-CAPELLA.

* 1. Did you read the terms and conditions outlined in the form above?

◯ Yes, I read the terms and conditions of the agreement and wish to continue to the consent form

◯ No, I DID NOT read the terms and conditions of the agreement and DO NOT wish to continue to the consent form

5. Request for a copy of the survey

If you would like to be notified of the final results of the study, you are welcome to leave you email address for a copy to be sent to you.

1. Email Address (only if you want a copy of the final results)

Please note: Your email address will not be used for any other reason

2. Please feel free to provide any comments, questions, or concerns