

2015

Socioeconomic Challenges Faced by African American Men Entering the Information Technology Industry

Melvin Smith
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Walden University

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Melvin Smith

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Walden University
2015

Abstract

Socioeconomic Challenges Faced by African American Men

Entering the Information Technology Industry

by

Melvin Smith

MA, University of Phoenix, 2006

BS, University of Phoenix, 2003

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Information Systems Management

Walden University

June 2015

Abstract

African American men experience impediments when entering the field of Information Technology (IT), which may portend the disappearance of this ethnic group from the technology-driven work force of the future. The purpose of this phenomenological study was to investigate the socioeconomic factors faced by African American men from their own viewpoints. With this goal in mind, three research questions were studied focusing on the availability of IT resources; the quality of science, technology, engineering, and math (STEM) based education; and existing hiring practices within the IT industry. The conceptual framework for this study was the critical theory perspective, which provided an understanding of real and perceived problems of African American men attempting to enter the field of IT. To facilitate the collection of data for this study, a Web questionnaire program was used. The data analysis process was a 3-phase coding method which included open, axial, and selective coding in order to identify emergent themes such as: racial discrimination, economic hardships, employment opportunity, interpretations from job seeking experiences, the effects of unfulfilled needs, and inadequate access to IT. The data analysis strategy used for this research was the homogeneous sampling method, which made it possible to choose a target population of African American men enrolled in the City Colleges of Chicago who have sought employment in the IT field. The findings from this study have implications for social change by illuminating the experiences of previously-underrepresented African American men in the IT industry.

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Entering the Information Technology Industry

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Dedication

First and foremost, I dedicate this study to my Lord and Savior Jesus Christ, who has provided me with the wisdom, courage, strength, and conviction to not only conduct this study, but to face the obstacles of life with the grace that He has provided me. To my wife, who has stood by my side through this long journey and always made me believe I was good enough to accomplish my goals, even when I sometimes did not believe myself. To my mother, who placed the idea in my head that I could acquire the first Doctorate degree in my immediate family, who taught me to stand up for my convictions, who taught me to be responsible, and to never give up on reaching for my goals in life. To my uncle Malvin, who no matter what, taught me how I should conduct myself as a man, the importance of taking care of one's family, and how a real man deals with adversity when times get hard. To my brother, who was always there for the 'real conversations' and never let me forget that we were the *special ones* who were meant to accomplish great things in this life. To my son, who I have strived to show that great things really can be accomplished, in order that he accomplish great things, and show his children how to do the same. And finally, to all of my cousins, my niece and nephew, and my grandchildren, I dedicate this study to each of you knowing that I am not the only one... the potential to attain greatness runs deeply within us all.

Acknowledgments

I would like to give a very special thanks to my dissertation chair, Dr. Judith Forbes. For every step that I took during this dissertation process Dr. Forbes has provided me with guidance, knowledge, and direction, which ultimately led me on the proper path for successfully completing this project. I appreciate all she has done to help me on this journey, not the least of which was her patience, support, candor, and professionalism, which I definitely needed to overcome the many challenges involved for a study of this magnitude.

I would also like to thank my second committee member, Dr. Walter McCollum for his timely feedback and very useful recommendations. More importantly, I acknowledge Dr. McCollum as the person who first introduced me to the "So what" – "Who cares" concept when writing an academic paper. Although I was taken aback by this concept initially, it has served as a focal point during this entire research project, which motivated me to seek out the social significance of my topic and how I could potentially impact social change through my research.

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Chapter 1: Introduction

African American men face numerous challenges when attempting to acquire employment in the information technology (IT) industry (Grimmett, 2010; Harper-Anderson, 2008; Smith & Joseph, 2010). Whether these challenges were based on education, economic conditions, or unavailability of IT-based resources, the fact remains that significant disparity exists with relation to the number of African American men versus other races and ethnicities employed in IT. This premise is supported by the U.S. Department of Labor (2013) who stated that although the IT industry was expected to grow by 2.1 million additional jobs from 2010 to 2020, African Americans represented only 5.9% of this industry as of 2011. As of 2008, even in the case of African American men who have earned Master's degrees in Science, Technology, Engineering, and Math (STEM), only 4.9% found employment, compared to 67.2% who were White, and 21.5% who were Asian (National Science Foundation, 2012). These figures elucidated collectively that despite the exponential escalation of the IT industry in terms of economic growth, increased productivity, and self-empowerment, an underrepresentation of African American men in this field would be imminent.

Other theorists who studied this problem contended that the underrepresentation of African American men in the field of IT was due to nonselection for employment by companies due to social or racially motivated biases. For example, Strayhorn (2010) argued that one of the primary reasons why African American men have not and will not be included in the aforementioned growth of available IT positions stems from the fact that this ethnic group is perceived by some as an *at-risk population* (i.e. uneducable,

endangered, and dysfunctional) due to unstable environment factors. Likewise, Smith and Joseph (2010) showed that a common belief existed among several employers who did not select African Americans for employment due to the perception of general belligerence or presumed inability to adhere to management policies. Additionally, the Department of Professional Employees (DPE, 2012) demonstrated irregular hiring practices of African Americans as corroborated by the fact that only 10.8% of the labor force represented this ethnic group as of 2011. However, the perceptions, responses, and decisions of African American men who deal with these problems when seeking employment in the IT industry have not been extensively studied. By focusing on the internal implications of this topic as opposed to the outside forces that impact the overall problem, a unique opportunity was provided to make a significant contribution to the field of management regarding the problems associated with African American men attempting to enter the IT workforce. With this information in mind, the purpose of this investigation was to identify factors that relate to African American men at the college level who seek to acquire jobs in the IT industry that they have trained for. Unlike other studies relating to this phenomenon, this research concentrated specifically on the perceptions of African American men who are trained and qualified in IT, yet have difficulty obtaining IT careers due to possible socioeconomic factors.

In providing a context for this study, the major sections included for this research were the foundation of the study, the background of the problem, as well as the problem and purpose statement. Other major sections included in this chapter were comprised of the rationale for the study, the research questions from which this study is based on, and

the conceptual framework of this examination. As final aspects of this exploratory examination, the major sections of the nature of this study, terms and definitions used in this research, assumptions and limitations, as well as the significance of this study were included.

Foundation of the Study

Despite the rampant growth of the IT industry in recent years, a great deal of information exists that provides evidence that African American men continue to be significantly under-represented in high tech fields. To illustrate both the growth of information technology and the underrepresentation of African American men in this field, several sources were drawn upon. For example, Simmons (2011) found that jobs such as information technology support specialists, computer programmers, and network administrators are expected to increase much faster than other job fields. With technology growing at exponential rate in society today, many businesses managers are attempting to leverage these advancements in order to increase the proficiencies and profitabilities of their companies (Keller, 2013). This assertion was supported by the results yielded from a survey conducted by the ManpowerGroup (2013) whose survey results indicated that 49% of U.S. organizations that rely on IT recognize that talent shortages impact their abilities to serve clients and customers. Even so, information derived from the National Black Information Technology Leadership Organization (NBITLO) website suggested that many African Americans are categorically eliminated from this field because they are not ready for competition in the modern competitive market (National Black Information Technology Leadership Organization, 2012).

Probable reasons why African Americans, and specifically African American men, are not properly prepared to compete in fields such as the IT industry have been extensively examined. In one such study, the Educational Testing Service (ETS) found that numerous problematic factors relating to families, schools, communities, and public policy all played a significant role in creating "the perfect storm of educational and economic negligence that society now must seek to counter regarding African American men" (Educational Testing Service, 2011, p. 2).

With so many problems being confronted by African American men seeking careers in the field of IT, what may be imagined is that this ethnic group faces oppositions based only upon their socioeconomic origins. However, even if these obstacles have been overcome for many African Americans, the entry into IT industry presents another unique set of challenges. From a purely sociologic perspective Rosenchild (2010) argued that the problems faced by African Americans attempting to enter the IT field have even deeper connotations due to inherent social and economic practices embraced by the IT industry. Rosenchild concluded that "IT seems to have become a White only Club that will accept a foreign employee before an African American professional with the same qualifications, experience, certifications, and interpersonal skills" (para. 1). These allegations were supported from data derived from the Department of Professional Employees (2012) who stipulated that as of 2011, the IT industry has an erratic history of hiring African Americans, which is apparent by the 10.8% representation of the labor force. With information such as this in mind, yet another challenge was found that African American men seeking careers in the field of IT have to contend with, which was

racism. Albeit, this type of racism was not the overt type (historically considered as hatred for another), but rather a circuitous type of racism which was not so clear in meaning or intent, due to the ambiguity gained from the interpretation of standardized levels of achievement and proficiency in the IT industry. Further support of Rosenchild's world view of the numerous systemic problems facing African American workers was provided by Chakraborty and Remington (2011), who explained how other external forces such as the impact that offshore outsourcing of IT services had on the economy in the United States. According to Chakraborty and Remington the outsourcing of IT jobs has displaced 2 million blue color jobs in the United States, but created 43 million high tech IT jobs in other service areas. Chakraborty and Remington further explained that outsourcing has caused in the displacement of American based IT resources and that IT positions once shielded from foreign competition are now vulnerable because these jobs could be performed for much, less in terms of cost, in low wage countries such as India and China. Additionally, outsourcer employees were denied the opportunity for skill development and experiences regarding the task that was being outsourced (Chakraborty, 2001). With a problem such as this having negative implications on the entire IT industry in America, the research conducted by Valiente (2012) delved even deeper into this issue by explaining how offshore outsourcing has impacted African Americans specifically. As explained by Valiente, large segments of the African American population are now unemployed due to the outsourcing of technological production. While it is recognized that a large scale problem such as offshore outsourcing represents a dilemma for the entire IT industry and has played a negative role in the lives of all American-based IT

workers regardless of race, it must be equally recognized that the consequences of such problems have served to exacerbate the already numerous challenges encountered by African Americans seeking IT positions in the United States.

Despite the contributions to the field of management that the preceding research has provided, what has failed to be examined by these studies are the implications derived from the lived experiences and perceptions of trained and educated African American men who have sought, or are seeking, employment in the various fields of IT. In this study, I provide a contribution to the management field, which can be defined as the realization of organizational goals through the planning, organizing, leading and controlling functions (De Janasz, Dowd, & Schneider, 2009). By focusing on this previously unrecognized socially significant aspect of the overall problem facing African American men attempting to enter the IT industry, this study attempted to bridge a gap in available research explaining another aspect of the underrepresentation of African Americans in the field of information technology.

Background of the Problem

No matter what particular field (e.g. programming, database administration, web design, etc.) that exists in the IT industry, job opportunities are growing at an incredible rate. According to Csorny (2013), IT job opportunities are expected to increase at a faster rate than all other industries in the professional sector by up to 22% over the next 10 years. Despite this exponential growth, however, researchers have indicated that African American men in the United States will not be filling these job positions. Simmons (2011) argued that high-tech computer jobs will increase much faster than average;

unfortunately, many young black people, particularly black males, cannot pursue these technology careers due to educational and economic factors. Strayhorn (2010) asserted that one of the key predictors as to why African American men have not and will not be included in the aforementioned growth of available IT positions stems from the fact that African American men are seen as products of a stereotypical cultural environment. According to Strayhorn "Black men are often viewed as an at-risk population in education and tend to be described with words that have negative connotations such as uneducable, endangered, dysfunctional, dangerous, and lazy" (p. 6). Strayhorn's research into "perpetuate negative stereotypes" (p. 6) provided a bridge that associates not only the educational and economic challenges faced by African American men seeking employment in the field of IT, but also the social stigma that seems to be more often than not, associated with this ethnic group.

Taking into account that the problems with African American men attempting to enter the IT industry did not start when they became adults, an investigative analysis was required to attempt to identify approximately at what ages in their developments this problem actually started. A possible origin to this quandary was traced back to the lack of early computer learning in urban elementary schools. From research conducted by Simmons (2011) it was stated that a pipeline of African American students who pursue technical degrees has to be started in well in advance of the decision to actually attend college. In this regard, the Educational Testing Service (2011) made the argument that Black boys in urban ghettos are being failed by America as a whole due to the fact that many schools are now nothing more than holding tanks for a population that is generally

perceived as having statistically higher probability of walking the corridors of prison than the halls of college. Assertions such as these were supported by earlier research conducted by Gabriel (2010) who elucidated that only 12% of Black 4th grade boys are competent in reading, compared to 38% of White boys, and only 12% of Black 8th grade boys are adept in math, compared to 44% of White boys. With information technology being a field that demands that workers be both highly skilled and well trained, it can easily be construed that it is very difficult, if not impossible, for African American men who do not have the prerequisite skill set to be proficient in IT get a job in this industry. Simmons corroborated this particular world view by explaining that an important requirement for pursuing a technology career is education, because many jobs demand at least a bachelor's degree in technical fields such as computer science or computer engineering. What Simmons did not elucidate on, however, was the not so uncommon likelihood that many African Americans have such degrees, yet still are underrepresented in the information technology industry.

Another problem not clearly defined in current research is the underrepresentation of African American men attempting to enter the IT industry due to racism. Burleson (2013) asserted that "If we let raw numbers tell the story, minority under representation and racism appears to be especially prevalent in IT, lurking just under the covers, hidden and well-disguised behind rigorous education requirements and institutional barriers" (para. 1). Coleman (2012) stated that "One has to question why people remain blind to the possibility of racism existing in their fields" and that "Simply stepping behind a keyboard will not delete all conscious and sub-conscious feelings about other races"

(para. 9). From the worldviews of both Burleson and Coleman, the intricacies of the term *covert racism* spoken of earlier in this study were made clearer and also provided insight as to how this particular barrier could impede the career progression of African Americans, or any person considered as undesirable, seeking employment in the field of IT. For example, if an employer chose not to hire a potential employee who was identified during an interview process as having the prerequisite education or experience for a position, possible reasons for non-selection could include the following justifications:

- The person has the prerequisite education but not the prerequisite experience.
- The person has the prerequisite experience but not the prerequisite education.
- The person has both the prerequisite experience and education, but does not possess the industry specific IT certifications for which he or she is seeking employment in.
- The person has all of the required prerequisites for this position, but was not chosen as being the best candidate for this position.

Based upon justifications such as the ones provided above, if an employer decided to do so, a possible means would be provided to not hire even the most educated or qualified applicants based on any number of reasons, including racism. Admittedly, a situation such as this would be very hard to prove. With examples such as this in mind, it must be understood that although studies have been previously conducted that addressed racism as one of the barriers faced by African American's in information technology (Houston-Brown, 2002 and Lynn, 2009); a gap in knowledge still exists concerning this

issue. From the results of this study, An opportunity exists for not only African American men to take advantage of an industry which has a need for IT professionals but for significant social change concerning how the IT industry selects qualified candidates to fill an ever increasing talent shortage for high-tech positions.

Expectations from Information Technology Employment

In 2010, the national graduation rate for African American male students attending high school was only 52% (The Schott Foundation for Public Education, 2012). From this statistic a pattern emerges regarding what the potential income will be for a high-school dropout as opposed to a college graduate. For example, as explained by a 2012 survey conducted by the U.S. Bureau of Labor Statistics, the median weekly earnings of a person without a high school education was \$471, as compared to a person with a Bachelor's degree whose weekly median income was \$1066. This delineates the difference between having a low level job in IT and having a high level career in the information technology industry. As a case in point, working for a company such as Best Buy® (a multinational consumer electronics corporation based in America) a person seeking an IT job might consider working for this company's Geek Squad department. As gleaned from information from one of the job openings from the Best Buy® web site (2013), for a position such as this the basic qualifications are...

- A High School diploma or equivalent
- The Ability to work a flexible schedule, including Saturdays as needed
- 6 months phone-based customer service experience
- 6 months Microsoft Office experience, including Excel and Outlook

Not so surprisingly, the average salary for a job such as this is \$9 - \$13 an hour (approximately \$28,000 a year) based on national salary trend estimates, while working at a fast food franchise such as Mc Donald's® offered nearly the same salary, paying its employees \$23,000 a year (Indeed, 2013). From this supporting evidence it is argued that employment in a low level IT job, at nearly minimum wage, is not the general goal of college students who have earned a four year Bachelor's degree in computer technology. Nor is employment in jobs such as these the focus of this study. Instead, the underlying motivation of this study was based on the attainment of IT related occupations that can be considered as career employment opportunities. For the purposes of this study, career employment opportunities were considered as jobs that provide a substantial wage commensurate to the education, skills, and knowledge acquired by the individual. In this regard, numerous IT related occupations exist that met this criterion. Examples of such IT related occupations as provided by a 2010 census conducted by the U.S. Bureau of Labor Statistics (2012) include fields such as computer programmers - \$71,380, computer support specialists - \$46,260, and Database Administrators - \$73,490. A more detailed listing of IT related occupations can be found in Appendix A of this study.

Without the prerequisite education and training demanded by employers to gain employment in IT related occupations such as provided above, the prospects for attaining such positions is severely limited. Conversely, given the education, training, and opportunity to acquire employment in IT positions such as these, it should be reasonably assumed that anyone, including African American men, could potentially be selected for employment in these IT fields. What this study focused on were the reasons why African

American men seeking employment in lucrative IT positions have not received either the necessary education, training, and (in some cases) opportunity to fill these positions.

Problem Statement

The problem addressed in this study was that African American men have not been able to enter the job market as IT professionals on a level commensurate to other races. This assertion was supported by Morgan, Marshall, and Moloney (2004) whose research brought to light the surprising statistic that African Americans accounted for less than 3.2% of the IT professionals in the US compared to White males who accounted for 67.9% of the total IT population. The findings of Grose (2007) added further evidence of a problem in this area by reporting that over the prior decade a 26% decline of African American men in IT-related professions had occurred. In 2008, similar findings were identified by the National Science Foundation whose data showed that African Americans account for only 4.2% of IT professionals in the United States while White males still accounted for greater than 67%. As might be expected, given the historical trend of employment for African Americans in the field of information technology, not much has changed in recent years regarding the underrepresentation of African Americans in IT. Thomas (2014) enumerates this fact by explaining that based on studies from the National Black Information Technology Leadership Organization (NBITLO) and the U.S. Bureau of Labor Statistics, African Americans hold less than 8% of all IT jobs in United States, and fewer than 3% of leadership positions in the IT workforce. What can be construed from these statistics is that a serious dilemma exists regarding the education, opportunity, and support afforded to African American men seeking careers in

IT. As explained by Lewis et al. (2010) one of the possible causes for the underrepresentation of African American men in the IT industry and many other fields, stems from the fact that outside of a few committed organizations, no real consideration for this set of issues currently exists. Lewis et al. explains further that "while researchers, governmental leaders, faith-based leaders, and others intent on improving the quality of life for Black males exist, their efforts are often too uncoordinated to match the comprehensive nature of the problem" (p. 2). Ashcraft (2013) found that whether people are aware of it or not, rarely is life experienced simply as women or men, but rather as White women, African-American men, poor immigrant, and so on, which in turn shapes the self perception's of those individuals and their plans for the future. By delving into a study such as this, much-needed insights were provided that can potentially help to bridge a gap in knowledge that currently is extant concerning this topic.

Purpose Statement

The purpose of this qualitative phenomenological based study was to investigate socioeconomic factors faced by African American men, from their own view-points, attempting to enter the information technology industry. In doing so, this analysis focused on the understanding of the experiences of African American men from the perspective of the individual, "bracketing taken-for-granted assumptions and usual ways of perception" (Lester, 1999, p.1). By addressing actual experiences encountered by African American men attempting to obtain careers in the field of information technology, the potential to provide a significant contribution to the field of information systems management was provided. Although existing research exists regarding the

numerous problems faced by African Americans who are, or have been, employed within the information technology field, what has not been addressed by current research are the specific problems faced by African American men seeking positions in the IT industry. To address issues such as these, this study examined dynamics such as the availability of quality technology-related resources, STEM based education, and existing hiring practices currently in place within the IT industry, as they relate to the experiences of African American men enrolled in the City Colleges of Chicago who have sought or are seeking employment in the fields of IT. From the conclusions derived from this research it is anticipated that this research can provide a significant contribution to the growing body of knowledge concerning the reasons why the digital divide spoken of by many researchers and scholars in terms of race has occurred.

Rationale

This qualitative study of the socioeconomic problems faced by African American men attempting to enter the IT industry is significant for several reasons. Foremost is the existing gap in literature that explains many of the factors that negatively impact the ability of African American men from acquiring jobs in these high tech fields, but fails to examine actual perceptions and experiences of this ethnic group in this regard. As was made apparent throughout the course of this research, a relationship exists between the problems encountered by African American men seeking employment in the field of IT and the perceived/actual implications derived from these issues. Secondly, this study challenged preconceived beliefs, perceptions, and stereotypical associations typified by authors such as Burleson (2013) and Strayhorn (2010) regarding African American men

and the ability of this specific population to compete and be selected for employment in IT positions. Lastly, a prominent goal of this inquiry was to identify and examine some of the psychological aspects involved in the hardships associated with seeking careers in the IT industry for African American men and the resulting consequences of career decisions made because of the perceived scarcity in employment within this field. By focusing on these previously unidentified dynamics as the core of the problems associated with African American men relating to this issue, this study provided significant information having the potential to lessen the underrepresentation of educated and qualified minorities in the field of information technology. In creating such a foundation, this investigation also provided information for future researchers who wish to add to or build upon this study.

Research Questions

This exploration of the challenges faced by African American men attempting to enter the IT industry was addressed by the investigation of the following questions:

1. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry regarding the availability of quality technology-related resources?

For the purposes of this study, the term 'quality technology-related resources' was defined as tools, equipment, methodologies, and technology related sources (e.g. books or online websites) that promote rich technology experiences with the goal of improving the potential for student engagement and general knowledge of technology in a classroom environment.

2. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry regarding the quality of STEM based education through caring and knowledgeable teachers?

For the purposes of this study, the term 'quality STEM based education' was defined as an education that delves into interdisciplinary and applied approaches that have the greatest potential to result in real-world, problem-based learning (The California STEM Learning Network, 2012). The term 'caring and knowledgeable teachers' was defined as educators who demonstrate enthusiasm for teaching, knowledge in their chosen fields, and persistence in teaching their students.

3. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry regarding the existing hiring practices currently in place within the IT industry?

Conceptual Framework

This study was conducted through the lens of Fay's (1987) critical theory perspective, which is concerned with the empowerment of people to rise above the limitations placed on them by gender, class, or race (Gentry & Harrison, 2010). Fay went on to explain that a dedication to an important social science is an effort to understand the oppressive features of a people such that this understanding stimulates its audience to change their society and thereby set themselves free. The study conducted by McCollum (2004) which examined the distinct contemporary needs of African American culture, and African American men specifically, bolstered and concentrated Fay's earlier assertion. From McCollum's worldview concerning the empowerment of college going

African American men, it was argued that "the few Black men who decide to enrich their lives must be helped along, so with their successes, encouragement for others can be obtained" (p. 65). From supporting opinions such as this, Fay's assertion regarding the critical theory perspective could potentially be realized for African American men. Contrary to what might be thought by some, the critical theory perspective in regards to race and self-empowerment are just as relevant now as it was during the timeframe of the studies conducted by Fay and later by McCollum. The research conducted by Miller (2010) proved to be an amalgamation of many of the views espoused by Fay and McCollum by focusing on the broad values of mutual aid, empathy, and originality as well as the regressive values of assertiveness, relating to associated problems in the field of information technology. According to Miller, a number of implications were extant from the current technological transformation which society has undergone. One of these repercussions from the use of technology revolved around the allegation by Miller that technology has become utterly intertwined in the government's makeup, an integral part of corporate/economic systems, and saturated into our everyday lives (Miller, 2010). Miller also asserted that the technology of the information age was also directly related to social issues that caused individuals to become a secluded producer who separates from others, from the real world, and from that person's true selves (Miller, 2010). Through the use of the critical theory perspective Miller contended that a means to identify inconsistencies, or built-in stresses between the way things are and the way they could be could possibly be addressed from the standpoint of the individual (Miller, 2010). By pursuing this research from the critical theory perspective, with a focus on self-

empowerment, a unique perspective was gained concerning the real and perceived problems faced by African American men attempting to enter the IT industry.

With the availability of quality STEM based education and technology-related resources addressed by Carver (1994) and later by Baber (2012) and Griffin and High (2011) also having an impact on African American men attempting to enter the IT industry, critical theory perspective played a significant role in understanding and potentially overcoming the problems associated with this phenomenon. As explained by Fay (1987) "By offering this complex set of analyses to the relevant group at the appropriate time, a social theory can legitimately hope not only to explain a social order but to do so in such a way that this order is overthrown" (p. 36). In this regard, this study examined the experiences of African American men who have sought or are currently seeking employment in the IT industry in order to extrapolate an emerging design yielding new perspectives for how to deal with this problem.

Nature of the Study

From previous research conducted by Smith (2012) it was pointed out that according to Creswell (2009), the objective of qualitative research is to provide a method for investigating and discerning the connotation that individuals or groups credit to a given social human predicament. Along this same line of reasoning, Creswell (2012) states that it is common practice to use multiple sources of data in some types of qualitative research due to the fact that qualitative researchers usually collect many types of data, such as questionnaires, interviews, observations, and documents, instead of relying on a single data source. In addressing the socioeconomic challenges faced by

African American men attempting to enter the IT industry several possible sources were drawn upon, which included the following:

- Pryor research conducted by doctoral student concerning particulars of the phenomenological research approach in relation to this study.
- Public records from the National Black Information Technology Leadership Organization (NBITLO) database.
- Surveys of selected group of African American men attempting to enter the IT industry.
- Public records from the United States Department of Labor database.
- Public records from the National Science Foundation database.
- Public records from the Department of Professional Employees.

With this goal in mind, the research method that was used to investigate the socioeconomic problems faced by African American men seeking career level employment in the IT field was the phenomenological research approach. As pointed out by Smith (2012), it was identified that Lester (1999) defined the phenomenological research approach to qualitative studies as a methodology focused on the study of experience from the viewpoint of the person, correlating taken-for-granted beliefs and usual ways of perception. Later research provided by Chi-Shiou (2013) explained that phenomenological analysis is apprized by perception and rumination based on concentrated and recurring reading of the accumulated narratives. Having researched both the potential strengths and weaknesses of this methodology as it applies to the topic

of this research I identified that the phenomenological research approach is a highly appropriate means to researching human experiences.

Smith's (2012) previous research also explained the disadvantages of the grounded theory approach by summarizing Moriarty's (2011) position that grounded theory generates theories too small in scale and overlook the influence of the capacious world upon the lives of respondents. With the partial goal of this research being to provide a pivotal building block for future studies that can be analyzed on a large scale, the use of the grounded theory approach in itself would not be a qualitative vehicle which would allow my chosen study to grow in scale, although the utilization of parts of this theory such as triangulation proved to be useful. Lastly, if I wanted at some later date to include quantitative elements into this study to support specific hypotheses, the grounded theory approach would also introduce subjectivities to my research, thereby creating threats to the validity of my study (Smith, 2010).

Smith's (2012) study also cited that, according to Creswell (2009), an ethnographic approach to qualitative research is an investigative strategy in which the researcher examines a whole cultural group in a natural situation over an extended time period by gathering observational and interview data. Due to the fact that the ethnographic approach would take more time than the requirements of this study allows and the specific limitation of this methodology only relying on one or a few people (Mowatt, 2011), this qualitative method would not be conducive to the particular study that I am conducting.

According to information gleaned from Smith's (2012) prior research, an online article written by Colorado State University (2011) identified that one of the major disadvantages of the narrative design in qualitative research is that narrative studies do not answer questions, nor can this method be used to predict prospective behaviors. Another disadvantage of the use of narrative inquiries in qualitative research is that these types of inquiries do not lend themselves well to duplication at another location or time, and are not generalizable (Colorado State University, 2011). Because it is crucial to be able to both replicate my work here and provide answers upon which future studies can use as a basis for further research, the narrative approach would not be appropriate for this particular study. Finally, Smith's (2012) research brought to light that according to Key (1997), numerous disadvantages exist from using the case study method in qualitative research. From Key's assessment, the factors that could create problems for a researcher choosing this particular approach could include the following quandaries:

- The very subjectivity of the inquiry leads to difficulties in establishing the reliability and validity of the approaches and information.
- It is very difficult to prevent or detect researcher induced bias.
- Its scope is limited due to the in-depth, comprehensive data gathering approaches required.

With these potential problems in mind, the case study method could very well create insurmountable obstacles that could have precluded the successful completion of this study. This conclusion was based in part on the assumption that this study involved numerous socially volatile issues that needed to be mitigated throughout the course of

this research. For these reasons, the phenomenological research approach was utilized to collect data from African American men seeking career level positions in the field of information technology.

Definition of Terms

The following terms which have been previously undefined during the course of this research are provided below as these terms are applicable to the context of this study:

African American: Also classified as Black Americans, Afro-Americans, People of Color, or Blacks, are persons born in the United States who have whole or partial ancestry from Africa. (Lynn, 2009, and Merriam-Webster Online Dictionary, 2013)

Broadband: The common term for a very fast connection to the Internet. It allows users to download online entertainment such as video clips and music, listen to digital radio, send e-mail faster and speeds up everything they do online (De-Argaez, 2013).

Cell phone: Also known as a cellular phone or mobile phone, is any portable telephone which uses cellular network technology to make and receive calls (Ware, 2013).

Computer assisted web interviewing (CAWI): An online research technique in which the respondent receives and fills out a questionnaire via internet. CAWI has several advantages which included allowing for quick revisions of online questions and answers and making it possible to reach a larger target of research participants (Institute for Political and Sociological Consulting, 2014).

Data encryption: The mathematical calculations and algorithmic schemes that transform plain-text into cipher-text, a form that is non-readable to unauthorized parties.

The recipient of an encrypted message uses a key which triggers the algorithm mechanism to decrypt the data, transforming it to the original plain-text version (Spam Laws, 2013).

Digital divide: The gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies and to their uses of the Internet for a wide variety of activities (Acılar, 2011).

Digital Media player: A device most normally used for the playing and storing of digital media such as video, audio, and images. These devices can be found in many forms ranging from home theater system or game console that plays audio or video material and/or displays photos to the more common MP3 players such as an iPod® (TheFreeDictionary.com, 2013).

External hard drive: An external hard drive is a portable storage device that can be attached to a computer through a USB (Universal Serial Bus) or FireWire connection, or wirelessly. External hard drives typically have high storage capacities and are often used to back up computers or serve as a network drive (Rouse, 2012)

Information technology (IT): The technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data (Merriam-Webster Online Dictionary, 2013).

Internet: The Internet is a massive public spider web of computer connections. It connects personal computers, mainframes, cell phones, music players, soda pop

machines, car alarms, and even dog collars. All of these computer connections exist for the sake of free information sharing (Gil, 2010).

Mail server: A computer with mail transfer agent (MTA) functions. Mail is exchanged between email servers running special software, which is built around standardized protocols for handling messages and their varied (multimedia) content (Techopedia, 2012).

Mobile technology: Technology that is portable such as laptop and netbook computers, mobile phones and 'smart phones', global positioning system (GPS) devices, and wireless debit/credit card payment terminals. Mobile devices can be enabled to use a variety of communications technologies such:

- Virtual private networks - secure access to a private network.
- Wireless fidelity (Wi-Fi) - a type of wireless local area network technology.
- Bluetooth - connects mobile devices wirelessly.
- 3G, 'third generation' global system for mobile communications (GSM) and general packet radio service (GPRS) data services - data networking services for mobile phones.

Network: A network is a group of two or more computer systems linked together, that include types of networks such as; (a) Local-Area Networks (LANs) which are computers that are geographically close together (i.e. in the same building) and, (b) Wide-Area Networks (WANs) which are computers that are farther apart and are connected by telephone lines or radio waves (Webopedia, 2014).

Off-shoring: the process of shifting one or more business functions to a company based in a low-wage country which is geographically far from the client. Not to be confused with 'outsourcing' which means transferring one or more business functions to a service provider (MicroSourcing International Inc, 2013).

PC: Stands for 'Personal computer'. PCs are what most of us use on a daily basis for work or personal use. A typical PC includes a system unit, monitor, keyboard, and mouse. Most PCs today also have a network or Internet connection, as well as ports for connecting peripheral devices, such as digital cameras, printers, scanners, speakers, external hard drives, and other components (Computer Hope, 2011).

Silicon Valley: An industrial region around the southern shores of San Francisco Bay, California, U.S named from the dense concentration of electronics and computer companies that sprang up there since the mid-20th century, silicon being the base material of the semiconductors employed in computer circuits (Encyclopædia Britannica, 2013).

Smart phone: A smart phone is a general term that refers to a cellular telephone that is more advanced than a feature phone. In general, a smart phone has an operating system that allows a user to do many of the things that were once reserved for a personal computer, such as accessing the Web at higher speeds, viewing/editing documents, downloading files, creating music playlists, or managing multiple email/messaging accounts (AT&T, 2015).

Social networking: Alternatively referred to as a virtual community or social media, a social network is a web site on the Internet that brings people together in a central location to talk, share ideas, make new friends, etc. (Computer Hope, 2014).

Secure Sockets Layer (SSL): is the standard security technology for establishing an encrypted link between a web server and a browser. SSL is an industry standard and is used by millions of websites in the protection of their online transactions with their customers (ssl.com, 2013).

Science, technology, engineering, and mathematics (STEM): The acronym of science, technology, engineering, and mathematics (National Science Teachers Association, 2012).

Uniform Resource Locator (URL): a formatted text string used by Web browsers, email clients and other software to identify a network resource on the Internet. Network resources are files that can be plain Web pages, other text documents, graphics, or programs (Mitchell, 2014).

Universal Serial Bus (USB) Drive: Also known as a flash drive or thumb drive, a USB drive is a plug-and-play portable storage device that does not require rebooting after it is attached, does not require batteries, and is not system dependent. A USB drive is a standard type of connection for many different kinds of devices such as computers, digital cameras, digital tablets, printers, etc. (Fisher, 2013).

Assumptions, Limitations, and Delimitations

Assumptions

In the course of conducting this study, numerous assumptions were made that directed this research. The principal assumption was that the targeted group for this study was interested in obtaining employment in the IT industry. Although it was acknowledged that many African American men at the college level are proficient in information technology, it was only the individuals that were seeking careers in the field of IT that were the target of this examination. The second assumption by the researcher was that participants, whom this research was based on, were representative of the general population. In order for this study to investigate the socioeconomic problems faced by African American men, as a specific ethnicity, it was necessary to collect information from a pool of participants who can be considered representative of this ethnic group. An assumption was also made that the participants in this study provided their honest views, opinions, and lived experiences from the list of questions asked of them. Through the open-ended questions provided by this questionnaire, it was hoped this method of gathering information would incline the participants of this study to provide honest answers to the questions asked of them, which were crucial to the findings of this exploratory research. Lastly, it was assumed by the researcher that the participants in this study would provide input from the list of questions asked of them based solely on the time period that this research was conducted. The importance of asking questions based on the time period of this study was to focus on the time period in which this research was conducted and to not consider views, opinions, and lived experiences from

'pre-college' attempts to seek temporary employment in the field of IT (e.g. a summer job or temporary employment).

As an important mitigating element concerning this study, it was important to acknowledge that this research in no way indicates that African American men are the only group of individuals encountering problems entering the IT industry. In fact, numerous studies are extant which explain similar situations with other ethnicities and genders in this regard (Ashcraft & Blithe, 2009; Griffin & High, 2011; Maheshwari, Pierce, & Zapatero, 2008). However, this particular research focused primarily on African American men, with the goal of adding to the existing body of knowledge that deals with the problems associated with the 'digital divide' as a whole. Further research concerning this phenomenon can possibly provide greater insight concerning this issue not only with African American men, but with all ethnicities and genders.

Delimitations

One of the main delimitations of this research was the treatment of a small sample for the population being studied. By selecting a representative population of African American men from the City Colleges of Chicago to participate in this study, it was understood from the outset that the findings from this research would be limited in scope. However, it was anticipated that the results of this study would meet the criteria as serving as a foundation of research from which future research can be conducted.

Another delimitation concerning the scope of this study was that it does not include the use of any comparison data across demographic groups, nor did this research address perceptions from any other group other than the targeted population of African

American men. Other similar populations such as Hispanics, Asians, or other minority male groups would benefit from studies such as this as it applies to their ethnic backgrounds. Additionally, by broadening the scope of studies such as this, potential transferability could be addressed concerning the problems faced by African American women, providing even greater insight for addressing issues of this nature within the United States.

As a final delimitation of this research, this study did not attempt to provide a statistical analysis of the quantity of African American men attempting to enter the IT industry, but rather focused on the perceptions from the perspectives of the participants. By focusing on this particular line of research, previously unrecognized problems facing African American men in this area were gained. Although it was recognized from the beginning of this study that inherent biases may exist from the use of open ended questions generated from questionnaires as the primary means of gathering information, the breadth of coverage allowed by this approach is ideal for collecting data (Ciotti, 2013).

Limitations

A limitation of this study was that African American men currently in key technology positions were not focused upon during this exploratory research. Although the opinions of African American men already in the IT industry would no doubt be pertinent to this study, the inclusion of this group would introduce too many variables and slant the conclusions drawn by the selected group that this study actually focuses on. In addition to the aforementioned limitation, this particular research was based on the

phenomenological research method, which followed the tenets applied under qualitative research. It was acknowledged that for some of the research questions from this study, greater insight could have been obtained from a statistical analysis such as might be provided from a quantitative study.

Due to the stringent security protocols used by SurveyMonkey in regards to protecting any and all demographic information for selected audiences that choose to answer online questionnaires, follow-up questions are available only for respondents (via the mail server used by SurveyMonkey) and could not be initiated by the person submitting the online questionnaire. This one way means of communication added a limitation to this study in that written responses to the submitted online questionnaire may not adequately provide detailed responses for theme analysis. To deal with such an eventuality, any ambiguous responses received from research participants for this study that did not effectively provide enough detail for theme analysis were not used for this study.

A final limitation impacting the conclusions drawn from this study was the duration of time experiences which were gathered from the participants of this study. With the ever increasing speed in which information technology is advancing combined with the almost day-to-day changes of America's sociopolitical climate, a longitudinal study might have provided more insight regarding the topic of this study. However, due to the in-depth analysis of each participant's experience and the exorbitant amount of time and resources required to conduct a phenomenological study for so long a period, a longitudinal study was not practical. To offset this limitation, the targeted population

was selected from the City Colleges of Chicago who have sought or are seeking employment in the fields of IT, in order to provide the most varied experiences of African American men in this regard.

Significance of the Study

Reduction of Gaps

Although African American men possess the same attributes as other races and genders, numerous circumstances exist that preclude this ethnic group from fully taking part of the opportunities available within the IT industry. For an assertion such as this to have any merit, however, a question that must be asked is "what are some of these circumstances and from where do these conditions originate from relating to African American men and the problems that this ethnic group faces in seeking IT related careers?" These circumstances often originate from youth for African American males because of the following conditions:

The nation's young Black males are in a state of crisis. They do not have the same opportunities as their male or female counterparts across the country. They are more likely to live in single-parent homes and less likely to participate in early childcare programs. As adults, Black males are less likely than their peers to be employed. At almost every juncture, the odds are stacked against these young men in ways that result in too much unfulfilled potential and too many fractured lives. (Lewis et al., 2010, p. ii)

In higher level IT positions, the problems encountered by African American men seeking employment is even more pronounced. This premise is supported by the Leadership Conference on Civil and Human Rights (2013) who made the point that "A digital divide persists between those who have the training and access to technologies and those who are unable to take full advantage of the employment opportunities available in the new economy" (para. 1). The research conducted by Luo (2009) provided information that was just as disturbing by identifying that Black men who are college-educated have struggled compared to White men in that the rate of unemployment for Black male college graduates 25 and older in 2009 was 8.4% as opposed to 4.4% of White male college graduates. By delving into a study such as this, the following insights were provided that can potentially help to bridge the gap in knowledge that currently exists concerning this topic:

- Possibly helping to provide a solution for increased opportunities for young African American men attempting to enter the IT Industry.
- The possibility of increasing the disproportionate number of African American men in the information technology industry by isolating significant aspects that prevent this ethnic group from entering this field.
- Challenging existing social perceptions for how African American men attempting to enter the IT Industry are perceived by employers.
- The possibility of adding to the existing breadth of knowledge concerning what African Americans are looking for in as far as satisfying careers in the information technology industry.

- The potential to provide the basis for future study concerning psychological aspects involved with the problems faced by African American men seeking careers in information technology that have not been previously studied.

Implications for Social Change

With the advancements that information technology has made possible in the last 20 years alone, it would be hard to argue that today's society has not undergone a significant social change in the way we think, the way we interact with each other, and the way we conduct business. With wide sweeping innovative changes that have included such technologies as social networking, Wi-Fi, Smart Phones, to name a few, very few limits seems to exist for where technology can take society. Even when considering other industries such as medical, automotive, banking, transportation, and education, information technology has become so pervasive and needed by these other fields that it is possible to imagine that these other industries could no longer function without the advancements that IT has provided. Nevertheless, what must be just as equally kept in mind is that although social change has occurred from the technology itself, many of society's beliefs, perceptions, and methods by which business is conducted have not. Unlike what might be imagined in this technology enlightened society that the United States seems to be built upon, societal problems such as poverty, racism, lack of education, and the unavailability of technology related resources that could either improve our lives for us (or give us the opportunity to improve our lives ourselves) still exist. In fact, some have made the argument that technology itself has created a whole new range of problems that negatively impact society in ways that could not have been

conceived in the past. As a case in point, the following assertion was made regarding the negative impact of technology on society:

Over the past few decades, technological, social, cultural, and economic changes have revolutionized the structure of American community.

Globalization, the information revolution, and the emerging pre-eminence of the service economy have begun to undo the bonds that long defined the transformation we are living through is, in many respects, changing American life for the better — but not in every respect. And whether the long-term effects augur a brighter future or not, one thing has been made clear: Many of our public institutions are failing to adapt (Dunkelman, 2011, pp. 135-136).

Through this exploratory research, the potential exists to affect positive social change regarding the socioeconomic challenges faced by African American men attempting to enter the IT industry. By informing research, challenging existing hiring policies, and questioning preconceived beliefs currently adhered to within the IT industry, a foundation was provided enabling the empowerment of African American men to transcend the perceived or factual constraints placed on them by race, class, and gender. Although this research was limited to the perceptions and experiences of African American men, it is hoped that studies of this type will eventually be conducted for all genders and ethnicities, focusing on the unique problems of each until all minorities are equally represented in the IT workforce.

Transition and Summary

Whether the obstacle is economic, social, or based upon existing hiring practices of IT based companies, research suggests that African American men seeking employment in the field of IT face unique problems. As mentioned in the course of this research some of the extant problems that preclude African American men from successfully being hired in these high tech fields include numerous problematic factors relating to families, schools, communities and public policy. Other problems faced by a significant percentage of African American men seeking education in IT to potentially work in the field were identified as being economic hardships that could not be overcome. And in what may well be the biggest obstacle of all concerning the inability of African American men to compete for high paying IT positions, studies were conducted that concluded that social biases such as racism impeded this ethnic group from being considered for employment.

Based on the research that was conducted from my preliminary exploration of the problems faced by African American men seeking positions in the IT industry, the purpose of chapter 1 was to provide an overview of the background, purpose, and significance of this problem. Given the multifaceted nature of this social dilemma, this study may add to existing research and ultimately help to resolve issues concerning the disproportionate number of African American men in the IT field. Chapter 2 of this study consisted of a review of the professional and academic literature that summarizes what has been previously published in peer reviewed journals and scholarly sources, which assists in the definition the variables of the research questions for this study.

Chapter 2: Literature Review

Introduction

The problem focused on for this study was that African American men have not been able to enter the job market as IT professionals on a level commensurate to other races. While it is true that the topic of the socioeconomic challenges faced by African American men attempting to enter the information technology industry has been researched from several perspectives, what has failed to be addressed by existing literature are how these problems are perceived and responded to by this ethnic group. No matter the race, every ethnic group has specific needs, which in order to survive and prosper, must be satisfied. This assertion was supported by the following statement:

In essence, an ethnic group is a named social category of people based on perceptions of shared social experience or ancestry. Members of the ethnic group see themselves as sharing cultural traditions and history that distinguish them from other groups. Ethnic group identity has a strong psychological or emotional component that divides the people of the world into opposing categories of 'us' and 'them'. In contrast to social stratification, which divides and unifies people along a series of horizontal axes on the basis of socioeconomic factors, ethnic identities divide and unify people along a series of vertical axes. Thus, ethnic groups, at least theoretically, cut across socioeconomic class differences, drawing members from all strata of the population (Peoples and Bailey, 2014, p. 367).

In this regard, the importance of researching this problem from the bottom-up perspective of the individual (as opposed to the top-down perspective of the organization) was shown to be apparent. By failing to elucidate this problem from the perspective of the individual, a gap in available research exists which must be addressed in order to better understand the underrepresentation of African American men in the field of Information technology. Even so, by gaining insight from previous studies relating to this issue, a means to better understand and examine the findings from this research regarding the phenomenon of the underrepresentation in the IT industry of African American males was achieved. Only by combining the findings of previous research with those found during the course of this investigation can informed conclusions be drawn from this exploratory research.

Included in this chapter was the literature search strategy, the conceptual framework underpinning this study, and the literature review related to the key concepts of this exploratory research. The literature review was categorized into three areas related directly to the research questions upon which this study is based upon. Lastly, a summary of the literature review was included in this chapter providing an overview of the various theories, findings, and conclusions drawn from professional and academic literature regarding the phenomenon of the associated problems of African American men who are seeking career level IT positions, yet cannot gain employment in this field.

Literature Search Strategy

Several databases retrieved from the Walden University online library and other online resources were utilized to search for peer-reviewed journals and scholarly sources applicable to this research. These databases included ProQuest Central, SAGE Journals, and EBSCO Host. Due to the need to obtain the latest information, theories, and world views pertaining to this study, several sources outside of these journals were used as well. These sources included the following online academic references:

- The Anita Borg Institute for Women and Technology - A nonprofit organization that conducts research on the state of women and minorities in information technology.
- The Level Playing Field Institute (LPFI) - A not-for-profit agency that examines and conducts research concerning barriers faced by underrepresented people of color in science, technology, engineering and math (STEM).
- The Pew Research Center's Internet American Life Project - a nonprofit, nonpartisan research organization, provides free data and analysis on the social impact of the Internet.

In conducting a search of each of these databases and academic resources, several key search terms were used. These terms included such phrases as 'African American', 'STEM', 'information technology', 'digital divide', 'education', 'unemployment', 'hiring practices', and 'access to information technology' to identify and categorize previous studies whose focus was based on relevant issues regarding the research which was

conducted. The strategy used for searching the selected literature was based on the relevance of the information derived from the research to both the problem statement and research questions expressed in this study. The selected literature was then subcategorized into three major headings that represent existing themes and trends relating to the research questions posed in conducting this investigation. Throughout this exploration, the term 'African American' was utilized to discuss the findings of previous research germane to this specific ethnic group.

Conceptual Framework Underpinning this Study

In drawing upon a multitude of findings gleaned from a diverse body of research, the substance of this literature review amalgamated both earlier and recent findings relating to the challenges faced by African American men seeking careers in the IT industry that address the conceptual framework, the research questions, and the phenomenon of this study. To effectively align the conceptual framework chosen for this study with the research questions, problem statement and gaps in existing literature, what had to be taken into account were the underlying themes conveyed by the findings from the research of each author or theorist cited in the course of this investigation. In analyzing these themes, one of the requirements identified for the successful implementation of this study was that a direct correlation existed between the critical theory perspective, which served as the theoretical framework of this investigation, and the researched topic of the selected author or theorist. Additionally, it was necessary for each selected author or theorist to address an aspect of the underlying problem as it relates to the research questions for this study seeking answers to the perceptions of

African American men concerning educational inadequacies, existing hiring practices within the IT industry, and the unavailability of IT resources. Lastly, the onus of finding existing gaps in the selected literature was consciously self-imposed on me, as the researcher, in order to effectively examine new concepts pertaining to this phenomenon focusing on the perceptions and experiences of the problems faced by African American men seeking careers in the field of information technology.

Literature Review Related to Key Concepts

Educational Factors

As was evident in the context of this research, numerous studies have been conducted focusing on the positive and negative impact of education, where it applies to African Americans being properly trained to enter the IT industry upon reaching adulthood. In fact, it can be logically construed that due to the influence that information technology has had on just about every personal and professional area of society (to include education) that technological literacy has become a chief factor in preparing youth for eventual IT related careers upon reaching adulthood. One of the more well-known studies from which many other authors (e.g. Lynn, 2009, Malone and Yin, 2011, and Messersmith et al., 2008) have either directly or indirectly based their researches was conducted by Carver (1994).

Carver's (1994) quantitative research focused on the early computer learning for African American males (consisting of 4th and 5th grade students) attending two large urban elementary schools. Based on the sociological forecast that African American males will be prohibited from large scale involvement in the information age due to

insufficient financial, educational, and other societal prospects available to them, Carver espoused that a danger existed for the materialization of a knowledge-rich – knowledge-poor dichotomy in the United States. To prove this allegation Carver conducted an examination focusing on the viability of African American male involvement in preparing for the technological innovations that the information technology industry was expected to produce. In establishing the framework of this study, Carver applied three measureable factors which consisted of: (a) the degree of social interaction, or cooperative learning, occurring within a school, (b) the instructional preparedness of the school curriculum for computer learning, and (c) the school's computer status (i.e. availability of computers) towards 2 separate urban elementary schools and sixteen black males in these schools. For the selection of the sample from whom Carver's research was built upon, the students were chosen based on teacher selection for each school that were felt to be representative of African American male students in the area and in their corresponding classrooms. To establish a baseline defining what was considered to be a typical of African American male student these teachers based their decisions on identified characteristics such as: (a) verbal ability, (b) family background, (c) achievement level, and (d) level of computer activity.

What was concluded from Carver's (1994) study was that in spite of the high levels of interest in computing shown by the students, neither school was ideal in terms of available curriculums for teaching computer based technologies compared to similar studies conducted on White American students. Because of inadequacies such as the lack of expenditures for African American students, and expanding curriculum endeavors

focused at enhancing the computer competencies of these students, it was predicted that it would only be a matter of time before African American males disappeared from the technology-driven work force of the future (Carver, 1994). To combat such an eventuality, Carver placed the onus on parents, educators, and other concerned persons who would have the best chances of transforming home and school environments of young African American males into settings that offer them with increased knowledge about information technology and the importance it has in society.

Carver (1994) provided an essential point of origin, still being corroborated by present day research and projections, as to why African American men may not be ready to enter the IT workforce by the time they reach adulthood. Similar studies concerning the negative implications of the instructional preparedness of a school's curriculum for computer learning have yielded comparable conclusions. Payton et al. (2008) found that the concept of cooperative learning spoken of by Carver is just as relevant now as it was during Carver's study. According to Payton et al. (2008) the concept of cooperative primarily deals with creating strong relationships based on collaboration; refusal to go along with inappropriate social pressure; and working out relational conflict, which all play an important part in the maturation process of educating students.

Other authors cited in this literature review (e.g. Messersmith et al., 2008, and Malone & Yin, 2011) argued that the factors of 'instructional preparedness of the school curriculums' and 'availability of computers' addressed by Carver's research are still significant problems for African American youth attending inner-city urban schools. Whether these problems stemmed from budget constraints, inadequate training for

teachers, or improperly organized education programs, the quandaries with inner-city urban schools seems to have been a complicated puzzle that is still being addressed in many cities in the United States. Notwithstanding, a gap in knowledge not addressed by Carver's research were the perceptions of the African American male participants who took part in this study regarding their feelings, frustrations, or future interests in working with computers based on the experiences they encountered.

Adding to the research conducted by Carver (1994), the quantitative study conducted by Lynn (2009) delved into the relationship between existing literacy levels of African American men and the decision to become an IT professional. Lynn made the argument that the concept of computer literacy was an evolving definition that implied that an individual had a fundamental understanding of how a computer functions, but might not necessarily understand the details of how the various parts that make up a computer work. What was found to be an interesting association derived from Lynn's (2009) research was this author's interpreted world view that computer literacy levels of African American men generally impacted their choices or decisions to become information technology professionals. Unlike other researchers (Baber, 2012 and Carver, 1994) whose examinations identified that African American men had no choice in this regard, Lynn's research focused on the possibility that an association exists between educational dynamics that could possibly produce varying degrees of computer literacy and the choice to work in the information technology field.

Lynn's (2009) quantitative study identified that a severe shortage of trained IT professionals existed due to training for new IT workers not keeping pace with the

growing demand. This lack of training and the resultant inability to keep up with technical advancement in information technology was based on "the battle for operating system and application software dominance between companies such as Microsoft, IBM, and Apple, that rapidly forced changes in the way computers looked and worked" (Lynn, 2009, p. 30). In spite of these factors, however, Lynn articulated that many African American men were generally found to lack the prerequisite computer related skills to acquire employment. Based on the purported computer literacy levels of the population of African American men studied in Lynn's research, it was found that evidence exist showing agnosticism among African American men towards the use and understanding of technology. By attrition, Lynn hypothesized that this lack of confidence could have a negative impact on the decisions of African American men to enter IT based professions. Contrary to what might have been expected by such research, however, Lynn ultimately concluded that the decision to pursue IT related careers by African American men was not a result of computer literacy. Based on this conclusion, Lynn's research implied that African American men, as an ethnicity, possessed the same attributes as other races and genders regarding computer literacy levels.

While the research conducted by Lynn (2009) provided significant insight relating to the general phenomenon of some of the problems faced by African American men seeking IT careers, a significant gap in knowledge exists from the conclusions of this study. If, as concluded by Lynn, literacy levels do not influence the decisions of African American men to successfully enter the IT industry, then the question remains concerning what does impede this ethnic group's ability to pursue IT related careers? Conversely, no

information was provided by Lynn concerning the population of African American men who are both educated and qualified in the field of IT, yet still are faced with numerous social, economic, and educational problems that hinder them from entering this field. Although the research conducted by Lynn proved to be very useful to the present study that I conducted by identifying what the problem is not, in regards to the problems faced by African American men seeking employment in the IT field, this study provided very little in identifying what the problem actually was.

As similar as my own study is to that of Lynn's (2009) in terms of the recognition that a problem does exist for African American men attempting to enter the IT industry, it was questions and observations such as those posed earlier that drives my own research. Based in part on Lynn's research, a new unrelated line of inquiry was now able to be addressed relating to this issue, having already identified factors do not necessarily play a part in this problem for African American men. In doing so, this exploratory research filled a gap in existing literature and added to studies such as conducted by Lynn in order to increase the base of knowledge regarding this socially significant problem.

Baber's (2012) qualitative phenomenological study addressed the issue of education being a prominent dynamic impacting the ability of African American men to enter the IT industry much differently than Carver (1994). According to Baber, although African Americans enrollment in STEM fields at predominately White institutions (PWIs) were increasing, setting up relationships and maintaining a friendly association on campus presented ongoing difficulties. Included in the list of associated problems experienced by African Americans attending predominately White institutions from

Baber's study were "(a) established racial identity; (b) reconsidering identity through heterogeneous community experience; (c) conflict between ideologies; (d) resiliency against hostility; and (e) uncovering complexity of identity" (p. 71). These difficulties, as explained by Baber, showed that in comparison to their white peers, African American students were more likely to develop perceptions of a racially hostile climate on campus resulting from a perception of hostility, impeding an establishment relationship and dedication to the institution. From the conclusions drawn from Baber's research it was identified that the socioeconomic status of African Americans enrolled in PWIs was an evolving dimension of racial identity, which could serve to adequately replace race-based affirmative action policies with little consequence for African Americans. To combat associated perceptions of alienation Baber contended that the use of developmental frameworks for African Americans (classified as a Multidimensional Model of Racial Identity or MMRI) should be used in PWIs, which stress the dissimilar dimensions of racial identity development, important to the increased understanding of African American student experiences.

What made Baber's (2012) research so important to this study were the psychological implications derived from the conclusions of this research. From Baber's findings it was established that the development of resiliency played a major role in preparing African Americans to be able to adapt to the demands of information technology employment that is often fast paced and can be very stressful (Mielach, 2012). As explained by Baber, "resiliency theory suggests that those with stable healthy personas develop coping skills that enable them to succeed in the face of perceived or

actual threats" (p. 77). In considering such a supposition in the context of why so few African Americans gain employment in the information technology industry, a hereto unrecognized aspect of this problem was identified.

Unlike most authors that have been cited throughout this study, Baber not only recognized the external issues relating to one of the perceived problems faced by African Americans seeking college degrees in technology, but also studied the psychological implications associated with this problem. From the use of this particular research tactic, Baber was able to uncover hidden truths relating to this line of research that added to the breadth of discovery for his findings. It was by the use of this research approach that my own study of the problems faced by African American men seeking employment in the IT industry was addressed.

The mixed methods study conducted by Messersmith, Garrett, Davis-Kean, Malanchuk, and Eccles (2008) focused on the pathway toward or away from an IT career for African Americans and other minorities. In examining the latent causes for gender and ethnic disparities in IT related career fields Messersmith's et al. study was framed around three research questions which were: (a) how might families influence emerging adults' IT related careers?, (b) how do STEM based educational experiences influence children's and emerging adults' progression toward or regression away from an IT career?, and (c) what other formative experiences do emerging adults mention when they recall their career paths?

For the first research question Messersmith's et al. (2008) determined that based on the interview responses that a positive message was conveyed to children who had

role models that used computers and conveyed that children in the family could do well with computers as well. To address the second research question from which this study was based on, Messersmith's et al. elucidated that self-efficacy and interest in learning valuable computing skills were the result of positive educational experiences. In this regard Messersmith's et al. also identified self-efficacy as a primary reason why information technology related jobs generally attract more men than women and also more European and Asian Americans than other ethnic groups. Messersmith et al. concluded that vocational development theories suggest that individuals choose career fields based on self-perceptions, values, and beliefs, and that distinctive cognitive differences can explain much of the gender and ethnic gaps in career field participation. Lastly, Messersmith's et al. corroborated the findings of the third research question upon which this study was based by explaining the significance of counselors, peers, and other adults as sources of formative educational experiences to the participants of the study. Messersmith's et al. conclusions from this study were that external influences such as social supports and environments continue to have an impact on emerging adults as they enter their career tracks in the IT work force. Based on interview responses from this study Messersmith's et al. asserted that although many participants had career goals or had made career-related choices by early adulthood, the influence of parents, peers, and others remained prominent in their career pathways. Moreover, Messersmith's et al. concluded that that, based on previous socialization, being exposed to computers was not enough to build up interest in entering the IT industry and that anticipated discrimination may have an even larger impact on career trajectories.

As comprehensive as Messersmith's et al. (2008) research was, concerning the social and psychological implications associated with young African Americans whose goals were to eventually enter the IT field, the conclusion that being exposed to computers was not enough to develop interest in entering a computer related career stood out the most. Unlike numerous theorists that have argued that primary reasons that African Americans are so underrepresented in the IT industry include factors such as the inability to take part in early computer learning programs (Carver, 1994), or lack of access to technology (Hall and Damico, 2007), Messersmith's et al. seemed to imply the opposite from his conclusions concerning this issue. Although it can be logically construed that being exposed to computers offers no guarantees for African Americans entering a computer related career, an equal acknowledgment needed to be made concerning the socioeconomic impact the lack of access to technology resources would have on an already challenged ethnic group. With this world view in mind it is important that Messersmith's et al. conclusions in this regard be critically observed and analyzed in order to ensure that is not construed as an absolute concerning potential problems addressed by African American men attempting to enter the IT industry.

Warren, Hecht, Jung, Kvasny, and Henderson, (2010) provided a very unique perspective to the body of knowledge probing substantive reasons as to how education influences the ability of African Americans to ultimately acquire positions in the field of IT. Warren's et al. basis for this quantitative study concentrated on the relationship between Internet-based content tailored specifically to White mainstream audiences and the needs relating to socioeconomic status (SES) of African Americans seeking

information from online resources. Based on the results of a 2007 survey conducted by Pew Internet and American Life (2007), Warren et al. (2010) found that African Americans spent an average of 117 minutes per day online searching for information related to job opportunities, civic and interpersonal interaction, health information, and entertainment. In spite of this increase in Internet usage, a lack of content geared towards the specific needs (e.g. social class, relevant communal identities, and economic conditions) of African Americans was extant (Warren et al., 2010). In defending the premise of the this study, the indictment was made that despite the evidence that the "effectiveness of web-based messages depends at least to some extent on relevance to various cultural identities, such as African Americans, many parts of the web still under-represent and/or distort non-dominant group identities" (Warren et al., 2010, p. 675). Furthermore, it was stated by Warren et al. that in regards to the Internet content germane to local cultural/community interests and ethnically apposite health resources is limited and that many websites frequently treat ethnicity and other nonmainstream identities in a simplified manner. What tied Warren's et al. research to education relating to the focus of my own research was the assessment that even as technology becomes more readily available to African Americans, the important dimension of education, as a social class status, continues to have a strong association with. The rationale that Warren's et al. used to support this premise was the identification that education, as a means for gathering knowledge, influence opportunities to manage a person's social and economic environment, which included access to online resources.

Warren et al. (2010) identified that a total of 279 African American students took part in this quantitative study, from which 134 (48%) were selected that attended a predominantly European American university and 145 (52%) who were enrolled in a university that was predominantly African American. Among the findings discovered by Warren et al. for this examination was evidence that African Americans who regularly access online resources have beliefs and concepts that stem from their social class and ethnic identities to find web content. Conversely, Warren et al. also concluded that conveying a mixture of communal identities on the web is essential to both views of web self-efficacy and web-based information gathering and discovery.

In conducting a critical assessment of Warren's et al. (2010) research it was identified that what was not taken into account was the significance of socioeconomic status for African Americans as opposed to other nationalities. By conducting a comparative analysis in this regard, a better understanding of racial tendencies and online behaviors could have been provided, adding to the breadth of knowledge of how education of African Americans in this area could potentially impact this ethnic groups' ability to potentially find jobs in the IT industry. Be this as it may, Warren's et al. research adds to the considerable problematic factors associated by African Americans seeking employment in the field of IT. Al Jazeera (2014) and Membis (2013) explained that African Americans rely heavily on the use of the Internet in finding jobs, however, by taking the findings of Warren's et al. into account, it must also be acknowledged that limitations exist regarding the actual effectiveness of this ethnic group to find employment.

Existing Hiring Practices in IT Industry

When considering the prevalent hiring practices that exist in the IT industry, it might be considered by the uninitiated that one of the primary reasons for the disproportionate ratio of African American men in this field stems from not being qualified to fill these technology related positions. The case study based research conducted by Harper-Anderson (2008) refuted this allegation however, by explaining that even for African Americans who are both educated and qualified in IT, racial inequality still exists. The crux of Harper-Anderson's research supporting this premise was the *new economy* that has evolved from the rise in information technologies for corporate America. This new economy was based on several conceptualizations such as "globalization, transformations to knowledge intensive methods of productivity, the rise in IT, and the reorganization of worldwide productions" (Harper-Anderson, 2008. p 484). Although this new economy paradigm, as described by Harper-Anderson, was proven to be responsible for unprecedented economic growth on a global scale, it was concluded that structural economic changes have occurred that produced unequal outcomes for African Americans seeking employment in the IT industry. To provide a viable framework for this study, Harper-Anderson focused on four fundamental themes which included the following topics:

- How recent transformations and innovations have influenced work processes.
- How new employment practices functioned in corporate work environment.
- How rules for success differ from those operating in the old economy sector.
- Personal factors attributing to success or lack thereof.

Based on the findings from this research, Harper-Anderson (2008) asserted that macroeconomic variations in the 1990's reshaped rules for success, which were considered central to the economic transformations. Because of this reconfiguration of rules for achievement, Harper-Anderson argued the point that these new rules worked together with traditional *glass ceiling* obstacles for African Americans to create a new system of institutionalized racial barriers. Harper-Anderson went on to explain that problems such as career progression and equal pay had actually existed for many years in the IT industry. Because of this, the U.S. Department of Labor created the Glass Ceiling Commission in 1989 to look into such problems, which were defined as “those artificial barriers based on attitudinal or organizational bias that prevents qualified individuals from advancing in their organizations into upper management positions” (Harper-Anderson, 2008, p. 486). Even so, Harper-Anderson contended that that these barriers shaped a dissimilar playing field for African Americans than the one experienced by Whites in the IT industry. What Harper-Anderson included as a predominant factor explaining the apparent inequality extant in the IT industry were the responses from the participants in this study who were adamant in the opinion that *pipeline barriers* (i.e., those factors beyond requisite qualifications) continued to affect their success in the IT departments they worked in.

From a critical perspective ascertaining the implications involved with this research, it was noted that one of Harper-Anderson's (2008) main arguments focused on how the new economy has only modified racial inequality in the IT industry and not stopped or limited this problem. The only thing that has changed, according to Harper-

Anderson, are that patterns of racial inequality have become decidedly blurred due to the economic and social transformation brought on by technology. The gap in knowledge that exists from Harper-Anderson's research is the question asking "what can be done, if anything, to change these accepted norms within the IT industry?" Although the problem was clearly articulated and added to the body of knowledge concerning the problems faced by African Americans attempting to enter the IT industry, no relevant answers were provided on how to potentially solve this quandary. Even so, Harper-Anderson's research proved to be invaluable to the direction of my own research because it addressed racial inequality among higher-level IT workers instead of the impact of economic transformation on low-skill, workers. Harper-Anderson's research showed parallels between the problems faced by African Americans that already work in the IT industry and problems faced by African Americans attempting to enter the IT workforce.

The issue of racial inequality for the hiring practices within the IT industry is dealt with from a different perspective from Harper-Anderson's (2008) in the qualitative research conducted by Smith and Joseph (2010). Instead of focusing on the economy or the IT industry specifically, Smith and Joseph focus on the companies whose employers relied on racialized and gendered stereotypes as motivations for hiring African American employees. From the results of face-to-face, semi-structured interviews performed during the course of the study by Smith and Joseph, common themes were believed true by employers. Examples of these themes included beliefs that African Americans were believed to be "belligerent employees prone to challenging management policies", and that African American men specifically "lacked the soft skills to interact easily with

customers and coworkers" (Smith & Joseph, 2010, p. 747). Founded on racial perspectives such as these, the argument was made that "bicultural stress arises from having to be fluent in two or more cultures, the components of which might be significantly different" (Smith & Joseph 2010, p. 748). Consequently, Smith and Joseph went on to explain that the weariness resulting from bicultural stress can be seen in lower job performance, higher intentions to turnover, and a less positive attitude toward the organization.

Of special significance from Smith and Joseph's (2010) study was the explanation of discrimination. As explained by Smith and Joseph two types of discrimination exist within the power and privilege dynamic of the workplace. The first was *Access discrimination*, which occurs when members of a subgroup are prevented from entering a job or occupation. The second type of discrimination was dubbed as *treatment discrimination*, which occurred when fewer rewards, opportunities, or resources were provided to an ethnic subgroup from the work which had been performed. Interestingly enough, what Smith and Joseph found from the intentional or unintentional enactments of these types of discrimination was that due to the fact that racialized and gendered organizational factors are part of the presumed aspects of organizational experience, white males may not identify how their social location provides them with power and privilege in the organization.

Based on employer responses from this study Smith and Joseph (2010) concluded that a definite relationship exists between the representation in companies for qualified African Americans and what is actually known about the way African Americans conduct

themselves in a business environment in the United States. While the study conducted by Smith and Joseph was not industry specific, it was found that from a comparative analysis of existing research concerning this problem that discriminatory practices exist in the IT industry as well. For example the previously cited articles from such authors as Coleman (2012) and Luo (2009), along with the research conducted by Griffin and High (2011) each explained how problems such as racism, discrimination, and social perceptions each play a role in the problems dealt with by African Americans in the IT field.

Similar to Harper-Anderson's (2008) research concerning the racial inequality in the IT industry for hiring African Americans, Smith and Joseph (2010) offer very little from the study in terms of what can be done to rectify the problem addresses in this study. Although Smith and Joseph do conclude that managers must find a means for contending with extant stereotypes which have been rooted in the business culture and attempt to lessen the influence on affected employees, no method to do so is provided from this research. In retrospect of the findings, a possible solution to this problem may well have been the suggestion of how African Americans could better prepare themselves to combat stereotypes and prejudices through distinguishing themselves by means of achievement and advanced education. As comprehensive as this study was, without a viable solution for dealing with this problem, its impact was finite. Even so, the unique perspective provided from Harper-Anderson's research provided a unique view of one of the associated problems faced by African American men attempting to enter the IT industry from which comparisons can be made and added to in conducting my own study.

The quantitative study performed by Grimmert (2010) focused on the implications involving the social development of African American boys which potentially hampered this ethnic subgroup from obtaining jobs such as those within the IT industry. One of the focal points of Grimmert's study revolved around the assessment that "African American boys need to be equipped with an identity that affirms and empowers them" (p. 75). Grimmert also centered a great deal of this research on the premise that "excellence in achievement should be the ethical standard for students, instead of the prioritization of academic performance as a benchmark for African American boys in matching their White American peers" (p. 74). By being forced to learn in an educational system that places academic performance ahead of excellence in achievement, Grimmert made the argument that African American boys were vulnerable to the threat of stereotypical associations both as children and later as adults.

From the findings of Grimmert's (2010) study it was identified that two aspects of identity development are required for the healthy development of African American boys. The first type of identity development consisted of *spiritual-humanistic development*, defined as "cultivates a healthy identity in African American boys and helps to disarm harmful personal, interpersonal, and societal messages" (Grimmert, 2010, p. 76). The second classification of identity development was *cultural development* which includes aspects of "family, race, ethnicity, neighborhood, church, school, society, and history or ancestry" (Grimmert, 2010, p. 76). Grimmert asserted that without a healthy identity development African American boys are left with no other option but to adopt commercial images and messages of what young African American males are portrayed

as. What Grimmett found from this research regarding this issue was that such adaptations led to stereotypical social perceptions of an African American boy that were most often is characterized in the following ways:

- The potential of an African American boy to be an athlete or criminal is more apparent than is the potential to be an academic scholar or president.
- The interests of African American boys center on athletics and entertainment more so than on his interests in humanities, business, science, or technology.
- The tendency of African American boys is to be violently impulsive and reactive, rather than to provide safety, assistance, and understanding.

Another aspect of Grimmett's (2010) study was the connotations of career development for African American boys. According to Grimmett, one of the most important facets of career development for this ethnic subgroup was the flexible interactions with adults, typified as those types of relationships that educate and train African American boys as they mature from adolescence into adulthood. As explained by Grimmett, adaptive relationship with adults such as parents, relatives, and community members were based on the following factors:

- Positive expectations to achieve and succeed (i.e., academically, socially, and occupationally).
- Consistent encouragement and support to develop potential and to engage learning and career development opportunities.
- Emphasis on the importance of educational excellence for career success and personal fulfillment

Grimmett's (2010) conclusions based on this research were that the only way to change the social perceptions of African American boys in society was to incorporate a series of processes used to facilitate identity, spiritual-humanistic, and cultural development. Of special interest from the research conducted by Grimmett were the similarities between the perceived stereotypes of African American boys compared to the stereotypical associations of African American men identified from the research of Smith and Joseph (2010). In this regard Grimmett provided what can possibly be considered as a point of origin explaining why African American men may be generally typecast when being considered for employment in IT jobs.

Notwithstanding, it was found that although the research conducted by Grimmett was conceptually sound, a critical analysis of this study recognized possible fallacies from this examination. As a case in point, if the factors impacting on the social acceptance of African American boys yield such negative conclusions, could the same not be said of other races (e.g. Hispanic, Asian, or White) for boys who were not "equipped with an identity that affirms and empowers them" (Grimmett, 2010, p. 75)? Due to the failure to provide a comparative analysis between races for this problem, an opportunity to increase knowledge regarding how identity plays a role in social development was missed. Consequently, because of this existing gap in knowledge, it was found that Grimmett's research must be thoroughly scrutinized so that personal bias is not introduced into my own research.

The quantitative study conducted by Houston-Brown (2002), which delved into the perceived barriers to African Americans and Hispanics seeking IT careers, addressed

the underlying issues relating to the existing hiring practices in IT Industry from a top-down perspective of professionals that already worked in the field of IT. Based on the perceptions of full time IT administrators and IT professionals based out of California, Houston-Brown's rationale for this study was to identify obstacles believed to prevent African Americans and Hispanics from pursuing full-time employment in the technology-related fields in California schools. In doing so, Houston-Brown determined that such research would provide an important beginning in deciding what actions to take to eliminate this problem of unjust ethnic representation in the IT workforce.

From Houston-Brown's (2002) findings at the time that this study was conducted it was argued that factors such as limited exposure to technology, inadequate educational preparation, and the perceptions of IT professionals were leading barriers to African Americans and Hispanics seeking IT careers. Conversely, the findings derived from the IT administrators and IT specialists who participated in Houston-Brown's study showed that socially related issues such as how a person is perceived and peer pressure were non-issues in the consideration for hiring ethnic minorities for IT jobs. As a result of the research conducted by Houston-Brown, it was recommended that social mechanisms be put in place such as equal access to technology for minorities and recruiting IT professionals as mentors to minority students who were of the same ethnicity.

In conducting a critical analysis of the research executed by Houston-Brown (2002), it was found that this study was most similar to my own in terms of the identification of the overall problem concerning the perceived or actual external barriers for African Americans seeking IT careers. Like my own study, Houston-Brown weighs

the impacts of factors such as education, access to technology, and to some extent, existing hiring practices within the IT industry against the dependent variable of African Americans seeking careers in the field of IT. What distinguishes my own research from the study performed by Houston-Brown; however, are the perceptions of African American men who are seeking positions in the field of information technology as opposed to the perceptions of IT professionals who already work in this field. In doing so, the goal of my research was to identify and analyze the previously unrecognized psychological and social aspects associated with this problem, adding to the body of knowledge explaining the underrepresentation of African Americans in the IT Industry. Furthermore, a decided difference exists between Houston-Brown's study and my own in regards to the target population that was the focus of my research, the research approach used to conduct my study, and the predicted conclusions from the findings of my examination.

In its simplest sense, the true difference between the research conducted by Houston-Brown and myself concerning this issue was the selection of a top-down perspective for studying this topic selected by Houston-Brown, as opposed to the bottom-up perspective of this problem which was provided from my own research. In other words, the study that I conducted was based on the perspectives of African American men attempting to enter the field of IT and not the perspectives of African American men already in the IT field. Additionally, by focusing exclusively on the problems faced by African American men seeking IT careers (not African American Women, Hispanics, or other ethnicities), unique findings for the overall problem were identified. From these

findings, the potential to bridge the gap in knowledge not addressed in Houston-Brown's research were afforded.

While the mixed-methods study conducted by the Level Playing Field Institute (2011) acknowledged the racial and gender disparities that existed for STEM based education for minorities, the true focus of this examination was how IT based company procedures and culture influence the employment decisions, workplace experiences, and retention of women and minorities. Consequently, the theme that the LPFI hinged this research on was the ramifications of hidden biases that were found to exist in the IT industry towards minorities. To provide a conceptual framework for this study, the LPFI defined the term hidden biases as "a mechanism by which unequal outcomes and opportunities by race and gender occur, through both unconscious and implicit biases at the individual level and biases in the form of practices and policies that appear impartial but produce unequal outcomes" (p. 3). From this classification the LPFI further defined hidden biases as being a type of *stereotype threat* that "describes the process by which the performance of members of negatively stigmatized groups is significantly diminished, due to fear of confirming negative stereotypes about their groups" (p. 4).

In conducting this research the methods of data collection that the LPFI (2011) used were the onsite and online collection methodologies. The target population for this study consisted of approximately 100 tech companies in the San Francisco Bay Area, from which a total of 9 companies agreed to participate in the on-site data collection part of the examination. Volunteers for this study submitted their responses through an anonymous web-based survey both for local companies and for the companies that were

nationwide. In addition to this data collection method, survey links were sent out to numerous tech forums, organizations, and individuals within the technology industry to recruit engineers and managers. From these various data collection methods, a total of 645 participants took part in the study conducted by the LPFI, which provided a means to analyze several key themes that emerged regarding the perceptions and beliefs about how each participant viewed, and were viewed by, the companies they worked for. These identified themes were as follows:

- 51% of underrepresented people of color were dissatisfied with the amount of weight given to increasing diversity during the hiring process, compared to 21% of whites.
- Exclusionary cliques were most often experienced by minorities and were experienced at rates significantly higher than their male and white counterparts.
- Underrepresented people of color reported encountering unwanted racial/ethnic/religious/cultural jokes at a rate almost twice as high as whites (34% compared to 19%, respectively)

From these results, the authors of this LPFI (2011) study drew several conclusions. Besides the recommendations for increased multicultural training and increased collaboration among employees, one of the most interesting conclusions drawn from this research by the LPFI was that "too many of the criteria for hiring and promoting talent are subjective, based on what is familiar and comfortable rather than being truly objective" (p. 13). Coincidentally, it was the crystallization of at least some

aspects of this hiring criterion which my own study partially focused on, albeit, not through the lens of people who already work in the IT industry, but rather from the perspective of African American men attempting to enter the field of information technology. By doing so, a gap in knowledge extant from the study conducted by the LPFI was filled, adding to the breadth of knowledge concerning this overall problem.

Access to Technology Resources

If the assertion espoused by Messersmith et al. (2008) stating that access to computers was not enough to develop interest in entering a computer related career, equal weight must be given to the premise that without access to technology resources, entering the IT industry may be very difficult. In this regard, the thematic research article submitted by Griffin and High (2011) refuted the findings of Messersmith et al. by identifying that issues of access and culturally relevant experiences with technology for African American youth can have a negative impact on future aspirations for working within the IT industry. To support this premise Griffin and High's research focused on several corresponding factors that were found to contribute to the employment gap in high tech positions for minorities (e.g. African Americans, women, and Hispanics).

These categories included the following problematic issues:

- Access to technology for minorities
- Attitudinal and perceptual barriers towards entering the IT field
- Minority STEM education
- Company hiring practices

In quantifying the significance of access to technology resources for minorities, Griffin and High (2011) cited the results from a 2009 survey conducted by the National Telecommunications and Information Administration. From the findings of this survey it was identified that less than 50% of all African American households have adopted broadband for Internet usage, compared to 68% of Whites (Griffin & High, 2011). With broadband providing the means to high-speed Internet access, Griffin and High elucidated that the importance of such a disparity illustrated one of the main reasons as to why African Americans were ill-prepared to take full advantage of the information and knowledge that could be gained from this means of communication. With this problem in mind, Griffin and High used the analogy that Internet access is the great equalizer to which many African Americans still did not have access to. To explain further how the lack of access to IT resources negatively impacts minorities Griffin and High asserted that the likelihood is greater that minority students are enrolled in school districts which do not have the resources for a comprehensive computer science program. This assertion was based on information derived from a 2008 survey conducted by the National Education Association that identified that "over 54% of public school teachers reported having two computers or less in their classrooms and observed that this number is inadequate to effectively use computers for instructional purposes" (Griffin & High, 2011, p. 20).

Another important aspect of the possible reasons for the underrepresentation of minorities in the IT field uncovered from Griffin and High's (2011) research was the hiring practices adopted by various notable IT companies in Silicon Valley. From a 2010

investigation conducted by the San Jose Mercury News, Griffin and High cited that companies such as Google®, Apple®, Yahoo®, Oracle®, and Applied Materials® refused to provide federal employment data based on the allegation that such information "would cause commercial harm by potentially revealing the companies' business strategy to competitors" (Swift, 2010, para. 2). Based on the implications from such resistance, Griffin and High made the argument that by not providing federal employment data, these IT companies not only prevented policymakers from accurately gauging the fairness of existing hiring practices but also discouraged minority applicants from applying for work at these companies.

Lastly, the research conducted by Griffin and High's (2011) delved into the various attitudinal and perceptual barriers faced by minorities seeking to enter the IT industry. These barriers included such issues as negative perceptions, isolation, and/or stereotyping on behalf of employers and potential employees. Based on previous research from authors such as Simard (2009) and Miller (2010), Griffin and High asserted that minorities are much more likely to experience isolation in workplaces and classrooms because they are often placed in a situation where so few minorities exist. Because of this structuralized alienation Griffin and High found that not only did a high turnover rate exist among minorities who worked for IT based companies, but a lack of motivation existed among minorities for even seeking careers in the IT field.

To combat the aforementioned problems associated with the underrepresentation of minorities in the field of IT, Griffin and High (2011) concluded that several courses of actions needed to be implemented. First, a working relationship between policymakers

and stakeholders would have to be committed to in order for minorities to have full access to the educational STEM based resources. Secondly, by promoting the advantages of having minorities work for high tech firms it was stressed that "diversity of thought and improved innovation would ensure continued economic prosperity and U.S. leadership in the high tech sector" (Griffin & High, 2011, p. 27). Griffin and High also concluded that a diverse workforce impacts the bottom line of an IT firm's innovative profitability objectives by encouraging a broad range of attitudes and new ways of thinking, which could potentially increase creativity.

From a critical assessment of the thematic research article submitted by Griffin and High (2011), it was found that this study provided an amalgamation of many of the concepts, theories, and world views of noted authors and theorists included in this literature review. Not only did the article by Griffin and High indirectly address many of the external problems facing African American men seeking careers in the field of IT, but it also touched on the internal perceptual connotations involved from facing such problems. With this understanding in mind, it is expected that Griffin and High's research played an important role for my own research in identifying heretofore unrecognized psychological and social aspects associated with the underrepresentation of African American men in the IT Industry.

The mixed method study by Mossberger, Tolbert, and Gilbert (2006) utilized hierarchical linear modeling and multilevel data to account for community-level socioeconomic characteristics providing reasons as to why African Americans are limited to IT resources. To effectively conduct this study, Mossberger et al. initiated a national

random-digital-dialed telephone survey as a method for collecting information which included an oversample of respondents drawn from all high-poverty census tracts in the forty-eight states, excluding Alaska and Hawaii. In order to delineate these high poverty areas identified by census records, Mossberger et al. defined this population as "those with 50% or more of the households living at or below 150% of the official federal poverty level" (p. 594). To frame this research, Mossberger et al. focused on environmental factors such as the economic, racial, and educational composition of the area. Due to the aforementioned factors, Mossberger et al. made the argument that it was a matter of place rather than race that served as the catalyst by which African Americans found it difficult to acquire access to information technology.

Because of factors such as racial segregation and concentrated poverty, Mossberger et al. (2006) contended that a disparity existed for the capability of African Americans to take advantage of access to technology related resources. The evidence of this argument was supported by Mossberger et al.'s findings that for inner-city neighborhoods, the information age has transformed existing disparities into digital inequalities as well. From the findings of Mossberger et al.'s research, this transformation was the consequence of problems associated many with low income inner-city neighborhoods, which included some of the following dilemmas:

- Inferior schools and neighborhood services
- Chronic unemployment and isolation from the labor market
- High incidence of crime and drug use
- Deteriorated housing and neighborhood infrastructure

- Loss of neighborhood businesses
- Estrangement from the larger society

Despite the fact that these barriers to IT access were found to be prevalent issue for the inner-city neighborhoods included in this research, Mossberger et al.'s (2006) identified that assistance for these communities was available for technology use through the funding of libraries or community centers. Even so, another problem to be dealt with was the fact that such centers were not generally obtainable, and these operations often depended upon volunteers or unstable sources of funding. Based on the findings derived from this study, one of the main conclusions arrived at by Mossberger et al. was that technology inclusion was less a matter of persuasion or demonstrating relevance than providing more opportunities to use technology and to develop necessary skills. Mossberger et al. also concluded that it was due to the paradox of racial segregation and concentrated poverty that African Americans had such a positive attitude towards technology because of the understanding that the understanding of technology presented opportunities for economic growth.

From a critical analysis of Mossberger et al.'s (2006) research, yet another aspect of the factors impacting how the digital divide impedes the ability of African Americans to enter the IT industry was identified. The gap in knowledge, however, concerning Mossberger et al.'s research was the explanation as to why African Americans, who do have access to technology related resources, still have problems finding employment in high tech careers. Although relevant in its own right, it cannot be assumed that racial

segregation and concentrated poverty are the only factors affecting the ability of minorities, to include African American men, to successfully access IT resources.

The thematic study conducted by Zickuhr and Smith (2012) both added to, and provided a transition from the previous research conducted by Mossberger et al. (2006) regarding access to technology. According to Zickuhr and Smith it was identified that although factors such as low household income and lack of education are still negative predictors of access to technology for minorities, "the internet access gap closest to disappearing is that between whites and minorities" (p. 6). Zickuhr and Smith based this assertion on information derived from a 2011 survey conducted by the Pew Internet Project. In fact, Zickuhr and Smith found significant changes to the old definition of what the digital divide used to be, as compared to what it had become. For example, Zickuhr and Smith found from the results of the aforementioned survey that the methods by which people connect to the internet are much more varied at present than they were in 2000, which means that internet access is no longer synonymous with going online with a desktop computer. This change was accounted to the rise of mobile technology, which overtime positively impacted the status of minorities considered "on the other side of the digital divide in basic internet access" (Zickuhr & Smith 2012, p. 2). What lessened the gap caused by the digital divide in recent years, according to Zickuhr and Smith, was the discovery that among smart phone owners, young adults and minorities were more likely than other groups to use their phones as the main source for internet access.

In conducting a critical analysis of the findings of Zickuhr's and Smith's (2012) study, several burgeoning questions emerged not answered from the findings of this research. Firstly, if the digital divide is indeed narrowing between minorities and whites for IT, then why do current statistics from the U.S. Department of Labor (2013) report such alarming disparities for African Americans in the IT field? Secondly, if the findings of Zickuhr and Smith identified that African Americans are utilizing technology and accessing the Internet more than at any time in the past, then why, as reported by the U.S. Department of Labor (2013), does such a poor representation of this ethnic group working in the field of IT exist? Lastly, what were the social and economic implications derived from the research conducted by Zickuhr and Smith regarding the exponential growth in the number of African Americans who now have access to technology? Although such questions may have well been beyond the scope of a thematic study, such as was conducted by Zickuhr and Smith, these queries were left largely unanswered from the conclusions drawn from this research.

Despite the fact that the findings of the research conducted by Zickuhr and Smith (2012) represented a clear, candid, and factual appraisal of the current status of the access to IT that African Americans have, a gap in knowledge exists concerning what this ethnic group has done with this increased capability. With issues ranging from the disparities found to be extant for African Americans in the IT field to the social and economic implications concerning African Americans who have found it difficult, if not impossible, to find employment in the field of IT, many questions were left unanswered. While the thematic study conducted by Zickuhr and Smith did meet the perquisites for such a study,

this research did not produce information regarding how African Americans either benefited or were negatively impacted by increased access to technology resources. Based on these limitations, it was not possible to distinguish what African American men, from an individual perspective, perceived to be the problem regarding employment in the field of information technology. Albeit, the significance of this research to my own study, in terms of having provided a current benchmark for the current state of the access which African American men have to information technology, was very important. By being able to distinguish the changes that have occurred regarding access to technology for African Americans between Mossberger et al.'s (2006) and Zickuhr and Smith, a more comprehensive evaluation of the current problem that I addressed was able to be conducted.

Summary of Literature Review

From the research conducted by the authors and theorists cited in this study, a pattern has emerged concerning the problems faced by African American men seeking employment in the IT field. Whether the obstacles were economic, social, educational, or based upon existing hiring practices prominent in the IT industry, research suggests that African American men seeking employment in this field face unique problems. Although many of these problems were encountered upon reaching adulthood for this ethnic group, current research shows that these quandaries actually started from the formative stages of education and social development for this ethnic group. In the area of education some of these problems included factors such as inadequate learning environments for teaching IT based curriculums, the associated difficulties experienced by African Americans with acclimating into predominantly white colleges, and the social significance of the formative experiences of African American men in regards to education STEM based disciplines. When speaking of the availability of technology-related resources for African Americans, a central theme was concerning the difficulties of finding eventual employment in the field of IT without having the prerequisite experience that could be gained having access to the selected technology resource. Lastly, in regards to the existing hiring practices within the IT industry, research identified that problematic issues existed for African Americans, and specifically for African American men, concerning societal perceptions, beliefs, and ideas relating to stereotype threat and racialized and gendered typecasting. With these findings in mind, the purpose of chapter 2 was to provide an overview of the various theories, findings, and conclusions drawn from

professional and academic literature regarding this issue. This chapter also addressed existing gaps in knowledge regarding the aforementioned problems associated with this phenomenon. Given the multifaceted nature of this study, this investigation attempted to provide new ideas based on previous research, which may ultimately help to resolve issues concerning this systemic problem.

Chapter 3 of this study concentrated on such factors as the researcher's role, the reasons for the selected research method, and a justification of the chosen data analysis techniques. Chapter 3 also focused upon the validation of the data collection instruments chosen for this study as well as the rationalization for the selected sampling method selected to conduct this research. Lastly, this chapter covered the aspects of validity and reliability relating to this research in order to justify the formation of conclusions derived from this study in order to connect the gap in the literature to the methods described in chapter 3.

Chapter 3: Research Methods

Introduction

The purpose of this study was to address the socioeconomic challenges faced by African American men, from successfully entering the IT industry. In doing so, this investigation was approached through a qualitative phenomenological research methodology. As explained by Lester (1999), this research approach allows for learning through the "experience from the perspective of the individual, 'bracketing' taken-for-granted assumptions" (p.1). Kumar, Shenoy, and Voralu (2013) corroborated Lester's earlier assessment of the meaning of phenomenological research by elucidating that the use of this methodology "is concerned with the study of experience from the perspective of the individual and is based on a paradigm of personal knowledge and subjectivity" (p. 402). From the use of interpretative phenomenology in an educational setting, Kumar et al. went on to explain that in the context of learning styles, this research method had the potential to play a constructive role in providing a means for students to apply best learning strategies that lead to success. Based on the need to ascertain what some of the inherent problems are relating to the socioeconomic challenges faced by African American men attempting to enter the IT field, it has been established that the phenomenological research method was utilized for this study to address these issues from the perspective of the individual. These individual perspectives were drawn from participants for this study that consisted of African American men enrolled in the City Colleges of Chicago who have sought or are currently seeking employment in the IT industry.

Included in this chapter were the research design and rationale, the role of the researcher, and the rationale for the selection of the research method related to the key concepts of this exploratory research. Chapter 3 also included the basis for the selection of the population sampling method and the means of data collection from the participants of this study to include specifics such as the instruments which were used for this study, the data collection technique, and the data collection techniques. In order to connect the methods described in chapter 3 to the gaps in the literature from Chapter 2, other topics that were covered in this chapter included the sampling strategy for this exploratory research, factors related to participant selection for this research, and issues of trustworthiness which were implemented in this study such as reliability and validity.

Research Design and Rationale

To recapitulate, the purpose of this qualitative phenomenological based study was to investigate socioeconomic factors faced by African American men, from their own view-points, attempting to enter the information technology workforce. In doing so, this analysis focused on the understanding of the experiences of African American men from the perspective of the individual, "bracketing taken-for-granted assumptions and usual ways of perception" (Lester, 1999, p. 1). With this rationale in mind, this phenomenon was addressed through the investigation of the following research questions:

1. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry towards the availability of quality technology-related resources?

For the purposes of this study, the term 'quality technology-related resources' was defined as tools, equipment, methodologies, and technology related sources (e.g. books or online websites) that promote rich technology experiences with the goal of improving the potential for student engagement and general knowledge of technology in a classroom environment.

2. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry, relating to the quality of STEM based education through caring and knowledgeable teachers?

For the purposes of this study, the term 'quality STEM based education' was defined as an education that delves into interdisciplinary and applied approaches that had the greatest potential to result in real-world, problem-based learning (The California STEM Learning Network, 2012). The term 'caring and knowledgeable teachers' was defined as educators who demonstrate enthusiasm for teaching, knowledge in their chosen fields, and persistence in teaching their students.

3. What are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry, relating to the existing hiring practices currently in place within the IT industry?

The rationale for chapter 3 was to discuss specific elements relevant to the study of the problems facing African American men attempting to enter the IT industry; including such factors the researcher's role, the reasons for the selected research method, and a justification of the chosen data analysis techniques. In preparing for this study, it

was established that each of these factors would be very important for developing a conceptual framework by which an outline for possible courses of action may be taken. For example, some of the significant goals of the role of the researcher, as explained by Bachman and Schutt (2013), can be broken down into the following 5 categories:

- Begin with an exploratory research question aimed at the discovery of what people think and how/why they act in certain social settings instead of beginning your research by testing a pre-formulated hypothesis.
- Focus on previously unstudied attitudes and unanticipated phenomena. Such attitudes cannot be adequately understood with a structured set of questions to explore new issues or to investigate hard-to-study groups.
- Orientation of social context to the interconnections between social phenomena rather than to the discrete features of either circumstance alone.
- Focus on human subjectivity, on the meanings that participants attach to events and that people give to their lives.
- Sensitivity to the subjective role of the researcher; the researcher considers himself or herself as necessarily part of the social process being studied and, therefore, keeps track of his or her own actions in, and reactions to, that social process.

The rationale for a selected research method was another very important aspect of this study due to the subjective nature of the exploratory research which was conducted. As explained by the Social Care Institute for Excellence (2013), in conducting research all research contains theory in some form, and these theories are apparent to some degree

in the following ways: (a) the theoretical approach itself (the methodology), (b) the arguments about what might happen, (c) the approach to the fieldwork or data-gathering, and (d) the analysis and synthesis of the findings. When conducting research, two important elements were identified by the SCIE which were crucial to the researcher's selection of the potential methodology to be used, which were the determination of the use of *ontology* (i.e the philosophy of being) and the utilization of *epistemology* (the philosophy or theory of knowing). These positions are closely related due to the fact that Ontology and epistemology "are about the ways that we understand the world and the nature of reality, and our understanding of knowledge within that perceived reality" (SCIE, 2013, para. 6). Based on these underlying principles, the chosen research method, explained later in this study, was selected.

In order to reduce the likelihood of error from the information retrieved from this study, this chapter also focused on the validation of the data collection instruments, the reasons for the inclusion of techniques chosen for this study, and the rationalization for the selected sampling method utilized to conduct this research. Finally, chapter 3 discussed how the factors of reliability, in terms of yielding consistent results, and validity, referencing how well a test measures what it is supposed to measure, for this study would be achieved. By providing this information, a conceptual framework was created for this study which served to outline the course of action taken concerning this project.

Role of the Researcher

As an African American man who has worked in various aspects of information technology for more than 15 years, I have long wondered why in each IT position that I was employed in why I was either the only African American, or one of the very few. Initially, I had thought that perhaps this was so because of factors such as my time spent in the military or the long years of applying myself towards my chosen craft, however, these thoughts ultimately proved how little I had thought about this problem, especially in light of the fact that I was not the only African American man with these qualifications. Overtime, I came to the realization that this observation was not just happenstance, but rather was a significant social problem that a growing number of researchers (Baber, 2012, Carver, 1994; Grimmett, 2010, and Messersmith et al., 2008) were seeking to characterize and find solutions for.

Moustakas (1994) explained that in conducting a phenomenological study of this nature, what the researcher is provided is a method to communicate the real meaning of lived experiences from the point of view of the participant. Bednall (2006) provides a somewhat broader definition of this research method by explaining that phenomenology focuses on the identification of that which is intrinsic and immutable in the significance of an idea under scrutiny. Worthington (2013) provided an even more expansive rationalization of the role of the researcher for the selection of a phenomenological study approach as a research methodology because of the inclusion of numerous advantages to the researcher such as...

- Phenomenology is a school of philosophical thought that underpins all of qualitative research.
- Phenomenological research is a distinct qualitative method for discovering the underlying structure of shared essences of some social phenomenon.
- Phenomenological research might not be adequately addressed in many general research methods text books.

In specifying the benefits of the phenomenological study approach, Worthington (2013) cited the earlier research of Patton (1990) who stated that this research methodology provide the essences which are "the basic implications commonly understood through a phenomenon experienced by a group. An earlier article written by Pringle, Drummond, McLafferty, and Hendry (2011) supported Worthington's premise where it was stated that interpretative phenomenological analysis originates from psychology and distinguishes the fundamental role of the analyst in understanding the individual experiences of research participants. Because this study necessitates the analysis and understanding of African American men in this regard, the adoption of the phenomenological study methodology has been selected.

The underlying principle for selecting a specific data analysis technique, from the perspective of the role of the researcher, is to choose the best method to be able to manipulate data without fundamentally changing the information (Baty, 2009). By doing so, what a researcher now has the capability of accomplishing is a reorganization of known information which helps the researcher to distinguish patterns not otherwise apparent. In this regard, the role of the researcher is made clearer because it is now

known that the goal of the study being conducted is to change the relationship that one aspect of data/information has with another. More importantly, the role of the researcher can be made more pronounced for a specific study through data manipulation by providing a means to answer specific research questions which might not otherwise be apparent from the findings of a study (Baty, 2009). Because of the need to compare, contrast, and analyze the fluidity of different responses expected from the participants of this study, it was expected that the concept of data/information manipulation would play a prominent role in identifying problems relating to African American men seeking employment in the IT field. As is the case with the majority of qualitative investigations, however, what had to be kept in mind was that the researcher's primary role is to serve in the capacity of a data collector, providing a thorough description, analysis, and interpretation of the collected facts (McCaslin & Scott, 2003). A subsequent study conducted by Guest, Namey, and Mitchell (2013) supported this allegation by elucidating that applied research often generates new knowledge, but its primary focus is on gathering and producing data to promote the researcher's knowledge of real-world problems.

Because I am an African American man who has worked in the very same field that I would be questioning the participants of this study about, I recognized that my own experiences could cause potential bias skewing the results of this research. This recognition, however, provided me with a means of distinguishing my own experiences from those of the participants of this study, and to more importantly set aside those experiences by taking a fresh view of this research (McCaslin & Scott, 2003). By taking

such as stance, some aspects of the problems encountered by African American men attempting to enter the IT industry were found to be similar to my own experiences (Bednall, 2006). Albeit, as the researcher of this study, my role was to let the findings from this exploratory research stand on its own merit, providing only an analysis and interpretation of the collected facts as they apply to the phenomenon being studied. Finally, although I, as the researcher, am a resident in the city where this study took place, it was important to make it known that no direct professional affiliation exists between me and either the participants of this study, or the colleges they attend.

Research Method and Design

In order to potentially provide relevant answers to the perceived problem applicable to the phenomenon regarding the socioeconomic challenges faced by African American men attempting to enter the IT industry, a research method had to first be established. For this study, the qualitative methodology was deemed to be the best approach to provide answers to the aforementioned phenomenon. The primary reason for the selection of a qualitative research method for this study was to provide an instrument for investigating and discerning the significance individuals or groups attribute to a social human problem (Creswell, 2009). From a different perspective, Lowhorn (2007) explicated that a qualitative methodology allows for the explanation of a current situation and only describes that situation for that group. It is based on the potential to address the pre-established issues concerning African American men from the perspective of the participants, that the rationale for utilizing the qualitative methodology was selected.

Just as important as the research method for this study was the research design. Whereas the research method is a general technique by which research questions for a study might be answered, a research design is more granular and establishes how a chosen method is applied. As explained by van Wyk (2012) the function of research design is to provide a general strategy for connecting the conceptual research problems to the pertinent empirical research that is achievable. From a slightly different perspective concerning the meaning of research design, van Wyk stated that research design expresses what data is necessary, what approaches are going to be used to accumulate and analyze this data, and how these methods will answer a research question. With this information in mind, the research design used for this study was the phenomenological design. As explained by numerous authors and theorists (Creswell, 2009, Lowhorn, 2007, Moustakas, 1994, and van Wyk, 2012), a phenomenology provides the researcher a means to communicate the actual meaning of lived experiences from the point of view of the participant, which may bridge a gap in existing research for the phenomenon of the problems faced by African American men attempting to enter the IT industry.

Rationale for Non-selection of Other Research Methods

Creswell (2009) asserted that three main research methodologies exist by which research can be conducted, which are the quantitative, qualitative, and mixed method research approaches. In selecting a research methodology, Creswell explained that the decision should be based on the worldview ideas the researcher brings to the study, strategies, and specific means of collecting data. With this information in mind, the methodology selected for this study was the qualitative research approach. The reason

for this choice is based on the fact that qualitative research allows for much more detailed investigation of phenomena, answering questions such as who was affected, what factors were involved, and why such an issue has occurred (Nicholls, 2011). Although weaknesses such making quantitative predictions and testing hypotheses with large participant pools are extant for this methodology, the qualitative approach is most appropriate for exploring and understanding social problems ascribed to by individuals or groups (Creswell, 2009).

Due to the fact that the quantitative research method is not designed to provide an explanation of the why of an occurrence, this approach was not deemed suitable for a study such as this. As described by Patton (2014), quantitative research necessitates the use of "standardized measures so that varying perspectives can be fit into a limited number of predetermined numerical response categories" (p. 22). Ilada (2014) provides additional information regarding the limitation of the quantitative research by explaining that "The greatest weakness of the quantitative approach is that it decontextualizes human behavior in a way that removes the event from its real world setting and ignores the effects of variables that have not been included in the model" (p. 1). Since the purpose of this study is to identify problems faced by African American men attempting to enter the IT field from the perspective of the participants, the quantitative research approach would be too limiting a process to adequately provide answers to this phenomenon.

Of the three main research methods described by Creswell (2009), the mixed method approach is by far the most comprehensive. Even with older examinations of the advantages of the mixed method approach it was identified that this research method

identified information-rich participants who had particular characteristics, detailed understanding, and/or a direct experience which was relevant to the phenomenon being studied. One such examination was provided by the earlier research of Johnson and Onwuegbuzie (2004), which supported Creswell's later assertion that the mixed method approach is the most comprehensive by explicating that this style of research was a class of exploratory study that allowed the researcher to combine quantitative and qualitative research techniques into a single study. By attempting to legitimate the use of both quantitative and qualitative approaches in answering research questions, issues of rigor from the single use of either approach were greatly reduced (Johnson & Onwuegbuzie, 2004). Regardless of these advantages, however, Johnson and Onwuegbuzie went on to explain that one of the greatest disadvantages to conducting a mixed method study is that the researcher's implemented theories or selected categories may not reflect the understandings of the constituencies being studied. Johnson (2006) also added that a major disadvantage of utilizing the mixed method approach is that this methodology is more time consuming to conduct due to the combining of techniques required for qualitative and quantitative research. Finally, Johnson elucidated that the difficulty of one researcher conducting a study that is both quantitative and qualitative can be overwhelming, which is most often attributed to the fact that the two methods may have to be performed concurrently. Because of the combination of these factors, the mixed method approach was not selected for this study.

Rationale for Nonselection of Other Research Designs

As previously indicated, the phenomenological research design was selected as the most suitable information gathering mechanism by which obtained information could effectively address the research problem of this study. Along with the earlier citation from Moustakas (1994) leading to the rationale for the selection of the phenomenological research design, Creswell (2009) added that this design allows the researcher to "identify the essence of human experiences about a phenomenon as described by participants" (p. 13). Since it is indeed the experiences, understanding, and beliefs of the participants that are being sought regarding the perceived problems of African American men attempting to enter the IT industry, this research design offers the best means of conducting this exploratory study. Even with this said, however, the rationale for the nonselection of other research designs needed to be addressed in order to fully grasp the logic of the selection of the phenomenological research design for this study.

From previous research Smith (2012) established that according to Creswell (2009), an ethnographic research design is a means of investigation by which the researcher conduct an analysis of an intact cultural group in a natural setting over a protracted period of time by primarily amassing observational and interview data. Smith also confirmed from an earlier study that Hoey (2011) both supported and simplified Creswell's premise by further explaining that the ethnographic approach to qualitative research can be considered as an insider's point of view, "allowing critical categories and meanings to emerge from the ethnographic encounter rather than imposing these from existing models" (para. 4). However, regardless of the apparent usefulness of this

research design, the fact that the ethnographic approach relies on observation rather than open ended answers derived from a data collection instrument such as an online questionnaire made the ethnographic research design a nonviable option for this study.

In considering the grounded theory research design Smith's (2012) earlier research of Creswell (2009) identified that this particular research design is a stratagem of investigation in which the researcher obtains a general, action, or interaction grounded in the viewpoints of participants. Crossman (2012) further explained that "grounded theory is an attempt to develop theories from an analysis of the patterns, themes, and common categories discovered in observational research, which also emphasizes research procedures when developing theories" (para. 2). Although using grounded theory research design would prove useful if interaction through focus groups or interviews with the participants of this study were conducted, this research design did not allow for communication through electronic surveys or questionnaires, and so was not selected. More importantly, as explained by Moriarty (2011), "grounded theory produces theories that are too small-scale and neglect the impact of the broader world upon respondents' lives" (p. 14). With the focus of this research being the socioeconomic problems faced by African American men attempting to enter the IT industry, the need identify the impact of this phenomenon in a broad view is paramount to this study.

As described by Creswell (2009), the case study research design is "a strategy of inquiry in which the researcher explores in depth a program, event, activity, process, or one or more individuals" (p. 13). Later research conducted by Summers (2012) supported Creswell's supposition by explaining that the case study research design

investigates an existing phenomenon from multiple sources within its real-life framework when boundaries between the two are not obvious. Although the case study research design was carefully considered for this study because of its flexibility to allow researchers to conduct research through the use of broad open-ended questions, this research design was ultimately rejected. The primary reason for abandoning the case study research design as an exploratory instrument for the investigation of the problems African American men contend with when seeking IT related careers is the difficulty of preventing researcher induced bias (Pannucci & Wilkins, 2010). Such bias would be introduced from the use of this method by involvement of the researcher with the participants who are being studied, ultimately leading to the researcher getting to know the participants as people instead of research participants, which would in all likelihood have a tendency to skew the results of the study being conducted (Onwuegbuzie, Leech, & Collins, 2008). Being both the researcher and an African American man, it is of extreme importance that I distance myself from any factors that could potentially bring about partiality, prejudice, or preconceived notions from my perceptions of the results drawn from this study.

Creswell (2009) expressed that the narrative research design is "a strategy of inquiry in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives" (p. 13). As with other research designs mentioned thus far, the narrative research design is most easily implemented through personal interaction with the participants of a study, and so would not be advantageous for a study conducted through the use of online questionnaires as the primary research

gathering instrument. Even was this not the case, however, a paramount reason for the non-selection of the narrative research design for this study was concluded from the fact that this research design does not try to answer inquiries, nor are they extrapolative of prospective behaviors (Colorado State University, 2011).

Population and Sampling

With the intent of this study being to identify possible reasons associated with the perceived socioeconomic problems faced by African American men attempting to enter the IT industry, the population selected for this research were African American male students (ages 23 – 30) enrolled in the City Colleges of Chicago. The City Colleges of Chicago is a conglomerate of seven community colleges that provide occupational, adult education leading to good jobs or affordable four-year degree opportunities (City Colleges of Chicago, 2013). These colleges include: The Richard J. Daley College, Kennedy-King College, Malcolm X College, Olive-Harvey College, Harry S Truman College, Harold Washington College and Wilbur Wright College. Of the 120, 000 students enrolled in the City Colleges of Chicago 7% of the students were Asian, 37% African American, 35% Hispanic, and 18% were White as of 2011 (City Colleges of Chicago, 2013).

In choosing a sample of African American male students from the City Colleges of Chicago, the first consideration, as it applies to this study, was why this particular populace should be selected. From research, it was established that the City Colleges of Chicago (CCC) is a predominantly African American institution that provides real-world experience via teacher-practitioners, internships and top-notch facilities (City Colleges of

Chicago, 2013). More important to the focus of this study, CCC offers an affordable curriculum of STEM based disciplines preparing students with the required skills to work for information technology companies such as Cisco®, CompTIA®, Google®, IBM®, Microsoft®, Motorola Solutions®, Vanguard®, and Verizon Wireless® (City Colleges of Chicago, 2013). The CCC also offers students and graduates a 'first pass at job opportunities' through existing job sponsorship programs available through the college (City Colleges of Chicago, 2013).

The sampling method utilized for the population of this study was a type of purposive sampling known as the homogeneous sampling method. Patton (2002) attested to the fact that homogeneous sampling is a research inquiry instrument that allows a researcher to choose a target population who are of a similar or identical subculture or have analogous characteristics. Later research conducted by Curry, Nembhard, and Bradley (2009) established that purposeful sampling "seeks to include the full spectrum of cases and reflect the diversity within a given population by including extreme or negative cases" (p. 1445). The sample size of this study depended on the encountered breadth and complexity of the research project as different elements of this exploratory study were made known (Curry, et al., 2009). The adequacy of the selected sample size was determined by the principle of theoretical saturation, which according to Curry, et al. is the point at which no new information materializes from the study of consecutive data from a sample that is varied in relevant characteristics and experiences.

Given that the focal point of my study was centered on the problems associated with African American men attempting to enter the IT industry, the prerequisites of the

use of the homogeneous sampling, as described by Patton (2002) and later by Curry, et al., (2009), were in line with this research approach. Focusing further on the homogeneous sampling method, what had to be taken into account was the sampling frame used for this study. As explained by Herek (2012), the sampling frame is a list of all elements in the chosen population of interest that operationally defines the target population from which the sample is drawn and to which the sample data will be generalized. With this guidance in mind, the next consideration for this study was the target age-group of the population being examined. From information acquired from the National Center for Education Statistics (2012) it was reported that between 2000 and 2010, the enrollment of students under age 25 increased by 34% whereas enrollment of students 25 and over rose 42% during the same time frame. From these statistics, it was projected that an appropriate sampling frame which could potentially capture the homogeneous responses provided by the target population of this study would be the inclusion of African American men from ages twenty three to thirty. By bracketing the variables of African American men seeking employment in the IT field, students enrolled in the City Colleges of Chicago, and the age group twenty three to thirty, Patton's and Curry, et al.'s, guidelines for conducting a homogeneous sampling was again satisfied.

For the sampling size selected for this study, what had to be kept in mind from the very outset of an exploratory study such as this was that the goal was to discover potentially important insights relating to the perceived problem instead of 'measuring' the results of the conducted research. DePaulo (2000) supported this objective for implementing a qualitative sampling size by stating that "estimating the chances of

missing an important perception is completely different from estimating the percent of a target population who hold a particular perception" (para. 36). From a different perspective, later research conducted by Mason (2010) pointed out that "Qualitative samples must be large enough to assure that most or all of the perceptions that might be important are uncovered, but at the same time if the sample is too large data becomes repetitive and, eventually, superfluous" (para. 2). By combining the connotations derived from the conclusions drawn by DePaulo and Mason concerning what an acceptable sampling size should be for a study such as this, the guiding principle was to make sure that the coverage of as perceptions as possible were included in this study without including redundant information that added nothing to this investigation. Lastly, a final factor taken into account for this study in selecting sampling size was the aim of the study to be conducted, which according to Charmaz (2006), is the decisive driving consideration of the design of the project, and therefore the size of the sample.

Knowing that what was sought for this study were the perceptions of African American men relating to the problems encountered acquiring IT employment, the sampling size was based on the precept that for a homogeneous sample selection, research should be based on a small group of people (Patton, 2002). With this understanding in mind, it was decided that the sampling size for this study would consist of a viable number of African American men currently enrolled in CCC who would be able to answer as many aspects as possible of the research questions from which this study is based. As argued by Mason (2010), "no logical reason exists why samples

ending in any one integer would be any more prevalent than any other in qualitative studies" (para. 43).

The eligibility criterion for study participants involved in this exploratory study was made up of several consistent characteristics which are universally shared among the members of the selected group. The first criteria was that the participants involved in this study must all be African American men, ages twenty three to thirty, who were currently enrolled in the City Colleges of Chicago during the period being researched. Secondly, the participants had to have a passing grade point average of 2.0 (i.e. a letter grade of C) or better, and be currently majoring in an information technology based discipline. Such disciplines could include, but not limited to, fields of study such as Computer Programming, database administration, PC repair, network administration, software development, and/or computer support specialist as an example of some of the curriculums available in most college level programs. The study participants must also have attempted, or were presently attempting, to apply for employment in the IT field. Lastly, the participants of this study must be able to share their experiences, as it relates to how training and education have prepared them for acquiring employment in said field, and what their perceptions were of the companies they were seeking employment from.

To establish a means for how participants are known to meet the criterion for this exploratory study a method known as *unmoderated remote usability testing*. According to information from an online called TecEd (2013) it was explained that *unmoderated remote usability testing* is a technique for confirming that participants of a study meet the conditions required by a researcher to conduct a study through the use of commercial

products and services to collect user data. Soucy (2010) explained further that unmoderated remote usability testing allows a researcher to obtain information from hundreds of people simultaneously, in their natural environments, which, in turn, can provide either quantitative data or qualitative information. To facilitate the unmoderated remote usability testing for this study, a computer-assisted web survey and questionnaire program known as SurveyMonkey® was used. As explained from information provided from SurveyMonkey's (2013) web site, this tool allows users to define questionnaires and capture responses from research participants and comes with predefined templates for academic research.

Among the many flexible and advanced features of SurveyMonkey is the capability to get the data needed with required questions and response validation as well as eliminating bias with random assignment and randomization (SurveyMonkey, 2013). It was also through the use of SurveyMonkey that participants were identified, contacted, and recruited for the purposes of this study. This was accomplished through joining a pre-paid membership plan provided by SurveyMonkey where I received the assistance of an 'Audience Project Specialist' who specializes in targeting and recruiting specific populations for research projects such as the one conducted for this study. The Audience Project Specialist chose research participants who met the criteria of this study from a pool of SurveyMonkey Contribute members who are a diverse group of people, who are reflective of the population in the United States, comprised of people who have Internet access and have joined a SurveyMonkey to answer questionnaires based on their interests (SurveyMonkey, 2013). Contact with research participants was implemented by the

Audience Project Specialist through the email capabilities of the SurveyMonkey address book, which allows researchers to create custom email invitations, submitted by the Audience Project Specialist, and track the number of responses from the research participants for this study (SurveyMonkey, 2013). Evidence to use the SurveyMonkey platform to conduct this research was provided to the Walden IRB via an approval letter from SurveyMonkey authorizing this exploratory study and confirming the source of the contact information.

The relevance of characteristics of the selected sample hinged on the answers sought to the research questions posed earlier in this study. Additionally, a direct correlation existed between the selected criterion between the chosen participants of this investigation and previous research conducted by theorists and authors cited thus far in the literature review portion of this study concerning the aforementioned problems faced by African American men attempting to enter the IT industry. By choosing the homogeneous factors that effectively link the distinguishing dynamics of race, gender, age, location, and intended profession, what was established was a means by which the theme of this study could be contrasted and compared to what is known concerning this phenomenon. Through the use of this purposive sampling technique for identifying associated problems relating to African American men seeking careers in the field of information technology, a gap in existing knowledge regarding this issue was provided from this study.

Sampling Strategy

The sampling strategy used for the participants of this study was the homogeneous sampling method. As explained by Patton (2002) a homogeneous sampling approach is a means by which the researcher selects participants who belong to the same subculture or have similar characteristics. Although Patton asserted that the homogeneous sampling method was best suited for focus groups, Kilinc and Mahiroglu (2009) explained that it could also be an effective sampling method when used with open ended questionnaires. What was found through the research conducted by Kilinc and Mahiroglu was that when using a homogeneous sampling approach, open-ended responses would permit a researcher to identify and explore comments made by participants of a study which were beyond the responses that closed-ended questions could provide.

Because my study focused specifically on African American men and employment in the information technology industry, the utilization of homogeneous sampling is well suited to the research which was conducted. The rationale for this claim stemmed from the fact that with homogeneous sampling method, "A homogeneous sample is often chosen when the research question that is being address is specific to the characteristics of the particular group of interest" (Lærd Dissertation, 2011, para. 7). Furthermore, this approach allows for the capture of critical themes submitted from the participants of this study in order to analyze, compare, and contrast my own exploratory research with the research conducted by other theorists who have studied this phenomenon from a broader or different perspective.

Data Collection

Instruments

For the purposes of this study it was found that both a distinction and a clarification needed to be provided for the potential use of surveys, questionnaires, or interviews as a data collection instrument to be used for this research. The rationale for making such a distinction originated from the need to explain to the reader how for a phenomenological study such as this, the goal of the use of online questionnaires, which was to get the perceptions and perspectives from research participants was achieved. By making these differentiations, clarity of both intent and meaning regarding the researcher's selected data collection instrument was realized.

Of the three potential data collection instruments (i.e. surveys, questionnaires, or interviews) which could be used for this research, the instrument that was first identified for non-selection was the survey. According to Jansen (2010), a survey generally only covers quantitative studies that primarily focus on the description of numerical distributions of variables (e.g. prevalence rates) in the population. With this information in mind, and in understanding that a survey is more suited to closed-ended questions, it was identified that this data collection instrument did not meet the purposes for conducting a study such as this.

The second data collection instrument that was considered for this study was the interview method. From the online table providing examples of data collection methods, Siebold (2011) explained that that from face-to-face interviews, the use of the interview method as a data collection instrument benefited the researcher in order to fully

comprehend someone's impressions or experiences, or learn more about their answers to questionnaires. Martin (2014) explained further that from face-to-face interviews, a distinct advantage was provided to the researcher to establish a connection with potential participants and therefore gain their support. Yet another advantage of interviewing as a data collection instrument is the general consensus that a lot can be gained from the nonverbal cues in interviews, especially when looking at the perspectives and perceptions of participants of research participants that a research can actually see. Nevertheless, in considering this particular data collection instrument, what also had to be taken into account were the disadvantages of the use of interviews in qualitative research. As a case in point Whorton (2009) asserted that depending on the skills of the interviewer or the sensitivity of the topic "the interviewee will pull their punches and not tell the whole truth, or the interpretation of the end results starts to resemble a process of hearing what you want to hear" (para. 17). Siebold (2011) also explicated that depending on how close the researcher is, on a social or emotional level, bias can be introduced into the study by the researcher's own preconceived perceptions. As an African American man who has spent years in the IT industry and who has also experienced socioeconomic challenges of my own, the choice of the interview method as a data collection instrument could potentially slant the findings of this study and make any conclusions derived from this research not only biased, but fallacious as well. Knowing these potential complications in advance, another means for collecting data was sought for the purposes of this study.

The data collection instrument considered, and ultimately chosen, to facilitate the upcoming research for this study was the questionnaire method. Unlike interviews that,

depending on the sensitivity of the subject matter and the skill of the interviewer, may yield half-truths or result in answers that the interviewee thinks the interviewer wants to hear, with questionnaires "people tend to be more truthful while responding to questions regarding controversial issues in particular due to the fact that their responses are anonymous" (Martin, 2014, para. 9). In considering the needs of the researcher, several other advantages exist from the use of questionnaires as a data collection instrument, which include the following benefits retrieved from United States Centers for Disease Control and Prevention (2008):

- When resources are limited and you need data from many people: You can disseminate questionnaires relatively inexpensively. Your costs will increase if you need to do a lot of follow-up to get a sufficient response rate.
- To gather data about knowledge, beliefs, attitudes, and behaviors: Questionnaires are helpful in gathering information that is unique to individuals, such as attitudes or knowledge.
- When it is important to protect the privacy of participants: Questionnaires are helpful in maintaining participants' privacy because participants' responses can be anonymous or confidential. This is especially important if you are gathering sensitive information.

Unlike what might be thought of questionnaires, this data collection instrument is no longer just a paper generated tool for gathering data as it was in the past.

Questionnaires are now Web-based and represent "a new and inevitably growing methodology for the use of Internet based research" (Martin, 2014, para. 10). More

importantly, it was found that "questionnaires can ask more complex questions with more complex answers beyond responses such as *yes*, *no*, or the option next to a checkbox, which differs from person to person and will convey subjective information often based on what is seen in a natural setting (OpenStax, 2012). Even so, what was found to be the driving factor for the selection of questionnaires as the data collection instrument for the research conducted for this study was the concept of computer-assisted web interviewing (CAWI). According to information derived from the Web-site of the software development company called Survey Expression (2013), CAWI is an Internet technique in which the interviewer follows a script provided in a website that uses questionnaires made in a program for creating web interviews. With this information in mind, what was identified was that due to the flexible nature of CAWI's, online questionnaires could now be used for the purpose of conducting semi-structured interviews without being limited to such restrictions as scheduling, limitations to research participants, or inconsistencies in how questions are asked.

One of the more well-known computer-assisted web interviewing programs in existence today is known as SurveyMonkey®, which was used as the data collection instrument used to conduct this research. Unlike what the name may imply, SurveyMonkey was found to be much more than a simple online site from which surveys could be created. According to Smyth (2013), "SurveyMonkey is a relatively new tool researchers use to assess candidates with material relevant to the questions being asked" (para. 3). This online information collection instrument was developed by Ryan Finley in 1999 and launched as a part-time project that eventually was established as the Internet's

most popular web interviewing program, questionnaire submission application, and survey tool, used by individuals and organizations throughout the world (SurveyMonkey, 2013). SurveyMonkey has been used by many participant groups to include 99% of the Fortune 500, academic institutions, and organizations (SurveyMonkey, 2013).

It was because of the innovative concept that SurveyMonkey allows a researcher this Web based program was ultimately selected to gather research for this study. From information derived from the SurveyMonkey Web site, this instrument allows researchers to delineate and conduct online questionnaires and capture responses from research participants in order to capture both the context and cultural specificity of the phenomenon addressed in this study. To best implement the requirements for conducting a qualitative study focusing on the socioeconomic problems faced by African American men attempting to enter the IT industry, a means for collecting reliable information through non-ambiguous interview-like questions would be required. This goal was achieved by the utilization of a Comment/Essay template offered through the SurveyMonkey tool, which enabled participants to answer open-ended questions with responses as large as necessary (SurveyMonkey, 2013). To facilitate the goal of implementing an online questionnaire, the participants of this study were also given the capability of expounding on and adapting their answers to the questions through the use of SurveyMonkey's mail server. Responses from the selected demographic through SurveyMonkey were drawn by an audience panel supplied by SurveyMonkey whose information is always kept private when responding to online questionnaires of this type focusing upon exploratory research.

Structure of the Instrument. Having discerned the instrument to be used, the next step of this research was to form the actual organization of the instrument. In developing the structure of the questionnaire guide used as the research instrument for this study, it was determined that an effective means by which answers retrieved from research participants could be grouped and classified was through the use of Maslow's (1943, 1954) hierarchy of needs. Maslow's hierarchy of needs, illustrated in Appendix B, emphasized the significance of self-actualization and included five motivational needs, which were as follows:

1. Biological and physiological needs - air, food, drink, shelter, warmth, sex, sleep.
2. Safety needs - protection from elements, security, order, law, limits, stability, and freedom from fear.
3. Social needs - belongingness, affection and love, - from work group, family, friends, and romantic relationships.
4. Esteem needs - achievement, mastery, independence, status, dominance, prestige, self-respect, and respect from others.
5. Self-actualization needs - realizing personal potential, self-fulfillment, seeking personal growth and peak experiences.

Unlike what may be thought by the casual observer of this hierarchy of needs concerning this study, a direct correlation exists between the problems faced by African American men seeking careers in the field of information technology and these aforementioned needs. For example, from a generally holistic worldview, McCollum

(2004) paralleled many of the needs spoken of by Maslow (1943, 1954) in focusing on the premise that the examination of the strengths and unique contemporary needs of African American men is so controversial an issue that it is often not discussed except in the most exclusive of settings. Later research conducted by Lewis et al. (2010) centered on the assertion that specific needs for African American males must be addressed in properly preparing this ethnic group to be successful in STEM based careers. In line with these modern day adaptations of Maslow's hierarchy of needs supplied by McCollum and Lewis et al., the structure of the questions posed to the participants of my own study were intentionally grouped under the five levels of need, defined by Maslow, in order to yield the most information-rich and flexible responses possible for this specific research. The specific questions asked of the participants of this study represented subtopics from the research questions from which this examination is based upon regarding the challenges faced by African American men attempting to enter the IT industry.

Identifying and addressing psychological needs. The research conducted by Urwiler and Frolick (2008), which compared and contrasted Maslow's (1943, 1954) hierarchy of needs with a hierarchy of progressive IT maturity within organizations, illustrated in Appendix C, described psychological needs as the most basic of needs for humans which included "oxygen, food, water, and warmth in order to survive" (p. 84). In focusing on these needs from the individual perspective, however, the paradigm provided by Urwiler and Frolick takes on an entirely different meaning due to the point of focus changing from progressive IT maturity within organizations to survival for individuals seeking careers those IT based companies. From this bottom-up perspective, the

psychological needs of the individual were probed and analyzed through the combination of the following questions:

- How long are you willing to wait for the opportunity to be hired in the IT field?
- Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?
- What is your interpretation of how your current economic situation has played a part in your ability to obtain employment with the company(s) that you have applied for an IT job position with?

In accordance with Maslow's (1943, 1954) hierarchy of needs, these questions delved into the topic of what would a person do if the profession for which he or she were educated and trained in was not obtainable. Arguably, such conditions would leave the individual with no other choice but to seek other opportunities for employment in order to satisfy the basic needs of acquiring food, water, and warmth (i.e. an affordable home supplying this last need) in order to survive. As explained from the Maslowian based research conducted by Urwiler and Frolick (2008) "if one or more of these basic needs is lost, the priorities of a person immediately shift to satisfying the missing need" (p. 84). With this premise in mind, a means for analyzing internal responses to external factors such as the lack of economic, educational, and other societal opportunities available to African American men, from youth to adulthood, spoken of by Carver (1994) and later by such authors as Messersmith et al., 2008, Lynn, 2009, and Malone and Yin, 2011, was provided for the purposes of this study.

Identifying and addressing safety needs. From the viewpoint of an IT based organization, Urwiler and Frolick (2008) theorized that *stability and security needs* were the equivalent to the safety needs defined by Maslow (1943, 1954). The stability and security needs for a secure IT infrastructure for a company necessitate that "IT standards, controls, policies, and procedures regarding the selection, deployment, and management of infrastructure were in place in order to provide a framework for overall systems stability" (Urwiler & Frolick 2008, p. 85). Notwithstanding, Maslows earlier explanation for the meaning of safety needs from the perspective of the individual finds relevance from the explanation that safety needs can be exhibited in many ways based on environmental circumstances such as when the safeguard from physical endangerment becomes vital or when the state of personal safety is threatened (Urwiler & Frolick, 2008).

No matter what perspective such needs were viewed from the commonality which existed between the two characterizations of the needs for safety were the sought after tenets of stability, protection, and peace of mind from external threats. Accepting this premise as an suitable amalgamation of safety oriented needs spoken of by Maslow (1943, 1954) and later by Urwiler and Frolick (2008), a link was established to the cited research of Harper-Anderson (2008) who contended that artificial barriers based on attitudinal bias shaped a dissimilar playing field for African Americans compared to Whites in the IT industry. The same connection can be said to exist for the research conducted by Smith and Joseph (2010) who argued that many companies were extant whose employers relied on racialized and gendered stereotypes in their rationales for

hiring African American employees. In either case, what was found through a comparative analysis of the research conducted by Harper-Anderson's and Smith and Joseph's examinations regarding the challenges faced by African Americans seeking careers in the IT industry was the aforementioned lack of stability, protection, and peace of mind from external threats. With this idea in mind, the structure of the questionnaire guide for the following questions was created to examine this particular area (i.e. safety needs) from the perspective of the individual for the participants who took part in this study:

- What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT related discipline that you have been studying for?
- What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job position with?
- What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?

From asking questions such as these, common themes were established such as self-doubt, anxiety, fear, etc., which were identified and linked to by this research as responses to the safety needs of these participants not being met. Maslow (1943) explained the significance of such themes in regards to satisfying safety needs by stating the primary objective is a substantial determinant not only of a person's current world-view, but also of that person's philosophy of the future. To better understand the significance of these themes, the qualitative data analysis program called Nvivo®

(version 10) was used to analyze non-numerical or unstructured data that these themes represent.

Identifying and addressing social needs. The study conducted by McCollum (2004), which examined the unique contemporary needs of African American men, provided a very revealing aspect of this ethnic group in making the argument that "the Black community focuses a lot on being social" (p. 59). The question derived from this assertion was why was so much attention placed on social integration into STEM based fields such as information technology in the Black community? One answer to this question was found through the reiteration of Maslow's (1943) explanation of social needs, provided by Urwiler and Frolick (2008). Urwiler and Frolick defined the Maslowian description of social needs as the fulfillment of the need to be associated with a group which a person can relate to, which would impart a sense of mutual association and affirmation for that person. In providing a correlative match for the social needs definition provided by Maslow, Urwiler and Frolick went on to explain that from an organizational viewpoint, the concept of *integrated information needs* existed (2008). This company based need focused on the goal that "more integrated systems be implemented in order to fully realize the power of information across the company" (Urwiler & Frolick 2008, p. 86). As with the comparative analysis for safety needs, whether looking at social needs from the perspective of an organization or the individual, commonalities were shared among both views. These common themes included characteristics such as support, assimilation, and the gratification of gaining whatever is being sought from being part of a group or organization. With this understanding, the

structure of the questions asked of the participants for this study focused on what the individual's opinions and/or beliefs were concerning how factors such as race, education, and IT training that was provided played a negative or positive role in fulfilling their social needs to gain employment in IT oriented organizations:

- If you feel that you are adequately trained in the IT discipline that you have selected as a potential career field, what do you think has stopped you from being hired in your branch of IT?
- From your perspective, how do you think matters of race and/or gender have played a role in your ability/inability to obtain employment for the IT related position(s) you sought?
- What has been the level of concern from your teacher(s)/Instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?

The basis for these questions in developing the structure of the research instrument used was derived from research previously cited in this study which contained inherent connotations relating to the social needs of African American men seeking career employment in the IT field. For example, Baber's (2012) research provided strong evidence that due to alienation within some educational institutions, the social needs of African Americans were not being met, resulting in the inability to establish a connection to the institution. Conversely, the research conducted by the Level Playing Field Institute (2011) also delved into the social needs of African Americans by examining the effects that company practices and culture, for IT based organizations, influenced the

recruitment and hiring of these minorities. Through the research of these authors, the idea for the structure of the questions provided above was created.

Identifying and addressing esteem needs. Urwiler and Frolick (2008) explained that esteem needs, from the perspective of Maslow (1943, 1954), were the degree to which individuals feel content with their achievements, confidence level, respect, and status within the group or groups to which they identify with. From a broader company level view, esteem needs were compared to *competitive differentiation*, which is an essential part of "the organization's strategic planning process not only as an enabler of a more efficient entity, but also as a means of leap-frogging the competition" (Urwiler & Frolick 2008, p. 86). Whether from the standpoint of the individual or the organization, what was found as a common theme between these two interpretations was the need to advance to a level commensurate to the accomplishments earned. Even so, a challenge found in differentiating *self-esteem need* from *simple pride* from the participants of this study was the determination of what was to be used as a baseline to establish validity from the responses provided. After careful consideration, the baseline decided upon to gauge the difference between esteem needs and pride based responses from the participants of this study were answers that expressed actual accomplishments (e.g. high grades, advanced IT certifications, awards, etc.). Based on this premise, the following questions were asked of the participants of this study:

- From the education/training that you have received thus far, do you think that you are as equally qualified as White male students to acquire a good paying job in the IT industry? Explain.

- For the IT related field that you have been studying for in college, have you had access to the latest tools, equipment, and techniques required by companies in the IT industry to obtain an 'other than entry level' IT position? Why or why not?
- How has the education/training that you have received thus far prepared you to get a job in the IT industry?

The underlying motivation for asking this particular series of questions of the participants of this examination were the studies conducted by Houston-Brown (2002) and Warren et al. (2010). From Houston-Brown's research, which focused on the perceived barriers to African Americans and Hispanics seeking IT careers from the viewpoint of professionals that already worked in the IT field, an opportunity was afforded to study this problem from the specific perspective of African American men seeking careers in this field. In doing so, what became apparent was the possibility that a major reason why so few African American men existed in the field of information technology was that the esteem needs of this ethnic group were not being satisfied. Conversely, the research conducted by Warren et al. (2010), which concentrated on the relationship between Internet based content tailored specifically to White mainstream audiences and the needs relating to Socioeconomic Status (SES) of African Americans indirectly demonstrated yet another aspect of what can be construed as a challenge to the esteem needs spoken of by Maslow (1943, 1954). Owing to the various views of the research conducted by these authors, the design for the structure of the research instrument relating to the questions above was created.

Identifying and addressing self-actualization needs. As cited earlier, this study was conducted through the lens of Fay's (1987) critical theory perspective, which is "empowering human beings to transcend the constraints placed on them by race, class, and gender" (Gentry & Harrison, 2010, p. 74). Fay explained further that a commitment to a critical social science is seeking to understand the repressive aspects of a society in order to stimulate a group to change their culture and ultimately liberate themselves. In line with Fay's explanation of the critical theory perspective was Maslow's earlier research on the subject of self-actualization needs. According to Urwiler and Frolick (2008), self-actualization needs, as characterized by Maslow (1943, 1954), was the point beyond the need to meet self-esteem needs, where individuals attempted to acquire all of what they feel they were capable of becoming, in order to reach the pinnacle of their potentials. This same premise existed from the top-down perspective of organizations, classified by Urwiler and Frolick as *paradigm shifting*. This organizational level view of satisfying actualization needs was characterized by Urwiler and Frolick as an application of information technology implemented by an company that positively changed consumer buying behavior and the expectations of companies in the competitive space. Examples of implementations of information technology fitting this criterion were Amazon's book selling business, Netflix's DVD rental business, and Apple's integration of the iTunes service (Urwiler & Frolick, 2008). Be this as it may, a comparative analysis of Maslow's 'self-actualization needs' with the 'paradigm shifting' goal explained by Urwiler and Frolick both focused on the realization of empowerment through reaching a believed or anticipated potential. In conducting an examination of such precepts from the individual

perspective of African American men seeking careers in the field of information technology, the following questions were asked of the participants of this study:

- What are your goals concerning a career in the IT industry for your chosen discipline?
- What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?
- Do you consider IT as a career, or is it just another job for you until something better comes along?

In asking questions such as these, the structure of the chosen research instrument for this study was built upon an underlying query which each of the cited authors from the literature review of this study either directly or indirectly asked, which was, "what are the problems that have precluded African American men from realizing their needs of self-actualization in attaining careers in information technology?" In line with the primary research questions posed for this study, this problem was looked at from the view of educational challenges faced by African American men by Baber (2012), Carver (1994), Lynn (2009), Messersmith et al. (2008), and Warren et al. (2010). From the standpoint of existing hiring practices in IT industry, the research conducted by Grimmett (2010), Harper-Anderson (2008), Houston-Brown (2002), and Smith and Joseph (2010) each contained questions that ultimately related back to the self-actualization needs of African American men not being met. Lastly, on the topic of access to technology resources, Griffin and High (2011), Mossberger et al. (2006), and Zickuhr and Smith (2012) each posed questions that at first hand related directly to the underrepresentation

of African American men in the IT industry, but also included strong connotations relating either directly or indirectly to the needs of self-actualization for this ethnic group not being met. Based upon the diverse findings of the research conducted by the aforementioned authors and theorists that focused on the numerous socioeconomic problems faced by African American men seeking careers in the field of IT, a means for studying this multi-dimensional issue from the perspective of the individual was provided.

Data Collection Technique

The computer-assisted web questionnaire consisted of fifteen open-ended questions, as presented in Appendix D of this study titled as Questionnaire Guide. Concepts specific to qualitative research for this particular study were examined through content analysis from answers provided by the research participants. Queries for this online questionnaire represented a subset of queries relating to the three primary research questions upon which this study was based, focusing on answers concerning education in IT based disciplines, availability of quality IT resources, and existing hiring practices within the IT industry. The questions which were decided upon for this online questionnaire were specifically formed to either have a direct relationship to the main research questions for this study, or establish dynamics which potentially impacted responses provided by research participants that related to the research questions. With this understanding, the queries for the online questionnaire were mapped to the main research questions in the following manner:

- Research Question 1 correlates to Online Questionnaire Query Numbers 5, 6, 9, and 11.
- Research Question 2 correlates to Online Questionnaire Query Numbers 2, 4, and 12.
- Research Question 3 correlates to Online Questionnaire Query Numbers 3, 7, 8, 10, and 13.
- Online Questionnaire Query Number 1 is for establishing fields of interest in the field of IT only.
- Online Questionnaire Query Numbers 14 and 15 are for establishing factors such as the mind-set (i.e. attitudes) of research participants towards employment in the field of information technology.

The duration of information collection events started from the time that permission from the Walden University IRB was received for this study until the conclusion of the exploratory research project. The frequency of data collection events was dependent on the needs and responses from the participants of this study. What was made clear to all research participants was that each participant has the right to withdraw from this study at any time from the beginning of this exploratory research to the end of the study, including during follow-up phase of this research project. The goal of the questions asked in the questionnaire was to ascertain, from the perspective of the participant, what problems were encountered seeking employment in the IT industry, and through coding of emergent themes, what could potentially be done to address these issues.

The results of this research were made available to all participants of this exploratory study. To disseminate the results from my research I utilized another feature of SurveyMonkey that allowed me to create a *Shared Data Page*. This feature allowed me to publish the results of my research after completion, (with a choice of plain text, tables, charts, or graphics) so that the participants of my study could get access to research results of this study via a unique URL (i.e. a web address) provided by SurveyMonkey. These results were available for 8 months to 1 year to all research participants, dependent on the time of enrollment in my SurveyMonkey membership plan.

To augment the validity of the questions asked of the research participants of this study, a method for field testing responses to these questions was developed. According to Esposito (2010) "field tests are complex, resource-intensive, collaborative operations that draw upon the knowledge/information/data and skills possessed by various subject matter experts to optimize questionnaire design for the ultimate purpose of gathering high-quality data about a particular domain-of-interest" (p. 1). Understanding this definition, the first part of my method for field testing responses was the selection of 3 subject matter experts (SMEs) in the IT field who these questions could be sent to for critique of factors such as understandability, succinctness, and familiarity for any IT terms used in the formation of those questions. In gathering a group of SMEs for the purposes of this study, I decided to not make race a criterion for the participation in the field test team which I was attempting to build, but rather experience and knowledge in a

given IT discipline. Towards this end, 3 SMEs were selected whose positions in the field of IT were as follows:

- Professor (adjunct): J. Sas**** – Employed as Computer Forensic Examiner
- Hiring Manager: J. Bru*** – Supervisory IT Specialist
- Practitioner: B. Ste**** – IT Specialist (Systems Administration/Customer Support)

(Note: In order to help maintain confidentiality of the SMEs selected for the participation as the field test team, the subject matter experts were, from this point, identified as the *Professor*, the *Hiring Manager*, and the *Practitioner*).

After being briefed about the topic, purpose, and intended participants for this research project, the selected SMEs all agreed to participate in a field test for the questions for this study. It was explained to the SMEs that what was needed from each of them was an evaluation of the questionnaire based on their individual perspectives. A semi-structured guideline was provided to each of the SMEs for critiquing the questions, which I explained could contain the following evaluation parameters (as well as any other suggestions that each of them might have):

- How long did you estimate that it would take to answer these questions?
- Were the questions clearly stated?
- Were the terms used in the questions familiar to you?
- Were there any grammatical errors?
- Is there any confusion as to why I asked these questions?
- Are there any other questions that you would ask?

- Were there any other questions or comments that you felt needed to be addressed?

Each of the selected SMEs also agreed to provide contact information (e.g. professional email addresses and/or business telephone numbers) upon request to verify each of their occupations. It was also explained to each of the SMEs that they were not the target population upon which this study would be based upon, but rather chosen professionals whose purpose regarding this research was to identify potential threats to the validity of the questions for this study. Understanding these guidelines, the responses from the field test of the submitted questions were as follows for each of the SMEs:

- Professor's Response to Questionnaire –
 - The Professor stated that he estimated it would take 15-20 minutes to answer the questions.
 - The Professor stated that he thought the questions were clearly stated, that he understood the intent of the questions, and that no terms existed within the context of the questions that were unfamiliar to him.
 - The Professor suggested that small grammatical corrections be made for question's 3 and 4, changing the phrase 'White males' to 'white males', and changing the word 'Instructor' to 'instructor' (see Appendix D).
 - The Professor suggested that demographic information (e.g. age, ethnicity, college enrollment, GPA average) be included in the questionnaire guide as *yes* or *no* selection options.

- The Professor made the comment that for question 5, the research participant might not know what are the 'latest tools, equipment, and techniques required by companies in the IT industry'.
- Hiring Manager's Response to Questionnaire –
 - The Hiring Manager stated that he estimated it would take 15-20 minutes to answer the questions.
 - The Hiring Manager stated that he thought the questions were clearly stated, that he understood the intent of the questions, and that no terms existed within the context of the questions that were unfamiliar to him.
 - The Hiring Manager stated that based on previous conversations with the researcher concerning the topic, purpose, and intended participants for this study that he understood why I, as the researcher, was asking these particular questions.
- Practitioner's Response to Questionnaire –
 - The Practitioner stated that she estimated it would take 25-30 minutes to answer the questions.
 - The Practitioner suggested that for question 2 (see Appendix D), it is possible that the research participants might not have a point of reference for determining if their education and training has prepared them to get a job in IT.

- The Practitioner recommended that a possible tactic to deal with this question might be to preface this question with the phrase, *To the best of your knowledge...*, or *In your opinion...*
- The Practitioner made the comment that for question 5 (see Appendix D) the research participant might not know what are the latest tools, equipment, and techniques required by companies in the IT industry.
 - The Practitioner suggested that this question could be clarified further by prefacing this question with the phrase *To the best of your knowledge ...*, and re-phrasing the question slightly to better suite the experience level of the research participant.
- The Practitioner stated that she thought all other questions were clearly stated, that she understood the intent of the questions, and that no terms existed within the context of the questions that were unfamiliar to her.

Member checking (i.e. informant feedback) was implemented as a means of validating that all suggestions, opinions, and recommendations were accurately transcribed. This procedure was accomplished by sending an email message to each SME, with the goal of having them review their individual comments for accuracy. Only after verification of accuracy was established did I include the comments from the SMEs into the research that I conducted. Lastly, for every recommendation that was submitted by each of the SMEs who participated in the field testing of the questions for this study, corrective actions were taken to address those issues in the questionnaire guide

for this study (see Appendix D) and sent (via email) to the SME who identified the potential problem.

Data Organization Techniques

The system utilized to keep track of information and emerging understandings for this study has been a research log. The reason for the selection of this specific data tracking mechanism was its capability to compile a comprehensive listing of references that I have either researched or examined at various points throughout this investigation. The program that I chose take advantage of as a research log was Microsoft® OneNote®. From information gleaned from Microsoft's Website (2013), this program affords a completely innovative method of keeping track of data, taking notes, and collecting thoughts and ideas. OneNote also allows for the use of *subpages*, which permits a researcher to create groups of related pages that can be organized as needed (Microsoft, 2013). With this information in mind, Microsoft OneNote was also the program that was utilized to record the responses from the participants of this study.

What needed to be stipulated at this point was the backup method to be used if the data collection and organization techniques intended for this study did not yield the anticipated recruitment results due to too few participants. If the use of SurveyMonkey failed to produce an adequate number of participants for this study, I as the researcher would be left with no other alternative but to attempt to collect the desired information for this study by physically going to several of the colleges that make up the combined City Colleges of Chicago. If this reality occurred, it was anticipated that the time to

complete this study would not only take significantly longer but potentially include fewer research participants than originally calculated to take part in this study.

Upon completion of this research project, the participant responses received from the SurveyMonkey survey was backed up to two external hard drives. The data contained on both hard drives was encrypted utilizing a software encryption program known as TrueCrypt®. As explained by the vendor, this encryption software creates encrypted files on your computer or a storage device (such as an external hard drive) and protects the information through the use of a password that cannot be accessed by others who attempt to open the files on the encrypted storage device (Indiana University, 2014). One of these encrypted hard drives was secured in a locked fireproof safe in the home office of the researcher. The second hard drive was secured in a locked fireproof safe, which was kept inside of a locked cabinet unit located in the adjacent parking garage (owned, not rented) of the home of the researcher.

In accordance with earlier guidance suggested by Coulehan and Wells (2006), it was recommended that research data should only be retained for as long as is required by the principal investigator (i.e. the researcher) for a period of no more than 3 years. To show just how much the standards for the secure data storage have changed for conducting a study such as this, it was found that later guidelines derived from the Dissertation Guidebook published by Walden University (2011) stipulated that information derived from participants of a given study should be maintained for no less than five years upon completion of a dissertation. It was the guidelines set forth by the Dissertation Guidebook that this study adhered to for the secure storage of all

data/information collected from this research. Beyond this guidance, the subsequent disposition of the data retrieved from the participants of this study was conducted by totally wiping the hard drive. What this process entailed was the effecting *zeroing out* of all existing data for a hard drive, leaving absolutely no remaining data on the drive itself, since every binary bit (0 or 1) on the drive platters (the disks that contain the data) was set to 0.

Need for Pilot Study Implementation

Before conducting an actual study for the questionnaire created utilizing SurveyMonkey as a means to provide answers from participants, it was determined that a pilot study would first be conducted. The purpose of such a study was to gather information to prove or disprove the effectiveness and clarity of the questions to research participants in order to validate the larger study's quality and efficiency. Although it was understood that the pilot test could not be conducted until IRB approval was granted, it was considered necessary that a methodology be created during the initial stage of this research. The pilot test for this study utilized 3 individuals who met the criteria for the exploratory research in order to ascertain the following post pilot study questions:

- How long did the questionnaire take to complete?
- Were the questions clearly stated?
- Were the terms used in the questions familiar to the research participants?
- Were there any grammatical errors?
- Are there any other questions that you would ask?

By adding questions such as these to the end of the questionnaire for this pilot study, deficiencies in the design of the questionnaire were addressed before expending time and resources on the larger scale study (see Appendix E for pilot study questionnaire guidelines). Although a pilot study was considered a small comparison with the main experiment vital information concerning the procedures or treatments used in creating the structure of the research instrument could still be gauged, and if found to be lacking, corrected (Thabane, et al, 2010). If it were found that the pilot study for this exploratory research project did not lead to modification of the questions posed in the submitted online questionnaire, then the questions were considered suitable for the incorporation into the main study.

During the pilot study phase of this research, the identification and recruitment of participants were accomplished through joining a pre-paid membership plan provided by SurveyMonkey. Through the use of this membership plan, I received the assistance of an *Audience Project Specialist* who specialized in targeting and recruiting specific populations for research projects such as the one which was conducted for this study. The Audience Project Specialist identified participants who met the criteria of this pilot study from a pool of *SurveyMonkey Contribute members* who were a diverse group of people, who were representative of the population in the United States, made up of people who had Internet access and had joined SurveyMonkey to answer questionnaires based on their interests (SurveyMonkey, 2013). The specific personal information (e.g. identities, locations, etc.) of the SurveyMonkey Contribute members was kept private due to the fact that SurveyMonkey security guidelines did not allow for direct communication

with research participants, which was done in order to protect the identities of those members. Communication with pilot study participants was implemented by the Audience Project Specialist department through SurveyMonkey's email address book system, which allows researchers to create custom email invitations submitted by the Audience Project Specialist department members and allow the researcher to track the number of responses from the research participants for this study (SurveyMonkey, 2013). Informed consent from research participants was collected and validated through the use of a unique consent form for the pilot test containing a check box stating that "I agree to participate in this study" (see Appendix F). Only after clicking the checkbox, which was configured using SurveyMonkey, was a participant granted access to the questionnaire. The information collected from the pilot study was gathered through the use of a *Collector tool* provided by SurveyMonkey, which allows researchers to capture responses from research participants through SurveyMonkey's mailing system (SurveyMonkey, 2013).

To support the goals of external validity for this pilot study and to ensure that the interpretations of the responses provided by the research participants were in line with my own, member checking (i.e. informant feedback) was implemented to ensure that questionnaires had been accurately transcribed. To effectively accomplish this member checking procedure, the ability to conduct follow-up questions was made available to respondents of this pilot study questionnaire (via the mail server used by SurveyMonkey). Since the personal information of the SurveyMonkey Contribute

members was kept private, the choice to email the person who created the questionnaire was provided to all participants so that follow-up questions could be addressed.

Data Analysis Technique

To effectively analyze and interpret all data derived from my study I chose to adopt the technique used from Janesick (2011), which addressed how data analysis should logically and sequentially address all research questions posed by a study such as this. In order to most effectively analyze data retrieved from open-ended questions, a coding process is recommended to categorize unstructured information into a structure that can be more easily recognized and examined (Janesick, 2011). Although the act of coding in a qualitative study is generally connected to the grounded theory research approach, Offredy and Vickers (2013) made the point that "as with all qualitative data, phenomenological data analysis involves such processes as coding (open, axial, and selective), categorizing and making sense of the essential meanings of the phenomenon" (para. 1). It was because of this reason that coding was selected as a data analysis technique to validate the findings of this research. Furthermore, as per the guidance from Janesick, when coding, "the range of evidence should be used to support your assertions and view the work in progress throughout the entire history of the inquiry" (p. 178). Even with this said, however, the process of manually coding data would have been far too cumbersome to be effective for this study. To most effectively conduct an exploratory study on the socioeconomic problems faced by African American men attempting to enter the IT industry, an analytical tool called Nvivo® was utilized.

Nvivo® is a qualitative data analysis (QDA) computer driven software package that helps a researcher easily organize and analyze unstructured information, so that the researcher can ultimately make better decisions (QSR International, 2013). Besides being able to analyze non-numerical or unstructured data, Nvivo is also a very flexible program in that it can interchange information between other applications such as Microsoft Word® and Excel®, SurveyMonkey®, and Microsoft OneNote® (QSR International, 2013). By using *nodes* (i.e. how Nvivo defines a code), Nvivo actually provides the capability to distinguish free nodes and tree nodes, thus allowing me to create a hierarchical structure that I was able to apply to each data set created for the purposes of this study. Despite the fact that this study is a phenomenology based epistemology, the data retrieved from the research participants of this study was coded in NVivo using a three phase coding method which was open coding, axial coding, and selective coding in order to confirm and establish the validity of answers provided by research participants by analyzing a research question from multiple perspectives (Guion, Diehl, & McDonald, 2011). The open coding was used to develop categories, axial coding used to inter-connect the categories in the identified in the open coding, and selective coding used to build the story that connected the categories.

After the multiple sources of data were analyzed, it was recognized, as with any qualitative study of this type that I, as the researcher, had to be cognizant that information retrieved from the research participants of this study may not fit into any particular category. This recognition stemmed from the prediction that information derived from research participants might be *discrepant data*, which is an occurrence of the phenomena

being studied whose findings do not fit the results of a researcher's emerging theory (Universal Teacher, 2013). Rather than ignoring such responses from the participants of this study, these types of answers were critically analyzed using Nvivo in order to ascertain the variations in the meanings of these types of responses so that these meanings could be interpreted on both merit and relevance relating to the topic of this study.

Issues of Trustworthiness

Creswell (2009) stated that substantive reliability and validity means "understanding one's own understandings of the topic, understandings derived from other sources, and the documentation of this process in the written study" (p. 206). Understanding this, the best way to ensure dependability (the qualitative counterpart to reliability) and validity for this study was to synthesize participant perceptions regarding the topic of this exploratory research with my own perceptions. Simultaneously, all results drawn from the data were based on other empirical sources to arrive at conclusions that plausible and dependable (Smith, 2012). By equally emphasizing the dichotomous importance of each of these strategies in conducting this research, what was established was a means by which the psychometric properties of this study could be ascertained for dependability and validity (Creswell, 2009). Even with this said, however, it was understood that personal biases could exist on the part of the researcher in analyzing the collected data retrieved from the participants of this study. To combat such biases, the precepts of Morrow (2005) were adopted which explained that confirmability (vs. objectivity) should be the objective of exploratory research,

addressing the core topic that findings from a study should characterize, as far as is possible, the circumstances being investigated rather than the beliefs, pet theories, or biases of the researcher.

Validity

Having ascertained a course by which the reliability of a study pertaining to the socioeconomic problems faced by African American men seeking to enter the field of information technology could possibly be implemented, the next phase of this study was to discern how validity could be applied. In its simplest sense, validity in a qualitative study is considered as the degree to which an exploratory study observes what it claims to study (Creswell, 2009, Golafshani, 2003, and Patton, 2002). In this regard, two types of validity exist, which is internal validity (also known as credibility) and external validity (also known as transferability).

Information derived from an online research article provided by the Vienna University of Economics and Business (2011) explained that "internal validity is the approximate truth about inferences regarding cause-effect or causal relationships" (p. 2). To best implement internal validity for this study, data triangulation of sources such as existent research, emergent themes from the answers of the participants of this study, and the researcher's worldview of the perceived phenomenon was drawn upon (Patton, 2002). Be this as it may, threats to internal validity had to be considered from the use of data triangulation as a form of validity for this study. Through research, what was found to be one of the greatest threats to validity for an exploratory study of this type was what this research article identified as social threats to internal validity. The Vienna University of

Economics and Business (2011) explained that this threat arises when "social research is conducted in real-world human contexts where people will react to not only what affects them, but also to what is happening to others around them" (p. 3). To lessen the potential of such a threat, the inherent strengths of data triangulation were again heavily relied upon to offset any views that are not consistent with the findings of one of the three points of the aforementioned triangulation methodology.

The research provided by the Vienna University of Economics and Business (2011) explicated that external validity is the extent to which the suppositions derived from research would also be true for others in different times and places. Although the phenomenon of the problems faced by African American men attempting to enter the IT workforce has been acknowledged as a socially significant issue by numerous researchers, these problems are not specific only to one ethnicity or gender. In fact, it can be construed that only through external validity that a study can be said to be of any significance in so far as being considered a legitimate source relating to a social issue. Knowing this, the means by which external validity was implemented for this study was what this online resource classified as the *sampling model*. With the sampling model, a "researcher identifies the population to be generalized to, then draws a fair sample from that population and conducts the intended research with the sample, generalizing the results of the study back to the population" (Trochim, Donnelly, & Arora, 2015, p. 83).

Throughout this research, a recognized threat to external validity using this type of sampling model was *population validity*. Siegle (2013) explained that population validity is the level to which one can make generalizations from the sample of a study to

a specific population. With the intended participants of this study being a relatively small sample derived from the pool of African American men enrolled in the City Colleges of Chicago, it must be restated that the goal of this study was to discover potentially important insights relating to the perceived problem relating to this investigation instead of measuring the results of the this research. With this goal in mind it was important that I, as the researcher, addressed threats to external validity by not attempting to draw any universal or all conclusive inferences from the results of this study. Instead, the goal of this study was to bridge a gap in existing knowledge concerning the phenomenon of the problems faced by African American men seeking careers in IT, thereby broadening the scope of what is currently known concerning this phenomenon, and more importantly, what can potentially be done to address this issue.

Dependability

By conducting a qualitative study of this nature using a homogeneous sampling methodology and a qualitative data analysis instrument such as Nvivo®, it is of utmost importance that a means of dependability be established. To do so, however, it was first necessary for me, as the researcher, to come to a clear understanding of the different meanings and implementations for dependability, as opposed to reliability. As explained by Hughes (2011) reliability is an attribute of quantitative research and assesses how confidently a researcher can assume that the results seen in the research sample accurately represent the results seen in the larger population of interest. Hughes explained further that a researcher assesses reliability through methods of *inferential statistics*, "which look at the statistics measured, the sample size, and the variability of the data and

calculate a probability that the same result would occur consistently across the larger population" (para. 4). Such a method would not be conducive to a qualitative study which is by in large interpretive in nature. Based on this information, it was decided that dependability would be the best option to use for this particular area of trustworthiness for this study. This decision was made based on research derived from Hughes (2011) where it was explained that dependability was suited for a qualitative study which was designed to be more illuminative than probative. Trochim, Donnelly, and Arora (2015) expounded on this subject by explaining that dependability emphasizes the need for researchers to justify the ever-changing context within which research occurs.

In order to establish dependability for my selected research approach, data analysis instrument, and questions from my questionnaire, the type of dependability known as *triangulation* was used. Bryman (2011) explain that the implementation of triangulation is the utilization of multiple approaches in the analysis of a research question in order to develop confidence in the resultant conclusions. To implement the concept of triangulation for this study, a 3-phase coding method was used, taking advantage of the capabilities of NVivo. The first coding approach used from the participants of my exploratory research was open coding. In its simplest sense, open coding can be considered as opening the text answers received from study participants and exposing the meaning of the text. Khandkar (2009) supported this explanation by clarifying that "open coding includes labeling concepts, defining and developing categories based on their properties and dimensions and is used to analyze qualitative data" (p. 1). Knowing this, open coding was used to develop the categories of the

responses from the research participants of this study, which was in line with the research questions upon which this investigative study was based upon. The second coding approach used to apply the concept of triangulation for this study was axial coding. Biddix (2014) explained that axial coding is used by researchers to essentially reexamine concepts and categories in order to verify accuracy from response and to establish how concepts and categories are related. In this regard, axial coding was used for this study to inter-connect the categories in the identified in the open coding. Lastly, selective coding was used to complete the triangulation technique for providing dependability for this investigation. Matthew and Price (2009) explicated that selective coding "refers to the final stage of data analysis to be completed after core concepts emerging from the coded data categories and subcategories have been identified through open and/or axial coding" (para. 1). It was through the use of this particular coding process that an overall study was built which connected the categories identified earlier from both the open and axial coding results, which in turn helped to ensure the dependability of this exploratory research focusing on the unique challenges faced by African American men attempting to enter the IT industry.

Confirmability

Another critical aspect of issues of trustworthiness which was dealt with for this study concerning the problems faced by African American men seeking careers in the field of information technology was the implementation of confirmability for this study. As explained by Shenton (2004) confirmability is the qualitative researcher's goal to objectively identify which steps are used to help ensure that the conclusions drawn from

research are the results of the actual experiences and ideas derived from the participants of a study instead of the researcher's own perceptions of the problem. A later interpretation provided by an online research resource named Universal Teacher (2013) provided a more detailed explanation of the function and purpose of confirmability as can be seen in the following statement:

Confirmability in Qualitative Research means the degree to which the outcomes could be confirmed or corroborated by other people. The concept of confirmability is the qualitative investigator's comparable concern to objectivity. The investigator can actively hunt for and describe any negative instances which contradict earlier findings. After the study, one can carry out a data audit which inspects the data collection and analysis procedures and makes judgments concerning the potential for bias or distortion (para. 1).

Being both the researcher and an African American man who may have experienced some of the experiences from the participants of this study it was of utmost importance that I did not allow any of my own preconceived ideas or beliefs for the responses that I was provided skew or distort my research findings. One of the best ways to accomplish this goal was again the use of triangulation for the information received from the participants of this study (Shenton, 2004). In addition to triangulation, another tactic used to ensure confirmability was the adoption of Shenton's assessment that "an important principle for confirmability is the degree to which the researcher acknowledges personal biases. In doing so, I was aware throughout the course of the entire research

process that I was accountable for the reasons for favoring one approach, when other more practical approaches could have been taken.

Ethical Procedures

To satisfy the requirements for Walden's Institutional Review Board (IRB) in regards to conducting the research, a research ethical review application form was submitted once all requirements were met. It was understood that no research could be conducted before receiving approval from the IRB, nor was it permissible to contact research participants before IRB approval had been granted for this study. On approval by the IRB, an invitation letter and an informed consent form was submitted with the questionnaire during the actual research phase of this exploratory study. The purpose of the invitation letter to participate in this exploratory research was to explain to research participants what this study was about and to invite them to participate in this exploratory research (See Appendix G). The consent form (shown in Appendix H) was provided as the first page of the questionnaire when a participant logged in; with a message "I agree to participate in this study". Only after clicking the checkbox (which was configured using SurveyMonkey) was a participant granted access to the questionnaire.

In order to support the goals of external validity for this study and to ensure that the interpretations of the responses provided by the research participants are in line with my own, member checking (i.e. informant feedback) was implemented to ensure that questionnaires have been accurately transcribed. To effectively accomplish this member checking procedure, the ability to conduct follow-up questions was made available to respondents of this questionnaire (via the mail server used by SurveyMonkey).

Confidentiality and protection of participants was ensured through the Secured Socket Layer (SSL) encryption feature of the SurveyMonkey website, which protects data along communication pathways between the respondent's computer and SurveyMonkey servers. In configuring the SurveyMonkey questionnaire template, I as the researcher, explained the nature of the study being conducted and clarified that no identifying information would be required from the voluntary participation in this research. In this regard the participants of the questionnaire were totally anonymous. It was also explained that it was totally permissible for participants to refuse participation in this study or for early withdrawal from the research that I conducted. Although no adverse events took place, all predictable adverse events were considered in regards to the participants of this study, with the first step being to handle the situation amicably, and the second step being to immediately report to the IRB to seek advice on the best course of action for problem resolution. Upon completion of this research project, the participant responses received from the SurveyMonkey questionnaire were backed up two external hard drives. The data contained on the hard drives were encrypted. One of these encrypted hard drives was secured in a locked fireproof safe in the home office of the researcher. The second hard drive was secured in a locked fireproof safe at a different location of a family member of the researcher. At no time did anyone but the researcher have access to the data collected from the research participants. In accordance with the Walden Dissertation Guidebook (2011), information derived from participants of this study was maintained for no less than five years upon completion of a dissertation.

Besides the previously mentioned issues relating to confidentiality, another ethical consideration adhered to during the course of this study was the truthful and accurate account of all responses provided by the participants of this study. According to Winter (2000), failure to provide a truthful and accurate account of all responses from questionnaires constitutes not only an ethical issue but also presents one of the greatest threats to the validity of qualitative research. In defining the meaning of validity, Winter cited the earlier study conducted by Hammersley (1987) which stated that "an account is valid or true if it represents accurately those features of the phenomena, that it is intended to describe, explain or theorize" (p. 69). Later research conducted by Driscoll (2011) added another dimension to the earlier assessments by Winter and Hammersley by providing the following information in regards to validity:

The participants of a researcher's study may reveal embarrassing or potentially damaging information such as racist comments or unconventional behavior. In these cases, the researcher should keep the participants' identities anonymous when writing results. An easy way to do this is to create a "pseudonym" (or false name) for them so that their identities are protected (Driscoll, 2011, p. 156).

From Driscoll's (2011) assessment of the researcher's responsibility regarding the treatment of research participants, what should be clear is that anonymity is of the utmost importance when conducting research. This assertion would be true whether the research conducting research on an individual, a group, or an entire organization. With this rationale in mind, it was of extreme importance that I take great care in not only

maintaining individual anonymity for the participants of my study but also be mindful of any specific geographical information as well. The reason for such precautions stemmed from the fact that such information, combined with the type of organization could have potentially exposed the identity of the research participants for this study.

In conjunction with the findings of Winter (2000) and Driscoll (2011), earlier research conducted by Smith (2003) elucidated that if researchers learn of errors that change the interpretation of findings, they are ethically obligated to correct the errors. Finally, the issue of informed consent was another highly important ethical aspect of my research that had to be adhered to. This ethical consideration was of critical importance because, according to Walden's Institutional Review Board (IRB), the approval to conduct this study would not be approved if these guidelines were not followed.

Other information was found that explained the rationale of Walden's stance regarding ethical standards in conducting research. As a case in point, Escobedo, Guerrero, Lujan, Ramirez, and Serrano (2008) explained that the benefits of acquiring informed consent from the participants of a study were that "after understanding information about the project, research participants were more willing to give full consent for the researcher to conduct a study. Escobedo et al. went on to explain that the ethical undertones involved with the informed consent process when conducting a study were "language barriers, religious influences, and false expectations" (p. 3). Although barriers to communication and religious influences, did not present as much of a problem as false expectations when conducting this study, the awareness of potential problems such as these helped to heighten my sensitivity to such problems if they were encountered during

the course of my research. Information derived from an online Web resource called Lærd Dissertation (2011) explained in detail that ethical principles need to be followed when conducting research. These principles included the following guidelines for the researcher: (a) obtain informed consent from potential research participants, (b) minimize the risk of harm to participants, (c) protect anonymity and confidentiality, (d) avoid using deceptive practices, and (e) give participants the right to withdraw from your research. By following the guidance of these online resources and authors, as well as the more expansive ethical guidelines for research found in resources such as Walden's Institutional Review Board (IRB), a baseline for the parameters of the questions asked of the participants of this study was established. Since the purpose of Walden's IRB is to "evaluate proposed data collection methods to ensure that the risk to participants in the study and other individuals associated with a researcher's work is minimized to acceptable standards" (Walden, 2011, p. 9), it was of critical importance to this study that these guidelines be followed.

Transition and Summary

The basis for chapter 3 was to discuss definitive elements germane to the study of the challenges facing African American men whose goal is to enter the IT industry; including such dynamics as the researcher's role, the reasons for the selected research method, and a rationalization for the use of the chosen sampling and data analysis techniques. In order to reduce the possibility of inaccuracy from the data retrieved from this study, chapter 3 also focused on the validation of the data collection instruments, the basis for the inclusion of techniques chosen for this study, and the basis for the selected sampling method utilized to conduct this research. Finally, chapter 3 discussed how the factors of reliability, in terms of yielding consistent results, and validity, referencing how well a test measures what it is supposed to measure, for this study was achieved. By providing this information, a conceptual framework has been created for this study which served to outline the course of action taken concerning this project.

Chapter 4 included the results of both the pilot and the main studies, including problematic issues encountered during both phases of research, and the data collection and analysis procedures implemented for those studies. Emphasis was also placed on issues such as influences that impacted participant interpretations, explication of the demographic composition of this study, and the implementation of evidence of trustworthiness during this research. Lastly, chapter 4 incorporated a discussion of the results from both studies that incorporated the collected perceptions derived from African American men who are educated, trained and qualified in IT, yet still were confronted by socioeconomic dilemmas that preclude them from obtaining careers in the IT field.

Chapter 4: Results

Introduction

The focus of this study was to ascertain the perceptions, responses, and eventual decisions of African American men faced with socioeconomic challenges that present a problem for this ethnic group in obtaining careers in the information technology industry. From the numerous studies cited throughout my examination thus far, what can be seen is that a great deal of research exists which has explored this dilemma from a *top-down* perspective (i.e. from the viewpoint of professionals that already worked in the field of IT). Other authors and theorists cited in the course of this examination focused on this issue from a position of the external socioeconomic factors which have been shown to exacerbate the challenges faced by African American men seeking careers in the field of IT. An aspect of this problem that has not been meaningfully addressed, however, are the psychological implications of this phenomenon, which present a *bottom-up* perspective (i.e. from the viewpoint of trained and educated African American men seeking careers in IT). To effectively probe, analyze, and discern the individual perceptions of the participants selected for this study, the research instrument chosen to conduct this research was a *Comment/Essay* template offered through an online resource called SurveyMonkey, which enabled participants to answer open-ended questions which were relevant to the study being conducted. The structure of this research instrument was built upon and adapted from Maslow's (1943) hierarchy of needs, which allowed for an exploratory means of research beyond the initial answers retrieved from the predetermined questions posed to the participants of this study.

This chapter was organized by the pertinent topics of the personal or organizational conditions that influenced participants or their experiences at time of this study, the demographics of the research participants, and a description of the data collection method that was used, which included factors such as location, frequency, and duration of data collection. Other main areas dealt with in this chapter focused on areas of evidence of trustworthiness, which included such topics as credibility, transferability, dependability, and confirmability. Lastly, Chapter 4 focused on the results from this research, which addressed the research questions upon which this study was based on and presented data to support each of the findings.

Pilot Study and Issues

The purpose of the pilot study was to gather information to prove or disprove the effectiveness and clarity of the submitted research questions in order to validate the larger study's quality and efficiency (Zikmund & Babin., 2010). By employing a pilot for the submitted questionnaire, the proper validations were able to be made for the questions and the subsequent collection and analysis of the data (von Diether, 2011). After completing the pilot study, no discrepant case issues were found that had an impact on the main study regarding the research instrumentation which was used or the questions which were submitted. Each participant for this pilot study agreed to participate in this exploratory research by selecting the *yes* option for the statement "I agree to participate in this pilot study",' which was provided and explained in detail as part of the pilot study consent form that preceded the actual pilot study questionnaire submitted through the

SurveyMonkey Website. Each of the research participants also selected the 'yes' option for answering the following preliminary demographic questions:

- Are you 23 to 30 years old? Click check box to answer?
- Are you an African American Male?
- Are you enrolled in one of the City Colleges of Chicago?
- Is your GPA average 2.0 or better?
- Have you attempted to seek employment in an IT occupation?

Of the 5 research participants who were contacted to take part in this pilot study, 1 of the chosen SurveyMonkey contributor members opted to not participate in the study and to be automatically removed from the SurveyMonkey mailing list. A second SurveyMonkey contributor started the questionnaire but later decided not to continue in the pilot study and to be removed from any future mailing lists submitted from SurveyMonkey regarding this study. Three of the SurveyMonkey contributor members finished the entire questionnaire.

Pilot Study Data Collection and Analysis

I received formal approval from the Walden University Institutional Review Board (approval number 07-22-14-0156850) before any research was conducted. The three research participants who chose to take part in the entire pilot study were found to meet the criteria for this exploratory research based on the answers provided by each from the submitted questionnaire. These conditions included such factors as participants for this pilot being African American men (ages twenty three to thirty) who were currently enrolled in the City Colleges of Chicago during the period being researched.

The research participants also had to have a passing grade point average of 2.0 (i.e. a letter grade of C) or better, and be currently majoring in an IT based discipline. The pilot study participants also had to have recently attempted to apply for employment in the IT field and be able to share those experiences in as far as how training and education prepared them for acquiring employment in said field, and what their perceptions were of the companies they were seeking employment from. The unique aspect of the pilot study in comparison to the full study which was conducted was the inclusion of the following post pilot study questions:

- How long did the questionnaire take to complete?
- Were the questions clearly stated?
- Were the terms used in the questions familiar to the research participants?
- Were there any grammatical errors?
- Are there any other questions that you would ask?

From the responses of each of the three participants for this pilot study it was found that 2 of the 3 participants completed the questionnaire in 20 minutes while the third participant completed the questionnaire in 30 minutes. All 3 research participant responded with an answer of *yes* for the questions asking "were the questions clearly stated?" and "were the terms used in the questions familiar to the research participants?" For the question asking "were there any grammatical errors?" each research participant answered this question as *no*. None of the research participants for this pilot study posted any responses to the question asking "are there any other questions you would ask?" At the end of each submitted questionnaire a link was provided by which each participant

could go to (or return to) which enable them to view a transcribed copy of the results of the completed study.

Once each research participant had finished the questionnaire I imported the collectors (i.e. the invitation letter and the questionnaire for the participants who chose to take part in the entire pilot study) from SurveyMonkey to the qualitative analysis program called Nvivo. These collectors were imported directly into an encrypted hard drive, which was stored in a locked fireproof safe in the home office of the researcher each night during the entire research project. A copy of the imported files was stored and secured in a locked fireproof safe, which was kept inside of a locked cabinet unit located in the adjacent parking garage (owned, not rented) of the home of the researcher. Both hard drives were kept secure and stored for a minimum of five years. For the purposes of this study, the responses provided from the research participants were transcribed and consolidated into a Microsoft Word table, which was created in the encrypted hard drive stored in a locked fireproof safe in the home office of the researcher. This Microsoft Word table was copied to the second encrypted hard drive kept in adjacent parking garage of the home of the researcher. The Microsoft Word table containing the transcribed responses of research participants from the provided questionnaire is presented in Appendix I of this study. Once analyzed, the results of the multiple sources of this transcribed data were made available to the participants of this pilot study through a web-link provided at the end of the questionnaire, which all research participants were given the option to return to and access. This web-link created on the SurveyMonkey website was titled as "Results of Pilot Study - An Exploration of Socioeconomic Challenges

Faced by African American Men Attempting to Enter the Information Technology Industry".

In collecting data from the SurveyMonkey website, no unusual circumstances or variations in data collection methods were found to exist for this study. Another point that I, as the researcher, made sure of was that although no personal information was provided for the participants who took part in this pilot study, a pseudonym was created for each participant to better track the responses which were provided. For the purposes of this study these pseudonyms were classified as *Participant A*, *Participant B*, and *Participant C*. At no point was an attempt made to analyze the responses from the participants of this pilot study until this action was completed.

After importing the primary data received from the research participants of this pilot study into Nvivo, it was identified that each participant had a unique career goal in the field of IT. The career goals of Participant A and Participant C was to work in the computer programming field. Participant B's goal was to work in the IT related field of cyber security. What was found to be just as insightful as the career goals of each research participant were the answers to the question "what other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?" Participant A's answer to this question was that he did not have any other marketable skills besides what he had been going to school for. Participant B stated that he had some skills in carpentry, but he did not want to make a career in that field. Participant C's response was that he would rely on his acquired skills with administrative or clerical work to find employment outside of the field of information technology. All

research participants responded with an answer of *no* in response to the question "Have you given up on the notion of being hired in the IT field?"

After determining the aforementioned similarities and distinctions between the research participants, the first problem encountered was determining how to implement a means for analyzing the data through open coding for the subsequent responses provided for this questionnaire so that the information could best be organized to analyze the results. This difficulty stemmed from the fact that each unit of analysis consisted of responses that were usually paragraph in length for a respondent's individual's posting. As a result, it proved difficult to draw parallels for comments made by one research participant to comments by another participant regarding the same question asked of each. To overcome this dilemma, nodes (i.e. a collection of references about a specific theme) were created to organize the data using Nvivo. This was done to establish a coding process in order to develop a means of categorizing unstructured information into a structure that could be more easily recognized and examined (Janesick, 2011). In accordance with the research questions asked of each participant for this pilot study, these nodes were categorized under *parent* (i.e. main) heading nodes and named as follows:

- Job Preparation from Education
- Self-Perceptions of Qualifications
- Level of Concern from Teachers
- Access to IT Resources
- Self-Perceptions of Lacking IT Skills
- Interpretation of Existing IT Hiring Practices

- Job Seeking Experiences
- Impact of Economic Situation on Finding IT Employment
- Perception of How Race has Impacted IT Employment
- Other Acquired Skills
- What has Stopped You From Being Hired In IT
- A Career or Just a Job
- How Long Will You Wait for an IT Job
- Have You Given Up on IT

By creating these nodes a hierarchical structure was established, which showed me how to organize my data, but did not map to any responses provided from the research participants of my pilot study. To implement this mapping I first had to open the imported responses provided by the participants and subsequently choose main phrases from each individual response, which I added to the corresponding node that I had previously created. For example, to establish a means of open coding for the response provided by Participant A regarding the question "To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?", I selected the specific portion of the submitted phrase "did not prepare me" for the node *Job Preparation from Education* by choosing the option to *Code Selection at Current Node* using Nvivo. I then chose the specific word *certifications* to represent the reasoning as to why Participant A thought that he was not prepared to successfully get a job in the IT field using the same process. By doing so, what was able to be established was a direct correlation to the answer for the submitted

question as well as a rationale explaining why the specific answer was given. This process was repeated for every question which was submitted by the participants of this pilot study in order to implement a means of open source coding for each response. For phrases that could not be clearly transcribed into the Microsoft Word table created for the purposes of selective coding, these phrases were re-worded in the 3rd person tense making sure not to change the meaning or context of the original responses by the participants.

The next step conducted to help establish emergent themes from the responses of the research participants using Nvivo for this study was the implementation of axial coding which was used to interconnect the categories identified in the open coding process (Gibbs, 2011). This was accomplished by utilizing the using the *Word Frequency* tool as a query option using Nvivo. Knowing that participants responded with very similar answers, yet used different wording in expressing those answers, it was necessary for me to set the criteria for those matches as *similar wording* (as opposed to exact wording) when running this query. To focus on the most comprehensive list of similar words from the responses of the participants of this pilot study, I also identified that I had to limit the criteria used to no more than three hundred for the number of matching words. Another consideration in running this query was the filtering of words such as *yes* or *no* in order to ensure that such answers were not included in the data results, since these answers were to finite for the purposes of this qualitative study and could be interpreted as quantitative results (Balkissoon, 2014). The results of running this query in this fashion resulted in numerous categories which were given a *weighted percentage* (i.e. the frequency of the word relative to the total words counted). Once all

generalized words (e.g. what, have, been, etc.) were added to the 'Stop Words List' in Nvivo for the query, the highest weighted percentages for the responses provided by the research participants included the following words; job (23.23 %, used 23 times), career (7.07 %, used 7 times), student (6.06 %, used 6 times), certifications (5.05 %, used 5 times), education (5.05 %, used 5 times), experience (5.05 %, used 5 times), prepare (5.05 %, used 5 times), racism (5.05 %, used 5 times), training (5.05 %, used 5 times), white (5.05 %, used 5 times), employment (4.04 %, used 4 times), opportunity (4.04 %, used 4 times), black (3.03 %, used 3 times), discrimination (3.03 %, used 3 times), equipment (3.03 %, used 3 times), guidance (3.03 %, used 3 times), teacher (3.03 %, used 3 times), qualified (2.02 %, used 2 times), access (1.01 %, used 1 times), coaching (1.01 %, used 1 times), and mentoring (1.01 %, used 1 times). Although the words *access*, *coaching* and *mentoring* were found to have a low weighted percentage for the conducted word frequency query, these words were selected as well due to the inherent relationship and importance to the research questions for this study. A word cloud depicting the most frequently used terms from the responses provided by the participants of this pilot study can be seen in Appendix J of this study.

After having identified the categories to be analyzed, the final step conducted was the utilization of selective coding in order to build the story that connected the categories and discover emergent themes that existed. From this selective coding process a vehicle for the integration of the major categories were used thereby developing and refining theoretical claims presented in this study (Benaquisto, 2013). Through the utilization of this process several emergent themes were identified which were found to have major

connotations throughout this pilot study. The importance of implementing such a methodology was that it allowed me the capability to build a means of selecting key variables from participant responses, thus making it possible to identify distinct (qualitatively different) states of these variables and more clearly define the combinations of these states as types (Gläser & Laudel, 2013). The themes identified during the course of this pilot study included the following topics:

- Race and gender discrimination
- Employment opportunity
- Career path development
- Understanding of recruitment and hiring practices
- Inadequate access to latest technology
- Insufficient educational preparation
- Economic hardships in satisfying educational and job requirements
- Confusion regarding educational and job requirements
- Negative interpretations from job seeking experiences
- Continuing education and professional advancement

Emergent themes recognized during the course of this pilot study were determined by the number of matching words or phrases found through the use of the Nvivo word frequency query, which helped to establish categories by which these subjects could be identified. This selective coding process utilized a higher level of abstraction than was available through the use of Nvivo alone, with the focus being to identify what was central in the data analytically and not just descriptively (Punch, 2013). The results of this selective coding process were made available in Appendix K of this

study. Due to the fact that no discrepant case results were found from the responses provided from the research participants of this pilot study it was decided to consolidate the findings with those of the main study which was conducted in the Discussion of the Results portion of this exploratory research. By using these approaches to coding, it was recognized that I had developed a process which was effectively used to move inductively from coded units to larger representations including categories and themes, which as explained by Blackstone (2014) should be applied as follows:

In an inductive approach to research, a researcher begins by collecting data that is relevant to his or her topic of interest. Once a substantial amount of data have been collected, the researcher will then take a breather from data collection, stepping back to get a bird's eye view of her data. At this stage, the researcher looks for patterns in the data, working to develop a theory that could explain those patterns (para. 2).

Setting: Influences Impacting Participant Interpretations

Regardless of the specific and implied differences identified from the responses of the participants of this study in terms of chosen information technology majors, career goals, financial status, or family obligations, the one personal condition shared by nearly all of the participants was the fact that they could not find employment in the field of IT. This commonality played an important role in establishing an understanding of what it was that influenced the responses received from the participants and the rationale as to why these participants responded as they did during the course of this study. With these considerations in mind, the setting for this study, which was conducted in an online

environment where participants could maintain privacy through the use of SurveyMonkey, was selected in order to acquire responses which were possibly more honest and forthcoming regarding what would be considered by some as a very controversial issue. Additionally, by conducting this study in an anonymous fashion through the use of SurveyMonkey, a wider dissemination of the questions for this study was able to be achieved, as opposed to attempting to conduct face-to-face interviews with research participants, which would have been limited by my own inability to effectively cover the geographical locations that the City Colleges of Chicago is comprised of within the entire city of Chicago.

Demographic Composition of the Study

The demographic composition of this study consisted of African American male students (ages twenty three to thirty) enrolled in the City Colleges of Chicago. The reason why research participants from the City Colleges of Chicago was selected for this particular study was based on the fact that this conglomerate of community colleges is a predominantly African American institution that provides "real-world experience via teacher-practitioners, internships, and top-notch facilities" (City Colleges of Chicago, 2013, para. 1). Furthermore, it was identified that CCC offers an affordable curriculum of STEM based disciplines preparing students with the required skills to work for IT companies such as Cisco®, CompTIA®, Google®, IBM®, Microsoft®, Motorola Solutions®, Vanguard®, and Verizon Wireless® (City Colleges of Chicago, 2013). Despite the benefits of such a laudable program as what the CCC provides, it was found that "even with an increased national emphasis on STEM education over the last decade,

African American males remain underrepresented in the information technology sector" (Davis, 2013, para. 1). In support of Davis' allegation, earlier research conducted by Palmer, Davis, Moore, and Hilton (2010) illustrated the social importance of increasing the number of African American men within the IT industry through the following assertion:

While America needs to focus on increasing college access and degree completion among underrepresented ethnic minorities, particularly in Science, Technology, Engineering, and Mathematics (STEM), educators and policymakers assert that this is particularly important for African American males (p. 105).

With indicators such as these providing evidence that a problem still exists for African American men seeking careers in the field of IT, it was decided that the demographic composition of this study would consist of a representative population which was trained and educated in IT, but had not acquired a job in this field commensurate to the level of education received. By basing this research on this particular ethnic group, what was afforded to the goals of this examination was a means by which a problem such as this could be studied from the perspective of the individual instead of the externally generated socioeconomic conditions this problem was viewed from in previous research.

The age range for the participants of this study was from twenty three to thirty year old. The selection of this age range was based on information gleaned from the website for the American Association of Community Colleges (2014) where it was

elucidated that the average age of community college students was twenty eight years old and the average median age was twenty three years old. Taking into account that extenuating factors may have existed for the selected participants of this study that may have extended the actual time enrolled in the college, it was decided that an additional 2 years would be added to the age range, making the approximate age of this group range from twenty three to thirty years of age.

A point that had to be acknowledged from the selection of African American men as the chosen participants for this study was that it was understood from the outset of this research that this ethnic group represented only a small portion of the larger problem faced by minorities attempting to enter the information technology industry. In its broadest sense, it was known that this problem incorporated not only the challenges faced by African American men, but also African American women, Hispanics, Asian, and all other ethnicities generally classified as minorities. Nevertheless, what I chose to address were the problems associated with African American men attempting to enter the field of IT due to the fact that I myself am an African American man who currently works in the information technology industry. In this regard, the answers provided from the participants of this research served not only to make a significant contribution to the field of management regarding the problems associated with African Americans attempting to enter the field of IT, but also provided long sought after answers that I personally sought after concerning this issue. Be this as it may, it is hoped that future research regarding this problem will address this issue from the perspective of other ethnicities and genders

ultimately culminating in an all-inclusive body of knowledge which will inform research and possibly reduce the underrepresentation of minorities in IT workforce.

Main Study and Issues

The main study which was conducted for this exploratory research was very similar to the pilot study, with the exception being the number of research participants. As with the pilot study, each participant for this main study agreed to participate in this exploratory research by selecting the *yes* option for the statement "I agree to participate in this pilot study", which was provided and explained in detail as part of the consent form that preceded the actual questionnaire submitted through the SurveyMonkey website. Similarly, in collecting data from the SurveyMonkey website, no unusual circumstances or variations in data collection methods were found to exist for this study. Each of the research participants also selected the *yes* option for answering the following preliminary demographic questions:

- Are you 23 to 30 years old? Click check box to answer?
- Are you an African American Male?
- Are you enrolled in one of the City Colleges of Chicago?
- Is your GPA average 2.0 or better?
- Have you attempted to seek employment in an IT occupation?

It was decided that based upon previous research conducted by Curry, et al. (2009) which stated that the adequacy of a selected sample size is the "point at which no new concepts emerge from the review of successive data from a sample that is diverse in pertinent characteristics and experiences" (p. 1445) that a reasonable number of research

participants selected to take part in this study would be ten to twenty participants. The rationale for the decision to select ten to twenty research participants as a solid baseline for this study was gleaned from further research conducted by Mason (2010), which stated that for a phenomenological qualitative study, an acceptable point of theoretical saturation was found to have been between 5 – 25 participants as a guideline for "estimating sample sizes for robust research prior to data collection" (p. 61). With this information in mind, the number of research participants originally invited to take part in this study were twenty, which was estimated to yield a minimum of ten African American men who met the criteria for taking part in this exploratory research. This number was considered as being an adequate sample size which ensured that the qualitative samples retrieved from research participants who took part in this study were large enough to assure that most or all of the perceptions that might be important were uncovered Mason. Additionally, from the similarities found from the research participants of the previously conducted pilot study for this exploratory research project, it was determined that the invitation of twenty research participants for this study was sufficient to reach the *point of saturation* (i.e. the point when participants are repeating things said by others). Of the twenty research participants who were solicited to take part in this study, only eleven of the SurveyMonkey contributor members chose to participate in the study. All eleven of the SurveyMonkey contributor members finished the entire questionnaire.

Data Collection and Analysis of the Main Study

The eleven research participants who chose to take part in the entire study each met the conditions for this exploratory research based on the answers provided from the submitted questionnaire. As with the pilot study, these conditions included such factors as participants being African American men (ages twenty three to thirty) who were currently enrolled in the City Colleges of Chicago during the period being researched. The research participants also had to have a passing grade point average of 2.0 (i.e. a letter grade of C) or better, and be currently majoring in an IT based discipline. The research participants also had to have recently attempted to apply for employment in the field of IT and be able to share those experiences relating to how training and education prepared them for acquiring employment in said field, and what their perceptions were of the companies they were seeking employment from. At the end of each submitted questionnaire a link was provided by which each participant could go to (or return to) which enable them to view a transcribed copy of the results of the completed study. All research participant answers were received within a time frame of two weeks after the initial questionnaire was submitted on the SurveyMonkey website.

Upon completion of the questionnaire by each research participant, I imported the collectors, including the invitation letter and the questionnaire itself, from SurveyMonkey to the qualitative analysis program called Nvivo. These collectors were imported directly into an encrypted hard drive, which was stored in a locked fireproof safe in the home office of the researcher each night during the entire research project. A copy of the imported files was stored and secured in a locked fireproof safe, which was kept inside of

a locked cabinet unit located in the adjacent parking garage (owned, not rented) of the home of the researcher. Both hard drives were kept secure and stored for a minimum of five years. For the purposes of this study, the responses provided from the research participants of this study were transcribed and consolidated into a Microsoft Word table, which was created in the encrypted hard drive stored a locked fireproof safe in the home office of the researcher. A copy of the Microsoft Word table was made to the second encrypted hard drive kept in adjacent parking garage of the home of the researcher. The Microsoft Word table containing the transcribed responses of research participants from the provided questionnaire is presented in Appendix L of this study. Once analyzed, the results of this transcribed data were made available to the participants of this study through a web-link provided at the end of the questionnaire, which all research participants were given the option to return to and access. This web link created on the SurveyMonkey website was titled as "Results of Study - An Exploration of Socioeconomic Challenges Faced by African American Men Attempting to Enter the Information Technology Industry". In order to ensure that no personal information was provided for the participants who took part in this study, a pseudonym was created for each participant to better track the responses which were provided. For the purposes of this study these pseudonyms were classified as *Participant's D* through *N*. At no point was an attempt made to analyze the responses from the participants of this study until this action was completed.

After importing the primary data into Nvivo, it was ascertained that numerous career goals existed for the research participants of this study. The career goals of

Participant D and Participant N were to work in network administration. The goals of Participant F and Participant I was to work with databases. Participant G's goal was to be a PC technician, Participant H chose Web design, and Participant K had goals of being a computer programmer. The career goal of Participant L was to work as an IT instructor and Participants' M and J had aspirations of working as a computer helpdesk technician. Participant E's career objective was to create a startup IT company that provides technical support to homes and businesses in the Chicago area.

In analyzing the responses of each research participants career goals, a very interesting contrast to these ambitions was identified from the answers provided for the question which asked "What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?" Surprisingly, the answers included a great deal of manual labor positions such as a car mechanic, working in construction, general repairs, and even working at a McDonald's restaurant (see Appendix L, question eleven, for complete list of answers). Answers to such as these were found to be in line with recommendations provided by McCoy (2012) who stated that possible considerations for people who cannot find a job in today's economy might be to keep looking, go overseas, volunteer, string together part time jobs, or work for yourself. However, from the interpretation of the answers provided by the research participants of this study, no one chose to go to college and study IT to end up stringing together part time jobs. This analysis of the aspirations of the research participants who participated in this study was bolstered by the fact that a 100% response of *no* was

provided for the question, "Have you given up on the notion of being hired in the IT field?"

As with the pilot study, the first issue dealt with was to analyze the data through open coding for the subsequent responses provided for this questionnaire so that the information could best be organized to analyze the results. It was decided that the best way to analyze and organize the results would be through the creation of *nodes* (i.e. a collection of references about a specific theme) which were created using Nvivo. This established a coding method that helped me develop a means of categorizing unstructured information into a configuration that could be more easily recognized and examined (Janesick, 2011). In line with the research questions asked of each participant for this exploratory research, these nodes were categorized under *parent* (i.e. main) heading nodes and named as follows:

- Job Preparation from Education
- Self-Perceptions of Qualifications
- Level of Concern from Teachers
- Access to IT Resources
- Self-Perceptions of Lacking IT Skills
- Interpretation of Existing IT Hiring Practices
- Job Seeking Experiences
- Impact of Economic Situation on Finding IT Employment
- Perception of How Race has Impacted IT Employment
- Other Acquired Skills

- What has Stopped You From Being Hired In IT
- A Career of Just a Job
- How Long Will You Wait for an IT Job
- Have You Given Up on IT

By creating these nodes a hierarchical structure was established, which although established how I would organize my data, did not map to any responses provided from the research participants. To implement this mapping I first had to open the imported responses provided by the participants and subsequently choose main phrases from each individual response, which I added to the corresponding node that I had previously created. For example, to establish a means of open coding for the response provided by Participant D regarding the question "To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?", I selected the specific portion of the submitted phrase *properly prepared* and *mentored*, taking into account that the meaning of the participant's statement for this question was that he was not properly prepared or mentored as the focus for the node. By doing so, what was able to be established was a direct correlation to the answer for the submitted question as well as a rationale explaining why the specific answer was given. This process was repeated for every question which was submitted by the participants of this study in order to implement a means of open source coding for each response. For phrases that could not be clearly transcribed into the Microsoft Word table created for the purposes of selective coding, these phrases were re-worded in the 3rd person tense making sure not to change the meaning or context of the original responses by the participants.

To help establish emergent themes from the responses of the research participants using the Nvivo program, the next step conducted for this study was the implementation of axial coding which was used to inter-connect the categories identified in the open coding process (Gibbs, 2011). This was accomplished by utilizing the 'Word Frequency' tool as a query option using Nvivo. It was necessary for me to set the criteria for those matches as *similar wording* (as opposed to exact wording) when running this query, since I had established that the participants responded with very similar answers, yet used different wording in expressing those answers. To focus on the most comprehensive list of similar words from the responses of the participants of this study, I also identified that I had to limit the criteria used to no more than one thousand for the number of matching words. Additionally, it was necessary for me to filter out words with no more than three characters in order to ignore words such as *yes* or *no* to ensure that such answers were not included in the data results, since these answers were too finite for the purposes of this qualitative study and could be interpreted as quantitative results (Balkissoon, 2014). The results of running this query in this fashion resulted in numerous categories which were given a *weighted percentage* (i.e. the frequency of the word relative to the total words counted). Once all generalized words (e.g. what, have, been, etc.) were added to the *Stop Words List* in Nvivo for the query, the highest weighted percentages for the responses provided by the research participants included the following words; career (13.79 %, used 36 times), job (10.73%, used 28 times), training (7.28 %, used 19 times), education (6.13 %, used 16 times), student (6.13 %, used 16 times), teacher (6.13 %, used 16 times), white (5.75%, used 15 times), racism (4.98 %, used 15 times),

used 13 times), equipment (3.83 %, used 10 times), employment (3.07 %, used 8 times), opportunity (3.07 %, used 8 times), certification (2.68 %, used 7 times), experience (2.68%, used 7 times), guidance (2.68%, used 7 times), mentoring (2.68%, used 7 times), access (2.30%, used 6 times), black (1.92%, used 5 times), discrimination (1.92%, used 5 times), and prepare (1.92%, used 5 times).

Not surprisingly, these were many of the very same words used by the research participants of the pilot study. Two stark differences were the addition of the words *need*, which had a weighted percentage of 8.05 and the word *economic*, which had a weighted percentage of 1.92. It was also anticipated, based on previous research cited in this study that the percentage of usage for the words *access* and *coaching* would increase (although the word *coaching* was found to be replaced by the word *mentoring*). A word cloud depicting the most frequently used terms from the responses provided by the participants of this study can be seen in Appendix M of this study.

The final step conducted after having identified the categories to be analyzed was the utilization of selective coding in order to build the story that connected the categories and discover emergent themes that existed. By doing so the criteria for transferability was added to this study, which indicates the "degree to which the results of qualitative research can be generalized or transferred to other contexts or settings" (The World Bank Group, 2013, para. 1). From this selective coding process a vehicle for the integration of the major categories were used thereby developing and refining theoretical claims presented in this study (Benaquisto, 2013). It was also during this point in the study that confirmability was established, which refers to the extent to which the conclusions drawn

from research could be corroborated by others (The World Bank Group, 2013). From the utilization of this process several emergent themes were identified which were found to not only have major connotations throughout this pilot study but also provide confirmability through the reiteration of findings from authors and theorists cited during this study. The importance of implementing such a methodology was that it allowed me the capability to build a means of selecting key variables from participant responses, thus making it possible to identify distinct and qualitatively different states of these variables and more clearly define the combinations of these states as types (Gläser & Laudel, 2013). Similar to the pilot study conducted for this main research project, the selectively coded themes identified during the course of this study were categorized by the following topics:

- Race and gender discrimination
- Employment opportunity
- Career path development
- Understanding of recruitment and hiring practices
- Inadequate access to latest technology
- Insufficient educational preparation
- Economic hardships in satisfying educational and job requirements
- Confusion regarding educational and job requirements
- Negative interpretations from job seeking experiences
- Continuing education and professional advancement
- Unfulfilled needs

Emergent themes recognized during the course of this main study were determined by the number of matching words or phrases found through the use of the Nvivo word frequency query, which helped to establish categories by which these subjects could be identified. This selective coding process utilized a higher level of abstraction than what was available through the use of Nvivo alone, focusing on what was central in the data in an analytical sense and not just a descriptive sense (Punch, 2013). The results of this selective coding process were made available in Appendix N of this study.

Evidence of Trustworthiness

To best ensure trustworthiness during the course of this study it was determined that appropriate validity checks must be taken throughout this research to ensure integrity. This was accomplished by monitoring, recognizing, and planning for the potential problems that that could have occurred using the analytical tools for this study. In this regard, it was important that I established a sound understanding of the tools which were used to include the capabilities, functionality, limitations of those tools. In order to substantiate the findings of this exploratory research it was necessary to base all results drawn from the information derived from the participants of this study on research derived from empirical sources in order to arrive at conclusions which were plausible and dependable (Smith, 2012). By doing so, a guideline was developed by which dependability (the qualitative counterpart to reliability) could be established for this study to effectively synthesize participant perceptions regarding the topic of this exploratory research with my own perceptions.

Of equal importance to the trustworthiness of this research was the implementation of validity, which as explained by Shuttleworth (2014) "encompasses the entire experimental concept and establishes whether the results obtained meet all of the requirements of the scientific research method" (para. 12). With this precept in mind, acute attention to detail of the three different types of coding (i.e. open, axial, and selective) utilized during this study were adhered to. By thoroughly analyzing the codes derived from the responses of the participants of this study, I was able to effectively identify and substantiate the resultant themes and subthemes which were based on the number of repeated words and phrases provided by participant answers (Gläser & Laudel, 2013). In doing so, I was able to show in a real sense how the majority of the research participants for this study actually felt about many of the issues regarding the socioeconomic challenges faced by African American men seeking IT jobs.

By equally emphasizing the dichotomous importance of each of these strategies in conducting this research, what was established was a means by which the psychometric properties of this study could be ascertained for dependability and validity. Conversely, it was understood that personal biases could exist on the part of the researcher concerning this study. In order to circumvent the potential existence of such biases the precepts of Morrow (2005) and later reiterated by Marais (2012) were used as guidelines for combating possible bias whose arguments were very similar regarding confirmability for a qualitative study. These precepts included the guidance that confirmability (vs. objectivity) should be the objective of exploratory research and the findings should not be a function of biases of the researcher. By adhering to the principles shared by both

Marais (2012) and Morrow (2005), a baseline was established by which the core topic of this study could be addressed, which provided me with a means to focus more on the circumstances being investigated rather than beliefs, pet theories, or biases which I previously may have consciously or subconsciously accepted as being true.

Discussion of Results

Through the development of the categorical selecting coding process implemented to group or link individual words from the participants of this study, a clearer understanding of the underlying individual and collective themes from participant responses was achieved. Even after developing this selective coding process, however, it was found that other challenges existed that had to be taken into account in order to ensure that this final stage of coding included all aspects of the responses provided by the participants of both the pilot and main study for this exploratory research. One of these challenges was found in establishing a meaning from the responses of research participants who replied that they "did not know" the answer to a particular question. As an example, for question number 5 of the pilot study where it was asked "To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry?", the first part of the response provided by Participant B was that "I do not honestly know". A similar response was given by Participant J during the main study who stated "I do not know what areas of knowledge I am lacking" in response to question number 6 where it was asked "What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT

related discipline that you have been studying for?" Because the Nvivo data analysis program which was used did not have the capacity to provide accurate axial coding to the phrase *did/does not know*, it was found necessary to categorize this group of words due to the fact that these particular expressions had been used numerous times by participants in both studies and that this idiom did indeed have a meaning relating to the main research questions for this study. In order to establish a categorical meaning for this particular phrasing of words it was determined after re-reading each participant response that the phrase *did/does not know* was synonymous (in meaning and context) with the word *guidance*, which had already been selectively coded under *confusion regarding educational and job requirements*. Responses such as these were highlighted under the selective coding heading which can be seen in Appendices K and N of this study.

Another quandary which had not been anticipated that occurred during the main study was encountered from answers provided by research participants which contained no axial coding (i.e. no comparable words used by other participants of this study) because of the phrasing of the provided response. An example of such a response was given by Participant H who answered the question "To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry?" by answering "No. The classes I have taken are a little behind on Web design creation techniques and tools that can be used". Although no axial coding was derived from the specific wording of this response, distinct (qualitatively different) states of existing variables used by the selective coding of other answers provided by research

participants were extant for answers such as this. For instance, by discerning the connotations from the partial sentence "...a little behind on Web design creation techniques and tools that can be used", the conclusion drawn from responses found to be most similar to other research participants for what Participant H expressed was that the indicated meaning from this response denoted an inadequate access to IT resources.

Although these cases were very few, it was through this associative process that selective coding was implemented for all other responses that did not have definitive axial coding results which could be extracted from answers provided by the participants of this study.

The last issue dealt with during the coding process for the answers derived from the research participants of this study was the classification and handling of discrepant data, which is an occurrence of the studied phenomena whose findings do not fit the results of a researcher's emerging theory (Universal Teacher, 2013). Rather than ignoring such responses from the participants of this study, discrepant data or non-confirming answers were critically analyzed in order to ascertain the variations in the meanings of these types of responses so that the significance of these responses could be interpreted on both merit and relevance relating to the topic of this study. It was also established during this phase of the study that it would be at this juncture that the criteria for dependability would be established, which stresses the need of researchers to take into consideration the evolving meaning from the results of research (The World Bank Group, 2013). As explained by Trochim (2006) "the research is responsible for describing the changes that occur in the setting and how these changes affected the way the research approached the study" (para. 6). With this goal in mind, it was found through the

analysis of this study that Participant's L and M were the only contributors to this exploratory research whose responses were not in line with the other research participants who took part in this study. From the responses provided by Participant M, an underlying reason for the discrepant answers submitted for this questionnaire became apparent from his response to question number 8, where it was asked "What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?" As a rejoinder to this question Participant M stated that he had talked to several of his teachers, who explained that once he met the standards for the position he was considering, the chances were very good chance that he will get it. Unlike other research participants for both the pilot and main studies for this exploratory research, the response submitted by Participant M indicated that the potential for gaining employment in his chosen field of IT was very positive. Based on the responses of the participants of both the pilot and main study, it was concluded that Participant M could potentially find employment in his chosen field of IT. It was interpreted that such a possibility positively impacted the self-efficacy beliefs of Participant M as well as his general opinions concerning the challenges faced by African American men from finding employment in the information technology industry. Such an interpretation was also found to be the case from the results of a 2013 poll conducted by the National Public Radio (NPR), the Robert Wood Johnson Foundation and the Harvard School of Public Health for African Americans. From the results of this pole it was identified that 53% of African Americans who found themselves, either by chance or planning, in a good situation concerning their educations, finances, and/or careers felt very positive about

their lives despite the fact that they were able to recognize specific problems with their educations, finances, and/or careers (NPR, et al., 2013).

Conversely, this assertion was not found to be the case for the discrepant responses submitted by Participant L. As a case in point, when asked "To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?", contrary to how the majority of the participants of this study believed, Participant L's response was that "My education/training has been pretty good". Similarly, when asked "What has been the level of concern from your teacher(s)/instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?" Participant L's answer was "I have had some very good teachers". Through analysis of these responses the dichotomy of Participant L's answers for these two questions was found to be incongruent with the majority of the answers he submitted for this questionnaire. For example, when asked "What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job with?" Participant L responded with the answer "It is hard for Black people to get a break". From this answer it was concluded that although Participant L believed that his education had prepared him to find employment in the IT field, other social (and possibly economic) issues were still extant that precluded him from successfully finding employ in the field of IT. Attitudes such as this from young African American men were found to be quite common from research conducted by Hucks (2011) who concluded that "we as a people can believe in education all we want, but until the people who are running the schools believe in our education, then it is an uphill battle" (p. 124). The analogous

characteristics from these responses found to be most interesting for both of these discrepant cases was that the answers did not (as initially anticipated) detract from, or change results of the emerging theory for this research, but instead provided a deeper understanding of this exploratory research as a whole.

Thematic Representations of Research Questions

The discovered themes were logically built from the research problem and design, and were presented in a manner that addressed the research questions. From the answers provided by the participants of both the pilot study and the main study for this exploratory research, the most critical aspect in determining the meaning of those answers was establishing the selective coding from those responses, which in turn built the story that connected the research questions and helped in ascertaining emergent themes. As was evident from the open and axial coding results, words such as racism, discrimination, training, education, employment, and opportunity were used to explain socially charged issues as to why the participants of this study could not find employment in the field of information technology. However, from the individual words alone, no connections were found to exist that could be used in developing the subsequent emergent themes or relationship to the research questions from the individual responses of the research participants. From this limitation, it was made clear that the utilization of coding alone would not be enough to uncover emergent themes from the responses of this study due to the fact that codes only capture a single idea associated with a segment of information, and consist of pithy labels identifying what is of interest in the information in relation to the research question (Turner, 2013). Because of this, it was necessary to

selectively categorize the words used most frequently by the participants of this study in a way that captured recurring patterns which were found to be most common between the participant responses and the research questions. With this goal in mind, selective coding categories were matched to the words identified as the most frequently used by the participants of both the pilot and main study for this exploratory research, taking into account the context in which the words were used for the responses which were provided by each participant of these studies. In presenting this information, I first provided the words which were identified as having the greatest weighted percentage from the Nvivo program, followed by the selective coding category associated with those words, which I subsequently matched to the appropriate research question. The results of this matching process between the selective coding and the research questions for this study can be seen in appendix O of this study.

The manner in which selective coding was utilized for this study was supported by research from several sources that provided a method to effectively implement the coding process in order to find a meaning from those codes. One such resource was an online document from The University of Lausanne (2011) which provided information explaining that “the goal of coding is not to count things, but to fracture the data and rearrange them into categories that facilitate comparison between things in the same category and that aid in the development of theoretical concepts” (p. 5). Online data retrieved from Gallicano (2013) paralleled the method provided by The University of Lausanne for the use of selective coding where it was stated that for selective coding, a researcher should decipher the core variable which is all inclusive for the provided data and then reread the transcripts and selectively code any data relating to the core variable

which has been identified. Finally, the research provided by Jones and Alony (2011) provided the most comprehensive explanation for the use of selective coding by explaining that this stage of coding utilizes ongoing comparison and memoing. Jones and Alony also explained the following concerning selective coding:

This stage results in dense, saturated core categories. The core categories are then sorted, written, theorized, and cross-referenced with literature, during theoretical coding. The results of this last stage of coding are a basic social process and a theoretical model (p. 101).

From the preceding information derived from The University of Lausanne (2011), Gallicano (2013), and Jones and Alony (2011), the last part of the selective coding process implemented for this study was the cross reference of the eleven selective codes utilized for this exploratory research with literature that supported the findings associated with those codes. As a case in point, the selective code 'inadequate access to latest technology', correlating to research question number 1, was based on supporting research from Griffin and High (2011) where it was explained that "minority students are more likely to be in school districts lacking the resources for a rigorous computer science curriculum" (p. 20). Based upon participant responses, this very same premise is identified as being one of the prevalent beliefs exemplified from the number of coded words that fit this particular category. A parallel was also derived from research question number 1, with the selective code *unfulfilled needs*. This conclusion was drawn from the number of participant responses found to be in line with research conducted by Lewis et al. (2010) which made the assertion that specific needs for African American males must be addressed in properly preparing this ethnic group to be successful in STEM based

careers. Interestingly enough, an indirect relationship was also established for *unfulfilled needs* with research question number 2 and 3 based upon the responses of research participants who indicated that a need existed for increased STEM based education (the basis of research question number 2) or a better understanding of *existing hiring practices currently in place within the IT Industry* (the basis of research question number 3).

The number of selective codes associated with research question number 2 was found to be even more prominent than those associated to research question number 1. For example, the selective code *career path development* was found to have credence from studies such as those conducted by of Grimmatt (2010) who made the conclusion that one of the most important facets of career development for African American men was the education and training of this ethnic group as they grow into adolescence and adulthood. For the selective code *insufficient educational preparation*, a similar contrast was drawn from with research question number 2, identified from prior research from the educational testing service (ETS, 2011). As concluded by the ETS, the most probable reasons why specifically African American men are not properly prepared to compete in the IT field stem from problematic factors from childhood which have created "the perfect storm of educational and economic negligence that society now must seek to counter" (ETS, 2011, p. 2). In establishing the thematic representation for the selective code *continuing education and professional advancement*, the conclusions drawn by Lynn (2009) were found to encapsulate how African American men were found to be lacking concerning this prerequisite. Lastly, it was identified that a direct correlation existed between research question number 2 and the selective code *confusion regarding*

educational and job requirements. Conclusions from the online report by Ebersole (2014) connected this selective code with research question number 3 by making the following argument:

As educational programs increase in numbers and distinction, so will the importance of having a degree. Until then, those with the degree will not only compete with the experienced job seekers, but with the notion to question the necessity of the degree (para. 4).

Research question number 3 which asked "what are the experiences and perceptions of college going African American male students who are attempting to enter the IT industry regarding the existing hiring practices currently in place within the IT industry?" was found to have the most comparisons to the remaining selective coding categories. One of these categories included *race and gender discrimination*. From research conducted by the Level Playing Field Institute (LPFI, 2011) hidden biases were found to be extant in the IT industry towards minorities. These hidden biases, whether perceived or actual from the responses submitted by the research participants for this study, provided the rationale for the development of and inclusion of *race and gender discrimination* a selectively coded theme for this exploratory research. The examination conducted by the LPFI (2011) also served as the building block for the selective code *understanding of recruitment and hiring practices*. This selective code was associated to research question number 3 from the LPFI's research conclusions stating that the practices and culture of a company impacts the recruitment, hiring, workplace experiences, and retention of these minorities, which is not part of the education and/or

experience minorities generally have when seeking a job right out of college. The selective code *employment opportunity* was created base on the number of responses from the participants of this study relating to the opportunity for employment and was supported from previous research by Smith and Joseph (2010) whose research concluded that the number of companies whose employers relied on racialized and gendered stereotypes in their rationales for hiring African American employees was not uncommon. Research question number 3 was also matched to the selective code of *negative interpretations from job seeking experiences* based on the number of participant responses referring directly or indirectly to this category. This selective code was constructed based upon research by the Department of Professional Employees (2012) which stipulated that The IT industry has a spotty record of hiring Black and Hispanic workers. Weise and Guynn (2014) made the argument that this problem has not abated in recent years, which is in part due to the fact that although many colleges have "elite computer science departments that graduate larger numbers of African-Americans" (para. 23), these colleges are not the ones where leading companies recruit employees. Lastly, the categorization of selective code *economic hardships in satisfying educational and job requirements*, expressed by a great majority of the research participants for this study, stemmed from the perspective of Strayhorn's (2010) research, which delved into the educational and economic challenges faced by African American men seeking employment in the field of IT. Not surprisingly, a great many of the educational and economic challenges spoken of by Strayhorn were found to still exist today, as identified from the findings of a report from the New York State Educational Conference Board

(2014) where it was concluded that "the capacity of our schools to deliver the education our students need has been undermined by a prolonged era of harsh financial challenges" (p. 1). Based on the responses from the participants of this study, these 'economic hardships in satisfying educational and job requirements' are still a big problem for African American men seeking employment in the IT industry.

For discrepant cases found during the course of this entire study, these findings were both analyzed and incorporated to ensure validity for this exploratory research. A key aspect of validity for this entire study was found from research conducted by Freeman et al (2010), where it was explained if the discrepant cases outnumbered those that fitted the assertion, the assertion would not be warranted by the resulting data. From the results of this study it was found that the number of discrepant cases did not outweigh concurring assertions for this research. Be this as it may, what did have to be taken into account were the number of selectively coded themes that did not have a direct or obvious correlation to the axial codes derived from the responses provided by the participants of this study. As an example of this observation, the selectively coded theme *confusion regarding educational and job requirements* was derived from numerous research participant responses who used words such as guidance, or coaching to directly or indirectly express a lack of knowledge concerning a specific research question based issue. Such words were used by participants 'A', 'B', and 'C' for the pilot study, and by participants 'D', 'G', 'H', 'K', and 'L' for the main study. Another means of expressing *confusion regarding educational and job requirements* was revealed from participant responses stating "I do not know" in answer to queries from the submitted questionnaire

for this study. This phrase was used in the responses provided by participants 'A' and 'B' for the pilot study and by participants 'E', 'F', 'H', 'I', and 'J' for the main study. Lastly, it was found that some responses by participants who took part in this study could not be selectively coded due to the fact that no open or axial codes (i.e. matching words or phrases) existed in the context of the answer which was provided. An example of such a situation was identified from the response provided by participant 'G' to the question "From the education/training that you have received thus far, do you think that you are as equally qualified as white male students to acquire a good paying job in the IT industry?" Participant G's response to this question was "No, but I have been trying to educate myself, which make me as good as most white students in my opinion". Based on this response, it was concluded that the likelihood for participant 'G' being confused concerning the requirements for his chosen education and for possibly getting a job based on that education was very possible. Young (2010) corroborated such a conclusion by stating that "many of the university-hating self-taught are the kind of people who read a couple self-help books per year and believe that's basically the same as getting a degree, who then get angry at the bureaucratic system that will not let them get their ideal careers" (para. 2). Other research supporting this conclusion was derived from Mifflin, Campbell, and Price (2012) where it was identified that "the confusion surrounding the notion of self-direction (i.e. self-education) is often compounded when a problem-based curriculum is adopted" (p. 301). By the use of these selectively coded processes, meaning was established for each of the selectively coded themes used to categorize the responses provided by the participants of this study.

Transition and Summary of Responses

The purpose of this study was to examine, understand, and describe the phenomenon of socioeconomic factors faced by African American men, from their own view-points, attempting to enter the IT industry. This chapter included the results of both the pilot and the main studies, including problematic issues encountered during both phases of research, and the data collection and analysis procedures implemented for those studies. Emphasis was also placed on issues such as influences that impacted participant interpretations, explication of the demographic composition of this study, and the implementation of evidence of trustworthiness during this research. Lastly, chapter 4 incorporated a discussion of the results from both studies that incorporated the collected perceptions, opinions, beliefs, and thematic representations derived from research participants from both the pilot and main studies for this exploratory research, which were in line with the research questions of this study.

Chapter 5 concluded this study and provided an in-depth interpretation of the findings for this exploratory research based on a three phase coding (open, axial, and selective) method that was used to confirm and establish the validity of answers provided by research participants through the analysis of the questions from multiple perspectives (Guion, Diehl, & McDonald, 2011). Chapter 5 also included the identification of the applications to professional practice concerning this phenomenon, the limitations of this study, and recommendations for future research. As a final component to this chapter, the implications for social change was addressed in order to potentially provide a positive impact for the underrepresentation of African American men in the IT industry.

Chapter 5: Discussion, Implications, and Recommendations

Introduction

A copious number of problems including educational issues, economic conditions, and the unavailability of IT based resources exist regarding the socioeconomic challenges faced by African American men attempting to enter the IT industry. By concentrating on the internal implications of this topic as opposed to the outside forces that impact the overall problem, this phenomenological based study investigates the socioeconomic factors confronted by African American men (from their own points of view) endeavoring to enter the field of IT. In doing so, this exploratory research concentrates on the understanding of the experiences of African American men from the perspective of the individual. Through the analysis of the responses from African American men who are attempting to obtain careers in the IT industry, based on their real world experiences, current perceptions, and existing beliefs, the potential to provide a significant contribution to the field of information systems management is being provided from this research. Of equal importance to the overall objective of this study are the identification, investigation, and conclusions drawn from these previously unidentified dynamics associated with African American men relating to this issue. From the results of this study, a preponderance of information regarding this issue is being provided, having the potential to lessen the underrepresentation of educated and qualified minorities in the field of information technology. Moreover, this study also serves as a foundation for future research regarding not only problems encountered by African American men attempting to enter the field of IT, but all minorities.

Interpretation of the Findings

From the identified selective codes established from the responses of the research participants, which are in line with both the research questions and the conceptual framework of this study, several emergent themes are extant. These themes, sharing a distinct commonality regarding the problem addressed during this research include; career path development, confusion regarding educational and job requirements, continuing education and professional advancement, economic hardships in satisfying educational and job requirements, employment opportunity, inadequate access to latest technology, insufficient educational preparation, negative interpretations from job seeking experiences, race and gender discrimination, understanding of recruitment and hiring practices, and unfulfilled needs. From the results of these selectively coded themes, this study shows a gap in existing research for the understanding of the beliefs, perceptions, and experiences regarding socioeconomic challenges faced by African American men attempting to enter the IT industry.

For the pilot and main studies which this exploratory research was based on, the eleven selectively coded themes established from the answers provided from the participants of both studies corroborate not only the previous research of authors and theorists cited during this study, but also considers antecedent problems not considered regarding this dilemma for African American men. As a case in point for themes previously identified concerning this issue, forty eight matches exist for the selective code *insufficient educational preparation*, which relates to research question number two for this study. This finding suggests that instructional preparedness of IT based school

curriculum, which the African American men who participated in this study are enrolled in, may very well be inadequate for future employment in the IT field. This finding does not represent a new phenomenon for the problems faced by African American men attempting to enter the IT industry. As cited during the course of this study, similar conclusions are found from research as early as Carver (1994), and later by Malone and Yin (2011). However, based on my own findings from this study, the problem of insufficient educational preparation still exists as a factor that precludes, or at the very least impedes, African American men from successfully entering the IT work force.

The sixty three selective coding matches for *career path development* from the answers provided by the participants of this study relating to research question number two suggests that individuals choose career fields based on their own self-perceptions, which is in turn built on what is perceived to be the right path to take in order to reach their goals. Such a conclusion was also reached from the research of Messersmith et al. (2008) regarding career development theories. This topic of career path development is just as relevant now as it was in the past for African American men attempting to enter the field of information technology. Such an assertion is supported Brewer (2013) who made the argument that from a standpoint of self-empowerment that "the unfortunate truth is that many African-American men have never had sufficient career development training" (para. 12) and that many of the skills that are taken for granted by their white male counterparts have never been taught to them. Based upon the context of the submitted answers from the research participants and the emergent themes which resulted from those responses, the same conclusions are extant from this study.

For the selective code *confusion regarding educational and job requirements*, eighteen matches correlating to research questions 2 and 3 are extant, which implies that a standard education alone is not enough for some students to bridge the gap between academia and a professional career. This conclusion is partially supported by earlier research conducted by Simmons (2011) which determined that education is a critical prerequisite for pursuing a technology career. However, based on the context of the answers provided by the participants of this study, evidence suggests that regardless of the amount of education received by African American men, a great deal of confusion exists for in determining how to successfully pursue and acquire a technology career. From an online article submitted by TARGETjobs (2014), which is a career advise website, one possible solution to this quandary is provided, stating that by the end their degree plans, college students need to have developed skill sets such as emotional intelligence (i.e. maturity), tact and empathy, document planning and filing skills, and being an effective team player. As explained further on the TARGETjobs website, to effectively gain these skills conversion courses (i.e. courses that facilitate the transition into a particular profession) are necessary. As logical as such an approach would seem, however, is the problematic reality that these types of classes are not included in the typical IT degree plan, such as provided by the City Colleges of Chicago. Even if such classes were provided, it is argued that a great deal of guidance would have to be provided to college students concerning what classes are right for their chosen fields of IT.

Selective coding matches for *employment opportunity*, relating to research question number 3, are associated with forty one responses from the participants of this study. The conclusion drawn from the interpretation of this particular selective code is that despite educational advancements by African American men in STEM, employment opportunities remain scarce. The premise for this argument is abetted by research conducted by the Leadership Conference on Civil and Human Rights (2013) where it is stated that a digital divide persists for those who are unable to take full advantage of the employment opportunities available in the new economy. Along with the findings from my own study focusing on employment opportunity as an aspect the overall problems encountered by African American men seeking employment in the IT field, the research by the Leadership Conference on Civil and Human Rights provides a great deal of evidence which exposes this issue as an encumbrance to professional advancement. Even for highly recognized information technology based companies such as Google, recent research shows that this digital divide still exists, as is evident from Google's latest equal employment opportunity commission report exposing the fact that only 1% of the company's tech workforce is African American (Weise, 2014). Based on the responses from the research participants regarding employment opportunity, the economic and social inequality, which the digital divide is structured on, continues to be one of the greatest challenges in acquiring employment in the field of information technology.

Another prominent selective code resulting from the collective responses of the research participants of this study is *race and gender discrimination*, corresponding to thirty one participant answers relating to research question number 3. Not surprisingly,

considering the topic of this study, this selective code represents a driving factor for many of the responses supplied by the research participants. The conclusion drawn from this selective code is that the type of racism encountered by research participants in seeking employment in the information technology field is not the overt type of intolerance (historically considered as hatred for another), but rather a circuitous type of racism which is not so clear in meaning or intent. This ambiguity, as interpreted from participant responses to the submitted questionnaire, emanates from a perceived lack of consistent levels of achievement and proficiency in the IT industry. Taking into account earlier research by Smith and Joseph (2010), where it is explained that it is not uncommon for companies to have employers who relied on racialized and gendered stereotypes in their rationales for hiring African American employees, it is understandable why research participants from my own study equated *racism and discrimination with lack of consistent levels of achievement*. Burleson's (2013) world view concerning this issue adds credence to both Smith and Joseph's earlier findings and the findings of my own study by making the assertion that "If we let raw numbers tell the story, minority under representation and racism appears to be especially prevalent in IT, lurking just under the covers, hidden and well-disguised behind rigorous education requirements and institutional barriers" (para. 1). Whether perceived or actual, the responses by the participants of my study are in line with both the research conducted by Smith and Joseph, as well as Burleson.

Selective coding matches for *inadequate access to latest technology*, correlating to research question number 1, are associated with sixteen responses from the participants

of this study. The conclusion arrived at for this selective code is that although many colleges offer computer related curriculums, issues ranging from budgetary constraints to ill-prepared information technology courses impede the capability of these institutions to provide students with the knowledge and tools needed to be competitive in the IT field. Along with the findings derived from this study, this assertion is also based on research conducted by Griffin and High (2011) where the conclusion is drawn that many colleges do not have the capability to provide a stringent computer science program. Later research conducted by Dougherty (2014) corroborates Griffin and High's assessment of this issue by elucidating that "underrepresented [minority] students are more likely to be in school districts lacking the resources for a rigorous computer science curriculum" (p. 20). As seen from the results of my own study, access to technology is still a problem that has not been fully resolved by some colleges and is still a barrier for students who have aspirations for finding employment in the information technology industry.

The conclusion derived from the thirteen participant matches for the selective code of *negative interpretations from job seeking experiences* relating to research question number 3 is that a college education alone is not sufficient for preparing students to deal with what will be encountered once they start seeking jobs in the IT industry. In conjunction with the results derived from research participant responses of this study, research by Strayhorn (2010) regarding perpetuate negative stereotypes delineates in detail what many research participants of this study actually experienced in seeking employment in the field of IT. From these experiences, the participants who took part in this exploratory research expressed various degrees of confusion, apprehension, and/or

resentment for being perceived as not being qualified for the IT positions they sought employment in, whether the perception was true or not. In this regard, an underlying interpretation derived from the various responses matching to the selective code *negative interpretations from job seeking experiences* is that despite the obstacles, perceptions, and barriers to finding employment in the IT industry, many research participants would keep trying. Interestingly enough, current research indicates that observations such as this are not unique when studying African American attitudes towards employment. As a case in point, Birch and Heideman (2014) argue that African Americans seeking employment are even more resilient than their white counterparts, staying in the job market longer despite persistent frustrations of their search for employment, which as previously mentioned is also perceived from the responses from participants of my own study.

From the 7 selective coding matches for *continuing education and professional advancement*, which correlates to research question number 2 for this study, the inference exists that the education being provided to the African American men who took part in this study is not sufficient to keep pace with the fast paced growth occurring in the IT industry of today. During the course of this study, Lynn's (2009) research explaining the impact of not keeping up with advancements in information technology by African American men first brings this problem to light, which has again surfaced from the results of my own study, albeit from the perspective of individuals seeking employment in the field of IT instead of the viewpoint of IT professionals that already work in the IT field. Not surprisingly, the significance of *continuing education and professional*

advancement for African American men is recognized by other current research, such as the report by Smith and Anderson (2014) which makes the point that " Our public institutions—especially our educational system—are not adequately prepared for the coming wave of technological change" (para. 1). In this regard, the conclusion arrived at concerning this particular issue by Smith and Anderson is analogous with my supposition.

Selective coding matches for *understanding of recruitment and hiring practices*, correlating to research question number 3, are associated with 7 responses from the participants of this study. From this selective code, the conclusion is made that the education received by the participants of this study does not provide, even in a general sense, training for what companies are looking for from prospective employees. Similar to the findings of this study, research by the Level Playing Field Institute (2011) concludes that practices and culture of a company impacts the recruitment, hiring, workplace experiences, and retention of these minorities, which is not part of the gained education or experience minorities generally have when seeking a job right out of college. A key factor concerning the selective code *understanding of recruitment and hiring practices* is the identification that this problem is not just an issue for African American men seeking employment in the field of IT, but for many job seeking college students, regardless of race or gender. Daniels-Randolph (2014) elucidates this issue by making the point that many newly minted degree holders anxiously try to parlay their credentials into a new full-time job closely aligned with their degree, but what these students find out is that many employers are asking for more experience than is

reasonable to expect of someone just graduating college. Based on participant responses from my own study and the resultant selective codes, this problem also exists for African American men seeking employment in the IT field.

The resulting conclusion from the 7 participant matches for the selective code of *economic hardships in satisfying educational and job requirements*, relating to research question number 3, is that the exorbitant costs of an average college education is in many cases beyond the financial capabilities of what students can afford. This problem is compounded by the additional costs of IT related certifications, which many companies base hiring decisions on. Along with the findings derived from the responses of the participants of this study, similar conclusions from Strayhorn's (2010) research identifies this issue as being a problem by explaining that "the capacity of our schools to deliver the education our students need has been undermined by a prolonged era of harsh financial challenges" (p. 1). Namalefe's (2014) research supports both my own conclusion and those of Strayhorn by making the argument that when considering higher education, a major worry is the balancing of educational cost and quality with the increasing demand for participation, which has become crucial for both individuals and economies with the advent of the information age. Although finding a solution to this problem is outside of the scope of this study, the acknowledgement that this problem exists regarding the socioeconomic challenges faced by African American men attempting to enter the IT industry is a highly significant aspect of this perceived problem for this ethnic group.

Of all of the selective coding matches, the thirteen corresponding results from the participants of this study regarding *unfulfilled needs*, identifies not only a failure by

previous research to address the contemporary needs of African American men attempting to enter the IT field, but also proves to be the selective code that relates to all 3 research questions. Although Maslow's (1943, 1954) hierarchy of needs research undoubtedly lays the groundwork for the understanding of this selective coding match from my own study, a different comprehension of those needs is required when taking into account the new economy paradigm first explained by Harper-Anderson (2008) during the course of this research. Since, according to Harper-Anderson, the new economy paradigm is the catalyst for the unprecedented economic growth in information technologies for corporate America which have produced unequal outcomes for African Americans seeking employment in the IT industry, these particular needs have not been addressed by previous Maslowian precepts. Even when taking into account later research by Lewis et al. (2010) concluding that the needs of African American males must be addressed to properly prepare this ethnic group to be successful in STEM based careers, it is acknowledged that little has been done to address or study this new aspect of a theory originally provided by Maslow more than seventy years ago. With this said, the findings of my own study provides a bridge to an existing gap in knowledge concerning the overall issue of the socioeconomic challenges faced by African American men attempting to enter the IT industry, which has not been previously addressed during the course of this exploratory research. Furthermore, through a deeper examination of the selective code matches for *unfulfilled needs* resulting from participant responses during the course of this study, it is concluded that a direct correlation exists between this selective code and the ten other selective codes identified during the course of this study. This

conclusion is derived from the fact that for each selective code (e.g. insufficient educational preparation, career path development, employment opportunity, etc.), the theme of *unfulfilled needs* is many times placed as a preceding ancillary argument expressed by the participants of this study, based on the submitted responses in the context which these responses are provided to the online questionnaire.

Through the identification and examination of each of the selected codes explained above, I have effectively established core categories and subcategories which coincide with both the answers provided by the participants of this exploratory research and the supporting research questions which this study is based upon. During this selective coding process, a means to effectively align the conceptual framework chosen for this study with the research questions, problem statement and gaps in existing literature is accomplished. Just as important to the objective of this study is the fact that previously identified distinct concepts and categories are further defined, developed, and refined, which in turn makes it possible for my research to identify emergent themes and tell a larger story than what the individual aspects of this issue could provide alone. In examining these themes, one of the requirements identified for the successful implementation of this study is that a direct correlation exists between the research questions for this exploratory research, the responses from the research participants, and the identified selective codes from those responses, which serves as the theoretical framework of this investigation, and the link to both previous and current research regarding the phenomenon being studied through this research. Lastly, the onus of finding existing gaps in the selected literature is consciously self-imposed by me in order

to effectively examine new concepts pertaining to this socially problematic development, focusing on the perceptions and experiences of the problems faced by African American men seeking careers in the IT field.

Identification of the Applications to Professional Practice

For the purposes of this study, 3 aspects are focused upon relating to the applications to professional practice within the IT industry, which include the pedagogy for STEM provided to African American men, recruitment practices and hiring policies within the IT field, and the availability of IT resources to this ethnic group. In this regard, I as the researcher, add to the base of knowledge gained from the previously cited authors and theorists who have studied various elements of this social problem by applying the research questions from which this study is based upon to a practical environment where the problem is proven to exist. From the use of this research tactic, several interrelated problems are identified that either directly or indirectly influence not only the answers from the research participants of this study, but provide the potential for African American men to successfully find career level employment positions in the field of information technology.

The Pedagogy for STEM Provided to African Americans

In line with the research questions and the selective coding matches for this study, the first application to professional practice within the field of IT focused upon are the principles and methods of instruction provided for STEM to college students. According to Higton et al. (2012), it is this pedagogy for STEM by which many companies determined the suitability of potential employees. While the benefits of an education in

one or more of the STEM fields is generally accepted as placing students in good stead for the employment market, numerous challenges are extant that cause these students to seek other careers(Higton et al., 2012). One such example is found from the case study conducted by Persaud-Sharma (2012), where the point is elucidated that although a great demand in both academia and industry exists for students who are pursuing studies in the STEM disciplines, a high number of students exist who choose to change their academic paths away from STEM focused degrees at higher-level institutions.

Simms (2013) supports the findings of Persaud-Sharma (2012) by reporting that the problem with students choosing other academic paths instead of STEM is not just in the black community, but in society as a whole. This assertion is made based on the observation that many black students "see STEM programs as being more difficult than English or social studies, which steers them away from pursuing a math or science path" (Simms, 2013, para. 6). A further examination of Simms' research elucidates that as an ethnic group, African American men have the highest levels of discouragement in regards to the successful pursuit of a STEM career. In line with the findings of my own research regarding the socioeconomic challenges faced by African American men attempting to enter the information technology industry, a pattern is established relating to this particular application to professional practice within the IT industry, which allows for a broader understanding of the responses from the participants of this study.

Recruitment Practices and Hiring Policies

An important aspect distinguished through the course of this research is the correlation between applications to professional practice within the IT industry in regards to recruitment and hiring policies and the challenges faced by African American men seeking employment in this field. Despite the need from IT based organizations for educated and trained employees to fill a multitude of information technology positions, the findings from this study, based on the percentage of research participants who expressed difficulties in finding employment, show that African American men still encounter huge problems entering this field. From this peculiar conundrum, where a need exists by employers to find educated and trained IT employees and an equally urgent need is extant by African American men to find employment with these organizations, the underlying question to this dilemma is, "why is there such a problem for African American men filling these positions?" Along with the numerous reasons, rationales, and arguments provided by the findings of this study, and the various authors and theorists who attempt to explain this problem cited in this examination, another possibility is identified from the website of the All Star Code (2013), "which is a non-profit initiative that seeks to attract, prepare, and place high-potential, qualified young black men in the tech-career pipeline" (All Star Code, 2013, para. 3). From information provided by this online resource, another reason why it is so difficult to identify and possibly develop solutions for the problem of African American men seeking employment in the IT industry is because "very few tech career pipeline programs that focus on under-represented black males exists" (All Star Code, 2013, para. 2). By

comparing and contrasting information such as this with the findings of my own study, as well as previous research by Harper-Anderson (2008), Smith and Joseph (2010), and Grimmett (2010), to professional practice within the IT industry regarding recruitment and hiring policies, a means for comprehending this issue from both the viewpoint of the employer and the perspective of the research participant is gained.

Availability of Information Technology Resources

In the course of conducting this research, several viewpoints are provided drawing a parallel between the selective code matches established by my own research, the impact of availability of information technology resources, and applications to professional practice within the IT industry. For example, Zickuhr and Smith (2012) subscribe to the idea that although economic and educational factors still play a role in access to technology for minorities, "the internet access gap closest to disappearing is that between whites and minorities" (p. 6). From an entirely different perspective, the Griffin and High's (2011) research provides evidence that the problem and the responsibility for the lack of availability to IT resources stems from poorly equipped educational institutions that do not have the resources for a comprehensive computer science program. Based on the findings of my own research, an integral aspect of this problem ignored by both of these authors is how African American men are responding to the confusing and difficult problems associated with having the access and the competency to understand information technology, but still being prevented from finding employment in this STEM based field. Although 100% of the research participants of my own study responded with an answer of "no" to the question asking "Have you given up on the notion of being hired

in the IT field?", the totality of the answers provided by each participant, taken in the context provided, provides strong indications that the answer *no* would eventually change to *yes, I have given up* if employment is not found in a reasonable time. Such a conclusion is also arrived at by Grasgreen (2011) who asserts that obstacles that ultimately drive black students away from the "high-status, high-paying jobs that these students are qualified for in fields such as engineering, science, finance and information technology are the social and institutional obstacles which these students encounter" (para. 1). As with the conclusions drawn from my own study regarding this issue, it is important to understand that Grasgreen's supposition does not discount or refute the findings of the other authors and theorists cited in the course of this study regarding the availability of IT resources. Instead, these assertions should be interpreted as alternative way of looking at this problem from an individual based perspective, instead of from the viewpoint of the external forces (i.e. educational or economic) that exacerbate this already complicated problem.

Limitations of the Study

An identified drawback of this study is that African American men who currently work in the field of information technology are not studied during this exploratory research. Despite the fact that the opinions of African American men who already work in the field of IT would no doubt be of significance to this study, the inclusion of this group would present too many variables which could ultimately slant the findings reached from the responses of the research participants that this study concentrates on. Another limitation of this exploratory research is the acknowledgement that the

phenomenological research method used for this study does not provide the same insights as could have been obtained from a quantitative analysis of the socioeconomic challenges faced by African American men attempting to enter the IT industry. Similarly, it is acknowledge that greater insights may have been gained from actual face-to-face interviews with the participants of this study as opposed to the submission of online questionnaires.

Due to the stringent security protocols of the SurveyMonkey Website service, regarding the protection of any and all demographic information for selected audiences that choose to answer online questionnaires, follow-up questions are available only for respondents (via the mail server used by SurveyMonkey) and cannot be initiated by the person submitting the online questionnaire. This one way means of communication adds a limitation to this study in that written responses to the submitted online questionnaire may not adequately provide detailed responses for theme analysis. To deal with such an eventuality, any ambiguous responses from the research participants for this study that do not effectively provide enough detail for theme analysis are not used for this study.

A final limitation impacting the conclusions from this study are the duration of time experiences which are gathered from the participants of this study. With the ever increasing speed in which information technology is advancing, combined with the almost day-to-day changes of America's sociopolitical climate, a longitudinal study might have provided more insight regarding the topic of this study. However, due to the in-depth analysis of each participant's experience and the exorbitant amount of time and resources required to conduct a phenomenological study for so long a period, a

longitudinal study is not practical. This limitation is why a targeted population from the City Colleges of Chicago is the focus of this study, isolating the phenomenon of African American men who have sought or are seeking employment in the fields of IT, in order to provide the most varied experiences of this ethnic group in this regard.

Recommendations for Future Research

Through the findings derived from the selective coding matches assembled from the participants of this study and the related literature cited during the course of this research, the conclusion reached from these findings is that education alone is not enough to effectively solve the problems faced by African American men aspiring to enter the IT industry. From this study alone, the denouement is reached that a need exists for a recognized process by which students who have achieved the standardized educational requirements for entering the IT industry can develop a flexible line of progression for meeting the real world requirements of IT based companies. This flexible line of progression, in a real sense, needs to be considered as the integration and implementation of an IT related career path to help guide and better prepare African American men for employment in career level IT positions. This assertion is based on the findings from this research, which strongly indicate that even after overcoming economic and/or educational challenges to find employment in the IT industry; a need still exists for this ethnic group to understand how distinguish themselves as potential employees that companies are looking for. Based on this need, it is recommended that future research probe deeper into the incorporation of value added skill-set training with existing educations to better understand the ways in which structured career paths could help

contribute to successful career outcomes in the field of IT for African Americans in general and for African American men specifically.

From a different perspective, another recommendation for future research is the implementation of a quantitative or qualitative study examining the perceptions of men from other races (e.g. White, Hispanic, Oriental, etc.) to establish if the views of African American men regarding entrance into the IT industry correspond to those of other races. Based on findings such as these, future research could help to identify and differentiate factual problems relating to entering the IT industry as opposed to perceived problems. By combining the findings from this research with similarly conducted research including other races, a more complete representation of the problem could be identified, which could in turn not only help African American men obtain career level positions in the IT field, but all minorities who are currently underrepresented in this field.

Implications for Social Change

Taking into account that many limitations to this study are extant during the course of this qualitative phenomenological based study, several implications are still able to be derived from this exploratory research that hold the potential to influence positive social change for individuals, organizations, and society as a whole. In focusing on the individual, this study reveals that even for African American men who have managed to overcome, or at least endure, societal and economic adversities explained during this investigative study, a great deal of confusion still exists for this ethnic group concerning how to leverage learned skills in IT disciplines and other value added education into qualities that IT companies are looking for. From a general perspective,

Huhman (2011) explains that some of these *value added* qualities which companies are looking for include the following attributes:

- A strategist – a person who has a plan and a goal and a strategy for attaining that goal
- A leader – a person who can take charge of a project and/or a team of individuals successfully
- A creator – a person who is innovative. Creative individuals can help companies succeed and reach their target audiences in new and unique ways
- A problem solver – a person who is able to successfully navigate problems and develop appropriate solutions. Problem solvers often must think outside of the box and come up with creative solutions

In conjunction with the findings of this study, what these personal attributes could potentially represent for African American men is a means for distinguishing themselves in a real sense from other job seekers for acquiring career level jobs in the field of information technology. From such realizations, the likelihood of satisfying many of the self needs defined by Maslow (1943, 1954), and subsequently focused on specifically for African American men, in regards to self-empowerment, by Lewis et al. (2010) and McCollum (2004) could possibly be improved. Additionally, it is found that through a comparative analysis of the results of this study with those of other researchers such as Grimmatt (2010), Harper-Anderson (2008), and Smith and Joseph (2010) that a viable means to possibly do something about the problems associated with African American men attempting to enter the field of IT, beyond generalizations or abstract

recommendations, is afforded from the results of this exploratory research. With these career-based prospects in mind, a great potential for the results from this research to become a base for future exploratory study regarding the underrepresentation of African American men in the IT industry exists. More importantly, a possibility exists that many African American men may increase the scope of their educations to encompass these *value added* skills, and in doing so distinguish themselves as top candidates for the IT jobs they are seeking, ultimately resulting in acquiring those jobs.

The findings derived from this research also suggest that a direct correlation exist between the needs of the individual (African American men in this case) and the objectives of IT based companies. According to the selective coding matches from the participant responses, the goals concerning a successful career in the IT industry from an individual point of view are the equivalent of the broad based organizational needs defined by Urwiler and Frolick (2008). As a case in point, Urwiler and Frolick explain that the stability and security needs for a secure IT infrastructure for a company necessitate that "IT standards, controls, policies, and procedures regarding the selection, deployment, and management of infrastructure are in place in order to provide a framework for overall systems stability" (p. 85). From the literal and implied meaning of the responses of the participants of this study, these organizational needs were representative of the very same objectives that African American men seeking positions in the field of IT are attempting to fulfill through their individual and collective educations. Based on the responses from the participants of my exploratory research, the implications for positive social change regarding these findings lies in the argument that

trained and educated African American men seeking career level jobs in the field of IT cannot find employment, which represents an untapped resource which has not been fully explored as a means for satisfying the bottom-line expectations of IT based companies. By thoroughly examining the responses from the participants of this study both in content and context, what is hoped is that a fresh perspective can be gained by IT corporations concerning perceived stereotypes and closed minded opinions, which have been associated with African American men regarding this ethnic group's potential value to the IT industry.

As important as the findings of this exploratory study are at the individual and organizational levels, it is identified that perhaps the greatest implications for positive social change stems from the potential for this problem to be recognized and acted on as a society. From the perspectives drawn upon in identifying how African American men perceive and respond to the socioeconomic challenges faced by this ethnic group in attempting to find career level employment in the field of IT, it is recognized that this phenomenon is a macro level problem, which ultimately has a negative effect on society as a whole. What is hoped from this research is that the responses from the participants of this study will encourage additional research concerning the plight of African American men who are seeking gainful employment in the IT industry. In doing so, the possibility to initiate increased dialog among those in a position of power to make positive social changes regarding this issue may be achieved.

The Incorporation of Career Paths as opposed to Education Alone

Based upon the research and the synthesis of the findings from this qualitative study, it is important that I, as the researcher of this phenomenon concerning the challenges faced by African American men attempting to enter the IT industry, provide more than generalizations for answers to this issue in order to potentially impact positive social change. Although previous research cited during the course of this study offer resolutions such as mentoring, family support, peer encouragement, teacher assistance, and other adults, as possible solutions to this problem, very little guidance has been provided for African American men, from a self-empowerment perspective, to combat and possibly overcome the numerous obstacles faced in acquiring a career level job in the field of information technology. In order to provide such a solution, one possible answer is identified through the incorporation of a career path along with educational pursuits in STEM related disciplines.

By the amalgamation of the benefits of a career path (considered by some as a pre-employment consideration) with possible solutions provided by researchers of this problem cited in the course of this study, a tangible answer to solving this issue may be provided (Bryan, 2014, and Morgan, 2013). Such an idea could possibly have positive ramifications spanning from training in information technology from childhood, as espoused by Carver (1994), and later by Grimmett (2010), to adult related problems concerning this issue focused upon by researchers such as Harper-Anderson (2008) and Messersmith et al. (2008). The rationale to an assertion such as this is the incorporation

of proven value added skills, from a business perspective, to an already recognized education in the field of information technology.

To better understand how African American men seeking careers in the field of IT can benefit from the inclusion of a career path with their chosen fields of interest in information technology, it is necessary to explain what a career path is considered as. According to Heathfield (2014), a career path is the process used by an employee to chart a course within an organization for career development, which involves understanding what knowledge, skills, personal characteristics, and experience are required for an employee to progress their careers. McQuerrey (2012) makes very similar points concerning the importance of a career path by making the following assertion:

Choosing a career path can help you set professional goals and develop a strategy for getting where you want to be. Part of choosing an appropriate career path involves making an honest self-evaluation of your talents, abilities and interests. While elements of your path may change over time due to choice or circumstance, having an overall professional objective with which to guide yourself will help you make critical decisions with greater clarity (para. 1).

With such explanations in mind, the immediate question to be asked is “why must a person wait until he or she is actually employed to develop knowledge, skills, personal characteristics, and experience considered as valuable attributes by businesses?” Indeed, why are these attributes not included as part of the curriculum for college going minorities (such as African American men) who, although may have acquired an

education through STEM based education, are still uninformed concerning what prospective employers are looking for from a potential employee? In asking questions such as these, what must be taken into account is that this line of inquiry is not a new path of research, but rather extensions of the primary research questions which this study is based upon. For example, when considering the perceptions of the participants of this study towards the availability of technology related resources (research question number 1), at least 1 aspect of this research question includes the extent to which the previously asked questions are realized. Another consideration related to research question number 1 is the question of when the participants of this study came to understand how the availability of technology related resources impact potential job employment and potential career advancement. The same can be said for Research questions 2 and 3 in relation to these lines of inquiry.

One paradigm showing the significance of the aforementioned questions to both the findings from this study and previously cited research is provided by Harper-Anderson (2008), where it is explained that it is the *new economy* that is mostly responsible for the existing disparity of African Americans in the IT industry. Although Harper-Anderson's findings regarding this matter are found to be factually based, from the conclusions derived from my own research, no consideration was given to specific solutions that African Americans, and especially African American men, could implement in order to either keep pace with or take control of this alleged *new economy*. Similar research conducted by Smith and Joseph (2010) focused on the allegation that it is not the changes in the economy, but rather racialized and gendered stereotypical

associations from company employers which are at fault for the underrepresentation of African Americans in the field of information technology. As with Harper-Anderson, the conclusions derived from the research conducted by Smith and Joseph are provided from a top-down perspective, attempting to provide answers from a macro-level point of view, which by the very nature of the problem, provided very little that African Americans seeking careers in the field of IT could change or impact from an individual level.

Having investigated the research conducted by such authors as Harper-Anderson and Smith and Joseph, and correlating those studies with the responses from the participants of this exploratory research, it is concluded that the socioeconomic challenges faced by African American men attempting to enter the IT industry is not a problem which can be addressed only from a top-down perspective. In order to bridge the gap in knowledge concerning this dilemma, consideration has to also be given to how individuals perceive, respond, and arguably have been conditioned by the numerous problems encountered concerning future aspirations for working in the IT field. One possible solution for molding these perceptions to conform to existing expectations of employers in the field of IT, such as those Huhman (2011) provides, would be the integration and implementation of a career path along with the STEM based education obtained by African American men seeking careers in the field of information technology. This assertion is based upon findings from the 2012 national summit on educational excellence and opportunity for African American males conducted by the Council of the Great City Schools (2012), where it is identified that African American males must have "comprehensive access to a core curriculum in their schools which is grounded in

rigorous college and career-readying standards” (p. 22). Similarly, the issue of establishing effective career paths along with education is addressed by President Barack Obama in 2012 when he launched a White House initiative to assist with acceleration of national efforts to support African American students (U.S. Department of Education, 2012). One of the major tenets of this executive order, as directly quoted from President Obama is “to strengthen the Nation by improving educational outcomes for African Americans of all ages, and to help ensure that all African Americans receive an education that properly prepares them for college, productive careers, and satisfying lives” (The White House, 2012, para. 1). By including the establishment of careers which are productive for African Americans of all ages, what this executive order from President Obama acknowledges is that a need exists to not only prepare African Americans for college, but to also prepare this ethnic group for employment which is commensurate to the education which they have obtained. With these observations and conclusions in mind, the question which remains from this presidential initiative is how African American men could benefit from such an action at the individual level.

To answer the question of how African American men can benefit from the integration of a career path along with education, it is necessary to revisit the explanation of what businesses are looking for from potential employees, as elucidated by Huhman (2011). Huhman explains that the *value added* qualities that companies are looking for include attributes such as being a strategist, a leader, a creator, and a problem solver. The problem found with these particular skill sets are that the average grade school, high school, or college curriculum does not normally teach subjects relating to these skills. A

good example of this is found on the Chicago Public Schools (2014) website where it is explained that curricular programs are composed of Reading/Language Arts, Mathematics, Science, Social Science, and Service Learning, for K-12 students. Similarly, for students attending college for an IT degree, the curriculum, though more tailored to a specific area of study in the STEM fields, is still limited to a particular discipline. These limitations are not based on the quality of education that is provided by a college but rather the standardized courses which are offered to students seeking IT degrees. Bjerede (2013) supports this allegation by explaining that several disadvantages to standardized curriculums exist, which includes: (a) a severe limitation of opportunities for students to learn by enforcing a one-size-fits-all curriculum, and (b) a shift in professional practice towards content coverage and away from deep understanding. As a case in point, for students earning an Associate degree in Computer Information Systems (CIS) from the City Colleges of Chicago (2014), the classes for degree completion are provided in Appendix P of this study. After reviewing the offerings of the curriculum for CIS provided by the CCC, the first observation made is that it is apparent that the courses offered are well suited for an education that prepared a person to become familiar with computer information systems. Conversely, it is also observed that almost no training or education is provided for the qualities spoken of by Huhman (2011), which companies look for in potential employees. Even with the addition of business classes for this degree plan, it is hard to imagine how such a curriculum prepares students, such as the participants of this study, to literally be considered as strategists, leaders, creators, and problem solvers, thereby making themselves more marketable to potential employees in

the field of IT. It is through this observation, along with the selective coding matches derived from the responses from the research participants of my own study that this unpreparedness, spoken of by Griffin and High (2011), is found to represent at least one component of the numerous problems impeding African American men from successfully entering the IT field.

To impact positive social change regarding the way that African American men are educated and prepared for eventual employment in the IT industry, one possible solution can be found in the integration of a career path along with education. For African American men seeking to enter the field of information technology, one possible solution can possibly be the attainment of recognized credentials that would set them apart from the competition in this particular job market. It is recommended that a means of effectively accomplishing this goal could be for colleges to integrate certification training that IT based businesses would recognize, along with existing IT based curriculums. Although a debate exists within the IT industry of the importance of many IT certifications, some certifications are universally recognized and sought after by companies seeking to hire potential IT certified employees (Hein, 2012). Examples of some of the more recognized and accepted IT certifications can be seen in Appendix Q of this study. Hunsinger and Smith (2008) explain the benefit of earning IT certifications by explaining that IT hiring managers may use certification to differentiate between job candidates with similar levels of education and experience. Hein (2012) describes the importance of IT certifications as a means that a person can position themselves' for a promotion or potential job in a competitive job market.

In line with the rationale for distinguishing one's self from the competition when seeking employment provided by Huhman (2011), other highly recognized non-IT related certifications are also available. One such certification is the Project Management Professional (PMP), which is the most important industry-recognized certification demonstrating that a potential employee has the knowledge and proficiency to lead and direct projects (PMP, 2014). Another valuable nationally recognized certification is the American Academy of Certified Public Managers (AACPM), which shows companies that an individual is proficient in advanced management and leadership concepts (AACPM, 2015). From such certifications, along with IT based educations, African American men would be able to show that they possess other value added skills applicable to real world context (Wlodarz, 2014). The costs of incorporating these certifications into an IT curriculum would be comparatively inexpensive compared to the cost of each class, especially when considering the potential average salary of employees who have acquired these credentials. For example, the total average cost pre-requisites for the A+ (PC technician) certification is \$178.00, from which the average potential salary of certification holders is \$50,447.00 (Pierce, 2014). A partial list of the return on investment (ROI) from individuals seeking professional certifications can be seen in Appendix R. Interestingly enough, most colleges, including the CCC, already provide training for these certifications outside of the degree plans offered. From such a recommendation, a viable option is provided concerning how African American Men attempting to enter the IT Industry can potentially leverage the education which they have received to be more competitive in finding employment in this field.

Conclusions

From the findings of this study it is contended that the integration and implementation of a career path providing a sense of direction to African American men seeking careers in the information technology industry is desperately needed by this ethnic group. By including education and certifications in leadership, management, and business employment skills to STEM based education, African American men can be better prepared for employment in career level IT positions. Of equal importance to this study is the fact that the results of this exploratory research identifies the existence of numerous emergent themes that either preclude or impede the participants of this study from benefiting from the building of a solid career path, which must be considered as an integral part of their educational experiences. Some of these themes include socially charged issues such as race and gender discrimination, confusion regarding educational and job requirements, economic hardships in satisfying educational and job requirements, employment opportunity, insufficient educational preparation, and negative interpretations from job seeking experiences. Other issues which surfaced during the course of this study include the effects of unfulfilled needs in finding employment in the field of IT, continuing education and professional advancement, understanding of recruitment and hiring practices, and inadequate access to latest technology. Although not all of these problems carry the same weight, based upon the number of selective code matches derived from the research participants of this study, each of these themes are at the very least identified as a distraction from the goals set by these African American men in seeking gainful employment in the IT industry. Even if by chance these

distractions and deterrents are overcome during the years spent in college, what is apparent is that a climate of confusion still exists at many levels for African American men seeking careers in the field of information technology due to the lack of knowledge for what IT companies are looking for from potential employees, besides the STEM based education that this ethnic group has received. These findings, based on the responses from the participants of this study, suggest that although many African American Men have satisfied the prerequisite demands of the IT industry as being qualified in computer related disciplines, a barrier still exists that hinders many from this ethnic group from successfully gaining career level employment in the field of IT and thus reaching some level of economic parity.

In summation, this exploratory study yields valuable information to add to the field of management for information technology. The most vital contribution of this body of research stems from the fact that it provides another integral piece to the overall problem to potentially have a positive impact on social change. In spite of the fact that significant opportunities have been made available for African American men to acquire a college degree, the fact that an underrepresentation of this ethnic group in field of information technology still exists represents the next hurdle for this social problem, which as of yet has not been overcome. It is hoped that by hearing the *voice* of the African American men who participated in this study (from their own experiences and perspectives) that a more comprehensive understanding of the socioeconomic challenges faced by this ethnic group to enter the IT industry will gain much needed attention and thereby bring about real social change concerning this dilemma.

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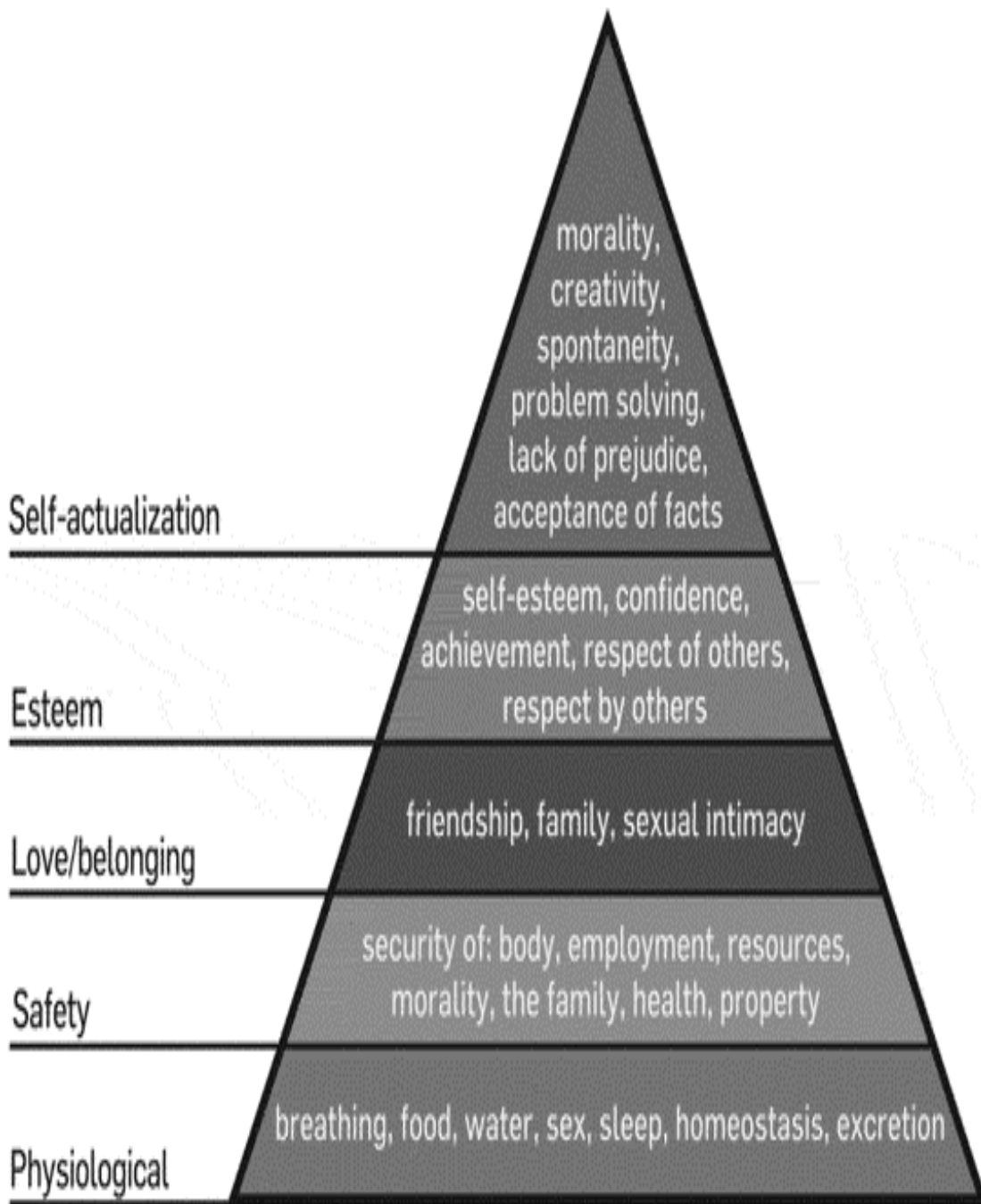
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Appendix A: Information Technology Occupations

OCCUPATION	JOB SUMMARY	ENTRY-LEVEL EDUCATION	2010 MEDIAN PAY
Computer Programmers	Computer programmers write code to create software programs. They turn the program designs created by software developers and engineers into instructions that a computer can follow.	Bachelor's degree	\$71,380
Computer Support Specialists	Computer support specialists provide help and advice to people and organizations using computer software or equipment. Some, called technical support specialists, support information technology (IT) employees within their organization. Others, called help-desk technicians, assist non-IT users who are having computer problems.	Some college, no degree	\$46,260
Computer Systems Analysts	Computer systems analysts study an organization's current computer systems and procedures and make recommendations to management to help the organization operate more efficiently and effectively.	Bachelor's degree	\$77,740
Database Administrators	Database administrators use software to store and organize data, such as financial information and customer shipping records. They make sure that data are available to users and are secure from unauthorized access.	Bachelor's degree	\$73,490
Network and Computer Systems Administrators	Network and computer systems administrators are responsible for the day-to-day operation of an organization's computer networks. They organize, install, and support an organization's computer systems, including local area networks (LANs), wide area networks (WANs), network segments, intranets, and other data communication systems.	Bachelor's degree	\$69,160
Software Developers	Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or other device.	Bachelor's degree	\$90,530

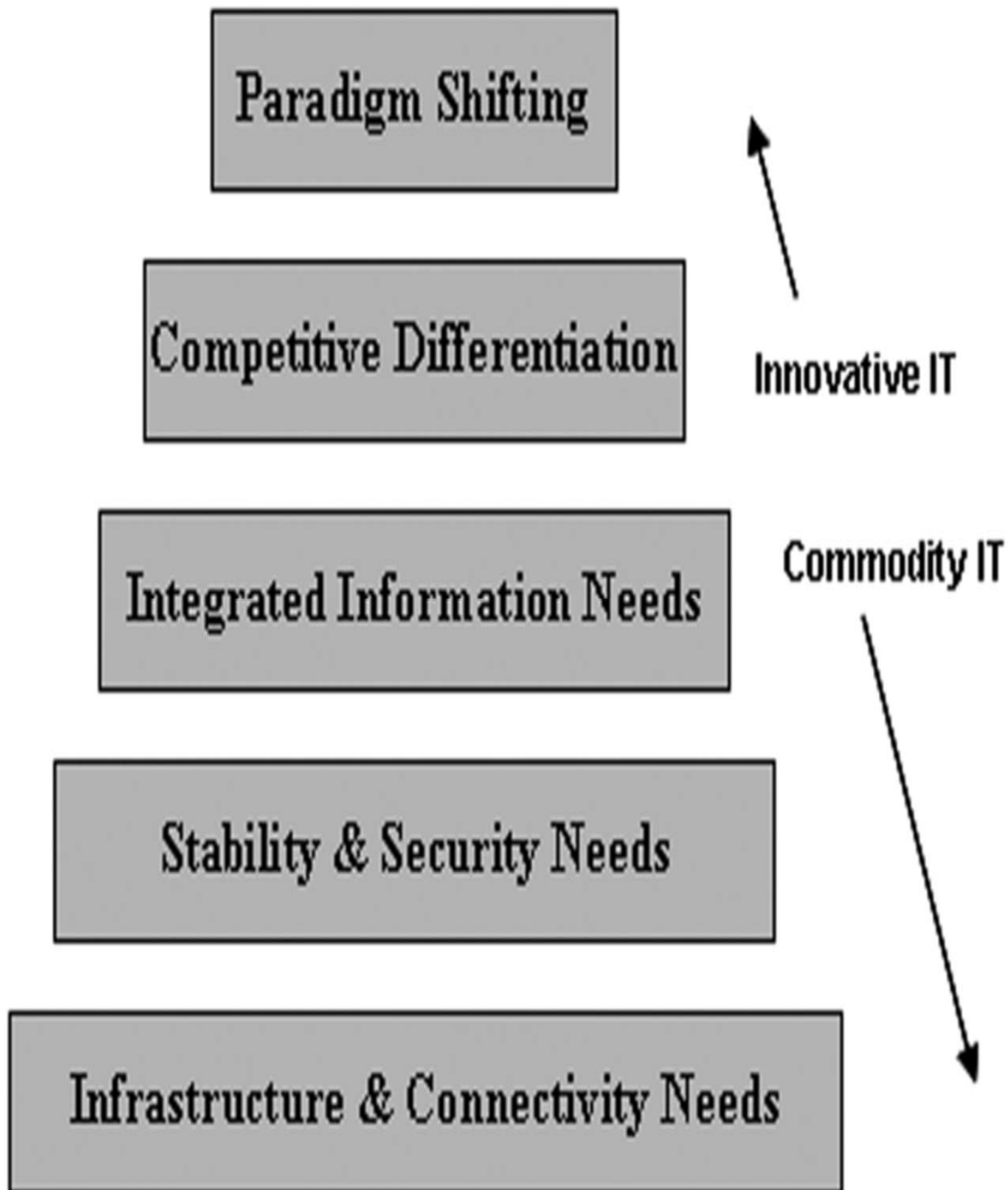
Source: Bureau of Labor Statistics, 2012

Appendix B: Maslow's Hierarchy of Needs



Retrieved from Burton (2012)

Appendix C: The IT Value Hierarchy



Retrieved from Urwiler and Frolick (2008)

Appendix D: Questionnaire Guide

Questionnaire Guide

Demographic Information

1. Are you 23 to 30 years old? Click check box to answer
Yes No
2. Are you an African American Male?
Yes No
3. Are you enrolled in one of the City Colleges of Chicago?
Yes No
4. Is your GPA average 2.0 or better?
Yes No
5. Have you attempted to seek employment in an IT occupation?
Yes No

Questionnaire

1. What are your goals concerning a career in the IT industry for your chosen discipline?
2. To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?
3. From the education/training that you have received thus far, do you think that you are as equally qualified as white male students to acquire a good paying job in the IT industry? Explain.
4. What has been the level of concern from your teacher(s)/instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?
5. To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry. Why or why not?
6. What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT related discipline that you have been studying for?
7. What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job with?
8. What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?
9. What is your interpretation of how your current economic situation has played a part in your ability to obtain employment with the company(s) that you have applied for an IT job position with?
10. From your perspective, how do you think matters of race and/or gender have played a role in your ability/inability to obtain employment for the IT related position(s) you sought?

11. What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?
12. If you feel that you are adequately trained in the IT discipline that you have selected as a potential career field, what do you think has stopped you from being hired in your chosen field of IT?
13. Do you consider IT as a career, or is it just another job for you until something better comes along?
14. How long are you willing to wait for the opportunity to be hired in the IT field?
15. Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?

Appendix E: Pilot Study Questionnaire Guide

Questionnaire Guide

Demographic Information

1. Are you 23 to 30 years old? Click check box to answer
Yes No
2. Are you an African American Male?
Yes No
3. Are you enrolled in one of the City Colleges of Chicago?
Yes No
4. Is your GPA average 2.0 or better?
Yes No
5. Have you attempted to seek employment in an IT occupation?
Yes No

Questionnaire

1. What are your goals concerning a career in the IT industry for your chosen discipline?
2. To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?
3. From the education/training that you have received thus far, do you think that you are as equally qualified as white male students to acquire a good paying job in the IT industry? Explain.
4. What has been the level of concern from your teacher(s)/instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?
5. To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry. Why or why not?
6. What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT related discipline that you have been studying for?
7. What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job with?
8. What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?
9. What is your interpretation of how your current economic situation has played a part in your ability to obtain employment with the company(s) that you have applied for an IT job position with?
10. From your perspective, how do you think matters of race and/or gender have played a role in your ability/inability to obtain employment for the IT related position(s) you sought?

11. What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?
12. If you feel that you are adequately trained in the IT discipline that you have selected as a potential career field, what do you think has stopped you from being hired in your chosen field of IT?
13. Do you consider IT as a career, or is it just another job for you until something better comes along?
14. How long are you willing to wait for the opportunity to be hired in the IT field?
15. Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?

Critique of Questionnaire (Click the appropriate check box to answer)

16. Approximately how long did the questionnaire take to complete?
10 minutes 20 minutes 30 minutes 30 minutes or longer
17. Were the questions clearly stated?
Yes No
18. Were the terms used in the questions familiar to you?
Yes No
19. Were there any grammatical errors?
Yes No
20. Are there any other questions that you would ask?
No Yes If so, what questions Q1: _____
Q2: _____
Q2: _____

Appendix F: Pilot Study Consent Form

You are invited to participate in a pilot study regarding *An Assessment of Socioeconomic Challenges Faced by African American Men Attempting to Enter the Information Technology Industry*. If you choose to take part in this preliminary analysis concerning this topic, it is requested that you read this form in its entirety before participating in this pilot study.

Procedures

Pending your agreement to participate in this pilot study, I as the researcher will collect data from answers provided from this online questionnaire using SurveyMonkey® as a means of analyzing information that you provide. To gather data from answers provided from this online questionnaire, the Collector tool provided by SurveyMonkey will be utilized. It is anticipated that the response to the questions asked in the questionnaire will take no more than 10 - 15 minutes to complete.

Voluntary Nature of the Pilot Study

Your decision to participate in this preliminary study is strictly voluntary, which means your choice to withdraw will be respected. If you decide to participate in this pilot study now, you can still change your mind at any time. If for some reason you develop feelings or stress or anxiety during this pilot study, you may end your participation at any time. You also have the right to not answer any questions that you feel are too personal.

Why an Online Questionnaire Instead of a Face-to-Face Interview

Unlike interviews that, depending on the sensitivity of the subject, may yield half-truths or result in answers that the interviewee thinks the interviewer wants to hear, with

questionnaires people tend to be more truthful while responding to questions regarding controversial issues due to the fact that their responses are anonymous. Since your identity is indeed anonymous even to me as the researcher), this is why I chose this particular method in choosing to ask questions of you.

Example Questions asked in Questionnaire for this Pilot Study

What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?

Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?

Member checking (i.e. Research Participant Feedback)

Member checking (i.e. Research Participant Feedback) will be made available to respondents of this pilot study questionnaire via the mail server used by SurveyMonkey. Since the personal information of the "SurveyMonkey Contribute" members is kept private, the Audience Project Specialist (through the use of a unique "Email Collector") will provide a means of communication for all follow-up communications sent from participants of this pilot study and myself. To support any follow-up questions that participants may have, I have provided my email address at the end of the consent form for this survey in order for the participating "SurveyMonkey Contribute" members to ask questions of me directly or for contributors to go through SurveyMonkey seeking additional information regarding this survey. Follow-up questions will be allowed at any time (i.e. before, during, or after responding to this survey) until the study has been completed. This survey will have the option to be saved at any point while answering questions and completed at a later date of your choosing. The choice to submit follow-up questions will be totally optional during the entire duration of this exploratory research.

Risks and Benefits

The only conceivable risks involved with answering this questionnaire may be feelings of uneasiness due to the sensitive nature of some of the questions. The benefits of your participation in this pilot study will be that you took part in research that has the potential to significantly impact social change for the way that African American men seeking careers in the IT field are perceived. Your answers to the research questions asked of you during this study could very well provide the stimulus to change the underrepresentation of African American men in the IT industry.

Confidentiality

Any information provided by you will be kept strictly confidential. The researcher will not use your information (whether personal or professional) for any purposes outside of this research project, to include sharing this information with the college that you are attending. In addition, the researcher will not include your name or anything that could identify you in any reports of the study or in the body of the study itself.

Dissemination of Research Results

To disseminate the results from my research I will be utilizing another feature of SurveyMonkey that will allow for the creation of a "Shared Data Page". This feature will allow me, as the researcher, to publish the results of my research after completion so that the participants of this study can get access to research results via a unique URL (Web address) provided by SurveyMonkey. These results will be available for 8 months to 1 year to all research participants, dependent on the time of enrollment in my SurveyMonkey membership plan.

Statement of Consent:

Electronic signatures are regulated by the Uniform Electronic Transactions Act. Legally, an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.

If you choose to participate in this pilot study it is required that you acknowledge that you have read the contents of this informed consent form and I agree to participate in the pilot study by clicking the checkbox below. By clicking on the checkbox below you are consenting to participate in this pilot study.

I agree to participate in this pilot study

If you have any questions concerning this research or want to withdraw from this pilot study at any time, please contact Melvin Smith via email at msmith03@wowway.com or call me at 773-783-3487. If you have any questions regarding your rights as a subject or researcher in this pilot study, please contact Research Participant Advocate 1-612-312-1210.

Please print and maintain a copy of this informed consent form for your records.

Appendix G: Invitation Letter to Research Participants

You are invited to participate in an exploratory study titled, *An Assessment of Socioeconomic Challenges Faced by African American Men Attempting to Enter the Information Technology Industry*. The researcher for this exploratory study is Melvin Smith, a doctoral student in Information Systems Management at Walden University, who is an African American man. If you choose to participate in this research, I, as the researcher, will collect and analyze data from your responses from an online questionnaire using SurveyMonkey. It is requested that if you choose to participate in this study that you read this invitation letter in its entirety.

The purpose of this study will be to investigate socioeconomic factors faced by African American men (from their own view-points) attempting to enter the IT industry. In doing so, this research will afford you the opportunity to impact positive social change by providing your own unique world view concerning the real and perceived problems of African American men attempting to enter the IT industry.

You were selected as a possible participant for this exploratory research because of having met the basic criteria of being an African American man enrolled in college who has sought or is currently seeking employment in the fields of IT.

Your confidentiality as a potential participant of this study will be maintained. Your decision to participate in this study is strictly voluntary. Also, know that I am keenly aware of sensitivity issues regarding this research and that your privacy will be respected at all times.

Please do not hesitate to contact me with any questions you may have concerning this planned research. I look forward to hearing from you at your earliest convenience.

Melvin Smith, Ph.D. candidate
Walden University

Appendix H: Consent Form

If you choose to take part in this exploratory research please be aware that this form must be read in its entirety before participation in this study is allowed.

Procedures

Pending your agreement to participate in this study, I as the researcher will collect data from answers provided from this online questionnaire using SurveyMonkey® as a means of analyzing information that you provide. To gather data from answers provided from this online questionnaire, the Collector tool provided by SurveyMonkey will be utilized. It is anticipated that the response to the questions asked in the questionnaire will take no more than 10 - 15 minutes to complete.

Voluntary Nature of the Study

Your decision to participate in this study is strictly voluntary, which means that should you decide to withdraw from this study that your choice will be respected. If you decide to participate in this study now, you can still change your mind at any time. If for some reason you develop feelings or stress or anxiety during the study, you may end your participation at any time. You also have the right to not answer any questions that you feel are too personal.

Why an Online Questionnaire Instead of a Face-to-Face Interview

Unlike interviews that, depending on the sensitivity of the subject, may yield half-truths or result in answers that the interviewee thinks the interviewer wants to hear, with questionnaires people tend to be more truthful while responding to questions regarding controversial issues due to the fact that their responses are anonymous. Since your

identity is anonymous (even to me as the researcher), this is why I chose this particular method in choosing to ask questions of you.

Example Questions asked in Questionnaire

What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?

Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?

Member checking (i.e. Research Participant Feedback)

Member checking (i.e. Research Participant Feedback) will be made available to respondents of this study questionnaire via the mail server used by SurveyMonkey. Since the personal information of the "SurveyMonkey Contribute" members is kept private, the unique "Email Collector" used by SurveyMonkey will provide a means of communication for all follow-up communications sent from participants of this pilot study and myself. To support any follow-up questions that participants may have, I have provided my email address at the end of the consent form for this survey in order for the participating "SurveyMonkey Contribute" members to ask questions of me directly or for contributors to go through SurveyMonkey seeking additional information regarding this survey. Follow-up questions will be allowed at any time (i.e. before, during, or after responding to this survey) until the study has been completed. This survey will have the option to be saved at any point while answering questions and completed at a later date of your choosing. The choice to submit follow-up questions will be totally optional during the entire duration of this exploratory research.

Risks and Benefits

The only conceivable risks involved with answering this questionnaire may be feelings of uneasiness due to the sensitive nature of some of the questions. The benefits of your participation in this study will be that you took part in research that has the potential to significantly impact social change for the way that African American men seeking careers in the IT field are perceived. Your answers to the research questions asked of you during this study could very well provide the stimulus to change the underrepresentation of African American men in the IT industry.

Confidentiality

Any information provided by you will be kept strictly confidential. The researcher will not use your information (whether personal or professional) for any purposes outside of this research project, to include sharing this information with the college that you are attending. In addition, the researcher will not include your name or anything that could identify you in any reports of the study or in the body of the study itself.

Dissemination of Research Results

To disseminate the results from my research I will be utilizing another feature of SurveyMonkey that will allow for the creation of a "Shared Data Page". This feature will allow me, as the researcher, to publish the results of my research after completion so that the participants of this study can get access to research results via a unique URL (Web address) provided by SurveyMonkey. These results will be available for 8 months to 1 year to all research participants, dependent on the time of enrollment in my SurveyMonkey membership plan.

Statement of Consent:

Electronic signatures are regulated by the Uniform Electronic Transactions Act. Legally, an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.

If initiated, I have received answers to any questions I have at this time. I have read the contents of this informed consent form and I agree to participate in the study. By placing a check mark in the space below, I consent to participate in this study.

I agree to participate in this study

If you have any questions concerning this research or want to withdraw from this pilot study at any time, please contact Melvin Smith via email at msmith03@wowway.com or call me at 773-783-3487. If you have any questions regarding your rights as a subject or researcher in this pilot study, please contact Research Participant Advocate 1-612-312-1210.

Please print and maintain a copy of this informed consent form for your records.

Appendix I: Pilot Study Transcribed Responses

1.	<p>What are your goals concerning a career in the IT industry for your chosen discipline?</p> <p>Participant A: To be able to find employment in the computer programming field</p> <p>Participant B: To get a job in the field of cyber security</p> <p>Participant C: My aspiration is a career in computer programming.</p>
2.	<p>To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?</p> <p>Participant A: My academic training didn't prepare me for paid employment at all or give me the certifications I need to be recognized by employers. I still cannot believe that we were taught programming languages that were not in use any more. We have to read and pass, not read to understand and apply.</p> <p>Participant B: The education/training in my computer related classes is only part of my learning experience and did not really prepare me for the real world. I prefer learning by doing, which I do not get the opportunity to do from the classes I have taken.</p> <p>Participant C: The education that I have received towards computer programming hasn't prepared me as much as I would have liked or given me the computer certifications I need.</p>
3.	<p>From the education/training that you have received thus far, do you think that you are as equally qualified as white male students to acquire a good paying job in the IT industry? Explain.</p> <p>Participant A: I think that I've studied as hard as many white male students, but I also believe that white students do not have to put up with things like racism and discrimination the way the average black student does.</p> <p>Participant B: I believe that I'm just as qualified as white male students to acquire a job in IT. I simply haven't had the opportunity to prove it yet.</p> <p>Participant C: I'm definitely as equally qualified as a white male student who has received the same training that I have. The only difference is that don't have to go through the stereotypical racism and discrimination that I've had to</p>

	deal with.
4.	<p>What has been the level of concern from your teacher(s)/instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?</p> <p>Participant A: I think my teachers have had too many students to provide me with the guidance and mentoring I'm individually looking for, so it has always been up to me, which has been very hard to do sometimes.</p> <p>Participant B: My teachers have showed concern for the most part, but I haven't gained anything from them in the way of career guidance or what it takes to get a job in the computer field.</p> <p>Participant C: I believe that there are too many people in the classes for my teachers to give me the level of coaching that I would really like.</p>
5.	<p>To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry. Why or why not?</p> <p>Participant A: They have good equipment, but most of the access I was looking for with hands on learning on computer programming using languages like "Python" and "Ruby" that I had hoped for were not available.</p> <p>Participant B: I don't honestly know. They have good equipment but I don't know if it is the same equipment I will be required to know how to work at the IT job I hope to be working at someday.</p> <p>Participant C: I have studied older programming languages like Java and C++. I have not had the opportunity to be trained in programming languages that I am really interested in like Perl and Python.</p>
6.	<p>What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT related discipline that you have been studying for?</p> <p>Participant A: I am lacking in using programming languages like "Python", "Ruby", and "SQL" and having the certifications to show employers that I am skilled in these languages.</p> <p>Participant B: I believe that I am receiving a good education, but I don't think this training will equip me for a good paying career in the cyber security field.</p>

	<p>For that I will need more education, certifications, and a little help paying for both.</p> <p>Participant C: I don't think that the classroom training or career guidance that I have received has given me enough real-world understanding for me to be able to go out and get a really good job in computer programming.</p>
7.	<p>What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job with?</p> <p>Participant A: When I went on my last job interview the people who interviewed me did not seem interested even though I confidently answered all of their questions and tried my best to appear enthusiastic about the process. At the end of the interview I was told "thank you, but we are looking for someone with more experience".</p> <p>Participant B: Companies are looking for employees that are experienced, but you can only get the experience if you've been given the opportunity.</p> <p>Participant C: For the jobs that I have applied for it seemed like it was who you knew instead of your experience and what you knew that determined if a person was going to be hired or not.</p>
8.	<p>What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?</p> <p>Participant A: I once went on a job interview and after the interview was over, the senior member of the board asked me to come into his office. I was totally shocked that he basically told me that although I did well on the interview that they were not going to hire me because they did not think I would be a "good fit" for the company.</p> <p>Participant B: When I showed up for one interview I went on, the employers seemed to be suddenly skeptical. For no apparent reason they started asking me personal questions that had nothing to do with the job.</p> <p>Participant C: One of my friends and I recently applied for an IT job that had multiple positions in the company. Even though my friend's resume was almost the same as mine, the difference was that he had a "white" sounding name and I had a "black" sounding name. The company called him in for a job interview, but I never heard anything back from the company.</p>
9.	<p>What is your interpretation of how your current economic situation has played a part in your ability to obtain employment with the company(s) that you have</p>

	<p>applied for an IT job position with?</p> <p>Participant A: I think that my current financial situation has played a big part in me not being able to obtain employment in the IT field. If I was financially able to afford attendance at a college that specialized in computer programming, then I would be much better prepared to enter the job market.</p> <p>Participant B: If I could afford to attend a better college, then I think that I would be more prepared to find the job I was looking for.</p> <p>Participant C: I have struggled with my finances and with trying to find sources of income to keep my education going and ultimately for better opportunities to get a job.</p>
10.	<p>From your perspective, how do you think matters of race and/or gender have played a role in your ability/inability to obtain employment for the IT related position(s) you sought?</p> <p>Participant A: From my perspective racism still exists, which is why I think it has been so hard for me to find a suitable job.</p> <p>Participant B: I think that the fact that I am an African American man has played a very big role in me not being able to find a job.</p> <p>Participant C: If it wasn't for racism and discrimination, there's a very good chance that I would have a job right now in the IT field.</p>
11.	<p>What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?</p> <p>Participant A: I don't have any other marketable skills besides what I have been going to school for.</p> <p>Participant B: I have some skills in carpentry, but I do not want to make a career in this field.</p> <p>Participant C: Probably administrative or clerical work.</p>
12.	<p>If you feel that you are adequately trained in the IT discipline that you have selected as a potential career field, what do you think has stopped you from being hired in your chosen field of IT?</p> <p>Participant A: Don't really know. I'd have to say the lack of certifications is one</p>

	<p>of the main reasons why I have not been hired.</p> <p>Participant B: I think that racism and the lack of career-plan have played a part in me not being hired in the IT jobs that I have applied for.</p> <p>Participant C: I think the fact that I am a Black man has intimidated people in some of the companies that I have applied for employment at. It's a feeling I get sometimes.</p>
13.	<p>Do you consider IT as a career, or is it just another job for you until something better comes along?</p> <p>Participant A: I would like to think of IT as a career, but that would depend on if I can find a good paying job in IT.</p> <p>Participant B: My passion is to work in the cyber security field, but I would be satisfied if I could at least make my start in a good IT related job position.</p> <p>Participant C: I really love computer programming, but a man's got to eat.</p>
14.	<p>How long are you willing to wait for the opportunity to be hired in the IT field?</p> <p>Participant A: I have a family, so my main priority is to make sure that I can provide for them.</p> <p>Participant B: Hopefully no longer than it takes for me to finish my degree.</p> <p>Participant C: I'd like to say as long as it takes, but I know that's not realistic. The truth of the matter is that if I don't get a programming job by the time I graduate, I'll probably have to seriously start considering other job fields.</p>
15.	<p>Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?</p> <p>Participant A: No I have not given up.</p> <p>Participant B: No but with the difficulties that I've faced in trying to find a job, I don't know if I can pursue this goal for too many more years.</p> <p>Participant C: I haven't given up yet.</p>

Appendix J: Pilot Study Cloud Chart



Appendix K: Pilot Study Selective Coding Results

Open codes created through Nvivo generated nodes	Axial codes created through Nvivo word frequency query tool	Selective code
<p>• Job preparation from education</p> <p>Participant A – did not prepare him / certifications</p> <p>Participant B - prefer learning by doing / does not get the opportunity</p> <p>Participant C - has not prepared me / certifications</p>	<p>Believes that lack of certifications is a main reason why he is not prepared.</p> <p>Believes that lack of preparedness stems from not having the opportunity to work with technology.</p> <p>Believes that lack of certifications is a main reason why he is not prepared.</p>	<p>Insufficient educational preparation</p> <p>Insufficient educational preparation / Employment opportunity</p> <p>Insufficient educational preparation</p>
<p>• Self-Perceptions of Qualifications</p> <p>Participant A - studied as hard as many white male students / racism / discrimination</p> <p>Participant B - equally qualified as a white male student / no opportunity</p> <p>Participant C – just as qualified as a white male student / racism / discrimination</p>	<p>Blames racism and discrimination as the reason why he is not perceived as being as qualified as white male students, despite his efforts to learn IT.</p> <p>Attributes lack of opportunity as the reason why he is not perceived as being qualified as white male students to get a job in IT.</p> <p>Blames racism and discrimination as the reason why he is not perceived as being as qualified as white male students.</p>	<p>Race and gender discrimination</p> <p>Employment opportunity / Race and gender discrimination</p> <p>Race and gender discrimination</p>

<p>• Level of Concern from Teachers</p> <p>Participant A – teachers have too many students to provide adequate guidance and mentoring</p> <p>Participant B - teachers have showed concern / career-guidance / what it takes to get a job</p> <p>Participant C – too many students / coaching</p>	<p>Perceives lack of one-on-one student training from teachers as the reason why he has not received the guidance and mentoring he thinks he needs.</p> <p>Sees lack of career guidance from teachers as the reason why he does not understand how to get a job in the field of IT.</p> <p>Believes the number of students in his classes is the reason why he has not received the coaching he thinks he needs.</p>	<p>Career path development / Insufficient educational preparation / confusion regarding educational and job requirements</p> <p>Career path development / confusion regarding educational and job requirements</p> <p>Career path development / Insufficient educational preparation</p>
<p>• Access to IT Resources</p> <p>Participant A - good equipment / hands on learning / access not available</p> <p>Participant B – does not know if he has access to latest equipment / good equipment</p> <p>Participant C – been given access to older programming languages / opportunity</p>	<p>Expresses that he does not have the access to IT equipment and that he does not get enough hands-on learning.</p> <p>Acknowledges that he does not know if he has access</p> <p>Expresses that he does not have the access to IT resources nor has he had the opportunity to work with the IT resources he thinks are needed.</p>	<p>Inadequate access to latest technology / Career path development / Insufficient educational preparation</p> <p>(Indicated meaning from response denotes confusion regarding educational and job requirements) / Inadequate access to latest technology</p> <p>Inadequate access to latest technology / Employment opportunity</p>

<p>• Self-Perceptions of Lacking IT Skills</p> <p>Participant A - lacking in using programming languages / certifications</p> <p>Participant B – does not think he has received enough education or certifications to be competitive for a career in the cyber security field</p> <p>Participant C – not enough real-world understanding of what it takes to get a IT job</p>	<p>Expresses a lacking of certifications for IT programs.</p> <p>Believes that more education and required certifications are needed for the career he wants to enter.</p> <p>Believes more career guidance is required to get an IT job</p>	<p>Insufficient educational preparation / (Indicated meaning from response denotes inadequate access to latest technology)</p> <p>Career path development / Insufficient educational preparation</p> <p>Confusion regarding educational and job requirements</p>
<p>• Interpretation of Existing IT Hiring Practices</p> <p>Participant A – employers are looking for someone with more experience</p> <p>Participant B – employers are looking for someone with more experience</p> <p>Participant C – who you know instead of experience and what you know</p>	<p>Presupposes that employers are seeking employees who are more experienced than his training has provided.</p> <p>Believes employers are seeking employees who are more experienced than his training has provided.</p> <p>Believes employers are seeking employees who have already been selected for the position despite experience and education of other job applicants.</p>	<p>Continuing education and professional advancement / Understanding of recruitment and hiring practices</p> <p>Continuing education and professional advancement / Understanding of recruitment and hiring practices</p> <p>Continuing education and professional advancement / Understanding of recruitment and hiring practices</p>

<p>• Job Seeking Experiences</p> <p>Participant A – asked personal questions that did not have anything to do with the job</p> <p>Participant B – employers seemed to be suddenly skeptical when participant appeared for interview / asked questions that had nothing to do with the job</p> <p>Participant C – friend's resume was almost the same as participant's for job position, the difference was that friend had a "white" sounding name and participant had a "black" sounding name</p>	<p>Experienced conflicts with what he thought his education had prepared him with to get a job.</p> <p>Experienced conflicts with what he thought his education had prepared him with to get a job.</p> <p>Based on stereotypical associations to White and Black sounding names, participant experienced conflicts with what he thought his education had prepared him with to get a job.</p>	<p>Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences</p> <p>Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences</p> <p>Race and gender discrimination / Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences</p>
<p>• Impact of Economic Situation on Finding IT Employment</p> <p>Participant A – current economic situation has played a big part in not being prepared for suitable employment in the IT field</p> <p>Participant B – If I could afford to attend a better college, then I think that I would be more prepared</p>	<p>Believes that economic situation has hampered him from being prepared to effectively seek employment.</p> <p>Believes that inability to afford a better college is the reason why he is not prepared.</p>	<p>Economic hardships in satisfying educational and job requirements / Insufficient educational preparation</p> <p>Insufficient educational preparation / (indicated meaning from response denotes economic hardships in satisfying educational and job requirements</p>

Participant C – struggles with finances / attempting to find additional sources of income to for better opportunities to get a job	Considers current financial situation as the reason why he has not had the opportunity to get a job in the IT field.	Employment opportunity / (indicated meaning from response denotes economic hardships in satisfying educational and job requirements
<p>• Perception of How Race has Impacted IT Employment</p> <p>Participant A – racism still exists / the reason why participant thinks it has been so hard to find a suitable job</p> <p>Participant B – Because the participant is an African American man, race has played a very big role in not being able to find a job</p> <p>Participant C – racism and discrimination are the reasons why participant does not currently have a job</p>	<p>Accounts racism as the reason it has been hard for him to find a job in the IT field.</p> <p>Blames racism as the reason he has not been able to find a job in the field of IT.</p> <p>Accounts racism and discrimination as the reasons why he does not currently have a job.</p>	<p>Race and gender discrimination / Employment opportunity</p> <p>Race and gender discrimination / Employment opportunity</p> <p>Race and gender discrimination / Employment opportunity</p>
<p>• What has Stopped You From Being Hired In IT</p> <p>Participant A – does not really know / not having the proper IT certifications</p> <p>Participant B – racism / lack of a career-plan</p> <p>Participant C – being a Black man intimidates people</p>	<p>Attributes the lack of certifications as a main reason why he has not been hired.</p> <p>Accounts racism and lack of career-plan as the reason he has not been hired.</p> <p>Blames racism and discrimination as the reasons why he has not been hired.</p>	<p>(indicated meaning from response denotes confusion regarding educational and job requirements) / Insufficient educational preparation</p> <p>Race and gender discrimination / Career path development</p> <p>Race and gender discrimination</p>

<p>• A Career of Just a Job</p> <p>Participant A – a career (dependent on a good paying job can be found)</p> <p>Participant B – a good IT related job position</p> <p>Participant C – a career (dependent on the job satisfying his basic needs)</p>	<p>Considers IT as a career</p> <p>Considers IT as a job</p> <p>Considers IT as a career</p>	<p>Career path development</p> <p>Employment opportunity</p> <p>Career path development</p>
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Appendix L: Main Study Transcribed Responses

1.	<p>What are your goals concerning a career in the IT industry for your chosen discipline?</p> <p>Participant D: To be a network administrator working for a government agency.</p> <p>Participant E: To create a startup company that provides technical support to homes and businesses in the Chicago area.</p> <p>Participant F: I would one day like to work as a database administrator for a major company like Dell, Google, or Microsoft.</p> <p>Participant G: To be a PC technician.</p> <p>Participant H: Web design</p> <p>Participant I: My goal is to be a database designer.</p> <p>Participant J: I'm planning on working for a government agency like Homeland Security or maybe the FBI as a Computer Helpdesk Support Specialist.</p> <p>Participant K: A computer programmer.</p> <p>Participant L: To work as an IT Instructor.</p> <p>Participant M: A career as a Computer Help Desk Technician</p> <p>Participant N: Network administration</p>
2.	<p>To the best of your knowledge, how has the education/training that you have received thus far prepared you to get a job in the IT industry?</p> <p>Participant D: I don't feel as if I've been properly prepared or mentored.</p> <p>Participant E: The IT training has been good, but I think I need more training in business innovation and how to go into business for myself.</p> <p>Participant F: This education has been a good start, but I know I need to learn more than what my current classes provide.</p> <p>Participant G: Good training to fix computers but not enough guidance on a career in fixing computers</p>

	<p>Participant H: My classes have provided a decent education but not up to par for what I need to know and very little guidance for how to get a job after graduation</p> <p>Participant I: The education/training has been pretty basic, but I know I have to start somewhere.</p> <p>Participant J: I don't think so. From what I have read you have to know a lot more to work for places like Homeland Security or the FBI than what I have been taught in my classes so far.</p> <p>Participant K: No my training has not properly prepared me for a career in IT.</p> <p>Participant L: My education/training has been pretty good.</p> <p>Participant M: Yes. my education has prepared me for where I want to be in my career right now</p> <p>Participant N: Not really, but it has given me a good foundation.</p>
3.	<p>From the education/training that you have received thus far, do you think that you are as equally qualified as white male students to acquire a good paying job in the IT industry? Explain.</p> <p>Participant D: Because of the education and training that some white male students have been able to get from the colleges they attended I think that a lot of white male students getting an education in IT are much more prepared than I would be to find a job in the IT field.</p> <p>Participant E: I have the motivation, desire and discipline that in my opinion makes me the equal of any white student, but what I don't have is the opportunity that many of these students have.</p> <p>Participant F: Yes, but I don't think that I've had training as good as what is available to many white students.</p> <p>Participant G: No but I have been trying to educate myself which make me as good as most white students in my opinion.</p> <p>Participant H: No. Since almost anyone can create a web page these days just by going online I feel that I have to be better than those "automated web-site" companies (mostly ran by White people). Plus I have no certifications, which I</p>

	<p>really wish had been included in the cost of my classes.</p> <p>Participant I: If a white student has only had the education and training that I have had, I believe that I am just as good as any one of them. The problem is that I think a lot of white students have had better training and education than I have been able to afford.</p> <p>Participant J: No. For me to be as good as white students who have the same goals, I would need the same opportunities and mentoring.</p> <p>Participant K: Not from what I have seen and heard. I don't have the same opportunity a lot of them have had nor have I had the mentoring that many white people have access to.</p> <p>Participant L: No. I haven't had the same opportunity. White students tend to have more prospects than I have had and don't have to deal with discrimination.</p> <p>Participant M: I believe I am because I've been able to gain some very good insights from my teachers for what it takes to start a career as a computer instructor.</p> <p>Participant N: Yes. I believe that I am very good at what I do. But there's a big difference between learning how to build a network and learning how to protect a network.</p>
4.	<p>What has been the level of concern from your teacher(s)/instructor(s) towards making sure that you understood the IT related discipline(s) that you have been studying?</p> <p>Participant D: Some teachers that I've had seemed to care a lot about my education. Others, not so much. They were all limited for the amount of time they could spend helping me.</p> <p>Participant E: The teachers were too busy helping students pass the classes instead of teaching them how to enter the work force and possibly get a job.</p> <p>Participant F: My teachers have been good, but they do not have the time for quality one-on-one training.</p> <p>Participant G: The concern has been good but when my teachers don't have the time I try to teach myself.</p>

	<p>Participant H: It was good, but it could have been better if my teachers had the time.</p> <p>Participant I: Some of the teachers that I've had genuinely care, but others seem to have the mentality of "come to class – pass the test – leave my class". It's hard to learn from teachers like this.</p> <p>Participant J: The teachers that I have had can only teach me what they know about. None of them know how to help me reach my goal of creating a career for myself.</p> <p>Participant K: Some teacher care. Others do not. I sometimes think that my teachers have been kind of automated to get students in and get them out. How we get out is up to us.</p> <p>Participant L: I've had some very good teachers.</p> <p>Participant M: The concern has been very good</p> <p>Participant N: The questions I ask sometimes are beyond my teachers' level of knowledge.</p>
5.	<p>To the best of your knowledge, have you had access to the latest tools, equipment, and techniques in the IT classes that you have taken in college, which may help you get an 'other than entry level' IT job in the IT industry. Why or why not?</p> <p>Participant D: I don't believe that the college that I am enrolled in has been able to provide access to the latest tools and equipment that many companies use today. Even when I read technology magazines I can easily see how far behind my school is compared to the technology that is really out there.</p> <p>Participant E: No. I've had friends who have better equipment and software at their homes than some of the equipment that I have had access to in the classes I have taken.</p> <p>Participant F: The tools, equipment, and techniques in the IT classes that I have taken are not the best or the latest. It probably has something to do with budget limitations for the school.</p> <p>Participant G: The equipment is not the best. The school probably can't afford to get the best.</p>

	<p>Participant H: No. The classes I have taken are a little behind on Web design creation techniques and tools that can be used.</p> <p>Participant I: There isn't a lot of hands-on training in databases for the classes I have taken so far, so I don't know if access to the latest tools and equipment is available. I do know that we're not learning the latest techniques in database design.</p> <p>Participant J: No way. The computer that I have at home is better than the computers that I have trained with in my classes.</p> <p>Participant K: I don't think the school can afford the latest equipment out there. I have been able to find more information on the Internet sometime than what my teachers actually know.</p> <p>Participant L: I don't believe so. Sometimes the equipment we have doesn't even work.</p> <p>Participant M: Not the latest equipment, but it's very good.</p> <p>Participant N: All you have to do is pick up the latest magazine about computers and you can easily see that we don't have access to the latest equipment or tools.</p>
6.	<p>What areas of knowledge, if any, do you feel that you are currently lacking in order to be competitive for a job in the IT related discipline that you have been studying for?</p> <p>Participant D: I don't feel confident in my ability to set up a network between two offices on the opposite sides of town, which I know is very important to be a network administrator in the IT field. For me to get this experience, I need more mentoring than I have gotten so far from my teachers.</p> <p>Participant E: The IT program is okay. I just wish there was more importance placed on how to get start up a business or even have a career with the training that is being given.</p> <p>Participant F: I don't have some of the more advanced database applications like Oracle or SQL. I also don't know what companies are really looking for from prospective database administrators.</p>

	<p>Participant G: Working with high-end computers like MACs and understanding how they work. Also guidance on how to get a good job.</p> <p>Participant H: I'm lacking in a lot of areas, but one of my main areas of interest is the Responsive Design Web site creation like Google uses. I'm also lacking in knowledge about how to aggressively pursue a career in this field. For this I think I would need more guidance or a career path that I could follow.</p> <p>Participant I: It would be nice if some type of route I could follow for my career or a little more mentoring was included in these classes. That way I'd know what I need to do for my career.</p> <p>Participant J: I don't know what areas of knowledge I am lacking to work for someplace like the FBI or Homeland Security, and that's my problem. Places like these seem to be looking for people who are certified and educated. I presently do not have the certifications that I think I need.</p> <p>Participant K: Upper level programming skills in different programming languages and a little more help in the way of career guidance.</p> <p>Participant L: I feel that I'm placing myself in a very competitive position to start a career. But I am lacking several IT certifications that I think I'll need to get the kind of career I want. It would also be nice if I had more mentoring on what I need to do to be competitive.</p> <p>Participant M: For the career that I want I don't feel that I am lacking anything.</p> <p>Participant N: One area that I have heard about is how a lot of companies are using virtual environments to control their networks. I can only imagine how something like that would work.</p>
7.	<p>What has been your interpretation of the hiring practices of the company(s) that you have applied for an IT job with?</p> <p>Participant D: I think that for the most part Whites disproportionately hold the best jobs, are hired for jobs with the highest incomes, and are not prone to open up this field to other races.</p> <p>Participant E: It's because of the hiring practices of some of the jobs that I applied for employment at that I came up with the idea of starting my own IT business. At least this way I could be judged on the work that I do instead of the color of my skin.</p>

	<p>Participant F: African Americans are still considered disadvantaged compared to White Americans as far as getting jobs even though more African Americans are getting college degrees.</p> <p>Participant G: There seems to be a lot of entry level jobs like at Best-Buy or CompUSA, but very few careers working at City, State, or Federal organizations.</p> <p>Participant H: Unless you are really good, no one is hiring to create Web sites anymore because they can do it themselves.</p> <p>Participant I: Employers are looking at their bottom line. If you can't provide it, they're not interested in you.</p> <p>Participant J: I think that nobody is willing to take a chance on a young person, especially if they're young and Black.</p> <p>Participant K: It seems that job openings for IT positions are very scarce. There's nobody to tell me how to go about applying for these positions or what I need to do to prepare me for one of these types of career fields.</p> <p>Participant L: It's hard for Black people to get a break. There's a lot of people out there looking for the same job that I am.</p> <p>Participant M: From what I have learned I think that the hiring practices are reasonable and fair.</p> <p>Participant N: At this point I think it's easier to try to move somewhere else and try to find a job than it is in Chicago.</p>
8.	<p>What are some of the experiences that you have gone through in attempting to obtain employment for the IT related position(s) you sought?</p> <p>Participant D: I was questioned for almost an hour for an entry level IT position. They made me come to their office about 3 times and on the third time they told me I would not be hired, but did not tell me the reason why.</p> <p>Participant E: I was once hired as an IT person for a company that "let me go" to weeks after I started. The only reason I got for being "let go" was that I wasn't a good fit for the company. In those two weeks I was never late, always tried to be courteous, and worked as hard as I could to get the job done. To this</p>

day I don't know how I didn't fit.

Participant F: On an interview that I went on I was asked my strengths and weaknesses. I told them what my strengths were but could not think of a weakness. I was told by one of the interviewers that I wasn't professional enough and after the interview was over, I never heard from that company again.

Participant G: I tried to put in for an IT position with the city once and it was the worst experience of my life. All they did was ask me to fill out paperwork that I didn't understand and even after I finished the paperwork they just threw it in a pile with other applications that I don't believe were ever seen by anyone.

Participant H: I went to an interview and was given a 25 question test to take in 15 minutes. I didn't do well on the test because I didn't have enough time and I didn't know I'd be taking a test for the position. I didn't get the job.

Participant I: I tried to go online and fill out a job application for an IT position with the FBI. There were so many questions that I didn't understand that I eventually gave up.

Participant J: I went to a job fair and it was really crowded. Even after reaching the front of the line and getting to talk to the company reps, I was told a couple of times that my resume needed work. They didn't even ask me about what I knew about computers.

Participant K: I sent in a resume to one company and got a response back that I was not qualified for the position. It was a real eye-opener for me and made me realize how far I have to go to reach my goals.

Participant L: I was on a interview where I was told I have the education, but I do not have the experience. When I asked "how do I get the experience" I was told I wouldn't get it there.

Participant M: I've talked to several of my teachers who have explained to me that once I meet the standards for the position I am considering there is a very good chance that I will get it.

Participant N: On one job interview there was me and another guy. The employer seemed to know the other person and I couldn't help but notice how they laughed and joked with each other. When the time came up for my interview, it was painfully short and it was over before I knew it. It was a complete waste of time because I never heard back from the employer.

9.	<p>What is your interpretation of how your current economic situation has played a part in your ability to obtain employment with the company(s) that you have applied for an IT job position with?</p> <p>Participant D: My economic situation has played a big part in my limitations for getting employment in my chosen field. Many of the certifications I hope to earn are very expensive.</p> <p>Participant E: The biggest problem for me is trying to find investors for my startup company idea.</p> <p>Participant F: It's going to take a great deal of money to get the training I think I need and I don't know how far I can or should go with student loans.</p> <p>Participant G: I'm not rich so I haven't had access to the latest technology out there, but I think companies are looking for people who are familiar with the latest technology which puts me at a disadvantage for getting a job. It's a vicious circle.</p> <p>Participant H: I'm depending on student loans to pay for my education, then I'll be depending on a job to pay off my student loans.</p> <p>Participant I: If I was in a better economic situation, I'd be getting a better education. If I could get a better education, I'd have a better chance at getting the career I want.</p> <p>Participant J: I think that if I was in a better economic situation or just knew the right people, then I'd have a much better chance of being able to find out how I could start a career with the FBI or Homeland Security.</p> <p>Participant K: You need money to get a good education. Especially in IT. It's because of my current economic situation that I really need to get employment in this field.</p> <p>Participant L: My economic situation hasn't really stopped me from reaching my goals so far.</p> <p>Participant M: I do have a lot of student loans, but now I'm about to get a job that will help me pay off those loans.</p> <p>Participant N: For me, I also have to consider my brothers and sisters, so I am always trying to find a way to help them out even if it takes away from me having the opportunity to better myself.</p>
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10.	<p>From your perspective, how do you think matters of race and/or gender have played a role in your ability/inability to obtain employment for the IT related position(s) you sought?</p> <p>Participant D: I think that the racist "good old boy" network is still out there and still in control, even in the IT field.</p> <p>Participant E: There's a new type of racism out there where it's no longer obvious who your enemy is or who is persecuting you. This is one of the reasons why I really want to create my own startup company. With my own company, at least I'd know who to trust.</p> <p>Participant F: I genuinely feel that if I were White that there would be more opportunities available to me for meeting my career goals than what I currently have.</p> <p>Participant G: It's through racism and discrimination that people are used to perceiving who you are when they first meet you.</p> <p>Participant H: I'm sure that race is important, but if I could show a company what I know, it would go a long way for me to potentially have a career in the field that I want to work in.</p> <p>Participant I: Everything seems to be built on what color you are, what sex you are, and even what's your sexual preference. You'd think that these things shouldn't matter, but racism and discrimination matter a lot.</p> <p>Participant J: I don't know how or if race or gender play a part in my ability to get a position with the FBI or Homeland Security. This is part of my problem. If I could get the education, certifications, and experience, I don't think that race will matter that much in businesses like these.</p> <p>Participant K: Black people are at a disadvantage and don't get a lot of the recognition like other races and are often victims of racism and discrimination. Even though they don't say it, I believe that companies look at race as one of the most important factors when they are thinking about hiring a person</p> <p>Participant L: I feel that people already have preconceived notions of who I am and what I'm about every time I try to apply employment in the IT field. If I get the opportunity, I feel confident that I could show them I'm not the typical stereotypical Black Man that they believe I am.</p>
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	<p>Participant M: I know that race is important, but it has not proved to be a barrier for me to this point. I would like to think that employers are looking at what I can do instead of the color of my skin.</p> <p>Participant N: I really don't think that a lot of White people have the same problems as Blacks for racism and discrimination when trying to find a job in the IT field.</p>
11.	<p>What other skills/education that you have acquired will you rely on if you do not get hired in the information technology field?</p> <p>Participant D: I have a little experience as a car mechanic.</p> <p>Participant E: have worked as a bar tender and as a hotel attendant/greeter.</p> <p>Participant F: I know how to cut hair and do general repairs.</p> <p>Participant G: I have won a couple of dance contests, so I might look into that.</p> <p>Participant H: No other real skills that I would interested in working in.</p> <p>Participant I: I've been told that I can sing, but I don't think I'd like to make a career at it. Maybe administrative work.</p> <p>Participant J: In high school I spent some time with the ROTC. I've been considering joining the Army if I can't find a job by graduation.</p> <p>Participant K: I used to work in a restaurant. I am also pretty good with PC repair, mostly from tinkering on my own</p> <p>Participant L: Construction</p> <p>Participant M: I am good with Microsoft Office, so I guess I could get a job as an administrative assistant or a sales position somewhere.</p> <p>Participant N: I've worked in places like McDonald's, but I refuse to go back to doing that.</p>
12.	<p>If you feel that you are adequately trained in the IT discipline that you have selected as a potential career field, what do you think has stopped you from being hired in your chosen field of IT?</p>

	<p>Participant D: I don't feel as if I have been adequately trained or given the proper guidance and this is what has stopped me.</p> <p>Participant E: What has stopped me is the fact that I don't have a career path for my career laid out that I can follow to get to where I want to be in life. It seems that there are no classes out there to teach you this. You have to learn it on your own.</p> <p>Participant F: One of my problems is that I know I don't have the knowledge I need in databases but if I could afford it, I'd go to a college that really specialized in database administration and design. I could really use more career advice on how to go about this.</p> <p>Participant G: The lack of opportunity has stopped me. It's hard to show someone all the time I've studied on my own to learn about computers.</p> <p>Participant H: My problem is that I need more training and someone to help me with working out the steps for a career instead of just getting a job.</p> <p>Participant I: I need more certifications. This is what I think has stopped me plus the fact that I haven't been given a chance.</p> <p>Participant J: Lack of knowledge and mentoring has stopped me from being hired.</p> <p>Participant K: More training and direction in the IT field and certifications to show that I'm knowledgeable.</p> <p>Participant L: I need more guidance and more experience for the career opportunities I am looking for</p> <p>Participant M: Apparently nothing</p> <p>Participant N: More training and certs in the field I have chosen</p>
13.	<p>Do you consider IT as a career, or is it just another job for you until something better comes along?</p> <p>Participant D: To be a network administrator would definitely be a career for me.</p>

	<p>Participant E: My dream of creating a technical support startup company would definitely be a career for me.</p> <p>Participant F: my passion is working with databases and learning with them, so for me it'd be a career.</p> <p>Participant G: IT is a career for me. I don't know how yet but one day I plan on working in this field for a living and making good money at it.</p> <p>Participant H: This would be a great career for me where I would be happy to go to work every day.</p> <p>Participant I: It's a career for me.</p> <p>Participant J: I'd like it to be a career.</p> <p>Participant K: It's just a job to me.</p> <p>Participant L: Being an IT instructor will be a great career for me.</p> <p>Participant M: A career. I've already had a job and I know what that feels like.</p> <p>Participant N: I really like network administration, but I don't have the luxury of waiting until someone decides to hire me. I've got to make this thing work for myself by whatever means necessary.</p>
14.	<p>How long are you willing to wait for the opportunity to be hired in the IT field?</p> <p>Participant D: Not too long after I graduate</p> <p>Participant E: I would like to say forever, but honestly I know that I'll have to find a job doing something if my plans don't work out.</p> <p>Participant F: As long as I have to, but I will work in other places until I get the opportunity.</p> <p>Participant G: For as long as it takes. I might have to find something else to get by, but I'm determined to be a PC technician.</p> <p>Participant H: To get where I want to be in this field will take a long time. I know that I've got to be patient.</p> <p>Participant I: Hopefully not too long. I have needs and responsibilities that won't wait forever.</p>

	<p>Participant J: Until I graduate.</p> <p>Participant K: I'm not willing to wait at all. I need a j.o.b.</p> <p>Participant L: I don't think that I will be waiting too long. I hope it will only be about six more months.</p> <p>Participant M: The wait is over. I start in one week.</p> <p>Participant N: Not long. I have responsibilities.</p>
15.	<p>Have you given up on the notion of being hired in the IT field, and if so, what are your current career aspirations?</p> <p>Participant D: Not as long as I have a chance.</p> <p>Participant E: Not yet.</p> <p>Participant F: No</p> <p>Participant G: I won't give up. Being a PC technician is what I want to be.</p> <p>Participant H: In my heart I will never give up. In my mind I know that I might have to settle for something else.</p> <p>Participant I: I haven't given up. It almost seems that's what some people expect, but I'm going to pursue this dream for as long as I can.</p> <p>Participant J: Even if I end up joining the Army I plan on working the IT field.</p> <p>Participant K: I haven't given up, but I won't sit around waiting for an opportunity that might never come.</p> <p>Participant L: Nope. There's nothing on the other side of giving up but low paying jobs that I have no real interest in.</p> <p>Participant M: It's because I never gave up that I believe that I finally got hired.</p> <p>Participant N: Not just yet.</p>

Appendix M: Main Study Cloud Chart



Appendix N: Main Study Selective Coding Results

Open codes created through Nvivo generated nodes	Axial codes created through Nvivo word frequency query tool	Selective code
<ul style="list-style-type: none"> • Job preparation from education 		
Participant D – not properly prepared or mentored	Believes that he was not prepared or mentored	Insufficient educational preparation / Career path development
Participant E – needs more training	Believes that he needs more training in how to go into business for himself	Unfulfilled needs / Career path development/ Insufficient educational preparation
Participant F - needs to learn more than what current classes provide	Thinks that he needs more training and education than what current classes provide	Unfulfilled needs / Career path development / Insufficient educational preparation
Participant G - not enough guidance on a career in fixing computers	Believes that more guidance is required for a career in the IT field	Confusion regarding educational and job requirements / Career path development
Participant H - decent education / not up to par for what is needed for IT knowledge and very little guidance for how to get a job	Thinks that he needs more education than what current classes provide and believes that more guidance is required for a job in the IT field	Unfulfilled needs / Career path development / Insufficient educational preparation / confusion regarding educational and job requirements /
Participant I – education / training has been relatively basic	Thinks that his education and training has been basic	Employment opportunity
Participant J – a lot more needs to be known than what classes have taught	Thinks that he needs more teaching (i.e. more than he has been taught) than what he has received	Career path development / Insufficient educational preparation
		Unfulfilled needs / Career path development / (indicated meaning from response denotes insufficient

Participant K - training has not properly prepared him for a career in IT	Believes that the training that he has received has not properly prepared him for a career in IT	educational preparation).
Participant L – training has been good	Believes that training has been sufficient	Career path development / Insufficient educational preparation
Participant M - education has prepared him for an IT career	Believes that education has prepared him for an IT career	<u>Discrepant case</u>
Participant N - not properly prepared	Believes that he was not prepared	<u>Discrepant case</u> Insufficient educational preparation
<ul style="list-style-type: none"> • Self-Perceptions of Qualifications 		
Participant D - education and training / white male students in IT are much more prepared / find a job in the IT field	Believes that white male students have been better prepared for IT jobs from their education and training.	Race and gender discrimination / Insufficient educational preparation / Employment opportunity / Career path development
Participant E - equally qualified as a white male student / no opportunity	Attributes lack of opportunity as the reason why he is not perceived as being qualified as white male students to get a job in IT.	Employment opportunity / Race and gender discrimination / Career path development / Insufficient educational preparation
Participant F – training not as good as what is available to many white students	Believes that the training that he has received is not equal to that of white male students.	Career path development / Insufficient educational preparation / Race and gender discrimination
Participant G – self education / equally qualified as a white male student	Presupposes that by educating himself he is equally qualified as white male students	Career path development / Insufficient educational preparation / (indicated meaning from response denotes confusion regarding educational and job requirements).

Participant H – has to be better than competition (white people) / certifications	Believes that he must be better than white people for his chosen IT related field and thinks that he requires certifications to prove to employees what he knows	Race and gender discrimination / Insufficient educational preparation
Participant I – just as good as any white male student who received equal amount of training / many white students have had better training and education	Believes that he is the equal of white male students with the same training but also believes that many white male students have had better training and education	Race and gender discrimination Career path development / Insufficient educational preparation
Participant J – needs access to same opportunities and mentoring	Believes that he needs access to more opportunities and mentoring	Unfulfilled needs / Inadequate access to latest technology / Employment opportunity / Career path development /
Participant K – does not have same opportunities as white male students / does not have access to mentors	Thinks that he has not had the same opportunities as white male students and has not had access to knowledgeable mentors	Employment opportunity / Race and gender discrimination / Career path development / Insufficient educational preparation / Inadequate access to latest technology
Participant L – has not had same opportunities / white students have more prospects and do not have to deal with discrimination	Believes that white male students have more opportunities and do not have to deal with discrimination	Race and gender discrimination / Career path development / Insufficient educational preparation / Employment opportunity
Participant M – equally qualified as white male students to start an IT career	Thinks that he is equally qualified as white male students to start an IT career	<u>Discrepant case</u>
Participant N – very good at what he does / difference between learning how to build a network and learning how to	Thinks that he is very good at what he does but acknowledges that a difference exists between learning and doing	Career path development /

protect a network		Insufficient educational preparation
<p>• Level of Concern from Teachers</p> <p>Participant D - some teachers seemed to care about education, others do not / limited for the amount of time</p> <p>Participant E - teachers were too busy helping students pass the classes instead of teaching them to get a job</p> <p>Participant F – teachers are good / teachers do not have the time for quality one-on-one training</p> <p>Participant G - the concern from teachers has been good / when teachers do not have the time attempts to teach himself</p> <p>Participant H - concern was good, but it could have been better if teachers had the time</p> <p>Participant I - some of the teachers genuinely care, others do not / hard to learn from teachers like this.</p> <p>Participant J - teachers can only teach me what they know/ teachers do not know how to help reach career goals</p> <p>Participant K - Some teachers care. Others do not.</p>	<p>Perceives that not all teachers care about his education and for those teachers that do, their time is limited.</p> <p>Thinks that teachers are only interested in teaching students to pass IT classes and not interested in helping students get a job.</p> <p>Thinks that level of concern from teachers is good, but his teachers do not have the time for quality one-on-one training.</p> <p>Thinks that level of concern from teachers is good, but attempts to teach himself when teachers do not have the time.</p> <p>Thinks that level of concern from teachers is good, but it could have been better if teachers had the time</p> <p>Believes that some teachers care while others do not, and for those that do not, it is very hard to learn from those teachers.</p> <p>Thinks that teachers do not have a broad spectrum of knowledge for IT and cannot help him reach his career goals</p> <p>Feels that some teachers care, while others do not</p>	<p>Career path development / Insufficient educational preparation</p> <p>Career path development / Insufficient educational preparation / Employment opportunity</p> <p>Career path development / Insufficient educational preparation</p> <p>Career path development / (indicated meaning from response denotes confusion regarding educational and job requirements).</p> <p>Career path development</p> <p>Career path development / Insufficient educational preparation</p> <p>Career path development</p> <p>Career path development</p>

Participant L – teachers are very good	Believes that teachers level of concern is high	<u>Discrepant case</u>
Participant M - The concern has been very good	Believes that teachers level of concern is high	<u>Discrepant case</u>
Participant N - questions are sometimes beyond teachers' level of knowledge	Thinks that teachers do not have a broad spectrum of knowledge for IT	Career path development
• Access to IT Resources		
Participant D - college has not been able to provide access to the latest tools and equipment that many companies use	Expresses that he does not have the access to IT equipment that he thinks companies use.	Inadequate access to latest technology
Participant E - friends have better equipment and software at their homes than what he has been given access to in classes.	Believes that personal friends have greater access to IT equipment than what has been available from the classes that he has taken.	Inadequate access to latest technology
Participant F - tools, equipment, and techniques in the IT classes are not the best or the latest	Conveys that he does not have the availability to the best or the latest IT equipment.	Inadequate access to latest technology
Participant G - the equipment is not the best	Conveys that he does not have the access to the best IT equipment.	Inadequate access to latest technology
Participant H - the classes are behind on Web design creation techniques and tools that can be used	Conveys that the classes are behind on Web design creation techniques and tools that can be used.	(Indicated meaning from response denotes an inadequate access to IT resources).
Participant I - not a lot of hands-on training in databases / does not know if access to the latest tools and equipment is available.	Expresses that limited hands-on training in databases has been provided and believes that he does not know if he has access tools and equipment.	Career path development / Insufficient educational preparation / Inadequate access to latest technology /

Participant J - computer at home is better than the computers trained with in classes	Thinks that home computer is better than computers trained with in his classes	(indicated meaning from response denotes confusion regarding educational and job requirements Career path development / Insufficient educational preparation / (indicated meaning from response denotes a lack of access to IT resources).
Participant K – has been able to find more information on the Internet than what teachers actually know	Thinks that teachers do not have a broad spectrum of knowledge for IT	Career path development
Participant L – college computer equipment does not work	Expresses that computer equipment does not work (e.g. is sub-standard)	Inadequate access to latest technology
Participant M - good equipment	Thinks that the computer equipment is sufficient for purposes of acquiring a job in his chosen field of IT.	<u>Discrepant case</u>
Participant N – does not have access to the latest equipment or tools	Conveys that he does not have the access to the latest IT equipment.	Inadequate access to latest technology
• Self-Perceptions of Lacking IT Skills		
Participant D – does not feel confident in ability to set up a network / needs more mentoring teachers	Believes that more mentoring is needed from his teachers	Career path development
Participant E – more emphasis from training placed on how to have a career in the IT field	Believes that more emphasis should be placed on how to start/have a career in the IT field.	Career path development
Participant F – does not know	Acknowledges that he does not	(indicated meaning from

what companies are looking for from prospective database administrators	know what companies are looking for employees in his chosen field of IT.	response denotes confusion regarding educational and job requirements
Participant G - working with high-end computers / guidance on how to get a good job	Feels that he needs more experience with high-end computers and guidance on how to get a good job.	Confusion regarding educational and job requirements / Employment opportunity
Participant H - lacking Responsive Design Web site creation / need more guidance or a career path	Feels that he needs more experience with Responsive Design Web site creation and more guidance or a career path he could follow to meet this goals.	Unfulfilled needs / Confusion regarding educational and job requirements / Career path development
Participant I – needs route for career / mentoring	Believes that he needs more mentoring and a route he could follow for my career were available	Unfulfilled needs / Career path development
Participant J – does not know what areas of knowledge are lacking / certified and educated	Acknowledges that he does not know what areas he is lacking in to enter the IT field but believes that companies are looking for employees who are certified and educated.	(indicated meaning from response denotes confusion regarding educational and job requirements / Insufficient educational preparation / Career path development
Participant K - lacking in upper level programming languages / career guidance	Thinks that he is lacking more experience with upper level programming languages and help with career guidance.	Career path development
Participant L - lacking several IT certifications that are needed to start a career / more mentoring	Feels that he needs more IT certifications and more mentoring to have a career in the IT field.	Unfulfilled needs / Insufficient educational preparation / Career path development
Participant M – not lacking anything for his career	Feels that he is not lacking anything for the IT career that he wants.	
Participant N - lacking in the use of virtual environments to	Thinks that he is lacking in the use of virtual environments to control	<u>Discrepant case</u>

control company networks	company networks	(indicated meaning from response denotes insufficient educational preparation)
<p>• Interpretation of Existing IT Hiring Practices</p> <p>Participant D – whites disproportionately hold the best jobs</p> <p>Participant E – because of the hiring practices of jobs applied for will start own business / be judged on the work that I do instead the color of his skin.</p> <p>Participant F – African Americans are still considered disadvantaged compared to White Americans for getting jobs</p> <p>Participant G – a lot of entry level jobs / very few careers</p> <p>Participant H – no one is hiring</p> <p>Participant I – employers are looking at their bottom line. If you cannot provide it, they are not interested</p> <p>Participant J – nobody is willing to take a chance on a young Black person</p>	<p>Believes that White people disproportionately hold the best jobs</p> <p>Thinks that due to hiring practices of jobs that he has applied for that it would be best to start his own business</p> <p>Thinks that African Americans are still considered disadvantaged compared to White Americans for getting jobs</p> <p>Feels that many entry level (i.e. low paying) jobs exist for IT, but very few careers</p> <p>Thinks that companies are not hiring</p> <p>Believes that companies are not interested in employees that cannot add to profit growth</p> <p>Presupposes that companies are not willing to hire a young Black</p>	<p>Race and gender discrimination / Employment opportunity</p> <p>Employment opportunity / response denotes Race and gender discrimination</p> <p>Race and gender discrimination / Employment opportunity</p> <p>Employment opportunity / Career path development</p> <p>(indicated meaning from response denotes lack of employment opportunity)</p> <p>(indicated meaning from response denotes lack of employment opportunity)</p> <p>Race and gender</p>

Participant K – job openings for IT positions are very scarce / no guidance to prepare me for one of these career fields	Thinks that job openings for IT positions are scarce and that he has received no guidance to prepare him for one of these career fields.	discrimination / (indicated meaning from response denotes lack of employment opportunity
Participant L – hard for Black people to get a break / a lot of people looking for the same job	Believes that Black people have a hard time finding opportunities for employment in the IT field because a lot of people looking for the same job.	Employment opportunity / Insufficient educational preparation / Career path development
Participant M – From what has been learned / hiring practices are reasonable and fair	Thinks that from what he has learned that hiring practices are reasonable and fair.	Race and gender discrimination \\ Employment opportunity
Participant N – it is easier to try to move somewhere else and try to find a job than it is in Chicago	Presupposes that it would be easier to move somewhere else and try to find a job than it is in Chicago.	<u>Discrepant case</u>
• Job Seeking Experiences		Employment opportunity
Participant D – questioned for almost an hour for an entry level IT position / on the third time was told would not be hired	Experienced conflicts with what he thought his education had prepared him for employment in the IT field.	(Indicated meaning from response denotes negative interpretations from job seeking experiences
Participant E – was "let go" two weeks after start / reason for being "let go" was that not a "good fit" for the company / worked hard to get the job done / does not know why he was not a "good fit"	Experienced conflicts and confusion with what he thought his education had prepared him with to get a job.	(Indicated meaning from response denotes negative interpretations from job seeking experiences / confusion regarding educational and job requirements
Participant F – asked about strengths and weaknesses / knew strengths but not	Experienced conflicts with what he thought his education had prepared him for employment in the IT	(Indicated meaning from response denotes negative

weaknesses / was told he was not professional enough	field.	interpretations from job seeking experiences
Participant G – tried to put in for an IT position with the city / worst experience of life / ask to fill out paperwork that did not understand / threw paperwork in a pile with other applications	Experienced conflicts with what he thought his education and experience had prepared him for employment in the IT field.	Continuing education and professional advancement / Understanding of recruitment and hiring practices / (indicated meaning from response denotes negative interpretations from job seeking experiences
Participant H – was given a 25 question test to take in 15 minutes / didn't do well on the test because I didn't have enough time / did not get the job	Believes that he did not get the job he applied for due to conflicts with what he thought his education had prepared him for employment in the IT field.	Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences
Participant I – attempted to go online and fill out a job application for an IT position / so many questions that were not understood that he eventually gave up	Experienced conflicts and confusion with what he thought his education had prepared for a job in the IT field.	Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences /
Participant J – went to a job fair which was really crowded / was told that resume needed work / did not ask about what he knew about computers	Experienced conflicts with what he thought his education had prepared for a job in the IT field.	confusion regarding educational and job requirements
Participant K – sent in a resume to one company and got a response back that he was not qualified for the position	Experienced conflicts with what he thought his education had prepared him for employment in the IT field.	Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences
Participant L – was told he has the education, but does not have the experience	Experienced conflicts with what he thought his education and experience had prepared him for to seek employment in the IT field.	(indicated meaning from response denotes negative interpretations from job seeking experiences
		Career path development /

<p>Participant M – talked to several teachers who explained that once standards for the position were met there was a very good chance that he would get it</p> <p>Participant N – The employer seemed to know the other person on the job interview / When the time came up for his interview, it was very short / a complete waste of time</p>	<p>From conversations with teachers, participant presupposes that his experiences matched what he thought his education had prepared him with to get a job.</p> <p>Experienced conflicts with what he thought his education had prepared him with to get a job in the IT field.</p>	<p>Continuing education and professional development / Understanding of recruitment and hiring practices / (indicated meaning from response denotes negative interpretations from job seeking experiences</p> <p><u>Discrepant case</u></p> <p>Employment opportunity / (indicated meaning from response denotes negative interpretations from job seeking experiences</p>
<p>• Impact of Economic Situation on Finding IT Employment</p> <p>Participant D – economic situation has played a big part in limitations for getting employment / certifications are very expensive</p> <p>Participant E – biggest problem is trying to find investors for startup company idea</p> <p>Participant F – it is going to take a great deal of money to get the training needed</p>	<p>Believes that economic situation has limited him from getting employment partially due to not having the IT certifications he needs</p> <p>Thinks that his biggest economic problem is trying to find investors for startup company idea</p> <p>Presupposes that it is going to take a great deal of money to get the training he feels that he needs</p>	<p>Economic hardships in satisfying educational and job requirements / Employment opportunity / Insufficient educational preparation</p> <p>(Indicated meaning from response denotes economic hardships in satisfying educational and job requirements</p> <p>Insufficient educational preparation / Unfulfilled</p>

		needs / (indicated meaning from response denotes economic hardships in satisfying educational and job requirements)
Participant G – not rich, so has not had access to the latest technology / companies are looking for people who are familiar with the latest technology / put at a disadvantage for getting a job	Believes that because of his economic situation that he has not had access to the latest technology which has been a disadvantage for getting a job.	Inadequate access to latest technology / Employment opportunity / (indicated meaning from response denotes economic hardships in satisfying educational and job requirements)
Participant H – depending on student loans to pay for education / will be depending on a job to pay off student loans	Presupposes that student loans will pay for his education and that an IT job will pay for his student loans.	Insufficient educational preparation / Employment opportunity / (indicated meaning from response denotes economic hardships in satisfying educational and job requirements)
Participant I – better economic situation / better education / better chance at getting the career	Believes that if he were in a better economic situation he could receive a better education which would give him a chance for a career in the field of IT.	Economic hardships in satisfying educational and job requirements / Career path development / Insufficient educational preparation /
Participant J – better economic situation / better chance of being able to find out how to start a career	Believes that if he were in a better economic situation he would have a receive a better chance of being able to find out how to start a career	Economic hardships in satisfying educational and job requirements / Career path development
Participant K – need money to get a good education / because of current economic situation that employment is needed	Presupposes that he needs money to get a good education and that it is because of his current economic situation that employment is needed.	Career path development / Insufficient educational preparation / Economic hardships in satisfying

Participant L – economic situation hasn't really stopped me from reaching my goals	Thinks that his economic situation has not been responsible for him not reaching his goals for employment in the field of IT.	educational and job requirements / Employment opportunity / <u>Discrepant case</u>
Participant M – has a lot of student loans, but is about to get a job that will help pay off those loans	Presupposes that the student loans that he has built up will be paid off by the job that he thinks he is about to get.	<u>Discrepant case</u>
Participant N – trying to find a way to help brothers and sisters out / even if it takes away from him having the opportunity to better himself	Believes that he must sacrifice (financially) in order to help his brothers and sisters, including opportunities to better himself through education.	Employment opportunity
<ul style="list-style-type: none"> • Perception of How Race has Impacted IT Employment 		
Participant D – the racist "good old boy" network is still out there	Thinks that racism still exists and presents a problem concerning employment in the field of IT.	Race and gender discrimination
Participant E – a new type of racism out there where it is no longer obvious who your enemy is	Believes that a new type of racism exists in the IT field.	Race and gender discrimination
Participant F – if participant was White that there would be more opportunities available for meeting career goals	Presupposes that if he was a White man that there would be more opportunities available for meeting his career goals.	Race and gender discrimination Employment opportunity / Career path development
Participant G – it is through racism and discrimination that people are used to perceiving who you are	Believes that it is through racism and discrimination that people are used to perceiving who you are.	Race and gender discrimination
Participant H – race is	Thinks that race is important, but	

<p>important / if he could show a company what he knows, it would go a long way for potentially having a career in the field</p>	<p>if he could show a company his knowledge in his chosen field of IT, it would potentially allow him to have a career in the field.</p>	<p>Race and gender discrimination / Career path development</p>
<p>Participant I – everything seems to be built on color, sex, and even sexual preference / racism and discrimination matter a lot</p>	<p>Feels that employment opportunity in the IT field is based on racism and discrimination such as what color you are, what sex you are, and even what's your sexual preference</p>	<p>Race and gender discrimination</p>
<p>Participant J – does not know how or if race or gender play a part in ability to get a position / If education, certifications, and experience could be attained, does not think race will matter that much</p>	<p>Does not know how much race or gender plays a part in getting a job in the IT field, but presupposes that if he had the education, certifications, and experience that race would not matter so much.</p>	<p>(Indicated meaning from response denotes confusion regarding educational and job requirements / Race and gender discrimination / Career path development / Insufficient educational preparation / Continuing education and professional advancement / Understanding of recruitment and hiring practices</p>
<p>Participant K – Black people are at a disadvantage and do not get a lot of the recognition like other races and are often victims of racism and discrimination</p>	<p>Thinks that Black people are at a disadvantage and do not get a lot of the recognition like other races and are often victims of racism and discrimination</p>	<p>Insufficient educational preparation / Continuing education and professional advancement / Understanding of recruitment and hiring practices</p>
<p>Participant L – people already have preconceived notions of him when he applies for employment / If he gets the opportunity, feels confident that he could show that he is not the typical stereotypical Black Man</p>	<p>Presupposes that people already have preconceived notions of him when he applies for employment, but think that if he got the opportunity that he could show that he is not the typical stereotypical Black Man.</p>	<p>Race and gender discrimination</p>

Participant G – lack of opportunity	Thinks that it has been a matter of the lack of opportunity which has stopped him from being hired in the IT industry.	Employment opportunity
Participant H – needs more training and someone to help with working out the steps for a career instead of just getting a job	Presupposes that he needs more IT related training and also thinks that he needs someone to help with working out the steps for a career instead of just getting a job.	Unfulfilled needs / Career path development / Insufficient educational preparation / Employment opportunity
Participant I – needs more certifications	Thinks that he needs more certifications to be hired in his chosen field of IT.	Unfulfilled needs / Insufficient educational preparation
Participant J – lack of knowledge and mentoring	Feels that lack of knowledge and mentoring in his chosen IT related discipline has stopped him from being hired in the IT field.	Career path development
Participant K – more training and direction in the IT field and certifications to show that he is knowledgeable	Thinks that he needs more training and direction in the IT field and certifications to show that he is knowledgeable.	Unfulfilled needs / Career path development / Insufficient educational preparation
Participant L – needs more guidance and more experience for the career opportunities	Believes that he needs more guidance and more experience for the career opportunities he is looking for.	Unfulfilled needs / confusion regarding educational and job requirements / Continuing education and professional advancement / Understanding of recruitment and hiring practices / Career path development
Participant M – nothing	Does not feel as if any factors have stopped him from being hired in the field of IT that he is interested in.	<u>Discrepant case</u>
Participant N – training and certifications in the field he has chosen	Thinks that more training and certifications are required for the IT field that he has chosen.	

		Career path development / Insufficient educational preparation.
• A Career of Just a Job		
Participant D – a career	Considers IT as a career	Career path development
Participant E – a career	Considers IT as a career	Career path development
Participant F – a career	Considers IT as a career	Career path development
Participant G – a career	Considers IT as a career	Career path development
Participant H – a career	Considers IT as a career	Career path development
Participant I – a career	Considers IT as a career	Career path development
Participant J – a career	Considers IT as a career	Career path development
Participant K – a job	Considers IT as a job	Employment opportunity
Participant L – a career	Considers IT as a career	Career path development
Participant M – a career	Considers IT as a career	Career path development
Participant N – likes network administration / does not have the luxury of waiting until someone decides to hire him	Considers IT as a job (based on noncommittal response)	(Indicated meaning from response denotes employment opportunity

Appendix O: Selective Code Matches to Research Questions

Words Having Greatest Weighted Percentage from Research Participants	Associated Selective Coding Category	Research Question Matches
Access	Inadequate access to latest technology	Correlates to research question number 1 regarding the availability of "quality technology-related resources".
Black	Race and gender discrimination (used in contextual meaning as being related to racism and/or discrimination)	Correlates to research question number 3 regarding the perception of "existing hiring practices currently in place within the IT Industry".
Career	Career path development	Correlates to research question number 2 regarding the perception of "the quality of STEM based education".
Certifications	Insufficient educational preparation	Correlates to research question number 2 regarding the perception of "the quality of STEM based education".
Economic	Economic hardships in satisfying educational and job requirements	Correlates to research question number 3 regarding the perception of "existing hiring practices currently in place within the IT Industry".
Equipment	Inadequate access to latest technology	Correlates to research question number 1 regarding the availability of "quality technology-related resources".
Experience	Continuing education and professional advancement / Understanding of recruitment and hiring practices	Correlates to research question number 2 regarding the perception of "the quality of STEM based education" and research question number 3 regarding to the perception of "existing hiring practices currently in place within the IT Industry".
Guidance	confusion regarding	Correlates to research question

	educational and job requirements	number 2 regarding the perception of “the quality of STEM based education” and research question number 3 regarding to the perception of “existing hiring practices currently in place within the IT Industry”.
Job/Employment	Employment opportunity	Correlates to research question number 3 regarding the perception of “existing hiring practices currently in place within the IT Industry”.
Mentoring/Teaching/Teacher	Career path development (used in contextual meaning as being trained in IT, as well as the individuals who know about technology and what it takes to get a job in the field of IT)	Correlates to research question number 2 regarding the perception of “the quality of STEM based education”.
Need	Unfulfilled needs	Correlates to research question number 1 regarding the availability of “quality technology-related resources, research question number 2 regarding the perception of “the quality of STEM based education” and research question number 3 regarding the perception of “existing hiring practices currently in place within the IT Industry”.
Opportunity	Employment opportunity	Correlates to research question number 3 regarding the perception of “existing hiring practices currently in place within the IT Industry”.
Prepared	Insufficient educational preparation	Correlates to research question number 2 regarding the perception of “the quality of STEM based education”.
Racism/Discrimination	Race and gender discrimination	Correlates to research question number 3 regarding the perception of “existing hiring practices currently in

		place within the IT Industry”.
Training/Education/ Learning/Student	Career path development / Insufficient educational preparation (used in contextual meaning as having a need for more training, education, or learning, as well as the individuals who have such needs)	Correlates to research question number 2 regarding the perception of “the quality of STEM based education” and research question number 3 regarding to the perception of “existing hiring practices currently in place within the IT Industry”.
White	Race and gender discrimination (used in contextual meaning as being related to racism and/or discrimination)	Correlates to research question number 3 regarding the perception of “existing hiring practices currently in place within the IT Industry”.

Appendix P: Classes for CIS Associate Degree Completion Offered by CCC

<ul style="list-style-type: none">• Business<ul style="list-style-type: none">○ BUSINESS111 Introduction To Business 3○ BUSINESS181 Financial Accounting 4○ BUSINESS182 Managerial Accounting 4
<ul style="list-style-type: none">• Computer Information Systems<ul style="list-style-type: none">○ CIS101 Intro to Computer Information Systems 3○ CIS120 Intro to Microcomputers 3○ CIS250 Intro to Systems 3
<ul style="list-style-type: none">• Mathematics<ul style="list-style-type: none">○ MATH118 General Education Math 4
<ul style="list-style-type: none">• Computer Information Systems<ul style="list-style-type: none">○ CIS103 Intro to BASIC Language 3○ CIS122 Intro to Word Processing on Microcomputers 3○ CIS142 Intro to C or C++ Language 3○ CIS144 Intro to Java Programming Language 3○ CIS145 Intro to Database on Microcomputers 3○ CIS158 Beginning Internet 3○ CIS181 Web Development I/Basic Web Technologies 3○ CIS182 Web Development II/Client Side Scripting 3○ CIS244 Advanced Java Programming Language 3○ CIS258 Advanced Internet 3

Appendix Q: Recognized IT Certifications

<ul style="list-style-type: none">• Microsoft (MCSE, MCITP, MCTS) – Most businesses rely on a healthy dose of Microsoft products, and the company provides a wide range of certification options for professionals to prove they’re qualified to service those tools. All of them require some amount of real-life experience in addition to passing a certification test.
<ul style="list-style-type: none">• CompTIA (A+, Network+, Security+, Linux+) – The nonprofit, vendor-neutral Computing Technology Industry Association provides well-respected certifications for professionals who are experienced with a variety of technologies. These certificates show someone can work with products from many different vendors.
<ul style="list-style-type: none">• Cisco (CCNP, CCNA, CCIe) – As a major vendor of networking products, Cisco provides some of the most popular certifications for networking professionals.
<ul style="list-style-type: none">• Apple (ACSP, ACTC) – Companies that have a few Mac users mixed in with their PC people often use Apple’s certifications as a way to judge whether a job candidate can manage those Macs.

Retrieved from Narisi (2010)

Appendix R: IT Certification Return on Investment (ROI)

Certification	Total Avg Cost - Testing, Pre-requisites, required courses, etc.	Average Salary of certification holders
PMP (Project Management Professional) in IT field	\$555.00	\$96,407.00
CCNA (Cisco Certified Network Associate)	\$295.00	\$69,813.00
ITIL (Information Technology Infrastructure Library) Foundation	\$150.00	\$103,414.00
CISSP (Certified Information Systems Security Professional)	\$599.00	\$101,917.00
CompTIA A+ (PC technician)	\$178.00	\$50,447.00
MCSE (Microsoft Certified Systems Engineer) - Server Infrastructure	\$950.00	\$79,335.00
CCNP (Cisco Certified Network Professional)	\$895.00	\$80,360.00
CISM (Certified Information Security Manager)	\$595.00	\$100,842.00
MCSA (Microsoft Certified Solutions Associate) - Windows Server	\$450.00	\$67,387.00
CCDA (Cisco Certified Design Associate)	\$200.00	\$84,543.00
RHCSA (Red Hat Certified System Administrator) for Linux Operating System Environments	\$800.00	\$90,208.00

Retrieved from Pierce (2014)