

Stigmas that Exist Regarding Technology

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Abstract

In looking at technology and how technology affects an individual, research indicates that a number of stereotypes exist about the people that most frequently use technology. A large portion of these stigmas involve the personality or gender of those that work with or use technology. The research that indicates that these stereotypes exist within the field of Information Technology (IT) but does not expand to look at the general population and their use of technology. More specifically, the research has not focused on the individuals who are simply interested in information technology and who are talented in working with technology. The characteristics of these individuals (gender, personality, the generation that they are considered a part of) have been largely understudied; however, variations in characteristics of those who are associated with IT have been examined. Therefore, a gap exists in the research looking at stigmas that affect individuals that utilize and work with technology. Based upon this gap, the question then arises as to whether or not the stigmas that exist in relation to IT apply to those who simply enjoy working with and/or using technology.

Keywords: stigmas, information technology, gender, personality

Stigmas that Exist Regarding Technology

There are a number of stigmas related to individuals interested in the field of Information Technology (IT). The researcher identified that a common perception exists about those who are interested in technology, as well as those who actually work in the field of technology. Many of the stereotypes that exist in regard to technology include gender, personality style, race, and religion. It is evident that these stigmas exist but it is unknown as to whether these aspects actually affect one's likelihood of enjoying technology, have a talent in working with technology, or have a position in the field of technology. Further, one can investigate whether the individual's gender, age, personality style, or race affects the level of satisfaction that he/she receives from using technology or the personality styles that are correlated to that enjoyment. Each of these variables may contribute to the likelihood that the individual self identifies as someone who enjoys technology and is good at working with technology.

These stigmas are evident in different avenues and give individuals an idea of the way that technology influences people in the different environments (workplace, school, etc.). Those who are involved with technology are typically expected to have a more introverted personality style. At the same time, these individuals are expected to be male instead of female (Moore & Love, 2011). These are the preconceptions that most people would often associate with individuals who enjoy technology. These stigmas have the potential to elicit pride in certain individuals and shame in others. The reaction ultimately hinges on what a specific individual personally values (Moore & Love, 2011). Beyond simply taking the commonly recognized stigmas about these individuals as absolute truth, they should be evaluated so that the stereotypes can be deemed either true or false.

Ridley (2008) provides a number of potential organizational patterns for a literature review. The zooming technique was utilized in organizing the literature review for the purpose of this study. This technique starts with a broad topic and gradually focuses in on more specific aspects of the topic. The following model is given as a guide for the research of this topic based on the zooming technique (Ridley, 2008).

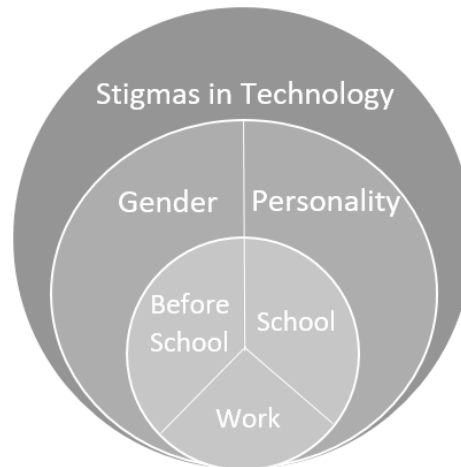


Figure 1. Breakdown of literature review. This figure illustrates the breakdown of the literature review utilizing the zooming method.

This model starts with the broad topic of stigmas related to technology, breaks the stigmas down to look at both gender and personality, and finally focuses on different categories within gender and personality—before school, during school, and in the workforce.

The purpose of this literature review is to explore the many stigmas that surround technology and the individuals that use technology. Although this paper does not conduct an empirical study, the researcher plans to conduct a quantitative survey in the future to further analyze the role that an individual's traits—gender, personality, etc. will affect their likelihood to use or work with technology. Overall, this literature review establishes

a basis from which the researcher can continue the research on the validity of the stigmas in the future.

Literature Review

Setavald's (2015) article discussed the stigmas that exist within the STEM career field through the following quote from Phillip Ye, "Popular culture always portrays [cyber-professionals] as nerdy males who live in their mom's basement, drinking Mountain Dew out of the bottle with chips all around them." Thus, clearly indicating that technology stigmas are present within today's culture and ultimately affect the individual's perception of technology in general, the jobs that work within technology, and the potential success of certain individuals in the field (Setavald, 2015). These stigmas lead the researcher to hypothesize that these stigmas are possibly psychologically formed early in life beginning in an individual's toddler years and all the way into workforce years. The following literature review consists of a compilation of research identifying this stigma formation gap and ultimately resulting in conducting future research through a quantitative study.

Personality within Environments

Personality is a multifaceted variable that is unique to each person. When looking at one's personality, there are a number of theories that can be used to examine and evaluate the individual's personality. Additionally, within the theories different aspects of personality are analyzed. Ultimately an individual's personality is heavily affected by the surrounding environment—prior to schooling, in school (at any level), in the workforce, and on a global scale. However, there are also instances in which the personality would lead the individual to select a specific environment. Based upon the literature that has

been reviewed as a whole, each of these environments, at the very least, will affect the way that researchers analyze the data that are presented, due to the fact that the environment that one is in (school, workforce, etc.) will impact results.

Children prior to school. The population of children prior to entering into school provides an opportunity for researchers to assess individuals in an environment in which the child has not yet been influenced by a large amount of peer pressure. Jackson, von Eye, Fitzgerald, Zhao, and Witt (2009) conducted a study that investigated a sample of youth that were approximately twelve years old and equally representative of both males (47%) and females (53%) in order to find the answer to two separate questions about technology use and adolescents. The first question explored whether or not technology use was related to self-concept or self-esteem in adolescence. Secondly, the researchers examined whether gender and race differences affected the self-esteem and self-concept levels in adolescence. This study found that technology use (in looking at cell phone use and video game playing) negatively predicted academic self-concept and overall self-esteem (Jackson et al., 2009). Within this prediction, increased video game use had a negative influence on the child's overall self-esteem and academic self-concept, while Internet use (looking at email and instant messaging use) had a positive influence on the child's self-concept and self-esteem. Self-concept and self-esteem are deemed indicators or variables of an individual's personality.

This study analyzed technology use compared with both self-esteem and self-concept by using the Rosenberg Self-Esteem Scale and multiple measures of self-concept. The researchers found that the two most influential predictors of an individual's self-concept were gender and the family's household income (Jackson et al., 2009).

Gender differences were observed in a number of facets of the study, particularly in analyzing the dimensions that make up an individual's self-concept. Race had an influence on only one dimension of the population—behavioral self-concept. As an application for these findings, Jackson et al. (2009) recommended developing video games that are better suited to positively influence the individual's self-concept and self-esteem. In studying the effects of technology usage (through video games and the internet), research illustrated that gender accounted for differences in a number of avenues, primarily in self-concept. Gender accounted for the differences in self-concept but the researchers did not look at whether or not gender interacted with the actual use of technology (Jackson et al., 2009).

School. The many stigmas that are related to technology have been analyzed within the school systems (elementary through college). These studies essentially examine the preconceptions present within a given population and the data that these populations provide with the goal of determining whether or not the stigma is true within that specific population. This goal allows for researchers to further analyze the effect that these stigmas will have on any given population (Korpershoek, Kuyuper, van der Werf, & Bosker, 2010).

Secondary school. When entering into their secondary education, students are often faced with more choices when selecting a focus for study. This choice has the potential to separate the students into two distinct groups—either focusing on science and technology courses or taking fewer of these courses. Korpershoek et al. (2010) looked at a sample of almost 4,000 Dutch ninth grade students to determine what influences, if any, affect the student's choice to enter into either set of classes. More specifically the

researchers explored the differences in the students' personality traits to see if they had any effect on the students' choice of class types.

In order to look at the personality styles, the researchers used the Five Factor Personality Inventory which focuses on extraversion, agreeableness, conscientiousness, emotional stability, and openness. The researchers found significant correlations between the individual's personality traits and their choice of classes. In regard to extraversion, students who were more introverted were more drawn to the science-related course track which included science and technology courses, while more extraverted students were more likely to take the course track with less science (Korpershock et al., 2010). The researchers presumed that these students were presumably seeking to be more involved with the culture and social activities that exist within the school; the science-related courses were not perceived as being related to the cultural aspects of the school. When looking at emotional stability and conscientiousness, research revealed that science-oriented courses attracted less emotionally stable and less conscientious students. However, the content of the science-oriented courses had a tendency to appeal to students who were more likely to have higher levels of both emotional stability and conscientiousness (Korpershock et al., 2010).

These findings strongly coincide with Holland's Theory of Personality. This theory claims that an individual's vocational interests are related to their personality in some form. These findings can be used to better assist students in choosing the courses that they will study both in secondary education and within the university setting. This could be accomplished by utilizing the individual's personality profile to determine whether or not they fit well in their chosen degree program (Korpershock et al., 2010).

College. Studying college students provides an opportunity to explore each individual's unique trajectory. During this time of their lives, students are able to choose who they will become and what they will do more freely than at any other point in their lives. The majors that college students pursue, the clubs in which they participate, and other areas that the students become involved in will assist researchers in analyzing differences among the individuals.

Major. The Science, Technology, Engineering, and Mathematics (STEM) majors have brought about an entirely new avenue in regard to the students' traits and their desire to work with technology. Chen and Simpson (2015) utilized Holland's Typology to better understand students who chose to become a STEM major and the factors that affected that decision. The data that were analyzed came from a freshman survey at a research university. The sample consisted of 2745 predominantly Caucasian respondents (58% female, 42% male). They found that a number of different factors influenced the student's choice of this type of major. Personality was a strong indicator of whether or not the student would self-select to enter into one of these majors. More specifically, students with an enterprising or artistic personality were less likely to major in STEM than a student who was more investigative (Chen & Simpson, 2015). Further, males who had a stronger social personality were less likely than those that had a weaker social personality to choose one of these majors. Females were the exact opposite of the males in that those who had a strong social personality were more likely to choose this type of major than their less social counterpart (Chen & Simpson, 2015).

Lounsbury, Smith, Levy, Leong, and Gibson (2009) expanded upon assertions within Holland's Vocational Theory and compared 347 business and 2252 non-business

majors in a university setting to see whether or not the two groups differed in terms of their personality. In order to analyze the difference in the two groups, the researchers utilized the Big Five model of personality. This model consists of five dimensions of personality—agreeableness, conscientiousness, emotional stability, extraversion, and openness. Business majors scored higher on all traits except for agreeableness and openness, which they scored lower in compared to the non-business majors. The higher score is interesting because both agreeableness and openness would be crucial to the success of a business in any context, particularly when focusing on the individual business's employees (Lounsbury et al., 2009). The agreeableness factor looks at an individual's propensity to be cooperative in relation to other individuals. Openness determines the individual's receptiveness to learning new knowledge and gaining experience in the workforce.

Each of these factors would be integral aspects for the betterment of a business and would be traits that employers would potentially seek in hiring new employees. These findings follow what was expected by the researchers based on Holland's Vocational regarding both business majors and non-business majors. The individuals that will be working within the business come from a wide variety of backgrounds and many will ultimately work with technology in their daily duties (Lounsbury et al., 2009). Beyond this, these findings would be helpful for the advisement of students who do not necessarily know what career path they would like to pursue in the future. In considering the use of these findings in the advisement of students, the advisor should recommend that the student first take a personality test in order to analyze what areas they would best fit long term (Lounsbury et al., 2009).

In an attempt to hone in specifically on studying instructional technology and computer education in the college setting, Perkmen and Sahin (2013) examined the relationship (if any) that existed between vocational personality and departmental satisfaction of these students. The study did not compare the students enrolled in this major with any other students in the college but simply looked at the similarities that existed within the individuals in the Information Technology program. The study used Holland's Vocational Theory as a standard for comparison in looking at the work environment of each individual. This theory establishes that an individual's satisfaction in the workplace is directly correlated to the personality that they have. It claims that an individual who does not have a personality that fits with the specific job will not be satisfied with their position and will ultimately look for other employment opportunities or simply stay in a job and remain discontented (Perkmen & Sahin, 2013). The findings of this study, which revealed a significant relationship between departmental satisfaction and vocational personality, generally supported this claim and showed that an individual's personality does in fact play a large role in his/her potential satisfaction within the workplace, most specifically in the field of Instructional Technology and Computer Education. The individual's potential satisfaction was gauged by a 30-question inventory that asked questions that would gauge how satisfied or unsatisfied the individual will be in the potential workforce. This inventory was based upon Holland's Vocational Theory and how that applies to certain careers and the individual's personality. (Perkmen & Sahin, 2013).

It is vital for a student to identify and understand his or her personality type before entering into a program of choice or more specifically, a vocation. When choosing

a specific vocation, individuals should focus on three factors (Perkmen & Sahin, 2013). The first factor involves clearly understanding themselves in terms of aptitude, interests, personality, abilities, and limitations. This will allow individuals to know whether or not they have the potential to succeed in any given vocation. The second factor involves the line of work they wish to pursue. They must know and understand what the job will require of them and what their employer might expect of them. Beyond this, they should consider the compensation for the work that they will accomplish and the opportunities that exist in the field (Perkmen & Sahin, 2013). Finally, the individuals should understand the reasoning for how the first two factors relate to one another. If students are truly evaluating each of these factors in terms of their own future, they will have more of an opportunity for success in any given field. The opportunity to evaluate the relation of the factors allows for individuals to look at their personality's "fit" in working with technology in the workplace (Perkmen & Sahin, 2013).

Classroom Learning. Within the classroom, there is an opportunity for the use of technology unlike any that exists in other settings. Students are able to access the classroom through an online portal so that they are able to have access to the materials that are available to them within the classroom. Using the Five-Factor Model, Barnett, Pearson, Pearson, and Kellermanns (2015) researched the student's perceived and actual use of technology in relation to the individual's personality. The sample consisted of 382 undergraduate students in four separate business classes, their average age was 21.9 years and were 58% male. This model specifically looks at conscientiousness, openness to experience, extraversion, neuroticism, and agreeableness as representations of an individual's personality.

When exploring both perceived and actual use of technology within the classroom through the use of software that acted as a classroom management system the researchers found that conscientiousness was positively related because individuals would be setting goals and aiming for success and would use every available tool to achieve that success. The exploration of an individual's perceived and actual use of technology was operationalized by looking at the individual's actual use of the new software system compared to his or her perceived use over the course of a semester. Neuroticism was negatively associated with the use of the software, which is indicative of an individual who would not be seeking out ways to positively influence his or her learning (Barnett et al., 2015). Contrary to what previous research indicated, Barnett et al. (2015) found that an individual's inclination to exhibit extraverted tendencies had a negative effect on the technology's actual use by that individual. The individual's inclination can be explained by looking at the way the individual sought to fulfill their need for extraversion. Analysis of the individual's personal level of extraversion allowed for the researchers to theorize that he or she might have sought out arousal through the use of other sources (other individuals in the class). This would explain the difference in what was predicted to be true and what was actually true for each individual.

Workforce. The workforce provides an opportunity to investigate the personalities of individuals entering into the Information Technology field and the individuals that are using technology in their daily jobs. The opportunity to investigate the individual's relationship to technology in the workplace allows for stigmas to be analyzed to determine the stigmas validity. Chen and Simpson (2015) found that students who graduated with STEM degrees and entered the workforce did not possess the

character traits deemed desirable by their future employers, such as interpersonal and intrapersonal competencies found in social and psychological development. Based upon Holland's vocational theory, it is theorized that individuals entering into a vocation within the STEM field have character traits that are common to the rest of the population of graduates instead of simply common to those graduating in technology fields because of a person-environmental fit. This indicates that there is not a great deal of diversity in this field and this ultimately leads to a decrease in productivity and a lacking job field (Chen & Simpson, 2015). There is a necessity for heterogeneous personality traits in any job field, particularly in STEM fields. In simply looking at the technology that exists today and the diversity that occurs within the technology as a whole, one is able to see the need for individuals who consider themselves artistic or entrepreneurial personality types (Chen & Simpson, 2015). When there is greater diversity within any field, there are far more opportunities for advancement and expansion in that field due to a larger variety of individuals working to accomplish a common goal. Diversity allows for society as a whole to grow and flourish.

Within the field of Information Technology, there has been a substantial concern with employee turnover. Organizations are not able to keep employees for a significant amount of time. Because of this issue, a number of studies have been done in order to see if one's career satisfaction in the field of Information Technology is related to the personality style that he or she has. Lounsbury, Moffit, Gibson, Drost, and Stevens (2007) analyzed a sample of around 1,000 professionals working in the IT field that consisted of 77% males and 23% females that were predominantly 40 and younger. The researchers found that the personality factors of extraversion and teamwork disposition

within the Personal Style Inventory and were negatively related to the individual's job and career satisfaction. This implies that within the Information Technology field, independent introverts were better suited to work in this field than those who are more dependent on people and extroverted based upon the findings. This was found to be true in the workplace within the Information Technology field, but it was not extended to include the general population in order to see if any of these personality traits affect one's propensity to enjoy working with technology (Lounsbury et al., 2007).

The employee turnover issue includes the STEM field as well. Employees are simply not staying in their given positions within the field. Joseph, Ng, Koh, and Ang (2015) compiled a meta-analysis examining a number of studies conducted on this issue to uncover potential causes of employee turnover. Additionally, they aimed to locate specific gaps within the research that currently exists. In order to better understand why this turnover is occurring, future researchers should focus on three primary directions to conduct the future research. The researchers should begin to look at the link that exists between the intention to change positions (turnover) and the actual turnover behavior (Joseph et al., 2015). Secondly, they should conduct studies utilizing the new turnover theories, such as the unfolding model or job embeddedness theory, in order to better manage and understand the act of employee turnover. When applying the newer theories, researchers may begin to notice trends within employee turnover that had not yet been recognized. Finally, researchers should begin to look at contextual factors that exist in regard to turnover that are specifically related to Information Technology to better understand what is happening in the field (Joseph et al., 2015).

In an attempt to overcome the present issue of turnover that is facing employers within the IT field, Lounsbury, Moffitt, Gibson, Drost, and Stevens (2007) researched employees' personality traits and the effects that they had on job and career satisfaction. Researchers found that eight personality traits (assertiveness, emotional resilience, extraversion, openness, teamwork disposition, customer service orientation, optimism, and work drive) were all significantly correlated (either positively or negatively) with employees' satisfaction in their field. Most interestingly, they found that both extraversion and teamwork disposition were positively related to employees' satisfaction with their job. The finding that extraversion and teamwork disposition are positively correlated with job satisfaction goes against the common stigma and recommendation that independent introverts would be better suited for this line of work (Lounsbury et al., 2007).

The finding that eight personality traits is related to an employee's satisfaction is interesting because when considering career planning advice or descriptions of the job, one would find the contrary to be true. These documents indicate that an independent introvert would be more likely to succeed within the field of Information Technology than an extravert who works well in a team setting. This is a fascinating finding and leads one to investigate why employers are seeking a specific type of an individual (an independent introvert) when this type of individual is not best suited for the position. Further research is recommended to look deeper into this finding and to see whether or not this aspect is an influencing factor in the high levels of employee turnover in the field. Beyond looking at employee turnover in the field, it is recommended that future researchers explore other factors such as pay, productivity, and the challenge that

employers are giving to their employees to motivate them to do more (Lounsbury et al., 2007).

Additionally, one can look at the Information Technology field and consider if there are any distinct personality traits that distinguish individuals who work in this field from the rest of the general population. Lounsbury, Sundstromm, Levy, Leong, and Gibson (2009) conducted a research study that looked at approximately 2500 students that were enrolled in their first year of study. The researchers found that Information Technology student's levels of agreeableness and tough-mindedness were significantly higher compared to those in other professions. However, the student's conscientiousness, emotional stability, extraversion, assertiveness, customer service orientation, optimism, and work drive were significantly lower than those outside of the technology field (Lounsbury et al., 2009).

These findings support a number of personality theories such as Holland's Vocational Theory and Schneider's Attraction-Selection-Attrition (ASA) framework. These theories claim that people will gravitate toward fields in which they feel they belong. Once the individuals are employed in the field, they will remain in that field if they feel that it is a comfortable fit (Lounsbury et al., 2009). In exploring the current problem of turnover that exists in the Information Technology field (Joseph et al., 2007) one has the opportunity to apply these findings in the future in hopes that the turnover problem could be averted. The findings essentially claim that Information Technology professionals can be distinguished from those working in other disciplines by determining their personality traits. This claim does not go beyond the field of

Information Technology nor does it distinguish the professionals who work within this field from those who simply enjoy technology (Lounsbury et al., 2014).

The relationship that exists between technology and the personalities of individuals has a variety of uses within the workforce. While this relationship can simply be used to look at the personalities that the individuals that work in the field have, it can also contribute to research about the technology field. The merging of theory and research has been accomplished in management and psychology so researchers might be able to accurately predict potential actions of the user based on personality (Devaraj, Easley, & Crant, 2008). The application of research has been widely used in the fields of psychology and management but has gone largely unstudied in information systems. There is potential for such research so that businesses might analyze and anticipate consumer needs and wants in order to stay ahead of the curve.

Devaraj et al. (2008) examined the correlation that exists between the acceptance of a given technology and the user's personality. By interpreting logged data from a 180 new users of a collaborative technology, they found that they could accurately predict the user's attitudes and beliefs (which lead to the user's acceptance of the technology). The capability to predict the user's attitudes and beliefs created an opportunity for the researchers to create and manage a system that better fits the consumer's desires, which might ultimately lead to a more efficient business. However, this study was conducted in a setting that primarily focused on students and their responses to the program. Due to the homogeneity of the research sample, results may not be as reliable as a study which explored a more diverse population (Devaraj et al, 2008).

Technology permeates every area of society. It is no longer simply limited to the field of Information Technology or within a business, but is prevalent in an individual's personal life and within the work environment. Technology requires an individual to adapt to in order to live and work in the society that surrounds him or her. One of the most significant areas in which this shift is demonstrated is the education field. For many years, teachers have begun to embrace technology and ultimately to incorporate it into their daily lessons. Chambers, Hardy, Smith, and Sienty (2003) looked at a group of emergency permit teachers that were enrolled in university courses and their willingness to embrace the opportunity to use technology. The researchers in turn compared that willingness with their personality measured by the Myers Briggs Type Indicator. The Myers Briggs Type Indicator has been deemed a valid means by which identification of different types of cognitive styles can be defined (Chambers et al., 2003). They found that teachers who were considered sensory or feeling types were less likely to be receptive to the use of technology than those who were considered intuitive and thinking types. When considering techniques which would further integrate technology and allow individuals to become more receptive towards the use of technology, Chambers et al. (2003) recommended that administrators would be more open to teaching and sharing new material in a way that is more focused on adapting to and catering to the specific personality styles.

Additionally, there is an opportunity to explore teachers within the school system and how their personality will affect the likelihood of utilizing using technology in the workplace. In today's society, it has become more of a requirement to use technology in one's daily life, rather than a choice. However, computers were first introduced into the

school systems around the 1980s and teachers began to use them on a daily basis during the 1990s. Smith, Munday, and Windham (1995) examined the effect that a teacher's personality had on his/her likelihood to use technology in 1995. In this time period, teachers no longer had a choice of whether or not to use technology in the classroom but rather, how frequently they used the technology to benefit the students' education.

For intermediate/secondary teachers, those who were considered the intuitive/thinking types regarding personality in terms of the Myers-Briggs Typology were most likely to incorporate the use of technology in their classroom. These teachers would be considered more logical, analytical, and imaginative (Smith, et al., 1995). On the other hand, teachers who were considered the sensory/feeling personality types through the Myers-Briggs Typology were less likely to incorporate technology outside of curricular requirements. These teachers were considered to be more practical and sociable than the intuitive/thinking types. When considering the use of computers in the classroom, certainly a teacher's personality — the techniques, methods, styles, and preferred mode of instruction — would impact the likelihood to use technology. In order to overcome this barrier in the classroom, Smith, et al. (1995) suggested that training be implemented to help those teachers who were less likely to use the technology in the classroom feel more equipped to do so in cases where it is absolutely necessary for them to use technology.

Expanding upon the research that has been conducted in the technology field, one could look at other fields that have some relation to the technology field, such as those within the STEM classifications—Science, Technology, Engineering, and Math (Chen & Simpson, 2015). Williamson, Lounsbury, and Han (2013) researched the personality

traits of engineers that might influence innovation and development of technology. They accomplished this by comparing the personality traits of a sample of engineers to the personality traits of a sample of non-engineers. This is pertinent to engineering because these key personality traits are becoming increasingly important in the field, and the increasing need for engineers to assume new roles in the workforce to anticipate consumer needs is absolutely essential.

In order to evaluate the personality traits that are common to engineers and whether or not those traits are conducive for the new requirements of this vocation, the researchers compared a number of engineers with non-engineers' personality traits. Engineers scored higher on intrinsic motivation and tough mindedness. On the contrary, they score lower in conscientiousness, extraversion, emotional stability, image management, optimism, visionary, work drive, and customer service orientation (Williams et al., 2013). These findings were not supportive of the new directions that engineers will be expected to go in their position. While there is still hope that they will adapt and begin to accomplish the new directions the employees will be expected to go, their current personality traits are not conducive to a changing environment or new expectations by welcoming innovation and technological developments (Williams et al., 2013).

A number of variables might contribute to what defines any specific workplace. It is certainly worthwhile to ask whether the workforce itself shapes the individuals who enter into it, forcing them to develop certain qualities or if the people coming into the workplace modify the way that the workplace is. Schneider (1987) examined a number of different areas in psychology—interactional, industrial-organizational, personality,

vocational, and organizational theories to answer this question. He claims that the people who work in any given organization make the place. They begin to redefine how that place looks, feels, and ultimately behaves. This occurs in part because of the individuals' desire to enter into specific fields.

Within Schneider's theory, vocational psychology claims that individuals are attracted in different ways to separate careers because of their personality type and their personal interests. Therefore, as individuals are entering into the workforce they will be similarly drawn to specific vocations (when they have similar interests and personalities) and this will ultimately lead to the workplace (in specific departments) containing similar individuals. This allows for the workplace to in essence be defined by the individuals who are a part of any given organization (Schneider, 1987). Beyond the individual being attracted to specific workplaces, attrition plays a factor in the career that the individual chooses as well. Individuals will also be repelled from workplaces that do not align with their desires as well. Per turnover rates, people who do not fit in any given environment would have a tendency to leave that environment to find one that fits both their interests and personality types better. This further substantiates Schneider's claim that the people make the workplace. Schneider claims the turnover rates theoretically imply the people will in essence contribute to defining the workplace through either staying at the company or leaving it (Schneider, 1987).

This theory contributes to the stigma that certain personalities tend to have a more positive perception of technology than do other personality types. However, it brings in a new perspective that individual interests, as well as the work environment, contribute as well. When considering an individual's personality and how personality affects his/her

perceptions of technology, one begins to see there is not one single, clear-cut reason as to why an individual enjoys technology or does not. On the contrary, there are a plethora of different life aspects that blend to affect their perceptions.

Globally. The Technology Acceptance Model (TAM) is a construct used to examine a user's acceptance of technology. It is one of the most widely used models in the field of information science; it predicts the user's acceptance of technology through the utilization of three primary constructs. The three constructs that affect one's TAM score are perceived usefulness, behavioral intention, and perceived ease of use of the technology. While the TAM has been studied on a large scale, the studies have not extended beyond simply looking at the constructs individually and how they interact together. However, Svendsen, Johnson, Almas-Sorensen, & Vitterso (2013) sought to take this further by looking at how an individual's personality affects each of the constructs within the TAM. The sample for this study consisted of approximately one thousand participants randomly drawn from a panel of a statistical bureau. These participant's average age was 45 years old.

For this study, the researchers analyzed individuals' TAM scores alongside their measures on the Big Five personality scale. This scale includes extraversion, openness to experience, conscientiousness, agreeableness, and neuroticism (Goldberg, 1992). Whether or not one would be considered extraverted has an effect on a number of constructs within the TAM. Extraversion was found to be positively related to each construct—behavioral intention, perceived usefulness, and perceived ease of use. Conscientiousness on the other hand is positively related to behavioral intention (Svendsen et al., 2013). One's level of agreeableness has a positive effect on the

perceived usefulness of the technology and is unaffected by the other constructs that exist for this model such as behavioral intention and perceived ease of use. However, there is no relationship that exists between an individual's level of behavioral intention and agreeableness. The individual's level of neuroticism, surprisingly, has a positive relationship to the individual's level of behavioral intention in regard to the TAM (Svendsen et al., 2013).

The findings of the study that Svendsen et al. conducted has lasting implications within the world of technology, particularly in approaching how an individual views any specific form of technology and beyond that, how that individual ultimately interacts with the technology that they come into contact with. The findings will further apply to how an individual's acceptance of any form of technology might predict or simply relate to that individual's likelihood to use technology and his or her personality. In future study, researchers might find a correlation concerning the personalities of individuals in the field and whether or not they would consider themselves technologically savvy.

As time has gone on, technology has become an increasingly vital aspect of the world that exists today. Within technology, individuals are continually finding new uses for old technology, improving upon the current technology, or they are simply creating new technology to fulfill or account for needs that exist in society on a daily basis. In looking at new technology or newly modified technology, society as a whole will either reject or modify the newly-formed technology. Society's reaction to the technology will ultimately determine the potential future of that technology. Ultimately, individuals will have an opportunity to enthusiastically embrace the technology or to simply follow suit after others have begun to utilize it.

Innovativeness could be considered the time it takes an individual to adopt any new item (or innovation) in comparison to other individuals (Vishwanath, 2005). When examining an individual's level of innovation, researchers will often look at the amount of time it takes the individual to adopt new inventions within society. This is becoming increasingly important because of technology's ever-changing state in the world today. There is an inability to continually keep up with each technological advance as these advances occur but there is an opportunity to stay ahead of the curve with new technology. If one is simply not supportive of innovation or change, particularly in terms of technology, he or she will begin to fall behind in terms of the technology that exists in today's world. In terms of the adoption and acceptance of new technology, Vishwanath (2005) looked at whether or not an individual's personality has any effect on his/her propensity to adopt the new technology.

To evaluate the affect that an individual's personality has on the individual's technology use, Vishwanath (2005) utilized an information processing model to assess the results of a research study conducted within an introductory communications class. This survey looked at individuals' ownership of technology, likelihood of adoption, and the type of technology that they owned. Vishwanath (2005) ultimately found approximately 57% of the data the researchers found to be true of the sample that was analyzed could be explained by two factors or types of technology. Factor 1 consisted of types of PDAs, cell phones, and monitors. Factor 2 comprised of subscriptions to internet and cable, cameras, media players, and gaming consoles. From this, the researchers were able to further break down the barrier that existed and explore two of the factors through a second questionnaire that elicited specific responses in terms of technological

innovativeness (Vishwanath, 2005). They ultimately found individuals' technological innovativeness is indirectly influenced by their level of sophistication within information search, their global innovativeness, and their past ownership of technology. Ultimately, the researchers concluded that when looking at an individual's innovativeness in regard to technology, personality plays a critical role in their levels of innovation (Vishwanath, 2005).

To further an understanding of how individuals' personality affects their perception of technology, there are a number of areas that must be acknowledged and examined. This examination would allow for both a better understanding and more opportunities to expand the research that has been conducted. This expansion of research would allow individuals to become better equipped to both work with technology and assist those who do.

Gender within Environments

Another stigma that exists in the information technology field is there are significantly more men in the field than there are women. This stigma has been prevalent from the earliest days of technology use and is still considered true. However, as society has progressed women have become more involved in areas of life they were not heavily involved in previously. Despite the shift to more inclusion for women there is still a perceived stigma within the field of Information Technology that men are more involved and ultimately more capable than women (Setavald, 2015).

There have been a number of reasons attributed to this stigma in the past including discrimination, differences in the abilities of men and women, and choice. Researchers looked at a data set that represented unique information on vocational

interests to analyze the determinants of individuals entering into the Information Technology field (Rosenbloom, Ash, Dupont, & Coder, 2007). The researchers found women and men in the field of Information Technology differ significantly in what draws them to the field. Men are more likely to be attracted by realistic and investigative themed work places while women are more attracted to social and artistic themed environments. This difference can in turn account for the large gap that exists between the representation of men and women in the field. This study also found women often have a number of different inclinations or aspects of their lives that they wanted to focus on (i.e., motherhood) that their job did not allow/account for in the way they desired. These are variations that in a number of cases cannot be remedied but still contribute to the gap in the representation between men and women in this field (Rosenbloom et al., 2007).

School. Chen and Simpson (2015) utilized previously attained data that looked at approximately 2,700 college freshmen's (58% female and 42% male) responses to a survey that provided information about the students. The researchers found male students were twice as likely to choose a STEM (Science, Technology, Engineering, Mathematics) major than females. The finding that male students were more likely to choose STEM was further analyzed to examine personality styles that both the males and females had. Males were much more likely to choose this type of degree than were females. Researchers analyzed gender, previous academic achievement, parental education, race, family income and personality as predictors of the student's self-selection of a college major. Gender was in fact the best predictor of whether or not students would self-select a

STEM major over any other type of major followed by the student's grade point average and race or ethnicity (Chen & Simpson, 2015).

Within the university setting, students will expand a large amount of their skills as they progress in their education. One of the skills that will potentially improve dramatically is the student's capability within information technology, particularly if the student is considered a business computing student. Kizito (2011) researched the information technology skills students have and then analyzed the data from the perspective of gender in order to see if individuals' gender has any effect on their skills in this area. The sample consisted of 90 students (52.2% female and 47.8% male) were completing their undergraduate course work in Business Computing and Information Management. Beyond this, Kizito examined the expectations females have in the computer science curriculum and applied this to consider any hindrances females might have facing them in entering into the workforce in Information Technology.

An examination of personality traits and their correlation to a student's choice of courses illustrates gender played a significant role, and thus should be further evaluated. Gender influenced the personality traits of extraversion, agreeableness, and emotional stability. Boys scored lower than girls in agreeableness and extraversion while they scored higher in emotional stability than girls (Korpershock, et al., 2010).

The researchers found there were no significant gender differences between males and females when looking at their interest in programming courses and the perception that business courses were easier than information technology courses (Kizito, 2011). When analyzing the qualitative results, researchers found the profession of Information Technology was described as a male profession and it was considered too time-

consuming to mothers by many within the sample. This could hinder females as they are entering into the workforce because of a preconceived notion the job is better suited for males than females. The primary factors interpreted as limitations for women entering into this field were a feeling of inferiority (in comparison to men), employer's preference of males over females, family issues, and their attitude to technology coming in.

In response, Kizito (2011) developed potential guidelines for teaching Information Technology courses in the university setting that could better prepare females to overcome these preconceived barriers that are facing them. In order for lasting change to occur, the community must be encouraged to give women more of an opportunity when looking for individuals to fill positions within organizations. Kizito (2011) also suggested there be more soft skills (people oriented skills instead of more technical skills) introduced into Information Technology curriculum, along with more opportunities for career guidance within the Information Technology field. The government will also need to implement policies that are effective in empowering both men and women in the field of Information Technology. There must be change in both high school and university settings which empowers women to be confident with skills that they naturally possess which ultimately assists them in an Information Technology field. This will cause women to see their potential worth in a field (Kizito, 2011).

Workforce. Considering women's participation in the workforce today compared to their participation years ago, one finds that women are much more present in the workforce today than at any point in the past. However, despite this increase in participation in the workforce, women still remain largely underrepresented in certain fields within the workforce, including most scientific and technical fields. Women make

up approximately 47% of the workforce, yet in these specific vocational fields only 27% of those in a “computer occupation” are women (Rosenbloom, Ash, Dupont, & Coder, 2008). In the past, this has been largely attributed to discrimination in the workforce and differences in both males’ and females’ abilities and their preferences of vocation (Rosenbloom et al., 2007).

Rosenbloom et al. (2008), in an effort to address the reasons for the underrepresentation of women, analyzed a sample of workers within the Information Technology field or other similar fields and compared them to a sample of workers in fields that had similar needs in terms of skills and abilities. Within this study, the sample consisted of 152 IT professionals and 415 individuals in a wide variety of other fields (accountants and managers.). The researchers found that the lack of representation of women in these fields could be largely accounted for by the differences in men’s and women’s preferences for work. Both men and women, when looking for a job, will value different aspects of work, which will ultimately cause them to choose different occupations. Simply put, men and women tend to concentrate in different occupations from each other due to varying interests and abilities. However, this is not true for all women or all men; there will be individuals who will go against the norm (Rosenbloom et al., 2008).

Globally. In contrasting today’s society with society that existed in past centuries, one would immediately notice the substantial difference in gender roles and cultural stigmas that exists due of the advent of information technology. Information technology has caused society to change very quickly. Despite its rapid growth in past years, it is not readily available around the world. However, in locations where the technology is

available, there is often a large gender gap that exists which causes women to have less accessibility to technology around the world (Moghaddam, 2009). There is also a gender difference in how both women and men use and view technology around the world; they see technology as having a different purpose and use in a number of ways. For example, in school systems girls will typically use the computer for skill building and word processing while boys will use the computer for games. Despite the differences in the use of the computer, girls were largely underrepresented in upper-level computer classes compared with boys. This gap is seemingly bigger in countries that are still considered to be developing. This can be attributed to both culture and social values that exist in those countries. Women are seen as almost inferior to men and it is not believed that they “need” to use the technology (Moghaddam, 2009).

Historically speaking, Information Technology has been considered a male-dominated field and this is representative of how both women and men approach technology around the world, particularly in developing countries. However, in developed countries, a different trend has emerged in which both men and women approach the use of technology and more specifically, the internet. The differences in usage can be attributed to the culture and social norms that exist in those countries, just as it is reflective of what is occurring in developing countries (Moghaddam, 2009). It is interesting to look at how the cultural values and social norms that exist in a society (whether developing or developed) are indicative of the way that both men and women approach technology usage. Further, the way that technology is approached can contribute to the forms of technology that is used.

Gap

Research has been completed that investigates different aspects of technology. Each of the studies has limitations and highlights areas that the research could be extended. While each of these aspects of technology each is pertinent to the furthering of the industry as a whole there is a gap in the research. Studies have simply not taken a step back from looking at specific individuals who have some type of connection with technology (in various environments) to compare their demographics with those who do not have as strong of an interest in technology. Researchers must look at the general population instead of focusing on specific groups of individuals that have a propensity to technology (work in information technology and majoring in a related field).

The general population could be considered as consisting of individuals who are inclined to work with technology ('techies') and those who are not. The individuals who feel as if they enjoy working with technology and are talented in this area do not necessarily have to be affiliated with a specific technology major or technology vocation. This group of individuals has been largely underrepresented within the research looking at the stigmas that exist in technology. Research is necessary to determine if these individuals fall into the stigmas that exist in information technology. Their personality, gender, religious views, must be examined in order to determine if there are any trends that exist that might distinguish between those individuals who would consider themselves techies and enjoy technology and individuals who do not.

Conclusion

In attempting to learn more about the way technology affects individuals, researchers looked at different aspects of technology regarding particular variables (gender, personality, job status). One can see technology is widespread and can be

explored in a vast amount of areas; each area would in some way contribute to the knowledge that exists regarding this field. However, none of the previously listed studies researched the propensity of an individual to like or dislike technology and what factors (gender, personality style, and religious views) might influence that inclination. This creates a gap in the research that allows for further investigation, allowing one to attempt to uncover any correlations among these factors.

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