

# **EXAMINING INDIVIDUAL TRANSITION FROM HEALTHCARE TO INFORMATION TECHNOLOGY ROLES USING THE THEORY OF PLANNED BEHAVIOR**

*Posted on March 15, 2021 by Matthew*

Category: [Spring 2021](#)

*By Rebecca Johnston, MHIM, RHIA; Barbara Hewitt, PhD; Alexander McLeod, PhD; and Jackie Moczygemba, MBA, RHIA, CCS, FAHIMA*

## **Abstract**

Many health information management (HIM) positions, including coders and transcriptionists, are evolving due to the widespread adoption of electronic health records (EHR) and other automated entry systems.

Thus, focus for roles associated with those positions are changing and new positions to manage and manipulate the data collected in the new systems. This study seeks to identify which factors influence HIM professionals' decision to transition from a traditional HIM role to an information technology (IT) position.

An online survey was sent to these individuals to determine which factors influenced their decision to consider a transition from healthcare roles to information technology using the theory of planned behavior. In other words, this study explored whether these individuals were influenced by attitudes, normative beliefs, and self-efficacy to consider transitioning from healthcare roles to information technology positions. In order to better understand whether education played a role in this behavior, an additional element, education efficacy was added. The findings revealed that these health information management professionals are not considering a transition from healthcare positions to IT roles.

**Keywords:** Theory of Planned Behavior, education, health information management, career choices, information technology

## **Introduction**

The Health Information Technology for Economic and Clinical Health (HITECH) Act, signed into law on February 17, 2009 as part of the American Recovery and Reinvestment Act (ARRA) of 2009, promoted EHRs adoption and meaningful use of health IT.<sup>1</sup> The wide spread adoption of EHRs is changing the roles of healthcare professionals, particularly those in health information management (HIM).<sup>2</sup> Many of the traditional roles that HIM professionals hold are shifting from traditional clinical, operational, and administrative settings to the technical side of managing health information.<sup>3</sup> Health IT is an integral part of patient care delivery used to reduce errors and improve patient outcomes and safety.<sup>4</sup> According to Cascio and Montealegre, "The goal is to create an optimized space that links people, computers, networks, and objects, thereby overcoming the limitations of both the physical world and the electronic space."<sup>5</sup>

The American Health Information Management Association's (AHIMA) Board of Directors created a task force consisting of representatives from all levels of the HIM industry to identify "HIM

Reimagined Recommendations" based on changes in healthcare, technology, and education. The recommendations include new educational strategies to ensure current and future professionals are prepared for the future HIM roles in this rapidly changing environment.<sup>2</sup>

Many positions are slowly evolving as the work formerly performed by employees is automated, captured by technology, or generated by software. For example, the medical coder role is changing as computer-assisted coding software automatically generates medical codes using the transcribed clinical documentation, thus, replacing many aspects of their job.<sup>6</sup> Medical transcriptionists are also affected as physicians utilize natural language processing, which uses voice-recognition software to automatically convert patient care notes dictated by the physician directly into the medical record.<sup>7</sup> Structured Data Entry Systems allow the physician to customize patient-record templates for quicker data entry into the EHR, allowing maximized data completeness and a standardized structure.<sup>8</sup> While the need for coders and transcriptionists still exists, these positions will transition into auditing roles managing automated processes and resolving technical software issues.<sup>9</sup> These advances will force some HIM employees to transition into non-traditional positions,<sup>10</sup> including more technological roles.

As healthcare roles evolve, the demand for a more focused IT workforce will increase. The United States Department of Labor, Bureau of Labor Statistics<sup>11</sup> predicts that by 2024, IT roles will have grown 12 percent as emphasis is placed on cloud computing, data collection and storage, analytics, and information security.

According to the United States Department of Labor, Bureau of Labor Statistics<sup>12</sup> women make up 75 percent of healthcare practitioner and technical occupations, but only 25.6 percent of the IT field. While most women are capable of attaining the skills necessary to fill IT positions, the industry is failing to attract and/or retain them. Ashcraft and Blithe<sup>13</sup> found that half of the women working in science, engineering, or technical (SET) jobs left the fields within two years of graduation, whereas, most men were still employed in these types of positions two years after graduation. Therefore, this research study assesses the factors influencing individuals, particularly women, who may have or are planning to transition from a healthcare role to an information technology role.

## **Background**

According to Abrams, et al.<sup>2</sup>, "One doesn't need to look too far into the past to see what happens to industries and professions that fail to maintain relevance in a changing environment." As previously mentioned, technology advancements are evolving in the healthcare industry. The purpose of HIM Reimagined is to provide recommendations to help move forward and to prepare for the rapid changes that are changing and evolving in the industry.

The Theory of Reasoned Action (TRA) was created to understand the relationships between attitudes, intentions, and behaviors; distinguishing between attitude toward the object and attitude toward a behavior.<sup>14</sup> TRA's constructs included attitudes and social norm as influencers for decisions about human behavior including health behaviors, adoption of technology, and other adoption decisions. Ajzen<sup>15</sup> derived its successor, the Theory of Planned Behavior (TPB) framework from TRA. TPB proposes that behavior is influenced by specific personality traits and environmental factors. The constructs of TPB (attitude, subjective norm, and perceived behavioral control) have been beneficial in understanding the relationship between behavior and beliefs, attitudes, and intentions; which could potentially be influenced by social and psychological determinants.<sup>16, 17</sup> The definitions for the constructs are shown in **Table 1**. TRA and TPB are often used to explore human behavior, particularly to examine career choices.<sup>18</sup> TPB has also been used to predict intentions related to career behaviors in various situations including decision to major in computing degree programs.<sup>18-22</sup>

### **Research Questions**

Using the validated survey items from the prior study and adding the items for IT education efficacy, the authors seek to answer the following questions:

1. Do health information management workers have a positive attitude about transitioning from a traditional healthcare position to an IT role?
2. Do health information management workers receive support from referent others about transitioning from a traditional healthcare position to an IT role?
3. Do health information management workers possess self-efficacy that would support their transition from a traditional healthcare position to an IT role?
4. Does IT education efficacy play a role in the health information management professional's self-efficacy about their decision to transition from a healthcare position to an IT role?
5. Do health information management professionals intend to transfer to IT roles from their more traditional healthcare roles?

### **Methods**

The purpose of this exploratory research was to analyze the attitudes of healthcare professionals. A survey was developed to test an individual's decision to change careers or career paths. The descriptive statistics from the survey responses were computed using Microsoft Excel.

**Participants.** Participants responded to questions designed to reveal factors that influence their intent to transition from healthcare to IT roles. The survey included previously validated items to measure attitude, subjective norms, and perceived behavioral control. In order to determine if

education requirements were detrimental to someone considering a career in IT, items were added to measure IT education efficacy.

**Instrument.** While this study focused on theory and items previously validated, a new construct was added to measure IT education efficacy. Thus, to validate the reliability of the research items prior to collecting data from healthcare professionals, approximately 1,000 undergraduate and graduate students majoring in various healthcare degrees at a central Texas university were invited to participate in a pilot study via email. To increase the response rate, two reminders were sent to the students at one-week intervals following the original email. Three hundred fifty-seven students responded. However, 157 responses were removed due to incomplete responses, brevity of response time, or no variance in responses. To ensure that the items adequately represented the constructs, SPSS was used to perform a confirmatory factor analysis with varimax rotation. Items that did not load properly on factor were modified slightly or removed from the survey.

**Study Variables.** To gather demographic information about the respondents, the survey captured information about current employment, industry, role, and whether participants have considered IT as a career. Following the demographic information, the instrument contained 27 questions related to attitudes, self-efficacy, normative beliefs, and IT education efficacy. The survey consisted of seven-point Likert questions where the first radio button represented strongly disagree and the seventh radio button represented strongly agree. The survey items were randomly presented to the respondents.

**Data Collection.** The researchers received approval to conduct the study from the Institutional Review Board. The researchers first recruited students to complete the pilot study. The target population included health information management professionals currently in healthcare roles and those who may have transitioned or intend to transition to IT roles. The researchers invited 617 individuals from a Health Information Management (HIM) department's alumnus in Texas via an email message to complete the survey. Two follow-up reminders were sent to the alumnus group at one-week intervals following the original invitation. While one hundred thirty individuals started the survey, 24 responses were eliminated for incomplete responses. Thus, 106 responses were analyzed for the research study. This yielded a 17 percent response rate.

## Analysis

Respondents replied to questions that used a seven-point Likert scale to assess their attitudes toward changing from a healthcare role to an IT position. Results were generated using descriptive statistical analysis including frequencies and percentages. Microsoft Excel was used to compute descriptive statistics.

**Demographics.** Subjects of all gender, racial, and ethnic background, and age range (23-65) that graduated with an HIM degree from one university regardless of where they worked were invited to participate in the survey. With regard to gender, 91 percent of the participants were female and 9

percent were male. The sample was comprised of 95 percent White/Caucasian; 14 percent Black/African-American; 5 percent Asian; 5 percent from multiple races; 4 percent from other races; and 2 percent of the participants preferred not to respond.

One percent of the survey respondents reported having a high school diploma; 10 percent completed some college; 5 percent had an associate's degree; 65 percent had a bachelor's degree; 8 percent of participants completed some post-graduate work; 34 percent had a master's degree; and 2 percent had a Ph.D., law, or medical degree. [Table 2](#) shows the demographics of the individuals to summarize the results.

## Results

Question 1 explored whether an individual's attitude impacted their intent to transition from a traditional healthcare role to an IT role was supported. While most individuals (63 percent) indicated that there is more potential to work in IT for growth opportunities, less than one-quarter or 23 percent of the respondents in the current study either strongly agreed or agreed that they would not have greater opportunity if they transitioned to an IT role than a traditional healthcare role. These results can be seen in [Table 3](#).

In the current study, 64 percent of the female respondents and 60 percent of the males agreed or strongly agreed that "Working in IT would offer potential for growth opportunities." These results indicate that most respondents believe that transitioning from healthcare roles to an IT role will provide more potential; however, only one-fifth or 21 percent of our female respondents and 40 percent of our male respondents strongly agreed or agreed that they would have great opportunity transitioning to an IT role from their traditional healthcare role.

In response to Question 2, when asked whether referent others are encouraging the individuals to consider transitioning from a healthcare position to an IT role, only 11 percent of the respondents indicated that people who were important suggested that they work in IT. Referent others, including only 7 percent of employers, 7.5 percent of mentors, and 8.5 percent of coworkers, have suggested that these HIM professionals' transition to an IT role. Only 7 percent of females and 10 percent of males were influenced to work in the IT field. Other social norm questions showed similar results. While roughly 20 percent of males were being told that they should transition to IT jobs by people they valued, employers, and mentors, only 6 percent of females received suggestions to consider a transition from employers, mentors, and 8 percent from coworkers as indicated in [Table 4](#).

Question 3 explored whether individuals had the self-efficacy to make the transition to IT. Forty-six percent of the respondents felt that they had the knowledge, 43 percent felt that they had the resources, and 52 percent felt that they have the ability and the aptitude as shown in [Table 5](#). As indicated, self-efficacy was strong for males with 70 percent indicating that they had the knowledge, 60 percent indicated that they had the ability and advanced computer skills, and 90 percent believed they had the aptitude. Less than half of the female respondents felt that they had the

knowledge (44 percent), resources (44 percent), or computer skills (25 percent). On a positive note, over half of the females (51 percent) felt they had the ability to pursue a career in IT.

To determine if the individuals thought trying to complete an IT concentration would be hard, Question 4 explored whether individuals had IT education efficacy. Roughly half of the respondents indicated that IT courses would be challenging (49 percent); however, most respondents did not feel that an IT concentration would be difficult (18 percent) or required long hours of study (38 percent). Additionally, the respondents did not feel that IT courses are demanding (38 percent). Very few of the respondents felt that an IT concentration would take a long time to complete (8 percent). These results are shown in [Table 6](#). Half of the males (50 percent) and females (49 percent) agreed that IT courses would be challenging. Males believed that they would have to study many hours (60 percent) and the courses would be demanding (70 percent). Females were less concerned with needing to study many hours (35 percent) and only 34 percent felt that the courses were demanding.

In response to Question 5, roughly 13 percent of our respondents stated they would transfer to an IT role and only 12 to 14 percent were considering a transfer to an IT role as shown in [Table 7](#). Males were more likely to consider the transition, but that number was only 40 percent. Only 6 percent of the females indicated that they plan to transition to an IT role.

These results are shown in [Figure 1](#). The items used in Figure 1 were selected from the results above. This shows that while most individuals believe that they could transition to IT, they do not intend to actual transition.

## Discussion

This research explored whether factors as identified in the TPB factors model influenced an individual working in healthcare to consider transitioning to an IT role. The proposed model included IT education efficacy and different attitude questions to test opportunity, whether it was gender-based, and whether individuals felt the geek/nerd stereotype kept them from considering it as a role. When comparing the results of this study with other career choice studies that used the TPB model, this study further confirms the suitability of the model for evaluating career choices. Furthermore, TPB improves our understanding of attitude, self-efficacy, and normative beliefs for these individuals as they consider career choices and changes to those decisions.

Question 1 explored whether an individual's attitude impacted their intent to transition from a traditional HIM role to an IT role was supported. The majority indicated that IT jobs offered great job opportunity, but only 23 percent either strongly agreed or agreed that transitioning to an IT role would give them a better opportunity than a traditional HIM role. These results were similar to previous research. For example, Croasdell, McLeod, and Simkin<sup>23</sup> determined the difficulty of an IS major and curriculum<sup>23</sup>. While "difficulty of major" and "aptitude" were not significant determinants in

choosing an IS major, the study did find that a "genuine interest in Information Systems (IS) and the "influence of family" strongly influenced a woman's decision to major in IS. Amani and Mkumbo<sup>19</sup> used TPB to evaluate the determinants of career intentions among undergraduate students in Tanzania.<sup>19</sup> Attitude was found to be the strongest predictor of career intentions, followed by subjective norms, career knowledge, and career self-efficacy. Joshi, Kvasny, McPherson, Trauth, Kulturel-Konak, and Mahar<sup>21</sup> surveyed university students to explore how self-efficacy and perceived IT skills affected IT career choice.<sup>21</sup> While the study found positive results pertaining to intentions, self-efficacy did not have direct effects on IT career intention. Although AHIMA created the HIM Reimagined initiative, which provides job growth strategies as technology evolves the industry, HIM professionals are not making it a personal mission to equip themselves both academically and professionally to keep up with the changes that are occurring.<sup>24</sup>

To explore whether the responses were gender differences, results for males were compared to females. While 40 percent of males indicated that there were greater opportunities to transition from the HIM field to the IT field, only 21 percent of the females agreed with them. Basically, neither males nor females feel the need to position themselves for the possibility of needing to transition to a more technical role.

Question 2 tested whether individuals were influenced by others to transition from a traditional HIM role to an IT role. The results indicate that few individuals felt influenced by referent others (10 percent), employers (8 percent), coworkers (9 percent), mentors (8 percent), and professors (7 percent). The current research found that normative beliefs were significant in that referent others, including professors, coworkers, mentors, employers, and other individuals of importance, played an influential role in an HIM professional's intent to work in an IT role; however, only a few referent others encouraged the HIM professionals to consider a transition to an IT role.

To delve further into these responses were also supported indicating that normative beliefs influence both female's and male's intent to transition from a traditional HIM position to an IT role. Surprisingly, 7 percent of females and 10 percent of their male counterparts indicated that they were influenced by referent others.

Question 3 tested whether self-efficacy influenced a HIM professional's motivation to transition to an IT role. More than half of the respondents either strongly agreed or agreed to having the capability and more than 50 percent but less (46 percent) had the knowledge to transition. These results are quite interesting and signify that HIM professionals are not influenced to change their careers to an IT role by others in the profession including their bosses and colleagues. These results are similar to those found by Brinkley and Joshi, who determined that males had a higher self-efficacy than females regarding hard IT skills<sup>20</sup>. Govender and Khumalo<sup>25</sup> found that female respondents showed



that they need to have a high computer self-efficacy for them to consider a major in IS.<sup>25</sup>

Question 4 explored whether these individuals felt IT courses were challenging. The results indicated that IT education efficacy influenced one's attitude. While half (49 percent) felt the courses would be challenging, overwhelmingly, they indicated that the courses would not be challenging (82 percent). Only one-third indicated that the courses would require many hours to study. Because HIM roles are very different when compared to IT roles, many HIM professionals may feel that education requirements may be too challenging; thus, preventing them from transitioning from their present position to one in IT. The results indicated that the degree of difficulty perceived in the IT curriculum negatively affected the attitudes toward choosing an IT major. Males and females agreed upon the amount of difficulty of IT concentrations, but males were more concerned about studying and the demand of the courses compared to their female counterparts.

This study also measured the individual's intention to transition to answer Question 5. While 40 percent of the males stated they plan to transition, but only 6 percent of the females planned to transition from a more traditional HIM role to an IT position. These results are alarming as they are contrary to the current state of the field, with electronic health records changing the roles of these professionals.

The goal of this study was to investigate and evaluate influencing factors for individuals, particularly women, who may be considering a transition from an HIM role to an information technology role. The results suggest that attitude, normative beliefs, self-efficacy, and IT education efficacy all statistically play a positive role in determining such factors. However, males were not impacted by self-efficacy and IT education efficacy.

The shortage of individuals, particularly women, in IT roles is evident as discussed in previous studies. As HIM roles evolve and become more technology-oriented, education programs should introduce more IT-oriented subjects into the classroom. IT subjects can be integrated across the HIM curriculum to promote a greater sense of self-efficacy and potentially attract more individuals into the IT field. Concern needs to be expressed since the majority of our respondents did not consider a transition to an IT role (90 percent).

## **Conclusion**

In summary, the study presented in this paper refined the Theory of Planned Behavior, providing a more representative model for analyzing factors that influence HIM professional's intention to transition into information technology roles. IT education efficacy was added to the TPB model to explore whether an individual was influenced by how challenging they perceived an education in IT and how it would affect their self-efficacy. The study also explored how gender affected individual intentions to transition into an IT role within the TPB framework.

While the combined population provided homogenous responses towards attitude, social norms,

and self-efficacy, self-efficacy and IT education efficacy results varied by gender. The results indicated that while almost 50 percent of males surveyed indicated that they had the ability to transition to an IT to (self-efficacy) than their female counterparts, only 18.5 percent of the males intended to transition into an IT role. Fewer females intended on transitioning to an IT role compared to the males who responded to the survey. In these efforts, the study contributed to a deeper understanding by identifying important factors within the framework. By adding an additional element, the results provided a better understanding regarding one's efficacy in IT education. Furthermore, the research identified gender differences pertaining to the intent to transition into an IT role exist.

According to Eramo<sup>26</sup>, "technology has transformed almost every industry, and health information management (HIM) is no exception.<sup>26</sup> AHIMA's HIM Reimagined taskforce has been charged with initiating recommendations to ensure that HIM professionals are prepared for the rapidly changing environment resulting from changes in healthcare, technology, and education.<sup>27</sup>

### **Limitations**

While the data in our research study provided positive feedback to support TPB, the present study is not without its own limitations. The first limitation that should be noted is the small sample size. While we invited over 800 individuals to participate and sent at least one follow-up invitation, only 125 of the 155 responses were analyzed due to incomplete surveys.

In addition to the small population size, the survey lacked diversity, with females making up 84.8 percent of the participants and only 15.2 percent males. The lack of a diverse population participating in the survey made it difficult to generalize from this study. The majority of the respondents were white/Caucasian (76 percent). Future research should aim at including a more representative group of people, including more male respondents and a more diverse population.

Another consideration is related to the survey. The instrument should focus on other variables such as age, education level, and various professions in order to assess the generalizability of the scale to a more heterogeneous population<sup>28</sup>. Thus, providing a more comprehensive assessment of the subject.

### **Contributions and Implications for Future Research**

The results provide several contributions for researchers and organizations. By continuing to refine and evaluate the reasons that males and females choose certain careers, researchers will have the ability to better assess and determine one's motivation for behaving in a certain way. The model for this study added an IT education efficacy construct to TPB. This element adds a better understanding of whether individuals believe obtaining an education in IT is challenging. IT education efficacy might affect one's level of self-efficacy; subsequently influencing one's decision

to transition from healthcare to IT.

Organizations can benefit from these results, because the model provides a framework for understanding what factors influence individuals making the choice to transition from their current role, in this case, healthcare, to an IT role. The study may also provide additional information on how recruiters from academic institutions can encourage more females to pursue majors in an IT discipline. University HIM departments should consider including more computer-based subjects in their degree programs.

### Author Biographies

Rebecca Johnston, MHIM, RHIA, ([rjohnston@hamiltonhospital.org](mailto:rjohnston@hamiltonhospital.org)) is Remote Outpatient Coder for Hamilton Healthcare System in Hamilton, Texas.

Barbara Hewitt, PhD, ([barbarah@txstate.edu](mailto:barbarah@txstate.edu)) is Assistant Professor in the Department of Health Information Management at Texas State University in San Marcos.

Alexander McLeod, PhD, ([am@txstate.edu](mailto:am@txstate.edu)) is Associate Professor and Department Chair in the Department of Health Information Management at Texas State University in San Marcos.

Jackie Moczygemba, MBA, RHIA, CCS, FAHIMA, ([jackiem@txstate.edu](mailto:jackiem@txstate.edu)) is Associate Professor and BSHIM Program Director in the Department of Health Information Management at Texas State University in San Marcos.

### References

- [1. United States Department of Health and Human Services. "Hitech Act Enforcement Interim Final Rule." June 16.](#)
- [2. Abrams, K., S. Carlon, M. B. Haugen, D. Mancilla, K. McElroy, M. Millen, R. Sandefer, M. Sharp and L. Sorensen. "Him Reimagined Outlines Bold New Future for Him Profession." \*Journal of AHIMA\* 88, no. 6. \(2017\): 22-25.](#)
- [3. "Him Careers - Health Information 101". August 27, 2018.   
<http://www.ahima.org/careers/healthinfo>.](#)
- [4. "Improved Diagnostics & Patient Outcomes". August 27, 2018.   
<https://www.healthit.gov/topic/health-it-basics/improved-diagnostics-patient-outcomes>.](#)
- [5. Cascio, W. F. and R. Montealegre. "How Technology Is Changing World and Organizations." \*Annual Review of Organizational Psychology and Organizational Behavior\* 3, no. \(2016\): 349-375.](#)
- [6. Morsch, M. "Computer-Assisted Coding: The Secret Weapon." January 29.](#)
- [7. Nadkarni, P., L. Ohno-Machado and W. W. Chapman. "Natural Language Processing: An Introduction." \*Journal of the American Medical Informatics Association\* 18, no. 5. \(2011\): 544-551.](#)

8. Bush, R. A., C. L. Kuelbs, J. Ryu, W. Jian and G. J. Chiang. "Structured Data Entry in the Electronic Medical Record: Perspectives of Pediatric Specialty Physicians and Surgeons." *PMC* 41, no. 5. (2017): 75.
9. Dimick, C. "Health Information Management 2025: Current "Health It Revolution" Drastically Changes Him in the near Future." *Journal of AHIMA* 83, no. 8. (2012): 24-31.
10. AHIMA. "Evolving Role of the Coder: Current to Future State". AHIMA. 8/19/2018.  
<http://library.ahima.org/doc?oid=58509#.W3lyh7gnaiM>.
11. U.S. Department of Labor Statistics. "Computer and Information Technology Occupations". Washington, DC. September 1, 2018.  
<https://www.bls.gov/ooh/computer-and-information-technology/home.htm>.
12. United States Bureau of Labor Statistics. "Labor Force Statistics from the Current Population Survey". Washington, DC. <https://www.bls.gov/cps/cpsaat11.htm>.
13. Ashcraft, C. and S. Blithe. "Women in It: The Facts." National Center for Women & Information Technology. April 2010.
14. Fishbein, M. *Readings in Attitude Theory and Measurement*. Published: John Wiley & Sons, 1967.
15. Ajzen, I. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes* 50, no. (1991): 179-211.
16. Harding-Fanning, F. and J. M. Ricks. "Attitudes, Social Norms, and Perceived Behavioral Control Factors Influencing Participation in a Cooking Skills Program in Rural Central Appalachia." *Global Health Promotion* 24, no. 4. (2017): 43-52.
17. Godin, G., A. Bélanger-Gravel, M. Eccles and J. Grimshaw. "Healthcare Professionals' Intentions and Behaviors: A Systematic Review of Studies Based on Social Cognitive Theories." *Implementation Science* 3, no. 36. (2008):
18. Arnold, J., J. Loan-Clarke, C. Coombs, A. Wilkinson, J. Park and D. Preston. "How Well Can the Theory of Planned Behavior Account for Occupational Intentions." *Journal of Vocational Behavior* 69, no. 3. (2006): 374-390.
19. Amani, J. and K. A. Mkumbo. "Predictors of Career Intentions among Undergraduate Students in Tanzania." *Journal of Education and Human Development* 5, no. 3. (2016): 106-115.
20. Brinkley, T. and K. D. Joshi. "Women in Information Technology: Examining the Role of Attitudes, Social Norms, and Behavioral Control in Information Technology Career Choices." *McNair Journal* no. (2005): 24-40.
21. Joshi, K. D., L. Kvasny, S. McPherson, E. Trauth, S. Kulturel-Konak and J. Mahar. "Choosing It as a Career: Exploring the Role of Self-Efficacy and Perceived Importance of It Skills." *ICIS 2010*

*Proceedings* no. (2010): 154.

22. Tegova, S. "Application of the Theory of Planned Behaviour to Career Choice: The Role of an Improved Measure of Emotion." Edith Cowan University. October 2010.
23. Croasdell, D., A. McLeod and M. G. Simkin. "Why Don't More Women Major in Information Systems?" *Information Technology & People* 24, no. 2. (2011): 158-183.
24. "Him Reimagined". July 19. <http://www.ahima.org/about/him-reimagined/himr?tabid=overview>.
25. Govender, I. and S. Khumalo. "Reasoned Action Analysis Theory as a Vehicle to Explore Female Students' Intention to Major in Information Systems." *Journal of Communication* 5, no. 1. (2014): 35-44.
26. Eramo, L. A. "Leading Him Reimagined by Example." *Journal of AHIMA* 89, no. 5. (2018):
27. HCPro. "Him Reimagined: Just the Facts". July 19.  
<http://www.hcpro.com/REV-328136-140/HIM-Reimagined-Just-the-facts.html>.
28. Doğru, M. "Development of a Self-Efficacy Scale of Technology Usage in Education " *Eurasia Journal of Mathematics, Science & Technology Education* no. (2014): 3-10.

**There are no comments yet.**