Non-Technical Skills for IT Professionals in the Landscape of Social Media

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This paper provides a comprehensive literature review on the non-technical skills needed by IT professionals to work successfully in social media. Previous research has examined nontechnical and found that soft skills such as communication, knowledge management, leadership, personal accountability, time management and an understanding of business functions are important for IT professionals to possess. No study has examined the specific soft skills that are needed in the landscape of social media such as for bogging, content sharing, customer relationship management, pod-casting and project management. This paper will provide a comprehensive list of soft skills and will ascertain which skills are required for specific social media applications. Finally a review of the literature has indicated that an understanding of one's personal brand will impact career success. The issues relevant to personal branding for IT students and professionals will be discussed. Implications for curriculum development in academia and for practitioners will be examined.

Key Words: Information technology, information systems, non-technical skills, soft skills, social media, personal branding, job skills, interpersonal skills

Introduction

In a report to the President and Congress on networking and information technology the President's Council of Advisors on Science and Technology (PCAST) asserts that United States leads the world in the science of networking and information technology (Holdren & Lander, 2013). PCAST believes that having a skilled workforce in Information Technology is essential to our digital future. The American Society for Training & Development has indicated there is a skills gap between what organization's need from employees and the skills employees have (Sitek, 2012). The need for leadership skills and an understanding of business functions and specific industries ranked high in required skills. The ASTD survey indicated that the lack of skills could result in lower productivity, slower time-to-market and decreased profitability (Sitek, 2012). The ASTD indicated also that both industry and educational institutions need to play a role in workforce development of soft skills.

While there is an abundance of research on the importance of soft skills for IT professionals, no research has focused on a comprehensive analysis of the soft skills needed in social media. This paper will examine what soft skills are necessary for IT professionals in the realm of social media.

Literature Review

To determine the soft skills a literature review on non-technical skills was conducted using steps outlined in Fink (2010): Selecting the research question, Selecting article databases, web sites and other sources, choosing search terms, applying practical screening criteria, applying methodological screening criteria, doing the review and synthesizing the results . First the research question was to examine the requisite soft skills for IT professionals in the realm of social media. Database searches were conducted using EBSCO Host, Academic Search Premier, Google Scholar and the Information Science Institute. The author also examined the reference lists of relevant articles to further assess requisite soft skills.

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Browsers were also searched for relevant business articles on skill sets. Search terms included: Commu-

nication, Critical Skills, Information Systems, Information Technology, Interpersonal Skills, IT programs, IT Professionals, Job Skills, Networking, Non-Technical Skills, Project Management, Social Networking, Soft skills, Social media, Social Media Landscape, Social Media Skills, Talent Deficit and Talent Gap. A total of 334 articles were reviewed and of those 286 were used in this paper primarily from refereed journals but also including practitioner articles (e.g. Forbes). The articles that were excluded were outside of the scope of this paper such as articles on soft skills needed outside the IT profession. Papers that lacked content or construct validity were also removed from analysis. During the review the author conducted a content analysis to assess salient non-technical or soft skills for IT professionals. Results are then described and summarize in a tables.

The Demand for IT Soft Skills

The preparation and development of an IT workforce includes both technical and non-technical skills (and soft skills). Practitioners, educators and researchers have all deemed it necessary to teach soft skills to IT professionals (Bancino & Zevalkink, 2007; Gillard, 2009). Many studies have looked at the need for nontechnical skills for IT professionals and found that the nontechnical skills contribute to the success of an employee and an organization (Aasheim, Shropshire, Li & Kadlec, 2012; Evans, 2002; Gallagher, Kaiser, Simon, Beath & Goles, 2010; Hagen & Bouchard, 2015; Hawk, Kaiser, Goles, Bullen, Simon, Beath, Gallagher, & Frampton, 2012; Joseph, Ang, Chang, & Slaughter, 2010; Keil, Lee & Deng, 2013; Joseph, Soon, Chang & Slaughter, 2010; Lonoff Schiff, 2013; McMurtrey, Downey, Zeltmann & Friedman, 2008; Mann, 2002; Muzio, Fisher, Thomas & Peters; 2007; Petter and Randolph, 2009; Sukhoo, Barnard, Eloff & Van der Poll, 2013).

While technical skills are necessary for IT professionals, they do not provide a sufficient set of skills (Joseph et al., 2010). A survey of 153 IT professionals found that soft-skills were the most important skills for newly hired IT professionals (McMurtrey, Downey, Zeltmann & Friedman, 2008). Specifically, McMurtrey et al. (2008) found that critical thinking; problem solving and team skills were the most important of the soft skills for entry level IT professionals. Aasheim et al. (2012) also looked at entry level IT professionals and found that personal and interpersonal skills were the most highly desirable skills and that the requirement for these skills did not change substantially over a five year time period. Verma & Bedi (2008) discuss that having non-technical skills such as communication, problem solving and leadership can lead to increased employability, greater job performance and better work accuracy for IT professionals. Gallagher et al. (2013) studied mid-level IT professionals and found that critical skills included project management, business knowledge, problem solving and relationship skills. Joseph et al. (2010) reflects that the practical intelligence (soft skills) leads to more success in organizations than technical skills. Joseph et al. (2010) defines practical intelligence as "the managerial, intrapersonal, and interpersonal skills that are used to resolve IT-related work problems" (p. 149). These practical skills include self-management, interpersonal abilities and business knowledge.

Muzio et al. (2007) developed a measure to assess and quantify soft-skills. They looked at real performance data as measured by a 360-degree employee assessment process. Muzio et al. (2007) found that planning and organizing were the best skills and that having an empathetic outlook and flexibility were the weakest skills but were still highly needed. Keil et al. (2013) performed a Delphi study on critical skills needed of IT project managers. The study indicated that leadership, verbal communication, listening, project planning and written communication skills topped the list of skills needed for IT professionals. Hagen & Bouchard (2015) conducted a literature review of skills needed to train IT professionals and found that interpersonal, active listening, critical thinking problem solving, creative thinking, an understanding of diversity, general communication skills, the ability to refrain problems, professionalism and ethics and a willingness to use technology were critical skills for IT professionals.

Personal characteristics/traits such as attitude, honesty, integrity, trustworthiness, ethics, motivation and a willingness to use technology have also been found to contribute to the success of IT professionals (Aasheim et al.,2012; Hagen & Bouchard, 2015; Motah, 2008; McMurtrey et al., 2008). Integrity has been pinpointed as a necessary personal attribute given the nature of private and secure information in the IT world (Aasheim et al., 2012). The ability to handle stress, be diplomatic, be persistent and committed, be resilient and a have a sense of humor have been found to decrease tensions and increase work relationships (Keil et al., 2013; Motah, 2008; Muzio et al., 2007; Sukhoo et al., 2013). Being detail oriented was also found to increase the effectiveness of IT professionals (Keil et al., 2013; Lonoff Schiff, 2013).

Social Media and IT Professionals

Social media involves the websites and applications that allow users to create and share information. Social media has been playing a significant role in or-

ganizations for more than a decade with an increasing emphasis on its role (Burton, Wu & Prybutok, 2010; Castronovo & Hunt, 2012; Chao, Parker & Fontana, 2011; Heller Baird & Parasnis, 2011 Poynter, 2011; Recine, Prichard and Chaudhury, 2013). IT professionals are using social networking sites such as LinkedIn, Twitter, Facebook and YouTube to discover and exchange information (Weglage, 2010). Social media is increasing the collaboration between IT professionals and marketers as they develop dashboards, monitor social media and maintain social networking sites (Weglage, 2010).

While IT professionals are involved in creating platforms for use in social media, no literature has examined what soft skills are needed in this arena. This article will review the needed soft skills in the landscape of social media for IT professionals.

Personal Branding. While reviewing literature on soft skills, it was ascertained that IT professionals need an understanding of personal branding (Dutta, 2010). Personal branding involves taking control of one's image in the organization and on social media (Montoya & Vandehey, 2002; Peters, 2010). IT professionals should be authentic and consistent in their personal brand and display professionalism (Harris & Rae, 2011). Employees of any type of organization should be aware of the implications of personal branding for employment screening, hiring, training, monitoring and discipline (King 2006; Roberts & Roach 2009). Skills needed for personal branding will also be examined.

Non-Technical Skills

The literature review yielded 44 Non-technical skills that are necessary for social media. These skills will and the implications for IT professionals will be discussed.

First is the ability to actively listen by giving feedback to others about what has been heard. Active listening has been shown to increase collaboration and group functioning (Auerbach, 2014; Bailey & Mitchell, 2006/2007; Cavalier, Klein & Cavalier, 1995; Hagen & Bouchard, 2015; Keil, Lee & Deng, 2013; Verma & Bedi, 2008). Active listening is essential for organizational communication effectiveness of superiors and subordinates (Hunt & Cusella, 1983). Active listening also improves training in organizations through feedback and building rapport (Hunt & Cusella, 1983).

Next are analytical skills. IT professionals must have the ability to analyze problems and issues at different stages of a project (Aasheim et al., 2012; Acker, Grone, Akkad, Potscher, & Yazbek, 2011; Christ et al., 2012; Couger, Higgins & McIntyre,

1993; Gallagher et al., 2010; Hipperson, 2010; Keil et al., 2013; Kleinsmann et al., 2012; Muzio et al., 2007; Plaza, 2010; Rapoza, 2010; Seymour, 2013). Analytical thinkers tend to broaden their thinking to consider a larger set of alternatives allowing for a diversity of perspectives on creating solutions to problems (Couger et al., 1993).

Multiple studies have found that an understanding of business knowledge is essential to the success of IT professionals as they interact with internal and external clients (Aasheim et al., 2012; Davison, Maraist, & Bing, 2011; Feeny & Wilcocks, 1998; Gallagher et al., 2010; Gorman, 2011; Hawk et al., 2012; Holdren, Lander, Jackson & Schmidt, 2010; Keil et al., 2013; Lee, Trauth & Farwell, 1995; McMurtrey, Downey, Zeltmann, & Friedman, 2008; Stuart 2015). IT professionals need to understand the basic functions of Accounting and Finance, Customer Service, Human Resource Management, Marketing Production and Operations, and Research and Development.

Fourth, IT professionals need the abilities to collaborate and cooperate. Individuals cooperate when they exchange relevant information and resources in support of each other's goals, rather than a shared goal (Bruffee, 1995; Stuart, 2015). Individuals collaborate when they work together to share a common goal (Bruffee, 1995). Cooperation has been found to expedite a project and facilitate knowledge transfer (Keil et al., 2013; Zhang & Spiteri, 2012). Kane, Roginson-Combre, & Berge (2010) found that collaboration increases e-learning and the ability to manage knowledge.

Fifth, IT professionals need to have both good oral and written communication skills (Aasheim, Shropshire, Li & Kadlec, 2012; Auerbach, 2014; Evans, 2002; Gallagher et al., 2010; Hagen & Bouchard, 2015; Keil et al., 2013; Kleinsmann et al., 2012; Lonoff Schiff, 2013; Mann, 2002; Mason, 2013; McMurtrey et al, 2008; Motah, 2008; Sukhoo et al., 2013; Tambe & Hitt, 2012; Trenner, 2013; Verma & Bedi, 2008). It professionals should be able to communicate clearly and effectively and in a manner that is easily understood. IT professionals need to ensure that they are clearly understood by all stakeholders, that all stakeholders understand what is expected of them, and that all stakeholders communicate effectively with one another (Lonoff Schiff, 2013).

Sixth, IT professionals need to be able to work with communities (Acker et al., 2011; Arnold & Paulus, 2010; Fournier & Lee, 2009). Community building is necessary to strengthen relationships, build connections and communications within a group. Community building facilitates teamwork and also engages customers (Acker et al, 2011).

Seventh is the ability to resolve conflicts. Conflict management is the ability to recognize and deal

with disputes in a rational and effective way (Goo, Kishore, Rao, & Nam, 2009; Motah, 2008; Muzio et al., 2007; Jiang, Chang, Chen, Wang & Klein, 2014; Keil et al., 2013; Sukhoo et al., 2013). Goal conflict amongst teams can occur due to diverse interests of different parties involved. IT professionals able to overcome conflict increase the likelihood of success for multiple projects leading to more value for an organization (Jiang et al., 2014).

The eighth skill is the ability to think creatively. Creative and innovative thinking allows IT workers to generate new ideas (Aasheim et al., 2012; Ames & Runco, 2005; Cooper, 2000; Couger et al., 1993; Hagen & Bouchard, 2015; Heilesen, 2010; McKorkle & McKorkle, 2012; McMurtrey et al, 2008; Stuart, 2015; Sukhoo et al., 2013; Zhou, Chen & Lou, 2014). While general creativity is the ability to generate new ideas (Boden, 1990); domain Specific creativity is the ability to innovate within a specific field (Kaufman & Baer, 1995). Zhou et al. (2014) found that IT students perceived creativity to be both domain-general and domain specific and that IT students should be taught creativity tacitly and explicitly. Amabile (1996) indicates that three factors impact creativity: skills relevant to the domain, task motivation and cognitive skills.

The ninth skill relates to the credibility of the employee. IT professionals' credibility can also impact their performance (Mann, 2002; Walton, 2013; Xu, 2013). Credibility is influenced by knowledge, professionalism and good communication. Walton (2013) found that credibility improves trust, increases positive word-of-mouth communication, and builds relationships.

The tenth skill is the ability to think critically (Churches, 2009; McMurtrey et al, 2008; Evans, 2002; Hagen & Bouchard, 2015; Ivanov 1991; Stuart, 2015; Turner, 2004). "Critical thinking is the ability to test assumptions, make critical evaluations, and critically review systems approaches" (Hagen & Bouchard, 2015, p. 6). Ivanov (1991) discusses critical thinking in terms of critical construction approaches to IT. Ivanov indicates that this method allows for gradual learning and self-improvement of an information system.

The eleventh skill is having a customer focus and the ability to understand customer needs (Arnett & Badrinarayanan, 2005; Evans, 2002; Muzio et al., 2007; Trenner, 2013). Customer focus is more than customer service. Customer focus concentrates on what matters to the customer (Bofante, 2012). Having a strong customer focus is a strong contributor to the success of a business (Bharadwaj, Nevin, & Wallman, 2012). IT professions should have the ability to solicit and listen to customer feedback and effectively address concerns (Evans, 2002).

Twelfth is the ability to use data for creating customer insight. Data mining is having an understanding what information needs to be captured and analyzed in order to provide insight into customers and competition (Chau & Xu, 2012; Cowan, 2008; Hipperson, 2010). CEOs want more than data; they want to have genuine understanding (insight) into the why the data is important (Cowan, 2008). Businesses that use the insight well will have a competitive advantage (Cowan, 2008).

Thirteenth is the ability to make decisions. Decision making is the ability to analyze all aspects of a situation to gain insight to make a decision (Deans, 2012; Evans, 2002; Gorra & Finlay, 2009; Muzio et al., 2007; Verma & Bedi, 2008). "An employee's ability to correctly analyze a situation, understand tradeoffs, offer good recommendations, and make the right choice is often rewarded with increased freedom to self-manage, and with the opportunity to engage in more interesting and challenging projects" (Evans, 2002, p. 33).

Fourteenth is an understanding of diversity and its implications for an organization. Diversity awareness and understanding can increase an organization's effectiveness and produce better financial results (Nelson, 2014; Schachaf, 2008). Diversity skills can increase understanding and success of a team (Nelson, 2014; Schachaf, 2008). Understanding of organizational diversity also facilitates customer's adoption of innovation (Nelson, 2014; Weigelt & Sakar, 2009). This occurs because diversity provides a "cognitive and social environment that is a positive indicator for innovation and a negative indicator for routine tasks" (Nelson, 2014; p. 88). Trauth, Huang, Quesenberry & Morgan (2006) indicate that IT students need to be taught about the scope of diversity issues in the workplace and cross-culturally. Daniel, Agarway and Stewart (2013) found that when project participant roles were dispersed geographically it had positive influences on community engagement market success.

Fifteenth is the ability to edit. While general verbal and written communication skills are important, the ability to edit written communication before it goes public is essential (Goktas & Demirel, 2012). IT professionals need to try to improve documents by correcting errors, making sentences clearer and being more precise.

The sixteenth skill is the ability to engage people. IT professionals need to be able to engage their clients by keeping them informed and interested (Woodcock & Green, 2011). They "need to design experiences that deliver tangible value in return for customers' time, attention, endorsement and data" (Heller Baird & Parasnis, 2011, p. 30).

The seventeenth skill for IT professionals is the need to have an empathetic outlook (Auerbach, 2014; Muzio et al., 2007). Empathy allows a person to perceive and understand the feelings and attitudes of others. Empathy allows an IT professional to understand clients and end users' problems. Empathy facilitates teamwork, collaboration, problem resolution and learning (Denning, 2012).

The eighteenth skill is flexibility. IT professionals also must have the ability to be flexible (Aasheim et al., 2012; Muzio et al., 2007; Sukhoo et al., 2013). Having the skills to modify and integrate change lead to success for IT professionals (Muzio et al., 2007). Flexibility in using various IT platforms has also been shown to increase learning (Gorra & Finlay, 2009).

The nineteenth skill is the ability to frame and reframe information to make decisions. Framing is how information is presented to the decision maker (Tversky & Kahneman, 1981). The combination of information and framing will impact risk attitudes, escalation of commitment, and negotiation (Bazerman, 1984; Bolman & Deal, 2007; Davidson, 2002; Jain & Thietart, 2013). The ability to reframe allows an IT professional to fit multiple mental models to a problem thus allowing for better understanding and working with others (Bolman & Deal, 2007; Hagen & Bouchard, 2015). Davidson (2002) conducted a case study to exam how IT professionals frames impacted Information System Delivery Processes. Davidson found that social construction (the influence of others) helped the participants explore requirements for and influence their understanding of a project.

The twentieth skill IT professionals must have is the ability to set and achieve goals (Kleinsmann et al., 2012; Muzio et al, 2007; Wagner, Beimborn & Weitzel, 2014). Goals should specific, measureable and time oriented objectives. IT goals and business resources must be aligned to achieve organizational goals (Wagner et al., 2014). Understanding of goals must be shared for successful completion of projects.

The twenty-first skill is impression management. Impression Management is the ability to create a favorable impression in the minds of others (Goffman, 1959). Vieira da Cunha (2013) completed an ethnographic study on performance records of a sales unit. Vieira da Cunha demonstrated how managers can create an "idealized version" of their accomplishments and that by doing so they attempt to impress others. "By doing so, leaders and managers turn information systems into store windows to show achievement upward instead of transparent windows to monitor compliance downward" (Vieira da Cunha, 2013, p. 723).

Positivity is the twenty-first skill. Being able to interact positively with others (interpersonal skills) is a highly valued skill for IT professionals (Aasheim, Shropshire, Li & Kadlec, 2012; Gallagher et al., 2010; Hagen & Bouchard, 2015; Keil et al., 2013; Muzio et al., 2007). In other literature reviews interpersonal skills were consistently rated as one of the top skills for IT professionals (Aasheim et al., 2012). Aasheim et al. (2012) in a survey also found that hiring managers looked for interpersonal skills more than previous experience.

IT professionals also must be able to manage knowledge. Knowledge management is the process of identification of new knowledge for the long-term performance and success of organization (Alavi & Leider, 2001; Arnett & Badrinarayanan, 2005; Hasanzadeh & Mahaleh, 2013; Kane et al., 2009; Kumar, 2014; Nie & Nakamori, 2007; Starbuck, 1992; Yang, Chen & Chau, 2014). Knowledge management requires the abilities to develop, disseminate and apply knowledge (Arnett & Badrinarayanan, 2005; Janz. & Prasarnphanich, 2003). "A knowledge management competence is tacit, complex, and firm-specific" allowing organizations to build relationships" (Janz & Prasarnphanich, 2003, p. 331). The ability to manage knowledge means it becomes more useful (van Lohuizen, 1986 as cited in Janz & Prasarnphanich, 2003). Success with knowledge management in an organization can increase value, create a competitive advantage and lead to better customer relationships (Hasanzadeh & Mahaleh, 2013; Janz & Prasarnphanich, 2003).

IT professionals must be able to reuse knowledge. Knowledge reuse is the ability to locate and use knowledge previously generated (Majchrzak, Cooper, & Neece, 2004; Markus, 2001; Petter & Randolph, 2009). Knowledge transfer involves the ability to recall information and the ability to recognize when the information is needed (Markus, 2001). Knowledge reuse is important for individuals working in teams virtually and in the same location (Markus, 2001). Majchrzak et al. (2004) conducted a study on the Jet Propulsion Laboratory for the California Institute of Technology managed by NASA. Majchrzak et al. (2004) found that knowledge reuse helped individuals to look at problems in new ways with different strategies resulting in more innovation.

IT professionals must be able to share and transfer knowledge. Knowledge Transfer is "the focused, unidirectional communication of knowledge between individuals, groups, or organizations such that the recipient of knowledge (a) has a cognitive understanding, (b) has the ability to apply the knowledge, or (c) applies the knowledge" (Paulin & Suneson, 2012;, p. 83). Knowledge transfer has also been discussed as the sharing of knowledge which includes

"the exchange of knowledge between and among individuals, and within and among teams, organizational units, and organizations" (Paulin & Suneson, 2012;, p. 83, p. 83). Argote and Ingram (2000) assert that interactions among people are the most difficult to transfer therefore organizations should work to transfer knowledge internally while preventing it from transferring externally to competitors to provide a competitive advantage. Argote and Ingram suggest this can be done by embedding knowledge in organization members, tools/technology and tasks.

IT professionals should possess leadership skills. Leadership is the ability to influence people so that they will strive willingly toward the achievement of group goals. (Aasheim et al., 2012; Evans, 2002; Gallagher et al, 2010; Gillard, 2009; Gorman, 2011; Feeny & Wilcocks, 1998; Kumar, 2014; Lonnof Schiff, 2013; Mason, 2013; Muzio et al., 2007; Stuart, 2015; Sukhoo et al., 2013; Trenner, 2013; Verma & Bedi, 2008). Leaders affect the motivation of team members and the competencies of a group (Kumar, 2014). Creative thinking is central to leadership and sets an environment for innovation (Kumar, 2014). Leadership is necessary for success in leading IT initiatives and projects (Gorman, 2011).

Professionals in IT should be able to monitor information. Monitoring is the ability to observe and track the quality of something consistently (Acker et al., 2011; Christ et al., 2012; Thankachan & George, 2011; Woodcock, Green & Starkey, 2011). Monitoring is used for employees, products, finances, customers and the web (Acker et al., 2011; Thankachan & George, 2011). Monitoring allows IT professionals to determine if systems are secure (Samadi et al., 2014).

IT professionals need to be able to network. Networking skills allow for the exchange of information or services amongst individuals, groups and organizations (Aasheim et al., 2012; Bernier, 2011; Burton et al., 2010; Mital & Sakar, 2011; Morgan, 2011). Networking provides a means of communication within an organization and to customers (Bernier, 2011).

IT professionals should be organized. Organizing skills require arranging or structuring information in a coherent manner (Aasheim et al., 2012; Evans, 2002; Keil et. al, 2013; Lonoff Schiff, 2013). IT professionals should be able to organize and manage multiple projects at the same time (Lonnof Schiff, 2013). Organizational skills can range from scheduling, prioritizing, and tracking projects and teams (Evans, 2002).

Employees in the IT sector must understand they are personally accountable for their actions and work. Personal accountability is honoring agreements, contracts and assigned responsibilities ("Code of Ethics",

1992; Muzio et. al., 2007). Personal accountability is being willing to answer for the consequences of one's choices and behavior. Weitzener, Abelson, Berners-Lee, Feigenbaum, Hendler & Sussman (2008) assert use of information should be "transparent so it is possible to determine whether a particular use is appropriate under a given set of rules and that the system enables individuals and institutions to be held accountable for misuse" (p. 84).

IT professionals need to possess planning skills. The ability to plan involves setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals (Acker et al., 2011; Evans, 2002; Gallagher et al., 2010; Keil et al., 2013; Muzio et al., 2007). Planning involves allocating time to individual tasks, and anticipating challenges that might arise and making contingency plans. "Regardless of the size of the project, the ability to identify and define tasks, track milestones, recognize when a project timeline is running into problems, and take appropriate action is crucial to ongoing success in a technical job" (Evans, 2002, p. 32).

The IT sector is filled with private information. IT professionals must understand how to protect privacy. Privacy is the ability to understand what information needs to be kept confidential. Weitzener et al. (2008) indicates that current privacy laws are too complex for most consumers to understand the long-term implications of agreeing to use of information. Therefore, IT professionals and organizations need to ensure that privacy is maintained through its technology and systems such as through transaction logs. IT professionals should ensure that access to private information is authenticated and authorized (Sahama, Kushniruk & Kuwata, 2013). As data breaches in security become more frequent, IT professionals need to monitor the use of information, especially personal information (Sahama, Kushniruk & Kuwata, 2013).

IT professionals must be problem solvers. Problem Solving is the ability to integrate information from several different sources in order to improve performance through the integration of multiple platforms, functions and technologies (McMurtrey et al., 2008; Hagen & Bouchard, 2015; Keil et. al, 2013; Kleinsmann et al., 2012; Lonoff Schiff, 2013; McKorkle & McKorkle, 2012; Turner, 2004; Verma & Bedi, 2008). Brand-Gruewe, Wopereis, & Vermetten (2005) discuss that people need to be taught problem-solving skills. Individuals need to be taught to define the problem, identify sources of credible information, find and process the information, and organize and present the information.

IT professionals should be professional. Professionalism is the ability to conduct oneself in a manner that promotes value and show respect (Aasheim et al., 2012; Hagen & Bouchard, 2015; Capel, 2011;

Evans, 2002; Keil et al., 2013; Lonnof Schiff, 2013; Tahat, Elian, Sawalha, & Al-Shaikh, 2014). Harshman, Gilsinian, Fisher & Yeager (2005) demonstrate how the Internet impacts perceptions of professionalism and ethics. They indicate that it makes the interactions between lay people and the profession more open to scrutiny and allows for easier access to guidelines for a profession.

IT professionals should be responsive to their clients. Responsiveness involves rapid response to others. Information technology professionals should respond quickly to requests for information and opportunities to converse (Acker et al., 2011; Woodcock et al., 2011). IT professionals should monitor discussion forums, answer emails, post information in a timely manner and be responsive to users paying particular attention to accuracy of information, timeliness of postings, and be responsive to users (Woldeab, 2004).

The ability to manage risk is also a necessary skill for IT professionals (Gallager et al., 2010; Keil et. al., 2013). IT professionals should gather necessary information to ascertain the risks to project success, prioritize risks and have a plan to reduce or eliminate risks (Samadi, Salman & Addas, 2014; Keil et al., 2013). An understanding of risk management also provides needed business knowledge that contributes to more effective security measures for an organization (Spears & Barki, 2010).

Self-management is the ability to prioritize and complete tasks to achieve goals in desired time frame (Joseph, et al., 2010; Muzio et al., 2007). An IT Professional should be self-motivated to achieve excellence and have high levels of self-awareness in order to maximize productivity (Joseph et al., 2010). Individuals with high self-management abilities who are high performers have a positive impact on other employees in task interdependent work since they do not procrastinate and complete their tasks on time (Joseph et al., 2010).

IT professionals should be able to shape information so that it is understandable. Shaping involves reorganizing and presenting information in a way that is meaningful, usable and maintainable (Majchrzak, Wagner & Yates, 2013; Yates, Wagner & Majchrzak, 2010). Shaping promotes knowledge reuse through improving the ability to integrate knowledge (Majchrzak et al., 2013). Shaping also positively affects perceptions of information (Majchrzak et al., 2013).

IT professionals should be able to develop social capital. Social Capital is the value of one's network of social connections that enable and encourage mutually advantageous social cooperation (Capel, 2011; Burton et al., 2010; Ellison, et al., 2007; Wagner et al., 2014). Magsamen-Conrad, Billotte-Verhoff &

Greene (2014) found that online social capital gained through online communications can increase one's sense of well-being, enhance networking and increase sharing of valuable information. Wagner et al. (2014) found that for IT professionals social capital fosters knowledge, trust and respect amongst workers.

Storytelling is the interest and ability to tell a good story (Gershon & Eick, 1995; Gershon & Page, 2001). Storytelling allows for visualization of information and can contain a vast quantity of information in a few words (Gershon & Page, 2001). Stories tend to be more compelling when relating information than just giving directions (Gershon & Page, 2001). An IT professional should be able to relay information simply to customers such as by giving a quick story of a previous incident and how it was solved.

Tagging involves the ability to classify things and information (Hathi, 2009). IT professionals should know how to use keywords or a descriptive phrase on web documents so that it can be more easily stored, sorted and searched (Churches, 2009; Gray, Parise & Iyer, 2011; Hathi, 2009).

IT pofessionals need to be able to work in teams. Teamwork involves the ability to cooperate with others to meet goals (McMurtrey et al., 2008; Evans, 2002; Keil et al, 2013; Mason, 2013; McKorkle & McKorkle, 2012; Muzio, et al., 2007; Sukhoo et al., 2013; Turner, 2004)

Most organizations are relying increasingly on teams to accomplish projects. This is particularly true in high-tech environments where the success of a project depends on the contribution of many individuals with varied expertise. The ability to work with team members with diverse backgrounds and communication styles is highly valued and rewarded in most environments. Being able to read the needs of the team as a whole and the needs of individual team members, and to adjust one's role to increase team effectiveness, is essential to the success of the team process (Evans, 2002, p. 32).

An IT professional must be able manage time at work. Time management is the ability to make effective use of time by quickly and effectively prioritizing multiple tasks within a quickly changing environment (Hafner, Oberst, & Stock, 2014; Keil et al, 2013, p. 408; Lear, 2011; Verma & Bedi, 2008; Sukhoo et al., 2013). Lear (2011) discusses how time management can be difficult for IT professionals because their job is often disrupted. Lear suggests that to increase productivity IT Professionals should ask for requests to be sent by email or a "trouble-ticket" request.

IT professionals need visual literacy skills. Visual Literacy is the ability to understand and produce visual messages (Avgerinou, 2007; Avgerinou &

Pettersson, 2011; Christ et al., 2012; Gershon & Page, 2001). Petterson (2010) discusses information design and visual literacy and states the main goal is clarity in communication. " In order to fulfil this goal all messages must be accurately designed, produced and distributed, and later correctly interpreted and understood by members of the intended audience" (Petterson, 2010, p. 168). Table 1 summarizes the non-technical skills needed for IT Professionals and lists their definitions.

Table 1 - Taxonomy of Non-Technical Skills

Skill	Definition
Active Listening	Communication that involves comprehending, giving feedback and confirming that a message was understood (Cavalier, et. al, 1995; Hagen & Bouchard, 2015).
Analytical	The ability to visualize and solve problems using data from multiple sources to make good decisions (Acker et al., 2011; Christ et al., 2012; Plaza, 2010; Rapoza, 2010; Seymour, 2013)
Business Knowledge	An understanding of the main functional areas of Accounting & Finance, Customer Service, Human Resources, Marketing & Sales, Production & Operations and Research & Development (Paul, 2013)
Collaboration	Involves work to achieve a common goal (Cress & Kimmerle, 2008).
Communication	The verbal and visual exchange of thoughts and ideas in a clear, concise and easily understandable manner (Aasheim et al., 2012).
Community building	Involves strengthening the relationships, connections and communications of individuals within a community (Fourneir & Lee, 2009).
Conflict Management	Conflict management is the ability to recognize and deal with disputes in a rational and effective way (Jiang et al., 2014)
Creativity	The creation or invention of novel, new or interesting ideas (Cooper, 2000, Hagen & Bouchard, 2015; Heilesen, 2010).
Credibility	The believability of the source and message (Xu, 2013).
Critical Thinking	"The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" ("Define Critical Thinking, 2015, para. 3).
Customer Focus	A commitment to customer satisfaction (Arnett & Badrinarayanan, 2005)
Data Mining/Insight	The ability to capture, mine, analyze and visualize data to make strategic business decisions (Cowan 2008; Hipperson, 2010).
Decision Making	The ability to analyze all aspects of a situation to gain insight to make a decision (Deans, 2012; Gorra & Finlay, 2009; Muzio et al., 2007).
Diversity	An understanding of, and appreciation for, diverse perspectives for the purpose of improving overall organizational outcomes (Hagen & Bouchard, 2015; Schachaf, 2008).
Editing	Preparing a document for presentation for publication and presentation. This includes improving accuracy, clarity and proofreading (Goktas & Demirel, 2012).
Engaging	The practices that reinforce members' escalating interaction with a community, organization or brand (Schau, Muniz & Arnould, 2009, p. 34).
Empathetic Outlook	The ability to perceive and relate to the feelings of others (Muzio, et al., 2007).
Flexibility	The ability to readily modify, respond to, and integrate change (Aasheim et al., 2012; Gorra & Finlay, 2009; Muzio et al., 2007).
Framing	Restructuring one's mental model to better understand problems and situations (Bolman & Deal, 2007; Hagen & Bouchard, 2015; Kleinsmann et al., 2012).
Goal Achievement	Setting and achieving specific, measureable and time oriented objectives (Kleinsmann et al., 2012; Muzio et al, 2007).
Impression Management	Creating a favorable impression in the minds of others related to the self, organization or brand (Goffman, 1959).
Interpersonal Skills	The ability to interact with others in a positive manner to build relationships, manage conflict and understand the psychology of other people (Hagen & Bouchard, 2015; Muzio et al., 2007; Keil, et al., 2013).
Knowledge Management	The use of intellectual capital to achieve goals (Arnett & Badrinarayanan, 2005; Hasanzadeh, & Mahaleh, 2013; Kane et al., 2009; Nie et al, 2007; Starbuck, 1992).
Knowledge Reuse	The ability to locate and use knowledge previously generated (Majchrzak, Cooper, & Neece, 2004; Markus, 2001; Petter & Randolph, 2009, p. 46).
Knowledge Transfer	Communicating "best practices" between the creator and recipient of the knowledge (Argote & Ingram, 2000; Paulin & Suneson, 2012; Petter & Randolph, 2009, p. 46).

Leadership	"The ability to organize and motivate people to accomplish goals while creating a sense of order and direction" (Muzio et al., 2007, p 33).
Monitoring	The ability to consistently track and understand something consistently over a period of time (Acker et al., 2011; Christ et al., 2012; Thankachan & George, 2011).
Networking	The exchange of information or services amongst individuals, groups and organizations (Aasheim et al., 2012; Bernier, 2011; Capel, 2011; Mital & Sakar, 2011).
Organizing	Arranging or structuring the information in a coherent manner. (Aasheim et al., 2012; Ellison et al. 2007; Keil et. al, 2013; Lonoff Schiff, 2013; Morgan, 2011).
Personal Accountability	The ability to be answerable for one's actions (Muzio et. al., 2007).
Planning	The process of setting goals, developing strategies, and outlining tasks and schedules to accomplish the goals. (Acker et al., 2011; Gallagher et al., 2010; Keil et al., 2013; Muzio et al., 2007).
Problem solving	"The ability to integrate information from several different sources in order to improve performance through the integration of multiple platforms, functions and technologies" (Hagen & Bouchard, 2015, p. 6).
Privacy	The ability to discern what information is confidential (Capel, 2011; Lager, 2006; Tufecki, 2008).
Professionalism	The qualities, skills, competence and behaviors expected of individuals belonging to any given profession (Hagen & Bouchard, 2015; Evans, 2002; Lonnof Schiff, 2013).
Responsiveness	Involves rapid response to customers and collaboration. Respond quickly to requests for information, and opportunities to converse (Acker et al., 2011; Woodcock et al., 2011).
Risk Management	The ability to identify, prioritize and deal with risk factors (Samadi et al., 2014).
Self-Management	The ability to prioritize and complete tasks to achieve goals in desired time frame (Joseph, et al., 2010; Muzio et al., 2007).
Shaping	"Entails reorganizing content, removing redundancies or inconsistencies, and making the content more meaningful usable, and maintainable" (Majchrzak et al., 2013 p. 457).
Social Capital	Having a network of social connections that exist between people, and their shared values and norms of behavior, which enable and encourage mutually advantageous social cooperation (Capel, 2011; Ellison, et al., 2007).
Storytelling	Understanding, appreciation and interest in telling a story (Gershon & Page, 2001).
Tagging	Using keywords or a descriptive phrase on web documents so that it can be more easily stored, sorted and searched (Churches, 2009; Gray et al., 2011; Hathi, 2009).
Teamwork	The ability to cooperate with others to meet goals (Evans, 2002; Keil et al, 2013; McKorkle & McKorkle, 2012; Muzio, et al., 2007)
Time Management	The ability to make effective use of time by quickly and effectively prioritizing multiple tasks within a quickly changing environment. (Keil et al, 2013, p. 408).
Visual Literacy	The ability to identify, organize, interpret and create visual information. (Avgerinou, 2007; Avgerinou & Pettersson, 2011; Christ et al., 2012; Gershon & Page, 2001)

Social Media Landscape of Information Technology Professionals

The landscape of social media can be categorized into various tools such as publication tools (blogs, wikis), sharing tools (video, pictures, music), discussing (Reddit, Quora), social networks (Facebook, LinkedIn), and social aggregation (Friendfeed, Socialstream!) (Cavazza 2008). In order for consumers to use social media tools, application and platforms must be developed. Applications and platforms are facilitators of content that help to distribute content via the web (Chapell, 2013; Rostlund, 2013). The applications and platforms specific to different social media categories will be discussed in Table 2.

Reviewing literature on social media use in IT the following 19 categories of different types content were discovered: Blogs, Bookmarking, Communities, Content Sharing, Crowdfunding, Customer Relation-

ship Management, Dashboards, Enterprise Resource Planning, Mashups, Mobile, Photosharing, Podcasting, Project Management, Question and Answer Sites, Social Media Monitoring and Analytics, Social Networking, Socialized News, Video Sharing and Wikis (Arazy & Gellatly, Bale, 2014; Cawthorne, 2011; Christ et al., 2012; Deans, 2012; Fieseler & Fleck, 2013; Gorra & Finlay, 2009; Gray et al., 2011; Harris, 2008; Heilesen, 2010; Lackie & Terrio, 2007; Sung-Min, 2012; Yakushigawa, Yanagimoto & Yoshioka, 2013). Several of these categories have a larger focus on Information Technology Professionals: Customer Relationship Management, Enterprise Resource Planning, Project Management and Social Media Monitoring and Analytics. While project management is a skill for IT professionals (Aasheim et al., 2012; Gallagher et al, 2010; Keil et. al, 2013) it is also a process/activity that requires multiple skills (LonoffSchiff, 2013; Muzio et al., 2007; Petter &

Randolph, 2009). Table 2 lists each category and the   skills needed for each social media application.

Table 2 – Social Media Categories and Required Skills

Categories	Skills
Blogs Blog platforms allow individuals and organizations to design and maintain a web log. ("My Onsite Tools", 2012)	Collaboration Communication Critical Thinking Creativity Editing Organizing Promoting Visual Literacy (Chau & Xu, 2012; Churches, 2009; Fieseler & Fleck, 2013; Goktas & Demirel, 2011; Reid & Gray, 2007).
Bookmarking Sites **Social Bookmarks** allow people to save, edit and share web documents. (Sakib, 2014)	Categorization Collaboration Credibility Social Networking Tagging (Churches, 2009; Gray, Hathi, 2009; Litt, 2013; Yakushigawa, Yanagimoto, & Yoshioka, 2013; Xu, 2013)
(Web) Communities A group of people organized around lifestyles, brands or interests. (Fournier & Lee, 2009)	Communication Diversity Engaging Knowledge Reuse Knowledge Transfer Organizing Promoting Social Capital Social Networking (Arnould & Paulus, 2010; Castronovo, & Huang, 2012; Churches, 2009; Gazan, 2009; Litt, 2013; Schau, Muniz & Arnold, 2009)
Content Sharing Sharing of content on the web which includes information, photographs, music and videos. (Cleary, 2015)	Analytical Communication Credibility Knowledge Management Knolwedge Reuse Knowledge Transfer Planning (Brenner, 2014)
Crowdfunding Raising small amounts of money from large numbers of people via the Internet. (Prive, 2012)	Community building Credibility Goal Setting Monitor Networking Visual Literacy (Bugg-Levine, Kogut, Kulatilaka, 2012; Smith, Cronley & Barr, 2012; Sung-Min, 2012)
Customer Relationship Management (CRM) Customer relationship management involves two components involves collecting and analyzing customer information to build long term relationships with customers that are mutually satisfying. (Bailey, Baines, Wilson & Clark, 2009; Castronovo & Huang, 2012).	Analytical Business Knowledge Collaboration Communication Customer Focus Data Mining Engaging Knowledge Management Privacy Responsiveness (Acker et al., 2011; Lager, 2006; Bolding et al., 2005; Hasanzadeh

	& Mahaleh, 2013; Woodcock et al., 2011).
Dashboards Organizes and presents social media information in a way that is easy to read and allows for managing profiles in one place. (Post, 2014).	Decision Making Monitoring Organizational Visual Literacy (Bremser & Wagner, 2013).
Enterprise Resource Planning Enterprise Resource Planning (ERP) uses multi-modal application software platforms that include important business processes such as accounting, financing, human resources, purchase, production, inventory, materials management, and order processing (Coyle, Langley, Novack & Gibson, 2013) • **Cloud based ERP combines** traditional ERP "with capabilities of social networking, mobile computing and scalable worldwide, multi-lingual software deployment. All in the cloud" (Gould, 2012, p. 26). • **Inventory Management -** The overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale. (Columbus, 2013; Gould, 2012)	Analytical Business Knowledge Collaboration Critical thinking Knowledge Management Knowledge Reuse Knowledge Transfer Personalizing Problem solving Strategic Planning Systems thinking (Coyle et al., 2013); Gould, 2012; Zhang, Zhang, Chen & Pan, 2014)

Mashups
 "Aggregating content from different online sources to create a new application or service" (Kenney, 2007, p. 39)
      .
	Communication
	 Critical thinking
	 Data mining
	 Knowledge
	   Management
	 Knowledge Reuse
	 Knowledge Transfer
	 Organizing
	 Problem solving
	 Social Capital
	 Time Management
	 (Churches, 2009; Harris, 2008; Lackie & Terrio, 2007; Meditskos & Bassililades, 2011)

Mobile Mobile Marketing "includes messaging, Wireless Application Protocol (WAP), and the mobile Internet, streaming media, and downloadable content". (Castronovo & Huang, 2012, p. 121).	Business Knowledge Creativity Monitoring Visual Literacy (Avgerinou & Pettersson, 2011; Christ et al., 2012, Poynter, 2011)
Photosharing Sharing through a series of pictures via the web. (Parker, 2013)	Creativity Decision Making Flexibility Tagging Visual Literacy (Avgerinou, 2009; Avgerinou & Pettersson, 2011; Christ et al, 2012; Ming, 2012)
Podcasting A digital audio or web file that can be downloaded from the Internet. (Clark, 2014)	Communication Creativity Engaging Storytelling Visual Literacy (Churches, 2009; Gorra & Finlay, 2009; Heilesen, 2010)
Project Management (process) Planning, directing, controlling resources to meet	Active Listening Analytical

the technical, cost and time constraints of the project. Includes project planning scheduling, collaboration, time tracking, analytics and reporting (Bugg-Levine et al., 2012; Gallagher, et al, 2010; Keil et al., 2013; Kleinsmann et al., 2012; Lonoff Schiff, 2013).	Business Knowledge Communication Conflict Management Critical thinking Data mining Diversity Empathetic Outlook Flexibility Framing Knowledge Management Knowledge Reuse Knowledge Transfer Leadership Organizing Personal Accountability Problem solving Project Management Professionalism Risk Management Teamwork Time Management (Churches, 2009; Gallagher et al., 2010; Hathi, 2009; Hawk et al., 2012; Hasanzadeh, & Mahaleh, 2013; Keil, et al., 2013; Kleinsmann et al., 2012; Lonoff Schiff, 2013; Majchrzak, Cooper, & Neece, 2004; Markus, 2001; Petter & Randolph, 2009; Starbuck, 1992)
Question and Answer Sites Internet sites for posing and answering questions. (Young, 2010)	Communication Problem solving Social Capital (Fieseler & Fleck, 2013; Gazan, 2009).
Social Media Monitoring and Analytics **Social Media Monitoring** listen to what the social web says and gather customer insights. Monitoring enables a qualitative understanding of social media such as what is said. **Social media analytics** looks at how much is said (quantitative). (Nierhoff, 2013) **Customer Insight -** consists of four categories: market predictions, segments, needs and opportunity analysis and customer value analysis (Bailey, Baines, Wilson & Clark, 2009; Cowan , 2008) **Content Analysis** – What information is being clicked on and shared? "research tools for unstructured content and rich media" (Cawthorne, 2011, para. 4).	Analytical Business Knowledge Communication Critical thinking Data mining Decision Making Knowledge Management Knowledge Reuse Knowledge Transfer Monitoring (Bailey, Baines, Wilson & Clark, 2006; Cowan, 2008; Hipperson, 2010; Poynter, 2011; Nierhoff, 2013; Seymour, 2013; Salampasis, Paltoglou, & Giachanou, 2014; Thankachan & George, 2012).
Social Networking Engaging in practices that focus on creating, enhancing and sustaining ties among brand community members (Schau, Muniz & Arnould, 2009, p. 34)	Collaboration Communication Critical thinking Professionalism Promotion Tagging Visual Literacy (Arnould & Paulus, 2010; Bernier, 2011; Chau & Xu, 2012; Ellison et al.,2007; Fournier & Lee, 2009; Hathi, 2009; Heller Baird & Parasnis, 2011; Hipperson, 2010; Kane et al., 2009; McKorkle & McKorkle, 2012; Mital & Sakar, 2011; Morgan, 2011)
Socialized News/News Aggregators User posted news on the web. (Erin, 2015)	Collaboration Communication Critical thinking (Hernandez, 2014)

Video Sharing	Creativity
Allows people or organizations to upload and share videos. (Chowdry, 2015)	Editing Visual Literacy (Avgerinou, 2007; Avgerinou & Pettersson, 2011; Christ et al., 2012; Gershon & Page, 2001)
Wikis Wikis are "a collaborative authoring tool that allows users to overwrite others' contributions" (Arazy & Gellatly, 2012, p 87)	Collaboration Communication Creativity Knowledge integration Shaping (Arazy & Gellatly,. 2012; Churches, 2009; Majchrzak, Wagner & Yates, 2013; Wagner & Bolloju, 2005; Yates, Wagner, & Majchrzak, 2010)

Personal Branding for IT Professionals

A significant non-technical skill that has become increasingly needed is personal branding (Harris & Rae, 2011). Personal branding is the process by which individuals market themselves to the public and reflects one's skills abilities and lifestyles (Gehl, 2011; Gunelius, 2010; Hearn, 2008; Labreque, Markus & Milne, 2011; Montoya & Vandehey, 2002; Morgan, 2011; Peters, 1997; Quast, 2013; Rampersad, 2010 & 2006; Shepherd, 2005; Vitberg, 2009). Professionals in any field need to understand that actions engaged in today can affect their future HR professionals use social network sites to screen for job candidates and inappropriate photos or negative comments about an organization can lead to not be hiring or dismissed (Finder, 2006; Roberts & Roach, 2009).

IT professionals need self-awareness in order to effectively personally brand themselves. Self-awareness involves and understanding what are your skills, abilities, knowledge, talent, personality, strengths, and weaknesses and what others see in you (Capel, 2011; Morgan, 2011; Vitberg, 2010). This personal assessment allows individuals to identify what makes them unique and communicate this to others (Gehl, 2011; Labreque et al., 2010). This information should be communicated on the web and at work in a consistent manner (Montoya & Vandehey, 2002; Shepherd, 2005). Individuals need to develop a personal branding statement that highlights their unique qualities (Morgan, 2011; Peters, 1997; Shepherd, 2005). The personal branding statement should highlight personal skills, knowledge and professional qualifications (Harris and Rae, 2011; Peters, 1997). A personal branding statement defines one's role as

an IT expert (Hernandez, 2013). "Network administrator with eight years of experience managing hardware and software, providing expert troubleshooting and problem resolution, and utilizing a diverse technical skill set to successfully manage shifting business priorities" (Hernandez, 2013, para. 9).

Individuals should be authentic and demonstrate their character both online and offline (Dutta, 2010; Gehl, 2011; Harris & Rae, 2011; Rampersad, 2001). To maintain a positive personal brand, IT professionals should be professional, interesting and responsive (Montoya & Vandehey, 2002; Rampersad, 2001). Personal branding requires profile management which is the ability to create and manage online profiles and consistently update them across the web (Paul, 2014; Vitberg, 2009).

Blogs, podcasts, Facebook, LinkedIn, Twitter and YouTube have been used as mediums for personal branding (Chen, 2013; Gehl, 2011; Greer & Ferguson, 2011; Harris & Rae, 2011; Hearn, 2008). An IT professional can also demonstrate knowledge and share experiences through presentations on YouTube, Vimeo or LinkedIn and on any platform an organization uses (Chen, 2013; Dutta, 2010; Schwabel, 2009).

The influence of one's personal brand can also be measured and it is important to monitor one's personal brand online (Dutta, 2010; Gehl, 2011; Gunelius, 2010). For instance Google Alert and Social Mention can track how frequently people or companies are searching for an individual. Naymz and Yazni are sites that can help manage a personal brand. Table 4 discusses the skills needed for personal branding and some of the application platforms associated with personal branding.

Table 3 - Personal Branding

Personal Branding in Social Media	Application Platform	Skills
Personal brand – is a perception in the mind of others you can help create and control that there is no one in the marketplace like you (Vitberg, 2009, p. 10).	There are multiple websites available to assist individuals in establishing a branded web presence and to control how you appear in search engines. (Mitchell, 2013) • About.Me • BrandYourself.com • Flavors.Me • Naymz Personal branding tools Tools • Blogs • Podcasts • Social Media • Social Networks • Videocasts • Wikis The most commonly used social networking sites for personal branding: • Facebook • Google + • LinkedIn • Ning • Twitter Analytic tools available for monitoring personal brand: (Royse, 2013) • GoogleAlerts – sends alerts based on keywords such as a name • Me on the Web (Google) – alerts when personal data is published online • NameChk – find if name is available on a social network • Social Mention – sends alerts based on keywords • Who's Talking? - Sends alerts based on keywords • Yasni – provide links about any individual.	Engaging Impression Management Monitoring Networking Positivity Professionalism Responsiveness Shaping Social Capital Storytelling (Ellison et al., 2007; Fieseler & Fleck, 2013; Gehl, 2011; Gunelius, 2010; Harris & Rae, 2011; Labreque et al., 2011, Mitchell, 2013; Montoya & Vandehey, 2009; Morgan, 2011; Peters, 2010; Rampersad, 2001 & 2006; Shepherd, 2005; Vitberg, 2009)

Implications for Research and Practice

This paper has provided the first review of literature on non-technical skills for IT professionals in the realm of social media delineating a taxonomy of those skills. The exhaustive list of references provides academics and practitioners with abundant resources. The paper has also provided a framework for viewing non-technical skills as they relate to applications and platforms that are frequently used for business. The discussion on business function relates what knowledge IT professionals should have in regards to Accounting & Finance, Customer Service, Human Resource, Marketing, Production and Operations, and Research and Development and what non-technical skills are required in each of these functions.

In a survey of 2400 CIOs, 87% indicated that they would be adding more IT staff in 2015 (Florentine, 2015). The survey indicated that competition is tough and companies would be willing to relocate IT employees. The CIOs indicated that they would be using social networking for recruiting and would place emphasis on education and training of employees (Florentine, 2015). It is therefore essential that academic institutions properly educate potential IT professionals. Understanding the necessary soft skills, requirements of business knowledge and platforms is critical to the development of curriculum.

IT curriculum needs to emphasize the importance of honesty and integrity in IT professionals. Instructors need to teach professional standards of conduct and ethics in classes and model these to students. Cases involving ethical behavior should be analyzed and discussed in classes. Professors should emphasize the constant need for learning in the IT field and that students embarking on their careers need to have openness to continuous learning (Aasheim et al., 2012).

Instructors also need to ensure that students are aware of the implications of their behavior on social media and how it can impact their future. The knowledge of the importance of online activities in one's career can bolster or end one's professional credibility or career. Professors should teach students how to assess their strengths and weaknesses so that IT students can emphasize these skills and abilities in interviews and in social media. Teaching students to build a resume that highlights abilities and showing them how to share knowledge and expertise on social networking sites such as LinkedIn can help advance one into the profession. Teaching students to manage impressions of their skills, abilities and experiences may improve their chances of being hired and can lead to better interactions with customers and with fellow employees.

Practitioners can use the framework for job recruitment, training and job assessment. The taxonomy can be used as a checklist in evaluating IT professionals. Organizations can also use the taxonomy and structures in tables 1, 2 and 3 for organizational development and training. Companies spend limited resources training new IT personnel, with the use of the taxonomy organizations can direct training at the critical skill sets. The paper also indicates when each skill is core to different applications and business functions allowing organizations and IT professionals the ability to interact effectively with employees in different functional areas. Coaching of soft skills has been found to improve job satisfaction, interactions with fellow employees, improved teamwork, increased commitment to the organization and decreased conflict (Trenner, 2013).

Finally, the development of non-technical skills in IT professionals will benefit clients. As IT professionals develop their abilities to empathize, communicate with customers, acquire diverse perspectives and collaborate, they will be able to better support the needs of customers. When 100 executives from 56 organizations were surveyed they indicated that coaching information system employees in leadership communication and customer focus resulted in decreased customer complaints and improved customer service (Trenner, 2013).

Future Research

This paper provides a solid foundation for future empirical work. Future research should involve studies to test which of the skills are most significant to the IT professional and the organization in the landscape of social media. This would allow for greater focus in training at academic institutions and in industry.

This review examined entry and mid-level IT professionals. A deeper look at the requirement for different skills for experts, mid-level and IT professionals would be beneficial. The findings from the experts Several of the articles reviewed focused specifically on IT project managers. Conducting surveys of IT project managers to see if they are in agreement with the skills needed for social media would be useful.

Several articles mentioned gender differences but these were not specifically addressed in this paper. Future research should examine gender differences in perceptions of required skills in social media. McMurtrey et al. found that for some skills women ranked the skill as being more important than men did. Examining how gender perceptions impact evaluation, job performance and development at an organization would be valuable.

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