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PREDICTING HIRING MANAGERS' INTENTIONS TO USE I.T. CERTIFICATION IN THE SELECTION PROCESS

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ABSTRACT

Individuals applying for jobs differ in terms of knowledge, skills, abilities and other characteristics, which challenges managers to assess the capabilities of candidates. Certification is used in some Information Technology fields to ensure that job candidates possess certain knowledge and proficiencies. This research investigates the factors that influence a given hiring manager's intention to use IT certification as part of employee selection. The researchers used the Theory of Planned Behavior to investigate relationships proposed in a grounded theory of the phenomenon. Data were collected through a paper-based survey from managers in the Carolinas concerning their intentions to hire in the next six months. Hierarchical regression was used to investigate relationships between constructs. Attitude and subjective norm are significantly correlated with intention while perceived behavioral control is not. Both affect (emotion) and cognition are significantly correlated with attitude. These findings add to our understanding of the usage of IT certification in hiring decisions and provide suggestions for future work.

Keywords: Employee Selection, Hiring, Theory of Planned Behavior, Certification, Behavioral Intention, Staffing

INTRODUCTION

Individuals differ in terms of their knowledge, skills, abilities, and other characteristics, which challenges managers to assess the capabilities of job candidates [53]. Consequently, organizations may use assessment methods such as interviews and testing in the hiring process. Testing is often used by hiring managers to assess the knowledge, skills, and abilities of job candidates [34].

Even though companies can create and administer their own tests to potential employees, legal issues, psychometric requirements and factors such as overall cost may lead employers to consider alternatives, such as the use of third-party certifications, in lieu of their own

testing to indicate adequate skill and knowledge levels [11]. Certification and licensure exams created by third-parties exist in many fields.

Hiring managers staffing IT positions often use certification as a selection tool. Over half the Chief Information Officers polled in a previous study indicated that they "would hire a person with a certification, even if they had no work experience. Some even said they would not hire anyone without a certification" [17]. A study of hiring managers from 685 companies both inside and outside the IT industry found that "IT companies viewed certifications at least as important as a bachelor's degree while non-IT companies placed certifications slightly below a bachelor's degree in importance" [40].

The value of certification is recognized by many professions. Over 2,500 certifications are offered across all industries including IT [26]. Though no organization tracks the total number of obtainable IT certifications, it is estimated that as many as 450 are either in place or under development [12]. Worldwide spending in Information Technology (IT) certification was estimated to reach \$4 billion in 2003 [15].

Both IT certification and testing are used to screen out unqualified individuals and to help distinguish among otherwise similarly qualified candidates and their use can help companies save time, money, and resources. A grounded theory study [38] identified managers' reasons for using IT certification in hiring as well as many beliefs regarding outcomes. The study proposed, but did not test, relationships among its constructs. This research investigates some of those relationships using the Theory of Planned Behavior (TPB) [4], mapping categories onto constructs such as outcome beliefs, referent groups, and control beliefs. We also analyze the influences of affect and cognition on attitude. Based upon previous research, it is anticipated that affect will play an important role in influencing managers' attitudes towards using certification in the hiring process.

BACKGROUND

IT certifications enable managers to evaluate applicants without resorting to more time-consuming techniques such as personal interviews [11]. As well as speeding up the evaluation of applications, using certification reduces the difficulty of validating claims of expertise by job seekers. Managers may look for IT certifications to ensure that job candidates possess at least a base level of knowledge [38].

We use the theory of planned behavior (TPB) [4] to test the relationships among some constructs identified in previous research. The TPB extends the theory of reasoned action (TRA) [6], including perceived behavioral control to help predict behaviors under incomplete volitional control. Such performance may depend on availability of opportunities and resources, including time, money, skills, and cooperation of others [4].

TPB has been used to predict behavior and to estimate the relative influences of attitude, norms, and control in various fields. These studies have included issues such as smoking, drinking alcohol, hunting, completing high school, choosing a career, using a condom, and eating low-fat food [2, 9, 39, 60]. TPB has also been used to predict intention in studies of Information Technology use [16, 21, 37]. In this study, the behavior is using IT certification in the hiring process in the next six months.

According to the TPB, a person's intention to perform the behavior in question is stronger when attitude and subjective norm are more favorable and perceived behavioral control is greater [23].

Attitude toward the behavior is the degree to which a person has a favorable or unfavorable evaluation of the behavior in question [4]. In this study, the behavior is using IT certification in the hiring process in the next six months.

Hypothesis 1: Attitude toward the behavior is significantly and positively correlated with intent to use IT certification in the hiring process.

Subjective norm refers to the person's perception of the social pressures to perform or not perform the behavior [4].

Hypothesis 2: Subjective norm is significantly and positively correlated with intent to use IT certification in the hiring process.

Perceived behavioral control refers to the perceived ease or difficulty of performing the behavior [4]. It is derived from Bandura's [13] concept of self-efficacy – "the conviction that one can successfully execute (a given) behavior" [25].

Hypothesis 3: Perceived behavioral control is significantly and positively correlated with intent to use IT certification in the hiring process.

TPB's constructs may not be sufficient to fully explain people's intentions and actions [19]. The amount of explained variance in intentions has been increased in some previous studies by adding other predictors. For example, personal moral obligation, an individual's personal beliefs about right and wrong [54], improves prediction when taken into account along with attitude and subjective norms [32, 49, 66]. Some researchers have also claimed that past behavior, or habit, is not accounted for in TPB [14, 62].

As well, attitude may be better explained if we consider its affective and cognitive aspects [2, 45, 46, 48, 65]. Affect is based upon emotions or feelings, while cognition is based upon beliefs. Some attitude researchers have argued that a distinction should be made between evaluations based on affective responses to an attitude object as opposed to cognitive responses [65].

Despite that "it has been found that individuals differ in their reliance on cognition versus affect as determinants of attitude, and that the two components also take

on different degrees of importance for different attitude objects” [2], TPB use has dedicated minimal attention to the role of emotion or affect in the prediction of intentions [5]. Ajzen calls for attitude measures that contain items representing both the instrumental (such as desirable/undesirable or valuable/worthless) and experiential (such as pleasant/unpleasant or interesting/boring) sub-components of attitude toward a behavior. A previous study on the use of certifications in IT hiring decisions [38] provides evidence that both affect and cognition are factors in determining managers’ attitudes but did not determine their relative influences on attitude.

This study will separate affective evaluations from behavioral beliefs as suggested by Manstead and Parker [46]. Previous studies on affect and cognition have found that they are positively correlated with attitude [45]. However, the relative effect and the significance of affect and cognition may vary depending upon the behavior. For example, a marketing-related study of approximately 23,000 responses to 240 advertising messages found that affect does a better job than cognition in predicting attitude. Haddock and Zanna [36] studied whether individuals differ in the extent to which they rely upon affective and cognitive information in structuring their attitudes.

The researchers categorized individuals into two groups: Thinkers (cognition-based) and feelers (affect-based). They found that “thinkers” would be more likely to base their attitude toward capital punishment upon cognitive information, and “feelers” would be more inclined to base their attitude toward capital punishment on affective information [2, 35, 36].

In the case of the use of IT certification in the hiring process, results of the previous study lead us to expect that both affect and cognition will be positively related to attitude.

Hypothesis 4: Cognition is significantly and positively correlated with attitude regarding using IT certification in the hiring process.

Hypothesis 5: Affect is significantly and positively correlated with attitude regarding using IT certification in the hiring process.

Figure 1 illustrates the relationships between the constructs and the hypotheses that will be tested in this research.

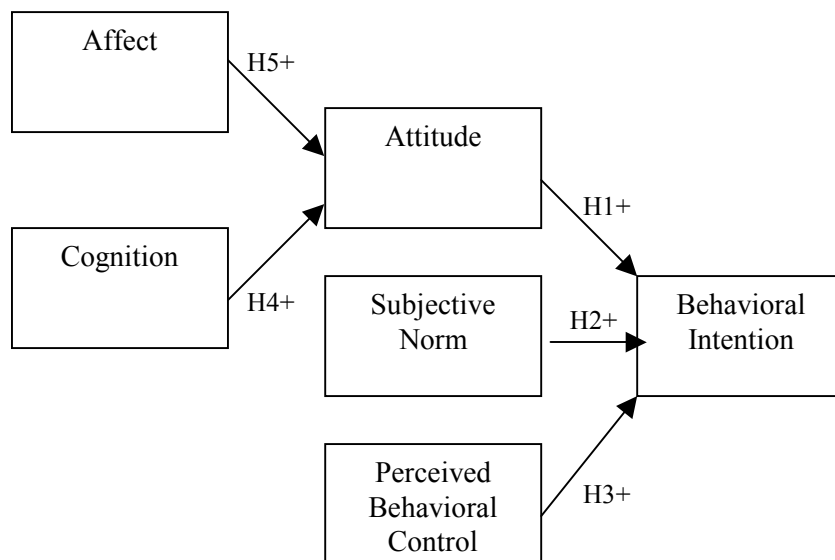


Figure 1: Model of Managers’ Intention to Use IT Certification in Hiring Decisions

The model in Figure 1 implies that the attitude construct mediates the relationship between affect and behavioral intention, suggesting these hypotheses:

Hypothesis 6: Attitude fully mediates the relationship between affect and behavioral intention.

Hypothesis 7: The indirect effect of affect on behavioral intention via the mediator (attitude) is significantly different from zero.

Mediation means that the effect of an independent variable (in this case, affect) on a dependent variable (in this case, behavioral intention) may be mediated by an intervening variable (attitude), and the independent variable may still affect the dependent variable. Full mediation occurs when the independent variable no longer affects the dependent variable after the mediating variable has been controlled [41].

METHOD

Measures

The survey instrument, provided in the Appendix, consists of 43 questions and several background and demographic items. Many measures for this study are derived from Ajzen's suggestions for constructing a TPB questionnaire and from examples he provided in a sample instrument [3].

Outcome beliefs and evaluations (Cognition)

Outcome belief measures were based on findings from a grounded theory study (Hunsinger and Smith 2004) dealing with managers' perceptions of using IT certification in the hiring process. Respondents were asked to rate ten statements on a seven-point scale ranging from Strongly Disagree (-3) to Strongly Agree (+3). Participants also indicated the *outcome evaluation* for each statement on a Likert-type scale ranging from Very Undesirable (1) to Very Desirable (7). The cognition measure was computed by multiplying the likelihood rating for each outcome by its outcome evaluation and summing the products over the ten outcomes.

No assumption was made about consistency of accessible beliefs; therefore, Cronbach's alpha was not computed. However, as recommended by Ajzen, temporal stability (test-retest reliability) was tested [1].

Affect

Affect was measured using four previously validated measures [20, 56]. Participants indicated responses on a five-point Likert-type scale ranging from 1 to 5. Affect was computed by averaging the responses from each participant. Cronbach's alpha was .929, which well ex-

ceeds the cutoff score of 0.7 recommended [51] to test construct validity.

Direct Measure of Attitude

A direct measure of attitude toward using certification was computed using three statements validated in previous TRA and TPB studies that were found to exhibit high internal consistency [2, 4, 55, 63]. Hiring managers were asked to evaluate using IT certification in the hiring process within the next six months on three seven-point scales (+3 to -3) with endpoints labeled good—bad, positive—negative, and helpful—unhelpful. Cronbach's alpha was .965 for attitude.

Normative Beliefs and Motivation to Comply

To measure normative beliefs, participants rated their agreement or disagreement with four statements about the views of referent groups, such as the person's manager(s), using a seven-point scale ranging from -3 to +3. Referent groups were identified in a previous study (Hunsinger and Smith 2004). Respondents were also asked to rate their motivation to comply with the opinions of each referent group on a seven-point scale (+1 to +7). An indirect measure of subjective norm was calculated by multiplying each normative belief by the corresponding motivation to comply and summing the products across the four beliefs.

Cronbach's alpha for motivation to comply, .872, is acceptable [51]. Temporal stability (test-retest reliability) is used to assess the stability of the normative beliefs as recommended by Ajzen (Ajzen 2001).

Perceived Control and Degree of Facilitation

Three statements were used to measure the strength of the respondent's control beliefs; three related statements were used to compute the perceived degree of facilitation of these beliefs. Beliefs were rated on a scale ranging from Strongly Agree (+3) to Strongly Disagree (-3), while perceived degree of facilitation was rated using the same terms using ratings from 1 to 7. Perceived behavioral control was calculated by multiplying each control belief by the corresponding perceived degree of facilitation and adding the products across the three beliefs. Cronbach's alpha for perceived behavioral control was .926.

Behavioral Intention

Two previously validated items were used to measure each respondent's intention to use certification in the hiring process for a particular position in the next six

months [4, 6]. Respondents rated intention on a seven-point bi-polar scale ranging from -3 to +3. Cronbach's alpha was .897 for behavioral intention.

DATA COLLECTION

Approximately 175 hiring managers located mostly in North and South Carolina in the United States were asked to participate in this pilot study. One of the authors distributed approximately 65 surveys and self-addressed stamped envelopes to Greenville, South Carolina Area Personnel Association (a chapter of the Society for Human Resource Management) members attending a meeting in October 2004, explaining the purpose of the survey to each member as materials were handed out. About 110 additional requests were emailed or faxed to other hiring managers in the Carolinas. Responses came via post, fax, or e-mail during October 2004. Incomplete questionnaires were discarded for the data analysis.

Thirty-three useable responses were returned, a response rate of 18.9%. The resulting sample size is similar to those used in previous pilots reported in Ajzen and Fishbein (1980, p. 105, p. 120). The participants work in a range of industries, including manufacturing, retail sales, healthcare, banking, utilities, education, and the military. Small, medium, and large companies in various sized cities are represented.

Twenty respondents agreed to participate in a follow-up study two weeks later to measure the temporal stability of the instrument; 18 of these respondents (90%)

participated. The order of questions was modified in this follow-up study.

Data were entered into Microsoft Excel 2003 on a Windows XP machine for initial calculations, then imported into SPSS 12.0.2 for hierarchical regression analysis.

Verification of Assumptions for Hierarchical Regression

Previous studies relating to Information Technology which tested TRA or TPB have often used either hierarchical regression [16, 22, 37] or structural equation modeling (SEM). Hierarchical regression is used in this study since it allows us to specify the order of entry of the variables based upon theory and previous studies. In addition, hierarchical regression allows us to observe the change in R^2 as each independent variable is entered into the model. This allows us to determine whether additional variables are significant when entered into the equation.

Assumptions of normality, homoscedasticity, linearity, and independence were verified before data analysis using scatterplots and the Shapiro-Wilk test. Results of the Durbin-Watson test ($d=2.29$) for autocorrelation fall within the range 1.5 – 2.5 recommended by Tabachnick and Fidell (2000).

Table 1 displays the correlation matrix for the constructs. The tolerance for each variable was also computed in SPSS 12.0.2. Since all correlations shown in Table 1 are below .90 and tolerance (not shown in Table 1) is greater than .20 for all variables, multicollinearity does not present a problem [29].

Table 1: Correlation Matrix

	Intention	Attitude	SN	PBC	Cognition	Affect
Intention	1.000					
Attitude	.782**	1.000				
SN	.682**	.426*	1.000			
PBC	.538**	.382*	.380*	1.000		
Cognition	.752**	.845**	.618**	.351*	1.000	
Affect	.731**	.821**	.467**	.432*	.777**	1.000

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

* Correlation is significant at the 0.05 level (2-tailed)

When using hierarchical regression, assumptions based on theory and research determine when terms should be entered into the model [59]. As each term or terms is entered, the change in R^2 is calculated and it is determined whether each change is significantly different from zero [59]. We followed the suggestion of Ajzen and Madden [7] regarding order of entry of variables and entered attitude into the equation first, followed by subjective norm then perceived behavioral control. Intention was the dependent variable.

RESULTS

The results of the initial hierarchical regression analysis are provided in Table 2, which shows that the theory of reasoned action constructs (attitude and subjective norm) are significant while the additional theory of planned behavior construct (perceived behavioral control) is not significant.

Table 2: Hierarchical Regression Analysis using Attitude, SN, and PBC

Step	IV	R ²	Chg. in R ²	β	P
1	Attitude	.611	.611	.782	***
2	Attitude Subjective Norm	.760	.149	.600 .426	*** ***
3	Attitude Subjective Norm Perceived Behavioral Control	.787	.027	.551 .377 .184	*** *** n.s.

p<.05 **p<.01 ***p<.001 n.s. = not significant
(Dependent Variable is *Intention*)

PBC was measured by asking participants to rate whether they believed they had the: 1) authorization, 2) knowledge, 3) resources to use IT certification to hire a job applicant in the next six months. Even though many of the participants in this study reported to a manager, it seems that they were authorized to decide whom to hire.

Based upon the analysis of the demographic data provided by the participants, 75% indicated that they were very familiar or somewhat familiar with IT certification in the area in which he/she plans to hire. Only 3% were somewhat unfamiliar with IT certification in the respective area while none were “very unfamiliar”, suggesting

that the respondents possess sufficient knowledge of IT certifications to make an informed hiring decision.

Since this study also examines the roles of affect and cognition as they relate to attitude, a second hierarchical regression analysis is performed. Attitude serves as the dependent variable, with cognition entered into the equation as the first independent variable, followed by affect. Affect is entered last since it is not traditionally measured in TRA and TPB. The results of the second hierarchical regression analysis, illustrated in Table 3, show that both Cognition and Affect are significant.

Table 3: Hierarchical Regression Analysis using Cognition and Affect

Step	IV	R ²	Chg. in R ²	β	p
1	Cognition	.714	.714	.845	***
2	Cognition Affect	.782	.068	.523 .415	** *

*p<.05 **p<.01 ***p<.001 n.s. = not significant
(Dependent Variable is *Attitude*)

Hypothesis 1 is supported. The correlation between attitude and intention = +.782. Attitude was entered first into the regression equation and explained 61.1% of the variance in intention. We conclude therefore that ***attitude is significantly and positively correlated with intent to use IT certification in the hiring process.***

Hypothesis 2 is supported. The correlation between subjective norm and intention = +.682. Subjective norm was entered second into the regression equation and the total variance in intentions explained increased to 76.0%. Attitude ($\beta = .600$; $p < .001$) and subjective norm ($\beta = .426$; $p < .001$) each contributed significantly to the equation. We conclude therefore that ***subjective norm is significantly and positively correlated with intent to use IT certification in the hiring process.***

Hypothesis 3 is supported. The correlation between perceived behavioral control and intention = +.538. Perceived behavioral control was entered third into the regression equation and the total variance in intentions explained increased to 78.7%. Attitude ($\beta = .551$; $p < .001$) and subjective norm ($\beta = .377$; $p < .001$) remained significant in the equation; however, perceived behavioral control ($\beta = .184$) was not significant. We still conclude that ***perceived behavioral control is significantly and positively correlated with intent to use IT certification in the hiring process,*** but perceived behavioral control does not play a significant role in the equation.

Hypothesis 4 is supported. The correlation between cognition and attitude = +.845. Cognition was entered first into the regression equation and explained 71.4% of the variance in attitude. We conclude therefore that ***cognition is significantly and positively correlated with attitude regarding using IT certification in the hiring process.***

Hypothesis 5 is supported. The correlation between affect and attitude = +.821. Affect was entered second into the regression equation and the total variance in intentions explained increased to 78.2%. Cognition ($\beta = .523$; $p < .01$) and affect ($\beta = .415$; $p < .05$) each contributed significantly to the equation. We conclude therefore that ***affect is significantly and positively correlated with attitude regarding using IT certification in the hiring process.***

Hypothesis 6 is supported. The four step approach proposed by Baron and Kenny (1986) to test for mediation was conducted. The effect of attitude remained significant after controlling for affect ($t = 2.885$, $p < .01$). Affect is no longer significant ($t = 1.423$, $p > .05$) when attitude is controlled. Therefore, ***the effect of affect on intention is fully mediated by attitude.***

Hypothesis 7 is supported. The regression coefficient for the indirect effect represents the change in be-

havioral intention for every unit change in affect that is mediated by attitude. The Sobel test [57] and an interactive calculation tool [50] were used to determine that ***the indirect effect of affect on intention via the mediator (attitude) is significantly different from zero*** ($t = 3.49$, $p < .001$).

In summary, the results suggest that the addition of perceived behavioral control does not significantly improve the ability of the TRA to predict managers' intention to use IT certification in employee selection. It is also shown that attitude fully mediates the relationship between affect and behavioral intention.

DISCUSSION

We were surprised to find that perceived behavioral control is not significant as suggested by the Theory of Planned Behavior. Meta-analyses have discovered that, on average, perceived behavioral control explains a significant increase of an additional six percent of the variance in intentions [5, 10]. Since this study examines *hiring managers'* intentions, it is possible that these managers possess higher volitional control than other subgroups. Even though some of the respondents report to higher managers, they still have the authority to hire. We anticipated that some managers may not have sufficient knowledge about IT certification to use it in the hiring process. However, only seven respondents did not believe they possess sufficient knowledge. In the end, given the characteristics of the sample, there may simply have not been enough variance in this measure.

Affect's significant influence on attitude is illustrated by respondents' emotional comments, positive and negative, about the role of certification in the employee selection process. For example:

"One of the things I really like about certification...it gives you a baseline that says that this person..."

"Certification is a good thing, it's a great thing!"

"...for the CCNA they have to configure a virtual router. That just rocks! That is totally the right thing to do."

"Most of the time, unless it's a specific skill I'm looking for that really no one else has, unless they have a [relevant] certification, I won't even talk to them."

“At this time, I am very anti-certification due to the fact that we have been burned by hiring a ‘paper engineer’ who actually could not identify real networking equipment...and could not resolve simple networking issues.”

“It was too easy to get certified during the dot-com bubble...the IT job market was diluted with so-called engineers and lowered the respect that IT certifications once had. That respect is slowly coming back though.”

Respondents seemed to feel strongly about the role of certification in the employee selection process. Future researchers using a larger sample may wish to examine affect and cognition to determine which exerts the prevalent influence on attitude depending on the respondent’s background. The expectancy-value model in the theory of reasoned action and theory of planned behavior assumes that affect and cognition play equal roles in determining attitudes. However, affect is shown to have a stronger influence on attitude than cognition in studies in which affect and cognition are oppositely valenced [45].

Previous studies suggested that IT certification is more important in the hiring process for lower-level positions than for higher-level jobs [58, 61]. Our survey instructions did not specify the level or the area of the posi-

tion the manager would describe. Nevertheless, to our surprise, only 13% of respondents chose to describe an entry-level position. 59% describe a mid-level position and 22% an upper-level position. We expected that managers would choose to describe more entry-level positions. However, managers intended to use certification in the hiring process for mid-level and even some high level positions. Several managers (6%) even indicated that they planned to use certification in the hiring process to select job candidates for a *managerial* position.

Table 4 shows the number of respondents who intended to hire a job candidate within the next six months, broken down into level of the position and IT field in which the employee would work. Forty percent of the respondents intended to hire a person for the networking field, followed by systems administration (24%), programming (24%), and database administration (8%). Since respondents were free to describe any position, that so many chose to describe networking may indicate support for the popular notion [18] that certification is very popular in networking, although it is not conclusive since we did not structure the questionnaire to answer this question. Future researchers, using a larger sample, may wish to determine how the relative significance of model constructs differ depending on the IT field or level of position for which the job candidate is being selected.

Table 4: Level of Position / IT Field for which Managers Plan to Hire

		LEVEL OF POSITION			
		Entry	Mid	Upper	Managerial
IT FIELD	Networking	2	4	4	0
	Database	0	1	1	0
	Programming	1	5	0	0
	System Administration	1	3	1	2
	TOTAL	4	13	6	2

Note: Data for respondents who did not indicate the level and/or field for which they were hiring are not included above.

The findings from this study are important to several stakeholder groups. For designers and promoters of certification, such as CompTIA, Microsoft, and Cisco, the results indicate that it is important to understand both what hiring managers *think* about certification (*cognition*) as well as how hiring managers *feel* about using certification (*affect*). Quotes gathered from respondents as well as the empirical analysis show that emotions (affect) play an important role in managers’ intentions to use IT certifica-

tion in the hiring process. Worldwide spending in IT certification was estimated to reach \$4 billion in 2003 [15]. The size of the certification market is expected to climb as much as 20 percent each year for the foreseeable future [61]. Better understanding the factors that influence the use and acceptance of certification would directly benefit this group.

For professionals thinking about pursuing IT certification, the findings verify that certification is used by

employers of various sizes across different IT fields such as networking, system administration, and database, and at multiple levels within companies. Approximately 6.5 million people in the United States hold some type of computer certification; that number may exceed 20 million by 2010 [61]. Managers have indicated that certification is sometimes used to differentiate between job candidates with similar levels of education and experience. Previous trade studies have indicated that certified employees make more money and bonuses than non-certified workers [27, 47, 52, 58, 61] and that certification helps IT employees earn promotions [24]. Other studies report that individuals often receive raises after obtaining certification [28, 30]. Some pay differences may be due to experience instead of certification [33], but the preference of some managers for certified employees to fill certain IT positions is clear. Future researchers may want to study why certain IT certifications are perceived more favorably than other certifications. This would help IT employees to determine which certification(s) they should pursue.

In addition to the areas noted above, researchers may also wish to further explore the usefulness of the theory of reasoned action and theory of planned behavior in explaining the phenomenon by using a greater sample size. Will perceived behavioral control be non-significant in larger studies? Does the field or level of position in which a job candidate is sought influence the significance of these factors? A larger geographical area could be used for future work as well as further study on the importance of certification to other stakeholder groups.

Other theories, including Task-Technology Fit [31] and the Unified Theory of Acceptance and Use of Technology [64], may provide additional insight about the use of IT certification in the employee selection process. Goodhue and Thompson (1995) link task-technology fit to the theory of planned behavior by holding that TTF influences expected outcomes, the cognitive aspect of attitude. UTAUT combines several theories, such as the theory of reasoned action, theory of planned behavior, and technology acceptance model, to explain user intentions to use information technology [64]. Other training and learning studies [8, 42-44] may also help explain the value of certification to managers and its importance to other groups of stakeholders.

CONCLUSION

These results can be used to better understand the use of IT certification in the employee selection process. Regarding intention, the influence of perceived behavioral control is less than that of attitude and subjective norm. This study provides evidence of the influence of affect on

attitude. Much previous research concerning the prediction of intentions has not explored the importance of emotions. The significance of affect as it relates to attitude, as well as the strong feelings expressed by several respondents toward the usage of certification, suggest the inclusion of affect in future research.

Studies producing a larger sample may benefit from the use of structural equation modeling to further explore the relationships among a model's variables. Researchers using a larger sample may also wish to investigate the influence of the level (entry, etc.) and field of the position (database, data communications, etc.) in the use of certifications during hiring. This study was limited primarily to respondents in North and South Carolina. Future studies could look at other geographical areas in the United States and even examine the role of certification in other countries. The importance of certification to other stakeholder groups, such as IT employees and IT vendors, could also be explored.

These findings are important to hiring managers as well as to other groups including future IT employees, training and higher learning institutions, and even IS professors. Having a better understanding of the role of IT certification in the employee selection process will help these groups make informed decisions about gaining, teaching, and recommending certifications in the future.

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APPENDIX: SURVEY INSTRUMENT

Dear Hiring Manager:

In order to better understand the role that IT certification plays in the hiring process, please complete this survey and return it in the enclosed self-addressed stamped envelope. **If another person in your company is more likely to hire an IT worker in the next 6 months, please forward this survey to him or her.**

Thank you very much for your assistance in this study. If you would like me to send you the results of the research, please email me at XXXXXXXX@XXXXXX.XXX.

Sincerely,

XXXXXXXXXXXXXXXX

BACKGROUND QUESTIONS: (Please circle the appropriate answer.)

1. Within the next six months, how likely are you to hire a new IT employee?

A. Very likely	B. Somewhat likely	C. Not sure	D. Somewhat unlikely	E. Very Unlikely
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2. For which IT field are you most likely to hire your NEXT new IT employee?

A. Networking or telecommunications	B. Database administration	C. Programming	D. Systems Administration	E. Other (please specify)
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3. For which level are you most likely to hire your NEXT new IT employee?

A. Entry-level / technical	B. Mid-level / technical	C. Upper-level / technical	D. Managerial
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4. Which IT certification(s), if any, would you most likely want your next new IT employee to hold?

A. Cisco Certified Network Associate (CCNA)	B. Network+ (CompTIA)	C. Cisco Certified Network Professional (CCNP)	D. Microsoft Certified Professional (MCP)	E. Microsoft Certified Systems Administrator (MCSA)
F. Microsoft Certified Systems Engineer (MCSE)	G. Microsoft Certified Solution Developer (MCSD)	H. Microsoft Certified Database Administrator (MCDBA)	I. Oracle Certified Professional – Database Administrator (OCP DBA)	J. Other (Please specify)

BASED UPON THE RESPONSES YOU GAVE ON THE PREVIOUS PAGE, PLEASE ANSWER THE FOLLOWING QUESTIONS RELATED TO THE **IT POSITION** IN WHICH YOU ARE MOST LIKELY TO MAKE YOUR NEXT HIRING DECISION.

PLEASE CIRCLE THE ANSWER YOU BELIEVE IS MOST APPROPRIATE FOR THE FOLLOWING STATEMENTS. PLEASE MARK ONLY ONE RESPONSE FOR EACH STATEMENT. THERE ARE NO WRONG ANSWERS.

Example: **During the summer, I enjoy...**

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
0.	going to the mountains	SA	A	AS	N	DS	D	SD

Using IT certification in the hiring process in the next six months...

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
1.	would enable me to save time and resources	SA	A	AS	N	DS	D	SD
2.	would make it easier for me to match applicants' skills with the department's needs	SA	A	AS	N	DS	D	SD
3.	would decrease the risk of making a poor hiring decision	SA	A	AS	N	DS	D	SD
4.	would result in the hiring of employees able to "hit the ground running."	SA	A	AS	N	DS	D	SD
5.	would ensure that job candidates possess at least a base level of knowledge.	SA	A	AS	N	DS	D	SD
6.	would, after hiring, give my department exposure to more resources such as technical support.	SA	A	AS	N	DS	D	SD
7.	would, after hiring, enable my department to receive discounted service level agreements.	SA	A	AS	N	DS	D	SD
8.	would help my organization comply with product warranty requirements.	SA	A	AS	N	DS	D	SD
9.	would, after hiring, help the department's equipment to run more efficiently.	SA	A	AS	N	DS	D	SD
10.	would, after hiring, result in more predictable training costs.	SA	A	AS	N	DS	D	SD

_____ think I should use IT certification for this position in the hiring process in the next six months.

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
11.	My managers	SA	A	AS	N	DS	D	SD
12.	My co-workers	SA	A	AS	N	DS	D	SD
13.	Other hiring managers	SA	A	AS	N	DS	D	SD

I _____ to use IT certification to hire a job applicant in the next six months.

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
14.	Have the authorization	SA	A	AS	N	DS	D	SD
15.	Have the knowledge	SA	A	AS	N	DS	D	SD
16.	Have the resources	SA	A	AS	N	DS	D	SD

_____ for this position in the hiring process in the next six months.

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
17.	I intend to use IT certification	SA	A	AS	N	DS	D	SD
18.	To the extent possible, I would use IT certification	SA	A	AS	N	DS	D	SD

Generally speaking, I do what _____ think I should do.

		Strongly Agree	Agree	Agree Somewhat	Neutral	Disagree Somewhat	Disagree	Strongly Disagree
19.	My managers	SA	A	AS	N	DS	D	SD
20.	My coworkers	SA	A	AS	N	DS	D	SD
21.	Other hiring managers	SA	A	AS	N	DS	D	SD

Please rate the following statements on a scale from Much Easier (7) to Much More Difficult (1).

Having the _____ to make the hiring decision would make it [much easier-----much more difficult] to use IT certification in the next six months as part of the hiring process for this position.

		Much Easier	Easier	Somewhat Easier	Neutral	Somewhat More Difficult	More Difficult	Much More Difficult
22.	Authorization	7	6	5	4	3	2	1
23.	Knowledge	7	6	5	4	3	2	1
24.	Resources	7	6	5	4	3	2	1

Please circle the appropriate answer for each question pertaining to the following statement:

“Using IT certification in the hiring process for this position in the next six months is a _____ idea.

25.	VERY GOOD	GOOD	SOMEWHAT GOOD	NEUTRAL	SOMEWHAT BAD	BAD	VERY BAD
26.	VERY POSITIVE	POSITIVE	SOMEWHAT POSITIVE	NEUTRAL	SOMEWHAT NEGATIVE	NEGATIVE	VERY NEGATIVE
27.	VERY HELPFUL	HELPFUL	SOMEWHAT HELPFUL	NEUTRAL	SOMEWHAT UNHELPFUL	UNHELPFUL	VERY UNHELPFUL

Please rate the following statements on a scale from Very Desirable (7) to Very Undesirable (1).

		Very Desirable	Desirable	Somewhat Desirable	Neutral	Somewhat Undesirable	Undesirable	Very Undesirable
28.	Saving time and resources is	7	6	5	4	3	2	1
29.	Easily matching applicants' skills with the department's needs is	7	6	5	4	3	2	1
30.	Decreasing the risk of making a poor hiring decision is	7	6	5	4	3	2	1
31.	Hiring employees who are able to "hit the ground running" is	7	6	5	4	3	2	1
32.	Ensuring that a job candidate possesses at least a base level of knowledge is	7	6	5	4	3	2	1
33.	Giving the department exposure to more resources such as technical support is	7	6	5	4	3	2	1
34.	Enabling my department to receive discounted service level agreements is	7	6	5	4	3	2	1
35.	Helping my organization comply with product warranty requirements is	7	6	5	4	3	2	1
36.	Helping the department's equipment to run more efficiently is	7	6	5	4	3	2	1
37.	Having more predictable training costs for the department is	7	6	5	4	3	2	1

Please circle the appropriate answer for each question pertaining to the following statement:

"I would _____ IT certification in the next six months as part of the hiring process for this position."

38.	LOVE USING	SOMEWHAT LOVE USING	NEUTRAL	SOMEWHAT HATE USING	HATE USING
39.	BE CALM USING	BE SOMEWHAT CALM USING	NEUTRAL	BE SOMEWHAT TENSE USING	BE TENSE USING
40.	BE EXCITED USING	BE SOMEWHAT EXCITED USING	NEUTRAL	BE SOMEWHAT BORED USING	BE BORED USING
41.	BE HAPPY USING	BE SOMEWHAT HAPPY USING	NEUTRAL	BE SOMEWHAT ANNOYED USING	BE ANNOYED USING

Finally, please answer the following questions to help me appropriately categorize your responses:

1. Approximately how many people are employed by your company?

A. Less than 25	B. Between 25 and 99	C. Between 100 and 999	D. Between 1,000 and 2,500	E. Over 2,500
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2. Which of the following best describes the industry in which your company is located?

A. Manufacturing	B. Retail & Wholesale Sales	C. Healthcare	D. Banking, Finance, Insurance	E. Utilities & Energy
F. Services	G. Education	H. Government or Military	I. Media or Communications	J. Other (please specify)

3. Approximately how many people live in the city where this position is located?

A. Less than 10,000	B. Between 10,000 and 49,999	C. Between 50,000 and 99,999	D. Between 100,000 and 500,000	E. Over 500,000
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4. How familiar are you with IT certifications in the area in which you are hiring?

A. Very familiar	B. Somewhat familiar	C. Neutral	D. Somewhat unfamiliar	E. Very unfamiliar
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5. Approximately how often have you previously used IT certification in the hiring process in the past three years?

A. Five or more times	B. Three or four times	C. Twice	D. Once	E. Never
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6. Which IT certification(s), if any, do you currently hold? Indicate all that apply.

A. Cisco Certified Network Associate (CCNA)	B. Network+ (CompTIA)	C. Cisco Certified Network Professional (CCNP)	D. Microsoft Certified Professional (MCP)	E. Microsoft Certified Systems Administrator (MCSA)
F. Microsoft Certified Systems Engineer (MCSE)	G. Microsoft Certified Solution Developer (MCSD)	H. Microsoft Certified Database Administrator (MCDBA)	I. Oracle Certified Professional – Database Administrator (OCP DBA)	J. Other (Please specify)

7. If you would be willing to participate in a short follow-up study in six months to find out whether you actually used IT certification in the hiring process, please provide your email address here:
