Relationship among Information Department' Technicians' Performance Influencing Factors in Taiwan Public and Private Colleges

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Abstract
The Information Technology (IT) departments in nearly every business unit play important roles. Managers must anticipate potential problems of key factors affecting performance. This study explores performance influencing factors and establishes a performance model for comparing performances of technician in Taiwanese public and private colleges (i.e., non-profit organizations vs. profit-making enterprises), respectively, along with the relationships among performance influencing factors. Results suggest that task-technology fit (TTF), core competencies, and professional involvement determine technicians’ performance along with technology characteristics. Technician’s motivation for achievement motivation and personality traits significantly affect the degree of job involvement and core competency.

1. Introduction
As e-business becomes a trend, many profit-making enterprises appropriately change to adapt to environmental or market changes [1]. Performance has the reputation of being an important management indicator to profit-making enterprises and non-profit organizations alike. An effective model for performance evaluation can also improve businesses’ overall operating efficiency and effectiveness by discovering ways to encourage employees with appropriate rewards and sanctions through review of reports for performance. By visiting regularly, managers can also evaluate employees’ performances [2]. Prior studies proposed different models for evaluating performance for various profit-making enterprises [2, 3, 4, 5, 7, 9], discussed the variety of factors which affect performance, and verified results for differing contexts. This study expects to assist managers’ understanding the factors that significantly impact performance in management contexts and the correlation of those factors.

2. Theoretical background
Job performance represents the individual’s behavior that meets expectations, provisions, and informal role requirements of the organization [6, 7, 8]. On the basis of existing literature, performance of tasks and the context of performance are effective and fair criteria to evaluate technicians’ performances [9, 48].

Prior studies often used the task-technology fit (TTF) theory to investigate individual job performance [10-14]. The theoretical model of the TTF theory proposed by Goodhue and Thompson [10] appears in Figure 1.

Figure 1. TTF model.

Evaluation of individuals’ job performances can occur by considering each construct in the TTF model, the classification of task and contextual performances [9], and implications reflected from previous scholars’ use of the TTF model. This study finally concludes that influential task- and contextual-oriented factors affect individuals’ job performances, as shown in Figure 2.
According to [21], job involvement constitutes an individual’s concentration on, or emotional commitment to, the position. Individuals, having higher degrees of involvement tend to be more willing and have greater commitment to effort, thereby leading to better job performance [33, 34, 44, 45, 46]. Various research widely used big five personality traits, that classification of personality traits varies in application among different cultural contexts [15-17], and have demonstrated consistency [18]. Moreover, personality traits affect the task-technology fit [5]. In addition, the first definition of achievement motivation, is a proposal of [19], who asserted achievement motivation to be one kind of demand, propelling individuals to overcome difficulties and complete tasks faster than others. The theory of achievement motivation asserts three internal needs: need for achievement, power, and affinity [20].

3. Research model and hypotheses

To achieve these purposes, a proposed research model draws concepts from the TTF model (Figure 3). The research model includes seven constructs, other than job performance: Task-technology fit (TTF), core competency (CC), job involvement (JI), job performance (JP), task characteristics (TC), technological characteristics (TEC), personality traits (PT), and motivation for achievement (AM). This study’s hypotheses are proposed based on related research on task characteristics and technology characteristics [10], related research on personality traits [16, 18, 22-26, 49, 51], research related to motivation to achieve [27, 28, 50, 52], research related to job involvement and core competency [29-36].

- H1: TC affects TTF.
- H2: TEC affects TTF.
- H1a: TTF affects TC.
- H2a: TTF affects TEC.
- H3: TTF affects JP.
- H4: PT positively affects degree of JI.
- H5: PT affects CC.
- H4a: The degree of JI affects PT.
- H5a: CC affects PT.
- H6: AM affects the degree of JI.
- H6b: The degree of JI affect AM.
- H7: AM affect CC.
- H7a: The CC will affect the AM.
- H8: The degree of JI affects JP.
- H9: CC affectse JP.

Then, this study develops a questionnaire by re-defining operational variables [53]. The questionnaire uses a seven-point Likert-type scale, ranging from disagree strongly to agree strongly. A pretest is carried out to ensure that the items for measurement in the questionnaire are consistent and stable. Distribution to this study’s participants, IT departments’ technicians in Taiwan’s public and private colleges occurred via email. Those technicians are, essentially, programmers. Finally, this study uses PLS to conduct CFA for the examination of convergent validity and discriminant validity of the research model. When conducting convergent validity analysis, considering CR and AVE values is necessary, and each must be greater than 0.5 and 0.6, respectively [37, 38].

4. Results

4.1. Descriptive statistical analysis

The study received 117 valid responses, and more valid questionnaires from male technicians, accounting for 65.8% of the overall sample. The age distribution of the majority of participants is 26 to 30 years old, accounting for 29.1% of the overall sample. Also, the level of education of the majority of participants is master’s degree, accounting for 50.4% of the overall sample. Seniority of 1 to 3 years of experience in a position accounts for the majority, 29%, of participants in the sample. Finally, the sample represents a majority from public colleges, 53%, of the overall sample.

Additionally, this study applied Harman’s one-factor test to insure correct analysis, and the result shows that the principal component cumulative explained variance is 27.88%, lower than 50%, so no significant CMV is present in this study.

As a result, for Hypothesis, H1: TC affects TTF, is not supported at the significance level 0.05. Due limitations on length, the results of analysis for convergent and discriminant validities do not appear, but do however, clearly represent the path diagram of
the theoretical model for public and private colleges, respectively. The differences between these two types of colleges are clear from the data, as well. The directivity between factors and the factors having an interrelated influence on individuals’ job performance in the public and private colleges appear in Figures 3 to 6, respectively (R means right, and L means left).

![Figure 3. Path diagram for public colleges (L → R)](image)

![Figure 4. Path diagram for public colleges (L ↔ R)](image)

![Figure 5. Path diagram for private colleges (L → R)](image)

![Figure 6. Path diagram for private colleges (L ↔ R)](image)

11. Results and discussion

Some scholars contended that the task-technology fit theory corresponds to employees’ perceptions of compatibility from new IT with tasks’ characteristics [39]. However, this study determines that software, in IT departments, remains in use for years and rarely changes. Highly non-routine and highly interdependent tasks, which handle system requirements, do not have clear definition and require personal communication and coordination. Whether or not technicians perceive IT as being able to assist these kinds of tasks is not obvious. Therefore, the hypothesis does not gain significant support.

When personality is more significant (i.e., degree of extraversion, conscientiousness, and openness is higher, and degree of disagreeableness and neuroticism is low), IT technicians exhibit positive attitudes, strong motivation to pursue performance, and willingness to invest effort in their occupations, and the degree of job involvement rises [22, 24]. As confronting novel situations or learning opportunities, technicians tend to display greater flexibility and willingness to accept new concepts and ideas to improve abilities [6, 40].

Technicians who have higher degrees of motivation for achievement believe that work has an important role in their lives, and tend to have more self-learning objectives and learning [41]. Moreover, technicians with high levels of motivation for achievement have equally high concern for their job performance, and consequently, have a greater willingness for, and more positive behavior toward enhancing abilities [42, 43]. Technicians with high degrees of job involvement tend to be more active and expend more effort on their professions, thus demonstrate better performance [44-46]. Also, the study of computer engineers found that technicians, alert to enriching knowledge have high levels of core competencies, thereby performing significantly at work [35, 47].
12. References


