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QUANTITATIVE RESEARCH INTO THE COMPETENCES OF INSTRUCTORS (CASE STUDY: TECHNICAL AND VOCATIONAL TRAINING ORGANIZATION, ISLAMIC REPUBLIC OF IRAN)

[1]Mojtaba Momeni Ghehi* and [2]Vahid Nasehi Far
[1]*Futurology Department, Shakhes Pajouh Institute, Isfehan, Iran*
[2]*Business Management Department, Allameh Tababaye University, Tehran, Iran*
*Author for Correspondence

ABSTRACT
Work-based learning is characterized by an emphasis on learning flexibility and personal learning. Work-based learning is assuredly successful when instructors, regarded as key players, possess certain forms of competence. In fact, competence means flexibility, uncertainty tolerance, and a positive attitude to change. Competence models describe certain characteristics which can be used at an organizational level in addition to determining competences and benefiting from individual traits. Such a model can be employed when a technical and vocational curriculum is designed and planned to meet the needs of labor markets for flexible and continuous training. Such a model can also help experts, organizations, and institutions to improve the professional quality of work-based learning provided by instructors to satisfy trainees. Therefore, this study aimed to introduce a model for the professional activities of instructors. The proposed model included specialties, knowledge, skills, and experience required by instructors to be successful in the work-based learning system.

Keywords: Quantitative Model, Instructor, Skill, Education System

INTRODUCTION
New trends in science and technology and the pressing needs of labor markets for capable and agile forces have shaken the foundations of previous approaches to the academic training of production forces. On the one hand, technological knowledge is progressing so fast that there is currently no ample opportunity for training academic forces appropriately and efficiently. On the other hand, such advances have made the external environment uncertain and unpredictable for organizations lacking competent and flexible forces. Therefore, organizations require certain training to prepare their workforce to be flexible, accountable, and competent in the shortest time possible. Nevertheless, the unique roles played by technical and vocational training in the competitiveness of knowledge have drawn the attention of many researchers and policymakers to regard them as a reliable solution for the market need. Researchers have mainly emphasized the necessity of technical and vocational training, especially in developing countries with an active population (Salehi Omran, 2008). Therefore, many countries have attempted to develop technical and vocational training such as Canada (1989), Germany (1996), Turkey (1986), and Iran in recent years. However, European Technical and Vocational Academy conducted a study to show a significant difference between the real world and technical and vocational training (Christina Velmari, quoted by Salehi Omran, 2012). Mehralizadeh *et al.* (2012), Khanifar *et al.* (2013), and Khavari and Gorzin (2015) carried out a few studies in Iran to indicate that technical and vocational training had completely failed despite many attempts. According to Khavari (2015), the effective components of technical and vocational training included the culture of adhocracy, decentralized structure or minimal formality, high-performance technology, and competences of human resources regarded as the competences of managers, employees, and instructors. In a paper, Salehi Omran (2013) analyzed the causes and effects of a management system at the Technical and Vocational Training Organization (TVTO) based on the three-branch model. As a result, a model emerged to include the competences of

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TVTO managers. According to Niro (2014), the competences of TVTO office workers included accountability towards applicants, flexibility in services, agility in services, and attempts made to blend in society. However, the competence model of instructors, used to evaluate teachers, include certain components leading to inefficiency. Hence, such a model has resulted in dissatisfaction.[1] Therefore, the absence of an inappropriate model for the professional competence of TVTO instructors has affected the evaluation system of instructors for one thing. In fact, the evaluation system will be accurate when all of their competences and skills are evaluated. Moreover, there is a significant difference between what instructors think about competences and the standard competences, a fact that drives instructors away from what they are doing and what they ought to do.

1. Competence

The competence approach was generally introduced by McClelland (1973) as a rational approach to evaluate and predict individual performance. According to McClelland, the most important advantages and applications of the competence approach in human resource management are as follows:

- The best way of observing what individuals perform successfully;
- The best way of evaluating and predicting performance;
- Competences are improved and learned over time. On the contrary to competences, innate and unchangeable characteristics emerge;
- Competences should be observable and available to people so that they can perceive and develop the expected level of performance;
- Competences should be associated with the purposive consequences of life. They should describe the procedure for performing professional tasks of people in the real world.

Lucia and Lipsinger (1999) explained the competence approach based on the employee real behavior and distinguished between outstanding employees and mediocre ones. The competence approach is used as an effective measurement instrument helping employees reach an agreement based on a common language in order to perceive what is known by the top or outstanding performance (Ozlik, 2006). Competence approaches bring about quick changes in the professional needs of individuals and result in constant changes (Timosi, 1999).

Researchers have analyzed professional competence in three different perspectives. The behavioral approach seeks to determine what competences will improve the work performance. The behavioral approach is a documented approach with a rich research background. Nevertheless, it is a retrospective approach with no guarantee as to the fact that previous competences are similar to competences required by organizations in the future. In the supreme competence model (Boyatzis, 1982), the interview of behavioral events was used for competence evaluation. In the superior management performance competence model, Schroeder (1989) employed the behavioral observation method for competence evaluation. The superior competence model of Dulewicz (1998) is based on the 360-degree evaluation. Considering the variety of evaluation methods in the behavioral approach, competences are classified as five classes including logical-rational competences, leadership and management competences, motivational-interactional competences, personal competences, and result-oriented and purposive competences. The standard approach emphasizes the output of a work process. It is associated with the definition of a minimum level of acceptable performance in a job. Such an approach seeks to identify the key roles and elements of a job, describe the accepted standards and criteria for work performance accurately, and finally answer the question what competences are required to achieve such standards. This approach focuses mainly on preliminary competences. It puts no emphasis on the high levels of

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[1] The researcher was the CEO of TVTO in Mazandaran in the research period when instructor dissatisfaction was observed clearly. Such dissatisfaction was also expressed by managers in the technical workgroups of different provinces.

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competence. The situational approach seeks to determine whether situational factors affect competences required for top performance. Morgan (1988), Gay and Chang (1997), Thompson, Lindsay, and Stuart (1996) concluded that situational factors such as organizational size and national constraints had certain effects on professional competences (Dehghanan, 2017).

2. Technical and Vocational Training

According to Montesquieu, education is a way of constructing a new community in terms of familiarity with latent situations and requirements. Having a sociological look, Dorkim considered education a social prerequisite. In other words, a modern community was impossible without education to Dorkim. Since Dorkim regarded the new community as a distinguished community in which professional groups dominated the social structure with purposeful organizations, social engineers were mainly responsible for educational engineering. Education seeks two goals: 1- conveying culture and socializing people (public education); 2- specialization by making people familiar with organizational jobs and goals (Azad Armaki, 2005, 25). Public and professional education is considered an important factor in human resources in developing countries. Public education produces unprofessional labor force; however, technical and vocational training produces specialized labor force. The former can be passed on from one job to another in the personal life, whereas the latter is not like that. Therefore, public education is very popular because it is more appropriate for the flexible labor force. It can change duties and even the type of work. However, technical and vocational training provides an opportunity for special and work-related skills to provide the labor force for a specific and creative profession. Hence, both of them are important. In many countries, education systems include both public and professional training in different areas (Bekiosre & Watanb, 2012). According to UNESCO, technical and vocational training is defined as a kind of training which deals with techniques, sciences, scientific skills, perceptive methods, and different socioeconomic professions in addition to general knowledge. Such training should meet the following three conditions:

A) They should be a part of public apprenticeship.
B) They should serve as an instrument to achieve a specific profession
C) They should be regarded as a part of long-term apprenticeship

This definition includes duties, responsibilities, and various components of technical and vocational training which can be supervised directly by the government in the implementation stage. They can also be implemented like other public and private training (Salehi, 2013).

The Technical and Vocational Training Organization, affiliated with the Ministry of Labor and Social Affairs, was established by merging three educational institutions in 2016 with the purpose of providing technical and vocational training. According to over 10 acts of Article 151 of the Third Development Plan approved in the Fourth Development Plan, the head of TVTO was in the office for a short period of time. The authority of the specialized committee for unofficial technical and vocational training starts educational activities in both governmental and non-governmental sectors with the membership of 16 ministries and organizations. In fact, TVTO is the most important applied skill center of Iran in relation to the International Labor Organization (ILA). It has a special position in the Islamic Republic of Iran's educational structure due to a legal responsibility. It has become a member of the Technical and Vocational Training Organization.

In the current economic and cultural conditions of Iran, it is essential to develop technical and vocational training in order to accelerate the production process. In fact, infrastructural investments, developed instruments and pieces of equipment, and physical capital are either left unused in the absence of human resources or not exploited economically and efficiently. Therefore, an education system for creating necessary skills of human resources would be the prerequisite for economic development. Accordingly, technical and vocational training is a mixture of sciences, techniques, and arts playing a major role in providing efficient human resources in a developmental context. The goal of such training is to increase

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knowledge, competence, and perceptive power of people with the purpose of performing jobs better in accordance with job descriptions.

Unemployment is an important problem worldwide. In developing countries, it has a greater impact on development due to the imbalance of economic, social, cultural, and political structures. Considering the fact that unemployment mainly the job seekers' lack of the skills required by the labor market, it is expected that the technical and vocational training organization can play a significant role in reducing unemployment by providing people with necessary skills to take the jobs. Such training provides both specialized skills required by industries and public skills required by the labor market. They also let employees improve and upgrade their skills if they face work insufficiency due to technological developments. Therefore, such training is regarded as necessary a instrument to cope with unemployment, especially structural unemployment caused by changes in the global economy (Ahmad Khani *et al.*, 2013). In fact, such training is characterized by fostering a kind of entrepreneur. In other words, trainees are able to obtain appropriate job opportunities or finally create such opportunities after receiving specialized technical knowledge and developing skills. Such training plays a significant socioeconomic role because it introduces an important type of investment in human resources. They help the economy develop by providing the groundwork for promoting knowledge, attitudes, and skills required by the labor market in different areas. Therefore, the work-orientation of technical and vocational training helps design and implement the process of learning through workplaces at training centers and coordinates the educational contents with changes and developments in technology and the economic function of society as a result. Such training is regarded as a key element to realize economic developments. They are also considered effective factors in the success of developed countries because theoretical education along with practice trains creative and active human resources, who will then employ a significant part of passive forces in society. Hence, if technical and vocational training is ignored in a country, education will directly be driven towards false employment and easy and unstable revenues, causing serious damage to the country gradually (Nemati, 2013). Thus, a top priority of education investments in every industrial society is to develop technical and vocational training. Developing countries are advised by the relevant international organizations such as UNESCO, UNIVAC, and the World Bank to regard the matter as an important strategy. On the other hand, making insufficient investments in technical and vocational training means ignoring and throwing away human capitals. It should be noted that correct technical and vocational training is one of the most important and viable solutions to unemployment.

Apart from the economic dimension, technical and vocational training has a significant role in sociocultural changes, especially in improvement on the development of work culture. Basically, this type of training and its operational implementation can act as a reformist to improve job opportunities and skills in order to have a major role. The relevant officials can eliminate constraints and make right plans for training used as the most important factor in instructing efficient entrepreneurs possessing a rich culture of ethics and work conscience. Like many other official and unofficial training institutes, the TVTO trains individuals in discipline, imitation, commitment, responsibility, and accountability in addition to sciences and skills. Therefore, the education system can change the social culture to effectively increase efficiency and productivity. The role of such training in sociocultural changes is considered very important for the following reasons: reducing unemployment; the international reputation of technical and vocational certificates; reducing social problems; helping preventing the youth from immigrating to big cities; decreasing the negative consequences of unemployment; educational renovation and restoration; empowering individuals to live a better life; improving mental health; increasing life expectancy, providing life opportunities; providing jobs and professions; improving social and human relationships; conveying social values and norms; and making individuals socially acceptable.

3. A Review of Previous Studies in Iran

In a study entitled *Analyzing the Professional Competences of Teachers to Explain Self-Strategy towards Student Learning,* Valik Bani and Abdolmaleki (2014) indicated that there was a positive and significant

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relationship between the professional competences of teachers and self-strategy towards student learning. They also showed that the professional competences of teachers had the greatest impact on learning activity and the smallest effect on learning strategy. In their study, the competences of teachers included value transfer, knowledge competences, teaching competences, concept transfer, general and personal competences, assessment competences, knowledge development competences, and strategy competences.

In another study entitled *Determining the Professional Competences of Teachers*, Talebi *et al.* (2013) indicated that the majority of teachers pointed out inability and lack of skills in psychological knowledge, evaluation of professional knowledge, methodological knowledge, and subject knowledge. However, the professional competences of most teachers related to teaching and implementing curricula. Hence, most of them do not possess scientific and specialized competences. Such an ignorance prevents teachers from participating in the process of curricular planning. Furthermore, all of the participants emphasized the necessity of increasing curricular knowledge and professional competences of teachers through teacher training curricula and workshops with the purpose of developing professions and motivating teachers. The center of such changes was the attention paid to the restoration of teaching training system and performance improvement regarded as the most important variable in improving the quality of education.

In a paper entitled *Analyzing the Professional Competences of Sports Instructors in Sanandaj County*, Pendari and Muhammadi (2012) identified and prioritized five components and 25 measures for teachers. The principal components of professional competences included competences of sports instructors (personality charisma, individual vitality, physical agility, and psychological competences), emotional and social competences (creating emotional relationships, being self-controlled and self-manageable, creating interpersonal relationships, trust, commitment, and loyalty), cognitive competences (possessing specialized knowledge in sports physiology and sports environment management), skill competences (doing specialized sports in at least two fields), and assessment competences for the evaluation of student sports skills (knowledge assessment, ability, and attitudes).

In a study entitled *Analyzing the Effects of ICDL Courses on Improvement in the Performance of Employees at the University of Tehran*, Jahanian (2011) concluded that there was a relationship between participation in ICDL courses and new competences of employees, i.e. accuracy, effectiveness, work speed, work rate, professional success, motivation, and enthusiasm.

In a paper entitled *a Comparative Analysis of Effects of In-Person and Distant Short-Term Training Courses on the Psychological Empowerment of Employees*, Nasti Zaei (2009) concluded that training was the necessary condition for the empowerment of employees. Accordingly, in-person short-term courses were more effective than distant short-term courses in the psychological empowerment of employees.

In another study entitled *Analyzing the Competences of Instructors of the First and Second Grades of Elementary Schools in Tehran*, Muhammadi *et al.* (2010) evaluated the competences of teachers to be well. They evaluated competences in the use of educational technology, semantic transfer knowledge, knowledge evaluation, and Islamic values transfer knowledge.

In a study entitled *the Relationship between Competences of Managers and Efficiency of Teaching Hospitals Affiliated with Tehran University of Medical Sciences*, Tabibi, Fathi, Riahi, and Yousefi Nejad (2010) concluded that the managers had the highest capability of teamwork; however, they had the lowest capability of human resource management.

In another study entitled *Analyzing the Current Assessment System for the Evaluation of Competences and Satisfaction of Elementary School Teachers from 2004 to 2007*, Ahmadi Pour *et al.* (2009) analyzed the current assessment system to evaluate competences and satisfaction of teachers with the aforesaid system. For this purpose, two research goals were analyzed: 1- determining teacher satisfaction (male and female) with the current assessment system; 2- determining the success rate of the current assessment system for competence evaluation in the eye of elementary school teachers. They employed the desk research method to answer the research questions. The statistical population included elementary school teachers working from 2004 to 2007. For information collection and data analysis, researchers used

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descriptive and inferential statistics. According to their findings, teacher satisfaction with the current assessment method was below average. To them, the success rate of the current assessment system of competence evaluation was below average, too.

Hatami (2010) analyzed the effectiveness of in-service training, administered by the human resources research office, to improve the performances of managers, faculty members, and employees at the Islamic Azad University of Marvdasht (District 1). According to the research results, in-service training increased the professional competences of human resources, increased discipline and accuracy, created attraction and interest in jobs, increased independence in duties, and solved work-related problems. Moreover, such training was one of the most important prerequisites for human resources coordination in an organization. The training also improved employee behavior by increasing their domain encounters.

In a study entitled *the Professional Competences of Teachers of Public Education: An Appropriate Perceptive Framework*, Niknami and Karimi (2007) analyzed the professional competences of general trainers in order to propose an appropriate framework with a descriptive survey. After reviewing the literature and research background, 8 principal components and 99 subcomponents were extracted. Accordingly, the first questionnaire was codified. The content validity of the questionnaire was confirmed by experts. The reliability of the questionnaire was calculated by measuring Cronbach's alpha (0.96). The statistical population included elementary and guidance school teachers (general education) in Isfahan. There were 6880 teachers, 400 of whom were selected by using the Krejcie-Morgan table and the relatively random sampling method. Data were analyzed at descriptive and inferential levels (factor analysis, t-dependent, t-independent, and one-sample t-test). The analysis ($P \leq 0.0001$) of the competences of teachers of general knowledge indicated that they were at higher levels in personal and ethical dimensions. However, they were at medium levels in educational, cognitive, and managerial dimensions. They showed poor levels at the components of technology, professional development, intellectual development, and teaching. After conducting the factor analysis, 9 principal components and 90 items were identified and renamed. According to the results of factor analysis, a perceptive framework was proposed for the competences of teachers. Educational experts confirmed the fitness degree of framework components at a mean of 4.63 out of 5.

Abedi (2003) conducted a study to analyze the ideal, official, and experienced levels of a teacher training curriculum. The necessary set of teaching abilities was classified as four general categories including attention attraction and preservation, lesson presentation, assessment, and class management. According to the results of teacher training courses (TTCs), teacher training books dealt briefly with only a small part of teaching abilities. Furthermore, TTC graduates showed poor performances in the key components of teaching. They could not implement the fundamental teaching abilities due to the poorly-codified curricular and other conditions.

Rezai (2004) evaluated the effects of in-service training courses on the professional performances of insurance employee. According to the research results, in-service training courses were regarded as the most important and best way of supplying and training human resources to improve employee performance at organizations. The study was a survey which indicated that employee training courses were greatly successful in achieving the goals set by Iran Insurance Training Center to train human resources required by companies and improve the knowledge, skills, and professional attitudes of employees in addition to their performances at the company.

In a study entitled *the Effectiveness of Short-Term Training Programs on the Knowledge and Performance of Education Managers*, Saki (1998) concluded that holding short-term management courses improved the professional knowledge in all three implementation methods. Nevertheless, there were certain differences in the effectiveness of different implementation methods. In-person training and semi-in-person training had the greatest levels of effectiveness, respectively.

Fazaeli (2004) carried out a study to analyze the effectiveness of in-service training for a higher education administrative course. Accordingly, the higher education administrative course brought about certain

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improvements in knowledge, attitudes, managerial skills, managerial duties, and organizational behaviors of the course graduates.

In a paper entitled *Designing a Model to Determine the Axial Organizational Competences in a Case Mining at Iran Khodro Company*, Hamidi Zadeh and Hussein Zadeh Shahri (2008) presented a model to identify the axial competences. According to their findings, the ability to design based on customer needs, adaptability, and development of purchased technologies were identified as the axial competences at Iran Khodro Company.

4. Research Findings

As discussed earlier, the components of competence models can bring about change and improvement after analyzing contents obtained through in-depth interviews. The interview items are affected by the following frameworks:

A) Theoretical and Technical Competences of Instructors: Such competences have been introduced by most of the models and studies conducted by Iranian and foreign researchers. Theoretical competences refer to the components used by instructors to produce, distribute, and promote knowledge by improving the personal area of knowledge and skill in obtaining science through papers, symposiums, or conferences. Such competences increase the logical or critical thinking frameworks resulting in skill-learning achievements for use in the learning process.

B) Educational Competences: This competency was dealt with by certain models and studies. It refers to the skills of knowledge presentation through educational technologies in addition to the attention paid to soft skills in the process of presenting education such as considering communications, facilitating the education process, regarding personal talents and differences, and dealing with innate, emotional, and spiritual intelligent quotas in the education process. This dimension also deals with the competences of teachers in student assessment.

C) Behavioral Competences and Professional Ethics: Undoubtedly, behavioral competences and professional ethics have an essential and significant role in educational activities regarded as the primary activities of instructors in addition to the role of this component played by instructors as a member of the organization. This dimension refers to the competences which are meant to present commitment, loyalty, and positive attitudes towards the organization. The virtue of communication with senior managers and coworkers and acceptance in work teams are among the achievements of professional ethics competences.

D) Commercialization Competences of Idea and Thought: Given the fact that efforts of instructors bear fruits when the presented competences and sets of knowledge emerge as entrepreneurial or self-employment activities, such competences are important to instructors. They are regarded as components which instructors use for market evaluation first in relation to industries. In other words, instructors observe the market status and industries (outside the organization) to analyze opportunities and threats in addition to organizational weaknesses and strengths. Then, strengths are strengthened, and weaknesses are dealt with to perform entrepreneurial activities and create needs. Need creation refers to the injection of competence requirements into the market. A successful presence in the market is important in the entrepreneurial and opportunity-providing plan of the trainees.

Table 1. Introducing Factors and Components of Competence

Factor	Component
Educational Competence	Teaching Competence
	Behavioral Competence in the Educational Environment
	Class Management Competence
	Assessment and Testing Competence
	Class Use of Technology Competence
Professional Competence of	Specialized Knowledge Improvement Competence

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Instructors	Information and Communication Management Competence
	Research, Researcher, Critical, and Creative Thinking Competence
	Personal Development Competence
Knowledge, Skill, and Technology Commercialization Competence	Idea Management Competence
	Marketing and Market-Creating Competence
	Innovation Valuation Competence
Professional Ethics, Behavior, and Commitment Competence	Responsibility
	Justice
	Accountability

Table 1 shows the factors determining competence in this study.

Table 2. The Results of Analyzing the Research Content

Category	Subcategory (Factor)
Educational Competence (Teaching Competence; Behavioral Competence in the Educational Environment; Class Management Competence; Assessment and Testing Competence; Class Use of Technology Competence)	Teaching as artistic components
	Active interest in subjects
	Identifying the needs and abilities of students
	Identifying and using educational goals
	Creating opportunities for creativity
	Expressing positive attitudes
	Using educational technologies (tools, materials, texts, and other references)
	Testing and assessment
	Making active teams of students
	Learning management and increasing self-strategic abilities
	Systematic registration of achievements of apprentices in learning work folders
	Observing and responding the emotions and psychological needs of apprentices
	Engineering the educational environment (effective and safe organization and management of the physical environment)
	The ability to resolve conflicts intelligently
Professional Competence of Instructors (Specialized Knowledge Improvement Competence; Information and Communication Management Competence; Research, Researcher, Critical, and Creative Thinking Competence; Personal Development Competence)	Up-to-date instructors in terms of knowledge and skill (organizational learning)
	Regular interaction with technical research-training centers worldwide
	Interaction with industries and syndicates
	Interaction with Iranian and global instructors
	Action research, lesson research, and narration of instructors on their experiences
	Thinking in action
	Developing and deepening human relationships at educational centers to create and deepen mutual trust and respect
	Flexibility towards changes

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	Responding organizational needs Adaptability to conditions and variable environment Increasing digital literacy Skill in the perception of uncertain conditions of future Skill in the faster implementation of new plans Recognition of organizational capabilities
Knowledge, Skill, and Technology Commercialization Competence (Idea Management Competence; Marketing and Market-Creating Competence; Innovation Valuation Competence)	Idea creation and ability to value ideas Participation in the codification of business plans and patents Research into markets, marketing, and market creation (identifying openings for markets which are suitable for technologies before taking any actions to develop technologies by instructor(s)) Supplying financial resources provided by sponsors for the implementation of ideas and active participation in development centers, incubators, and startup Ability to value a creative product
Professional Ethics, Behavior, and Commitment Competence (Responsibility; Justice; Accountability)	Work conscience of instructors in professional duties Shouldering responsibilities Complying with and respecting the rights of others Complying with values and social norms by instructors Commitment and justice Expressing problems and issues candidly Trust and virtue

4.1. Confirmatory Factor Analysis of Professional Competence

The confirmatory factor analysis was employed to determine how much every qualitative component contributed to the main research model.
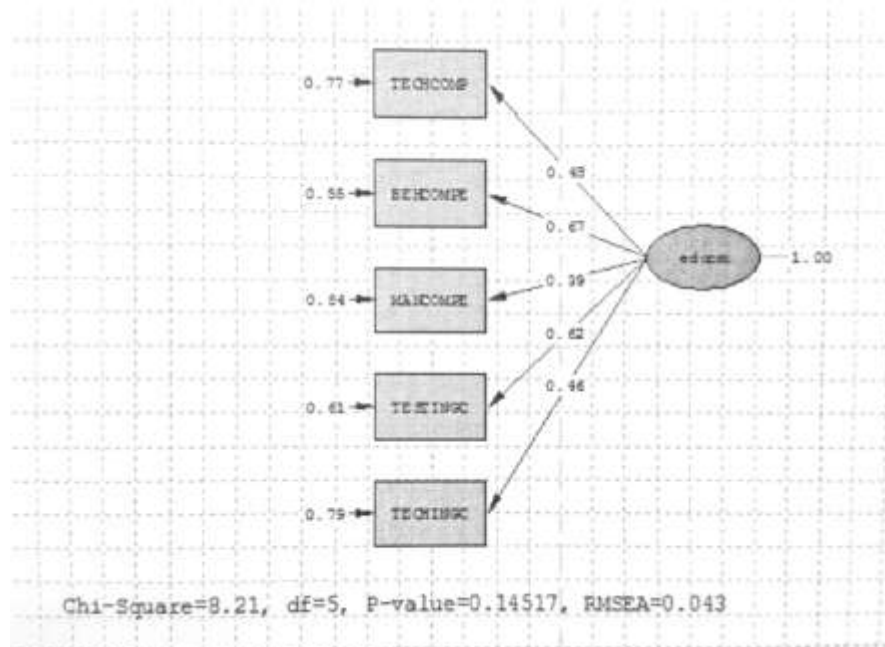
4.1.1. Confirmatory Factor Analysis of Teaching Competence

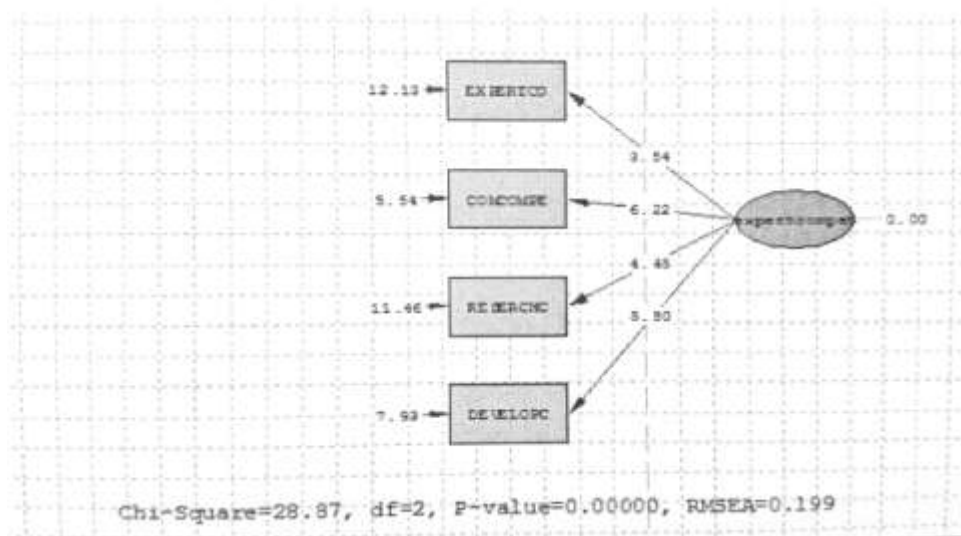Figures 1 and 2 show the confirmatory factor analysis results of teaching competence.
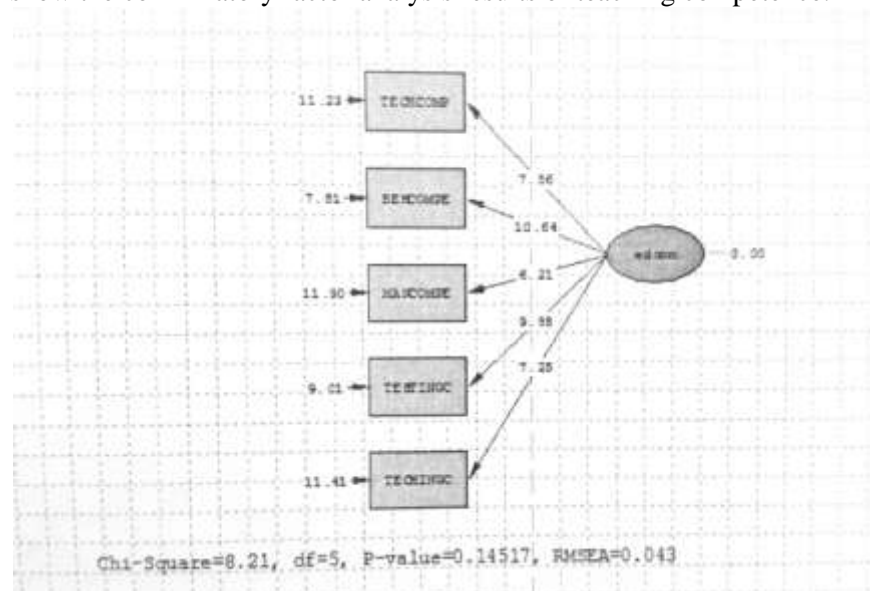
Figure 1. The Results of *t*-Test on Teaching Competence

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According to Figure 1, all of the lines are significant at 95% probability. All of them show values above 1.96; in other words, all five components (Teaching Competence; Behavioral Competence in the Educational Environment; Class Management Competence; Assessment and Testing Competence; and Class Use of Technology Competence) were among the teaching competences.

Figure 2. The Results of (Standard) Regression Test on Teaching Competence

Figure 3. The Results of *t*-Test on the Specialized Competence

According to the regression results, the greatest effect came from Behavioral Competence in the Educational Environment, Assessment and Testing Competence, Teaching Competence, and Class Management Competence.

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4.1.2. Confirmatory Factor Analysis of Specialized Competence of Instructors

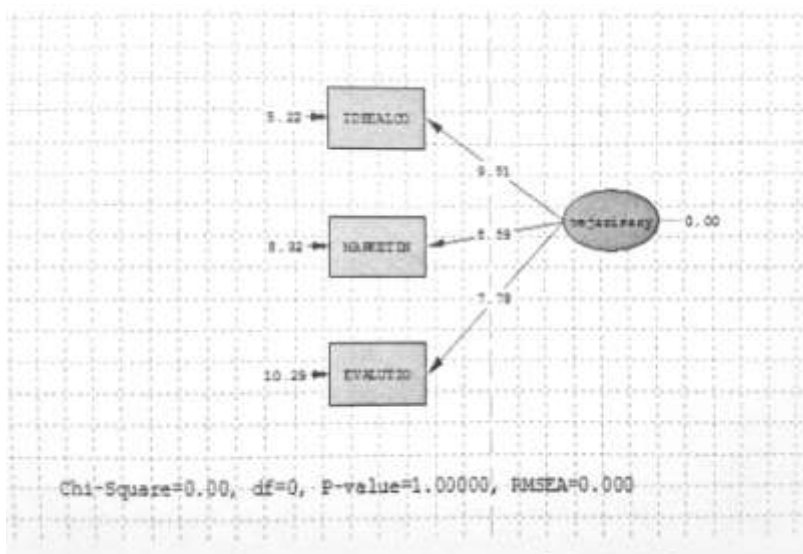Figures 3 and 4 show the confirmatory factor analysis results of teaching competence.

According to Figure 3, all of the lines are significant at 95% probability. All of them show values above 1.96; in other words, all four components (Specialized Knowledge Improvement Competence; Information and Communication Management Competence; Research, Researcher, Critical, and Creative Thinking Competence; Personal Development Competence) were among the specialized competences of TVTO instructors.
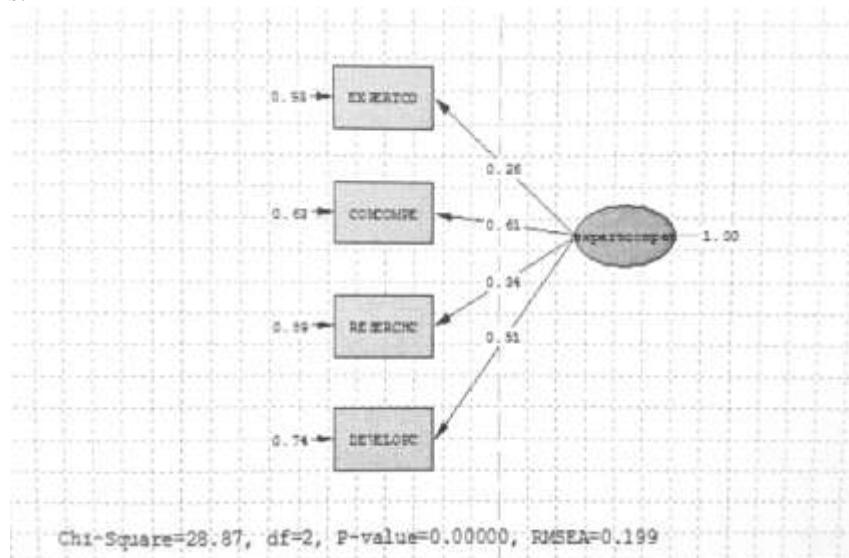
Figure 4. The Results of (Standard) Regression Test on Specialized Competence

According to the regression results, the greatest effects came from Information and Communication Management Competence, Personal Development Competence, Research, Researcher, Critical, and Creative Thinking Competence, and Specialized Knowledge Improvement Competence.

4.1.3. Confirmatory Factor Analysis of Commercialization Competence (Knowledge, Skill, and Technology)

Figure 5. The Results of *t*-Test on the Commercialization Competence

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According to Figure 5, all of the lines are significant at 95% probability. All of the lines show values above 1.96; in other words, all three components (Idea Management Competence; Marketing and Market-Creating Competence; Innovation Valuation Competence) were among the commercialization competences.
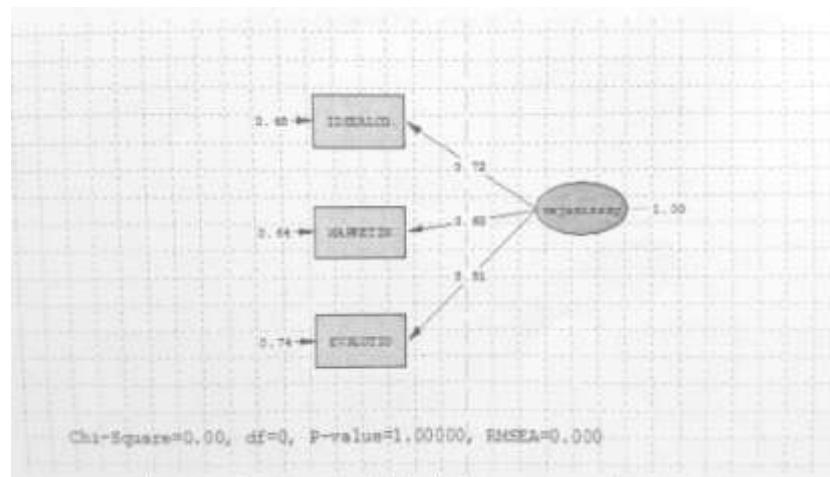

Figure 6. The Results of (Standard) Regression Test on the Commercialization Competence

The results of regression analysis indicated that the greatest effect of variables came from Idea Management Competence, Marketing and Market Creation Competence, and Innovation Valuation Competence.
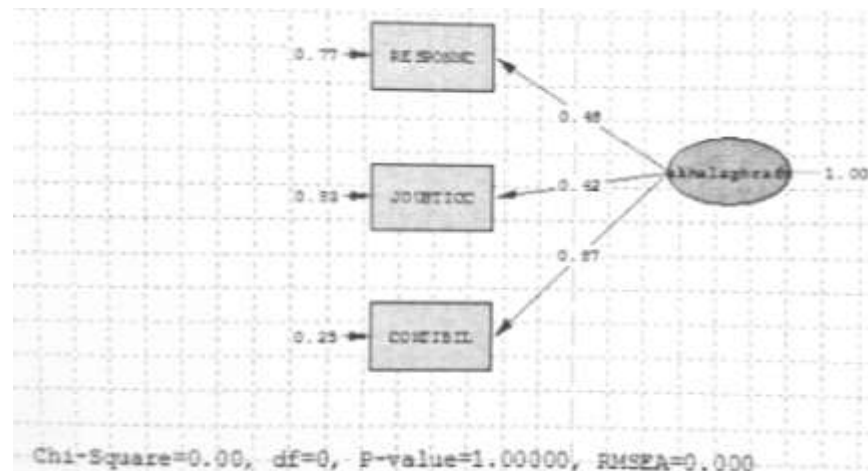
4.1.4. Confirmatory Factor Analysis of Professional Ethics, Behavior, and Commitment Competence
Figures 7 and 8 show the results of confirmatory factor analysis on professional ethics, behavior, and commitment competence.
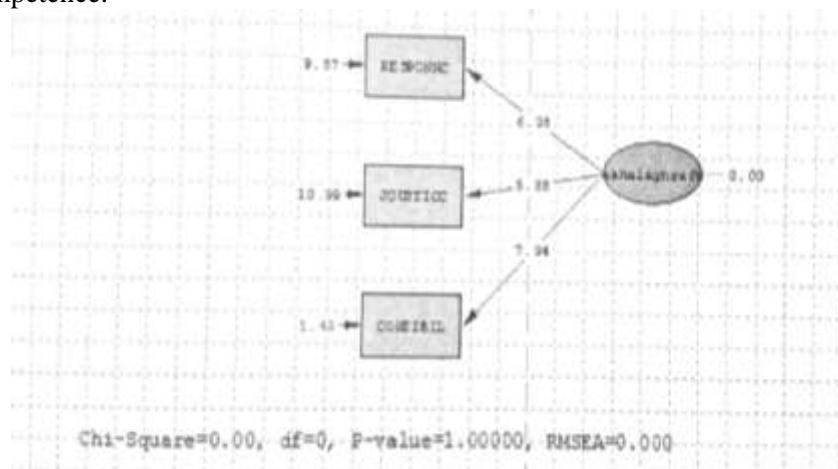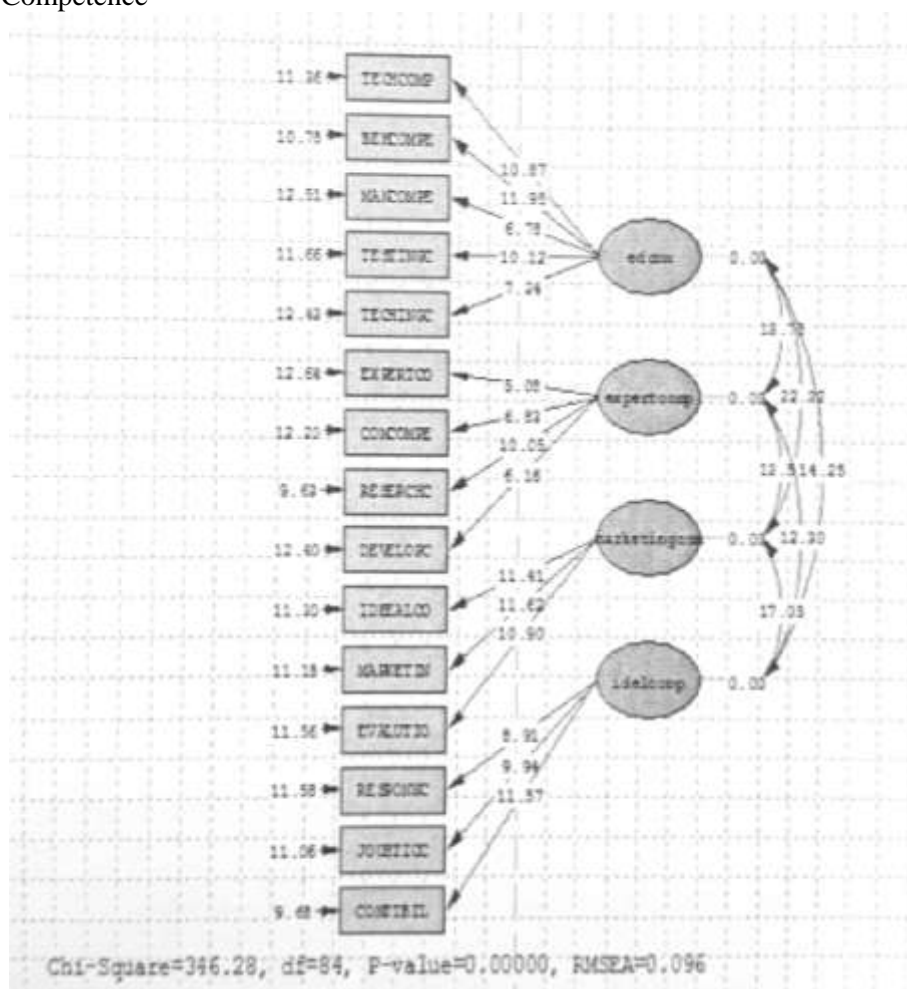

Figure 7. The Results of *t*-Test on the Professional Ethics, Behavior, and Commitment Competence
According to Figure 7, all of the lines are significant at 95% probability. All of the lines show values above 1.96; in other words, all three components (Responsibility, Justice, and Accountability) were among the professional ethics, behavior, and commitment competence.

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Figure 8. The Results of (Standard) Regression Test on the Professional Ethics, Behavior, and Commitment Competence
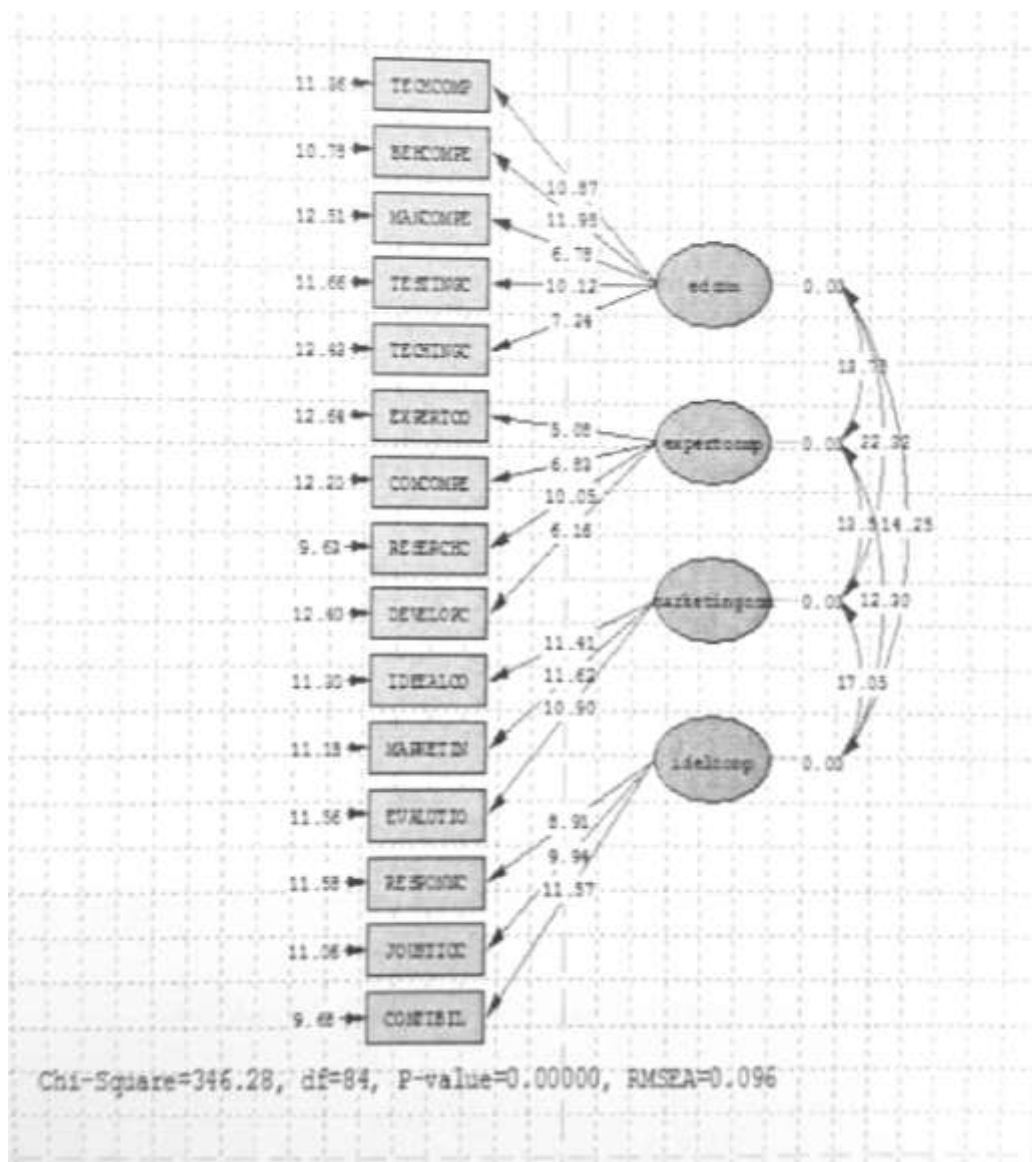

Figure 9.

According to the regression results, the greatest effect came from Accountability, Responsibility, and Justice on the professional ethics, behavior, and commitment competence.

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Figures 9 and 10 show the results of confirmatory factor analysis conducted on the final research model. Figure 9 indicates that all of the lines are significant at 95% probability. All of them are above 1.96; in other words, the components of the research model were significant.

Figure 10. The Results of (Standard) Regression Test on the Main Research Model

According to the analysis of current status on professional competence dimensions and components, all of the components of teaching competence of TVTO instructors were above average. Researcher findings indicated that all components of specialized competence of TVTO instructors were also above average. The Innovation Valuation Competence was above average. However, the rest of components were below average. All components of professional ethics, behavior, and commitment competence were above average.

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SUMMARIZATION AND CONCLUSION

Undoubtedly, employing the technical and vocational training system depends on the competence of instructors. Such competence emerges when the instructors benefit from professional development. The professionalism of education depends on the professionalism of teachers. Considering constant changes and developments in the structure of technical and vocational training courses, it is necessary to detect constant improvement and restoration of instructor competence. In fact, every nation has realized the necessary presence of educated and skilled instructors. Many countries insist that the speed of new developments require the creation of sufficient opportunities for instructors to update their knowledge and skills. Therefore, all of the technical and vocational instructors should always update their knowledge and skill in addition to possessing training competence in their specialized fields so that they can benefit from it in teaching. The first research step was to identify and prioritize competences. In this study, the most important competences of TVTO instructors were classified as knowledge, skill, and technology commercialization competence, teaching competence, and professional ethics, behavior, and commitment competence. The analysis of the current status indicated that although commercialization competence was the most important one, it played the smallest role in the research model.

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