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Workforce Competency Models for Multiple Construction Projects: A Review

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Abstract

The competency approach in human resource management (HRM) is not a new trend, and the subject of competence is a traditional subject matter. On the contrary, human resource competence is one of the most important issues of any organization, which includes diverse, fascinating and, simultaneously, sophisticated topics. Today, due to the changes in the field of HRM and the trend of managers to meritocracy in the organization, the planning of an organization based on competency has a special place. Different studies in this field show that the necessity to pay attention to the mission perspective, strategy, organizational goals and structure will be an integral part in the successful assignment of human resources and, without regard to this, the organization's approach cannot be determined. The use of human resource competency models in multiple construction projects requires a major paradigm, which in HRM literature refers to the competency-based human resource management (CBHRM), and changes the thinking of HR managers across individuals and organizations, generally. This competency-based management approach is a coherent approach for managing human capital in the long term, based on a common set of competency models related to the macro strategies of each project in the construction industry. In this paper, the researcher initially reviewed the diversity of conceptual frameworks and components of competency models in construction projects. Then, the competency models of the project manager, civil engineer, and construction foreman and worker are identified in project-oriented organizations.

Keywords: Human resource management, competency models, meritocracy, project manager and civil engineer

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Introduction

Human resource management (HRM) is the set of processes needed to effectively use the workforces involved in implementing an organization's activities. Given the increasing competition in the labour market, the increase in manpower costs and the dynamics and complexity of the changes, lack of proper human resources performance results in the imposition of huge costs and sometimes failure of the organization's goals. Also, the temporary nature of the projects leads to the emergence of new, sometimes temporary, organizational human resources. HRM should be desirable according to the requirements of the project and the use of techniques of these interim connections. Therefore, the optimal use of human resources in projects requires efficient planning for organizing a set of projects in different periods. On the other hand, project-oriented organizations, in comparison with functional or matrix organizational structures, have put the project at the centre of their activities (Mahoud & Hojatpanah, 2019).

Project-oriented organizations use a different approach to managing specific human resources because the classical approach is geared only to functional organizations. As an interim organization, the projects are unique, innovative and temporary. Because the organization has not done the same thing in the past, the projects are unique, so they need innovative processes and new resources. The unique, innovative and temporal consequence of projects on HRM is to create new functions for the project. Human resources in project-oriented organizations usually have more than one role, so they can belong to different teams of project management staff. For example, one person can be a program manager and at the same time work as a project auditor for other projects. Staff may also play different roles in projects. They may, in a project, be a project manager and in the next project, take on the role of technical staff that can influence their relationship with the project team members, especially if they do not know what role they will play in the next project (Mahoud &Hojatpanah, 2019).

The world's top organizations hire employees on the bases of knowledge, skills, capabilities and competencies of the individual. Therefore, capabilities are a combination of skills, personal and personality traits, and behaviours that directly relate to a successful employees performance in a

particular job or role. The skills capabilities and capacities are transferred to others in the organizations (Abolalayee &Ghafari, 2006)

Literature Review

Abraham et al. defined competencies as qualities, behaviors, and attributes that lead to effective performance (Abraham et al., 2001). According to McClelland and Boyatzis, competence is a capacity made up of related but distinct sets of behavior emerging from and exhibiting an underlying construct known as the aim, which is situationally (McClelland, 1973, 1985; Boyatzis, 1991, 2000).

"A competence is an underlying quality of an individual that is causally connected to criterion-referenced effective and/or successful performance in a job or scenario," according to Spencer & Spencer. Hence, underlying characteristics in this context include motives (the things that a person consistently thinks about or wants that cause action), traits (physical characteristics and consistent responses to situations or information), self-concept (a person's attitudes, values, or self-image), knowledge (the knowledge a person has in a specific content area), and skills (the ability to perform a certain physical or mental task). According to the Iceberg Model, knowledge and skill competencies are often visible, somewhat surface-level, and thus easily developed through training, which is the most cost-effective approach to secure these personnel talents. Self-concept, characteristic, and motivation competences, on the other hand, are more concealed and important to personality, making them more difficult to analyze and improve; yet, it is the most cost-effective approach to use those as project managers' recruiting criteria (Spencer & Spencer, 2008).

Zwell defined competences as "persistent attributes or characteristics that underpin certain work performances." The cited source also gave a classification of competences based on their difficulty of improvement, which appears to be consistent with the Iceberg Model idea. This categorization contained three clusters of competencies: simple to improve, moderately difficult to improve, and difficult to improve. Project managers' competences, according to Moradi et al., are "the capacities of applying skills, knowledge, and personal traits, which improve project managers' effectiveness and efficiency in their work performance and, as a result, raise

the chance of project success." Building on the concepts offered by Spencer and Spencer, the capabilities present both hidden and visible competence. In a nutshell, the demonstrated definitions suggest that competences have two key aspects: I contribution to good performance, and (ii) difficulty in improving (Zwell, 2000; Moradi et al., 2020).

Based on prior research, defined competencies as underlying qualities (motives, traits, self-image, abilities, and knowledge) that generate various types of actions when paired with a situation-oriented intent. Competence refers to the action taken as a result of a specific scenario. Because of its behavioral character; competence may anticipate and reliably induce effective performance. The underlying attributes described may be classified into three groups: extremely personality-oriented (motives and traits), knowledge and skill-oriented, and moderately personality-oriented (self-image). This suggests that some abilities (those linked to motives and traits) are essential to personality (e.g., trustworthiness, initiative, optimism). This is why prior research has found that abilities connected to motives and/or attributes are difficult to build. Knowledge and skill-oriented competences (e.g., management, leadership) on the other hand, are easy to measure and develop since they are separated from the personality, and so individuals may be readily educated for the knowledge and skills that they lack. Finally, the third set of skills, known as self-image (e.g., self-confidence and self-control), is connected to people' knowledge of their own strengths and shortcomings, and is located between the first two groups.

The most important aspects of behaviour and personality that are considered and evaluated in the evaluation centres of major and leading organizations of the world are as follows: (Shahhosseini & Sebt, 2011).

[- Communication skills (in 89% of assessment centres), self-expression and self-confidence (in 86% of assessment centres), - cooperation spirit (in 85% of assessment centres), - leadership skills (in 76% of assessment centres), conflict management (in 74% of assessment centres), problem-solving skills (in 70% of assessment centres), systemic thinking ability (in 65% of evaluation centres), outcome and goals (in 65% of assessment centres), - determination in decision making (in 62% of assessment centres), - tolerance of ambiguity and stress (in 59% of assessment centres), - participation spirit (in 58% of assessment centres).]

The PMBOK guide classifies competencies based on three dimensions of knowledge, performance and personal, whose units of knowledge and performance are:

[- Project Integrity Management - Project Scope Management - Project Time Management - Project Cost Management - Project Quality Management – Project Human Resource Management - Project Communications Management - Project Risk Management - Project Procurement Management]

Also, each knowledge and performance competency unit are divided into five sets of competencies of initiation, planning, execution, control, and closure.

On the other hand, the International Project Management Association (IPMA) in the ICB standard classifies competencies in three technical, behavioural, and contextual categories. The Association for Project Management (APM) in the United Kingdom has developed the APM Competence Framework in full compliance with the APM and the Standard Competency Framework (ICB). In the Standard of Project Management Competency Framework, by maintaining the Standard Dimension (ICB) classification, three dimensions of technical, behavioural and contextual competence have been considered. The National Competency Standards for Project Management (NCSPM) was compiled by the Australian Institute of Project Management (AIPM) under the auspices of the Australian National Training Authority (ANTA) and consulted with the industry. This standard classifies competencies in 26 criteria. The Global Standard of Global Performance-Based Standards for Project Management Personnel (GPBSPMP) categorizes competencies in 7 main units and 27 sub-categories.

In the following, some of the efforts made to review and list the expected competencies of the staff of multiple construction projects and even the general public in efficient working environments will be mentioned (Mahoud, 2015).

Methodology

In this paper, secondary data has been collected through desk research books, scientific articles and theses was conducted on the study of human resource

competency models in a set of construction projects. This paper also includes the philosophical foundations and theoretical frameworks in the subject area of research, the history of research, and, finally, the presentation of human resource competency models for use in future research. The desk research method first defines the problem and then provides the hypotheses that are evaluated through more formal research designs. In this type of research, there is no formal investigation plan which does not look so scientific. Since the purpose of this type of research is to identify the main problem, the researcher must use several informal methods to define the problem, which requires the power of imagination and flexibility. While the desk research uses informal methods, these studies are of great importance. The methods of the desk research project include: reviewing existing scientific articles and books and checking selected items. The advantages of desk research can be to save time and evaluate the trend of research in the past, and among its disadvantages, there are numerous barriers to accessing information, which must always ensure the credibility and accuracy of the information (Mahoud &Hojatpanah, 2019).

Conclusion

Diversity in project manager competency models

In this section, the proposed models are reviewed for the expected competency of the project managers, regardless of their academic background and career position.

Project Manager Competency Development Framework in the PMCDF standard

The Project Management Institute (PMI) in the Project Management Body of Knowledge (PMBOK) guide lists some of the characteristics that the project manager must have and, also, a separate standard is also provided to develop the capabilities of the project manager under the title of Project Manager Competency Development Framework (PMCDF). The framework outlined in this document classifies the competencies of the project manager based on three dimensions of knowledge, performance and personal. Knowledge of project management is what every project manager generates through knowledge and understanding of their project management for a project or activity associated with a project. The performance dimension of

project management is what every project manager can demonstrate in their ability to successfully manage a project or complete project-related activities. Next to personal competence, the core personality features highlight the ability of a person to perform a project or project activity. Figure 1 shows how to address the three dimensions of competence to help project managers achieve a level of project performance that is desirable for the organization. For dimensions of competencies of knowledge and performance, the same criteria have been used and their differences are in the way of measuring each one so that in the knowledge dimension, the Project Management Professional (PMP) can be evaluated through a test, 360-degree assessment, self-assessment or evaluation by collaborators or superiors examine the existence of knowledge, while in the performance dimension, there must be documentation of the applicability of that competence in practice, so these two dimensions are 9 units of competence and in total there are 45 competency sets and 62 competency elements which are also divided into 319 performance criteria (Dziekoński, 2017).

Figure 1

How to Combine the Three Dimensions of Competence for Project Managers

Performance Competence of PM   Personal Competence of PM   Knowledge Competence of PM
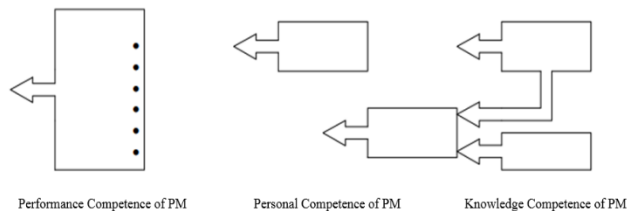
Knowledge and performance competency units include:

[- Project Integrity Management - Project Scope Management - Project Time Management - Project Cost Management - Project Quality Management – Project Human Resource Management - Project Communications Management - Project Risk Management - Project Procurement Management]

Each knowledge and performance competency unit are divided into five sets of competencies of initiation, planning, execution, control, and closure.

Next, personal competencies also include 6 units of competency as follows: 19 set of competence, 40 elements of competencies, and these elements are also known by 119 performance criteria:

1- Success and Action (Succession, Interest in Order and Quality and Accuracy, Initiative, Inquiries)

2. Humanitarian assistance and services (customer service orientation, social perception)

3. Impact (organizational awareness, relationship)

4. Management (teamwork and cooperation, development of others, team leadership, rule, decisiveness and power use)

5. Cognitive (analytical thinking, conceptual thinking)

6. Personal Effectiveness (self-control, confidence, flexibility, organizational commitment)

Competency framework of the project manager in the IPMA Individual Competence Baseline (IPMA ICB)

The Individual Competence Baseline (ICB) standard by the International Project Management Association (IPMA) is, in fact, a behavioural standard for project managers. In this standard, the features and elements that are relevant to determining an adequate project manager are presented. In this standard, 46 competency criteria have been introduced for the project managers. These elements are divided into three dimensions. These categories are in the form of competency of display and monitoring. This category for competency elements is:

Twenty specialized competencies relate to project management issues and professional individuals who work on it. This is a technical competence area that describes the core competency components of the project manager and includes the content of specialized project management knowledge.

There are 15 elements of behavioural competencies that relate to individual communication between individuals and teams in the project, program, or portfolio. Behavioural competency describes the individual aspects of the competency of the project manager and addresses the

behaviour and skills of the project manager with other individuals and teams involved in the project.

There are 11 elements of competence that interact with the project team, the project and organization environment in which the project is implemented. This competency range describes the components of the project manager's competency that relate to the environment and requirements of the project, including the ability of the project manager to manage relationships with the queuing organization, as well as the ability to function in a project-oriented organization.

As shown in Figure 2, in this standard, the term "Eye of Competence" has been used, which implies the integrity of all components of project management from the perspective of the project manager when evaluating different situations and showing the vision of the project manager. On the other hand, the inequality of each aspect of the eye of competence is the concept of inequality of technical, behavioural, and contextual qualities in this standard (Loufrani-Fedida & Missonier, 2015).

Figure 2

The IPMA Eye of Competence
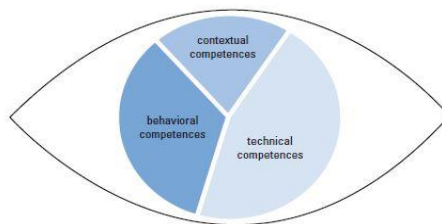
Considering the comprehensiveness and acceptability of this standard for human resource professionals in the construction industry, we will continue to list the most important competencies in this standard: (Loufrani-Fedida &Saglietto, 2016).

[- Successful project management - Project structure - Manageable scope and deliverables available - Partnership and motivation - Self-control - Relaxation - Outcome - Negotiation - Reliability - Value enhancement - Project-oriented - Program oriented - Portfolio management – Project,

program and portfolio implementation - Permanent organization - Business - Systems, products and technology - Staff management - Health, security, safety and environmental (HSSE) - Legal]

The APM Competence Framework

The Association for Project Management (APM), located in the UK, has compiled the APM Competence Framework in full compliance with the APM Knowledge Facility and the Individual Competence Baseline (ICB). In the standard of the APM competence framework, maintaining the standardization of the ICB dimensions, three dimensions are considered to be technical, behavioural, and contextual qualities that support 5 key concepts of project management, program management, portfolio management, project concept, and project management office. These competency dimensions are defined in a model entitled "Wheel of Competence" to 47 competency units that include precise details such as "creating strategic goals for the project" to "managing team and person performance, giving feedback to the team and individuals about their performance" (Ahadzie et al., 2014).

The National Competency Standards for Project Management (NCSPM)

The National Competency Standards for Project Management (NCSPM) was compiled by the Australian Institute of Project Management (AIPM) under the auspices of the Australian National Training Authority (ANTA) and consulted with the industry. This standard classifies competencies in 26 criteria, including "application of scope management techniques" and "contracts and direct provision of multiple projects." (Panas et al., 2014).

The Global Standard of Global Performance-Based Standards for Project Management Personnel (GPBSPMP)

In 2002, the Global Steering Committee, an international effort to create a standard for the project manager's competency framework that is consistent and can be used by businesses, academic institutions, specialized unions, and standard and government agencies. In August of that year, the first meeting of the organization was held in London and approved the Global Standard of Global Performance-Based Standards for Project Management Personnel

(GPBSPMP), which qualified competencies in 7 main units and 27 sub-categories: (Zhang et al., 2013).

[- Managing relationship of stakeholders - Managing interpersonal relationships - Creating a plan for a project - Managing project process - Manage a product - Manage project deliverables - Assess and improve project performance]

Diversity in Civil Engineer Competency Models

The American Society of Civil Engineers (ASCE), in the standard entitled "The Competency Framework for Civil Engineering in the 21st Century" has been devoted to developing the competencies required by civil engineers with regard to the vision and the predicted needs of this century (ASCE, 2008).

Civil engineer competencies in this standard are classified according to three dimensions of competencies: basic, specialized, and professional, then the core competency includes 4 criteria, the specialized dimension includes 11 criteria, and the professional dimension also includes 9 criteria.

Basic competency criteria are: (Dullayaphuta & Untachaia, 2013).

[- Mathematics: solving problems using different mathematical equations and applying this knowledge to solve engineering problems - natural sciences: solving problems using computational physics, chemistry and other fields of natural sciences and applying this knowledge to solve engineering problems - altruism: science The importance of humanity and displaying the results of this awareness in the professional engineering experiences - Social science: The science of the importance of the social sciences and the presentation of the results of this awareness in the professional engineering experiences]

Specialized competency criteria are:

[- Materials science: Using materials science to solve problems related to civil engineering - Mechanics: Analyzing and solving solid state and fluid mechanics issues - Tests: Specifying and performing a specific test to achieve required results and analyzing and describing test results. Identifying and solving problems: Formulating and solving civil engineering problems by choosing and applying appropriate techniques and tools. Designing:

Assessing and designing various systems, components or processes, and measuring the degree of compliance with engineering standards, project needs, stakeholders, and Other Related Constraints - Stability: An Analysis of Engineering Systems, A. From Old and New, For Sustainable Performance - Recent Content and Past Perspectives: Analyzing the Effect of Past and Past Articles on Identifying, Formulating and Solving Engineering Issues and Analyzing the Impact of Engineering Solutions on Economics, the Environment, Political Issues and Society - Risk and Uncertainty: Load analysis and capacity and the impact of their uncertainties on a well-defined plan, and the expression of the potential loss (or exit from the appropriate level of performance) for a specific demolition mode - Project management: Formulating documentation for participation and registration in the project plan - A deep attitude in civil engineering: analyzing and solving various civil engineering problems Utilization of at least 4 technical fields related to civil engineering - Technical expertise: Evaluation of the design of a complex system or process, or assessment of the creditworthiness of technology and modern science related to civil engineering]

And ultimately, the professional competence measures introduced in this standard are:

[- Communication: Planning, combining and integrating linguistic, written, virtual, and graphical communication with specialized and non-specialized audiences - General policy: Applying public policy policies and techniques for solving general problems associated with civil engineering activities - Public management business: applying concepts and Business Processes and Public Management - Globalization: Analysis of engineering activities and services to ensure performance at an elementary level in the global framework - Leadership: Organizing and guiding team efforts - Teamwork: Effective functioning as a member of a multidisciplinary team - Attitudes: Demonstrating attitudes Experience in civil engineering at a professional level - Lifelong learning: planning and implementing learning programs. Expertise required for civil engineering experience at the professional level - Professional and ethical responsibility: creating solutions to engineering issues based on professional and ethical standards and evaluating professional and moral personal development]

Diversity in Construction Foreman Competency Models

In this section, the proposed models are initially reviewed for the expected competency of the general foremen, regardless of their academic background and career position, then specifically to the construction foreman.

A. Foreman's skills in the US technical and vocational training program are sixteen, fifteen for core competencies, and one for moral competence. This program has been used by the Organization for Research and Educational Planning and the Office for the Planning and Compilation of Technical and Professional Training and Work and Knowledge in the Ministry of Education of Iran. The technical competence of this standard is: (Serpell & Ferrada, 2007).

1- Competency of logical thinking: [- Argument - Decision - Problem solving]
2- Competency of critical thinking: [- Critical Thinking]
3- Competency of system thinking and attitude: [- Understanding the organizational system - Setting and modifying system functions - Improving system functions]
4- Competency of creative thinking: [- Competency of Creative Thinking]
5- Empowerment of lifelong learning: [- Teaching and learning - Developing competency and knowledge]
6- Excellence in working with data and information: [- Collection and compilation of information - Organization of process information - Interpretation of information - Application of information technology]
7- Competence in using the appropriate technology: [- Using the right technologies - Using the right technologies - Maintaining the technology used]
8- Competency of mathematical calculation and application: [- Mathematical competence]
9- Competency of effective communication: [- Being Social - Listening (Listening Good)]
10- Teamwork competence: [- Role in the team - Participation in communities and activities - Displaying people's leadership power - Respecting the values of others]
11- Competency of training others: [- Helping others to learn]

12- Competency of documentation: [- Documentation]

13- Competency of resource management: [- Time Management - Financial Resources Management - Material and Equipment Management - Human Resource Management]

14- Excellence in work management and quality: [- Self-management - Managing tasks and projects - Quality management]

15- Entrepreneurship competency: [-Entrepreneurship]

B. In the design of a standard professional system by the Technical and Professional Training Organization of the country affiliated with the Ministry of Labor and Social Affairs of Iran, the professional skills of each class of national jobs have been developed. The qualifications of some technical technicians in the field of industry in civil engineering according to the table (2-2) that are involved in construction projects (the ability to apply professional behavior, the ability to apply safety and health standards in the workplace, and the ability of entrepreneurship in all of the common businesses, and for brevity Avoid repeated expressions of it):

16- Surveyor technician (Grade 1)
17- Reinforcement technicians (Grade 1)
18- Concrete Technician (Grade 1)
19- Builder skeleton (Grade 1)
20- Hardening technician (Grade 1)
21- Plumbers and equipment installers (Grade 1)
22- Electrician of the building (Grade 1)
23- Stonework technician (Grade 1)
24- Tile-making technician (Grade 1)
25- Gypsum Technician (Grade 1)
26- Building Painting Technician (Grade 1)

Diversity in Construction Worker Competency Models

In this section, the proposed models are initially reviewed for the expected competency of the general worker, regardless of their skill level and career position, then specifically to the construction worker.

A. In the O*NET Standard of the US Department of Labor/ Employment & Training Administration (USDOL/ ETA), the competencies of workers are identified in four dimensions of competence, knowledge, skills, abilities

and activities. Also, the relative importance of each competency (numbers in parenthesis) has been evaluated. The competencies of the workers, together with the definition and significance of each, are: (Lee et al., 2011).

1- Knowledge: [- Construction and Building (80) - Design (80) - Mathematics (60) - Mechanical (59) - Public Safety and Safety (58) - Engineering and Technology (51) - National Language (51) - Education (46) - Transportation (46) - Physics (37) - Personnel and Human Resources (35) - Law (47) - Education and Training (49) - Management and Administration (47) - Employer and Customer Services And government (30) - telecommunications (30) - administrative affairs (27) - sales and marketing (26) - geography (25) - economics and accounting (24) - psychology (24) - communications and media (23) Electronics (21) - Foreign Language (20) - Chemistry (18) - Medicine and Dentistry (18) - Consultation and Treatment (10) - Sociology and Anthropology (9) - Z Astrology (8) - History and archeology (8) - Philosophy and theology (6) - Food production (5) - Fine art (4)]

2- Skills: [- Speaking (53) - Coordination (50) - Active listening (47) - Transitional thinking (47) - Operations and controls (47) - Operations monitoring (47) - Social understanding (47) - Solving complex problems (44) - Monitoring (41) - Understanding readable concepts (41) - Choosing tools and equipment (38) - Time management (38) - Judgment and decision making (31) - Active learning (31) - Maintenance and equipment (31) - Quality control analysis (31) - Learning Strategies (28) - Human Resources Management (28) - Repairs (28) - Troubleshooting (28) - Training (25) - Incitement (25) - Service Orientation (25) - Writing (25) - Negotiating 22) - Installation and commissioning (19) - Analysis of operations (16) - Science (16) - Analyzing the system (10) - Evaluation system (10) - Design Technology (10) - Mathematics (6) - Resource Management (3) - Financial Resource Management (0) - Programming (0)]

3- Abilities: [- Stinginess (66) - Hand Arm Stability (63) - Body Organ Harassment (63) - Static Power (63) - Understanding Oral Concepts (60) - Precision Control (56) - Physical Resistance (56) - Near-mindedness (53) - Oral expression (53) - Sensitivity to problems (53) - Clear speech (53) - Speech recognition (53) - Fingers tone (50) - Special attention (50) - Endurance (50) - Sort information 47) - The deductive reasoning (44) - The

breadth of flexibility (44) - The inductive argument (44) - The control of the movement of the movement (44) - The comprehension of written concepts (44) - The deep perception (41) - The dynamic power (41) 39) - Flexibility in classification (38) - Gross body coordination (38) - Reaction (38) - Instant sharing (38) - Auditory sensitivity (35) - Perceptual speed (35) - Reaction time (35) - Visual discrimination (35) - Visualization (35) - Hidden identification (31) - Limb movement speed (31) - Gross balance of the body (28) - Peripheral vision (28) - Space orientation (28) - Writing (28) - Preserving (25) - Psychological idea (22) - Luminosity (22) - Termination rate (22) - Fast wrist (22) - Night vision (19) - Initiative (19) - Sound location detection (16) - Explosive power (13) - Dynamic flexibility (10) - Facility count (10) - Math argument (3)]

4- Activities: [- Performing general physical activities (75) - Moving objects (69) - Getting information (67) - Driving vehicles, mechanized machinery and equipment (67) - Communicating with technical supervisors (63) - Control Machinery and processes (61) - Inspection of equipment, structures and materials (59) - Coaching and development of others (57) - Identification of objects, actions, events (57) - Creating and maintaining interpersonal relationships (53) - Decision making and resolution 51) - Organization, Planning (49) - Assisting and caring for others (48) - Coordinating the activities of others (48) - Building teams development (48) - Teaching and teaching others (48) - Maintenance and repair of mechanical equipment - Learning and using knowledge (45) - Examining information to determine compliance with standards (44) - Monitoring processes, materials and environments (44) - Creative thinking (44) - Planning work and activities (43) - Resolving disputes And negotiation (41) - Relations with people outside the organization (40) - Measurable attributes of products, events, and information (38) - Service quality diagnosis (38) - Oral translation of information (37) - Direct work execution (36) - Conduct , Leadership to subordinates (35) - Development of goals and strategies (34) - Information processing (34) - Specification of technical devices (34) - Data and information analysis (32) - Advice and advice (29) - Supervision and control of resources (28) - Repair and maintenance of electronic equipment (25) - Collection of documents and information (23) - Organizational supply (23) - Sale or impact on others (22) - Administrative activities (14) Computer interaction (11)]

B. In the design of a standard professional system by the Technical and Professional Training Organization of the country affiliated with the Ministry of Labor and Social Affairs of Iran, the professional skills of each class of national jobs have been developed. The merits of some of the job occupations in the field of civil engineering in the construction sector (ability to apply professional behavior, the ability to apply safety and health rules in the workplace, and the ability of entrepreneurship in all occupations (2nd and 3rd grades) are common and for the abbreviation of repeated expressions It is avoided (Safarzadegan Gilan et al., 2012).

5- Mapping Assistant (Grade 2)
6- General surveyor worker (Grade 3)
7- Assistance to reinforcement (Grade 2)
8- General Armature Engineer (Grade 3)
9- Concrete (Grade 2)
10- General Concrete Worker (Grade 3)
11- Skeletal Assist (Grade 2)
12- Sketch Builder General Worker (Grade 3)
13- Assistance with the construction of a tent (Grade 2)
14- General Worker of Tightening (Grade 3)
15- Plumbers and installers of sanitary ware (Grade 2)
16- Household and commercial gas plumbing worker (Grade 3)
17- Assisted Electricity (Grade 2)
18- General staff of electrical building (Grade 3)
19- Stoneworker assistant (Grade 2)
20- General Stoneworker (Grade 3)
21- Tile installer assistance (Grade 2)
22- General tile installer (Grade 3)
23- Gypsum plaster assistance (Grade 2)
24- General gypsum plaster (Grade 3)
25- Assistant painter of the building (Grade 2)
26- General Painting Worker of the Building (Grade 3)

Diversity in Behavioral, Professional, Ethical, Cultural and Social Competencies

In this section, the behavioral, professional, ethical, cultural and social competencies expected from the human resources of construction projects is

reviewed, regardless of profession, academic background, level of skills and occupation. It was necessary to pay special attention to the values, social conventions and other elements of the community culture and its expectations from all the staff of the construction projects.

Merriam-Webster's encyclopedia defines culture as "common beliefs, practices and social behaviors of a particular national or particular people." However, in the real world, it is difficult to provide a definite definition of culture, because the features that are used in conjunction with cultural differences are not universally applicable. These attributes are individual. In the process of identifying competencies, the similarities and differences in attitudes and approaches to work and working relationships across the different areas should be identified and clarified.

It should be noted that one of the main reasons for poor communication is in fact lack of communication. For linguistic, temporal, and cultural issues, when access to information is limited, the ground for disaster will be provided (Madter et al., 2012).

1- The ability to apply professional behavior in the design of a standard professional system by the organization's technical and vocational training affiliated to the Ministry of Labor and Social Affairs of Iran is defined as follows: (SafarzadeganGilan et al., 2012).

[- The characteristic of ethics of morality - The character of individual morality - Responsibility - Conscientiousness - Work discipline - Behavior in behavior and keeping calm in the event of an accident]

The competencies of professional ethics in the US Professional Technical Aid program have been studied in two dimensions: individual excellence and accountability. This program has been used by the Iranian Organization for Research and Educational Planning and the Office for the Planning and Compilation of Technical and Professional Education and Work and Knowledge as a criterion for competence training in the Ministry of Education.

The competencies of professional ethics in this standard are: (Omar & Fayek, 2016)

2- Individual Excellence: [- identify ethical issues - identify social and personal values - integrity tool - show loyalty and goodwill - responsibility in relation to individual behavior - showing commitment to the development, individually Social - analysis of a set of behaviors and moral decisions in the workplace - advice and focus on a set of ethical behavior and performance - dealing responsibly with the activities and decisions immoral - set and classified set of ethical behavior at work - judging decisions and conduct performance - the exhibitors care and social responsibilities]

3- Responsibility: [- regular attendance - to showcase and demonstrate the timeliness and punctuality - to perform assigned tasks - follow the rules, policies and procedures - View and apply a good level of mental focus - volunteering for new activities and specific - doing the right things with minimal supervision - attention to detail - to showcase the passion, optimism and initiative - control and monitoring of performance standards - Keep track of assignments - voiced commitment to the organization - to showcase the efforts and perseverance significant - ensure the quality of work done - Conscientiousness - Judgment and evaluation of responsibility to others]

Non-technical skills of technicians for behavioral purposes in the US vocational training program include: (Takey & Carvalho, 2015).

4- Recruitment skills: [- the creation of jobs and employment - preparing for employment - assessing the importance of self-esteem - Job maintenance skills - knowledge of professional ethics - the ethics proper - use decision making techniques - using problem solving techniques - showing related characteristics with career progress]

5- Professionalism: [- Professional image planning - Formulating professional and personal goals - Managing personal and personnel finances - Protecting and supporting healthy communities - Working together to achieve organizational goals - Managing stressful and tense situations - Analyzing the effects of the family on work and the user on the family - the use and use of lifelong learning skills - managing professional progress]

6- Teamwork: [- Providing teamwork knowledge - Providing practical teamwork - Using teamwork to solve a problem - Leading team meetings]

7- Professional Practices: [- Description of Professional Responsibilities - Determine Ethical and Legal Behavior - Acting as a Self-Employed Leader - Observing and complying with intellectual property laws and copyright laws]

8- Safety of the work environment: [- Presenting and demonstrating safety knowledge and workplace hazards - Maintaining and maintaining the safety of the work environment - Displaying and presenting ergonomic professional and occupational knowledge]

Also, professional culture and ethics are among the general competencies in the technical and professional competencies of the Ministry of Labor and Social Affairs, that individuals should be able to combine their technical and social competencies or have these traits. These competencies have been examined in three areas: knowledge, skills and attitude.

Cultural competencies and professional ethics in this standard are: (SafarzadeganGilan et al., 2012).

9- Effective communication

1) Knowledge: [- The concept of communication - Communication process - The factors preventing effective communication - How to improve communication - The importance of listening and communicating - Verbal communication strategies in communication - Non-verbal communication strategies]

2) Skill: [- Provide a commonly used preventive table of effective communication - Correction of communication processes by using the inhibitor status analysis]

3) Attitude: [- Respecting Effective Communication - Calming Talk]

10- Adopt critical thinking to improve performance

1) Knowledge: [- The role of critical thinking in the recovery process - Continuous improvement of performance through critical mechanisms]

2) Skill: [- Critical Thinking Practice in the Brainstorming Process - Provide a Table of Criteria for Critical Analysis - Advice for news or global incidents and critical analysis of the subject using analytical criteria]

3) Attitude: [- Tolerance of others' opinions]

11- Work in a variety of work environments

1) Knowledge: [- The acquired concept of resistance to workplace diversity - Personal prejudices and career paths - Strategies to overcome personal prejudices]

2) Skill: [- Analysis of diversity in the workplace - Good practice with respect to human environmental diversity - Analysis of various environmental conditions in a simulated situation (case study)]

3) Attitudes: [- Avoiding bias in the workplace - The need to pay attention to individual characteristics rather than some of the features]

12- Positive attitude to doing work

1) Knowledge: [- The concept of positive attitude - The impact of a positive attitude on team members - How to create a positive attitude in people]

2) Skill: [- Preparation of Positive Attitudes Components - Analysis of the "We Can" concept (positioning) - Strategies for creating positive attitudes in people to do useful work]

3) Attitude: [- We can]

13- Resolve disputes and conflicts in the workplace

1) Knowledge: [- The Concept of Conflict - Types of Conflicts in the Workplace - Conflict Resolution Strategies - People's Typology (Anger, Aggression)]

2) Skills: [- Listening skills - Resolving disputes using strategies - Providing short written notes on workplace violence - Displaying a situation from a dispute and exploring ways to deal with conflict and conflict]

3) Attitude: [- Friendly behavior - Avoiding Discriminatory Behaviors]

14- Perseverance in difficult and complicated tasks

1) Knowledge: [- The concept of perseverance and endurance in work - Harsh conditions and strategies to deal with it - Endurance strategies at work]

2) Skill: [- Use the perspective to overcome hard work - Provide work in difficult situations - Analyze the status of successful and unsuccessful people in work]

3) Attitude: [- Trust in the Great God - Believing that everything that man earns is the result of his own work.]

15- In the Occupational Information Network (O*NET) by the US Department of Labor/ Employment & Training Administration (USDOL/ ETA), behavioral competencies are: (Isik et al., 2009).

[- Attention to detail – Trust- Collaboration: Enjoying others with work, showing goodness and a cooperative attitude. - Stress tolerance: Accepting the crisis and dealing with calm and effectively with high stress conditions. - Striving and sustaining work achievements – Initiative- Leadership: willingness to lead, accountability, and presenting opinions and solutions - Importance to others – Honesty – Insistence- Adaptability and flexibility – Independence- Being social- Analytical Thinking- Innovation]

The competence of human resources is considered an essential pillar for choosing and promoting them in organizations and one of the main criteria for the success or failure of an organization. Therefore, in order to identify, modify and enhance the performance at the organizational and managerial levels, organizations have considered the use of competency models which is imperative and essential and implement them in their main plans. (Dullayaphuta & Untachaia, 2013). If focusing on the human resources competencies employed in a set of construction projects, then the performance of a project-oriented organization is highlighted, so identifying and focusing on the competencies of the project manager, civil engineer, technical foreman, and worker should be a priority. On this priority and importance, if the important area of responsibilities and the range of influence of the executive teams in the projects, programs and portfolio will undoubtedly lead the mind of each scholar to the increasing importance of identifying, ranking and modeling the competencies of human resources in the set of construction projects. Also, based on research and studies, competency-based management (CBM) is identified as a solution for connecting HRM functions and as an attempt soon to clarify the competencies and skills framework in the form of a competency model in

project-oriented organizations to help select and the allocation of decent employees, whose void in such organizations is quite tangible (Skorková, 2016).

In this paper, firstly, by reviewing the diversity in human resource competency models in construction projects, conceptual framework, and competency model components are reviewed. In the following, the professional competency model of the project manager, civil engineer, technical foreman and worker are identified individually and in detail. Then, in the end, a set of behavioral, professional, ethical, cultural and social competencies is presented in a variety of competency models. Since human resource competency models are based on the structure and framework of project-oriented organizations in construction projects, it is suggested that researchers in project management areas present a model for a set of projects such as research, information technology, and business process implementation and compare the results with the results of this study. Finally, taking into account all the criteria and models extracted in this research and the findings of the future research, we will provide an appropriate model for promoting the level of excellence in project management and the construction industry.

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