

Prioritizing the Researchers' Important Competencies in Research Centres

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Abstract: Changes caused by the knowledge economy, including the emergence of new idea flows in management, methods and structure of organizations, have led to a change in the roles and skills needed for researchers in organizations. As new age organizations focus on intellectual property, organizational aspirations and organizational change, the researchers, as the wealth creators, in order to quickly adapt to new situations and develop their competencies in the competitive market, need to constantly change and develop a new identity for themselves. Since competencies have a prudential feature through describing skills and behavioural approaches, identifying and explaining researchers' competencies in research centres is of particular importance. Accordingly, the present paper seeks to identify the factors and indicators of researchers' competencies in research centres using scientific methods and surveys and then identify, classify, and prioritize researchers' important competencies using statistical methods. According to the results obtained from the present study, creativity and innovation, integration, accountability and customer orientation competencies have higher priorities; however, all identified important competencies have a significant positive distance to mean. With the help of the results of this study, researchers and managers can clarify expectations about each other.

Keywords: important competencies; industrial research centres; researchers' competencies prioritization

1 INTRODUCTION

Because competencies have a prudential feature, and describe the skills and behaviours that researchers and research managers in the research centers needed to create a new culture and skills to meet future challenges, defining and explaining the researchers' competencies is one of particular importance both for research Centres and researchers in research centers.

Clarifying the expectations of research centers and explaining the research activities requirements to assist the future development of research centers regarding researchers' engagement and developmental projects are among the benefits of identifying competencies and determining their importance in this industry.

The researchers' important competences in the research centers can be seen as a robust basis for establishing consistent performance standards, which are formed by a common language about what is needed and expected by research centers [1].

Because of applying the results of its findings to specific and intra-organizational problems, and for addressing the researchers' important competencies (including the components and dimensions of competencies), the present study is considered as applied research. The research is also considered as a descriptive-survey in terms of the data collecting approach.

The present study also considers the research competencies, not the management ones, and other non-executive competencies, not technical and specialized ones, so this institute is selected as the statistical population.

Library studies and surveys, interviewing relevant academic and research experts, Delphi method, examining related models, questionnaires, analyzing findings based on mathematical models, and statistics, competency software, SPSS, Excel and Lisrel software and other future studies methods have been used in the present study and in accordance with the procedure shown in the Fig. 1.



Figure 1 The research procedure

2 LITERATURE REVIEW

2.1 Definitions Competence

The ability to utilize or apply a set of relevant knowledge, skills, and abilities needed to successfully execute "critical aspects of work" or tasks defined in a work environment. This should not be confused with qualification, but competence describes a behaviour rather than trying to describe the performance level.

Competencies often considers as a basis for skill standards that provide a "level" of knowledge, skills, and competence needed to succeed in the workplace as well as a potential indicator to evaluate the competence achievement.

2.2 Competency Model

One of the challenges facing enabling an organization to compete effectively is adapting employees to their job needs. Using job analysis is a traditional approach to formulating job performance models, in which different procedures are used to identify and describe the job critical requirements and differentiate the high and low performance [18]. Job analysis focuses on issues such as what employees are really doing in their jobs, perceptions of what people are doing and what should be done in the future [8]. Two problems may arise when using job analysis to describe and describe jobs. Firstly, the description of traditional written jobs is only for describing the activity and may not clearly explain the outcomes needed for the organization to succeed; and the second is to describe traditional jobs rapidly in today's fast-changing and dynamic environment [6]. Criticism of job analysis indicates that performance models are very specific to jobs and are more focused on the job rather than the individuals and values and goals of the organization. Hence,

a relatively new approach is proposed to define and determine the performance called the competence model [13].

Competency models often contain a brief description of jobs, values, and key organizational goals for preparing a list or selecting from an existing list of the most important competencies required for performance that align with organizational values [10].

The competency model is based on the approach that competencies are defined as effective and visible behaviours that are tied to organizational outputs [15]. 'Introducing the competencies needed for senior executives in key positions in the organization', 'trying to eliminate any gap from competence through effective selection', 'training and development', 'ensuring recognition and reward for good performance' are among the goals of the competency-based approach[5].

According to Afkhami et al. [1], by identifying and emphasizing employees' skills that coordinate and support core strategies and competencies, the competency model approach can equip organizations to the competitive advantage [22].

A complete picture of job requirements is provided in competency models that will increase the chances of those who will be hired, and ensure about a systematic and orderly interview process. It can also help to distinguish between competencies that improve with training and those that are more difficult to improve [24]. A set of competencies is also defined in the competence model, by definitions and descriptions of behavior for a particular or a group of jobs and it is a narrative description of the competencies needed for a job or the job category that results from observing the employees' satisfying or phenomenal performance. A competency model identifies a set of competencies and behaviors, directly related to the work to be done, and the skill levels for each behaviour [3].

As the ability to perform activities within the work domain according to established standards, the competency model is in fact a measurable model of the abilities and behaviors needed to perform the job successfully [9].

The competency model is at the heart of organizational performance because it guides learning and training processes and strategies, content development, and performance evaluation [17]. In order to develop competencies, individuals need to know both the knowledge and opportunities for learning skills in practice.

The competency model is a certain behavioral description of skills and features needed by employees to be effective in a given job and it is also useful to determine the required abilities and features to meet current and future employees' requirements and focus on employees' development efforts to eliminate the gap between the available and needed capabilities [16].

The competency model is a detailed description of the competencies needed for the full success or an exemplary performance in a job, role or organization [23]. It is a decision-making tool in the human resource management system in the processes of recruitment, selection, training and development, performance management and succession

planning in order to meet the organizational requirements including a list of competencies, definitions, and behavioral indicators [4].

In addition, as it translates business requirements to training and operational needs for HR professionals, the competency model in many organizations helps leaders to develop within the organization to enhance the organization's performance from good to excellent and to provide a clear picture of what managers need to be successful in their careers. For many researchers, the competency model is the basis of any human resource system. According to [12], formulating a competency model has a positive relationship with individual and organizational performance. The competencies required for each managerial position are identified when formulating the competency model, and consequently, the organization can appoint managers who are more likely to have optimal performance [2].

2.3 Reviewing Competency Models

The competency models are discussed in two parts in the following: the general models and the models designed and used for research centers.

2.3.1 General Models

2.3.1.1 Beyham's et al. Model

Introduced in 2002, this model has four dimensions interpersonal skills, leadership skills, management or business skills, and personality traits. The characteristics of this model are listed in Tab. 1 [11].

Table 1 Beyham's et al. model

Index	Dimension	Index	Dimension
Entrepreneurship	Business management	Effective communication	Interpersonal skills
Business Frost		Effectiveness of Interpersonal Culture	
Important orientation		Customer-orientation	
Global intelligence		Developing important relationships	
Job handling		Persuasiveness	
Equipping Resources		Creating organizational talent	
Operational decision making	Leadership for Change		
Proper self-control	Coaching and Delegation		
adaptation	Influencing others		
Result-orientation	Team development		
energy	Expert		
Learning-orientation	Personality features		
optimist			
Performance oriented			
Understanding the environment			
Value for diversity			

2.3.1.2 Zenger & Folkman Model

The leadership competencies are classified in five dimensions in Zenger and Folkman [23] that to differentiate the organization: personality, personality capacity, result-orientation, interpersonal skills, and organizational change leadership. The model characteristics are listed in Tab. 2 [19].

Table 2 Zenger & Folkman model

Index	Dimension	Index	Dimension
Communications	Inter-personal skills	High integrity and loyalty	Personality
Motivating others to perform well		Technical and professional expertise	Personality capacity
Building relationships		Problem analysis and solution	
Being a team and working as a team		Innovation	
Partnership and Collaboration		Pay attention to own development	
Developing important vision and vision	Organizational change leadership	Result-orientation	Results-orientation
Champion of Change		Formulating flexible goals	
Creating internal group contacts with the organization's external environment		Responsiveness about results	

2.3.1.3 Boyatzis Model

The Management Association in the US delegated competency modelling research to Mac Company. The research was resulted to a model presented by Boyatzis in 1982 as follows. He has divided management competencies into six dimensions, including goal and operations management, leadership, human resource management, marketing leadership, focus on others, and specialized knowledge which indicators are presented in Tab. 3 [14].

Table 3 Boyatzis model [4]

Dimensions	Index	Dimensions	Index
Objective and Operation Management	Efficiency-orientation	Staff management	Using the power of command
	Being passive		Developing people
	Diagnostic use of concepts	Focus on others	Perception of reality
	Aware of the consequences of achieving the goal		Self-control
Self Confidence	Endurance		
leadership	Verbal presentation		adaptation
	Perception	Specialized knowledge	Specialized knowledge
Human Resource Management	Social power		
	Group management process		

2.3.1.4 Stone's Management Competency Model

This model, which is presented in Tab. 4, was formulated in 2001 and categorizes competencies into six dimensions: communication, development and partnership, core practice, technical expertise, organizational effectiveness, and personal effectiveness.

Table 4 Stone's Management Competency Model

Index	Dimension	Index	Dimension
Verbal communication	Communications	Building relationships	Organizational effectiveness
Written communication		Public Relations	
Conflict management		Evaluation and Accountability	
Introversion		Organizational review	
Educational Skills		Resource Management	
Presentation skills		Balancing work and personal life	
Teamwork and partnership	People Development and participation	Flexibility	Personal effectiveness
Facilitate teamwork		Individual education and personal learning	
Volunteer development and management		Job Management	
Control and coaching		Result-orientation	Action-orientation
Delegation of power		Change implementation	
Customer-orientation			
Technical expertise	Technical expertise		
Technology integration			
Problem solving			

2.3.1.5 Mansefield Management Competency Model

Introduced in 2003, this model states the manager's competencies in three areas: employees with two competencies, leadership, communication and influence, job domain with two competencies of achieving the results and follow-up and problem solving and self-management domain. The model indicators are presented in Tab. 5 [7].

Table 5 Mansefield Management Competency Model

Dimension	Item	Index
Employees	Communication and influence	Paying attention to communication
		Verbal communication
		Written communication
		persuasiveness
		Interpersonal awareness
		Penetration skills
		Establishing collaborative relationships
	Others direction	Customer orientation
		Empowering others
		Change Management
		Development of others
		Performance Management

Dimension	Item	Index
Job		Create a focus of attention
		Motivational support
		Teamwork nurturing
	Achieving results	Innovation
		Entrepreneurial orientation
		Nurturing innovation
		Result-orientation
		Precise and scrutiny
		Decisiveness
		Problem follow-up and solving
	Analytical thinking	
	Leading thinking	
	Conceptual thinking	
	Important thinking	
	Technical expertise	
	Self-management	Self confidence
		Stress management
		Individual trustworthiness
		Flexibility

2.3.1.6 Zenger et al. Model

The management competencies triangular with four dimensions are provided by Zenger and Folkman (2002), which includes important business skills, individual capability, cultural processes skills, and change and human resources skills. The model indicators are listed in Tab. 6.

Table 6 Zenger et al. Model

Index	Dimension	Index	Dimension
Change and Culture Management	Cultural processes and change skills	Important thinking and planning	Important Business Skills
Organizational Design		Customer-orientation	
Consultation		Leadership	
Facilitator		Important Sector Analysis	
Project management		Communications	
HR planning	HR skills	Coaching	Personal capability
Recruitment, training and development		Self-awareness	
Performance management, rights and benefits		Professional training	
Labor relations, conflict management		Participation	
		Integrity	

2.3.1.7 Managerial Assessment of Proficiency Tool (MAP)

The dimensions of this tool include executive skills, communication, monitoring and diagnosis. The model components and indicators are listed in Tab. 7 [4].

Table 7 Managerial Assessment of proficiency Tool (MAP) [4]

Dimension	Item	Index	
Executive	Time management and prioritization	Prioritizing	
		Practicing self-discipline	
		Controlling interruptions	
	Setting standards and goal-setting	Doing important things instead of everything	
		Support activities, goals, standards	
		Reducing barriers	
	Work planning and scheduling	Results evaluation	
		Complex task analysis	
		Source selection	
		Work planning and scheduling	
		Setting up inspection and control points to monitor the process	
		Communication	Listening and organizing
Overcoming the obstacles to listening and organizing			
Refining and rearranging a message for reminder			
Detection and control of assumptions and inferences			
providing clear information	Overcoming barriers to information clarity		
	Goals confirmation		
	Maintaining a climate of mutual benefit and trust		
Getting undistorted information	Using guiding, non-guiding, reflective, and reasoning questions		
	Understanding confirmation		
	Get agreement		
Monitoring	Training, guidance and delegation		Choosing the Right People
			Reaching agreement on plans to perform
		Maintaining balance between input and output	
		Assignment of responsibility	
		Providing effective feedback	
	Individual and performance evaluation	Providing appropriate rewards	
		Maintaining evaluations	
		Focus on performance, not personality	
		Reaching agreement on future expectations	
	Discipline and consolation	Following the executive plans	
		Maintaining performance	
		Determining the scope of individual responsibility	
Diagnosis	Problem identification and solving	Enhanced performance enhancement	
		Diagnosing and distinguishing between symptoms and problems	
		Data collection	
		Identifying the root cause	
	Decision making and risk weighting	Weighting options	
		Take appropriate action	
		Identifying the constraints and risks considered	
		Assigning weight to each option	
	Explicit and analytical thinking	Selecting the best option to achieve the desired goal	
		Identifying valid assumptions	
		Drawing logical results	
		Recognizing misconceptions, false assumptions and overview without evidence	

2.3.1.8 American Society for Training and Development (ASTD) Model

The American Society for Training and Development has considered three dimensions of competence, interpersonal competencies, management competencies and personal skills into its model. The model indicators are provided in Tab. 8 [21].

Table 8 American Society for Training and Development (ASTD) Model [21]

Dimensions	Index
Inter-personal skills	Trust
	Effective communication
	Influencing stakeholders
	Leveraging diversity
	Networking and Partnerships
Managerial skills	Needs analysis and solutions
	Business intelligence
	Result-orientation
	Scheduling and executing assignments
	Important thinking
Personal skills	Modelling personal development
	Adaptation

2.4 Application of Competency Models

As a set of applicable standards of skill in recruiting, leading jobs, evaluating employees, designing scientific programs and issuing industry certifications, competency models are a bridge between coaches, the business sectors and other stakeholders to prepare students and workers to deal with the challenges of the business environment where they have invested. Competency models can also be used by employees as an effective option and a tool for career development. These models are also able to assist human resources staff to adapt specific professional and work needs to different jobs in recruitment, promotion and career development while developing training programs. The competency models can be used to evaluate individuals' job performance, as well as the role of managers, reporting, customer and team members, and as a means of conveying performance expectations to employees in business environments.

These models can also be used to measure the gap between staff requirements and current training programs, and the system for providing training, reviewing existing courses, and designing competencies, and also as a path to identify gaps. The competency model can be seen as a benchmark when evaluating existing education and training programs or when designing new programs by program providers, resulting in courses that meet workplace needs and trends.

These models can be utilized by training program providers to obtain valid industry certificates. Such certificates prove that the graduates of a particular curriculum have earned the necessary competencies and dominance in a given field.

As a guide to investment boards and professional centers, competency models can match job requirements with the skill sets that employers determine for potential candidates. These services can even be offered to larger groups such as

high school, non-high school youth, workers transfer from one unit to another and current workers, as well as groups with special needs, and consequently, causes increasing the range of available workforce talent. Since all of these main partners work together through sharing assets and resources, the competency model plays an effective guiding and important role for government investment in the preparation of workforce strategies in an area or province.

3 RESEARCH METHOD

The present study is an applied research in terms of the purpose, which uses a combined research strategy that can have multiple applications in industry and organization. The study aimed to identify and prioritize the researchers' important competencies in research centers. The Delphi method (qualitative) method and the structural equation modelling (SEM) are used in this research to discover the most important researchers' important competencies and prioritize important competencies, respectively. The Delphi method can be used in qualitative research with exploratory dimensions to identify the nature and fundamental elements of a phenomenon. In this regard, Delphi method is utilized to "identify" and "screen" the most important decision-making indicators. The use of the professional knowledge and expertise of a set of experts is very helpful in making decisions about problems with a qualitative nature. Generally, Delphi method is defined as a research approach to reach consensus using a series of questionnaires and providing feedback to participants who have the related expertise. There is no standard statistical methods in Delphi method and expert opinion survey. However, data analysis methods depend on the research purpose, the type of questions, and the number of respondents. The data collection tool in this study are interviews and questionnaires. People participating in the Delphi method must be knowledgeable about the subject matter of the study and are referred to as "panellists" or "experts". Non-probabilistic sampling with the purposeful sampling and snowball sampling methods are used to select the experts. The study population was selected among the faculty members in the field of management and human resources, and the managers and researchers in the field of research and technology to reach the valid results. About the sample size, a sample of 10 to 20 qualified professionals have been estimated as a valid sample. In this regard, a list of individuals with high research, knowledge and expertise was selected to participate in the study who included faculty members and senior managers in the field of research and technology. The other experts were introduced during the interview by experts in the early stages of the interviews. Interviews continued until the content saturated that is, new components or dimensions were not mentioned by the interviewees. Finally, the interview would continue for 20 people. The participants' profile are presented in the Tab. 9.

Firstly, the components of researchers' important competencies were extracted through the exploratory phase by interviews. Then, a semi-structured questionnaire was used in the first Delphi round to limit the competencies, and

a closed questionnaire was used in the second and third Delphi round to converge the findings and discover the valid consensus. The expert agreement is reached in the present research when the average expert opinion on each item is above 4 (agreement). Kendall's coefficient was used to control the validity of the research instrument which was estimated at 0.763 in Delphi final stage which indicates appropriate validity. Generally, it should also be said that the content validity is guaranteed if the panel members have the needed expertise and quality as a qualified representative in the related field of knowledge. On the other hand, confirmatory factor analysis and construct validity are used to prioritize competencies and Cronbach's alpha was used to determine the questionnaire reliability which was estimated at 0.77 indicating acceptable instrument reliability.

Table 9 The expert panel profile

Variable	Group	Frequency	Percentage
Gender	male	14	70
	Female	6	30
Education	Ph.D.	12	60
	Master degree	8	40
Experience	Lower 10 years	5	25
	10-20	8	40
	Over 20 years	7	35
Position	Faculty member	11	55
	researcher	9	45
Total		20	100

4 RESEARCH FINDINGS

4.1 Qualitative Stage (Delphi)

The most important researchers' important competencies was provided to the experts in the first phase. The question is raised in the presence of most members and through open-ended interviews. Next, they were asked to suggest the components that were not considered by communicating with each of the members and explaining some of the elements extracted in the theoretical bases. After receiving the responses and examining the experts' views, similar items were merged and a number of non-relevant components were removed from the present study. The list of researchers' important competencies factors was compiled and analysed in the first phase of Delphi with the help of panel members and advisor and consultants. Finally, the initial questionnaire form, which was developed based on the literature using survey methods from experts and professors and initial analysis, was revised and modified according to the experts' suggestions and the final questionnaire was confirmed after two rounds of the Delphi method. The final questionnaire with 59 competency components was developed in the second phase and provided to the panel members to determine the importance of each component. The results were presented to the members in the next stage and the members were asked to review their responses and revise them if needed and state their reasons for disagreement. Finally, the consensus was achieved regarding 48 components of competence according to the following table and the final model was obtained.

Table 10 The Delphi results on the components of the researchers' important competence

Empowerment and competence	Average comments	Kendall coefficient	Rank
Professional scientific knowledge	4/76	0/768	1
The desire for continuous learning	4/56	0/762	2
Ability to teamwork	4/56	0/762	3
Innovation creativity	4/56	0/763	4
Analytical thinking	4/55	0/762	5
Critical Thinking	4/53	0/760	6
Decision making	4/51	0/764	7
Partners' passion / motivation	4/51	0/750	8
Integration	4/50	0/751	9
Formulating a research topic / problem solving	4/49	0/762	10
Moral competency	4/48	0/760	11
Time Management	4/48	0/764	12
Result-orientation	4/47	0/750	13
Systematic thinking and planning skills	4/45	0/762	14
Knowledge of management and organization	4/44	0/748	15
Foreign Language Skills	4/44	0/750	16
Developmental learning/ Future studies in learning	4/33	0/739	33
Water crisis	4/33	0/751	34
Crisis Management	4/32	0/748	35
Sustainable Development and Climate Change	4/32	0/750	36
Stress management	4/32	0/739	37
Self-confidence	4/31	0/751	38
Listening skills	4/30	0/748	39
The art of Influence	4/30	0/752	40
Analysis and use of ICT	4/44	0/760	17
Leadership	4/43	0/764	18
Adaptability / compatibility	4/43	0/750	19
Networking development capacity	4/43	0/762	20
Effective negotiation and communication skills	4/42	0/748	21
Project management	4/42	0/750	22
Important thinking	4/41	0/739	23
Risk management	4/39	0/751	24
Communication skills	4/38	0/748	25
Business intelligence and entrepreneurial spirit	4/36	0/760	26
Developing people	4/36	0/739	27
An open minded approach / horizonology	4/36	0/751	28
Challenge decision-making capacity	4/36	0/748	29
Challenge	4/36	0/750	30
Accountability and customer orientation	4/35	0/739	31
Resource management	4/35	0/751	32
Capacity of evaluating others	4/29	0/748	41
Conflict management	4/24	0/739	42
Financial management	4/21	0/751	43
Globalization	4/20	0/748	44
Science and Technology Policies	4/19	0/753	45
Changes	4/18	0/739	46
Regional turbulence	4/18	0/751	47
Transnational market	4/14	0/748	48

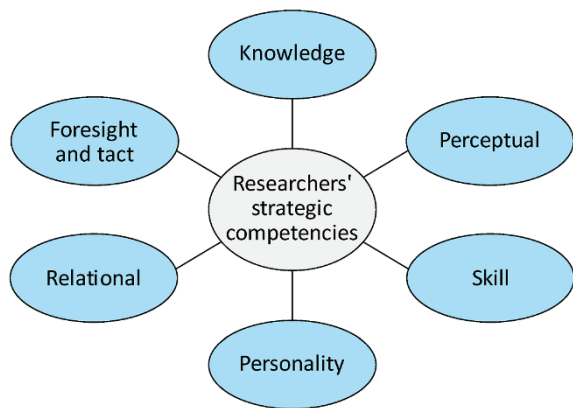


Figure 2 The final model of researchers' important competencies

4.2 Quantitative Stage (Structural Equation Modelling)

The validity of the model construct is tested in this section using structural equation modelling techniques by LISREL software.

4.3 Confirmatory Factor Analysis

The confirmatory factor analysis is mainly aimed to determine the power of a pre-defined factor model with a set of observed data. That is, confirmatory factor analysis aimed to determine whether the number of factors and variables measured on these factors correspond to what was expected by theory and theoretical model. In other words, this type of factor analysis tests the degree of conformity between the theoretical and empirical construct. Hence, validating the model is one of the functions of confirmatory factor analysis. The standardized loads are of particular importance in confirmatory factor analysis when interpreting factor analysis results. These loads indicate the correlation between each observed variable and its associated factor. The strength of the relationship between the factor (hidden variable) and the observable variable is represented by the factor load. The higher the factor loadings of an index in relation to a particular construct, the greater its contribution in explaining that construct. Also, if an index factor loading is negative, it indicates its negative impact on the explanation of the relevant construct. That is, the relevant question is designed inversely. The factor loading is a value between zero and one that if it is less than .3, the relationship is weak and it can be ignored. A factor loading between .3 and .6 is acceptable, and it is highly acceptable if it is greater than .6 [20].

4.4 Factor Analysis of Knowledge Construct

The factor loading of all the competencies of the knowledge construct is at the least acceptable status and the highest factor loading is related to the financial management variable (q3) with .83 according to Fig. 3.

In order to examine the significance of the relationship between variables, the T-test or t-value is used and since it is significant at the 0.05 level of error. So, if the factor loadings observed by the t-value test are lower than 1.96, the relationship is not significant and if it is greater than 1.96 the

relationship is significant and the model validity is confirmed.

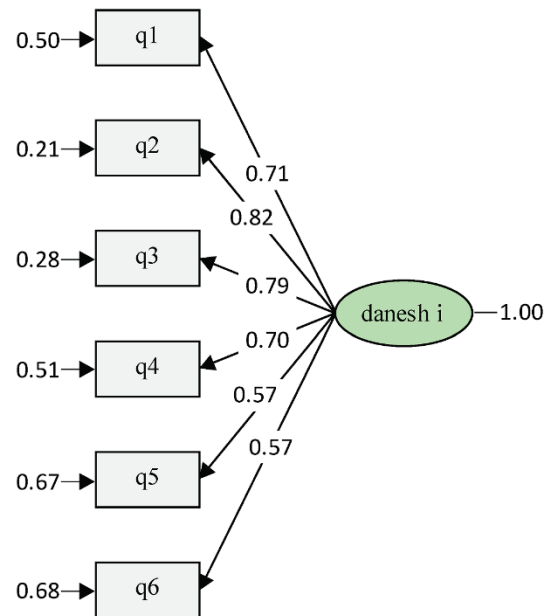


Figure 3 Factor Analysis of Knowledge construct (Standard Estimation Model)

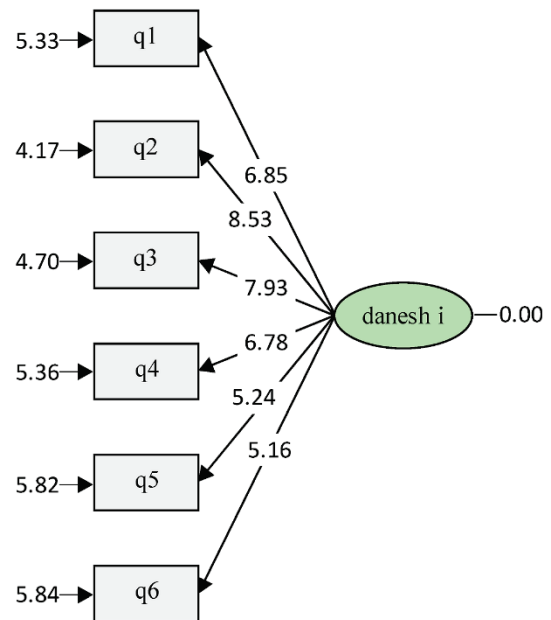


Figure 4 Factor Analysis of Knowledge construct (significance model)

Since all relationships between variables and constructs (knowledge competence) were greater than 1.96 according to Fig. 4 all relationships are significant and confirmed.

4.5 Second-Order Factor Analysis

The first-order Confirmatory Factor Analysis evaluates the relationship between factor(s) (latent variables) with items (observable variables). No relationship between latent variables is examined in this method. This type of measurement model is simply to ensure that latent variables are measured correctly. One can examine the relationship of

one factor with multiple items or factors or multiple items in the first-order confirmatory factor analysis.

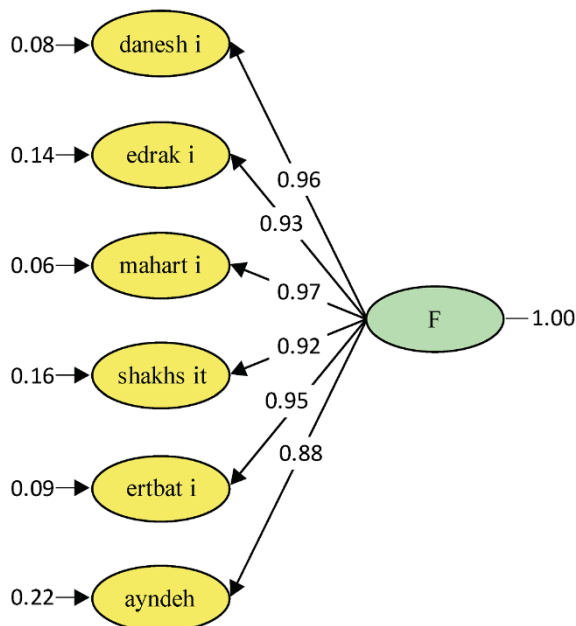


Figure 5 The second-order Factor Analysis (Standard Estimation Model)

However, when a large construct is composed of several latent variables, the second-order confirmatory factor analysis is used. In addition to examining the relationship of observable variables with latent variables in the second-order confirmatory factor analysis, the relationship of latent variables with their main construct is also examined.

The factor loading of all the competence groups (6 groups) is in optimal status according to Fig. 5, as all factor loadings are greater than .70. It is also seen that the highest factor loadings belong to the skill class with 0.97

The final questionnaire was distributed among the researchers of the research and the score of teach index is obtained based on the Likert classification that the mean of each index was determined and confirmed based on rank and score using the following statistical methods.

5 CONCLUSIONS

The important competencies needed by researchers in the research centres are listed in the table below according to the average score of experts and researchers. As can be seen, the creativity and innovation, integration and accountability, and customer orientation competencies have higher priorities followed by the women presence in the labour market, the water crisis, financial management, the use of ICT and self-confidence. However, all the identified important competencies have a significant positive distance to mean. The researchers were also asked to provide any other mention to incorporate in the second phase of the questionnaire.

The important competencies needed by researchers according to the mean score of the Research Institute researchers are provided in the table below. According to this table, the competencies of scientific and professional

knowledge, the tendency for continuous learning, the ability to perform, creativity and innovation, analytical and critical thinking have top priorities followed by women's presence in the labor market.

The final questionnaire was distributed among the researchers of research centers and two indices were selected based on Likert classification so that the mean of each index was determined by rate and score using the specified statistical methods and confirmed by the statistical methods.

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