Providing a model for evaluating university managers' competency using grounded theory

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Abstract

This study was conducted to provide a model for evaluating university managers' competency using grounded theory. The statistical population consisted of 40 university managers, of which 10 people were selected as samples using purposive sampling. The data was collected through semi-structured interviews. The validity of the data was checked through the review of the participants, as well as the review of experts not participating in the study. The reliability of the model was checked using the Kappa coefficient. The Kappa coefficient was 0.63, which was at the level of a valid agreement. MAXQDA software was used to analyze and code the interviews. Finally, the model derived from the grounded theory was provided based on the criteria identified. Besides, 72 open codes were identified from 503 segments of the interviews. 72 primary codes were categorized into 10 categories, including organizational strategies, managers' knowledge, university conditions and facilities, management of organizational affairs, extra-organizational management, university performance management, human resource management, management of organizational resources, skills, and managers' characteristics. According to the results, managerial skills ranked first with 144 codes, management of organizational affairs ranked second with 67 codes, and university performance management ranked third with 66 codes. 27 (67.50%) of the 40 interviewees referred to organizational affairs management. Managerial skills were prioritized in terms of the number of repetitions of codes, and management of organizational affairs was prioritized in terms of generality and comprehensiveness among the respondents, indicating the importance of these categories.

Keywords: management, skill, competency of managers
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1 Introduction

The competency of community managers significantly contributes to its prosperity. Moreover, the success of organizations in achieving their goals and missions depends on the existence of competent managers. So, appointing competent managers is of great importance, and criteria should be defined for it. On the other hand, knowing the dimensions of managerial competencies is an important factor for the development and evaluation of managers because they are responsible for managing complex organizations with different challenges and unpredictable demands.

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According to Crestid, competency is not a new approach in human resource management and the ancient Romans used it to achieve specific and detailed traits (good Roman soldier). The leadership literature is full of studies that attempt to define the characteristics of a good leader. Although the term competency may sound new, its concept is old. Issues such as personality, individual differences, and organizational behaviors have been of interest to psychologists for a long time, and psychometricians have raised many discussions about personality traits, intelligence, and other capabilities as well. Recognizing the key competencies of managers has always been of interest to researchers. It is a fundamental factor both for the development and for the evaluation of managers. The competency of managers is defined as the characteristics and behaviors leading to the effectiveness of managers in the workplace, such as knowledge, skills, personality traits, attitude, and professional and public credibility. Boyatzis [6] argues that a set of factors such as personal qualities, motivations, experience, and behavioral characteristics are involved in managers' success. He mentions these factors as competency and defines them as the capacity of people that leads to behavior to fulfill the job requirements within the parameters of the organizational environment and produces the desired results. A competency model is a set of factors including key behaviors required for excellent performance in a specific job. As a set of factors including the key behaviors required for excellent performance in a specific job, the competency model can be used to identify the competencies needed to improve performance in the current job, prepare for other jobs, and identify gaps and deficiencies. Personal development programs and in-service training are provided to fill these gaps. As Mansfield points out, the competency model is a detailed and specific behavioral description of the characteristics that employees of an organization or company need to be effective. A competency model can be a set of competencies concerning a job or role in an organization. Fogg suggests that a competency model is a descriptive tool for identifying the competencies required to perform a specific role in a job, occupation, organization, or industry. In other words, the competency model is a behavioral description of the job that should be defined according to each job and profession. Managerial competencies include the knowledge, abilities, skills, and behaviors required for effective job performance in a managerial position. Noordegraaf [42] argues that managers in times of ambiguity and uncertainty need three types of competencies, including interpretive, institutional, and textual competencies. Interpretive competency is the interpretation of new events, warnings, and crises and the evaluation of their applicability to current issues. Institutional competency is defined as linking new events with current issues and creating new issues, and textual competency is referred to as ensuring the appropriateness of the textual areas of current issues and the use of words and textual mode to ensure the calmness of discussions. All modern institutions face competition, and this is a serious challenge for managers to focus on activities to gain profitability and competitive advantage so that they can design strategies to develop a defensive competitive position. According to the studies, most of the organizations in Iran do not perform satisfactorily due to the non-observance of the meritocracy and merit-based system in the appointment of managers and employees and neglecting the principle of productivity. However, the obstacles to the implementation of this meritocracy system will be removed if every manager at any level considers him/herself obliged to implement it according to the talent, capabilities, and creativity in the country.

The management of educational systems, including universities, is of great importance because they are vital institutions for the development of any nation, facilitating the economic, social, political, and cultural development of society. Nowadays, universities have to manage their activities more carefully than ever before. The principle that universities should be proactively managed indicates the emphasis on the internal functioning of the university. Communication with many people, a wide range of fields and experiences, diversity of programs, reduction of government investment in higher education, development of competition, focus on research in universities, and new complexities of the environment affect both the roles of staff and faculty members and the roles of administrators, deans, decision-makers, and coordinators in higher education [55]. Today's universities are looking for ways to prepare themselves for the future, such as accepting international students and cooperating with regional development agencies. They face multiple demands and expectations, such as increasing access, promoting lifelong learning, achieving quality standards, providing income from diverse sources, promoting research, etc. Accordingly, they have to manage their activities more carefully than ever before [9].

In a study titled Competencies for Effective Leadership in Higher Education, Spendlove [51] examined the relationship between administrative capacity building and the Europeanization of Estonian public universities. The results indicate that the competency framework for developing strategic leaders in academic services includes credibility, insight, innovation, leadership, and result orientation. Lavson [31] conducted a study titled Principal Perceptions of the Relationship between Professional Development Designs and the Qualities, Proficiencies, and Leadership Skills Required of West Virginia Principals and developed a new system called PLOG (planning, leadership, feedback, evaluation, and reward) in educational organizations. The results indicate managerial competencies and skills and competencies and skills concerning the policy cycle and technical competencies. In a study titled Temperament and Competence in the Managerial Roles of Nurturing Education Administrators in the North Carolina Community College System, Welch et al. [56] examined university managers' competency through interviews with senior managers

and stated that coherent governance, problem-solving, interpersonal behaviors, operational effectiveness, influence, flexibility, and sensitivity of educational management are the most important. González [23] examined the views of senior managers of Mexican higher education institutions on the required managerial competencies through interviews with 20 university managers in Mexico using observation and analysis of documents. The results indicate the recognition of social trends and forces inside and outside the university, the need to understand national conditions, initiative, personal skills and characteristics, executive competencies, social responsibility competencies, and formal and organizational competencies. Khezri et al. [26] conducted a study entitled "A Survey of Comparative and Performance of Educational Groups Managers in Terms of Three Managerial Skills", arguing that there is a significant difference between the performance of the managers of the educational groups of Shiraz Azad University in terms of three management skills (technical, human, and perceptional). In general, the highest and lowest technical skills belonged to the Faculty of Agriculture and the Faculty of Humanities respectively, the highest and lowest human skills belonged to the Faculty of Humanities and the Faculty of Technical Engineering respectively, and the highest and lowest perceptional skills belonged to the Faculty of Basic Sciences and the Faculty of Agriculture, respectively. According to the results of [2], the competencies of educational department managers are creativity, leadership, scientific attitude, criticality, flexibility, collaborative management, teamwork, interaction, communication, time management, conflict management, logical thinking, innovation, negotiation skills, leadership, educational planning, organization, emotional intelligence, decisiveness, change management, strategic management, resource management, customer orientation, organizational commitment, responsibility, technical expertise, problem identification and solving, continuous progress and improvement, judgment, decision-making, and trust building. Ejtehadi et al. [17] conducted a study to provide a model for the appointment of department heads in Islamic Azad University based on fuzzy logic. The results indicate the high importance of competencies such as strategic orientation, professional credibility, expertise, executive-educational experience, organization, communication, human resources management, and financial management, which justify more than 70% of the competencies required by managers of academic departments. The model's consistency ratio is less than 0.1. In this way, pairwise comparisons and results are highly reliable. In a study conducted by Esbati et al. [18], managerial competencies in Iranian public universities were investigated. According to the results, a set of knowledge, skills, behaviors, and attitudes are needed to be effective in a wide range of managerial jobs in the organization, and the management of educational and higher education systems requires special management skills based on their differences with other organizations.

In general, the review of studies on the competencies of managers suggests that different dimensions have been provided separately to evaluate university managers' competency. Some studies point to the political dimension of managers' competencies and consider political insight and non-politicization among the components of university managers' political competencies. Others consider the knowledge of human resources important and identify their strategic knowledge, general knowledge, and specialized knowledge as essential components of managers' knowledge competency. In studies such as those by Ramezani and Ali Akbari [45] and Ghorbannejad and Isa Khani [21], the experience of managers is discussed, arguing that understanding organizational dimensions and structure, hierarchical growth in areas of expertise, and practical experiences during work can make a significant contribution to the usefulness of people for the organization, as well as improving the level of their competencies. In some studies, the dimensions of individual characteristics (ethical and personality traits), attitude (managerial insight, balanced attitude, positive thinking, contingent attitude, and strategic attitude), and skills (human/communication skills, perceptual skills, and executive skills) are evaluated. Accordingly, there is no study that comprehensively and holistically presents the main and sub-components of the model of university managers' competency.

Considering the importance of providing a model for evaluating university managers' competency and the research gap in this field, this study, which tries to provide a comprehensive model by using internal and external studies and the opinions of experts active in the academic field, is of high scientific and practical importance and necessity. The study is scientifically important because the presented model can pave the way for people who intend to have academic activities in the field of human resources competencies in the future. Furthermore, the study is practically important because the model can be very useful for decisions and the adoption of critical strategies by managers and academic staff to appoint managers and lead them toward meritocracy. Therefore, the main concern of the study is to provide a comprehensive model for evaluating the competency of university managers by reviewing the literature on the topic under review and the experts' opinions. This study can also improve the level of university managers' competency by providing scientific solutions derived from previous studies and experts' opinions. So, the study seeks to answer the question, what is the model for evaluating university managers' competency? In the following, an overview of the literature is provided. In the next section, the study design and data collection will be discussed, and the conclusion will be presented after the interpretation of the findings.

2 Theoretical foundations and literature review

Researchers have tried over the years to understand what enables managers to achieve superior performance and success, suggesting that factors lead to the efficiency of executive directors, general managers, and senior managers. In a study by Mintzberg [37], the task of managers is categorized in terms of ten managerial roles in three general categories: personal, informational, and decision-making. This is to provide an understanding of management skills to deal with job-related problems and pressures. Managers will be able to improve their job efficiency and effectiveness by understanding their job roles. This requires integrated talent management that can lead to the comprehensive organization of managers' abilities based on competency models [5]. Empirical studies on competency suggest that managers and employees must master the required competencies (i.e., specified skills, knowledge, and behaviors) to gain credibility. These competencies can then be transferred to other people [24].

Lawler [32] has emphasized the importance of competency in organizations and examined the evolution of organizations from organizations based on a job analysis to organizations based on competency so that a large number of organizations today use competency-based HRM. Despite its different uses, competency seems to need interpretation and explanation in terms of concept. Competency has now become a multi-purpose term that is used with different meanings in various scientific fields [39]. There are various definitions of competency in the literature. The definitions are very similar, emphasizing job roles and responsibilities [11].

According to Sandberg [48], competency has not been systematically studied and has not been frequently used in the management context. Competency has been examined in two main trends for more than 30 years. The first trend is a trait, a motivation, a skill, a definition of a social role or self-image, or a body of knowledge needed to perform a task. Boyatzis [6] used competency to identify individual characteristics that distinguished superior performance. According to Dunphy et al. [16], individual competency includes knowledge, skills, experiences, and capabilities. Woodruffe [57] described competency as the observable behavior concerning job performance. Cardy and Selvarajan [7] suggested that competency can include traditional knowledge. Skills, capabilities, or even motivation are expressed components of competency as well, which is described as a perception of the task, knowledge, skills, and other characteristics used in the fulfillment of the task [22]. The second trend sees competency as an interpretive approach that considers competency situational, meaning that it is determined by the situation in which the person is expected to perform. This trend concerns the examination of executive competency. Sandberg [48] described competency as the meaning of employees' and workers' experiences. In other words, how work is conceived enables people to organize specific knowledge and skills distinct from functional competency. In this way, this conceptualization makes the worker to be considered expert, good, and skilled. An expert is a person who has acquired specialized knowledge of the field through experience and training. Since competency is perceptual, it depends on the context in which it is viewed due to various knowledge, capabilities, and skills. So, a person who is an expert in one field may not be perceived as an expert by others [22].

Lucia and Lesinger [35] defined management competency as a descriptive tool that identifies the skills, knowledge, personal characteristics, and behaviors required to effectively perform a role in an organization, helping businesses to meet their strategic goals. According to the results of a study by Hellriegel et al. [15], competency is a set of knowledge, skills, behaviors, and attitudes that can affect a person in a wide variety of situations and different types of organizations. Competency should predict performance in a job and be measured by accepted standards. Thus, the knowledge of managerial competencies is a critical strategic resource needed by an organization [59]. Competencies are useful concepts, especially when trying to explain why people perform better than others. Competency is a basic personal characteristic that concerns performing effectively in a job or a situation. Competency can predict a wide range of job positions and tasks. Competency required by a person means the ability to use knowledge and do things correctly. Competency describes who can perform the task and why he/she does it in a certain way. Besides, competencies usually include intention, or in other words, motives, traits, self-concepts, roles, and social knowledge. Behavior without prior intention cannot be considered competency. Competencies are internationally grouped into three levels: technical, behavioral, and contextual (textual) competencies. Competency is referred to as capability. It includes a set of alternative organized behaviors that are fundamentally grounded. There are three distinct clusters of competencies. The clusters include cognitive competencies such as systemic thinking and pattern recognition, competencies concerning emotional intelligence such as self-awareness and emotional self-control, competencies concerning social intelligence such as social awareness, and competencies concerning relationship management. Accordingly, competencies are behavioral approaches to emotional intelligence, social intelligence, and cognitive intelligence. Project managers should improve this feature to meet their ever-increasing professional and interactive needs. The requirements of a job are based on the job demand of a person in an organizational framework with physical, technical, and financial resources, as well as traditions and culture [33].

The role of HR professionals has currently shifted from boring traditional administrative activity to a strategic

Table 1: Definitions of competencies [33]

Competency	Definition
Emotional awareness	The ability to identify, realize, and define emotions
Self-confidence	A strong belief in one's ability, competency, and self-esteem
Self-assessment	Knowing the limitations and strengths
Trustworthiness	Honest and ethical behavior
Maintenance order	Order, quality, and punctuality
Flexibility	The ability to adapt to changes
Innovation	Openness to new ideas, approaches, and data
Accountability	Conscience and accountability for personal performance
Getting information	Curiosity and desire to learn
Product effectiveness	Working quickly and with high quality
Decision-making	Making decisions based on principles, goals, and values
quality	The ability to deal with unpleasant, boring, and stressful situations
Stress management	Breaking down problems into smaller ones and systematically identifying them
Analytical thinking	with logical principles
Conceptual thinking	Identifying, applying, and defining concepts
Language skills	The ability and courage to use foreign languages
Achieving success	The desire to perform work more effectively
Commitment	Adapting to the goals of the group or organization
Initiative	Recognition and ability to create opportunities
Optimism	Pursuing goals despite obstacles and problems
Understanding others	Understanding other people's feelings and views
Developing others	Understanding the development needs of others and strengthening their capabilities
Diversity of	Creating opportunities to work with different people
capabilities	Understanding and using organizational dynamics to achieve goals
Organizational	Open listening and communication
perception	Assessing and resolving disputes
Communication	Focusing on things
Conflict management	Focusing on individuals
Management	Establishing and developing useful relationships and informal networks
Leadership	Working with others to achieve common goals
Communicating	
Cooperation	

role to advance organizational goals. So, it is expected to help organizational performance [34]. These responsibilities require specific competencies that HR professionals must acquire to succeed in this field. In the literature on human resources, these competencies are referred to as a set of skills, knowledge, insight, attributes, and abilities. Senior managers who are under competitive, political, and social pressures and stakeholder awareness must identify these competencies [54]. According to the Human Resource Management Society (HRMS), managers have improved their positions in the competitive arena by having management capabilities, and management tools have replaced the company's strategy. Ulrich et al. [54] suggest that HR professionals' competencies are strategic, building credibility, acquiring business and technology knowledge, and influencing HR practices using web-based networks [3]. Thus, having a set of managerial competencies contributes to economic growth and business survival [27, 53].

The terms "skills" and "competencies" are sometimes used interchangeably and sometimes with different meanings. Competency goes beyond knowledge or skill. It is the ability to meet complex demands by mobilizing resources (including skills and attitudes) in a particular field. For example, the ability to communicate effectively is a competency that may include a person's knowledge of the language, practical skills, and attitudes to communicate with others. The European Commission defines "skills" and "competencies" as follows: Skill is the ability to perform tasks and solve problems. However, competency refers to the ability to apply learning outcomes in a specific context (education, work, personal, or professional development). Competency is not limited to cognitive elements (use of theory, concepts, or implicit knowledge). It also includes functional aspects (technical skills), personal qualities (social and organizational skills), and moral values. Competency is, therefore, a broad concept that may include skills (as well as attitudes, knowledge, etc.) [30].

Today's business world is constantly changing. This unpredictability can be reliably predicted. Organizations have to change because they have to survive and progress. Environmental uncertainty creates conditions where planning is challenged more than ever. Accordingly, company managers should adopt a strategic approach to thinking and action. Organizations must adopt effective strategies to be in a better position to optimize their performance and remain competitive and profitable in the long term [43].

Competency is defined as how a person is, what he/she knows, and what he/she does. Important factors in this field include knowledge, communication, technical skills, distinctive thinking, emotion, values, and activities leading

to effective performance [29]. Competency describes the characteristics of employees that they need to perform their tasks properly [28].

One of the indicators affecting the proper use of human resources is the appointment of middle managers. In this way, the most important step in the effectiveness of organizations is to know the characteristics of middle managers to appoint them [40]. A successful leader defines guidelines such as beliefs, rules, and norms that define the entire organization for the proper functioning of members and can embed organizational culture through mechanisms such as training, reward systems, recruitment, selection, and promotion [12]. According to the studies, many factors affect the appointment of managers, and the appointment of competent managers leads to greater efficiency in organizations. These studies refer to the criteria for the appointment of managers, including personality traits, managers' knowledge, professional ethics, relevant experiences, and government requirements. All studies emphasize the effect of appointing competent managers on productivity. Some studies in Iran on the appointment of managers are those by Hosseinian et al. [25], Naderi [40], Gholipour [20], Siyavoshi Zangani [50], Shiri [49], Zarei [58], Ranjabr [47], etc. The results of the domestic studies suggest that the methods and criteria for the appointment of managers can be emphasized to increase productivity as an effective factor. According to the review of the literature, there are few studies in Iran on the appointment and promotion of managers. The meritocracy approach points out that people with equal capabilities and competencies usually achieve the same success. In other words, the only factor that should affect people's success is their competency, that is, their effort and talent. There is an unfair relationship between success in education and profession with race, gender, social class, or geographic location (47).

The survival and efficiency of any educational system depend to a large extent on the diverse knowledge and expertise, abilities, and skills of human resources, especially teachers. So, the more prepared, competent, and capable teachers, managers, and employees are, the more they will contribute to improving the organization's efficiency. The teacher is mentioned as the most effective element in the Document of Fundamental Transformation. The competencies that teachers should equip themselves with should be highly considered because they can affect students in different aspects [14].

Ghorbannejad and Isa Khani [21] designed the model of university managers' competency based on Islamic models using grounded theory and referring to Nahj al-Balagha. They identified consistency, behavioral-ethical competency, trustworthiness, justice, and decision-making as the main competencies of managers. In a study by Piryaei and Niknami [44], a model was provided to improve the system of appointment and promotion of managers in the Education Department. The results indicated that there are many differences between the existing criteria for the appointment and promotion of managers in the Education Department and the ideal criteria from the point of view of teachers and managers and that there are many differences of opinion between teachers and managers concerning the existing criteria for the appointment and promotion of managers, but they have relatively similar views on the ideal criteria. Ramezani Rad and Farrokh Seresht [46] investigated the similar-to-me effect on the appointment of Bank Mellat headquarters officials. According to the results of this study, there is a statistically significant relationship between the variable similar-to-me effect (groupthink, functional conflict, and narcissism) and the managers of the studied organization. After a lot of study and interviews with 217 experts, Megahed [36] introduced 62 competency components for Bahraini and Egyptian diplomats as follows: accountability, the ability to agree and compromise, analytical thinking, attention to details and quality, establishing a communication network, building trust, technical knowledge, coaching, IT literacy, resolving conflicts, credibility, decision-making, flexibility, effective leadership, diversity management, delegation, creative thinking, action initiator, trustworthiness, interpersonal communication, negotiation, oral communication, planning, organizing, learning to organize, power, influence, problem-solving, trust, self-confidence, self-control, written communication, stress tolerance, information seeking, team building, team work ability, excellent management, vigilance, ethics, cultural identity, delegation of authority, interaction with the media, English language proficiency, physical and mental health, communication management, personal development, political understanding, desire to learn, privacy, patriotism, and entrepreneurship in the public sector. In a study by Carlsson [8], the conceptualization of professional competencies in promoting the health of universities and educational institutions was investigated. The results showed that five areas define the core competencies: policy development, organizational development, professional development, student learning development, and health promotion activities development. Three critical gaps in the conceptualization of competency are trivializing domain development and limited focus on cognitive elements within it, limited focus on organizational cognitive and technical elements in developing the health of domain activities, and reducing emotional competency elements in domains. In a review of the management of professional development activities based on educational institutions, Cheng [10] suggested that principal support positively affects professional development policy and a culture of collaborative learning. furthermore, the effectiveness of the professional development program can be predicted with the culture and strategy of management cooperation. Adil et al. [41] reviewed the strengthening of competencies of managers of educational institutions based

on a framework, stating that some of the common challenges are limited financial resources, involvement of potential stakeholders and community members, limited administrative authority, and the lack of government attention to public educational institutions. According to the results, recommendations were made as follows: strengthening the mechanism, strengthening functions, roles, and responsibilities, and revising the allocation of funds for competencies for the management of universities and educational institutions and applying it. In the review of open educational resources (OER) in self-directed competency-based education, Eileen et al. [24] showed that the insights into how to evaluate and experience teachers affect the development and application of this method to improve self-directed competencies. In an attempt to identify competency attributes for excellent communication professionals from a work perspective, Fuller et al. [19] showed that excellent performance is characterized by skills that go beyond normative technical skills or practical communication knowledge. According to the results, people's ability combined with strategic goals and empathy is one of the important competencies in communication.

3 Methodology

This study was conducted to provide a model for evaluating university managers' competency using grounded theory. The statistical population included university experts who had executive experience at decision-making levels. This group was selected for the qualitative part and participated in the interviews. 40 samples were selected for interviews according to the time and available resources.

After conducting each interview, the text of the interview was analyzed in detail to infer and extract the concepts of each sentence. Further interviews were then conducted. This process continued until theoretical saturation was achieved. Theoretical saturation means that recent interviews do not result in any new data and are all repetitions of previous data [52]. So, there was no new data in the interviews from the 15th interview onwards, and theoretical saturation was ensured in the 15th interview. It should be mentioned that most of the interviewees had more than 15 years of professional work experience and that they were Ph.D. graduates or currently studying for a Ph.D. The interview with each expert lasted 70 minutes on average. As mentioned, this is a qualitative study conducted using grounded theory. This method enables the researcher to develop a new theory instead of using predefined theories in cases where the hypothesis cannot be developed or the subject under investigation does not have theoretical coherence. The new theory is developed based on the data collected from the real environment in real conditions rather than the researcher's opinions.

The data are coded in three levels: open coding, axial coding, and selective coding. The data are broken down into individual parts during open coding and analyzed to obtain similarities and differences. These "concepts" are then classified according to their similarities. This is called "categorization". "Category" is a concept that is more abstract than other concepts and forms the basis of the theory. In short, open coding leads to a set of conceptual categories emerging from the data. In axial coding, internal connections are established between the basic categories expanded in open coding at the level of features and dimensions. The categories are then divided into causal conditions, intervening conditions, contextual conditions, strategies, and consequences. In selective coding, the grounded theory theorist develops the theory based on the pattern created by communicating between the core category and other categories [1]. The core category in this study is "financial resource management". Strauss and Corbin (1998) describe two techniques for expressing the model and results: the diagram technique and the storyline technique [13]. The simplest technique is the diagram technique used in this study.

Grounded theory is a systematic and qualitative method for developing a theory that broadly explains the phenomenon, action, or interaction of a subject with a specific identity. Strauss and Corbin argue that grounded theory is derived directly from data that are systematically collected and analyzed during the study. In this method, data collection, analysis, and the final theory are closely linked. Although each different event gives different importance to data interpretation, it is at the heart of qualitative studies. In grounded theory, data interpretation plays a central role in the study process as well. This method was chosen mainly for the following reasons:

- The existence of few known examples of the studied area;

- The researcher's interest in understanding the perceptions and experiences of the participants in a specific sample;

- The researcher's interest in challenging the existing theories;

- The lack of any underlying theory to explain the fit of specific psychological constructs with the investigated behaviors;

- Developing a new theory by the researcher.

Grounded theory is generally implemented in two basic steps as follows:

Step 1. Data collection: The primary data of the study was collected using unstructured interviews with experts and an exploratory approach based on the general questions raised above.

Step 2. Text coding and theorizing: The data are coded in three levels: open coding, axial coding, and selective coding, each of which is explained below:

Open Coding: The data are broken down into individual parts during open coding and analyzed to obtain similarities and differences. These "concepts" are then classified according to their similarities. This is called "categorization". "Category" is a concept that is more abstract than other concepts and forms the basis of the theory. In short, open coding leads to a set of conceptual categories emerging from the data. In axial coding, internal connections are established between the basic categories expanded in open coding at the level of features and dimensions. The categories are then divided into causal conditions, intervening conditions, contextual conditions, strategies, and consequences. In selective coding, the grounded theory theorist develops the theory based on the pattern created by communicating between the core category and other categories. The core category in this study is "working capital management". In this method, MAXQDA software was used to analyze the qualitative data and theorize.

4 Findings

1. Open Coding

Strauss and Corbin (1990) define open coding as "a part of the analysis that concerns the naming and categorization of the phenomenon through careful examination of the data". In this type of coding, concepts in interviews and documents are classified based on their relevance to similar topics. This step leads to summarizing the mass of information obtained from interviews and documents into concepts and categories that are common in these questions. There are two trends for data analysis in theoretical coding. Some researchers analyze each part separately, that is, they analyze the texts and data line by line and word by word. Since this method is time-consuming, some only code key points and themes. In this study, the first method was used to answer the question ..., and 72 open codes were identified from 503 parts of the interviews.

2. Creating Categories (Axial Coding)

This stage of coding aimed to establish the relationship between the categories produced during open coding. Axial coding led to the creation of groups and categories. All the similar codes were placed in a special group, and the created codes were reviewed and compared with the texts so that nothing was missed.

Category	Open code	Repetition
1. Organizational strategies	1. Directing	1
	2. Controlling	1
	3. University cultural management	2
	4. Organizing	8
	5. Monitoring	11
	6. Planning	16
2. Managers' knowledge	7. Specialized knowledge	5
	8. Technical knowledge	13
	9. Educational knowledge	15
	10. Knowledge and information	16
3. University conditions and facilities	11. Academic progress	5
	12. University infrastructure development	9
	13. Academic environment management	11
4. Management of organizational affairs	14. Work hours management	1
	15. Organizational climate	1
	16. Job security	2
	17. Organizational recruitment	2
	18. Problem-solving skills	3
	19. Reward management	5
	20. Clarification of goals and visions	5
	21. Achieving success and goals	8
	22. Managing university affairs	8
	23. Managing the classes	9

	24. Employee motivation	10
	25. Decision-making power	13
5. Extra-organizational management	26. Political environment	2
	27. Social environment	2
	28. Economic environment	2
	29. Academic competitive environment	3
	30. International educational communication	4
	31. Business context	6
6. University performance management	32. Financial management	2
	33. Prevention of corruption	2
	34. International management	4
	35. Change management	4
	36. Improving conditions	8
	37. Performance evaluation	21
	38. Team management	25
7. HRM	39. Human development	2
	40. Appointment of teachers	2
	41. Talent recognition	7
	42. Meritocracy	9
8. Organizational RM	43. Employee attachment	1
	44. Information management	3
	45. Time management	5
	46. Resource management	5
	47. Communication management	7
9. Managerial skills	48. Scientific attitude	3
	49. Verbal skills	7
	50. The ability to apply knowledge	10
	51. Hard skills	12
	52. Interpersonal skills	13
	53. Communication skills	14
	54. Soft skills	16
	55. Human skills	19
	56. Perceptual skills	23
	57. Technical skills	27
10. Managers' characteristics	58. Judgment	1
	59. Independent thinking	1
	60. Moral principles	1
	61. Good reputation	1
	62. Relevant education	1
	63. Creativity	2
	64. Coaching	3
	65. Favorable behavior	3
	66. Self-management	4
	67. Influence	5
	68. Self-confidence	5
	69. Work discipline	5
	70. Work experience	6
	71. Commitment	7
	72. Accountability	8

Table 2: Axial coding

Table 2 shows the results of axial coding. According to the table, 72 primary codes are grouped into 10 categories.

5 Axial coding

In axial coding, the grounded theory theorist chooses a category of the open coding stage, places it in the center of the process being investigated (as the central phenomenon), and then relates other categories to it. These other categories are "causal conditions", "strategies", "contextual conditions", "intervening conditions", and "consequences". In this step, a diagram is drawn, called a "coding pattern", in which there are six boxes (or categories) of information:

- Causal conditions: Categories concerning the conditions that affect the core category;

- Contextual conditions: Specific conditions that affect strategies;

- Core conditions: a mental form of a phenomenon that is the basis of the process;

- Intervening conditions: general contextual conditions that affect strategies;

- Strategies: specific actions or interactions resulting from the central phenomenon;

- Consequences: Outputs from employing strategies.

Explaining and logically expressing the categories are vital in axial coding. This is done through the storyline. The storyline consists of a detailed explanation of the major categories by referring to notes and summaries and citing the quotes of the studied people [38]. The core category is the main phenomenon of this study, i.e., infrastructures, which is the basis and axis of the process to which all other main categories are related. Factors affecting this phenomenon, strategies derived from it, and the consequences of these strategies can be discussed according to the findings.

Table 3: Core category

Type of category	Category	Open code
Core category	Managerial skills	Scientific attitude, verbal skills, the ability to apply knowledge, hard skills, interpersonal skills, communication skills, soft skills, human skills, perceptual skills, and technical skills.

Causal conditions include categories that directly affect the central phenomenon or create and develop this phenomenon in such a way that they can often be found by looking regularly at the data and reviewing the events. According to the results, managers' knowledge and management of organizational affairs can be among the causal conditions affecting managers' competency.

Table 4: The causal category

Type of category	Category	Open code
Causal conditions	Managers' knowledge	Specialized knowledge, technical knowledge, educational knowledge, awareness and information
	Management of organizational affairs	Working hours management, organizational climate, job security, organizational recruitment, problem-solving skills, reward management, clarification of goals and visions, achieving success and goals, managing university affairs, managing the classes, employee motivation, and decision-making power

Contextual conditions are generally certain factors that organizations cannot control, but strategies are affected by them. The personal characteristics of the managers were emphasized more during the interviews concerning these factors.

Table 5: Contextual conditions

Type of category	Category	Open code
Contextual conditions	Managers' characteristics	judgment, independent thinking, ethical principles, good reputation,relevant education, creativity, coaching, desirable behavior,self-management, influence, self-confidence, work discipline, workexperience, commitment, and accountability

Strategies are actions that are presented in response to the central category or phenomenon, are purposefully selected, and can be used to realize the central phenomenon. The strategies that the company should consider to evaluate university managers' competency are very important. In the study, the interviewees mentioned university conditions and facilities and organizational strategies more than others.

Table 6: Strategies

Type of category	Category	Open code
Strategies	University conditions and facilities	Academic progress, university infrastructural development, and academic environment management
	Organizational strategies	Directing, controlling, university cultural management, organizing, monitoring, and planning

The intervening conditions adjust the causal conditions and affect the strategies. Most of the interviewees in this study mentioned extra-organizational management, indicating how these factors facilitate the implementation of the adopted strategies.

Table 7: The intervening category

Type of category	Category	Open code
Intervening conditions	Extra-organizational management	The political environment, social environment, economic environment, academic competitive environment, international educational communication, and business context

Consequences are derived from strategies, the implementation of which will lead to the realization of the central category in a successful state. The interviewees mentioned university performance management, HRM, and organizational resource management as consequences.

Table 8: Consequences

Type of category	Category	Open code
Consequences	University performance management	Financial management, prevention of corruption, international management, change management, improving conditions, performance evaluation, and team management
	HRM	Human development, the appointment of teachers, talent recognition, meritocracy
	Organizational resource management	Employee attachment, information management, time management, resource management, communication management

In the selective coding, the core category was selected and systematically linked to other categories according to the results of the previous coding steps, the links were validated, and the categories that needed further development were improved. The steps above were performed in a recursive process. In this way, the steps of selective coding are not separate from each other and are done through an interactive process with open and axial coding. The experts received the paradigm model and its development process via email. They were asked to comment on the process of developing the model and the final model. Most of them confirmed the model, and some of them had correction comments that were applied in an iterative process, and the final expert comments were taken. To integrate and present the model using grounded theory, the designed model was refined, the main factors were developed, and the final model (Figure 1) was obtained after identifying the core category and connecting other categories in the form of a systematic paradigm of grounded theory.
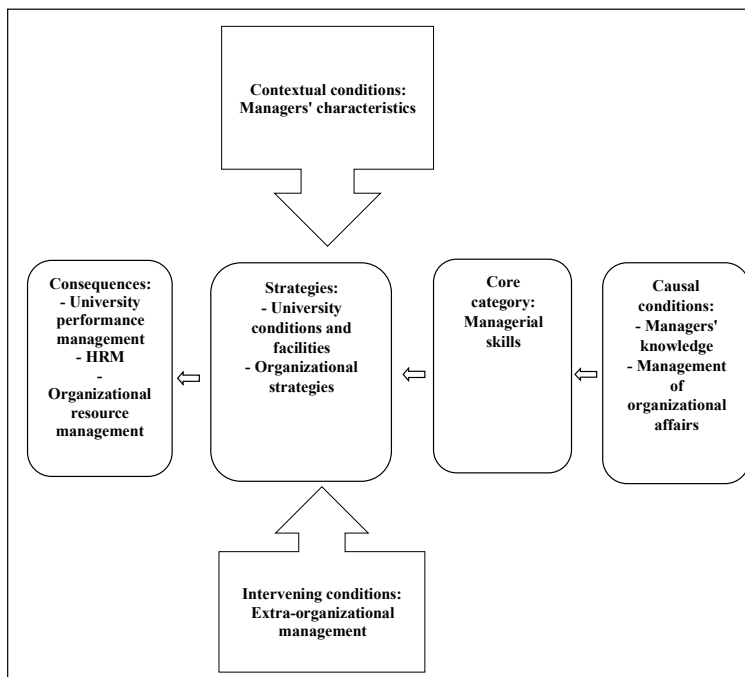

Figure 1: The model of evaluating university managers' competency

6 Model validation

The reliability of the designed model was checked using the Kappa coefficient. For this purpose, another person (one of the elites in this field) classified the codes into concepts without knowing how to integrate the codes and concepts created by the researcher. The researcher then compared the concepts with those presented by this person. Finally, the kappa coefficient was calculated according to the number of similar and different concepts. According to Table 9, the researcher created 11 concepts and another person created 9 concepts, of which 8 were common.

Table 9: The status of the conversion of codes into concepts by the researcher and the other person

The researcher's opinion				
Total	No	Yes		
8	$B = 1$	$A = 7$	Yes	The other
3	$D = 0$	$C = 3$	No	person's
11	1	10	Total	opinion

$$\text{Observed agreements} = \frac{A + D}{N} = \frac{7}{11} = 0.636$$
$$\text{Chance agreements} = \frac{A + B}{N} \times \frac{A + C}{N} \times \frac{C + D}{N} \times \frac{B + D}{N} = \frac{8}{11} \times \frac{10}{11} \times \frac{3}{11} \times \frac{1}{11} - 0.016$$
$$K = \frac{\text{Observed agreements} - \text{Chance agreements}}{1, \text{Chance agreements}} = \frac{0.636 - 0.016}{1 - 0.016} = 0.630$$

Table 10: The kappa coefficient

The numerical value of the kappa coefficient	The status of the agreement
Less than 0	Weak
Between 0 and 0.2	insignificance
Between 0.21 and 0.4	Moderate
Between 0.41 and 0.6	Appropriate
Between 0.61 and 0.8	Valid
Between 0.81 and 1	Great

According to Table 10, the Kappa coefficient is 0.630, which is at the level of valid agreement according to Table **??**.

Discussion and conclusions

This study was conducted to provide a model for evaluating university managers' competency using grounded theory. According to the results of open coding of qualitative data collected using interviews, 72 open codes were identified among 503 interviews. 72 initial codes were categorized into 10 categories, including organizational strategies, managers' knowledge, university conditions and facilities, organizational affairs management, extra-organizational management, university performance management, HRM, organizational resource management, managerial skills, and managers' characteristics. According to the results, managerial skills ranked first with 144 codes, management of organizational affairs ranked second with 67 codes, and university performance management ranked third with 66 codes. 27 (67.50%) of the 40 interviewees referred to organizational affairs management. Managerial skills were prioritized in terms of the number of repetitions of codes, and management of organizational affairs was prioritized in terms of generality and comprehensiveness among the respondents, indicating the importance of these categories.

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