

Research Article

# The Model of Women's Research Management Strategy in the Higher Education

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## Abstract

The purpose of this research is the model of women's research management strategy in the higher education centers of Fars province with an emphasis on the qualitative approach. This research was conducted using a qualitative method. In the qualitative method, data were collected and analyzed through semi-structured interviews with experts and research managers. The results show that the key elements of the model include research policy, management of financial resources, commercialization of research results, development of research infrastructure and equipment, and improvement of skills and knowledge of employees and students. The proposed research management strategy model can be used as an operational framework to improve research management in Fars province's higher education centers. This model has the ability to increase the quality and effectiveness of scientific research by emphasizing coherent policy making, optimal use of financial resources, commercialization of research results, and development of research skills and infrastructure.

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**Keywords:** Higher Education Centers; Research Management; Research Development; Strategic Model

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## 1. Introduction

Research domain, matter, and materials are fundamental to understanding the physical nature of the universe, as well as the materials and technologies surrounding us. Research is a systematic pursuit that involves collecting data, documenting vital information, analyzing and interpreting that data/information according to appropriate methods defined by specific academic and disciplinary fields. Investigations evaluate the validity of hypotheses or interpretative frameworks; they gather foundational knowledge and findings to share them suitably, fostering further inquiry (Zhao, Llorente & Gómez, 2021). Research is defined as "creative and organized work aimed at increasing knowledge." It

includes collecting, organizing, and analyzing information to deepen understanding of a subject or law. A research project may extend previous work in a field. To test the validity of tools, procedures, or experiments, research may replicate elements of previous projects or entire projects (Serpell, 2018). Although the distinction between fundamental and applied research is often blurred in scientific studies and science policy, in most cases it is based on pragmatic factors such as the researcher's intentions or the type of research institution, which influences the market evaluation of research. In Iran, the level of research is primarily based on applied research, utilizing quantitative and qualitative methods, with less emphasis on fundamental and original knowledge creation.



Conversely, in many leading research centers worldwide, there is a tendency toward fundamental research and knowledge creation rather than merely describing applied knowledge (Puustinen, Sääntti, Koski & Tammi, 2018).

Research conducted in higher education institutions aims to expand existing theories and apply them to solve societal problems, indicating that in the country, the focus is more on the application of knowledge rather than its creation. The primary outcome of research is the application of knowledge, with a predominant emphasis on practical research results in society, organizations, and universities. There is a greater interest in applying research rather than producing new knowledge. Few studies are focused solely on knowledge creation.

The new environmental conditions and their demands have introduced specific complexities for universities. In such a dynamic environment, improving quality and developing universities require a proactive strategic planning mindset and the formulation and implementation of appropriate programs aligned with internal and external conditions. It is essential to outline strategic directions based on a dynamic need assessment process that enables universities to effectively adapt to their environment while maintaining organizational health (Jamaludin, McKAY & Ledger, 2020).

The current state of research planning in Iranian universities, based on six indicators—1) a clear and shared understanding of the university development process, 2) existence of structured development programs, 3) alignment of development plans with environmental conditions, 4) alignment with internal capabilities and conditions, 5) availability of necessary facilities, resources, and structures, and 6) quality of decision-making—indicates that the situation is below minimum standards (Q3), reflecting an unsatisfactory status of research development planning. The indicators across universities—whether active, semi-active, or inactive—show no significant differences, except favoring non-active universities, highlighting fundamental weaknesses in the basic foundations for an effective research development system. This situation necessitates the formulation of strategic management models for research development (Yemeni, 2009).

Research management strategies include operational data sets aimed at achieving research goals, with a history spanning over a thousand years. While top-ranked universities globally focus heavily on knowledge creation, in Iran, education has primarily been applied, with little ongoing support or implementation processes for students' scientific work post-graduation. Research universities should not only conduct research but also create employment opportunities based on student research, funded by industries and universities, enabling students to undertake research without compromising

their livelihoods, and subsequently integrate into related industries or careers (Langford, 2006).

Canada, for example, has made significant efforts to commercialize applied research. A study (Antchak, 2017) on the University of Auckland's research and teaching model highlights the responsibility of academic staff to foster values, publish, and await high-quality research outputs at an international level. The university graduates approximately 1,100 master's and 500 doctoral students annually, increasing research funding from \$240 million to \$433 million, and expanding innovative research across disciplines, including international collaboration.

One of the strategic models in research management is the commercialization of academic research, where innovations in medicine, engineering, technology, and reproductive sciences have significantly contributed to global management practices. Although researchers often do not directly patent their discoveries, their work has globally transformed industries and created commercial opportunities. Commercialization involves transferring intellectual property and related assets to third parties for product or service enhancement or new product development, requiring unlimited time, sufficient knowledge of research fields by industries and researchers, and organizational incentives for collaboration.

Another strategic approach is interdisciplinary collaboration, which involves integrating multiple fields to redefine complex problems and seek innovative solutions. Promoting interdisciplinary research requires structural changes in universities, including policies, practices, and organizational structures that facilitate cross-disciplinary efforts (Sa, 2008). A successful model is the intra-organizational collaboration level, characterized by committed partnership, ongoing cooperation, and persistent collaboration, which helps delineate the boundaries of interdisciplinary work.

Other strategic research management approaches include diagnostic models that identify structural, behavioral, and environmental barriers in research, as well as quality management models in research organizations aimed at reducing research cycles and costs through process improvements (Ryahi, 2010).

The academic structure and organizational behavior of higher education institutions influence outputs like knowledge creation and legitimacy, yet research on the boundaries of university structures remains limited, especially regarding the effects on educational and research outputs (Pryor et al., 2022).

Despite the tripartite mission of higher education in research, teaching, and social services, effective strategies supporting all three areas simultaneously have not been thoroughly evaluated (Hazelkorn, Coates & McCormick, 2018). Like many non-profit and for-profit sectors, higher education faces significant challenges, including the need

to enhance market credibility, adopt entrepreneurial mindsets, and expand stakeholder engagement.

Web-based strategic approaches have been used to broaden research strategies; for example, a study (Kim, 2010) in Finland employed a web dialogue model to identify key factors such as work-life balance, resources, collaboration, R&D, knowledge, degree programs, training, students, mentors, and internationalization. This model, based on shared organizational visions, promotes idea sharing, evaluation, and development, aiding managers in strategic planning.

Given the limited scope of research-focused centers in Iran—often confined to teaching roles and clinical training—there is a clear need to develop and validate indigenous strategic models for research management in Iranian universities, particularly to support women's research in higher education (case study: Fars Province).

Research question:

What is the strategic research management model in higher education centers?

## 2. Method

Given the objectives and nature of the research problem, this study focused on presenting a strategic model for research management in higher education centers in Fars Province. The research was conducted within the paradigm of interpretive research and employed a qualitative case study methodology to achieve a deep understanding and identify the key factors and components influencing research management in this domain. The choice of qualitative approach was due to its capability to accurately describe and meaningful interpret the experiences and perspectives of experts and officials in this field, thereby facilitating an increased understanding and awareness of real human experiences. Participants in the qualitative section Participants in the qualitative part of the study were divided into two groups: the library-based section and the field section. Data collection tools for the qualitative part of the research titled "Strategic Research Management Model in Higher Education Centers in Fars Province" involved gathering qualitative data through two approaches: fieldwork and library review. In the field section, qualitative information was obtained via semi-structured interviews with 15 participants. The interviews aimed to answer questions regarding the design of research management strategies in relation to the organizational structure of higher education centers, existing research management systems, and the role of content and behavioral factors in the success of these strategies. Additionally, emphasis was placed on identifying necessary skills, knowledge, and operational patterns, environmental challenges and opportunities, and the role of external partners in developing research

management strategies. In the library review section, five upstream and relevant documents related to sustainable human resource management were examined to extract data pertinent to the proposed model. The interviews lasted between 30 to 50 minutes, during which the researcher collected and analyzed data using guiding questions. This process allowed for the identification of any informational gaps through the acquisition of new data from additional participants. By reiterating the main and sub-themes across interviews, the study reached theoretical saturation. Participants in this section were selected due to their prominent knowledge and information in this field, ensuring they accurately represented the target community. Data analysis was performed using content analysis, employing thematic analysis techniques. This process was designed so that, initially, key quotes from the semi-structured interviews and from relevant upstream documents were extracted and coded into separate tables. In the next step, similar codes based on their semantic similarities were compared and matched to identify core themes. Considering the practical similarities among these core themes, they were categorized into organizing themes. These organizing themes served as larger groups of ideas capable of illustrating the relationships and complexities within the data. Ultimately, these organizing themes were abstracted into higher-level, overarching themes that provided a comprehensive and holistic understanding of the data.

## 3. Finding

In this section of the study, to explore and analyze in-depth the dimensions and components of the strategic research management model in higher education centers in Fars Province, the thematic analysis method was employed. This interpretive approach, which is executed step-by-step, facilitates transforming scattered data into rich and meaningful information. Three main questions regarding structural, content-related, and environmental factors were examined separately, with responses organized into thematic codes. The analysis process in this study was based on the approach and conducted through three key stages:

1. Text segmentation and coding of quotations;
2. Discovery and extraction of core themes from the texts;
3. Integration of findings and presentation of the final research model.

A complete report of the procedures—from initial data collection and analysis to the extraction of final themes—is presented in [Diagram 1](#), illustrating the precise, step-by-step thematic analysis process used to develop the strategic research management model in higher education centers.

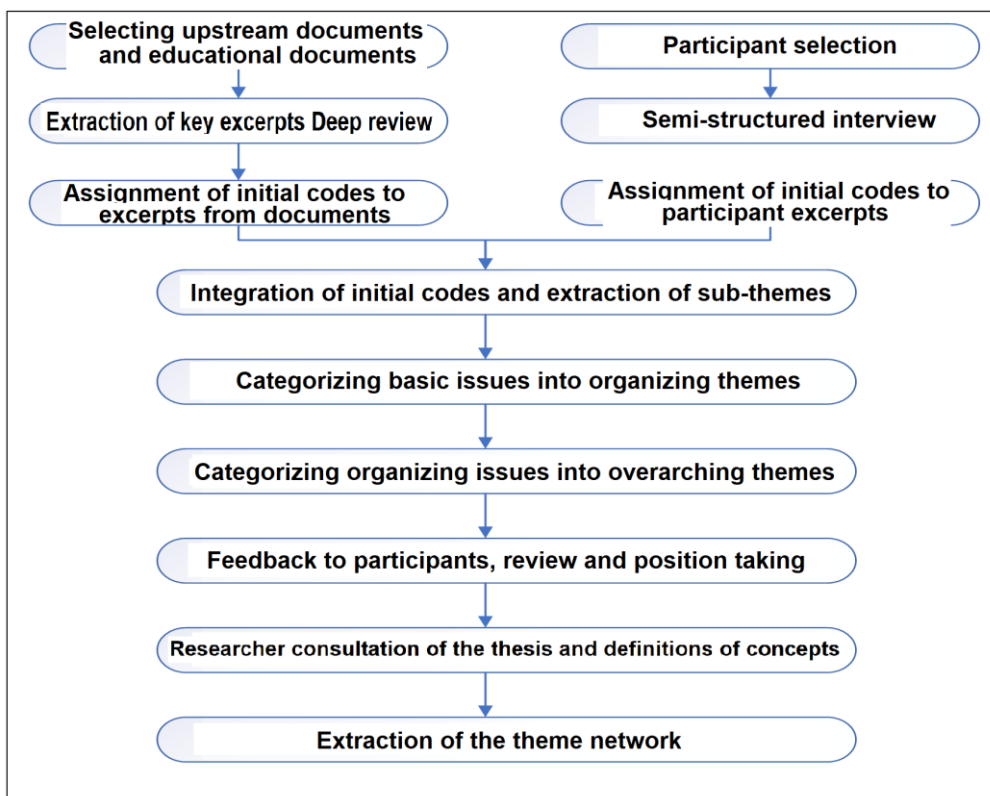


Diagram 1. Procedures Performed for Extracting the Thematic Network

Table 1. Categorization of Basic Themes into Organizing Themes

Research Management Development	Research Management Research Governance
Policymaking	Research Policies Research Strategies
Fellowships and Networks	Research Staff and Expertise Research Values and Beliefs Institutional Research Management Networks and Collaborative Collaborations Research Support Offices: Development of Research Infrastructure and Equipment
Research Environment and International Relations	Education-Based Research Productive Research Environment International and Research Collaborations
Financial Resources	Support and Funding Research Jobs Fellowships and Funding for Exploratory Research
Commercialization	Research Commercialization and Industrial Collaboration International and Industrial Collaboration
Development and Training	Staff and Student Development Researcher Development and Training

Research Question: What are the indicators and components of strategic research management in higher education centers?

To address this question, after conducting interviews and collecting data, the extracted themes are presented in Table 2, which categorizes basic themes into organizing themes. Finally, by incorporating a dominant theme into

all themes as an overarching theme, the final compilation of the three-theme table was carried out. Table 3 summarizes the steps implemented.

As seen in this study, research management was identified as an overarching theme and 3 organizing themes: 2, 7 organizing themes, 20 basic themes, and 195 primary (open) codes.

**Table 2.** Summary of themes

Primary Theme	Organizing Theme	Organizing	Primary Theme	Organizing Theme
Research Management	Structural dimension	Research Management Development	Research Management	Financial literacy Integrity Financial stability Financial purity Academic management of finances
			Research Governance	Specialized research teams Identifying necessary skills and knowledge Collaboration with other research centers Access to informational resources and research data Support for applied research Enhancing communication and teamwork skills Developing research-oriented educational programs Supporting interdisciplinary research projects Improving collaboration between domestic and international universities Researcher motivation and characteristics Presence of a research core Analyzing barriers and improving the research management system Creating a cohesive and efficient research management system to develop research strategies The important role of managers in increasing efficiency and effectiveness Strategic Planning and Governance
		Polycymaking	Research Policies	Clear definition of university mission Defining priorities Defining policies Defining support policies for local development
			Research Strategies	Designing specific strategies Determining appropriate strategies Transparency in research activities and community engagement Focus on developing technological infrastructure Information management Interaction with the local community Creating coherence among university departments Organized administrative system Designing a managerial structure Training in modern research methods Research development Research policymaking Innovation in research Addressing challenges Utilizing expert opinions and ISC experiences Holding workshops, conferences, and events Emphasizing research and practical courses Organizing conferences and calls for proposals Fundamental changes in the research system Establishing specialized working groups Updating and improving research equipment and laboratories
	External and environmental dimension	Fellowships and collaborative networks	Research Staff and Expertise	Adequate size, age, and diversity of the research team Controlling and coordinating specific research projects
			Research Values and Beliefs	Belief in and commitment to academic freedom Need for innovation as an institution Ambition and encouragement of individual initiative Willingness for change and excellence Importance of competition and shared commitment Need for risk-taking and performance evaluation

**Table 2.** Summary of themes

Primary Theme	Organizing Theme	Organizing Theme	Primary Theme	Organizing Theme
			Institutional Research Management	Encouraging rewards and celebrating successes Creating responsibilities aligned with successful implementation of research strategies Tracking operational outcomes of research
			Networks and Collaborative Partnerships	Monitoring the behavior of research supporters International and inter-faculty collaborations Strong research culture within universities Effective communication and cooperation Creating opportunities for interdisciplinary collaboration Evaluating and reviewing research activities Establishing active mechanisms for international collaborations Empowering researchers to conduct effective and credible research Encouraging interdisciplinary and inter-faculty collaborations Recognizing the importance of research in decision-making processes Developing a culture of research and innovation Continuous evaluation of research projects Providing facilities and resources Promoting inter-faculty collaborations Enhancing connections with industry and government agencies Raising public awareness Strengthening international collaborations Addressing social and cultural needs Enhancing university interactions International engagement Identifying and responding to real societal needs Defining research priorities Addressing local social and environmental challenges Faculty members Collaborating with external partners Funding and establishing knowledge-based companies Forming specialized teams Developing practical knowledge within the Supreme Council Secretariat Cooperation between the Secretariat and research centers Facilitating the process of publishing scientific articles through the Secretariat Holding scientific and expert meetings by the Secretariat Research Environment and Infrastructure
			Research Support Offices	Providing continuous development opportunities for staff Developing interdisciplinary role models Recruiting top faculty and students Empowering young researchers
			Development of Research Infrastructure and Equipment	Empowering researchers to conduct effective and credible research Forming specialized teams within the Supreme Council Secretariat Encouraging and supporting researchers in producing knowledge and innovation
			Education-Based Research	Creating training opportunities Establishing international collaboration networks

Table 2. Summary of themes

Primary Theme	Organizing Theme	Organizing Theme	Primary Theme	Organizing Theme
				Enhancing the knowledge and experience of researchers Creating educational and empowerment opportunities Direct engagement with society and industry Improving the research skills and knowledge of students Recognizing global trends and innovations
		Research environment and international relations:	Productive Research Environment	Creating collaboration opportunities Identifying and nurturing research talents Enhancing international cooperation Promoting effective interaction between managers and researchers Assessing needs and skills Research Management Structure
			International and Research Collaborations	Presence of pure and applied research Offering research-oriented education Wide range of academic disciplines High proportion of research-focused programs High levels of foreign income International outlook
			Collaborations	Clear objectives Emphasis on research Distinctive research culture Positive group atmosphere Decisive and participatory governance Decentralized organization Frequent communication to foster a research environment Access to resources
	Behavioral and functional dimension	Financial resources	Support and Funding	Use of research information management systems Establishing effective links between university and industry Access to information and databases Creating opportunities for effective researcher interactions Providing consulting and support services to researchers Establishing suitable platforms for collaboration Attention to global trends and technological changes Knowledge exchange with research centers Research management structures Continuous communication Redefining roles and responsibilities of managers Recognizing influencing factors Defining researcher roles Improving research quality Role of managers and faculty members Collaboration with government agencies and industry Funding and Resources
			Research Jobs	Financial support and sufficient resources for quality research projects Securing adequate funding for research projects Financial support for engineering and computer research Focus on interdisciplinary research Developing and supporting research careers Allocating resources and facilities Appropriately allocating budgets Providing administrative and managerial support Promoting publication of research results

**Table 2.** Summary of themes

Primary Theme	Organizing Theme	Organizing Theme	Primary Theme	Organizing Theme
				Identifying research opportunities Developing research skills and knowledge Addressing research challenges Securing research funding and budgets Obtaining government grants for research
			Fellowships and Funding for Exploratory Research	Job-oriented training programs for graduates emphasizing research careers and strategies Support mechanisms for early career development emphasizing research and management strategies Continuous staff development focusing on research and management strategies Developing research orientation Cultivating interdisciplinary career models Integrated scholarships
		Commercialization	Research Commercialization and Industrial Collaboration	Service scholarships Teaching scholarships Allocating resources to develop research management strategies Managing performance conflicts through exploratory research growth Research Commercialization and Industry Collaboration
			International and Industrial Collaboration	Focus on industry income and commercialization of research Commercializing research results Collaboration with industries Developing innovative approaches to research commercialization Building strategic relationships with the industry sector
		Development and training	Staff and Student Development	Strengthening inter-faculty and international research collaborations Effective communication and cooperation among research groups Creating opportunities for interdisciplinary research to advance university research Establishing active mechanisms for international collaborations to strengthen research Emphasizing interdisciplinary and inter-faculty collaborations as highly important Recognizing the importance of research in university decision-making processes Enhancing industry and government partnerships to strengthen applied research Strengthening international collaborations to enhance research quality Improving university-private and public sector interactions to develop research infrastructure International interactions to exchange knowledge and experiences in research Collaborating with foreign partners Developing practical knowledge Cooperation with the Supreme Council Secretariat Facilitating the publication process of scientific articles Organizing scientific and expert meetings Researcher Development and Training
			Researcher Development and Training	Providing ongoing development opportunities for staff Developing interdisciplinary career models

**Table 2.** Summary of themes

Primary Theme	Organizing Theme	Organizing	Primary Theme	Organizing Theme
				Recruiting top faculty and students Empowering young researchers Supporting researchers to produce credible and impactful research Forming specialized teams in the Supreme Council Secretariat Encouraging and supporting researchers in knowledge creation and innovation Creating training opportunities Building international collaboration networks Enhancing researcher knowledge and experience Providing educational and empowerment opportunities Direct engagement with society and industry Improving students' research skills and knowledge Recognizing global trends and innovations Creating collaboration opportunities Identifying and nurturing research talents Promoting international cooperation Facilitating effective interaction between managers and researchers Assessing needs and skills

**Table 3.** Definitions and Concepts of the Second-Level Organizing Theme

Row	Organizing Topic 2	Definitions and Concepts
1	Structural factors	The structural dimension of research management refers to the design and implementation of frameworks, procedures, and strategies adopted to strengthen research governance, determine research policies, and implement research strategies in higher education institutions. It deals with organizing resources, defining research priorities, and providing a suitable environment for innovative research.
2	Environmental and external factors	This dimension refers to the interaction of higher education institutions with the external environment and how they use scholarships, collaborative research networks, and international collaborations to strengthen research expertise and research infrastructure. This dimension focuses on research values and beliefs, developing infrastructure, and creating a productive environment for high-quality research and international collaboration.
3	Behavioral and functional factors	The behavioral and functional dimension refers to the management of financial resources, actions to commercialize research, and development programs for staff and students to improve research skills and knowledge. This dimension focuses on strengthening research careers, providing scholarships and funding for exploratory research, as well as facilitating international and industrial collaborations for knowledge and technology transfer.

Table 4 examines the definitions of organizing themes, which include 7 themes.

### Theme Network Exploration

In the theme network exploration stage, the main goal is to analyze and accurately organize the data collected from the previous stages of the research. This is done by identifying, categorizing, and defining important themes and subthemes that are extracted from quotes, theories, and previous research that were approved by the thesis committee and based on consensus feedback and final reviews, precise and comprehensive definitions and

concepts were provided for each theme and subtheme (Table 3).

In the next stage, based on the final categorization of the three-level thematic network analysis, the research management thematic network in higher education institutions in Fars Province has been identified. This network includes 1 overarching theme, 3 organizing themes, and 7 sub-themes.

### Data Credibility (Validity)

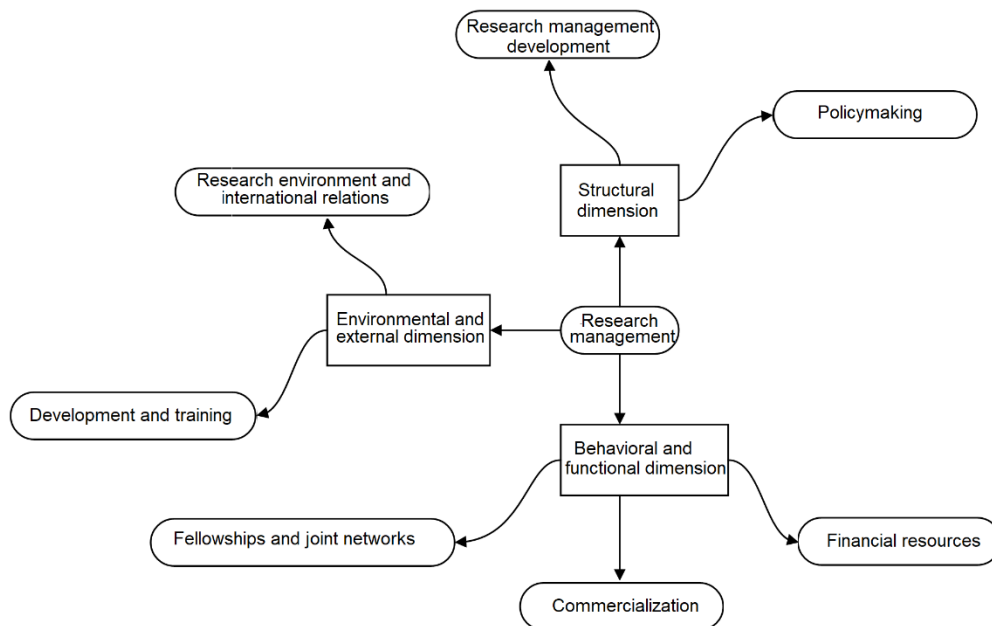
Data credibility is an ongoing and continuous process that begins during data collection and analysis and is repeated

multiple times; it does not consist of separate and independent stages. A key aspect of credibility is providing feedback to participants. Additionally, repeated reviews and the researcher's revisions play an important role in the credibility process. The researcher's careful reviews lead to the accumulation of theoretical and field evidence. For final validation, the triangulation (tripartite)

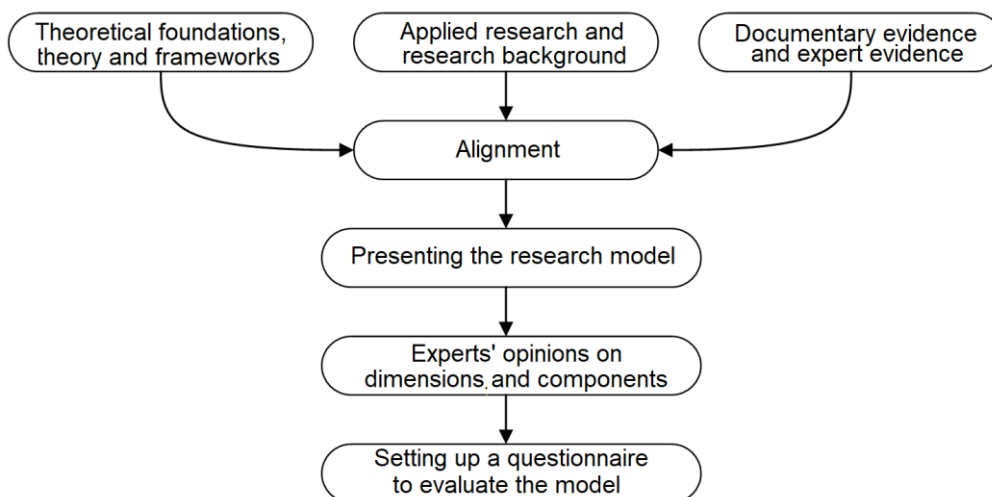
method is used, which involves comparing and matching field evidence and library evidence with research findings and theoretical evidence extracted from scientific sources to justify the convergence of themes. A summary report of the actions taken during the final validation process, which confirms and stabilizes the discovered research model, is presented in [Diagrams 3](#).

**Table 4.** Definition and concepts of organizing themes

Row	Organizing Theme	Definitions and Concepts
1	Research Management Development	The process of improving and enhancing the skills, structures, and management processes related to research in an institution. It includes strategic planning, project monitoring, evaluating research performance, and optimizing resource utilization. The main goal of developing research management is to increase the efficiency and effectiveness of research and improve the quality of research results.
2	Policymaking	The process of determining and implementing policies and regulations that guide and regulate research activities in an institution. Research policymaking involves setting priorities, allocating resources, establishing guidelines and standards, and ensuring compliance with ethical and legal principles in research. It seeks to improve coordination and coherence in research activities and increase transparency and accountability.
3	Fellowships and Joint Networks	It includes programs and opportunities that are created to financially and scientifically support researchers and to create scientific collaborations between different institutions and researchers. This includes providing scholarships and grants to students and researchers, developing scientific and research networks, and creating international partnerships for the exchange of knowledge and expertise. The main objective of these activities is to increase research capacity and improve the quality and impact of research.
4	Research Environment and International Relations	Creating a dynamic and supportive environment for scientific research that facilitates international collaboration. This includes developing research infrastructure, creating opportunities for collaboration with foreign institutions and researchers, exchanging knowledge and technology, and promoting global scientific networks. The main objective of these activities is to increase access to international resources and expertise and improve the quality and impact of research.
5	Financial Resources	The process of securing and managing the financial resources necessary to conduct scientific research. This includes attracting grants, research budgets, scholarships, and financial assistance from public, private, and international institutions. Financial resource management helps optimize the use of funds and increase the efficiency and effectiveness of research. The main objective of these activities is to ensure financial sustainability and enhance research capacity.
6	Commercialization	The process of transforming the results of scientific research into marketable products, services, or processes. This includes technology transfer, patenting, establishing industrial partnerships, and developing startups and knowledge-based companies. Commercialization of research helps to promote innovation, increase economic competitiveness, and create job opportunities. The main goal of these activities is to increase the economic and social productivity of scientific research.
7	Development and Training	The process of upgrading the skills and knowledge of staff and students in the field of scientific research. This includes training programs, workshops, specialized courses, and professional development opportunities for researchers. Development and training help to increase research capabilities and capabilities, improve the quality of research, and promote a scientific culture in the institution. The main goal of these activities is to create a strong and sustainable research workforce.



**Diagram 2.** Thematic Network of Research Management in Higher Education Institutions in Fars Province



**Diagram 3.** Actions Taken for Final Validation of the Discovered Model

Regarding research strategies in research management within higher education institutions in Fars Province, evidence related to upstream documents and key policies, regulations, and guidelines from the education sector are presented in the table as evidence for triangulation. This validation process reflects ongoing efforts to ensure the quality and validity of research findings, emphasizing the importance of aligning theoretical, field, and documentary evidence.

#### 4. Discussion

The development of research management in higher education institutions involves structural dimensions, including improving processes, structures, and management culture, which play a vital role in enhancing research quality and increasing scientific innovation. It is crucial to adopt project-based management models that transition from rigid hierarchical structures to more

flexible and supportive frameworks for commercializing scientific and technological activities. Proper management of structural capital—including processes, culture, structure, and intellectual property—can boost institutional performance. Optimizing organizational structures aimed at decentralizing administrative processes and increasing autonomy is essential to adapt to rapid social changes and market developments, such as establishing entities for commercialization and supporting financial mechanisms, ultimately leading to higher research quality.

Effective knowledge management requires a set of structural, cultural, technological, and human factors that support knowledge management approaches. Higher education institutions should create strategic structures to advise policymakers on robust support systems for research, innovation, and commercialization, based on the Triple Helix model emphasizing university-industry-government interactions. Conceptual frameworks for

managing research data—considering issues like privacy, security, and intellectual property—are essential for efficient data management. Competitive rankings and research evaluation frameworks demand continuous monitoring and strategic promotion of research strengths, with research managers playing a key role.

Challenges such as limited financial resources and high dependence on external sources in African universities highlight the need for efforts to decolonize higher education research and motivate researchers. Standardization and coherence in research management at the national level, as seen in the UK's efforts to professionalize research management, add further complexity to this field. Romanian universities also emphasize internal strategies to support research activities and reduce bureaucratic barriers, focusing on the role of universities in economic growth through investment in productive knowledge, which demonstrates how developing research management can improve research quality and elevate universities' scientific standing.

To validate our findings regarding the structural aspects of research management, several previous studies can be referenced. For example, [Molazhi \(2020\)](#) demonstrated that the governance structure and digital technological infrastructure are fundamental variables impacting digital leadership models, directly affecting human resource management and digital policy-making. He also highlighted that communication strategies should be integrated with other strategies to be effective. [Malekinia \(2017\)](#) assessed the strategies needed for Iran's higher education system, emphasizing that responding effectively to globalization requires adopting various strategies to improve research management and reduce bureaucratic obstacles.

Research policy plays a key role in guiding research directions and strategies within universities and higher education centers. Clear mission statements define the university's main goals and serve as a reference for all research activities. Prioritization of research areas, target groups, or specific topics is crucial. Policy formulation involves establishing regulations and standards aligned with national and international norms. Supporting local development through research that improves and develops local communities should also be prioritized, including financial and technical support for local development projects. Designing specific research strategies to achieve targeted goals and implementing transparent research practices foster public trust and collaboration. Developing ICT infrastructure, engaging with local communities, and fostering inter-sectoral cooperation help improve research quality and relevance. Organizational systems and appropriate management structures are essential for establishing an effective research environment. Training researchers in modern methods, research development, and strategic policies can encourage innovation. Utilizing

expertise from reputable institutions like the ISC, holding workshops, seminars, and scientific events, and updating research equipment are critical measures for enhancing research quality. These efforts should aim to create impactful changes in the research system, motivate applied and innovative research, and facilitate academic exchange.

Regarding policy validation, several studies highlight the importance of research policy and strategy. For example, [Hallonsten \(2020\)](#) analyzed the performance of Turkish research universities, emphasizing doctoral education and international collaborations as means to improve research quality and productivity. [Schaeffer et al \(2018\)](#) discussed the role of research universities in innovation ecosystems, stressing the importance of academic engagement in socio-economic environments and international connections. [Al Abri, Bannan, and Dabbagh \(2022\)](#) highlighted the role of open educational resources in developing researchers and providing continuous learning opportunities.

### **External and Environmental Factors in Research Management and Their Components**

External and environmental factors in research management include scholarships and collaborative networks, which play a vital role in developing and enhancing research quality. Scholarships and joint networks provide financial support and foster international collaborations, enabling researchers to conduct better research and achieve valuable results. This component includes financial backing, establishing inter-university and international cooperation networks, and providing resources and facilities for researchers. For example, scholarships can free researchers from financial worries, allowing them to focus more on research and development. Shared networks facilitate effective communication and interdisciplinary collaborations, leading to knowledge exchange and improved research outcomes.

Staff and research expertise are other critical aspects of the external environment. The size, age, and diversity of research teams contribute to innovation and creativity. Managing and coordinating specialized research projects and institutional research oversight are necessary to ensure research quality and effectiveness. Research values and beliefs—such as commitment to academic freedom, innovation, ambition, and encouragement of individual initiative—are fundamental for fostering a dynamic and productive research environment. Establishing appropriate responsibilities aligned with the successful implementation of research strategies and monitoring operational outcomes are also essential.

International and cross-sector collaborations, including academia-industry-government partnerships,

strengthen research culture in universities, create interdisciplinary cooperation opportunities, and facilitate ongoing evaluation and international engagement. These collaborations empower researchers to conduct impactful, credible research. Engaging with society and industry, strengthening relationships with government agencies, and promoting international cooperation are also crucial. Developing strategic relationships with industry helps universities better understand industrial needs and direct research accordingly, while access to financial resources and advanced equipment is essential. International collaborations, active participation in global networks, and participation in scientific conferences and publication processes further enhance research quality and visibility.

The role of research management at higher education institutions is highly significant. Establishing efficient governance structures can improve research processes and quality. Effective research management involves identifying opportunities, allocating appropriate resources, and creating a supportive environment for researchers. Regular conferences and publication dissemination enhance knowledge exchange, strengthen academic networks, and promote international cooperation. Validating research findings through publications in reputable journals increases global visibility and fosters further international collaboration.

Numerous studies underscore the importance of commercialization and industrial partnerships in higher education research. For instance, Bai, Li and Zeng (2020) demonstrated that innovative approaches to research commercialization and strategic industry partnerships enhance research quality and productivity, contributing to economic development and improved living standards.

### Development and Training of Staff and Students

Developing and training staff and students are vital for improving educational and research quality. Providing continuous professional development opportunities such as training courses, workshops, and seminars enhances their skills and knowledge, leading to better performance. Cultivating interdisciplinary career models enables knowledge exchange across fields and fosters innovation. Attracting top faculty and students strengthens the institution's research and educational standards, bringing valuable expertise and experience.

Supporting early-career researchers through specialized training, forming research teams, and encouraging participation in international networks are essential strategies. These efforts facilitate knowledge transfer, skill enhancement, and international collaboration, thereby improving research outputs. Identifying talented researchers and fostering international partnerships help promote innovative research and development.

Designing open educational resources, as discussed by Al Abri et al. (2022), supports researcher development and continuous learning. Recognizing faculty research achievements through financial and non-financial incentives encourages researcher growth. Overall, staff and researcher development significantly contribute to enhancing research quality and fostering innovation in higher education.

### Practical Recommendations

- Conduct specialized training courses and workshops to enhance researchers' managerial and research skills.
- Utilize project management software and systems to improve efficiency and reduce research time.
- Establish joint programs between universities and research centers for knowledge and experience exchange.
- Implement reward and incentive systems for top researchers to motivate and improve research quality.
- Develop long-term strategies for scientific and research endeavors.
- Create monitoring and evaluation systems to assess progress and quality of research projects.

#### Authors Contribution

All the authors have participated sufficiently in the intellectual content, conception, and design of this work or the analysis and interpretation of the data (when applicable), as well as the writing of the manuscript.

#### Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

#### Conflict of interest

The author states that there is no conflict of interest.

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