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# Challenges and problems of Library and Information Science Research

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# Challenges and problems of Library and Information Science Research

## Abstract

This study aims to identify the factors of Challenges and problems of Library and Information Science Research from the perspective of field specialists in Iran .This study examines one of these experiences to explanation conditions and strategies necessary for the success of such experience. This research, on the other hand has tried to clarify factors that affect on research .The method of the study is grounded theory. The survey was adopted for data collection through Deep and semi-structured interviews were conducted to collect information with 13 knowledge and science experts selected by mixed or mixed purpose sampling. After three steps of coding (Strauss & Corbin, 1998), the central phenomenon of the study was identified: " Research pathology in knowledge and information science" . Then paradigmatic model was developed. The results show that Human challenges ,Lack of time management, Financial crisis ,Lack of research popularity, Weak research structure, Lack of commitment ,Problem making ,Duplication, Lack of strategic planning are the most important affecting the phenomenon. four main outcome of this phenomenon is Implementation,Nativism ,Empowering information consultation and Research empowerment.

## Introduction

Higher education institutions should prepare students for progressively interdisciplinary and collaborative research that should be viewed as a product of immersion in a serious research experience. University needs a research scholar who is well experienced during the process of research not only for the study but also for contemporary life.( Ahmadian,2018). As an interdisciplinary field, nowadays the field of knowledge and information science is faced with various problems relating to its research status in Iran, which require thinking, studying and researching to be solved. As long as the basic issues of the discipline are not determined, doing research would be somehow a waste of time and resources. One of the problems that should be taken into account is that at present, many of the studies in the field of knowledge and information science are not that much effective and are not tailored to the needs and problems of the society. Diani (2008) believes that a significant number of studies in different realms of the discipline in the past were formed via problem finding in different fields, however in most studies in the field of library and information science, especially graduate dissertations, “problem making” was used instead of "problem-solving". He believes that the increase of the number of postgraduate programs and the lack of experienced instructors may account for it. Other challenges in the field of knowledge and information science include weaknesses in the applicability of research. In general, research findings are seldom used practically in the society for the development of goods and services (labor market and organizations) (Fattahi, Baglou, Axchik, 2014). In addition, the reason for a number of problems can be found in the uncertainty of the research needs of the society and lack of attention to research priorities in the field of knowledge and information science. There is an urgent need for a more precise outlook toward research given the fact that research budget is limited in Iran and it is not used optimally. This is especially important given the importance of research, the money and time spent on doing it and its impact on the development of the discipline. It is relatively difficult to carry out new and applied research conforming to the needs of the society

and the researcher's capability. The best solution is perhaps identifying the pathology factors of knowledge and information science and starting to solve these problems step by step.

### **Research Objectives**

In general, the major goal of this study is to determine the existing problems and their causes in the field of knowledge and information science in Iranian higher education system. The primary research objectives are as follows:

- Determining the limitations of conducting research in the field of knowledge and information science based on the experts opinions
  
- Finding strategies for dealing with problems in the field of knowledge and information science together with giving solutions and models.

### **Literature Review**

A good number of global and local studies have been done in knowledge and information science. What could be understood from the existing literature and previous studies is that there is a wide range of different research interests. These research interest include areas such as conceptual research, research constraints, the effectiveness of scientific productions of professors in research, and the problems of research.

Rong (2017) analyzes the theoretical research trajectories of library science in China since the 20th century and finds that theoretical studies of librarianship cause interdisciplinary development; the librarianship model of pluralism moves toward unity, and the ethnic characteristics reflect the process of localization more than before. In the same year, Heidari, Ghannadi Nejad and Chiniparad (2016) identified and categorized major research topics in knowledge and information science. They found that traditional and theoretical topics have less priority than technology and communication issues.

Bhardwaj (2017) studied the library and information activities of Indian higher education institutes. He found that the most important challenge is that financial institutions and universities need to encourage library and information experts to improve their research and publication. Zarei and the Famil Rouhani (2009) have focused on the same thing. They studied the research status of faculty members of the Islamic Azad universities within the 5th district and identified the problems they face in producing scientific information; the problems were categorized in three general categories: A. Research problems; b. Educational problems, the problems of library resources and equipment. Furthermore, Ganji (2004) examines the status of scientific information generation of Faculty Members of Ferdowsi University of Mashhad, and it was found that there is a significant

difference between education level, teaching postgraduate students and the use of faculty sabbatical opportunity. There is also a significant relationship between the years their teaching experience, their English knowledge and their scientific production. Boolean & Kenan & Willard (2012) consider the research efficiency and emergence of LIS professors in Australian higher education institutions, which considers the most important factor in exploiting the opportunities for lecturers and the development of research topics. Chuan and Kin (2011) address another aspect of the research and examine the scientific methods of library and information science in China. In their findings, they offer five stages to solve research methodological problems: 1- Improving the research methodologies in library and information science. 2- Setting the concept of research methods in library science and Information science 3. The Importance of teaching research methods in library and information science 4. Strengthening empirical methods 5. Emphasizing the integrated use of various studies. A similar research has been done by Osareh, Faraj Pahloo and Siamaki (2014) who analyzed the Persian articles published in the field of knowledge and information science in terms of research method and data collection instruments. The study of published articles show the uneven distribution of research methods and data collection instruments used in the field of knowledge and information science. Studies have shown that previous studies were sporadic and not coherent in examining one or several aspects of research. Generally speaking, it can be understood that the opinions of the professors of library and information science regarding their research has been less often a concern among the Iranian researchers. Therefore, the present study aims to answer the following questions by examining the views of the professors of knowledge and information science.

What are the obstacles in conducting research in the field of knowledge and information science in Iran?

What are the strategies for overcoming the obstacles in the field of knowledge and information science in Iran?

### **Methodology**

This is a qualitative research that uses grounded theory as the major research method. When a researcher aims to study the experiences and views of individuals in order to provide a theory, grounded theory would be the perfect method (Corbin & Strauss, 2015, p. 10).

The Data were collected in Iran from October 2017 to March 2018. The data collection tool was in-depth, semi-structured interviews. Given the use of grounded theory and the emphasis on research in the field of knowledge and information science, the research population included the faculty members and researchers from different universities. In qualitative research, it is not possible to use a specific and fixed formula to measure the sample size. To measure the sample size in qualitative studies of library and information science, Powell (2000) believes that the simple solution is to continue data collection until the saturation point, i.e. the point at which the samples do not add anything to the data or what they pose are not in

contradiction with the collected data. Therefore, to determine the sample size, a combination purposeful sampling method (and then snowball method) was used by considering the criteria for obtaining the most necessary information. Eight experienced and highly-informed members of the Knowledge and Information Science Planning Committee of the Ministry of Higher Education were interviewed. In snowball sampling, the current subjects recruit or introduce more subjects among their acquaintances so that the sample group expands like a rolling snowball. Snowball method is useful when the informed subjects are geographically dispersed or they are not found in clusters. Thus these committee members introduced other participants including the directors and professors of knowledge and information science departments at different universities in Iran (Azad University, private universities, Payam-Noor University, Scientific and Applied University) to gather more information. The data were collected by conducting in-depth and semi-structured interviews with 13 experts in knowledge and information science, Which includes 8 experienced and highly-informed members of the Knowledge and Information Science Planning Committee, 2 faculty members from Payame Noor University, 1 faculty member from a private university , 1 faculty member from university of Ferdowsi University of Mashhad , 1 from Islamic Azad University and 1 from Applied Scientific & Technology University. Eleven participants were male and two were female (m=11, f= 2). All had a PhD. degree with the experience of teaching at different levels (undergraduate, postgraduate or doctorate). In conducting the interviews, the researcher tried to make the questions relevant to the research goal through being completely aware of the topic. Sample selection for interview continued until the saturation point and no new data were obtained. Thus, the data saturation point was the key to finish the interview phase. The interviews' data were coded in three coding steps of grounded theory: 1. Open coding 2. Axial coding 3. Selective coding. The data were analyzed by using MAXQDA 10, which is a qualitative analysis software.

Open coding is an analytical process through which basic concepts are identified, and their properties and dimensions are found in the data (Corbin & Strauss, 2008, p. 195). In the open coding step, the text of each interview is analyzed sentence by sentence, row to row and paragraph by paragraph, and the relevant concepts were extracted based on an understanding that may sometimes be in the form of several paragraphs. In the open coding step, 405 concepts were extracted for the research pathology, and after extraction, these concepts were then categorized as abstract categories. After extracting the concepts and defining the categories, in the axial coding stage, the subcategories were grouped and linked together around the axis of the main categories. This is called the axial coding because coding happens around the axis of a category (Corbin & Strauss, 2008, p. 198).

At this stage, among the categories extracted in the open coding step, a category is selected as the axial or core category or phenomenon, and the other categories are associated with it. Other categories are categorized as the causal conditions, context conditions, intervening conditions, strategies, and consequences.

Causal conditions are factors that affect the core category. Strategies are actions that take place in response to a core category. Context and intervening conditions (a set of intermediary and mitigating variables) are specific and general factors that affect the strategies. The consequences are also the results of the implementation of the strategies (Creswell, 2005, p. 398). In the selective coding step, the grounded theory will be derived from a qualitative analysis (Corbin & Strauss, 2008, p. 263). Selective coding is the process of integration and improvement of the categories through techniques such as writing a storyline in order to link categories and categorization through personal notes about theoretical ideas. Within a storyline, a researcher examines how certain factors affect a phenomenon and leads to specific strategies and outcomes (Creswell, 2005, p. 398).

To evaluate the validity and reliability, four criteria of credibility, transferability, dependability and confirmability were considered in the research interviews. The criterion of credibility refers to the research descriptions and findings, and their validity. Therefore, in this research, the researcher has studied and collected the data in different times and places, and from people with different but related expertise. The interview files were repeatedly reviewed. Every time the interview text was ambiguous, the interviewees were asked again. The transferability criterion is the degree of generalizability of qualitative research findings to other contexts and environments. Therefore, the research attempted to provide sufficient details and descriptions in order to give a thick description as a requirement of transferability. In the dependability criterion, all details of data collection, decision making, interpretations and analyses done in the research were precisely recorded in order to allow others locate and replicate the research process. Finally, confirmability is whether the data and findings can be verified by others. To realize confirmability of data in this research, all documents related to research data, inferences, interpretations, and findings were recorded in a systematic manner, and were named and stored in special folders. All stages of conceptualization and categories were derived from the documented interviews. The extraction of codes was carried out by another person, and they were reassessed and compared with the codes extracted by the researcher; therefore, the codes are traced, assessed and confirmed by others.

After identifying the interviewees, the research major problems and the interview questions were sent to them, so that they became familiar with the topic. The interviews were conducted in Farsi. In each interview, the researcher began the discussion with a brief introduction and then provided the questions. The interviewees were free to express their views in response to the open questions of the interview. The interviews were finished in one session, lasting for a mean 66 minutes.

The responses were recorded by an audio recording tool and saved as an audio file. Then the audio files were transcribed and saved as a text file. Immediately, open and axial coding was done for each text file using IMAXQDA software. The interviews questions addressed the opinion of the interviewees about research, the motivating factors that affect research and the consequences of such factors.

Table 1. Open coding and interviews categorization

Property	Main categories (theme)	Subcategories	Concepts (open codes)	sentences
Research sources	The dissertation impact (causal conditions)	Engaging the students	Student Concerns about the publication of the articles / the publication of the dissertation articles with the professors names on them	Articles are extracted from the dissertation, in which the professors are not cooperative enough, yet the articles have to should be published in their names.
		Extracting articles from dissertation	Increase of dissertation articles/ the impact of dissertation articles/ the effect of dissertations on the discipline value	At universities, most of science production is related to the student's dissertation, and interestingly, these articles are extracted from the dissertation.

	Article production (causal conditions)	Increase in the articles number	Publishers and scientific journals / The necessity of article writing/ Importance of article production	The number of local research publications increased in this field, and the participation of faculty members in universities has grown exponentially in international publications.
		Articles status	Failure to meet the need for article production / lack of articles written by an independent author / Writing articles by students	But the fundamental problem here is the quantitative attitude toward the production of articles, and less attention is paid to the needs of the professional community and more deep research that targets the current problems in the
		promotion	Improving the university rank through article publication/ the scores of articles for the professor	The professor does not research himself and he lives on his students' articles. Both the government and the university also know this, but they say that when the professor's name is on the paper, this will give a score to the college and university.
	Articles' efficiency (causal conditions)	Articles appeal	Increase of knowledge in articles/ article quality priority/ article novelty/ the capability of making basic changes	To write a quality paper with drastic changes e.g. to study about a particular subject which causes substantial change and impact.
		Articles impact	The impact of article production on credit/ the value of articles with multiple authors/being inspired by articles	The number of articles is indeed important but what is really important is the impact of that article and the number of positive changes.
	Publication system (causal conditions)	Book publication	Issues of Books / Spelling & Conceptual Writing / Electronic Books / subject list of the books	The topic has been investigated many times by different individuals. A book has been published by two publishing houses.
International publication		The participation of professors in international publications/ lack of international publications	We have few international book publications.	
Publication market		Practical use of books / book production / favoritism / providing pamphlet out of books	Many non-practical books are published in the realm of librarians in Chapar and Ketabdar as well as other venues, which have no significant practical value. No body reads, teaches or uses them as a resource book.	
Production of science	Knowledge production (causal conditions)	Knowledge production expansion	Quantitative Knowledge production increase / Knowledge production significance / Understanding the needs of the society in knowledge production	In the production of knowledge, there has been an increasing increase, and this is a positive point.
		Knowledge production status	The appropriate level of knowledge production in the discipline/ the status of Iranian librarians in the international articles and journals	Unfortunately, our knowledge production is high, but its effectiveness is much lower. Iran, according to statistics, has one of the largest number of ISI articles in internationally recognized publications.

		Production of knowledge to fulfill the real needs	Real production of knowledge/ the relevance of the produced knowledge with the real needs of the discipline	The main thing is the mismatch between the knowledge produced and the needs of the field.
		Innovation in producing modern knowledge	Updated knowledge production/ language skills of the professors/ use of innovation/ the efficiency of knowledge production	We obtain the modern science and we produce knowledge based on the modern science, but the depth of this knowledge is important. If the produced knowledge is profound and if it is published in books, articles and reports, and we must see the effectiveness of this knowledge generation in the industry and society.
		Knowledge production quality	Paying attention to the quality of knowledge production/ the difference between article production and knowledge production	Although we do all this knowledge production, our industrial progress and transforming knowledge into technology and wealth is far less compared to countries with lower production of knowledge.
Human factors	Human challenges (intervening)	Weakness and capabilities of research skills	Weakness of students in research/ lack of understanding of the process/ academic weakness/ lack of capability in correct representation of research priorities	The most important problem we face is the academic weakness of the graduate students. For instance, I have seen in journals that the author has failed to identify the sampling method.
		Lack research work intent	Lack of effort on the part of the supervisors/ lack of cooperation from research participants/ lack of sabbaticals/ lack of interest from the faculty members/ students' interest in mere classes/ not taking the dissertations seriously/ students orientation toward courses	Lack of working spirit, since they don't know to where their research will lead.  The lack of cooperation of research participants due to the cultural beliefs of the community about academic research
		Lack of motivation	Weak motivation among students/ being away from the main identity of research/ professors motivating efficiency/ personal motivations/ motivation for fulfilling a task/ no motivation for the researcher	There is no reciprocal relationship between tradition and university. Even if there is a relationship of some kind, it does not emphasize solving the problems, and this leads to a lack of financial and spiritual support, and thus researchers are not motivated at all.
External factors	Lack of time management (intervening)	Time limits for the research	Lack of sufficient understanding/ the employment of PhD students/ lack of awareness regarding limited sources and time/ Lack of time among professors	Professors have time limitations. Student management: on the one hand, a large number of students enter universities, and this makes it difficult for the professor to read a thesis.

	Financial crisis (intervening)	Financial resources limitation	Lack of research funds/ Lack of financial resources / Industry and society's alienation from research initiatives / Limitations of financial support / lack of financial feasibility/ Reduced potential for budget absorption / difficulty of research / more profitability of courses	Usually, due to the limitations of university funding, research projects do not receive much support. The potential for attracting this budget into knowledge and information science departments is very poor due to lack of practical projects.
	Lack of research popularity (Intervening)	Poor support from universities	Lack of support from universities/ not giving proper attention to research/ low number of studies/ universities lack of cooperation with the thesis	Our educational system cannot be changed. There is no possibility for the expansion and upgrade of the equipment and financial support. The doctoral students are less often sent to sabbaticals.
		Major educational policies	Reduced recruitment of research graduates / emphasis of the Ministry of Science on research education / Lack of research opportunity in Payam-Noor university/ research complementary education/ neglected research	The ministry of education has an educational and research emphasis, and this goes back to a major educational policy.
	Weak research structure (Intervening)	Superficial attitude toward research method	Not being serious about research approach/improper research methods/ difference between research and essay/ emphasis on quantitative research/ use of statistics/ collecting inappropriate data/lack of theoretical structure/ lack of qualitative research method and training./ lack of methodological structure/ weakness in problem statement/ the importance of knowing the problem/ the impact of understanding the problem on scientific research/ not analyzing the statistics deeply/ non-practical approach/ lack of reference/ different research and teaching method	For the most part, the research is not of high quality. Methods, topics and data collection are sometimes poor since we have only learnt quantitative research method, and little attention has been paid to qualitative research.
Internal factors	Weak research structure (Intervening)	Lack of attention to basic topics	The importance of the dissertation topic / lack of attention to research proposals / orientation to easy topics / lack of clear topic / dispersion of research topics / inappropriate topics / repetition of research topics / lack of novelty / lack awareness regarding social hazards / not knowing opportunities and threats / lack of inquiry From Iran Doc	Therefore, many of the issues in the profession are neglected and the tendency is more toward trivial and straightforward issues.  Our major problems in this regard are the lack of purposeful research, the triviality of the research approach, the repetition of research topics and possibly some methodological

	Lack of commitment (Intervening)	Unethical methods	Plagiarism/ ordered articles/ cheating in dissertations/ buying and selling dissertations/ not paying attention to research ethics	Filling in the questionnaire carelessly even by the researcher him/herself, which is known as information cooking.
Innovation obstacles	Problem making (Intervening)	Lack of problem finding	Recognition of gaps/ not solving the problems and issues.	Less attention has been paid to the needs of the professional community. The studies have not been carried out in dept with focus on the current issues.
	Duplication (intervening)	Innovation problem in research	Similarity of topics / research as a routine / lack of new ideas in doctoral dissertation / not being up-to-date / lack of exploratory research / lack of research to extend the knowledge boundary	There are also many methodological problems. There are abundance of research and the findings are similar although they are carried out in different cities.  A huge number of articles that are produced are quantitative. This is not bad at all, and this quantity should ultimately leads to quality. They should also be organized, and the articles have to be innovative and functional.
	Lack of strategic planning (intervening)	Lack of plan	Lack of a comprehensive map for research/ unclear path of research work	We need to have a comprehensive map related to this area and the problems in the community. There is also a need for efficient people who can link these two and actually determine how to bridge the gaps. However, the pre-requirement for a coherent and comprehensive map.
	Research pathology in knowledge and information science (core category central)	Research pathology	Lack of equipment/ financial and economic limitations/ executive and administrative problems/ social and cultural issues/ methodological weakness	Understanding social and cultural damages and finding solutions for them, paying attention to cultural tenets and social infrastructure, and ways to strengthen this infrastructure. When social tenets fall in a social system, people do not need to believe so the libraries and those who work in the field will not have the capacity to work.
Usefulness	Applicability (strategies)	Using and implementing the findings	Using research in administrative structure/ making the organizations use the findings/ referring to other findings/ similarity of findings	The problem is that the executive structure of the country which does not pay much attention to research findings.
		Making the research practical	The venue for using the findings/practicality of the findings/not using the findings/ dissertation graveyard/ mission-based dissertations / customer-based research/making the officials familiar with research	The research findings should be practical and they should be used in practice in areas such as planning, organization, service provision and management.

	Commercialization (strategies)	Expansion of the relationship between universities and society	No conforming the present needs of society / industry and university relationship / Systematic link between university and society / Relationship between tradition and university / Mutual understanding of society and profession / establishment of an office for relations between Industry and Society	The relationship between industry, research and the needs of different organizations. Research is not being conducted to solve the problem, and on the other hand, the society and the profession are often unaware and there is no reciprocal link between the tradition and the university.
		Profitability of research	Attracting Organizational Support / Research Marketing	Many of these studies and theses could be used for business purposes, which is only possible if the real needs and problems are identified.
Performance enhancement	Evaluation of research (strategies)	Research evaluation	Adequate control for not repeating the topics/ evaluation of research by committees / Methodological quality enhancement / Adequate precision in the approval of research proposals	Carelessness in approving the research and dissertation proposals. No one really monitors if the topic has been addressed before. The dissertations should be analyzed in a committee such as in National Library or Librarians Association Group Panels.
		Research review	Seriousness of reviewers/ Highlighting reviews in approving proposals / critical reviewers/ Financial and moral support for reviewers	The research teams should look for the reviewers who are critical and careful enough.
	Efficiency improvement (strategies)	Research quality enhancement	Research on theoretical foundations / Attention to research tenets / training for improving the quality of research method / Appropriate topics / increase of research projects/ stopping the orientation toward academic degrees / creation of research committees / more qualitative research	Few students are willing to work on the basics and to expand the field theory. Independent research projects should be proposed by professors.
	Efficiency improvement (strategies)	Cooperation	Realism and collaborative thinking / Contribution of Researchers in the Field / Failure to Repeat Mistakes / Identifying ethical and spiritual principles/ collaborative thinking and cooperation/Collaboration at different levels	Having the spirit of co-operation is a prerequisite. If no solution is provided for our existing problems, our discipline will gradually deteriorate and will no longer affect the development process of Iranian society. Thus, we need to find realistic solutions to the problems through cooperation.

Executive factors	Implementation (consequence)	Research implementation	Professors and students' attention to the impact of research/ better dissertations/ the impact of interdisciplinary conferences/ being economical/ will for implementation/ implementation of projects/ demand-based research	I believe the research is not demand-driven. They are majorly based on abstract purposes and generally remain on libraries book shelves.
	Nativism (consequence)	Answering the society research needs	Practical approach/ research conformation to the needs / the relationship with society needs / the need for practice / research orientation to social challenges / belief in national research	The second realm is research if we deliver a research that addresses the basic challenges within a society.
Self-efficiency expansion	Empowering information consultation (consequence)	Information Consultation	Information Consultation in Society / Continuous Learning / Belief in Knowledge / Society Use of Scientific Findings by Professors	Merging the education with professional processes within the society, which plays an advising role and can direct the needs and information of the society.
		Research promotion	Strengthening motivation through research / promotion and professional credit / Lecturers' independence on dissertation articles /attention to meritocracy	It seems that a wide range of professors present their research in this field either in the form of student dissertations, or driven by a personal motivation (including promotion or professional proficiency). This accounts for a majority of the research works.
	Research empowerment (consequence)	Research enhancement	Conducting Workshops / Conducting National and Regional Conferences / Succeeding in Research / Enablers of advisors and supervisors / Empowering evaluators and reviewers	The most important point is the training of the professors that teach the students. This is so much related to their knowledge and their class control, which can be further enhance through research and data regarding different levels of education.
Need assessment	Problem finding (basic condition)	Problem solving	Deep research / Expansion of knowledge boundary / Investigation of research / Problem solving / Filling of research gaps / Focusing on research topics / Attention to local issues	Research should address problem-solving and the development of the knowledge. It needs to strengthen the discipline through novel explorations. You can only fill in the gaps of the research when you know where the gaps are? This would be a corrupt loophole unless our dissertations begin to adopt a problem-finding attitude.

Professor guiding role (basic condition)	Professor guidance	The key role of professors / supporting and accompanying students / The specialty of supervisors in directing dissertations / Expertise of professors in helping researchers present new ideas / Leading researchers to journals / advisors and supporters in innovation	In the field of research, the professors must know the method of research so that they can direct the student in teaching and researching. Thesis supervision should also be in line with the professors' expertise.
	Professor knowledge	Professors grasp of statistics/ knowledge of research method	Another issue is the professors' lack of knowledge about statistics. As per research, they need to know research methods to guide their students.
	Questioning tendency	Innovative mind	Nowadays, speaking of creative and critical thinking is reciprocal and multi-dimensional.
Research grounds (basic condition)	Grounding	Research Committee / Strengthening research incentives / Support / Appreciation and encouragement / Provision of research equipment / Need for research training / Provision of appropriate resources	I motivate the students to write research articles. We should decrease the quantity; less students and better professors. This needs equipment and financial resources, and the universities should sponsor that.

Causal conditions: Research causal pathological conditions in the field of knowledge and information science include 89 concepts and 5 main categories of knowledge production, the effect of dissertations, article production, articles efficiency and publication system. From the viewpoint of experts, knowledge production included 32 concepts and 5 sub-categories; publication system had 17 concepts and 3 sub-categories; the effects of dissertations included 2 sub categories; article production had 3 sub categories; articles efficiency included 2 sub categories, and the basic conditions included 34 concepts in 3 main categories of the research ground with subcategory of grounding. The role of professors includes the sub-categories of guidance, knowledge and questioning tendency. The main category of problem finding included one subcategory of problem-solving. Intervening factors were 134 with 13 subcategories and 9 main categories of human challenges, lack of time management, financial crisis, and lack of research popularity, weak research structure, and lack of commitment, problem making, duplication, and lack of strategic planning. Strategies had 114 concepts, 8 subcategories and 4 main categories of applicability, commercialization, research evaluation and efficiency improvement. Consequences included 26 concepts, 5 subcategories and 3 categories of implementation, nativism, empowering information consultation and research empowerment. As shown in Figure 1, causal conditions are those that affect core and main

category. Strategies are actions that happen as a response to the core category. Basic conditions and intervening factors (a combination of mediating factors) are specific and general factors that affect the strategies, and consequences are the result of implementing strategies (Creswell, 2005)

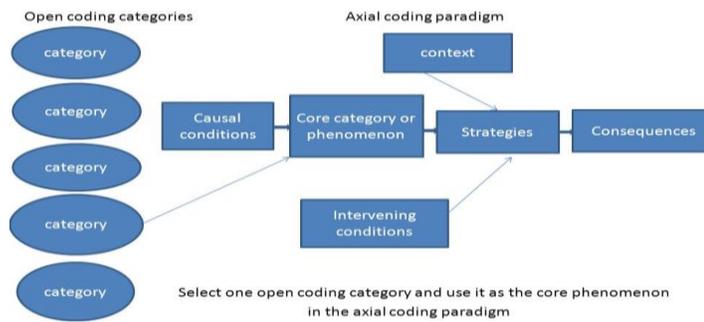


Figure 1: Encoding the Foundation Data Theorization from Open Coding to a Pivot Coding Pattern (Creswell, 2005)

The relationships between the main categories of pathology of the research are shown in the conceptual model of Fig. 2. In Fig. 2, arrows show the pathological process of research and the relationships between the categories.

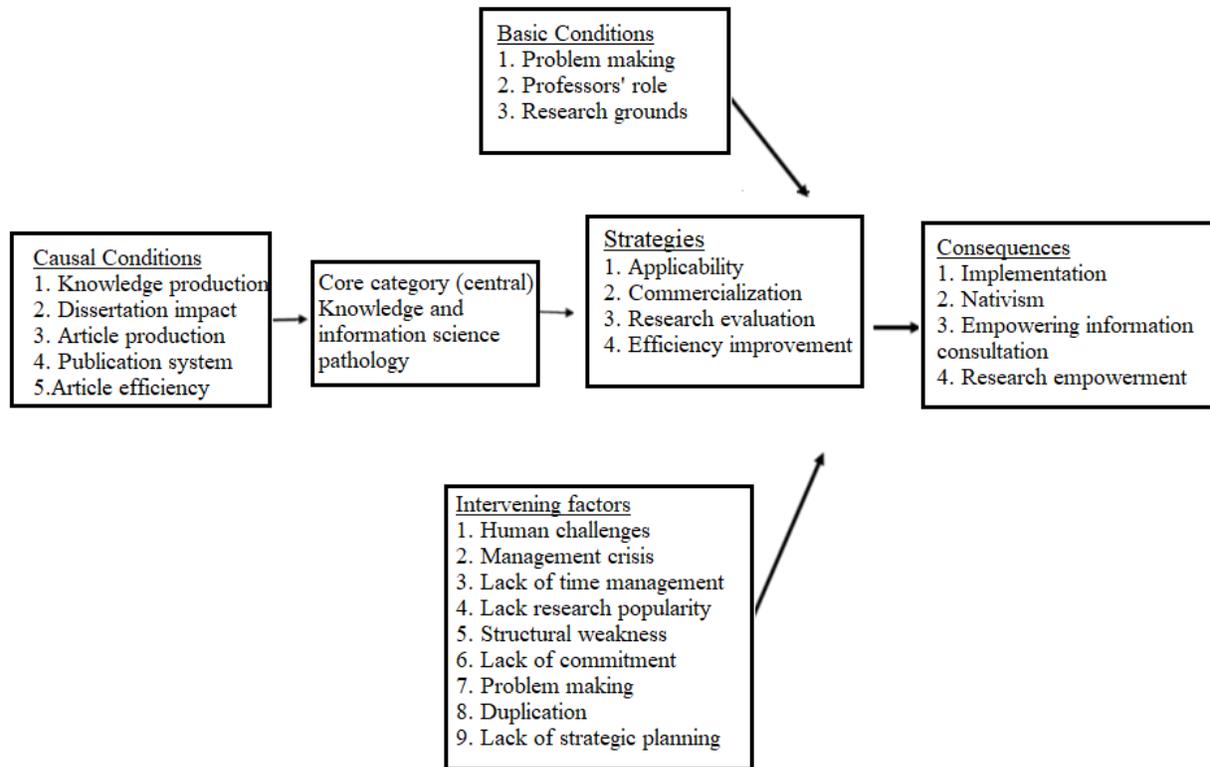


Figure 2. The conceptual model of research pathology of knowledge and information science

## Conclusion

Given the importance of the subject of research, the field of knowledge and information science requires to move towards the pathology of research. The lack of expert human resources and financial constraints as well as other factors are among the most important research problems. If research factors are determined accurately and properly, it will provide more possibilities for conducting appropriate research, and consequently, the results of the research will be used more effectively and more efficiently. The present research was carried out for the purpose of the pathology of research in the field of knowledge and information science. It also aimed at identifying the damaging factors in this discipline. In the conceptual model, the main categories of problem-finding includes the sub-categories of the problem solving, and the main categories of professors' role include professors' guidance, research and questioning. The category of research contexts is together with the sub-category of context. Failure to fulfill these sub-categories provides the underlying conditions and context for research problem.

In response to the first question of research and based on the interviewees' viewpoint, the most important basic pathology factors are the necessity of problem solving in the research, which is the basis of other factors. Research is to solve the problems of society, which requires attention to the local social issues. Dani (1999) found that the problem is first recognized in the research; then the information is gathered to solve the problem, and eventually something practical would be suggested to the scientific community of

librarianship in particular and to the scientific community in general. Furthermore, in this model, the main category of the production of knowledge included sub-categories of knowledge production expansion, the status of knowledge production, production of knowledge for meeting the actual needs, modernity and innovation, the quality of knowledge production. The main category of the publication system included the sub-categories of book publication, international publications and the publication market. The main category of dissertation impact included the sub-categories of engagement of students and the extraction of articles from dissertations. The main category of article production was consisted of the subcategories of articles number, articles status and promotion. The efficiency of the articles included article appeal and article efficiency. According to the interviewees, extracting articles from the dissertations are among the most important factors that causes problem. Fattahi, Baglou and Akheshik (2014) emphasized the extraction of articles from dissertations, and according to the interviewees' views, the increase of papers is due to the increase of graduate students. From the interviewees' viewpoints, the number of research papers drawn from students' dissertation is very high and professors tend to be co-authors. They do not have the desire to finish the research merely in the name of the student. Some interviewees talked about research collaboration and stated that some of supervisors need articles from dissertation because of the promotion of their academic level, however they do not comply with their obligations and the responsibility, and the whole responsibility falls on the students' shoulders. On the other hand, increase in the number of papers has an inverse relationship with the quality. Not all of the published articles are desirable, which is in line with Hassanzadeh et al. (2016). However, the number of articles is not the ultimate goal, but the goal is to have high-quality articles that improve our knowledge and discipline. In presenting such high-quality articles, utmost attention should be paid to the foundations and theories of the research problem and topic. Emphasizing theoretical foundations and presenting theories related to the subject matter of the research is one of the points that enriches and strengthens the articles. It also improves the relationship between the previous and new knowledge in the fields of human and social sciences (Fattahi, Baglou and Aakhshikh, 1393). According to interviewees, knowledge production is on rise, and universities are the source of knowledge. Therefore, the community and industry should refer to universities for their research projects, and the field of knowledge and information science is no exception. Organizations, and executive departments do not refer to universities for the implementation of research projects and activities. Despite the good development of knowledge in the field of knowledge and information science, it does not have the necessary quality in knowledge production. On the other hand, the publication has continued to grow, and this finding is consistent with findings of O'Cola (2007), Ashraf Rizi et al. (2010), Radfar (2011) and Amani et al. (2013). The repetition of book subject matter is one of the categories, which requires more attention by the authors and translators active in the field in order to address the existing gaps. They need to address less developed areas. This is also confirmed by findings of Zainal-Abedini and Mohammadi (2017). Problems and constraints such as human challenges, research time limits, financial limitations, poor university support, the weakness of research structure, duplication, lack of commitment, problem making, lack of strategic planning, and lack of research-driven approach in universities are among the harmful factors in the research, which limit the strategies. One of the most important limiting factors is the lack of a research-driven approach, which has been addressed by Badvaroj (2017), Ganji (2004) and Zarei and Rohani (2009). According to the interviewees, research in the discipline has faced problems in covering its expenses. Interviewees described the poor relationship between research and the needs of the society, and consequently, the inability to attract research projects function as a reason for causing financial problems. The weakness of the research motivation is due to the role of supervisors, the lack of cooperation of

participants and the failure to send PhD. students to sabbaticals. Based on the results of the interview analysis, doing the research basically requires teamwork and utilization of the expertise of each member.

The members of a research team barely collaborate with each other and this requires the improvement of group work in the research. Given that universities are not research-based and based on the views of interviewees, universities are fertile in training researchers since they are very course-based. Universities train more professors and instructors than researchers. In other words, as a result of the course-based education approach in some universities, the outcome is professors who merely transfer the knowledge instead of producing it. By contrast, some of the professors also do not usually enter the field of research and knowledge production. In general, it can be said that research is a skill, and it is not only about knowing theoretical issues, methods, and principles of scholarship. To carry out a research, these skills should be acquired. Yet, not all people are equipped with such skills. Another important limiting factor is the educational policy, which is related to the non-research focus of universities. According to the results of interviews analysis, one of the serious damages to the field of knowledge and information science is the policy of universities for expansion of education. This means that a university increases attention to post-graduate education such as Payame Noor University, which marginalizes research. Giving so much attention to course-based approach has created a lot of problems for teachers. As professors spend most of their time fulfilling educational goals in different departments of higher education, such as classroom and responding to students, they do not have enough time to spend on research. On the other hand, in some cases, the educational activities and the revenue from it prevent them to feel the need for research. In response to the second question, a mixture of the following research strategies identified in the conceptual model can be used: applicability and commercialization along with the expansion of the relationship between the university and society, profitability of research, the assessment of research, efficiency improvement, quality enhancement, cooperation and collaboration. Based on the results of the interviews' analysis, the relationship between research findings and their application in society is not satisfactory while there are good grounds to improve this situation. In governmental agencies and existing institutions, there is no need to the assignment of their plans to the researchers. It is imperative to focus on research topics of existing institutions, such as public libraries, in the initial phase of research in the field of knowledge and information science. Hence, they will trust that the university can really help them to address their research needs and issues. Universities should not just address theoretical issues, but they should also have the ability to execute and operate. Based on research findings, strategies provide a thorough and comprehensive implementation of research and response to current and local needs of the society. This along with the capacity of information counseling will reduce the damage in the research.

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