

# Provide a framework for problem statement in the organization's research: an AHP, ISM, and MICMAC approach

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**ABSTRACT.** The aim is to provide a framework for statement organizational research problems. State the problem is the most important reason for the researcher to choose the subject. Although research has been done on the characteristics of expression of research problems, but in organizational research, no framework for expressing the problem has been provided. The method used in this research is grounded theory followed by the ISM-MICMAC approach for modelling. The findings of this study identify the components of problem statement in organizational research and modelling them. Due to the large number of indicators, first nine indicators of higher importance were identified, which had much more weight than other indicators. These indicators were then compared and prioritized again by other experts. Based on the level of importance of these indicators, a model is presented and it is determined what position each of these indicators is in terms of Degree of dependence and Influence rate. The researcher can easily use this information to provide an acceptable problem statement and the editors will have a good assessment tool.

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## 1. Introduction or background

Problem statement is the clarification of a problem and an extract of what the researcher intends to do [26]. The statement of the problem is the most important reason for the researcher to choose the research topic [19, 26, 35]; and the beginning of it which shows his interest [27]. In other words, there is a problem that has occupied the mind of the researcher, and by solving that problem or solving parts of it, something adds to that science and knowledge [27]. Writing problem statements plays a vital role for other parts of the research [20]. The state of the problem ends with a question that the rest of the research proceeds based on the answer to that question [28].

Although extensive research has been done on a variety of writing genres, there is very little research on how to write problem statement; In other words, it can be argued that no agreement has ever been reached [19].

At the beginning of each research and before the title of the research, the reason for choosing the topic, or in other words, the issue that the research deals with and the cause-and-effect relationships [1] are clearly stated. Which is sometimes presented as

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a problem statement and sometimes as an introduction [19, 1]. Of course, it is often an introduction to proving that the researcher has complete mastery of the subject and, knowing the various aspects of the subject, has realized the existence of a problem [25, 9] and then, the problem is expressed.

The problem should be stated in such a way as to justify the audience that the subject of the research has been selected and stated in answering or explaining the issue [1]. Typically, the problem statement should consist of two parts, cause and effect [20]. With the explanations provided, problem statement is the most difficult and important part of research [21], the writing of which is stressful and anxious [34]. Jacob 2013 [20] acknowledges the difficulty of expressing the problem and considers it necessary to conduct research based on the interest of the researcher.

When the research problem is clarified, then the researcher's goal is to solve parts of the problem or all of it, and the researcher will not deviate from the right path in the continuation of his research. In other words, the researcher will pursue his strategy, which is to do the right thing in the right direction of the research. Problem statement should state the central issue, the need for study, and why the problem is important [14].

Problem statement can be presented in a variety of ways, and many researchers have enumerated the characteristics of a good problem statement: summarizing and being important enough, but not more than 250 words [6]; Accuracy in expression and based on valid research and show a research gap [20]; Urgency and being based on the scientific method [13]; Has accuracy in writing language [29] and clear rhetorical structure, etc. In a bibliographic study, search for "problem statement" on Web of Science, Time span: All years, and Indexes: SCI-EXPANDED, SSCI, A & HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC 160 articles obtained by omitting research that was not directly concerned with the problem statement or they expressed only one issue on a case-by-case basis, 49 articles were obtained which, according to their title, were directly about expressing the problem as part of the research framework. Of these, only eight were from the years before 2000. Also, according to the research titles, none of them were specifically in the field of management.

Beeler (1991) [5] provided a theoretical model and framework for adjusting college graduates with academic life that underlies many related studies [16, 11, 2, 4, 23].

Metoyer-Duran and Hernon (1994) [26] provide nine characteristics for a well-structured problem statement: 1. Clarity and accuracy (a good problem statement does not lead to widespread generalization and irresponsible statements); 2. Identify what is to be studied, while avoiding the use of valuable words and expressions; 3. Identify a comprehensive question and key factors or variables; 4. Identify key concepts and terms; 5. Expression of study boundaries or parameters; 6. Some generalized ability; 7. Convey the importance, benefits, and justification of the study (regardless of the type of research, it is important to address the "So what" question and show that the research is not trivial); 8. Do not use unnecessary terms; And 9. Transfer in a way that is more than just the collection of descriptive data.

David Clark lists four characteristics for a research problem statement in the social sciences [19]: "1. lead-in; 2. declaration of originality (e.g., mentioning a knowledge void, which would be supported by the literature review); 3. indication of the central

focus of the study; and 4. explanation of study significance or the benefits to be derived from an investigation of the problem”.

But the most complete framework is provided by Ali and Pandya (2021) [1], which consists of 4 steps and is taken from Beeler (1991) [5] model. In this framework, 12 questions are asked with the following topics: Phrase and express the problem with appropriate words, find keywords to describe, PEEL approach and put them together, support for problem expression with sources and data.

The present researchers asked the characteristics of a good problem statement from 12 researchers with at least two valid articles indexed in the JCR, and the absence of unsourced paragraphs and the presence of supplementary data were more important to the respondents, respectively. Other features of a research problem statement enumerated by Ali and Pandya (2021) [1] were not expressed by these 12 respondents or their frequency was only 1. This result shows that even some researchers with authoritative articles do not know the capabilities of a good problem statement.

Some recent research, such as doctoral theses and high-quality papers, as well as some research methods, such as ethnography and auto-ethnography, have a large number of unsourced paragraphs and may not have enough data to complete the problem. Therefore, in order to justify the editor/supervisor, it is necessary for the researcher to be aware of all the convincing possibilities for expressing the problem and to know their importance in order to use them in writing the problem statement. The purpose of this article is to identify all the components and capacities of problem statement that can justify and convince the audience and the supervisor/editor in accepting the existence of the problem. It should be noted that very little research has been done on emerging research problems, such as Case and Light (2011) [7], which shows some methodologies such as Case Study, Grounded Theory, Ethnography, Action. Research, Phenomenography, Discourse Analysis, and Narrative Analysis may enable his research community to better respond to the challenges they face in the 21st century. Therefore, the expression of emerging organizational and research problems has created double problems for researchers. Therefore, before presenting it as an issue, it is necessary for researchers to know the capabilities of a common research problems that is acceptable to the audience or the supervisor/editor.

## 2. Methodology

**2.1. Part 1. Create a questionnaire.** The research method is qualitative in general and "grounded theory" in particular. This method is inductive in terms of approach and based on it, theory is formed from the concepts derived from the data. This strategy is based on three characteristics of concepts, categories and theorems. This theory is based on data, so it offers a better explanation than a theory derived from existing theories or adapted to other theories; because it is more appropriate to the situation. In general, there are three plans for conducting such research: the systematic approach of Strauss and Corbin (1990) [36], the emergence approach based on the teachings of [17], and the construct approach that CHARMS [8] presented it. The qualitative data of the present study are analyzed based on the systematic approach of Strauss and Corbin.

In the present study, theoretical sampling method has been used. This sampling is purposeful and in it the researcher tries to analyze and scrutinize the desired event

and phenomenon by using the opinions and knowledge of the most knowledgeable people about the subject. In other words, the type of sampling is not random, but intentional and judgmental.

**2.2. Part 2. Modelling.** Framework, categories, and concepts are tested using the Analytic Hierarchy Process. Liang and Peng (2017) [24] used this method to examine the success factors of autonomous landscape development in rural communities. The same method has been used in the present study.

AHP, which is a decision-making method with multiple goals or standards, aims to divide complicated and unstructured problems into several groups and organize them into hierarchies. Then, the opinions of experts and scholars and various hierarchies that actually participate in decision-making to simplify complex systems are organized into a simple hierarchic system. The nominal scale is regarded as the pairwise comparison of the elements in different hierarchies. After establishing the pairwise comparison matrix, the eigenvector of the matrix is calculated, and the priority vector of the hierarchy is decided according to the eigenvector to represent the priority of elements. The eigenvalue is then calculated to evaluate the consistency of the pairwise comparison matrix as the decision evaluation indicator. AHP consists of six processes: identification of the evaluation factors, construction of hierarchical structure, establishment of the dual matrix, solving the eigenvalue and eigenvector, consistency test of the dual matrix, and solving the dominant proportion of factors, which are explained below [24].

Interpretive structural modelling (ISM) is applied to develop the structural inter-relationship among various problem statement enablers. Considering the results obtained from ISM the Matrices d'ImpactsCroises Multiplication Appliqué a un Classement (MICMAC) analysis is done to identify the driving and dependence power of Problem Statement Enablers" [33].

### 3. Part 1. Create a questionnaire

The specifications of the participating units are presented in Table 1.

Table 1. Sample specifications

Sample selection was performed using a combination of judgmental sampling method and snowball method with the condition of having at least one article indexed in JCR and familiar with the field of organization. In the snowball sampling technique, after interviewing the experts, they were asked to introduce other experts and other knowledgeable people; therefore, except for the first few who were directly selected by the researcher based on the desired criteria, the others were introduced and approved by the interviewed professors and experts. Adequacy of sampling has been achieved by theoretical sampling method. In this method, sampling continued until the model reached the stage of fabrication and saturation, although from the seventeenth interview we repeated the indicators and saturation, but to be sure, twenty interviews were conducted. The characteristics of the participants are listed separately in Table 2.

Table 2. Individual specifications of sample units

**3.1. Data analysis.** In this research, using various methods of collecting qualitative data - such as in-depth semi-structured interviews, reviewing the experiences of other countries, studying documents and articles, etc. - to collect data based on the prevailing logic Theoretical sampling was performed. According to the systematic plan for data analysis, first by analyzing the content of texts and writing interviews, live coding and coding based on sociological structures have been used. At this stage, a list of codes was extracted and the basic concepts were formed by combining and linking the codes together.

Table 3 presents the theoretical terms extracted in the categories and subcategories to achieve the model. The logic of theoretical sampling requires that the concepts inferred, categorized and organized, and if the criterion of theoretical saturation of categories is not met, other data should be collected and analyzed. In total, at this stage, 218 codes have been extracted from 25 interviews and review of documents, experiences and other sources. By comparing and classifying similar codes, a number of concepts were extracted and finally 22 categories were separated by classifying similar concepts. In addition to coding, note-taking has been done by researchers to help analyze findings, organize activities, explain and clarify key ideas, and arrive at a model. The following are some of the quotes that have been coded and ultimately used to extract concepts and theories.

- Expressing the problem is acceptable if it is based on statistics (Interview 1).
- Using the source for the content presented in the state of the issue is very important (Interview 2).
- In fact, there is one or more issues that make a researcher do research (Interview 3).
- In companies and organizations, research and development departments outsource their problem solving using research with public announcement. The research axes taken from the departments of the organization are collected and after prioritization, they are published in the form of public advertisements on the relevant websites (Interview 1).
- Until the audience of an article or research project is not justified that there is an important issue in the organization and until that issue is not well explained, the research will not be attractive to him (Interview 11).
- In my view, these are valuable studies whose main root - the existence of the problem is derived from the personal experience of the researcher in the organization (Interview 12).
- Statistics of human resources of the organization, including exit rate, job satisfaction, organizational silence, etc. can indicate the presence or absence of a problem in the organization (Interview 15).
- The research issue should be extracted directly from the claims of employees and managers of the organization. For example, if an organization's tender expert claims that tender rates are being traded illegally in insurance companies, this in itself raises an issue (Interview 3).
- When more than one industry elite or expert claims to have a problem, the necessary research should be done before it is too late (Interview 17).
- In the insurance industry, banks, central insurance and shareholders always monitor insurance companies, and most of the orders that are officially announced by these regulatory bodies indicate problems in the organization (Interview 10).
- The text of the interview should be narrated in a way that has a narrative logic;

In other words, take the audience from one point to another and let them know that there are important issues (Interview 9).

**3.2. Axial coding.** In the axial coding stage, which is based on a general pattern known as the paradigm, a relationship was established between the obtained categories. Based on this, the central category is determined and then other categories are related to it as sub-categories with different titles of the paradigm model. Figure 1 presents the paradigm model extracted from the axial coding, which is also examined below its subcategories.

**3.3. Causal conditions.** Causal conditions include the personality traits of the audience or researcher (positivity or negativity (confidence in researchers), work experience in the industry, research experience, and knowledge of industry problems, short-term or long-term attitude). Underlying factors include structural factors such as research as an organizational plan, scientific article, dissertation or report and process factors (using quantitative, qualitative or combined research method, research background and agreement of employees on a problem). The conditions of the intervener include factors such as the custom among the judges of the article (statistical problem-solving and citation in writing the problem-solving) and valid articles in the field of problem-solving. Strategies include respect for custom among editors/supervisors, respect for research ethics in unsourced paragraphs, and the use of interdisciplinary research methods in new organizational issues and emerging research. The central category or phenomenon is trust in the researcher's experiences and previous experiences of other researchers, the expected outcome of which is the expression of the issue approved by the editors/supervisors and the audience of the research. Table 3 shows the concepts extracted from the interviews and the categories derived from the coding.

Table 3: Concepts and categories extracted from interviews and experiences of experts

Consequences are the outputs of strategies. This means that problem-solving strategies lead to consequences in research. In the coding step, a number of concepts were identified that are organized into categories, which we describe below. Problem statement based on valid information: Presenting statistics, tables, graphs and valid figures and using the contents of previous researches and valid texts makes the reader of the article believe in the problem aspect of having research. Problem expression based on the researcher's experiences: The researcher's experiences due to the presence of the researcher in the research community, if the way of expressing the problem is correct, makes the problem credible and logical. Problem statement based on the experience of others: Sometimes the researcher does not have reliable information about the existence of the problem and is not a member of the study community. In this case, the researcher can base the problem on the experiences of people who are members of the study community. The use of these experiences also makes the existence of the problem believable and acceptable. Statement of the problem based on the credibility of the audience: State of the problem based on the experiences of themselves, others or using reliable information has only one main purpose, which is credibility from the perspective of the research audience, whether the audience is auditor or a researcher or the general audience. All the cases raised in the above

sections are presented in Figure 1 in the form of a paradigm model derived from axial coding.

Figure 1. Axial coding based on research paradigm model

**3.4. Selective coding.** Selective coding can be considered as a process of integrating and improving categories. In this stage, based on the results obtained from the previous two stages, the theory is generated. In this way, we systematically relate the central category to other categories and formulate those relationships in the form of a clear narrative [10]. We also modify categories that need further improvement and development. At this level, an attempt is made [36, 22] to present a theory-based narrative for the phenomenon by placing the categories around a central category as the main theme and establish a systematic relationship between categories [22].

The following categories are the result of selective coding for the phenomenon of trust in the researcher's experiences: When there is sufficient ground for the research problem (sufficient background and known research structure), in order to justify the problem to the audience/editor, these items are of the highest importance in stating the problem: the use of reliable statistics (tables and charts, extracted from statistical reports, and use of yearbooks), inductive inference (multiplicity of problem observations, common problem of stakeholders, and persistence of the problem), narrative logic (justifiable narrative, existence of logic in the arrangement of events, full expression causes and effects in the text), references to credible sources (statistics based on credible source, claim with source, credible scientific sources, sources provided by official sources, and based on position literature) and acceptable literature (text appropriate, integrated text, sufficient cause and effect, summary writing, and avoidance of exaggeration).

**3.5. Conclusion.** This research has been done in order to provide a model for expressing research problems in the organization. Some background factors among research editors and citing existing scientific articles in relation to the components of problem statement, affect the researcher's decision in how to state the problem. However, the known components of statement a research problem from the perspective of organizational researchers are in order of importance: inductive inference; Based on statistics; Authentic source; Fictional logic; Acceptable literature; Inferential inference; The result of external evaluations; Official announcement of the organization; Concern of the day; Approved by the elite; The result of internal evaluations; personal experience; Manager's claim; Note to regulatory bodies; Clear and obvious issue; Expert claims; Inference from reports; Night letter; Not reaching the planned programs; Bottlenecks in the organization; Organizational silence; And human resource rates.

**3.6. Research suggestions.** Considering the concepts and categories extracted from Table 3 and the axial coding based on the research paradigm model in Figure 1, providing a framework for researchers to state the problem in the organization's research helps to be able to consider the importance components of problem statement and, by observing the dispersion in related categories, to state the problem convincingly; In such a way that the audience, especially the editors, accept that the subject of the research is the issue. This framework is suggested to researchers in Table 4 in the form of Questions to ask, which is presented in the completion of Table 3.

Table 4. A framework for researchers in problem statement

**4. Part 2. Modeling and testing the framework**

Saaty (1980) [31] considers the AHP process to consist of the following processes: reciprocal judgments, homogeneous comparisons, network structures and synthesis in a hierarchical manner, and meeting the desirable expectations. The first steps in the AHP method are the results of the first part of the present study, including Problem Definition and Establishment of the Hierarchical Structure. Other processes are described below.

Table 5. Definition and description of analytic hierarchy process (AHP) evaluation scale

“One of the key factors of the method is to estimate the priorities in terms of consistency and consideration of the principal or the largest eigenvector. Consistency means that the decision maker is exhibiting coherent judgment in specifying the pair wise comparison of the criteria or alternatives. Mathematically, it was defined that the comparison matrix A is consistent if” [3]:

$$a_{ij}a_{ik} = a_{jk} \quad \text{for any } i, j \text{ and } k \tag{1}$$

“That property requires all columns and rows of the comparison matrix to be linearly dependent. The consistency ratio of the aggregate matrix is defined as” [3].

$$CR = \frac{(n_{max} - n)}{(n - 1)R} \tag{2}$$

RI is a random index of consistency and n is the number of criteria.

Saaty [32] “defines a limited number of analyzed criteria and alternatives as 7 +/- 2 (which means 9 maximum. But the first part of the present study includes 22 criteria and more than 70 sub-criteria. “The Analytical and Deductive methods of preliminary criteria reduction can become useful tools for elaborating a correct list of criteria for Analytic Hierarchy Process application. They can prove themselves as useful in multicriterial decision making processes, where the number of criteria exceeds the amount allowed by the method” [15].

In this study, the importance of concepts - considering their number of repetitions - has been investigated by experts. Therefore, according to Table 3, from the 22 available concepts, 9 concepts that have the most repetition can be selected and used in the AHP technique. Table 5 is the result of reducing the number of criteria. These criteria are numbers 1 through 9 in the Number of Criteria column of Table 4.

“Saaty [32] suggested the use of C.I. and C.R. to test the consistency of the pair-wise comparison matrix, and the C.R. in various hierarchies or the entire hierarchical structure should be < 0.1 to prove the consistency and rationality of the respondents’ judgment” [24]. In the present study, C.I = 0.032 and C.R for 10 participants are 4%, 6%, 8%, 6%, 4%, 5%, 5%, 7%, 6% and 7%, respectively. Therefore, these conditions have been approved. If CR > 0.1, the choice creator must change the components of a<sub>ij</sub> to realize better consistency in the pair wise comparison matrix (PCM). The results elaboration has been continued by using the “Business Performance Management Singapore—BPMSG AHP Excel template with multiple inputs” [18] as mentioned in Figure 2, and the ranking of criteria are presented at the following Table 5. The relative weights were found by separating each component of the framework with the entirety of the column where it is set. At that point, the normal entirety of each push



calculates the relative weight for each sub-criterion with respect to the consistency proportion of the corresponding main criterion.

Since,  $A\bar{w} = n_{max}w$ , with  $n_{max} > n$  and the  $i$  equation is,  $\sum_{j=1}^n a_{ij}\bar{w}_j = n_{max}\bar{w}_i, i = 1, 2, \dots, n$ , then

$$\sum_{i=1}^n \sum_{j=1}^n a_{ij}\bar{w}_j = n_{max} \sum_{i=1}^n \bar{w}_i = n_{max} \tag{3}$$

Meaning that the  $n_{max}$  esteem breaks even with to the entirety of the components of the vector column  $A\bar{w}$ . The examination of the surveys and the information gotten for all criteria, normalized and the Pairwise Comparison Matrix (PCM) was created concurring to Saaty (1987) [30].

Table 6. Relative weight of criteria.

As shown in Table 6, Inferential Inference has the highest weight among the problem expression design criteria. This means that the mentioned criterion, from the point of view of experts, weighs much more than other criteria in expressing the problem. This criterion includes 5 sub-criteria; Lack of Strategy in the Organization, which indicates the same problem in the departments; Lack of Economic Justification for Continuing the Work of Upstream Units; Organizational Developments; Consecutive Changes of Senior Managers; and Abnormal Presence of Inspectors of Supervisory Bodies in the Organization. After Inferential Inference, the Based on Statistics criterion weighs significantly more than other criteria. Together, these two criteria account for about 45% of the weight of the problem statement. Then comes the criterion of The Concern of the Day, which weighs closely with the four criteria after itself.

Figure 2. Weight criteria

Figure 2 is presented to better understand the weight of problem expression design criteria. This Figure confirms the information in Table 6.

Figure 3. Summary of AHP Analytic Hierarchy Process (EVM multiple inputs)

The ISM and MICMAC approaches are used for modelling. They continue the methodology as follows:

The steps related to ISM are presented below:

**4.1. Structural Self-Interactive Matrix Formation (SSIM).** In this step, the specialists consider the criteria in sets with each other and react to the match comparisons based on the taking after. That is, in each comparison, the two criteria use the letters V, A, X, O taking after explanations.

- V: The factor of row I causes the factor of column J to be realized.
- A: The factor of column J causes the factor of row I to be realized.
- X: Both row and column factors cause each other to be realized (factors I and J have a two-way relationship)
- O: There is no relationship between the row and column factor.

In this step and to start the modelling process, the researchers hand over the research questionnaire to the experts. The evaluation matrix is completed in pairs based on the response spectrum. Therefore, the above steps were followed and Table 7 was obtained.

Table 7. SSIM matrix

**4.2. Obtaining the initial achievement matrix.** By converting the symbols of the SSIM matrix to numbers zero and one based on the sub-matrix, the introductory accomplishment is gotten.

- If the symbol of cell IJ is the letter V, the number 1 is placed in that cell and the number zero is placed in the symmetrical cell.
- If the symbol of cell IJ is the letter A, the number zero is placed in that cell and the number 1 is placed in the symmetrical cell.
- If the symbol of cell IJ is the letter X, the number 1 is placed in that cell and the number 1 is placed in the symmetrical cell.
- If the symbol of cell IJ is the letter O, the number zero is placed in that cell and the number zero is placed in the symmetrical cell.

After obtaining the SSIM matrix, the initially received matrix must be prepared. Initial received matrix is obtained by converting SSMT matrix to a dual value (zero-one) matrix (Table 8).

Table 8. Initial received matrix

**4.3. Compatibility of access matrix.** The initial access matrix must be checked if  $I, J = 1, J, K = 1 \rightarrow I, K = 1$ . That is, if criterion A is related to criterion B and criterion B is related to criterion C, then criterion A must also be related to C. After the Initial received matrix is formed by including transferability in the variable's relationships, the Final received matrix is formed to match the Initial received matrix. The transferability of the conceptual relationship between variables is a basic assumption in interpretive structural modelling and states that if variable A affects B and variable B affects C, then A affects C. All secondary relationships between the variables are examined and finally the output is presented according to Table 9:

Table 9. Final received matrix

**4.4. Determining the level of variables.** In this step, we calculate the set of input (prerequisite) and output (achievement) criteria for each criterion, and then we also specify the common factors. After identifying this variable, we remove their rows and columns from the table and repeat the operation again on the other criteria. Influence rate and Degree of dependence of each variable are shown in this matrix. Influence rate of each variable is the final number of variables (including it-self) that can play a role in creating them. Degree of dependence is the final number of variables that cause the mentioned variable. Finally, the structural model is presented in three levels according to Figure 4.

**4.5. Drawing the network of interactions.** In this step, according to the levels of criteria in ISM and the relationships between them, a network of interactions is created. Level one is selected as the most affected level and the last level is selected as the most influential level (Figure 4).

Figure 4. Interpretative Structural Modelling Model

Low-level variable is the most effective (Acceptable literature) and higher-level variables are the most affected (The concern of the day, Authentic source, Inductive inference, Official announcement of the organization and The result of external evaluations).

Table 10. Influence rate and Degree of dependence of structural model variables

Finally, the MICMAC analysis is performed, which is also described in the continuation of this method. The research model variables can now be identified in terms of Influence rate and Degree of dependence using MICMAC analysis. In MICMAC analysis, the type of variables is determined according to the impact and effectiveness on other variables, and after determining the Influence rate or Degree of dependence of factors, all selected factors can be classified (Figure 5).

Figure 5. MICMAC analysis

The first group includes independent variables (autonomous) that have weak influence and dependence. These variables are independent and have little correlation. There are no variable in the Autonomous area. A7 (Inductive inference) is located in Dependence area which show the low influence rate of this index and have a high dependence on other indicators in the model. The third group are Linkage variables that have high influence and dependence including A1, A2, A3, A4, A5, A8, and A9 indices. These variables are in fact components that are unstable, meaning that taking any action on these components in addition to affect directly on the other components, it can affect the component itself in the form of feedback from other components. Finally, in the Independent area, there is A6 (Acceptable literature) indicators that have a strong influence, but their dependency is weak, and in fact they are key variables, and by making changes in them, the other variables can be influenced. Variables that have high influence rate are called key variables. In fact, any action on A6 (Acceptable literature) will change other variables. Therefore, in writing problem statement in organizational research, the role of A6 should be considered, because this variable is the basis of problem statement.

- 4.6. Suggestions for future researchers.** - How to write the expression of emerging research problems to be considered.
- The problem statement in authoritative articles and doctoral dissertations should be compared with the results of the present study.
  - A bibliometric analysis should be performed in research related to problem statement.

Table 1. Sample specifications

Type of relationship with the research topic	Number	education
University faculty member	6	PhD
Organizational Consultant	7	PhD
Organizational Manager	7	PhD / Master
Researcher in the field of organization	5	PhD / Master
Total	25	

Table 2. Individual specifications of sample units

Number	Age	Experience	Education	Type of relationship with the research topic	Number of codes found	Number of scientific articles	Number of concepts
1	38	10	PhD	Organizational Consultant	12	4	3
2	45	14	PhD	Organizational Consultant	5	9	5
3	43	14	PhD	Organizational Consultant	17	4	15
4	65	32	PhD	Organizational Consultant	12	3	6
5	53	25	PhD	Organizational Consultant	11	2	14
6	46	16	PhD	Organizational Consultant	14	4	5
7	59	30	PhD	Organizational Consultant	7	5	8
8	47	20	PhD	University faculty member	27	41	7
9	46	14	PhD	University faculty member	19	23	9
10	45	14	PhD	University faculty member	13	31	7
11	37	7	PhD	University faculty member	11	11	9
12	45	17	PhD	University faculty member	12	35	17
13	52	23	PhD	University faculty member	11	32	11
14	39	12	PhD	Organizational Manager	11	5	5
15	45	14	MA	Organizational Manager	7	1	4
16	43	14	MA	Organizational Manager	5	2	3
17	45	15	MA	Organizational Manager	9	1	3
18	49	18	MA	Organizational Manager	15	3	6
19	43	18	MA	Organizational Manager	3	1	3
20	47	21	PhD	Organizational Manager	5	1	3
21	37	5	PhD	Researcher in the field of organization	11	9	8
22	41	7	PhD	Researcher in the field of organization	18	12	8
23	45	17	MA	Researcher in the field of organization	12	15	12
24	43	8	MA	Researcher in the field of organization	10	13	7
25	38	2	MA	Researcher in the field of organization	5	7	8

Table 3. Concepts and categories extracted from interviews and experiences of experts

Number	Concepts	Categories	Number of indicators
1	Use of tables and graphs, extracted from statistical reports, use of yearbooks	Based on statistics	17
2	Multiplicity of problem observation, common issue of stakeholders, persistence of the problem	Inductive inference	17
3	Lack of strategy in the organization, which indicates the existence of the same problem in the departments, lack of economic justification for the continuation of the work of upstream units, organizational changes, successive changes of senior managers, abnormal presence of inspectors of supervisory institutions in the organization	Inferential inference	13
4	Justifiable narration, the existence of logic in the order of events, the expression of all causes and effects in the text	Fictional logic	15
5	Improve the current situation of the organization, help the organization compete in the industry, eliminate the first signs of defects in the organization	The concern of the day	9
6	Statistics based on valid source, source-based claim, valid scientific sources, Officially provided resources, based on position literature	Authentic source	17
7	From the point of view of the elites of that field, the existence of the stated issue should be confirmed, it should be stated by more than one expert, the industry elites should not object to that problem.	Approved by the elite	9
8	The state of the issue should be understandable to all the stakeholders of the organization, the issue should be obvious to the knowledgeable people in that area	The issue is clear and obvious	5
9	Appropriate writing, integrated text, sufficient cause and effect, summary writing, avoidance of exaggeration	Acceptable literature	15
10	Researcher familiar with the subject, researcher, member of the organization, researcher's personal experience, researcher's life with the target community	personal experience	7
11	Research axes announced by the organization, stating the problems of the organization on its website	Official announcement of the organization	10
12	The order of the senior managers of the organization to solve a specific problem, the claim of the relevant manager about the existence of the problem	The manager claims	7
13	Existence of the problem by inferring from the words of the experts, the insistence of the direct expert on the existence of the problem	Expert claim	5
14	Existence of the problem by inferring from the words of the experts, the insistence of the direct expert on the existence of the problem	Expert claim	5
15	External audits, investigation of supervisory bodies	The result of external evaluations	11
16	Internal audits are the result of senior management visits	The result of internal evaluations	8
17	Published night letters, whistles, letters of protest from current or former employees to regulatory bodies	Night letter	3
18	Official letters of supervisory bodies to correct matters, sending evaluators by supervisory bodies to the company, establishment of auditors in the company without prior plan	Note to regulatory bodies	6

19	Excessive work of some employees or units, protests against the slowness of the work process in a certain unit, weakness of the existence of a specific process in busy units	Throat in the organization	2
20	Lack of schedule, lack of good reasons for not doing work on time, inability of the company to compensate for the delay of the schedule	Do not reach the planned schedules	3
21	Weak criticism of managers, not participating in the suggestion system, unequivocal acceptance of orders, excessive calm in the organization	Organizational silence	2
22	Exit rate, sick leave rate, increased employee stress	Rates related to human resources	2
SUM			218

Table 4. A framework for researchers in problem statement.

Questions to ask	Concepts related to the expression of research problem in the organization	Categories related to the statement of research problem in the organization	Number of Criteria
How many times has the problem been observed?	Multiple viewing difficulty	Inductive inference	1
This problem is a common issue of which stakeholders of the organization?	Common issue of stakeholders	Inductive inference	1
Since when, at what times and for how long has the problem existed in the organization?	Continuity of the problem	Inductive inference	1
Have you used tables and graphs to express the problem?	Use tables and charts	Based on statistics	2
Do statistical reports confirm the existence of a problem in the organization?	Extracted from statistical reports	Based on statistics	2
Do related yearbooks confirm the problem in the organization?	Use yearbooks	Based on statistics	2
Did you use statistics based on a reliable source to state the issue?	Statistics based on a valid source	Authentic source	3
Which of your claims is not valid based on a source statement?	Authentic scientific sources	Authentic source	3
Have you used the resources provided by the official sources?	Resources provided by official sources	Authentic source	3
Are your sources in the literature statement based on the research topic?	Based on the subject literature	Authentic source	3
Does the narrative used justify the audience in accepting the existence of the problem?	Justifiable narrative	Fictional logic	4
Is there enough logic in the arrangement of events and problem-solving sentences?	Existence of logic in the arrangement of events	Fictional logic	4
Have you used the causes and effects in the context of the statement in proportion to each other?	Express all causes and effects in the text	Fictional logic	4
Does the statement have a proper text?	Appropriate writing	Acceptable literature	5
Does the statement have a unified text?	Integrated text	Acceptable literature	5
Are the related causes and effects sufficiently used in the issue?	Sufficient cause and effect	Acceptable literature	5

Did you follow the summary in stating the problem?	Shorthand	Acceptable literature	5
Have you deleted duplicate and extra texts or merged them with other related texts?	Avoid exaggeration	Acceptable literature	5
Is there a strategy for the research topic in the organization under study?	Lack of strategy in the organization, which indicates the same problem in the departments	Inferential inference	6
In the case of research, are there active upstream units without economic justification?	Lack of economic justification for continuing the work of upstream units	Inferential inference	6
Has the organization made any changes to the issue you are researching?	Organizational developments	Inferential inference	6
In the field of research, has the organization had successive changes of senior managers?	Consecutive changes of senior managers	Inferential inference	6
In the field of research, have the inspectors of the supervisory bodies in the organization had an unusual presence?	Abnormal presence of inspectors of supervisory bodies in the organization	Inferential inference	6
In the field of research, have there been auditors outside the organization in the company?	External audits	The result of external evaluations	7
In the field of research, have the supervisory bodies conducted research and investigation?	Investigation of supervisory bodies	The result of external evaluations	7
Is the issue of research one of the research axes announced by the organization?	Research axes announced by the organization	Official announcement of the organization	8
Has the research issue been announced as an issue on the official website of the organization?	Express the organization's issues on its website	Official announcement of the organization	8
Will solving your research problem lead to improving the current state of the organization?	Improve the current situation of the organization	The concern of the day	9
Does solving your research problem help the organization compete better in the relevant industry?	Help the organization compete in the industry	The concern of the day	9
Does your research statement indicate the first signs of a defect in the organization under study?	Describe the first signs of a defect in the organization	The concern of the day	9
Is the existence of the stated issue confirmed by the elites of the study area?	From the point of view of the elites of that field, the existence of the stated issue should be confirmed	Approved by the elite	10
Has the issue raised by you been raised by more than one expert in the organization?	Expressed by more than one expert	Approved by the elite	10
Do the elites of the research industry agree with the statement made by you?	The industry elite should not object to this	Approved by the elite	10
Do the organization's internal auditors confirm the issue you are reporting?	Internal audits	The result of internal evaluations	11
Is the research issue the result of the visit of senior managers?	Result of senior managers' visits	The result of internal evaluations	11

Is the problem researcher familiar with the subject and industry?	Researcher familiar with the subject	personal experience	12
Does the researcher address the issue of being a member of the organization?	Researcher is a member of the organization	personal experience	12
Is the research issue the result of the researcher's personal experience?	Personal experience of the researcher	personal experience	12
Is the researcher expressing a partial problem of the target community of the research?	The researcher's life with the target community	personal experience	12
Have the top managers of the organization ordered the research problem to be solved?	The order of the senior managers of the organization to solve a specific problem	The manager claims	13
Has the relevant director announced the existence of the research issue?	The relevant manager claims that there is a problem	The manager claims	13
Is the issue of research taken from the official letters of the supervisory bodies to improve matters?	Official letters from regulatory bodies to reform matters	Note to regulatory bodies	14
Is the research issue derived from sending an appraiser by the supervisory bodies to the company?	Sending the appraiser by the supervisory bodies to the company	Note to regulatory bodies	14
Have the auditors been stationed at the company without prior research related to the research issue?	Deployment of auditors in the company without prior plan	Note to regulatory bodies	14
Is the statement of the issue understandable to all stakeholders of the organization?	The statement of the issue should be understandable to all stakeholders of the organization	The issue is clear and obvious	15
Is the existence of the problem determined by inference from the words of experts?	Existence of the problem by inferring from the words of experts	Expert claim	16
Does the subject matter expert insist on the issue?	Direct expert's insistence on the existence of the problem	Expert claim	16
Do official reports inside and outside the organization indicate the problem?	Official reports indicate the existence of the problem	Inference from reports	17
Do the usual reports received by middle managers indicate that there is a problem?	Reports to middle managers	Inference from reports	17
Do the company's comparative reports with other companies indicate a problem in the organization?	Comparative reports of the company with other companies	Inference from reports	17
Do comparative reports of companies in the industry show the problem?	Comparative reports of companies in the industry	Inference from reports	17
Is there an issue resulting from reviewing the bids received from the company's bid fund?	offers box	Inference from reports	17
Is the expression of the issue based on related criticisms in various meetings inside / outside the organization?	Criticism in various meetings	Inference from reports	17
Is the statement taken from distributed night letters?	Published night letters	Night letter	18
Is the statement based on the whistling of some employees?	Whistle	Night letter	18



Is the statement based on letters of protest from current or former employees to regulatory bodies?	Letters of protest from current or former employees to regulatory bodies	Night letter	18
Is the statement of the issue resulting from falling behind the plan predicted?	Lag behind schedule	Failure to meet scheduled schedules	19
Is the problem statement based on falling behind schedule?	There was no good reason not to do the work on time	Failure to meet scheduled schedules	19
Is the statement based on the company's inability to compensate for the backlog of the program?	Inability of the company to compensate for the backlog of the program	Failure to meet scheduled schedules	19
Is the issue stated due to protests against the slow work process in a specific unit?	Protests against the slowness of the work process in a particular unit	Throat in the organization	20
Is the expression of the problem due to the weakness of the existence of a specific process in busy units?	Weakness of a specific process in busy units	Throat in the organization	20
Is there a weakness in criticizing managers in the organization?	Weak criticism of managers	Organizational silence	21
Is there a very weak participation in the organization's suggestion system?	Failure to participate in the bidding system	Organizational silence	21
Do the employees of the organization accept the orders unequivocally?	Unequivocal acceptance of orders	Organizational silence	21
Is the atmosphere of the organization too calm?	Excessive relaxation in the organization	Organizational silence	21
Does the exit rate of the organization indicate a weak employee satisfaction?	Exit rate	Rates related to human resources	22
Does the rate of sick leave in the organization indicate a lack of employee satisfaction?	Sick leave rate reduces job satisfaction	Rates related to human resources	22
Is there a lot of job stress in employees?	Increase employee stress	Rates related to human resources	22

Table 5. Definition and description of analytic hierarchy process (AHP) evaluation scale.

Evaluation Scale	Definition	Description
1	Equal importance	The assessment potential of two comparison conditions presents break even with significance. (equal)
2	Evaluation score between 1 and 3	When a compromise esteem between 1 and 3 is required
3	Weak importance	Judging from encounters, it somewhat tends to the primary assessment condition. (moderately)
4	Evaluation score between 3 and 5	When a compromise esteem between 3 and 5 is required
5	Essential importance	Judging from encounter, it tends to some degree to the primary assessment condition. (strongly)
6	Evaluation score between 5 and 7	When a compromise value between 5 and 7 is required
7	Very strong importance	Greatly solid purposeful to the primary assessment condition. (very strong)
8	Evaluation score between 7 and 9	When a compromise esteem between 7 and 9 is required
9	Absolute importance	It completely tends to the primary assessment condition. (extremely)

Table 6. Relative weight of criteria.

Sequence	Criterion	Weights
1	Inferential inference	27.40%
2	Based on statistics	15.80%
3	The concern of the day	10.20%
4	Fictional logic	9.70%
5	Authentic source	9.00%
6	Acceptable literature	8.80%
7	Inductive inference	8.10%
8	Official announcement of the organization	5.80%
9	The result of external evaluations	5.20%

Table 7. SSIM matrix.

I \ J	A1	A2	A3	A4	A5	A6	A7	A8	A9
A1. Inferential inference	-	A	A	V	O	A	O	V	V
A2. Based on statistics		-	A	O	X	O	V	V	V
A3. The concern of the day			-	A	A	O	O	V	A
A4. Fictional logic				-	O	X	O	V	V
A5. Authentic source					-	O	V	A	X
A6. Acceptable literature						-	O	O	O
A7. Inductive inference							-	A	V
A8. Official announcement of the organization								-	A
A9. The result of external evaluations									-

Table 8. Initial received matrix.

I \ J	A1	A2	A3	A4	A5	A6	A7	A8	A9
A1. Inferential inference	-	1	1	1	0	1	0	1	1
A2. Based on statistics	1	-	1	0	0	0	1	1	1
A3. The concern of the day	1	1	-	1	1	0	0	1	1
A4. Fictional logic	0	0	1	-	0	0	0	1	1
A5. Authentic source	0	1	1	0	-	0	1	1	0
A6. Acceptable literature	1	0	0	1	0	-	0	0	0
A7. Inductive inference	0	0	0	0	0	0	-	1	1
A8. Official announcement of the organization	0	0	0	0	1	0	1	-	1
A9. The result of external evaluations	0	0	1	0	1	0	0	1	-

Table 9. Final received matrix.

I \ J	A1	A2	A3	A4	A5	A6	A7	A8	A9	Driving power
A1. Inferential inference		1	1	1	1	1	1	1	1	8
A2. Based on statistics	1		1	1	1	1	1	1	1	8
A3. The concern of the day	1	1		1	1	1	1	1	1	8
A4. Fictional logic	1	1	1		1	0	1	1	1	7
A5. Authentic source	1	1	1	1		0	1	1	1	7
A6. Acceptable literature	1	1	1	1	0		0	1	1	6
A7. Inductive inference	0	0	1	0	1	0		1	1	4
A8. Official announcement of the organization	0	1	1	0	1	0	1		1	5
A9. The result of external evaluations	1	1	1	1	1	0	1	1		7
Dependence power	6	7	8	6	7	3	7	8	8	

Table 10. Influence rate and Degree of dependence of structural model variables.

Variable	Degree of dependence	Influence rate
A1. Inferential inference	6	8
A2. Based on statistics	7	8
A3. The concern of the day	8	8
A4. Fictional logic	6	7
A5. Authentic source	7	7
A6. Acceptable literature	3	6
A7. Inductive inference	7	4
A8. Official announcement of the organization	8	5
A9. The result of external evaluations	8	7

## References

- [1] A. Ali and S. Pandya, A four stage framework for the development of a research problem statement in doctoral dissertations, *International Journal of Doctoral Studies* **16** (2021), 469–485. DOI: [10.28945/4839](https://doi.org/10.28945/4839)
- [2] A. Ali, F. Kohun, and Y. Levy, Dealing with Social Isolation to Minimize Doctoral Attrition—A Four Stage Framework, *International Journal of Doctoral Studies* **2** (2007), no. 1, 33–49.
- [3] K.G. Aravossis, V.C. Kapsalis, G.L. Kyriakopoulos, and T.G. Xouleis, Development of a holistic assessment framework for industrial organizations, *Sustainability* **11** (2019), no. 14, 3946.
- [4] V. Bamber, C.J. Choudhary, J. Hislop, and J. Lane, Postgraduate taught students and preparedness for Master’s level study: Polishing the facets of the Master’s diamond, *Journal of further and Higher Education* **43** (2019), no. 2, 236–250.
- [5] K.D. Beeler, Graduate student adjustment to academic life: A four-stage frame-work, *NASPA Journal* **28** (1991), no. 2, 163–171. DOI: [10.1080/00220973.1991.11072201](https://doi.org/10.1080/00220973.1991.11072201)
- [6] K.D. Blum and A.E. Preiss, Strategies to win: Six-steps for creating problem statements in doctoral research, *Journal of College Teaching & Learning (TLC)* **2** (2005), no. 11. DOI: [10.19030/tlc.v2i11.1883](https://doi.org/10.19030/tlc.v2i11.1883)
- [7] J.M. Case and G. Light, Emerging research methodologies in engineering education research, *Journal of Engineering Education*, Wiley Online Library (2011).
- [8] K.G. Moons, J.A. de Groot, W. Bouwmeester, et al., Critical appraisal and data extraction for systematic reviews of prediction modelling studies: the CHARMS checklist, *PLoS Med* **11** 2014, no. 10, e1001744.
- [9] N.L. Columbaro, E-Mentoring possibilities for online doctoral students: A literature review, *Adult Learning* **20** (2009), no. 3–4, 9–15. DOI: [10.1177/104515950902000305](https://doi.org/10.1177/104515950902000305)
- [10] J.W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (2nd edition)*, 2005.

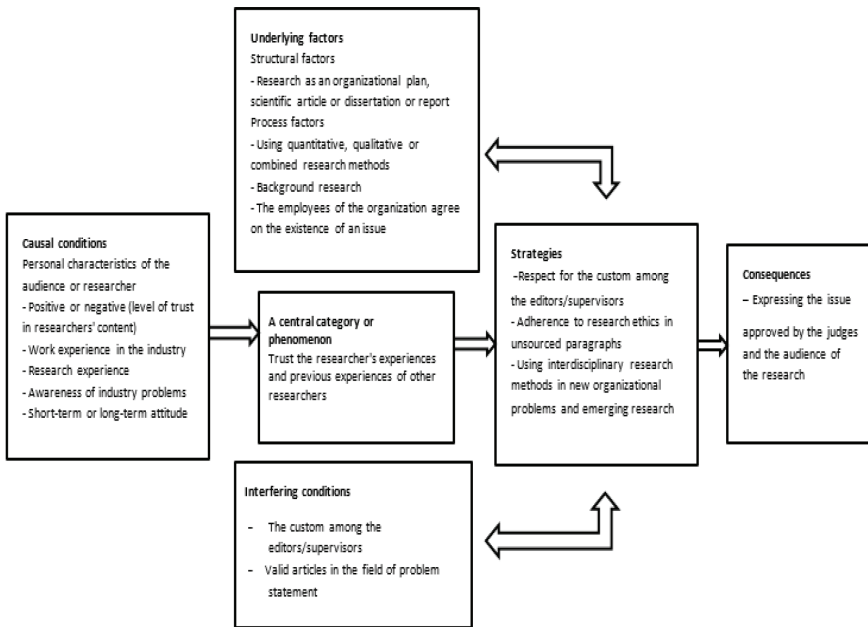


FIGURE 1. Axial coding based on research paradigm model

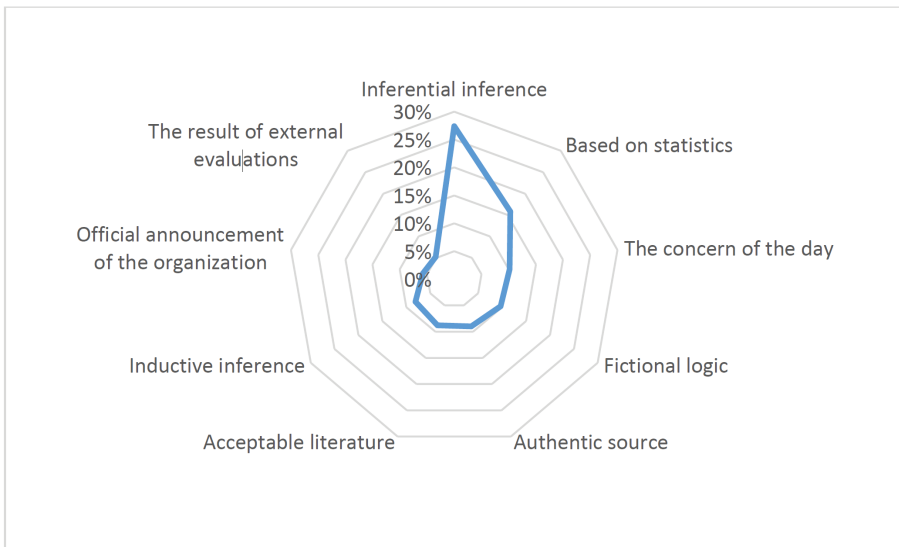


FIGURE 2. Weight criteria

### AHP Analytic Hierarchy Process (EVM multiple inputs)

K. D. Goepel Version 15.09.2018 Free web based AHP software on: <http://bpmsg.com>

Only input data in the light green fields and worksheets!

n= 9 Number of criteria (2 to 10) Scale: 1 AHP 1-9

N= 10 Number of Participants (1 to 20) α: 0.1 Consensus: 95.2%

p= 0 selected Participant (0=consol.) 2 7 Consolidated

Objective Calculate weights with pairwise comparisons

Author

Date

Thresh: 1E-08 Iterations: 5 EVM check: 5.3E-10

Table	Criterion	Comment	Weights	+/-
1	Inductive inference		8.1%	2.0%
2	Based on statistic		15.8%	3.5%
3	Authentic source		9.0%	0.8%
4	Fictional logic		9.7%	1.0%
5	Acceptable literatu		8.8%	1.3%
6	Inferential inferenc		27.4%	7.5%
7	The result of exter		5.2%	1.9%
8	Official announcem		5.8%	1.9%
9	The concern of the	for 9&10 unprotect the input sheets and expand the	10.2%	6.0%
10	Approved by the el	question section ("+" in row 66)	0.0%	0.0%

Result	Eigenvalue			Lambda: 9.318	MRE <sup>+</sup> 29.9%
	Consistency Ratio	0.37	GCI: 0.10	Psi: #REF!	CR: 2.7%

FIGURE 3. Summary of AHP Analytic Hierarchy Process (EVM multiple inputs)

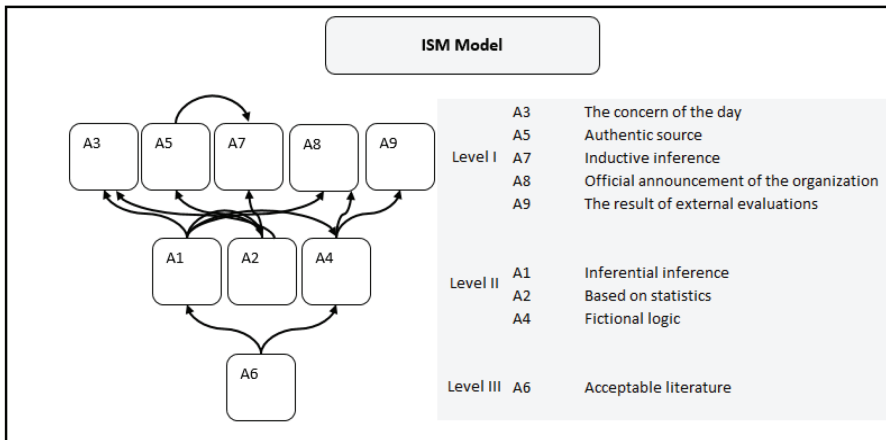


FIGURE 4. Interpretative Structural Modelling Model

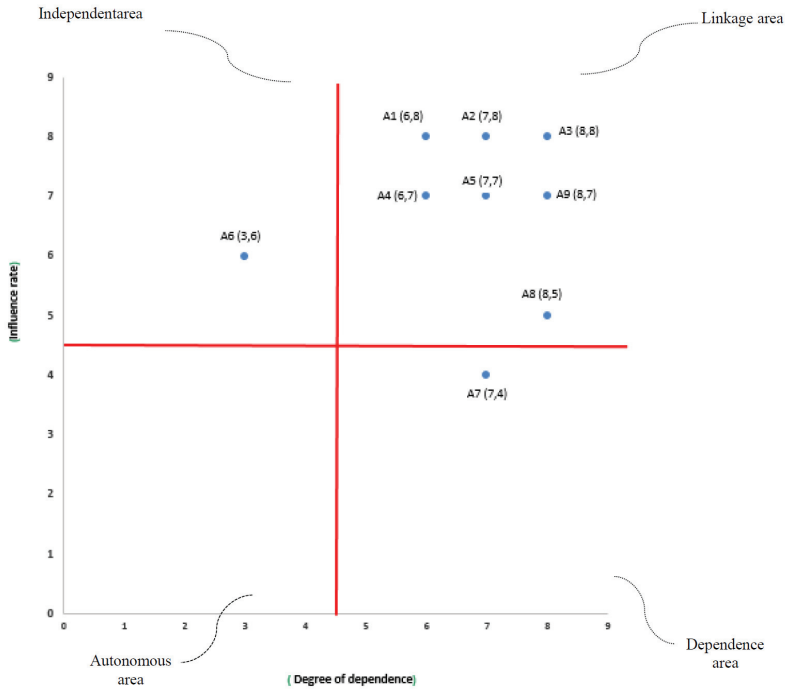


FIGURE 5. MICMAC analysis

- [11] E.M. Ellis, The impact of race and gender on graduate school socialization, satisfaction with doctoral study, and commitment to degree completion, *Western Journal of Black Studies* **25** (2001), no. 1, 30.
- [12] T.J. Ellis and Y. Levy, Towards a guide for novice researchers on research methodology: Review and proposed methods, *Issues in Informing Science and Information Technology* **6** (2009), 323–337. DOI: [10.28945/1062](https://doi.org/10.28945/1062)
- [13] Q. Faryadi, PhD thesis writing process: A systematic approach—How to write your introduction, *Online Submission* **9** (2018), 2534–2545. DOI: [10.4236/ce.2018.915192](https://doi.org/10.4236/ce.2018.915192)
- [14] M.D. Gall, W.R. Borg, and J.P. Gall, *Educational research: An introduction (6th ed.)*, White Plains, NY: Longman, 1996.
- [15] R. Gawlik, Preliminary criteria reduction for the application of Analytic Hierarchy Process method, 2008. <https://mpr.ub.uni-muenchen.de/45348/>
- [16] R.E. Gildersleeve, N.N. Croom, and P.L. Vasquez, “Am I going crazy?!”: A critical race analysis of doctoral education, *Equity & Excellence in Education* **44** (2011), no. 1, 93–114.
- [17] B. Glaser, *Emergence v Forcing Basics of Grounded Theory Analysis*, Sociology Press, Mill Valley, CA., 1992.
- [18] K.D. Goepel, Implementing the Analytic Hierarchy Process as a Standard Method for Multi-Criteria Decision Making In Corporate Enterprises – A New AHP Excel Template with Multiple Inputs, *Proceedings of the Int. Symposium on the Analytic Hierarchy Process* (2013), 1–10.
- [19] P. Herson and C. Schwartz, What is a problem statement?, *Library and Information Science Research* **29** (2007), no. 3, 307–309. DOI: [10.1016/j.lisr.2007.06.001](https://doi.org/10.1016/j.lisr.2007.06.001)
- [20] R.L. Jacobs, Developing a dissertation research problem: A guide for doctoral students in human re-source development and adult education, *New Horizons in Adult Education and Human Resource Development* **25** (2013), no. 3, 103–117. DOI: [10.1002/nha3.20034](https://doi.org/10.1002/nha3.20034)

- [21] F.N. Kerlinger and H.B. Lee, *Foundations of behavioral research (4th ed.)*, Har-court College Publishers, 2000.
- [22] J. Lee, A grounded theory: Integration and internalization in ERP adoption and use [Unpublished PhD Thesis], Lincoln: University of Nebraska, (2001).
- [23] S. Leisterer, F. Lautenbach, N. Walter, L. Kronenberg, and A.M. Elbe, Development of a Salutogenesis Workshop for SPPs to Help Them, Their Athletes, and the Athlete's Entourage Better Cope With Uncertainty During the COVID-19 Pandemic, *Frontiers in psychology* **12** (2021), 1574.
- [24] T.C. Liang and S.H. Peng, Using Analytic Hierarchy Process to examine the success factors of autonomous landscape development in rural communities, *Sustainability* **9** (2017), no. 5, 729.
- [25] W.C. McGaghie, G. Bordage, and J.A. Shea, Problem statement, conceptual framework, and research question, *Academic medicine* **76** (2001), no. 9, 923–924.
- [26] C. Metoyer-Duran and P. Herson, Problem Statements in Research Proposals And Published Research: A Case Study of Researchers' Viewpoints, *Library & Information Science Research* **16** (1994), no. 2, 105–118. DOI: [10.1016/0740-8188\(94\)90003-5](https://doi.org/10.1016/0740-8188(94)90003-5)
- [27] M.K. Nasution and I. Aulia, Design of the research problem statement, *In Journal of Physics: Conference Series* **1235** (2019), no. 1, 012115.
- [28] H.J. Nenty, Writing a quantitative research thesis, *International Journal of Educational Sciences* **1** (2009), no. 1, 19–32.
- [29] V. Nimehchisalem, Z. Tarvardizadeh, and S. SayedPaidary, Rhetorical Moves in Problem Statement Section of Iranian EFL Postgraduate Students' Theses, *Advances in Language and Literary Studies* **7** (2016), no. 4, 173–180.
- [30] R.W. Saaty, The analytic hierarchy process—what it is and how it is used, *Mathematical modelling* **9** (1987), no. 3-5, 161–176.
- [31] T.L. Saaty, *The analytic process: planning, priority setting, resources allocation*, McGraw, New York, 1980.
- [32] T.L. Saaty, *Rank, Normalization and Idealization in the Analytic Hierarchy Process*, ISAHP, Bali, 2003.
- [33] H. Sharma, N. Sohani, and A. Yadav, Structural modelling of lean supply chain enablers: a hybrid AHP and ISM-MICMAC based approach, *J. of Engineering, Design and Technology* (2021).
- [34] L.M. Stadlander, A. Sickel, and D. Salter, Online doctoral student research and writing self-efficacy in a publishing internship, *Higher Learning Research Communications* **10** (2020), no. 1, 4. DOI: [10.18870/hrc.v10i1.1170](https://doi.org/10.18870/hrc.v10i1.1170)
- [35] M.C. Stansbury, Problem statements in seven LIS journals: An application of the Herson/Metoyer-Duran attributes, *Library and Information Science Research* **24** (2002), no. 2, 157–168. DOI: [10.1016/S0740-8188\(02\)00110-X](https://doi.org/10.1016/S0740-8188(02)00110-X)
- [36] A. Strauss and J. Corbin, *Basics of qualitative research: Grounded Theory Procedures and Techniques*, Sage publications, 1990.
- [37] Y. Williams, *Cause and effect relationship: Definition & examples*, 2020.

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