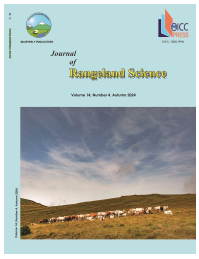

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Nomads' perceptions on nomadic rangeland management in two provinces of Iran (an application of grounded theory)

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Abstract:

In Iran, rangeland management is based on grazing licenses that were introduced in 1963. Following the nationalization of the country's forests and rangelands, the Iranian Government began approving grazing licenses to eligible users. However, evidence suggests that this strategy was not effective in utilization and improvement of the rangelands. This study aimed to answer the question, from the nomads' perceptions, whether the grazing licenses in the optimal rangelands management have been effective or not? The study location was the territory of the Bakhtiari pastoral nomads, who were engaged in animal husbandry in Chaharmahal & Bakhtiari and Khuzestan provinces, Iran. Data were collected using the grounded theory technique and semi- structured interview. The sampling method was purposeful and theoretical and data collection continued until theoretical saturation was reached. Content analysis was used to identify categories. Data were analyzed using open, axial and selective coding. Findings showed that six key categorizes emerged from the data: i) Grazing management is necessary to improve rangeland condition ii) the need for strict implementation of the license rules, iii) The number of livestock on the grazing license must be sustainable, iv) The problem of presence of urban dwellers with livestock grazing licenses and some real herders without grazing licenses, v) Nomads should protect natural resources, and the Government should support them, vi) the current system of livestock grazing licenses is not sustainable in balancing between livestock number and rangeland production. The central category was, " Inefficiency of animal grazing license in creating balances between livestock and pasture "; as a result, the creation of jobs for surplus herders in outside of pastures was introduced as an important strategy to solve the problem. The findings suggest a new management regime needed to achieve a balance between grazing and rangeland management.

Keywords: Grazing license; Livestock holders; Rangeland management

Introduction

According to the 2008 Iranian socio- economic census, nomadic tribes make up 1.18 million (about 1.68%) of the population. Livestock is the main source of livelihood for the nomads. In 2008, nomads had 24 million livestock units, about 28% of light livestock and 4% of heavy livestock. More than 70% of nomads' income depends on livestock. They import 9 million livestock units to the market every year, equal to 25% of the country's protein. In addition, they produce about 400,000 tons of milk and 14,000 tons of wool (Iran, 2016).

Following nationalization of the Iranian forests and rangelands in 1963, the Government took responsibility of range-

land management and as a result, the role of nomads in rangeland management was limited. Nationalization resulted in increased administration, regardless of local traditions and customs that resulted in the nomads losing their sense of responsibility and belonging in the conservation of the rangelands. The supervision of Government on rangelands management was poor, Due to its poorly trained staff, limited funding, and laws that failed to provide the necessary framework for the proper and efficient implementation of rangeland management. The current management regime originated from 1963 and the laws were enforced based on grazing licenses or the implementation of some specific rangeland projects. However, previous research (Mohebbi et al., 2017) showed that the current nationalization approach was not successful in improving the long term condition of the rangelands.

The current study sought to answer the question from the perspective of the studied nomads, " Have the grazing licenses been effective in the optimal management of rangelands or not? " Therefore, using a grounded theory (GT) approach, data were collected and analyzed in a methodical and systematic manner to develop a theory. According to Dieesing (1971) and Glaser (1978), the development of theoretical interpretations using GT is the strongest way to clarify reality. These authors consider theories to be the most systematic way to construct, combine, and integrate scientific knowledge. In Iran, GT has been applied in a number of studies (Jajarmi, 2005; Miandehi, 2011; Safarialamouti et al., 2021; Naderi et al., 2022). But the present study was the first one in rangeland management that utilizes this approach. Behzad (2013) in a study of the history of Iranian rangeland management and grazing licenses suggested some guidelines for grazing management but his suggestion was not completely implemented; however, these guidelines had been taken up by authorities from " Natural Resources and Watershed Management Organization ". Bakhshandeh (1992) undertook a study of Iranian rangelands and found that the livelihood of nomadic tribes was depended on ecological principles, and economic, social and historical factors. A number of studies of rangeland management had revealed that any planning to change livelihoods and production should be dependent on the nomadic traditions and the context (Eftekhari, 2011; Hajipuor et al., 2017; Bahareh et al., 2019). Many researchers had identified overgrazing as a key problem of Iran rangelands (Pabo, 1969; Rostami, 2016; Abdollahpour, 2001; Nasrollahi et al., 2004; Ansari, 2007). Other researchers have explained the causes of unsustainable use of the rangelands by changing landuse (Pabo, 1969; Ansari, 2007; Safari, 2009). Khaneiki (2000) believed that the complexity of rangeland management in developing countries was due to low educational levels and lack of distribution of information among local communities. A number of studies had suggested solutions to the rangeland issue, including Bajian (1997) who proposed the use of participatory development strategies arising from local conditions to develop appropriate livestock management. However, other studies such as Vermeulin (1997) concluded some participatory projects failed due to the modernity and fantasy of laws and the lack of regulation of natural resources laws in accordance with the traditions and culture of the local people. Ostrom (2007) believed there was no effective unit solution for these complex problems. Nelson and Agrawal (2008) suggested that in developing countries, understanding economic and political conditions along with the need for a general overhaul of the strategy of centralized NGOs is essential. According to studies conducted in a number of African countries, the Governments are willing to hand over the natural resource management to exploiters (Nelson and Agrawal, 2008).

Considering the above explanation, the aim of this research was to answer the question from the point of view of the nomads, " whether grazing license had been effective in the management of rangelands or not? " For this purpose, the GT technique was used in data collection and analysis.

Study area

This study was conducted in the territory of the Bakhtiari pastoral nomads, who were engaged in animal husbandry in Chaharmahal & Bakhtiari and Khuzestan provinces, Iran. The use of the rangelands grazing was on common land. Their summer rangelands cover 5,738 ha in Koohrang County in the north of Chaharmahal & Bakhtiari province. They included three customary system areas of Cheshmeh-Dimeh, Abkaseh and Tishtardon. Their winter rangelands cover an area of 3,752 ha that is more than 500 km far away from their summer rangelands. In traditional moving known as Koch, the nomads rest in 16 temporary places and take 30 days to reach their summer rangelands (Figure 1). If they want to move by car, it takes $2-3$ days. This tribe included four clans: Davood Mohammadi, Tizgard, Ardeshir Gharib and Sheikh. In the summer rangelands, the annual average precipitation is 1,135 mm and in the winter rangelands, it is 444 mm. (Mohebbi and Hassanzadeh, 2018; Mohebbi and Shirmardi, 2018).

Materials and methods

An interpretive approach was adopted for this study using the grounded theory (GT) technique. GT is a research method that seeks to develop a theory that is grounded in data systematically gathered and analyzed (Strauss and Corbin, 1990). Theoretical sampling was used until data saturation was achieved (Strauss and Corbin, 1990; Coyne and Cowley, 2006). Semi- structured interviews were conducted to collect data from eligible nomads who held grazing licenses. Open-ended questions were used to explore the research topic with the consent of the actor, all interviews were recorded. Content analysis was used to analyze the interview data. An interview was conducted with one nomad followed by open coding that revealed some key concepts. Utilizing these concepts, an interview with a second nomad was conducted and further key concepts emerged. This process continued with a further 28 respondents until data saturation was achieved. The collected data were subjected to open, axial and selective coding in which major and minor categories were developed (Strauss and Corbin, 1990). Concepts with more repetition were considered as research categories.

The coding process revealed 3020 concepts, 146 categories,

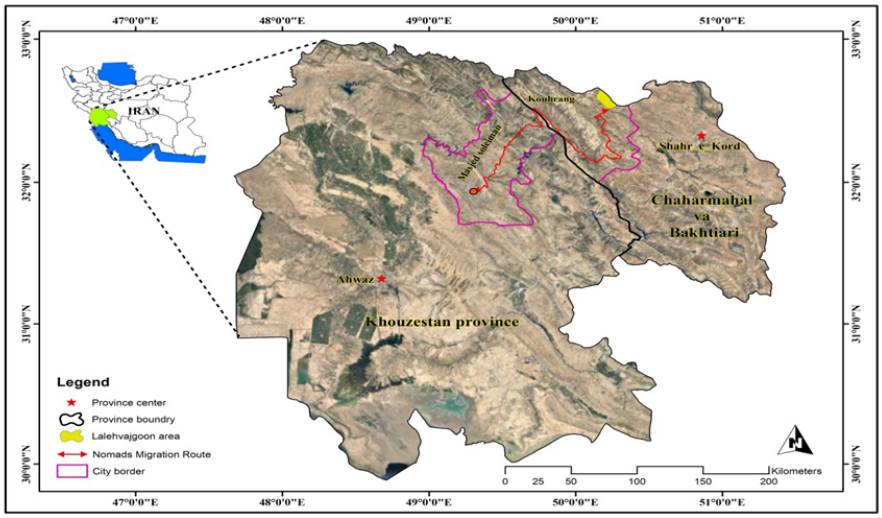

Figure 1. The location of summer and winter rangelands and the migration path of the Hamule tribe.

6 main categories and 1 central category, discussed as follows.

Open coding

According to Glaser and Strauss (1967), the first stage of content analysis was open coding. After each interview, the recorded text was printed as a hard copy. All sentences were carefully studied and concepts were extracted from one or more sentences and entered in a Table. To create a concept, the question technique was used, meaning that a researcher asks what these data represent. The same concept was then considered for similar sentences in subsequent interviews. In this way, concepts were identified for all respondents' sentences in the same way. At the top of each Table, the respondent code was written. For each question and answer, the researcher's observations and points of view were noted. After determining the concepts, and using open coding, the repetitive answers were determined. The concepts mentioned by many respondents were considered as categories. Live codes were also used to name other concepts and categories. Live codes included phrases that respondents mentioned during the interview, such as " There is no place for strangers ", " grazing licenses prevent bullying " and " application for separation of license ". The data from each interview determined the type of questions used in the following interview. The 3020 concepts that obtained through open coding, continued comparison and were classified in 146 categories and 6 main categories. The main categories were as following:

1. Livestock grazing management is necessary to improve rangeland condition.
2. Livestock grazing licenses have not been successful in balancing livestock and rangelands.
3. There is a need for strict implementation of the grazing rules.
4. The number of livestock listed on the livestock grazing license must be accordance with range production.
5. The problem of presence of urban dwellers with livestock grazing licenses and some real herders without grazing licenses.
6. Nomads should protect natural resources, and the Government should support them.

The axial coding was conducted in the next phase.

Axial coding

Categories were put in a logical order to produce a theory. Categories were further refinement to determine the relationship between them. Then, data were decomposed into open coding concepts and categories were joined together to make connections between a category and its sub- categories. In this stage, we represented a process in which the main categories and their sub- categories expanded. It was necessary for us to establish a link between one category and the sub- categories. In this stage, a process was represented in which the main categories and their sub- categories expanded. Then, a link was established between one category and the sub- categories

Selective coding

Selective coding was the final stage of analysis that involves the process of writing a storyline, discovering the central category of research and relating it to other categories in the form of a paradigmatic model, validating relationships with raw data, filling in vacancies, and completing subcategories (Strauss and Corbin, 1990). In this research, the narration of the storyline, led to the emergence of the central category

Central category

Since livestock grazing licenses have contained no current information such as the number of livestock, nomads and vegetation, and pests, diseases and natural disasters are not considered on the issue of grazing licenses; on the other hand, the license auditing process is not uniform across the country, together with non-scientific rangeland assessments, especially in the field of livestock and vegetation statistics, its credibility has been declined over time. The current management system has not been able to prevent leases of national rangelands. In general, the majority of the tribes in this study expressed their dissatisfaction with the current

management of rangelands based on the existing livestock grazing licenses. The findings suggest that livestock grazing licenses are an inefficient method of balancing livestock numbers and rangeland conservation. Paradigm model of inefficiency of livestock grazing license in creating a balance between livestock and rangeland phenomenon is illustrated in Figure 2.

Causal conditions

A number of causal conditions may be related to the central phenomenon of inefficiency of livestock grazing licenses in creating a balance between livestock and rangeland. Currently, grazing licenses are the basis for rangeland management. However, this study revealed a number of contributing factors:

- Lack of satisfaction with the auditing process in different parts of the country.
- Ignoring the dynamics of the number of livestock and herders in livestock grazing licenses.
- Non- scientific assessments in determining livestock statistics and vegetation assessments.
- The old history of grazing licenses.
- Population growth and lifestyle changes.
- Lack of strong oversight and strict enforcement of the law.

Figure 2. Schematic presentation of paradigm model of inefficiency of livestock grazing license in creating a balance between livestock and rangeland phenomenon.

• The herders' collusion.
• Ignoring the crucial role of climate as well as pests, diseases and disasters in rangeland management.
The grazing license approach has not been effective in balancing livestock numbers and rangeland capacity (Mohebbi et al., 2018). In addition, the issue of grazing licenses has not been in accordance with customary geographical boundaries and in some areas, a common license has been issued across different tribal areas that have created discord among the nomads that has led to a weakening of traditions.

Interfering conditions affect rangeland management strategies

In this study, a number of interfering conditions were identified that influence the current rangeland management strategies.
• The presence of herders using their father's livestock grazing licenses and the livestock of non- license holders has led to an increase in the number of livestock and the degradation of the rangelands.
• A lack of strong Government oversight and strict enforcement of laws, failure to report violations, and collusion of herders in various forms have all contributed to the current situation and in some cases, the paradox of Government behavior in dealing with nomads in favor of rural, top- down management, and the lack of recognition of the importance of custom to the nomads and listening to the nomad elders have all contributed.
• The current licensing system does not acknowledge the migration calendar and the disappearance of tribal migration routes all contribute to the weakness of the current grazing license system and ineffective in rangeland management.
• In many nomadic rangelands, the nomads and the Government are both waiting for each other to address the conservation of the rangelands. The nomads consider themselves as the sole operators of fodder and the protection of rangelands as the Government's duty while the Government has limitation for effective administration.
Our study suggested that the Government could use the traditional knowledge of the nomads combined with the necessary incentives and punitive policies to ensure sustainable management.

Discussion and conclusion

The findings of this study suggest the need to consider a number of alternative rangeland management strategies such as industrial or seasonal livestock systems, spontaneous and self- directed settlement of tribal people, limited use of rangelands, updating of livestock grazing licenses, and fair administration of grazing. These strategies may result in a more sustainable rangeland approach and reduction of excess livestock and improved production.
The findings revealed that the nomads believed that the rangelands were in good condition prior to nationalization and stated that the current licensing approach had not been successful, particularly as it disregards traditional knowledge and customs. The nomads in this study considered a co- management system to be more beneficial. In a previous study, Mohebbi et al. (2018) found that 64% of nomads were dissatisfied with the current grazing license system. Competition between nomads of common rangelands was a key concern for them, and some saw it as an opportunity while others saw it as a threat. Other researchers (Samari, 2000; Abdollahpour, 2001; Azarnivand and Nejad, 2001) had explored the common use of rangelands and obtained similar results. Early grazing of rangelands by rural livestock and overgrazing are key concerns of most of nomadic pastoral systems (Rostami, 2016; Nasrollahi et al., 2004; Abdollahpour, 2001; Ansari, 2007; Pabo, 1969).
In this study, the information used to issue the livestock grazing licenses was not updated and the performance of the audit board in different parts of the country is inconsistent and not evidence- based, particularly in relation to livestock statistics and vegetation conditions mentioned on the licenses. Unsustainable numbers of livestock, ignoring the dynamics of livestock numbers, climate changes and natural disasters are important factors that have not been considered in issuing of licenses. The lack of strong Government oversight and strict enforcement of laws has made it easier for nomads to avoid the law and punishment. The current management system has not been able to prevent the violation of many livestock grazing licenses in leasing national rangelands. Despite the legal changes proposed by Behzad (2013) regarding the regulations and related laws to replace an individual with a deceased herder, this has not been undertaken in all rangelands. All these factors contribute to the current licensing system was not reflecting the reality of rangeland utilization.

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

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

Conflict of interests
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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