

STRATEGIC PLANNING OF THE STONE INDUSTRY OF LORESTAN PROVINCE

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Abstract: Iran is the fourth largest producer of dimension stone in the world, which owns nearly 9 percent of global production. On average, annual production of dimension stone is 14 million tons. Due to several problems such as lack of modern technology and machinery in quarrying and processing of dimension stone, lots of these resources are being disposed as waste. In this research, the strategic planning of Lorestan dimension stone processing Industry has been investigated using SWOT analysis. Firstly, the factors affecting this industry are identified in four categories of strengths, weaknesses, opportunities and threats, using experts' opinions in the mining sector. Then, 50 questionnaires about these factors (strengths, weaknesses, opportunities and threats) were prepared and distributed. Both traditional and modern methods were used to analyze the results and select the appropriate strategies. In the traditional method, the effect of each factor on the industry were determined and then the strategic situation of the dimension stone processing industry of Lorestan province was identified using the SWOT, EFE, IFE, IE matrices. Results showed that the suitable strategic plan for Lorestan stone processing industry is a defensive strategy.

Keywords: Basin Modeling, Sarchahan Formation, Kangan Formation, Coastal Fars.

INTRODUCTION

Iran is the fourth largest producer of raw dimension stone in the world, accounting for about 9% of the world production, producing approximately 14 million tons annually. Due to the lack of modern technology and machinery in quarrying and processing, weak management, lack of proper governmental support, inadequate transportation, lack of proper trainings, and weak marketing plans, the final products are not qualified for export. Also, a large portion of these resources are disposed as waste during the quarrying and processing of stone.

Lorestan province produces about 22% of the national production, most of which is consumed in domestic markets, with less than 2% exported to the nations neighboring the Persian Gulf, European, and South-Eastern Asian countries. There are more than 80 dimension stone mines and about 450 stone-cutting plants in Lorestan province. Due to the lack of sufficient working capital and market liquidity, and a poor governmental support, most of these stone cutting plants are currently inactive or operating at very low capacities. The stone industry is facing many problems, so some planning and developing strategies are required to prevent wasting capital and destroying the environment, on the other hand, to improve the economic prosperity and create new jobs.

In this research, the SWOT method was used to identify and develop appropriate strategies for the current state of Lorestan stone industry. First, the external and internal environment of dimension stone industry in Lorestan was investigated and then, the existing strengths, weaknesses, opportunities and threats, as well as appropriate strategies were identified. Finally, the traditional approach was used for strategic planning. The conducted survey showed that the research on strategic planning of the stone industry is very limited. For example, in a limited

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study in 2010, Tahernejad et al. (2013) used the SWOT method and identified 9 internal factors, 9 external factors and 9 strategies. The SWOT approach is used for strategic planning in various research fields, e.g. industrial fields (Liu et al., 2018; Kumar et al., 2018; Ren et al., 2015), energy (Niu et al., 2017; Kassem et al., 2017), agriculture (Mirshadiev et al., 2018), medicine (Fosgerau and Hoffmann, 2015), and organization (Beg et al., 2017).

METHODS

Considering previous researches and utilizing 59 experts' opinions in stone industry (including owners and personnel of stone mines and processing plants in Lorestan province), 30 internal factors (strengths and weaknesses), 20 external factors (opportunities and threats) and 24 key strategies were identified using the SWOT matrix (Table 1).

Afterwards, a questionnaire was designed and developed based on the internal and external factors and developed strategies. The adjusted questionnaire was submitted to 11 units (including a number of stone mines, processing plants and related organizations) in order to be filled by groups of experts and personnel. After identifying internal and external factors, according to the designed questionnaires, the external factors evaluation matrix (EFE), the internal factors evaluation matrix (IFE), and the internal-external matrix were created.

Table 1. The SWOT matrix for the stone industry

Internal factors	Strengths (S)	Weaknesses (W)
	s ₁ : 21.5% of the country's reserves are in the province s ₂ : Variety of stones types, e.g. marble, granite s ₃ : High investments made in the industry s ₄ : Availability of many active and semi-active stone cutting plants s ₅ : High technical experience and knowledge of stone-processing in the province s ₆ : Availability of mines in the province s ₇ : High quality of Lorestan stone s ₈ : Suitable accessibility and low costs of energy	w ₁ : Insufficient attention to the preparation and updating of basic information w ₂ : High prices compared to competitors w ₃ : Insufficient skilled human resources w ₄ : Low productivity (capital, labor, energy and marketing) w ₅ : Lack of research & development centers in the province w ₆ : Lack of high technology equipment for the processing and quarrying w ₇ : Weak marketing and e-commerce techniques w ₈ : Applying traditional management instead of scientific management w ₉ : Weak exporting plans w ₁₀ : Use of worn out machinery and equipment w ₁₁ : Low quality of stone products w ₁₂ : Lack of proper communication between industry and university w ₁₃ : Lack of clear strategy in companies w ₁₄ : No suitable advertisements for export w ₁₅ : No participation in international exhibitions w ₁₆ : Manufacturers not familiar with international markets w ₁₇ : Lack of competitive quality of export goods for the global markets w ₁₈ : Lack of support for productions and domestic resources w ₁₉ : Lack of sales offices in the province w ₂₀ : Weak product packaging
External factors		

Opportunities (O)	SO Strategies	WO Strategies
<p>o₁: High volume of stone reserves in Lorestan</p> <p>o₂: Access to low-cost educated human resources</p> <p>o₃: Access to cheap energy resources</p> <p>o₄: Proximity to the global consumer markets</p> <p>o₅: Proximity to consumer provinces</p> <p>o₆: Proximity to water resources in the province</p> <p>o₇: Possibility of developing deprived areas</p>	<p>st₁: Development of plants to increase production to achieve the full potential of mines (o₁, o₆, o₃, s₁, s₂, s₄)</p> <p>st₂: To improve product quality to maintain and increase customer satisfaction (s₄, o₁, o₂, s₅, s₇)</p> <p>st₃: To provide the bed for innovation and creativity (s₂, s₅, s₇, o₂, o₁)</p> <p>st₄: Strategic marketing and developing exports to nearby foreign markets (s₁, o₅, o₄)</p> <p>st₅: Improving investment and attracting necessary credits to enhance technical and technological facilities (o₁, s₁, s₄, s₇)</p>	<p>w₂₁: Weak designs of new products</p> <p>w₂₂: Out-of-date stone cutting and processing techniques, not acceptable by international standards</p> <p>st₁₁: To use automation and mechanized systems to increase production efficiency (o₁, o₂, o₃, w₂, w₆, w₁)</p> <p>st₁₂: To attend international exhibitions, and improve e-commerce sales and marketing (o₅, o₄, w₇, w₈, w₉, w₁₄, w₁₅, w₁₆)</p> <p>st₁₃: To use the R&D committee to make the right changes at the right time (o₁, o₂, w₁, w₅, w₁₂)</p> <p>st₁₄: To produce of excellent quality products (o₁, o₂, w₁₂, w₁₁, w₁₇)</p> <p>st₁₅: To contact with foreign companies to attract foreign investment in the field of industrial development and preparing its basic infrastructures (o₄, w₁₆, w₁₇, w₂₂)</p> <p>st₁₆: To use the province resources, e.g. mineral potentials, human resources, raw materials, etc., to reduce costs (o₁, o₂, o₃, o₆, w₁₂, w₁₈)</p> <p>st₁₇: To come up with modern methods for funding development projects (o₁, o₄, o₅, o₇, w₁₉, w₁₅)</p>
Threats (T)	ST Strategies	WT Strategies
<p>t₁: Removal of subsidies for energy carriers</p> <p>t₂: Increasing environmental regulations</p> <p>t₃: Lack of labor law to protect manufacturers</p> <p>t₄: High interest rates on bank loans and financial facilities</p> <p>t₅: Alternative material, e.g. ceramic, tile, etc.</p> <p>t₆: Lack of government involvement</p> <p>t₇: Severe fluctuations in the price of raw stone</p> <p>t₈: International sanctions and political tensions</p> <p>t₉: Inadequacy of advanced technologies</p> <p>t₁₀: Export of unprocessed stones</p> <p>t₁₁: Not paying attention to customer needs</p> <p>t₁₂: Increased inflation</p> <p>t₁₃: Lorestan stone is unknown</p>	<p>st₆: Reduced price in mass production with high quality (s₃, t₁, t₃, t₄)</p> <p>st₇: To increase competitive production capability by developing diverse products (s₅, s₇, t₈)</p> <p>st₈: Earning the high position in protecting the environment and natural resources (t₂, s₆)</p> <p>st₉: To develop the investment in regional infrastructure activities (s₁, s₃, s₄, s₆, s₇, t₃, t₄, t₆, t₈)</p> <p>st₁₀: Management planning and proper development of human resources (t₁₁, w₈, w₁₃)</p>	<p>st₁₈: Reduced price and increased capability to compete in international markets (t₁, t₈, w₈, w₂₂, w₉)</p> <p>st₁₉: Appropriate policies to remove sanctions and cooperate with other countries (t₇, t₈, w₈, w₉, w₂)</p> <p>st₂₀: Government support for producers and manufacturers of Iranian equipment and parts, which increases the investment in this sector (t₈, t₄, w₈, w₆)</p> <p>st₂₁: Recruitment of specialized and educated personnel that leads to scientific management (w₁₂, w₈, t₁₁)</p> <p>st₂₂: Alignment with the updates of technological developments (t₉, t₁₀, w₆, w₁₀)</p> <p>st₂₃: Branding and e-commerce (t₁₃, w₇, w₈)</p> <p>st₂₄: The use of R&D committee to make the right changes at the right time (t₄, t₁₁, w₁, w₅)</p>

FINDINGS AND ARGUMENT

The internal-external analysis matrix of the Lorestan stone industry is shown in Figure 1. According to Figure 1, with respect to the EFE matrix score (2.004) and the IFE matrix score (1.829), Weakness-Threat strategies (WT strategies) should be selected for the Lorestan stone industry. It indicates that the Lorestan stone industry is in the worst position in the SWOT matrix.

Table 2 lists appropriate strategies to address weaknesses and mitigate the effects of threats in the Lorestan stone industry.

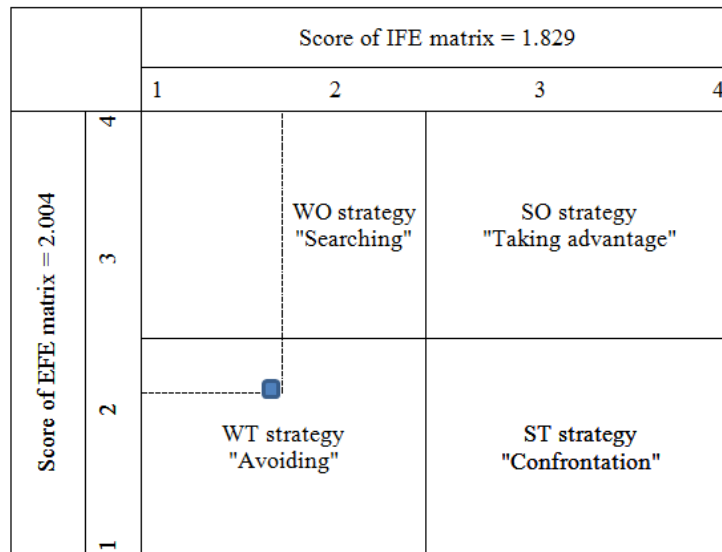


Fig 1. Internal-external matrix

Table 2. Appropriate strategies for Lorestan stone industries.

Threats	Weakness	Strategies
t ₁ : Removal of subsidies for energy carriers t ₈ : International sanctions and political tensions	w ₈ : Applying traditional management instead of scientific management w ₉ : Weak exporting plans w ₂₂ : Out-of-date stone cutting and processing techniques, not acceptable by international standards	Reduced price and increased capability to compete in international markets
t ₇ : Severe fluctuations in price of raw stone t ₈ : International sanctions and political tensions	w ₂ : High prices compared to competitors w ₈ : Applying traditional management instead of scientific management w ₉ : Weak exporting plans	Appropriate policies to remove sanctions and cooperate with other countries
t ₄ : High interest rates on bank loans and financial facilities t ₈ : International sanctions and	w ₆ : Lack of high technology equipment for the processing and quarrying	Government support for producers and manufacturers of Iranian equipment and parts,

political tensions	w ₈ : Applying traditional management instead of scientific management	which increases the investment in this sector
t ₁₁ : Not paying attention to customer needs	w ₈ : Applying traditional management instead of scientific management w ₁₂ : The lack of proper communication between industry and university	Recruitment of specialized and educated personnel that leads to scientific management
t ₉ : Inadequacy of advanced technologies t ₁₀ : Export of unprocessed stones	w ₆ : Lack of high technology equipment for the processing and quarrying w ₁₀ : The use of worn out machinery and equipment	Alignment with the updates of technological developments
t ₁₃ : Lorestan stone is unknown	w ₇ : Weak marketing and e-commerce techniques w ₈ : Applying traditional management instead of scientific management	Branding and e-commerce
t ₄ : High interest rates on bank loans and financial facilities t ₁₁ : Not paying attention to customer needs	w ₁ : Insufficient attention to the preparation and updating of basic information w ₅ : Lack of research & development centers in the province	The use of R&D committee to make the right changes at the right time

CONCLUSION

Given the considerable stone reserves in Lorestan province, it is important and necessary to have proper strategies and policies to promote the the industry. The aim of this research was to plan strategies for Lorestan stone industry, thus after identifying 30 internal factors (strengths and weaknesses), 20 external factors (opportunities and threats), and 24 key and important strategies, based on the opinions of 11 groups of experts, owners and researchers in the field, a traditional approach was employed. According to the method, with a matrix of internal-external factors and using scores of EFE and IFE matrices, the strategic position of Lorestan stone industry was identified to be in WT status of the SWOT analysis. This situation indicates the suitable strategic plan for Lorestan stone processing industry is a defensive strategy.

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