

## **Strategic Analysis of Establishing a Food Valley in Iran Using SWOT Method**

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### **Abstract**

The lack of recognizing Food Valley's potential and the lack of incorporating open innovation into food industry strategies are serious obstacles that debilitate their sustainability and viability. A mixed method approach was used to answer the question of what are the external and internal in a SWOT analysis to evaluate the possibility of the establishment of a food valley in Iran. Data was collected using structured interviews with 16 entrepreneurship and food industry experts. The SWOT matrix is based on 42 identified factors, drawn into four categories of strengths, weaknesses, opportunities, and threats. A total of 17 strategies were presented to establish Food Valley, including 5 offensive strategies, 5 revision strategies, 3 diversity strategies, and 4 defensive strategies. The results found that building trust, creating joint professional workgroups in food companies, having cooperation contracts for the exchange of skilful workforce, sharing information, developing continuous relationships with scientific centers and academia are among the most important strategies for establishing the Food Valley in Iran. Prioritizing alternative strategies illustrated that Since Food Valley is a critical factor in the field of food security, this study contributes to the literature on food security. Policymakers could design special plans to promote strategies for launching and establishing Food Valley and the adoption of open innovation by the agri-food industries and SMEs and emphasize the effects of this paradigm to improve innovative products and services.

**Keywords:** Agri-Food Sector, Entrepreneurship, Food Industry, Food Valley, Open Innovation.

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**Introduction**

Food security is one of the most challenging issues (Akbari et al., 2022; Akbari, Fozouni Ardekani, et al., 2023; Akbari, Mahavarpour, et al., 2023), and there are hundreds of millions of people, who do not enjoy an acceptable level of food security, it is predicted that there will be a severe threat to feeding more than 9 billion people in 2030 (O’Hara & Toussaint, 2021). Several studies showed that the future of food-agricultural systems is also subject to global change processes and unexpected shocks (including conflicts, climate change, and economic shocks) (FAO, 2020; Gross, 2022). This will be sustainable and inclusive as long as food-agricultural systems transform, become more resilient, and provide healthy and affordable diets for people (FAO, IFAD, UNICEF & WHO, 2022).

In this regard, an open innovation approach can create dynamism and coherence in agro-food systems (Solarte-Montufar et al., 2021). In this approach, SMEs’ food can play an important role in building flexibility and sustainability in the food systems (Ortiz-Miranda et al., 2022). In addition to ensuring the stability of the food supply, these businesses can have opportunities to participate in new forms of cooperation that enable them to compete in national and international markets (Fortes et al., 2020). Therefore, the participation of SMEs in the food and agricultural industries in R&D activities has been considered an essential activity, which has led many multinational companies to enter the agricultural sector to take advantage of opportunities (Zarafshani et al., 2010).

Today, the development of open innovation as a competitive strategy in the agricultural system is rapidly expanding (Solarte-Montufar et al., 2021). In addition to helping to find innovation partners, bringing them together, and playing a facilitating role in the food production and supply chain, Food Valley can contact innovation partners for the ideation and conceptual stages of the innovation process (Omta & Fortuin, 2013). Considering the potential opportunities provided by the Food Valley, and the importance of regional innovation systems in food security, the future food systems will be driven to apply open innovation (Bigliardi & Filippelli, 2022). However, this critical role can only be fully realized if a proper approach to adopting the innovation management system is applied according to the conditions and facilities available in each region. This emphasizes the necessity of a detailed analysis of the current situation and the feasibility of launching and establishing a support network for the innovation process in the food system.

Many studies in the field of agri-food have illustrated that open innovation, regional innovation systems (such as Food Valley), and collaborative networks of food production can bring

73 forward resilient approaches to increase sustainability production and competitiveness (Bogers  
74 et al., 2020; Pontieri et al., 2022). Linking Food Valley with open innovation leads to replacing  
75 conventional intraorganizational producer-driven innovation processes with activities that  
76 increase knowledge flows among SMEs' boundaries (Dabic et al., 2022). However, there are  
77 many opportunities to study the interrelation between open innovation and Food Valley in  
78 crises. These global challenges have highlighted the vulnerability of SMEs and the agri-food  
79 sector and forced companies to find more supply systems for innovation frameworks (Venturelli  
80 et al., 2022). Without innovation in Food Valley, several SMEs are highly vulnerable to market  
81 turbulence, and their future viability and resilience will be at risk (Dabic et al., 2022; Solarte-  
82 Montufar et al., 2021). Furthermore, the lack of recognizing Food Valley's potential and the  
83 lack of incorporating open innovation into food industry strategies are serious problems that  
84 debilitate their sustainability and viability. Some studies have used the approach of open  
85 innovation in the agri-food sector to improve innovation performance (Bayona-Saez et al.,  
86 2017), healthy food (Pontieri et al., 2022), and sustainability-oriented innovation (Troise et al.,  
87 2021).

88 Around the world, various measures have been taken to launch Food Valley, some of which  
89 include Regio Food Valley, Food Valley of Bjuv, UK Food Valley, and Ukrainian Food Valley.  
90 Regio Food Valley is the top region for knowledge and innovation in healthy and sustainable  
91 food. This region is not only renowned for its food-related expertise and technology, but also  
92 for its outstanding infrastructure and facilities for living, working and recreation. Regio Food  
93 Valley identified as the leading agro-food centre in Europe. It is a framework of cooperation  
94 involving eight municipalities with altogether 350,000 residents, and many educational  
95 institutions and businesses. Food Valley of Bjuv is an innovative practice in Sweden. The  
96 companies in Bjuv have long experience of taking advantage of each other's residual flows. In  
97 a circular economy, nothing is regarded as waste, but as a resource. Food Valley of Bjuv is a  
98 cluster where entrepreneurs and innovators get together to develop the future of food production  
99 and food companies. Networking and cooperation between research, entrepreneurs and industry  
100 is an important part in meeting future consumer and market demand. The UK Food Valley will  
101 support growth and encourage inward investment through promoting the scale, diversity and  
102 importance of the food sector to the area, and by ensuring that existing food sector companies  
103 and new investors are supported. The UK Food Valley currently supports around 75,000 food  
104 sector jobs, 18% of jobs in the area compared to 4% of the UK workforce. Key priorities for  
105 the UK Food Valley are accelerating food chain automation and digital technology adoption  
106 to deliver productivity growth and high value jobs, delivering low carbon food chains from

107 farm to fork by focusing on low carbon technologies for production, processing and  
108 distribution, and developing the market potential of naturally good for you foods and new  
109 sources of protein. Another successful food valley experience in the world is Ukrainian Food  
110 Valley. Ukrainian Food Valley is an institution that is intended to be a catalyst for the  
111 development of the AgriFood Ecosystem of Ukraine as a sustainable and self-sufficient  
112 innovation system. Ukrainian Food Valley through joint trainings creates the environment and  
113 brings together participants with aim of joint production and export of high added value goods  
114 and services. However, few studies have explored the Food Valley based on the open innovation  
115 approach. Therefore, further studies must theorize establishing Food Valley according to the  
116 open innovation indicators in the agri-food sector.

117 Since the application of this approach in the regional food system of Iran has not been widely  
118 investigated, Therefore, the purpose of this study is assessing the feasibility of establishing a  
119 Food Valley In Iran. This study contributes to conceptual and theoretical improvement by  
120 recognizing new strategies for launching and establishing Food Valley via open innovation. It  
121 provides policymakers, researchers, and practitioners with reflections on how Food Valley may  
122 be extended to support a comprehensive strategy aimed at sustainable food production in the  
123 agri-food sector. Furthermore, this study can help to understand the relationship between Food  
124 Valley and open innovation. By answering this question, we contribute to the understanding of  
125 the strengths, weaknesses, opportunities, and threats that Food Valley faces when establishing  
126 and prioritization strategies for Food Valley development. Furthermore, the results of this study  
127 could help to policymakers, researchers, and practitioners for planning comprehensive  
128 strategies to launch Food Valley by the agri-food industries and SMEs and emphasize the  
129 effects of this paradigm to improve innovative products and services.

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## 131 **2. Methodology**

132 A mixed method (quantitative and qualitative methods) was used to identify the factors  
133 affecting the establishment of Food Valley in Iran. This approach includes three steps: (1)  
134 identifying the factors influencing the establishment of Food Valley, (2) formation of a SWOT  
135 matrix, accreditation, and prioritization of criteria by SWOT-AHP and (3) presenting possible  
136 strategies and prioritizing them using the TOPSIS method.

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### 138 **2-1. Identifying factors influencing the establishment and launch of Food Valley**

139 First, a literature review was used to establish the feasibility of a Food Valley in Iran. Then, to  
140 determine the related factors and match the identified factors, the interview method was used.

141 The interviewees included 16 experts in the field of entrepreneurship and the food industry,  
 142 who were selected using the purposive and snowbal sampling method (Table 1). **Sampling**  
 143 **continued until the saturation stage.** **To find a larger sample and establish rapport with the**  
 144 **respondents, we applied the snowball chain of recommendation, considering the population's**  
 145 **specific characteristics** (Miles & Huberman, 1994). Then the experts exchanged opinions about  
 146 the strengths, weaknesses, opportunities, and threats of the establishment of Food Valley. **A**  
 147 **total of 16 structured interviews were conducted, each lasting an average of 45-60 minutes.** The  
 148 interviews were analyzed through theoretical coding (open and axial coding). **Inclusion criteria:**  
 149 The experts in this research were selected in such a way that they had at least 2 of the following  
 150 3 conditions (although most of them had all the conditions):

- 151  
 152 1. The person in question should be one of the experts or managers in the field of executive  
 153 management. 2. He/she has the experience of decision-making or he/she has the experience of  
 154 implementing it in his portfolio. 3. Be familiar with the field of food industry in general and  
 155 food industry development in particular.

156 **Table 1** Respondents profiles.

Number	Gender	Age	Degree	Experience
P1	Male	35	MSc	12
P2	Male	58	MSc	21
P3	Female	38	PhD	7
P4	Male	39	PhD	6
P5	Male	33	MSc	6
P6	Male	41	MSc	9
P7	Male	56	PhD	20
P8	Male	48	PhD	15
P9	Female	42	MSc	11
P10	Female	37	PhD	9
P11	Male	31	MSc	5
P12	Male	30	MSc	7
P13	Female	43	MSc	10
P14	Male	55	PhD	23
P15	Male	54	PhD	20
P16	Male	36	MSc	6

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## 158 **2-2. Formation of SWOT matrix, validation, and prioritization of criteria using SWOT-** 159 **AHP combination**

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161 At this stage, the extracted codes were categorized in the form of a SWOT matrix (strengths,  
162 weaknesses, opportunities, and threats to the establishment and launch of Food Valley). SWOT  
163 analysis is one of the practical methods of strategic analysis that is used to combine and  
164 generalize the content of environmental analysis (Dong et al., 2021). This method  
165 comprehensively considers various factors of the internal and external environment and  
166 specifically categorizes them into four elements: internal strengths and weaknesses and external  
167 opportunities and threats (Noorani et al., 2022). To verify the identified factors, a detailed list  
168 of SWOT factors was sent to five experts. They were asked to rank these factors based on their  
169 relationship with the feasibility of establishing Food Valley.

170 The rating scale was from 1 (not relevant) to 5 (very relevant). Therefore, only those factors  
171 considered that their average value based on experts' opinions was higher than the assumed  
172 hypothetical average, i.e. 3. Since the SWOT analysis does not provide an analytical tool to  
173 determine the importance of identified factors or the ability to evaluate decision-making options  
174 according to these factors (Hao et al., 2022), to evaluate the relative importance of each factor  
175 and its influence on developing appropriate strategies, analytical hierarchy process (AHP)  
176 technique was used. In this technique, a logical framework for the factors is created, and  
177 alternative criteria and decisions are quantified to obtain an overall ranking for the importance  
178 of all SWOT factors. Therefore, a 9-item scale was designed (1 = equally important, 9 =  
179 completely important). Then, five experts evaluated the relative importance and strategic  
180 strength of the sub-factors of the four SWOT factors based on pairwise comparisons. To verify  
181 the reliability of pairwise comparisons, the consistency ratio (CR) of each comparison was  
182 calculated.

## 183 184 **2-3. Prioritizing strategies with the TOPSIS method**

185 Finally, possible strategies are designed based on identified strengths, weaknesses,  
186 opportunities, and threats. These strategies are developed by using the strengths and capabilities  
187 of different stakeholders while minimizing their weaknesses and risks (Li et al., 2023). By  
188 combining each strength, weakness, opportunity, and threat, improvement strategies in four  
189 modes:

190 SO/ attack strategies: strategies are strategies that are based on internal strengths and  
191 environmental opportunities.

192 WO/ improve strategies: strategies are strategies that are formed based on internal strengths and  
193 environmental threats.

194 ST/ defend strategies: strategies are strategies that are formed based on internal strengths and  
195 environmental threats.

196 WT/ exit/defensive strategies: strategies are strategies that are designed and presented based on  
197 environmental threats and internal weaknesses.

198 Then, the importance of each strategy was determined using the TOPSIS technique. TOPSIS is  
199 a technique for prioritizing options based on the shortest distance from the positive ideal  
200 solution and the furthest distance from the negative ideal solution. In this study, the developed  
201 strategy was used as an option and criteria (required cost, amount of time spent, impact on the  
202 country's food industry, and feasibility) to evaluate the strategies and give weight to them.

203

### 204 **3. Results**

205 The factors affecting the establishment of Food Valley were identified through extensive study  
206 in international literature and related documents. This process was followed by identifying the  
207 leading strengths, weaknesses, opportunities, and threats. After evaluating the experts and  
208 reaching a consensus regarding the relationship of the identified factors with the subject under  
209 investigation and removing irrelevant factors, the identified factors were categorized in the form  
210 of a SWOT matrix (10 strengths, 11 weaknesses, 10 opportunities, and 11 threats).

211 In the next step, the relative importance of the identified factors in the establishment and launch  
212 of the Valley of Food was determined using Hierarchical Analysis (AHP) and based on the  
213 evaluations provided by experts (five university professors and food industry entrepreneurs).  
214 After prioritizing the SWOT criteria, the relative weight of each sub-criteria and its priority in  
215 the possibility of launching and establishing Food Valley was estimated (Table 2). Given that  
216 the consistency ratios (CR) for each of the pairwise comparisons is lower than 0.1, the  
217 consistency of the comparison matrix was confirmed, and it indicates the lack of contradiction  
218 in the evaluations and judgments of the experts.

219 The creation of synergy was one of the most important strengths in the advancement of the  
220 launch of Food Valley. Meanwhile, focusing more on innovative technologies becoming more  
221 competitive, and improving quality are ranked second and third in importance, respectively.  
222 Also, the existence of an elite force, cultural diversity, and diverse climate, the authenticity of  
223 Iranian food, cheaper labor, extensive infrastructure in the country, support of the private sector  
224 and non-governmental organizations, and finally, related higher education institutions were  
225 placed in the next priorities, respectively. Among the existing weaknesses, administrative

226 bureaucracy is ranked first, conflict of interest, and the lack of a suitable platform for risky  
 227 investment are placed second and third. Prioritizing the identified opportunities, reducing  
 228 imports, the possibility of easy use of expert forces, and creating Islamic food branding are  
 229 ranked first to third, respectively. Based on expert evaluation and AHP analysis, lack of  
 230 coherent management, lack of infrastructure provision, unexpected price growth, and fear of  
 231 lack of raw materials were the main threats to the advancement of the establishment and launch  
 232 of Food Valley in Iran.

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234 **Table 2.** Strengths, Weaknesses, Opportunities, and Threats of Establishing Food Valley.

	Rank	Factor loading	Weight	CR
<b>Strengths (s)</b>	1	Creating synergy	0.155	0.045
	2	Focus more on innovative technologies	0.131	
	3	Competitive demands and quality improvement	0.119	
	4	Elicit workforce	0.103	
	5	Cultural and climate diversity	0.095	
	6	The originality of Iranian foods	0.094	
	7	Inexpensive workforce	0.986	
	8	Wide infrastructures of the country	0.85	
	9	Support of private sector and NGOs	0.07	
	10	Related higher education institutes	0.062	
<b>Weaknesses (w)</b>	1	Organizational bureaucracy	0.141	0.074
	2	Interests' confliction	0.0125	
	3	Lack of proper platform for risky investments	0.0113	
	4	Incompatibility of industry needs and academic activities	0.102	
	5	The unfavorable domestic economic condition	0.098	
	6	Lack of marketing discipline	0.094	
	7	High production costs	0.082	
	8	Lack of higher organizations support	0.72	
	9	Perceived consumer risks about food production of new businesses	0.061	
	10	Brokers and middleman	0.058	
	11	Lack of efficient relationship between industry and academia	0.053	
<b>Opportunities (o)</b>	1	Reduce in import	0.188	0.061
	2	Ease of use of professional workforce in this industry	0.153	
	3	Creation of Islamic branding	0.145	
	4	Availability of export to neighboring countries	0.128	



	Rank	Factor loading	Weight	CR
	5	Low energy costs	0.092	
	6	Low wage rate	0.079	
	7	Use of domestic and foreign consuming market	0.061	
	8	Exchange Import	0.057	
	9	Wide employment in production, distribution, and sale sections	0.054	
	10	Integrative marketing, design, and sale	0.041	
<b>Threats (T)</b>	1	Lack of cohesive management	0.182	0.061
	2	Lack of necessary infrastructure	0.163	
	3	Unpredictable price growth and fear of lack of raw materials	0.116	
	4	Lack of legal support	0.096	
	5	The slowness of decision-making and policy-making processes	0.089	
	6	Increase in prices due to competition decrease	0.07	
	7	High costs of transportation	0.063	
	8	Lack of financial sources and proper facilities	0.61	
	9	Chronic economic inflation	0.59	
	10	Lack of proper rules and regulations	0.055	
	11	Government intervention in the market	0.046	

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236 Then, by focusing on each of the SWOT criteria and analyzing and comparing them, it was  
237 possible to extract appropriate strategies (SO, WO, ST, WT) for the establishment and launch  
238 of Food Valley in Iran (Table 3). In the (SO) strategies, the main question was how to provide  
239 the necessary ground for exploiting opportunities by focusing on strengths. In Iran, like many  
240 developing countries, the strengthening of start-up foundations and the design of an  
241 entrepreneurial ecosystem based on innovation and technology are developing and evolving.  
242 Today, achieving competitive advantages in the field of food products and industries,  
243 improving quality, and maintaining it requires more focus on innovative technologies. Due to  
244 Iran's benefits from knowledge-based companies and start-ups and having significant capacities  
245 such as elite and expert personnel, high diversity, and originality of Iranian products and foods,  
246 a platform for synergy and creation of economic value-added will be provided in this field.  
247 Therefore, adopting strategies such as creating food branding and expanding activities in the  
248 field of local foods and the capacity of authentic Iranian foods can be manifested in the form of  
249 Food Valley. By analyzing external opportunities and internal weaknesses, the necessary  
250 background for WO strategies was provided. The main question for designing alternative

251 strategies in this field was how to realize the opportunities for establishing and launching the  
 252 Food Valley in Iran, given the current weaknesses.

253 The existence of some obstacles and problems, such as complex administrative bureaucracy in  
 254 production, conflict of interests, and lack of a suitable platform for risky investment, is one of  
 255 the most important obstacles to the establishment of Food Valley. Therefore, adopting strategies  
 256 such as creating different distribution channels, building trust, and providing necessary capital  
 257 from internal and external sources can be effective in reducing and facilitating obstacles.  
 258 Strategies (ST) were also deduced by comparing the leading strengths and threats and focusing  
 259 on the question of how strengths can be used to reduce the vulnerability of the Food Valley  
 260 against threats. Also, strategies (WT) were presented about internal weaknesses and external  
 261 threats. The purpose of this group of strategies was how to limit the impact of current  
 262 weaknesses and threats on the Food Valley by adopting defensive strategies.

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**Table 3. Suggested strategies.**

<b>SO Strategies</b>	<b>WO strategies</b>
Export Encouragement and support	Providing necessary capital from internal and external sources
Developing partnerships with authentic foreign companies	Developing different distribution channels
Developing activities related to local foods and the capacity of original Iranian foods	Offering products with organizational brand
Creating an Islamic Halal brand	Trust-creation
<b>ST strategies</b>	<b>WT strategies</b>
Creating common professional workgroups in food companies and having cooperation contracts for the exchange of professional workforce and sharing information	Focus on marketing and strategic sales.
Diversification of products and services	Having informative advertisements for introducing platforms and attracting customer
Creating cooperation with other foreign similar platforms and organizations	Eliminate deficiencies
	Introducing Iran's brand to domestic and international markets General improvement of the factory to be able to use probable opportunities

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 266 Finally, the presented strategies were prioritized using the TOPSIS technique. 17 developed  
 267 strategies were used as options and criteria (required cost, amount of time spent, impact on the  
 268 country's food industry, feasibility) to evaluate the strategies and give weight to them.

269 Table (4) shows “building trust”, “creating the work of joint specialized groups in food  
 270 companies and concluding a cooperation agreement in the exchange of information and expert  
 271 personnel”, and “developing continuous relations with scientific centers and universities” are  
 272 among the most important alternative strategies that should be prioritized in the establishment  
 273 of the Food Valley. Furthermore, “developing activities related to local foods and the capacity  
 274 of original Iranian foods”, “creating cooperation with other foreign similar platforms and  
 275 organizations”, and “introducing Iran’s brand to domestic and international markets” are the  
 276 last three prioritized strategies.

277 **Table 4.** Prioritizing alternative strategies by the TOPSIS technique.

Rank	d+	d	CL	Strategy
1	0.05	0.13	0.29	Trust creation
2	0.05	0.12	0.30	Creating common professional workgroups in food companies and having cooperation contracts for the exchange of professional workforce and sharing information
3	0.07	0.10	0.39	Developing continuous relationships with scientific centers and academia
4	0.07	0.11	0.39	Identification and development of cooperation contracts with authentic domestic and powerful providers
5	0.06	0.11	0.34	Diversification of products and services
6	0.07	0.11	0.41	Developing distribution channels
7	0.09	0.09	0.49	Offering products with organizational brand
8	0.07	0.10	0.41	Providing necessary capital from internal and external sources
9	0.08	0.10	0.46	Having informative advertisements for introducing platforms and attracting customer
10	0.09	0.09	0.50	Develop partnerships with authentic foreign companies
11	0.09	0.09	0.51	Export support and encouragement
12	0.10	0.09	0.52	Creating an Islamic Halal brand
13	0.13	0.09	0.60	Eliminate deficiencies
14	0.12	0.07	0.63	Focus on marketing and strategic sales.
15	0.12	0.06	0.66	Developing activities related to local foods and the capacity of original Iranian foods
16	0.11	0.06	0.63	Creating cooperation with other foreign similar platforms and organizations
17	0.11	0.05	0.68	Introducing Iran’s brand to domestic and international markets

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281 **Discussion**

282 In this study, the SWOT matrix is based on 42 identified factors, which are drawn into four  
283 categories, namely “strengths, weaknesses, opportunities, and threats”. This prioritization  
284 provided a broad understanding of the factors based on their role in achieving the objectives of  
285 the study; so that it became clear what factors should be focused on to implement appropriate  
286 strategies. A total of 17 strategies, including 5 offensive strategies (SO), 5 revision strategies  
287 (WO), 3 diversity strategies (ST), and finally, 4 defensive strategies (WT), were designed.

288 Based on the results, the most important existing strengths of Food Valley were synergy,  
289 focusing more on innovative technologies becoming more competitive, and improving quality.  
290 Paying attention to synergy among actors is very important in optimizing the financial, social,  
291 and technical resources of Food Valley's launch. It is also possible to benefit from synergy to  
292 create and nurture relationships between supply chain actors and food value. Synergistic  
293 interaction can explain a relationship where agro-food supply chains complement and reinforce  
294 each other.

295 **Food valley scope necessities and develop collaboration to advance food related companies and**  
296 **organizations. It creates research and development platforms and support collaboration between**  
297 **food actors. Food valley should create strong connections to other local ecosystems, as well as**  
298 **to national and international food research and business actors.**

299 Innovative technologies also seem necessary in designing business models and establishing new  
300 investments. Considering that the food-agriculture supply chain is faced with several climatic,  
301 biological-environmental risks and fluctuations related to the market, logistic and political-  
302 management factors (Nyamah et al., 2017), applying innovative technologies, adapting and  
303 updating businesses in this area with various changes and risks will play a key role in the  
304 sustainability and success of these businesses.

305 Due to the increasing demand for healthy and sustainable foods, the formation of innovative  
306 organizations such as Food Valley will play a key role in developing solutions for the future of  
307 agriculture and the food industry. Increasing support for innovative technologies by agri-food  
308 industries and innovative organizations relies on the reality that old and ineffective technologies  
309 are largely unsustainable for the development of the food industry (Adenle et al., 2019).  
310 Therefore, innovative organizations can significantly contribute to the adaptation of open  
311 innovation related to the agri-food sector and the adoption of policies that collaborate with  
312 private and public sectors in the Food Valley.

313 **Furthermore, Food Valley should organize joint research and trainings for the development and**  
314 **consolidation of its participants who practice the principles of sustainable agri-food production**

315 throughout the whole value chain, efficient resources using, conservation, protection and  
316 improvement of energy sources, protection and development of communities, equality and  
317 people's welfare, and improving flexibility of cooperation between people, communities and  
318 ecosystems.

319 Cooperation and coordination between a wide range of stakeholders and beneficiaries related  
320 to the agri-food supply chain will also provide an opportunity to improve the product marketing  
321 system and reduce production costs. Establishing communication between producers and  
322 consumers and meeting different requirements, especially in the field of information related to  
323 the product, while eliminating middlemen and brokers in the food supply and distribution chain,  
324 reducing the perceived risks of consumption. Suppliers also play an important role in the food  
325 products produced. [Meneguel et al., \(2022\)](#) and [Sanchez et al., \(2023\)](#) also emphasized that the  
326 support of suppliers can improve the process of open innovation and the performance of the  
327 supply chain and create competitive benefits among agri-food industries by increasing added  
328 value.

329 The relevance and contribution of this study to current research lies in the applied perspective.  
330 Previous studies have mainly investigated the effectiveness of cluster organizations and  
331 specifically Food Valley in facilitating innovation in regional systems ([Omta & Fortuin, 2013](#)).  
332 [Fritz & Schiefer \(2009\)](#) also provide background and context for analyzing the effectiveness of  
333 cluster organizations in the agri-food innovation system. Some studies, such as [Jongen et al.](#)  
334 [\(2006\)](#), examined the experience of the Food Valley cluster organization. [Lee et al. \(2009\)](#) also  
335 investigated the Food Valley innovation system in the Netherlands as one of the most innovative  
336 food clusters in the world. Many studies also introduce food security as a current challenge  
337 ([Proskova, 2018](#)) and have proposed the need to review and adjust food security policies by  
338 focusing on adopting an innovative approach ([Boratyńska & Huseynov, 2017](#); [Shamah-Levy et](#)  
339 [al., 2017](#)). In this context, although previous studies emphasize the formation and development  
340 of networks and support for innovation in the food sector within the framework of cluster  
341 organizations ([Omta & Fortuin, 2013](#)), there has not been a comprehensive study on the factors  
342 affecting the development of these cluster organizations in the food sector in a specific region.

### 343 344 **Conclusions**

345 The transition from linear towards sustainable and circular business models is one of the main  
346 challenges for the agri-food sector. These challenges are relevant in the agri-food sector,  
347 particularly in the food industry, which is taken into account by policymakers and practitioners  
348 among the main strategic components for achieving sustainable production. However, in the

349 food industry, reaching this target is influenced by some internal and external factors.  
350 Therefore, researchers are called to reconnoiter various practices to solve those challenges.  
351 This study made it possible to identify internal and external factors leading to the establishment  
352 of Food Valley in Iran from the point of view of experts in this field. In this regard, due to  
353 various methodological limitations, it was tried to provide valid and acceptable results by using  
354 combined methods. For example, noting that some factors, especially opportunities, and threats,  
355 are specific and dependent on the place and context under study; therefore, to reduce mental  
356 biases and adapt the identified factors to the context (the country of Iran), the opinions and  
357 evaluation of experts in the relevance of the factors with the aim of the study was investigated.  
358 Although the experts in the field of entrepreneurship in the food industry were limited, the  
359 participants in the study had sufficient experience in this field and were representatives of  
360 people in different fields of the food industry, entrepreneurship, business, and commerce.  
361 With specific regard to agri-food industries and SMEs, since innovative products and services  
362 are at the core of Food Valley's strategies, providing capital from internal and external sources  
363 and interaction with authentic foreign companies could lead to more sustainable and productive  
364 businesses that can create better working conditions to all agri-food industries and SMEs. In  
365 this regard, scientific centers academia, and informative advertisements could facilitate the  
366 diffusion of knowledge and new products and services of agri-food industries and enable the  
367 emergence of Food Valley in Iran. This means that policymakers, managers, and scholars  
368 should support the implementation of all strategies in establishing Food Valley. This study  
369 manifests that the shift toward the Food Valley approach can make open innovation more  
370 accessible to agri-food industries.  
371 If we look at the four main strategies of launching and establishing Food Valley, offensive,  
372 revision, diversity, and defensive strategies, it is clear that prioritizing the alternative strategies  
373 in an open innovation system is one of the core inputs of Food Valley. The process of achieving  
374 open innovation in Food Valley is accelerated by combining most strategies (such as trust  
375 creation, creating joint professional workgroups in food companies and having cooperation  
376 contracts for exchanging skilled workforce and sharing information, and developing continuous  
377 relationships with scientific centers and academia). Furthermore, these strategies are  
378 significantly strengthening the networking possibilities of Food Valley in agri-food industries.  
379 To conclude, the results of this study confirmed that the 17 identified strategies provide the  
380 foundation for creating a Food Valley in Iran. It should be kept in mind that launching and  
381 establishing a Food Valley requires an all-out focus on the strategies; because strategies are

382 formed by combining strengths, weaknesses, threats, and opportunities. In other words, each  
383 strategy considers part of the prerequisites for creating Food Valley.

384 The future directions are represented by the need to create a comprehensive context inspired by  
385 sustainable development goals. Policymakers should consider applied strategies to establish  
386 Food Valley and rethink their agri-food systems according to the sustainable development  
387 goals. Furthermore, it provides more opportunities for scholars and managers of food industries  
388 to integrate within their agri-food business sustainable development goals to improve their  
389 innovative system and competition process through positive effects on Food Valley. Iranian  
390 policymakers should provide policies that support Iranian agri-food industries and SMEs and  
391 improve their infrastructure to help them integrate with other industries.

392 This research has some limitations. This study only focuses on the factors that led to the  
393 establishment of Food Valley in Iran. The results may only be generalized to other similar  
394 regions. Future studies exploring and comparing food system innovation initiatives and  
395 practices in other countries facing similar conditions to Iran would provide valuable  
396 benchmarks and best practices that can be adapted and applied in the Iranian context. Another  
397 limitation was that few experts in the field of open innovation and Food Valley in Iran and this  
398 study only considers the opinions of experts in the field of entrepreneurship and the food  
399 industry, and the opinions of other stakeholders, such as farmers, food producers, consumers,  
400 and local groups, are not considered. Therefore, future research could conduct surveys or  
401 interviews with the aforementioned stakeholders would provide a more comprehensive  
402 understanding of the challenges and opportunities in implementing open innovation in the food  
403 industry in Iran. Furthermore, exploring the perspectives of farmers, food producers, and  
404 consumers would shed light on their needs and expectations regarding establishing Food Valley  
405 processes and help to tailor strategies accordingly. Also, involving local groups such as  
406 associations, cooperatives, and governmental organizations would contribute to developing a  
407 holistic approach toward open innovation in the food sector. These groups can offer valuable  
408 insights into the local context, existing networks, and potential barriers that need to be  
409 addressed. Therefore, future research could solve this challenge by engaging more experts from  
410 other countries with similar conditions. Finally, this study mainly considers the current situation  
411 and does not consider future developments and changes in the agri-food sector. Therefore, it is  
412 essential for researchers and policymakers to continuously assess and analyze future  
413 developments and changes in the agri-food sector. This will enable them to develop proactive  
414 strategies and policies that can foster sustainable growth and address any potential challenges  
415 that may arise.

## 416 **Implication for Theory and Practice**

417 Various implications have been provided in this study. Theoretically, this study provides a  
418 structured approach to the feasibility of creating a network of Food Valley and identifying  
419 potential opportunities and challenges. Moreover, the theoretical evolution of related research  
420 trends such as; economic density and development will have great applications in forming  
421 future research trends.

422 First, the establishment of a Food Valley can create an opportunity for testing and modifying  
423 economic theories development which are related to cluster theories. Cluster theory divides  
424 industries and companies into different clusters based on their common resources such as;  
425 expert workforce, infrastructures, professional suppliers, and knowledge partners. By creating  
426 the clusters, companies would be able to cooperate and share their knowledge and ideas which  
427 will result in an increase in innovation and productivity in that cluster. Cluster theory applies  
428 to different economic development strategies to promote regional growth and competitiveness  
429 (Vicente, 2018).

430 Second, the Food systems theory is a multi-faceted framework that consists of different  
431 components and evaluates related activities of production, process, distribution, preparation,  
432 and consumption of foods. This theory verifies the role of food producers, consumers,  
433 businesses, local groups, and governments in food systems (Muzerengi et al, 2021). According  
434 to this theory, food innovations such as Food Valley can be considered as a solution to many  
435 food-related problems like improving the availability of local and fresh foods and supporting  
436 local farmers which can provide experimental evidence and insight into the establishment of  
437 more flexible and sustainable food systems.

438 Third, It is crucial to consider innovation theory in food systems to be aware of the challenges  
439 and complexities of sustainable agriculture and food systems (Jia, 2021). Reviewing innovation  
440 systems in this area would identify key elements such as; factors, knowledge and learning  
441 processes, interaction mechanisms, and context factors which would finally lead to a better  
442 understanding of innovation in agri-food systems (Spendirup & Fernqyist, 2019). Food Valley  
443 can play the role of innovation poles of the importance of implication of innovation and  
444 evolution in in food system which can bring researchers, entrepreneurs, and industry players  
445 together to be able to promote technological progress, product development, and process  
446 improvement.

447 The outputs of this research are relevant to the agri-food industry as they offer innovative  
448 practices that can develop product quality. This study create a new approach in the form of a  
449 Food Valley for the agri-food industry that focuses on open innovation. The combination of



450 agri-food industries and SMEs in the form of a Food Valley reveals how implementing an open  
451 innovation strategy can help agri-food industries adapt to regional political and market  
452 situations and apply best business practices to survive in society. It could abet the agri-food  
453 industry and SMEs to combine with other firms to highlight the importance of Food Valley as  
454 a paradigm and an efficient and effective system to improve open innovation and activities  
455 development. Therefore, the agri-food industry and SMEs can be vastly benefited in this regard  
456 by combining and using open innovation. Furthermore, policymakers could design special plans  
457 to promote strategies for launching and establishing Food Valley and the adoption of open  
458 innovation by the agri-food industries and SMEs and emphasize the effects of this paradigm to  
459 improve innovative products and services.

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586 **تحلیل راهبردی ایجاد دره غذایی در ایران با استفاده از روش SWOT**

587 عدم شناخت پتانسیل دره غذایی (Food Valley) و عدم گنجاندن نوآوری باز در استراتژی های صنایع غذایی موانع

588 جدی است که پایداری و دوام آنها را تضعیف می کند. از روش ترکیبی برای پاسخ به این سوال استفاده شد که در تجزیه

589 و تحلیل SWOT چه مواردی خارجی و داخلی وجود دارد تا امکان ایجاد دره غذایی در ایران ارزیابی شود. داده ها با

590 استفاده از مصاحبه ساختاریافته با 16 نفر از کارشناسان کارآفرینی و صنایع غذایی جمع آوری شد. ماتریس SWOT بر

591 اساس 42 عامل شناسایی شده است که در چهار دسته قوت، ضعف، فرصت و تهدید ترسیم شده است. در مجموع 17

592 استراتژی برای ایجاد Food Valley ارائه شد که شامل 5 استراتژی تهاجمی، 5 استراتژی تجدید نظر، 3 استراتژی تنوع

593 و 4 استراتژی دفاعی بود. نتایج نشان داد که اعتمادسازی، ایجاد کارگروه های تخصصی مشترک در شرکت های مواد

594 غذایی، داشتن قراردادهای همکاری برای تبادل نیروی کار ماهر، به اشتراک گذاری اطلاعات، توسعه روابط مستمر با

595 مراکز علمی و دانشگاهی از مهم ترین راهکارهای ایجاد دره غذا در ایران است. اولویت بندی استراتژی های جایگزین

596 نشان داد که از آنجایی که Food Valley یک عامل مهم در زمینه امنیت غذایی است، این مطالعه به ادبیات امنیت غذایی

597 کمک می کند. سیاست گذاران می توانند برنامه های ویژه ای برای ارتقای استراتژی هایی برای راه اندازی و ایجاد Food

598 Valley و پذیرش نوآوری باز توسط صنایع کشاورزی-غذایی و SMEs طراحی کنند و بر تأثیرات این پارادایم برای

599 بهبود محصولات و خدمات نوآورانه تأکید کنند.