

# Factors Affecting on Development of Processing and Complementary Industries of Date Palm in Khuzestan Province

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The purpose of this research was identifying factors affecting the development of processing and complementary industries of date palm in Khuzestan province. The method of research was causal comparative. The population of this research was managers in processing and complementary industries of date palm products of Khuzestan province (N=100). The return rate was 94% (N=94). By census method all of managers were selected for participation in the study. A questionnaire was developed to gather information regarding factors affecting on development of processing and complementary industries of date palm products. The questionnaire was pilot tested and reliability was estimated by calculating Cronbach's alpha. Reliability was favorable (Cronbach's alpha=0.85). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Based on the results most important items for human development of processing and complementary industries of date palm farms were: development of information management (M= 3.45, SD= 1.18), knowledge and information up-to-date (M= 2.92, SD= 1.09), scientific behavior development (M= 2.92, SD= 1.24), social participation development (M= 2.69, SD= 1.22). Also to categorize factors affecting development in processing and complementary industries of date palm products, and to determine the variance explained by each factor, an exploratory factor analysis approach was followed. These factors include: economic characters, managerial skills, infrastructure, expansion of monitoring and eliminating the inflexible procedures and customer oriented. Based on the results, it is recommended that these factors should be considered.

**Keywords:** Processing and complementary industries, Date palm, Khuzestan province

## 1. Introduction

Agriculture through processing industries plays a key role in economic development. Processing and complementary industries in agriculture, by creating value-added through processing and packaging have vital role in economic prosperity of the community. Stringer (2001) believed, primary agriculture gives up the processing, storing, merchandising, transporting, and financing practices, giving way to a more complex, specialized and integrated process. Input providers, farm suppliers, assemblers, processors, wholesalers, brokers, importers, exporters, retailers, merchants, distributors, and consumers join the food and agricultural economic links. Additional activities continually service these businesses, including research, transportation, packaging, storage, futures markets, advertising and promotion.

The fruit and vegetable processing activities have been set up, or have to be established in developing countries for one or other of the following reasons (Dauthy, 1995):

- diversification of the economy, in order to reduce present dependence on one export commodity;
- government industrialization policy;
- reduction of imports and meeting export demands;
- stimulate agricultural production by obtaining marketable products;
- generate both rural and urban employment;
- reduce fruit and vegetable losses;
- improve farmers' nutrition by allowing them to consume their own processed fruit and vegetables during the off-season;
- generate new sources of income for farmers/artisans;
- develop new value-added products.

Food industry has vital role in economy of Iran. A total of 12,198 entities are engaged in the Iranian food industry, or 12% of all entities in the industry sector. The sector also employs approximately 328,000 people or 16.1% of the entire industry sector's workforce (Ayse et al, 2013). Iran exported \$736 million worth of foodstuffs in 2007 and \$1



Abstract

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billion (~600,000 tonnes) in 2010. Soft drinks, mineral water, biscuit, chocolate, confection, edible oil, dairies, conserved foods and fruits, jam and jelly, macaroni, fruit juice and yeast were among the main exports to Iraq, Afghanistan, Turkmenistan, Tajikistan and other Central Asian countries, Russia, Ukraine, Belarus, Pakistan, Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Oman, Syria, Germany, Spain, the Netherlands, France, Canada, Venezuela, Japan, South Korea and Turkey (Dareini, 2014).

Since the 1979 revolution commercial farming has replaced subsistence farming as the dominant mode of agricultural production. By 1997, the gross value reached \$25 billion (Ministry of Commerce, 2009). Iran is 90% self-sufficient in essential agricultural products, although limited rice production leads to substantial imports. In 2007 Iran reached self-sufficiency in wheat production and for the first time became a net wheat exporter. By 2003, a quarter of Iran's non-oil exports were of agricultural products, including fresh and dried fruits, nuts, animal hides, processed foods, and spices (Ministry of Commerce, 2009). Iran exported \$736 million worth of food stuffs in 2007 and \$1 billion (~600,000 tonnes) in 2010. A total of 12,198 entities are engaged in the Iranian food industry, or 12% of all entities in the industry sector. The sector also employs approximately 328,000 people or 16.1% of the entire industry sector's workforce (Ayse et al 2013).

Date palm is a multi-purpose tree, being highly regarded as a national heritage in many countries. It provides food, shelter, timber products and all parts of the palm can be used. Because of these qualities, and its tolerance to harsh environmental desert conditions, areas under cultivation have increased tremendously in recent years. Improvement in marketing and export efficiency are priorities for date palm growers (Alabdulhadi et al., 2004). During the last 30 years, significant 'modernization' changes have occurred in date harvesting, packing, processing and marketing, largely because of access to the newly acquired oil wealth in the main areas of production (Mahmoudi et al 2008). In conventional date processing, dry or soft dates are eaten as whole fruit, seeded and stuffed, or chopped and used in a great variety of ways: as ingredients in cereals, puddings, breads, cakes, cookies, ice cream, and confectionaries. The pitting may be done by crushing and sieving the fruit or, more sophisticatedly, by piercing the seed out of the whole fruit. The calyces may also be mechanically removed. Surplus dates are processed into cubes, paste, spread, powder (date sugar), jam, jelly, juice, syrup, vinegar or alcohol. Decoloured and filtered date juice yields a clear invert sugar solution

(Morton, 2006). Recent innovations include chocolate-covered dates and products such as sparkling date juice, used in some Islamic countries as a non-alcoholic version of champagne, for special occasions and religious times such as Ramadan (Wikipedia, 2006).

## 2. Materials and methods

The method of research was causal comparative. The population of this research was managers in processing and complementary industries of date products of Khouzestan province (N=100). The return rate was 94% (N=94). By census method all of managers were selected for participation in the study. A questionnaire was developed to gather information regarding factors affecting on development of processing and complementary industries of date products. The questionnaire was pilot tested and reliability was estimated by calculating Cronbach's alpha. Reliability was (Cronbach's alpha=0.85). Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS).

Questions were generated from the literature review. The instrument consisted of two separate sections according to the purpose and objectives of the study. The first section was designed to gather data on personal characteristics of managers. The second section was designed to gather data regarding the factors affecting development of processing and complementary industries of date products. Managers were asked to rate their viewpoints on a five point Likert - type scale: 1 = very low, 2 = low, 3 = medium, 4 = much and 5 = very much. Beside descriptive statistics, Factor Analysis test was employed for detailed analysis.

## 3. Results and discussion

### 3.1. Demographic characteristics

The ages of the respondents ranged from 27 to 63. The mean age was 45 years old (N =94). The majority (n=34) of respondent were between 31-40 years old. Only 12.7% of managers had a lower the diploma degree (n = 12). The 27.65% of respondents (n = 26) had diploma degree and 68.7% had higher the diploma degree.

### 3.2. Current situation of human resource development

The 10 indexes for analyzing current situation of human resource development (HRD) were analyzed. The results explained in Table 1. Based on the results most important items were: Information management (M= 3.45, SD= 1.18), Knowledge and information up-to-date (M= 2.92, SD= 1.09), Scientific behavior development (M=

2.92, SD= 1.24) and Social participation development (M= 2.69, SD= 1.22).

### 3.3. Comparing current and favorable situation of human resource development

For analyzing and comparing of current and favorable situation of human resource development in processing and complementary industries of date palm products was used Wilcoxon test (Table 2). Based on results there was significant difference between all items of human resources development in current and favorable situation at 0.01 level.

### 3.4 Factor analysis of items affecting entrepreneurship development

To categorize factors affecting development of processing and complementary industries of date palm products, and to determine the variance explained by each factor, an exploratory factor analysis approach was followed. Data revealed that internal coherence of the data was appropriate (KMO =0.746), while and the Bartlett's statistic was significant at the 0.01 level. According to Kaiser Criteria, there five factors that their extracted

Eigenvalues were greater than one. Later, the items were categorized into five factors by using VARIMAX Rotation Method (Table 3). It is worth noting that after Varimax rotation and due to low factor loading (less than 0.5) of some variables therefore insignificance of their correlation with other variables, one variable were omitted from analysis and finally 16 variables were analyzed. Table 4 has summarized the findings.

### 3.5 The correlation between level of development and other variables

To determine the possible relationship between level of development and other variables Spearman correlation coefficient approach was utilized (Table 5). Based on the results the correlation between level of development with willingness to creativity, risk oriented, responsibility, competitiveness, participation on education programs, attitude to entrepreneurship, income level and educational level at 0.01 level was significant.

Table 1. Rankings of HRD items (n=94)

Items	SD	Mean	CV	rank
Information management	1.18	3.45	0.341	1
Knowledge and information up-to-date	1.09	2.92	0.373	2
Scientific behavior development	1.24	2.92	0.427	3
Social participation development	1.22	2.69	0.456	4
Professional development	3.04	1.43	0.471	5
Human empowerment	2.93	1.78	0.607	6
Education based on market need	2.92	1.78	0.609	7
Training and continuing education	2.93	2.12	0.723	8
Improvement of productivity culture	2.96	2.37	0.800	9
Tendency to increasing quality	2.92	2.45	0.839	10

Table 2. Comparing of current and favorable situation of HRD items (n=94)

Items	Negative Ranks		Positive Ranks		Z	Sig
	n	Mean Rank	n	Mean Rank		
Information management	0	0.000	94	53.5	9.238	0.000
Knowledge and information up-to-date	0	0.000	83	43	8.225	0.000
Scientific behavior development	0	0.000	91	46	8.555	0.000
Social participation development	0	0.000	74	37.5	7.915	0.000
Professional development	0	0.000	72	36.5	8.506	0.000
Human empowerment	0	0.000	80	40.5	7.999	0.000
Education based on market need	0	0.000	79	40	8.04	0.000
Training and continuing education	0	0.000	67	34	7.462	0.000
Improvement of productivity culture	0	0.000	99	53	9.178	0.000
Tendency to increasing quality	0	0.000	76	38.5	7.728	0.000

Table 3. Extracted factors, Eigenvalue, its variance percent and cumulative percent of variance Eigenvalue

Factors	Eigen value	variance	Cumulative percent of variance
First	2.095	13.093	13.093
Second	2.074	12.965	26.058
Third	1.871	11.692	37.750
Fourth	1.856	11.602	49.352
Fifth	1.293	10.953	60.305

Table 4. Affecting factors on development of processing and complementary industries of date palm products

Items	Factor Loading	
Economic characters	Market oriented	0.584
	Appropriated price	0.661
	Removing middleman	0.818
Managerial skills	Farm management	0.674
	Risk management skills	0.638
	Financial management skills	0.545
	Technical knowledge	0.712
Infrastructure	Technological infrastructure	0.846
	Physical infrastructure	0.835
Expansion of monitoring and eliminating the inflexible procedures	Remove inflexible procedures	0.674
	Monitoring of financial facilities	0.782
	Remove bureaucracy	0.679
Customer oriented	Appropriate marketing	0.792
	Considering customers needs	0.642
	Considering customers interest	0.780

Table 5: Relationship between level of development and other variables

Variable (1)	Variable (2)	r	Sig
Age	development level	0.021	0.762
Income		0.439**	0.000
Willingness to creativity		0.438**	0.000
Risk oriented		0.495**	0.000
Responsibility		0.327**	0.000
Competitiveness		0.420**	0.000
Education programs		0.383**	0.000
Attitude		0.402**	0.000
Level of education		0.318**	0.000

\*\* P < 0.01

#### 4. Conclusion and Recommendations

Based on the results most important items for human development of processing and complementary industries of date palm farms were: development of information management (M= 3.45, SD= 1.18), knowledge and information up-to-date (M= 2.92, SD= 1.09), scientific behavior development (M= 2.92, SD= 1.24), social participation development (M= 2.69, SD= 1.22). Based on the results, it is recommended that the background to the development of information management, information updates, and social and economic development of managers, priority.

To categorize factors affecting development in processing and complementary industries of date palm products, and to determine the variance explained by each factor, an exploratory factor analysis approach was followed. Data revealed that internal coherence of the data was appropriate, while and the Bartlett's statistic was significant at the 0.01 level. According to Kaiser Criteria, there were five factors that their extracted Eigenvalues were greater than one. These factors include: economic characters, managerial skills, infrastructure, expansion of monitoring and eliminating the inflexible procedures and customer oriented. Based on the results, it is

recommended that these factors should be considered.

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