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INTERNATIONALIZATION OF DATE INDUSTRY THROUGH SMALL INDUSTRIES DEVELOPMENT

Hassan Banaruee[1i],
Seyed Amir Amirizad[2]
[1]Department of Language, Chabahar Maritime University, Iran
[2]Hormozgan Industrial Estates Corporation,
Iran Small Industries and Industrial Parks Organization, Iran

Abstract:
Considering the markets open and international has always had benefits for demanders and suppliers. Moving from local to global as a result of the convergence of preferences cross-culturally is considered to result in multinational foundations and trading centers emergence. Date products employ a significant role in the business and farming of several countries worldwide and areas in south of Iran as one of the most important products in the non-oil export of Iran internationally. The objective of this study is to provide descriptive insight into the internationalization of date industries in general and Iran's production, export quantity and value in particular. To this aim, quantitative data rendered from FAOSTAT (2017) regarding the top 10 countries at export quantity and value are compared based on the years 2002 and 2013 and Iran's production quantity and value has been explained within a 12-year-scope from 2002 to 2013. It is concluded that the date industry in Iran has been in progress through investment and is highly potential to be a leading industry through internationalization.

JEL: K23, O11, O12, O14

Keywords: date, internationalization, small and medium industry

1. Introduction

The production of date fruits was reported on an increase in the study conducted by Bahkali (2012), with countries such as Pakistan with 169,159 metric tons, Iraq 144607

[i] Correspondence: email hassan.banaruee@gmail.com

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metric tons, Tunisia 105803 metric tons , Saudi Arabia 99770 metric tons, and Iran with 93030 tones are the top five countries in the production of this fruit. And their history goes back to 7000 years. Based on FAO (FAOSTAT, 2017) the date fruit production, utilization and industrialization are ascending. It is produced mainly in arid hot environments and Gulf Cooperation Council Countries are the major producers that Iran is one of them. Barreveld (1993) discussed that 10 percentage of the date fruits are the pits and these pits along with other wastes remained from the date palm being burned in farms are rich in cellulose, lignin, hemicelluloses and other useful compounds in biological processes which are explained thoroughly in the literature.

Considering the markets open and international has always had benefits for demanders and suppliers. Moving from local to global as a result of the convergence of preferences cross-culturally is considered to result in multinational foundations and trading centers emergence. Accordingly, Hollensen (2001) stated that this would be acheieved through the employment of the merits of internationalization markets in scale economies and have world-class-standardized products. Yet, the international marketplace is much broader and faster changing than before as a result of the development of the world companies (Craig & Douglas, 1996). Consequently, giant foundations have encountered devastating drawbacks as the result of bureaucratic, inflexible and insufficient belongings, while small and medium sized industries have better opportunities to enter and share world market (Bradley, 1999). Small industries have reached numerous benefits via internationalization and developed knowledge acquisition.

Date products employ a significant role in the business and farming of several areas in south of Iran nationally and is one important item in the non-oil export of Iran internationally, which is included in the class of fruits. In many disastrous events such as flood, earthquake, landfall, war, draught, date fruit is the first and the vital one to be provided as food. The reason is that this fruit is the king of all in energy. Moreover, its agriculture is so profitable and contributes to the employment and financial and economic improvement of a region. Besides its nutritional fact it is involved in industrial goods and surprisingly it is being as one of the main products in 34 countries in 5 continents today. This consumption and production of dates min industry include; date honey, dried date, date puree, date cookie, date cake, date halva, date powder, date fruit bar, liquid sugar, alcohol, vinegar, chocolate, chips, marmalade, paste, sauce, chocolate, jam, forage, soda pop's extract. From its seed (pit) oil, active carbon, alcohol, surface active materials, ointment (beneficial for eyebrows and eyelashes). Even its leaves are so lucrative to investors, and used in handcrafts especially in wickerwork. Its trunk or wood is used in chipboard, hardboard factories, and paper factories and in buildings' structures.

Not surprisingly, Iran has been always one of the suppliers of this market, yet this industry in Iran is encountered with difficulties from agriculture to export. With studies in line with the current study, this profitable industry will be promoted and achieve its utility which is highly potential. Why dates? Date fruit is almost the only agricultural product which is highly lucrative with the minimum capital investment. There are over 400 types of dates in Iran and in one category 600 types. The unawareness of farmers in Iran regarding the quantity and quality of the products and the utility of production, storage and packing has led to low achievements. Based on the observation by this study's researchers there is little information, investment, technology and small target markets available to the local farmers and date products dealers. This study aimed to investigate the effect of privatization in date industry on the internationalization of its market. Date fruit products and their potential industries are explained in detail in the literature section.

Internationalization has been defined as the movement to provide international operations (Ruigrook, 2000) the firms' process followed by strategies, resources and structures with the adaptation to international environments (Calof & Beamish, 1995) gradual sequential and cohesive stages of increase in the development of international operations (Welch & Luostarinen, 1993). Internationalization in small industries was specifically defined as the whole international processes and operations discussed plus the preparedness on managerial and firm level qualitative measurements (Lehtinen & Pentinen, 1999). Not easy is this international process and operation at any level of resources, strategies and management.

Coviello and Munro (199) asserted that the crucial items at firms' level are business resources, knowledge and networks and barriers are mostly related to financial, managerial, informational and human resource limitations. Hollensen (2001) identified some obstacles and named them entry barriers of internationalization which is an elaborate classification of hindrances to be tackled down at the initiative levels; a. Insufficient finances b. Insufficient knowledge c. Lack of foreign market connections and distribution channels d. Lack of export commitment e. Lack of productive capacity to dedicate to foreign market f. Management emphasis on developing domestic markets. These obstacles are reviewed in the literature in details.

2. Review of the Related Literature

Small industries are being established and introduced nationally at their local size and quality worldwide today and their internationalization is not a simple, easy task. This review represents some hindrances already observed and recorded. Secondly, date product industries regardless of their size and type are discussed which provides

valuable information for all entrepreneurs to have a bright sight on this lucrative hidden treasure.

2.1. Solutions to Internationalization Barriers

Hollensen (2001) identified six barriers which were also observed and confirmed in other studies. First, insufficient finance and poor access to capital impedes the progress and development of small industries and even endangers the whole economy (Nurzaimah et al., 2016), accordingly considering the banks insight, creditors' reputation is one of the most important information they collect when considering financial support to a company, claimed by Muda et al. (2016), and not deserving a reputation results the collapse of industries. Second, industries at any size operating locally may not have perfect information. This advantageous information about work force, raw materials, or target market conditions could lead all industries to costly mistakes and downfalls. Muchtar and Qamariah (2017) stated that small industries might face difficulties at attracting elite work force and partner companies because of the higher risks than larger companies being reputed. Third, Sirojuzilam et al. (2016) argued that in many countries, security procedures, safety and environmental standards, and probable worthy bureaucratic actions may hide barriers at the initiative stage that serve to protect politically established specific interests. Fourth, handling entry barriers was considered by Muchtar and Qamariah (2017), they expounded "*small and medium industries have the barriers of insufficient finances and knowledge, lack of foreign market connections and distribution channels, cultural, competition and language barriers, political risks and trade barriers. Insufficient finances and knowledge barriers are from their own limitations, lack of foreign market connections and distributions channels, cultural, competitions and language barriers are from general environment prevents, payment risks are commercial situation, and health care awareness is from political situation"* (p. 5). And fifth, at the firm level, minimum resources, strategies, knowledge, capabilities, networks and liabilities were considered necessary by Kuivalainen et al. (2012) to be analyzed when the antecedents of small internationalization are investigated.

2.2. Local Products Shift to Industrial Products

Local people may have whole date fruits traditionally used to prepare a wide range of products such as date juice concentrates (spread, syrup and liquid sugar), fermented date products (wine, alcohol, vinegar, and organic acids) and date pastes for different uses (e.g. bakery and confectionary) besides their direct consumption at their homes. Al-Hooti et al. (2002) stated that date processing industries manufacturing a variety of date products such as date-paste, date-syrup, date dip, date-honey, date-jam and date-vinegar. Date pectin, dietary fibre and syrup are some of the date substances which find

a plethora of applications as a thickener or gelling agent in processed foods, i.e. confectionery products, jams, table jellies, soft cheeses, yoghurts, etc were inspired directly from local demands and usage. Date syrup (dibs), the main and general by-product of date, is being used in the preparation of foodstuffs such as jams, marmalades, concentrated beverages, chocolates, ice cream, confectioneries, sweets, snacks, bakery products and health foods (Riedel, 1986). Mature date fruits are also processed into products such as date bars, date syrup, etc. (Abd El-Mohsen & Nezam El-Din, 1995).

2.3. Fermentation

Significant fermented products resulted from date fruits and the palm are; microbes, biopolymers, biofuels, biosurfactants, organic acids, amino acids, biomass, probiotics, antibiotics, and enzymes.

2.3.1. Microbes

Shamala and Sreekantiah (1988) analyzed the capability of microorganisms at fermenting date sap into wine and also found certain variations in the growth pattern of microorganisms and in the amount of ethanol, volatile acid, non-volatile acid and esters produced during these fermentations.

2.3.2. Biopolymers

Among biopolymers, xanthan gum, polyhydroxyalkanoates, curdlan, and carotenoid are the highlighted products. High value-added components such as xanthan gum, which has been authorized by the Food and Drug Authority (FDA) in 1969, were reported for use in food products by Besbes et al. (2006). Luengo et al. (2003) stated that polyhydroxyalkanoates derived from dates have the potential to replace petroleum-based plastics. Salah et al. (2011) informed that curdlan is a food additive that is used as firming agent, gelling agent, stabilizer, and thickener in the food industry and rhizobuim radiobacter ATCC 6466 was reported to produce curdlan using date palm juice by-products. Elsanhoty et al. (2012) reported that carotenoids are also produced by few microorganisms during the course of fermentation and are being industrially exploited and can be produced by using date (P. dactylifera) wastes by Lactobacillus plantarum QS3.

2.3.3. Biofuels

Among biofuels, Hydrogen, Bioethanol, and Butanol Acetone are so important. Hydrogen production from rotten dates by sequential three stage fermentation was studied using three different bacteria (Abd-Alla et al., 2011). Bioethanol the most commonly used metabolically derived liquid bio-energy compounds are ethanol and butanol. The three major classes of feedstuff used for ethanol production are sugars, starches and lignocelluloses. Date palm (P. dactylifera) sap which is highly nutritive

and has high sugar content (60–70%) is a very good source for microbial fermentation (Gupta & Kushwaha, 2011). Hence, fermentation of date extracts to ethanol and vinegar in batch and continuous membrane reactors (Mehaia & Cheryan, 1991) and date syrup and wastes were tried for the production of ethanol (Besbes et al., 2009). Butanol Acetone, butanol and ethanol (ABE) are commonly used solvents in many important industries and have a high potential for replacing petrochemical derived energy. Among the cheap and readily available substrates for ABE production, spoiled date fruits are possibly one of the better choices. The spoilage of dates is due to increased infestation of pests and diseases, improper transporting, handling, lack of cold stores, and lack of marketing and export (Al Jasser, 2010).

2.3.4. Biosurfactants

Biosurfactant are used widely in agricultural, cosmetics, food, pharmaceuticals, and petrochemical industries besides in environmental applications (Makkar & Cameotra, 2002). Biosurfactants from dates are less toxic, highly biodegradable, have better foaming properties compared to chemical surfactants (Desai & Banat, 1997).

2.3.5. Organic Acids

Among organic acids, citric acid and lactic acid are very important. Abou Zied and Khoja (1993) stated that citric acid is the major organic acid produced by fermentation with Aspergillus niger and is widely used in the food, beverage, chemical, pharmaceutical, and other industries. The production of citric acid by A. niger is one of the most commercially utilized examples of fungal overflow metabolism although Candida lipolytica was experimented for the utilization of dates in the fermentative formation of citric acid. Respectively, studies on date juice as nitrogensupplement for the production of lactic acid by Lactobacilluscasei subsp. rhamnosus showed that lactic acid productionin date juice supplemented with 20 g l1 yeast extract (0:5)was at same levels of lactic acid produced with the elementalnitrogen ratio of ammonium sulphate to yeast extract at 4:1 ratio (Nancib et al., 2001).

2.3.6. Amino Acids

Glutamic acid has a wide range of applications in food industry, in pharmacology and cosmetics. Date waste generated from date processing industry was recognized as a substrate for the growth and GA production by Corynebacterium glutamicum (Davati et al., 2007).

2.3.7. Biomass

Baker's yeast converts the fermentable sugars present in the dough into carbon dioxide and ethanol. Khan et al. (1995) evaluated dates as an alternative substrate for black strap molasses in the production of yeast biomass and concluded the date stimulator were best for the production of yeast biomass.

2.3.8. Probiotics

Lactobacilli enhance the microbial safety and offer nutritional and health benefits to the consumer (Leroy & De Vuyst, 2004). date palm (P. dactylifera) fruit which contains high amounts of sucrose as well as reducing sugars (especially glucose and fructose) offers scope as a potentially convenient and inexpensive substitute for the glucose required by the lactobacilli during their growth and biomass production (Al-Shahib & Marshall, 2003). Dates syrup and date pits were reported to have positive influence as nutrients for the cultivation of Lactococcus lactis and hence were suggested a suitable substrate for the cultivation of microorganisms (Khiyami et al., 2008b). Date powder (commercial product obtained from a production facility from Jam Co., Iran) was used for the first time as a low-cost main carbon source during the optimization of culture conditions for the economic production of a probiotic bacterium (Shahravy et al., 2012).

2.3.9 Antibiotics

Bleomycin Bleomycin (BLM) is a family of glycopeptide-derived antibiotics. Date syrup was used as an additional carbon source in the medium for the production of BLM by Streptomyces mobaraensis and a combined statistical approach of orthogonal design and polynomial regression was applied to optimize the composition and concentration of a liquid fermentation medium (Radwan et al., 2010). Oxytetracycline Oxytetracycline is still used to treat infections caused by chlamydia and infections caused by mycoplasma organisms. Barni date-coat (fruit-flesh) date-seed ash was experimented as substitutes for the components of the synthetic fermentation medium, especially carbon, nitrogen, and mineral sources for the production of oxytetracycline by Streptomyces rimosus (Abou-Zeid et al., 1993).

2.3.10. Enzymes

Enzyme industry is the second largest industry that depends on fermentation production using microbes as sources next only to pharmaceuticals. Industrial production of commercially important enzymes such as amylases, proteases, lipases, cellulases, pectinases, xylanases, invertases etc., largely depend on cheap enzyme production media formulated with simple and cheap substrates for the economic production of enzymes. From the literature available, it was inferred that date fruits could be successfully used in the production medium as substrate for the production of pectinases, endopectinases and alpha amylase by few microorganisms. Production of endopectinase from date pomace by A. niger PC5 was studied using a two-level fractional factorial design for screening of the most important factors among concentrations of ammonium sulphate, potassium dihydrogen phosphate and date pomace, pH, total spore amount, aeration rate and fermentation time (Bari et al., 2010). In this respect, amylases are enzymes that act upon starch and amylase producing microorganisms are not yet reported to produce amylase using date fruit products as

substrates in their enzyme production medium. Yeast Candida guilliermondii CGLA10 was reported to produce a-amylase using date wastes (Acourene & Ammouche, 2012). Enzymic processing Enzymes have been in use for processing of biomaterials over the years and enzyme processing of fruits for extraction and clarification is practised in industries. Production of high-fructose syrup (HFS), fructooligosaccharides (FOS) (Smaali et al., 2012). Date juice concentrate, Kabkab, a date cultivar from the Kerman province in Iran, which is industrially used for extraction of its sugar, was selected for enzymatic extraction using pectinases and cellulases (Bahramian et al., 2011).Pectinases (Most of the carbohydrates in dates are in the form of reduced sugars, mainly fructose and glucose) (Al-Farsi et al., 2007; Kulkarni et al., 2008).

3. Methodology

This study was a state-of-the-art review with a systematized review section at the analysis of date productions and export. The study is divided into three sections of Internationalization of dates' industry, dates production in Iran within a 12-year-scope, comparison of top 10 countries export quantity of dates and top 10 countries of export value of dates.

4. Result

In order to have the comparison of top 10 countries export quantity of dates and top 10 countries of export value of dates, quantitative information about two years of 2002 and 2013 was derived from FAO (FAOSTAT, 2017) and the information regarding the year 2002 is represented in the table below.

Table 1: 2002 Export Quantity versus Export Value of Dates

No.	Export Quantity of Dates					Export Value of Dates		
	Country	Item	Year	Value	Unit	Country	Value	Unit
1	United Arab Emirates	Date	2002	259360	Ton	Tunisia	68621	1000$
2	Islamic Republic of Iran	Date	2002	113533	Ton	United Arab Emirates	45526	1000$
3	Pakistan	Date	2002	77471	Ton	Pakistan	28368	1000$
4	Tunisia	Date	2002	41890	Ton	Islamic Republic of Iran	27587	1000$
5	Saudi Arabia	Date	2002	33925	Ton	Saudi Arabia	24248	1000$
6	Algeria	Date	2002	11023	Ton	France	17051	1000$
7	Iraq	Date	2002	8000	Ton	Algeria	16340	1000$
8	France	Date	2002	7639	Ton	Israel	12418	1000$
9	Oman	Date	2002	5025	Ton	United States of America	11262	1000$
10	Egypt	Date	2002	4545	Ton	Netherlands	3062	1000$

Based on the information available in table 1 the ranking of countries based on their quantity and value are not the same. Tunisia's export quantity which is nearly one sixth of the UAE has superseded in the export value ranking. Countries such as the USA, Israel and Netherlands which are not in top 10 export quantity list are included in the export value top 10. Iran with the quantity of 113533 tonnes as the second country is downgraded in the value to the fourth.

Table 2: 2013 Export Quantity versus Export Value of Dates

No.	Export Quantity of Dates					Export Value of Dates		
	Country	Item	Year	Value	Unit	Country	Value	Unit
1	Pakistan	Date	2013	169159	Ton	Tunisia	233962	1000$
2	Iraq	Date	2013	144607	Ton	Israel	132398	1000$
3	Tunisia	Date	2013	105803	Ton	Saudi Arabia	103571	1000$
4	Saudi Arabia	Date	2013	99770	Ton	Pakistan	85826	1000$
5	Islamic Republic of Iran	Date	2013	93030	Ton	Islamic Republic of Iran	74695	1000$
6	United Arab Emirates	Date	2013	76669	Ton	United Arab Emirates	58524	1000$
7	Israel	Date	2013	26332	Ton	Iraq	54289	1000$
8	Egypt	Date	2013	24590	Ton	United States of America	45707	1000$
9	Algeria	Date	2013	20682	Ton	Egypt	33402	1000$
10	France	Date	2013	10329	Ton	France	30282	1000$

As observable from the table 2 above, after 12 years the export quantity of dates ranking of countries does not match their export values. The information obtained is significant at the comparison of the countries quantity diachronically with the year 2002. Tunisia is the third country in quantity today. The second issue is that the shift of countries in the ranking is evident, which is mostly due to their higher developed and stronger markets aimed at internationalization. Yet, countries have been moved towards a slight balance as the table shows, Iran, the UAE and France quantity and value rankings are kept stable. And Saudi Arabia with one shift-up and Egypt with one shift-down are in top 10 countries.

Table 3: Iran Quantity and Value of Dates Production

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Unit
Value	448908	451973	505405	509054	510704	505596	522514	522514	522514	538215	554930	586543	US Dollar
Quantity	113533	120056	94584	117052	143434	123260	113539	68837	106760	112030	79196	93030	Ton

The table 3 above represents significant data which are so important to analyze the rate and trend of dates' production in Iran and the value obtained respectively. The value of dates' production has been increasingly raised, which shows it has been profitable. Yet, the amount of production has been fluctuating very often, and within the scope of twelve years 20503 tones have been reduced which is not a good sign of development.

The absorbing point for investors in this section is the rise of value with the decrease of quantity, knowing also that the country enjoys higher production potential.

5. Discussions and Conclusion

Date fruit, as discussed in the literature is one of the most nutritive and utilizable fruits in is an ideal substrate for deriving a range of value added products in food and other industries today employing bioprocessing technologies of date fruit by-products and wastes of date seeds thrown into the environment besides the discarded dates and spoiled wastes hold immense potential as raw material for bioprocessing and augmentation of new range of products as indicated in this review (Shamala & Sreekantiah, 1988; Besbes et al., 2006; Luengo et al., 2003; Gupta & Kushwaha, 2011; Mehaia & Cheryan, 1991; Al Jasser, 2010; Bahramian et al., 2011; Al-Farsi et al., 2007; Kulkarni et al., 2008).

Internationalization of dates' industries has been mostly through development of small and medium sized industries, this was illustrated in tables 1 and 2 in the result section. Tunisia has established date industries in various sections and its agrifood industry is one of the strategic industrial sectors in Tunisian economy. It is uniquely positioned in the industrial fabric and is the third job provider in manufacturing. They have been able to pick the internationalization barriers by reducing tax rate of 10% for export earnings and agricultural projects, allocating subsidies for agricultural development, participating in employers' contributions to social security schemes and in infrastructure expenses in regional development zones, providing the possibility for foreign investors to hold up to 100% of the project's capital without prior authorization, allocating grants and advancing towards leading the quality organic food. In addition, Tunisia has put in place research centers and several support structures dedicated to research and development of agrifood.

The current study recommends investors in Iran and from other countries to contribute to the development of the dates' industry in Iran and enjoy the high potential of a lucrative giant business at an international perspective. Referring back to table2 it can be observed that in recent years, the country is moving towards stopping raw dates exported and adding values to its products, yet the growth or the development has been slightly slow. In recent years Iran Small Industries and Industrial Parks Organization has made a lot of progress towards the empowerment of small industries and internationalization and one consequence of this movement is significantly evident in table3. Even though the amount of the dates' products has decreased, the value of the dates has increased. The reason is the development of packaging and marketing in Iran and it can be fully internationalized with vast investments and planning. In deed there

is the potential of having dates export as the most profitable non-oil product in Iran and the leading country in the world. There is also ample scope for the emergence of new bio industries and bioentrepreuners in the date growing countries towards total utilization of the date palm in addition to efficient and effective date palm fruit waste management.

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