

Geographical indications for supporting rural development in the context of the Green Morocco Plan: Oasis dates

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Abstract: Origin labelling is one of the most prominent approaches in the Green Morocco Plan with which the Moroccan government aims to support the marketing of domestically produced food and then improve the income of smallholder farmers. We analyse the preferences and attitudes of Moroccan consumers towards the recently established Protected Geographical Indication label "*Majhoul dates of Tafilalet*". The analysis is based on a survey of 303 Moroccan consumers and focuses on the influence of the label as extrinsic attribute on consumer choice. We use cluster analysis to segment the market and the Analytical Hierarchy Process to shed light on preferences of consumers under this labelling strategy. Results indicate two consumer types. The largest group seeks authenticity, origin, and quality. The label of origin in general and the origin from the oasis of Tafilalet in particular are the most important attributes affecting the purchasing decisions which fit with the goal of the labelling strategy implanted as part of the policy. The acceptance of the labelling by Moroccan consumers implies that the neighbouring countries might pursue similar approaches to support rural livelihoods in arid areas.

Keywords: Middle East and North Africa; oasis agriculture; origin labelling; Plan Maroc Vert; protected geographic indication

Living conditions in rural areas of North Africa are harsh as these regions are subject to unfavourable geographical and (semi-) arid climatic patterns which fundamentally challenge human existence. In consequence, the "continuing challenges facing rural areas linked to the social, economic and political marginalization of rural people" (IFAD 2016) are especially prevalent in North African countries.

Rural populations of North African countries are confronted with the challenges rural populations are faced with worldwide (Linard et al. 2012; IFAD 2016) in a particularly strong way. Such challenges are, for ex-

ample, the wide spatial dispersion of human settlement and food production and resulting high transportation costs, fragmented markets, and economic vulnerability (Veninga and Ihle 2018). The populations of these regions have thus also limited access to the vibrant urban markets – often located far away along the country's coast – and barely draw any profits from the buzzing economic development there. Rural income is substantially determined by geography (Radeny and Bulte 2012). Poverty rates in these rural areas often exceed those of urban areas substantially in the African context (Minot 2008).

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FAO (2017) stresses the importance of public policies for improving income opportunities in rural areas facing such a comprehensive set of challenges for eradicating hunger and poverty in the coming decades. Morocco is a good example of a country in which public policy measures have been implemented in order to face the above-mentioned socio-economic challenges in its dispersed and thinly populated rural regions. The Moroccan government wishes to support incomes and livelihoods in the rural areas of the country as well as to preserve the richly diversified cultural heritage in food specialties and traditional diets. For this aim, "Plan Maroc Vert" (PMV; Green Morocco Plan) has been established in 2008 (MAPM 2014).

Public support schemes for improving the marketing of domestically produced specialty foods via denominations of origin labelling play an important role in this strategy implemented by the PMV. Such marketing support strategies are, however, only successful if the targeted consumers are reached. Consumer acceptance of the newly established specialty food label is the decisive component determining the success of the PMV public policy.

Consumer preferences for food attributes have been dealt with extensively in the literature. Several publications have assessed various aspects of geographical indications during recent years. However, this literature has been mainly focusing on Europe; literature on this topic in the context of the Middle East is sparse. Only Dekhili et al. (2011), Mtimet et al. (2013) and Dokuzlu (2016) assess geographical indications of food products in the context of Turkey or North Africa. To the best of our knowledge, no research on consumer perceptions towards such governmental support to a labelling strategy in North Africa has been published so far. The contribution of this paper is in analysing consumer perceptions towards a recently established labelling strategy as part of the Green Morocco Plan. Particularly, we analyse the preferences of Moroccan consumers towards a protected geographical indication (PGI) label "*Majhoul dates of Tafilalet*". The importance of the geographical indication attribute in general and of the local origin (Tafilalet) attribute in particular for the Moroccan consumers during the purchasing process demonstrate the success of this labelling policy that aims at supporting local products produced in rural areas.

We evaluate preferences of domestic consumers towards "*Majhoul dates of Tafilalet*" by ordering product attributes including the PGI attribute and the oasis of Tafilalet origin. Hence, the consumer response

to a public marketing support program is analysed. In doing so, distinct profiles of *Majhoul dates* consumers are characterized. The Analytical Hierarchy Process (AHP) is used for obtaining the relative importance of consumers' most desired product attributes and their various levels. Finally, *Majhoul dates of Tafilalet* currently traded in the market are evaluated within the scope of AHP results. In order to achieve these study objectives, 303 questionnaires obtained from a survey conducted in three of the largest cities in Morocco are analysed.

Origin labelling as part of the Green Morocco Plan. Moroccan agricultural policy gives considerable priority to promoting locally produced food commodities, since it is seen as a tool for sustainable development of the domestic agricultural sector (Lambarraa 2016). Therefore, the PMV was established by the Moroccan Ministry of Agriculture and Fishery in 2008 (MAPM 2014). The PMV is based on the Law on Distinctive Sign of Origin and Quality (DSOQ), which was created with the objective of promoting local food products. This agricultural policy is particularly dedicated to the integral development of small farms located in less favoured and remote areas such as mountains, oases, and other dry farming areas. A number of locally produced food commodities were identified that could potentially be developed into products of denominated origin to be marketed in the urban centres of the country as well as to be exported. Afterwards, strategies that would facilitate their promotion and marketing as food specialty products locally produced by smallholder farmers in national and international markets were designed. A total of 37 products have been labelled so far. Besides the PGI Protected Geographical Indication "*Majhoul dates of Tafilalet*", there exist other labelled, locally produced commodities such as PGI saffron of Taliouine, PGI Argan Oil or PGI Berkane Clementine.

In Morocco, the date palm sector occupies a privileged position in socio-economic development and plays a central role in the preservation of the oases ecosystem services. The date palm industry generates 2 billion Moroccan Dirhams (USD 207 million) per year. The revenue from the date palm activity contributes 40% to 60% in the formation of agricultural income of more than 2 million people (MAPA 2020).

Despite the significant role that the dates sector plays in the socio-economic development of the country and the efforts policy makers invest into promoting it, market opportunities for *Majhoul dates* are only rudimentarily developed and remain limited. One

of the decisive problems is that urban Moroccan consumers barely take note of the newly established PGI of the *Majhoul dates*.

Majhoul dates of Tafilalet are traditionally highly appreciated by Moroccan consumers due to their physical, chemical, and organoleptic characteristics. Besides the valuation and the promotion of the quality of *Majhoul dates*, the PMV labelling strategy aims at expanding the demand for *Majhoul dates* both nationally and internationally. The goal envisaged by Moroccan policy makers is the reinforcement of the link between rural smallholder communities in the oasis and their environment in order to finally promote a more productive and sustainable farming sector which offers improved livelihood opportunities for local populations.

Given its high commercial value and traditional position in the domestic market, the *Majhoul dates of Tafilalet* are positioned within the core of the development strategy of the PMV. This variety of date was the first one to receive a labelling of a distinctive sign of origin and quality as a PGI. The geographical area which is granted the right to produce this commodity is composed of 30 rural communities spread across the provinces of Errachidia and Tinghirin in the oasis of Tafilalet. This oasis is located in the north-western part of the Sahara in the arid heart of Morocco about 500 km south of the coast bordering the Mediterranean Sea and about 500 km east of the country's Atlantic shore.

MATERIAL AND METHODS

We first conduct a multivariate analysis in two stages. A factor analysis is used to reduce the dimensions of the data before a cluster analysis identifies consumer types. The clustering categorizes all observations into homogeneous groups of individuals based on a set of characteristics (Kallas et al. 2011).

Subsequently, we apply the AHP technique as it offers a multi-criteria decision-making approach for discrete contexts. Davies (2001) reviewed potential applications of AHP in marketing science. Jackson (2001) used AHP for prioritizing customers and other stakeholders. In the context of analysing consumer preferences, the AHP methodology is used to convert individual preferences into weights ratios. These ratios may be combined into a linear additive weight for each decision alternative. The views of consumers towards the products are measured according to the product attributes and levels. For example, "size" is an attribute of a date variety and may have the levels small,

medium, and large. Attributes and levels are evaluated in a direct pair-wise comparison within a structured hierarchy. The consumer can evoke weights for each attribute and level. The result is used to compare and rank the alternatives.

AHP compares and chooses between options and pre-established criteria. By decomposing a complex problem into different components, AHP produces a result from a series of pair-wise comparisons. Afterwards it selects the option having the highest score (Saaty 1977, 1980). This methodology is based on well-defined and consistent matrices whose eigenvectors are associated with the ability to generate true or approximate weights that impose a mathematical structure (Saaty 1980; Yeh et al. 2020). To implement this method, a series of steps needs to be followed [for details on the method see electronic supplementary material (ESM); for ESM see the electronic version].

At the end, the available market products are compared using the AHP results. The objective is to determine the optimal consumer choice by making a compromise between the relative costs of purchasing the product and the level of satisfaction or benefit obtained from consuming it. The relative cost is the price of one option as share of the sum of the prices of all other options. The results of this analysis allow for assessing the most cost-effective decision while maximizing the level of satisfaction. The results of the different alternatives (purchase models) are positioned according to a vertical axis of relative costs and a horizontal axis of benefit level. The benefit level is calculated using the results of the AHP by adding the weight of each attribute. The relative cost is calculated using the product price in the local market.

Empirical approach. To define the attributes and levels of the product, we first identified and specified the most relevant attributes using the description of the PGI "*Majhoul dates of Tafilalet*" provided by the Moroccan Ministry of Agriculture. We then conducted an exploratory survey by interviewing producers, consumers, traders, and professionals in the sector (Lambarraa and Gómez-Limón 2004). This allowed us to design the final version of the survey and to determine the final attributes of the product.

The result of this explanatory survey led to the definition of the following four main attributes. The attribute "size" (A_1) has the levels big size ($L_{1,1}$), medium size ($L_{1,2}$) and small size ($L_{1,3}$). The attribute "origin of the product" (A_2) has the levels Tafilalet ($L_{2,1}$) and foreign (*Majhoul dates* imported from other countries, e.g., Israel) ($L_{2,2}$). The attribute "packaging" (A_3)

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has levels tray ($L_{3,1}$), cardboard box ($L_{3,2}$) and loose ($L_{3,3}$). Lastly, the attribute "labelling with distinctive signs of origin and quality (DSOQ)" (A_4) has levels PGI ($L_{4,1}$) and without labelling ($L_{4,2}$). The price attribute was not included in the AHP methodology because our objective is to evaluate the relative importance of non-monetary attributes. Table 1 shows attributes and levels chosen for *Majhoul dates*.

In order to implement the AHP, we use the four attributes following the hierarchical structure presented above. The relative importance of attributes and levels is obtained from paired comparisons using a scale ranging from 1 to 9. An example of the AHP questions is shown in Figure 1.

Using the AHP questions, we perform binary comparisons and insert their results into the matrices reflecting our hierarchy. Then the corresponding weights for each attribute and level are calculated. The analysis with the AHP technique on an individual basis is influenced by the vision and personal values of each respondent, which leads to some level of subjectivity. However, the AHP technique has several advantages compared to other multi-criteria methods. Most importantly, it offers verification mechanisms that promote greater objectivity.

The data used in this study were obtained from a consumer survey carried out in April 2014 in three of the largest Moroccan cities: Casablanca, Fez, and Meknes. We collected in total 303 completely filled questionnaires, 65% of those in Casablanca, 20% in Fez and 15% in Meknes. Casablanca is the largest net food consumption area of Morocco. Fez is characterized by traditional consumption patterns. The city has several specialized markets and shops where consumers can buy this date variety. Meknes is the capital of the administrative region to which the Tafilalet oasis belongs.

Table 1. Attributes and levels of *Majhoul dates*

Attribute	Levels (L)
Size (A_1)	big size ($L_{1,1}$)
	medium size ($L_{1,2}$)
	small size ($L_{1,3}$)
Origin (A_2)	tafilalet ($L_{2,1}$)
	foreign ($L_{2,2}$)
Packaging (A_3)	tray ($L_{3,1}$)
	cardboard box ($L_{3,2}$)
	loose ($L_{3,3}$)
Labelling with DSOQ (A_4)	PGI ($L_{4,1}$)
	without labelling ($L_{4,2}$)

DSOQ – distinctive signs of origin and quality

Source: Authors own processing

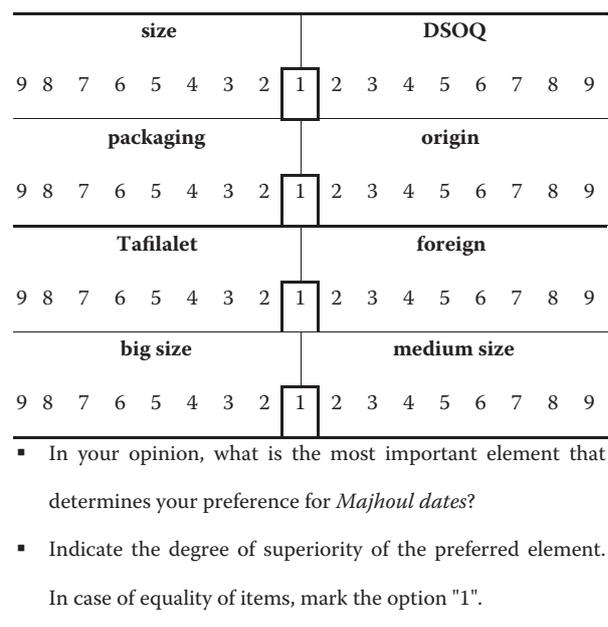


Figure 1. Example of the Analytical Hierarchy Process (AHP) questions following the Saaty scale

DSOQ – distinctive signs of origin and quality

Source: Authors own processing

The questionnaire collected extensive information on socioeconomic characteristics of consumer attitudes, preferences, and opinions towards consuming "*Majhoul dates of Tafilalet*". The survey also considered questions about consumer purchasing habits and behaviour. For example, we collected the typical point of sale visited for purchasing *Majhoul dates* (souks/traditional markets, herbalists, cooperatives, supermarkets or grocery stores) as well as the periods of consuming dates (83% of respondents declared that they consume palm dates exclusively during the month of Ramadan and other religious festivals, while the rest consumes them daily). We used random sampling stratified by age and gender following the distribution of Moroccan population (HCP 2013).

RESULTS AND DISCUSSION

The results of the cluster analysis segment the *Tafilalet Majhoul dates* consumers into the following two types. Type 1 are the authenticity, origin, and quality seekers. These consumers account for 84% of the total sample, 56% of them being male. Half of them have a high school or university degree and work as public officials, employees, or in a business job. A quarter of them are housewives and 2% are executives. 43% have income of less than EUR 150 per month.

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They visit mostly traditional markets ("souks"), modern retail markets, or traditional herbal shops for buying dates. They attach large importance to the main axes identified by the factorial analysis. For them, the origin of the product and its size are of the highest relevance when buying the dates. They value in particular the Tafilalet origin of dates and prefer to buy *Majhoul dates* because of their high quality compared to other dates varieties. They prefer products with PGI sign.

Type 2 are the indifferent consumers. They are less demanding in terms of all the above characteristics. This category is mainly composed of women (69%) of which 57% have a university degree. 24.1% are housewives and 34% are employees or public officials. Students represent one quarter of this group. Almost 20% of customers in this category have income of more than EUR 600 per month). Three quarters of this category buy *Majhoul dates* in traditional markets ("souks") or in modern retail markets. Table 2 shows the distribution of the willingness to pay for *Majhoul date* for both consumer types.

Most of both types are willing to pay between EUR 2.5 to 3.5 for 500 g of *Majhoul dates* with a PGI sign (37.8% and 28.6% of the consumers in the first group and in the second group, respectively). A share of 24.5% of consumer type 2 compared to 13.8% of type 1 are willing to pay more than EUR 5.5.

The results of the AHP method allow us to obtain individual weights of the four attributes and their levels using the geometric mean criteria. The results

of the aggregation of the weights of the four attributes across individual consumers are shown in Table 3.

These results indicate that the "size" attribute is the most important with an aggregate weight of 40%, followed by "origin" (28%), "labelling with DSOQ" (17%) and "packaging" (14%).

Results from weighting attribute levels are summarized in Figure 2. There are differences in relative ($W_{Ln,p}$) and global ($W_{G, Ln,p}$) weights of levels. $W_{Ln,p}$ denotes the relative weight of attributes (A_n) and levels ($L_{n,p}$) where $n = 1, \dots, N$ is the number of attributes and $p = 1, \dots, P$ is the number of levels. These weights quantify the relative importance of each attribute and its levels. $W_{G, Ln,p}$ is the global weight of each of the levels and of each of the attributes [for the calculation details see the electronic supplementary material (ESM); for ESM see the electronic version]. For the "size" attribute, the most important level is "big size" (40%) followed by "medium size" (34.79%) and then "small size" (16%). For the "origin" attribute, the most important level is the "Tafilalet" origin (64%) followed by "foreign" origin by a large margin (8%). In the "packaging" attribute, the highest weight is assigned to the "tray" level (40%), followed by the "cardboard box" level (32%) and "loose" (13%). Finally, in relation to the "labelling" attribute, the most important weights are associated, as expected, with "PGI" (40%), followed by "without labelling" (9%).

The global weights represent the total preference score or the total relative importance of each level,

Table 2. Willingness to pay for 500 g of *Majhoul dates* with protected geographical indication

	Willingness to pay (EUR/500 g)				
	1.5–2.5 (%)	2.5–3.5 (%)	3.5–4.5 (%)	4.5–5.5 (%)	≥ 5.5 (%)
Type 1	19.7	37.8	19.3	8.3	13.8
Type 2	10.2	28.6	14.3	22.4	24.5
Total	18.2	36.3	18.5	10.6	15.5

Source: Authors based on the primary data gathered by the authors

Table 3. Aggregated weights of the attributes

	Size (W_{A1})	Origin (W_{A2})	Packaging (W_{A3})	Labeling with DSOQ (W_{A4})
Aggregated weight (geometric mean)	0.407	0.281	0.144	0.177
Trimmed mean	0.427	0.271	0.131	0.160
Median	0.442	0.261	0.115	0.142
Variance	0.025	0.014	0.008	0.012

DSOQ – distinctive signs of origin and quality; W_{An} ($n = 1, \dots, 4$) – aggregated weights of the attributes across subjects

Source: Authors based on the primary data gathered by the authors

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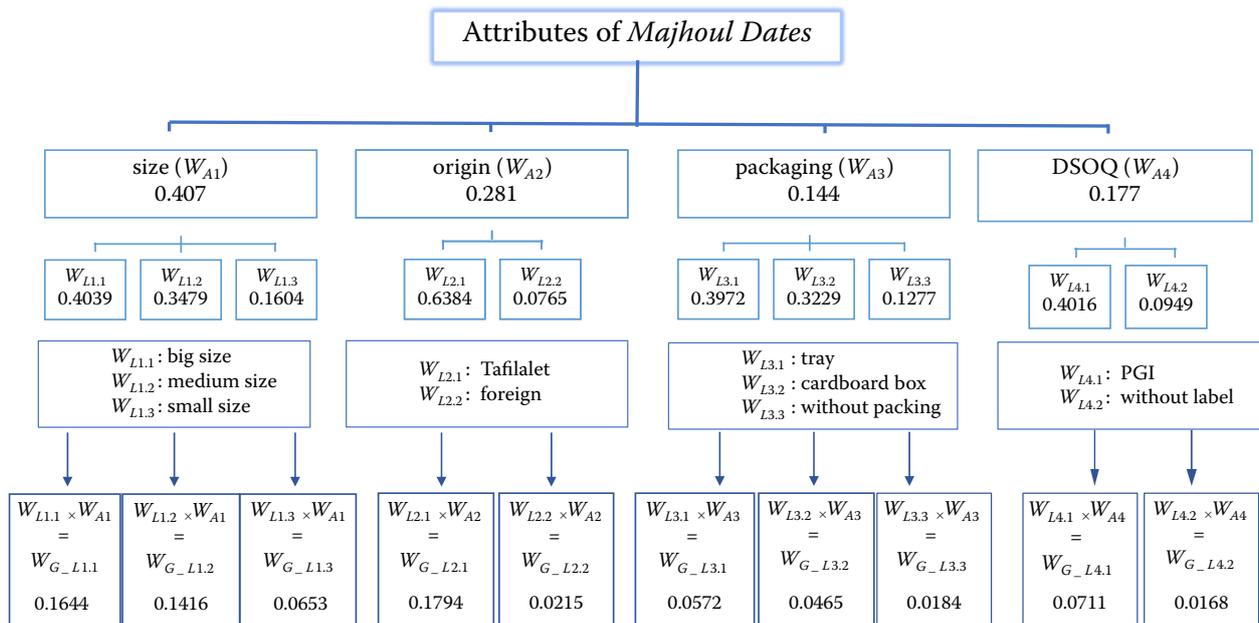


Figure 2. Hierarchical structure of *Majhoul dates* attributes

W_G – global aggregate weight of each attribute of *Majhoul dates*; W_L – relative aggregates weight of each attribute of *Majhoul dates*

Source: Authors based on the primary data gathered by the authors

taking into consideration all attribute levels. Thus, the most preferred date characteristic for consumers is the "Tafilalet" origin (18%). This is followed by "big size" and "medium size" (16% and 14%, respectively) and "PGI" labelling (7%). Figure 3 illustrates the evolution of the total final scores for each attribute level following the preferences of the Moroccan consumers.

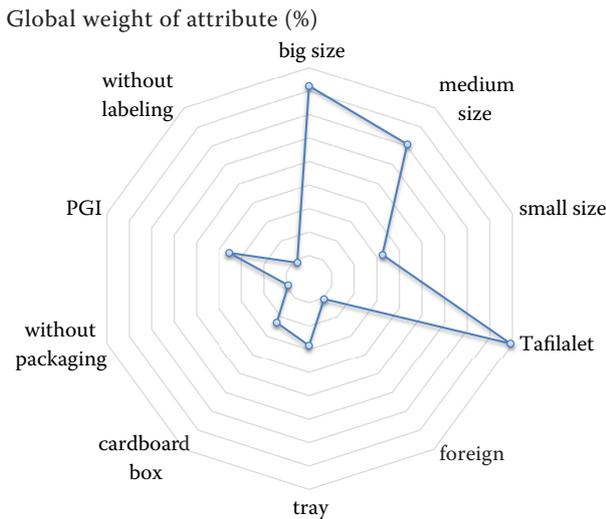


Figure 3. Total relative importance of each attribute level
PGI – protected geographical indication
Source: Authors based on the primary data gathered by the authors

The analysis of market products and the combinations of various attributes (called "options" in the following) of *Majhoul dates* being currently sold in the market is performed. The relative cost of each option is calculated as a share of its observed market price relative to the sum of the prices of all competing options. The benefit of each option is calculated as the sum of the overall AHP weights of each attribute as shown in Figure 2. The competing product types can be evaluated and ranked by relating their benefit to their relative cost. Hence, optimal rational consumer choices can be obtained by compromising between relative costs and relative satisfaction. The following options are currently available in the market:

- Option 1: *Majhoul dates* with "big size", originating from "Tafilalet" and packed in "cardboard boxes" with a PGI sign;
- Option 2: *Majhoul dates* with "big size", originating from "Tafilalet" and packed in "cardboard boxes", and "without DSOQ labelling";
- Option 3: *Majhoul dates* with "medium size", originating from "Tafilalet", packed in "cardboard boxes" and "without DSOQ labelling";
- Option 4: *Majhoul dates* with "big size", of "foreign" origin, packed in "cardboard boxes" and "without DSOQ labelling";

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– Option 5: *Majhoul dates* with "big size", of "foreign" origin, packaged in "Trays" and "without DSOQ labelling".

Table 4 shows the different options available in the market with their respective prices, costs, and benefits calculated using the AHP results.

Option 1 appears to be the best alternative, satisfying consumer preferences with an aggregate weight of 46%. This option includes *Majhoul dates* from "Tafilalet" with a PGI sign, big size, packed in cardboard boxes with a purchase price of 40 EUR/kg. Option 2 is found to be the second-best benefit-maximizing choice with a weight of 41%, followed by option 3 with a weight of 38%. In last place, we find options 4 and 5 with weights of 26% and 25%, respectively.

From these results, we can conclude that the Moroccan consumers attribute large importance to the Tafilalet origin and receive higher satisfaction from it (options 1–3) in comparison with the "foreign" origin (options 4–5). The role of origin is even higher when PGI labelled (option 1 vs. options 2 and 3). These results are in line with other international studies on consumers' perceptions and preferences for local

food. The review study of 73 research papers of Feldmann and Hamm (2015) states that local food is not perceived as an expensive product and that the consumers are willing to pay a premium for it. Regarding the different attributes perceived by the consumers, Rondoni et al. (2020) found that the impact of intrinsic and extrinsic properties of the product strongly affect consumer preferences.

Figure 4 displays the position of the different options using the two axes: benefit vs. relative cost.

Figure 4 suggests that improvement in packaging from option 4 to option 5 generates a low increase in benefit level for the consumer, while in case of switch to purchasing *Majhoul dates* produced in the Tafilalet oasis (from option 4 to option 2), the relative cost increases slightly with a large benefit level increase.

The improvement of date quality by increasing their size (from option 3 to option 2) increases substantially consumer's relative costs compared to the increase in the benefit level. The distinction by PGI labelling (from option 2 to 1) increases benefits and costs for consumers by about the same proportion. *Majhoul dates* of big size and of PGI labelled Tafilalet origin provide a high satisfaction to Moroccan consumers

Table 4. Price and benefit levels for *Majhoul dates* product available in the market

Option	<i>Majhoul dates</i> attributes	Benefit (%)	Sales price for 500 g (EUR)	Relative cost (%)
1	big size Tafilalet cardboard boxes	46	20	26
	PGI sign			
2	big size Tafilalet cardboard boxes	41	15	20
	without labelling			
3	medium size Tafilalet cardboard boxes	38	9	12
	without labelling			
4	big size foreign cardboard boxes	25	14	19
	without labelling			
5	big size foreign tray	26	17	23
	without labelling			

PGI – protected geographical indication

Source: Authors based on the primary data gathered by the authors

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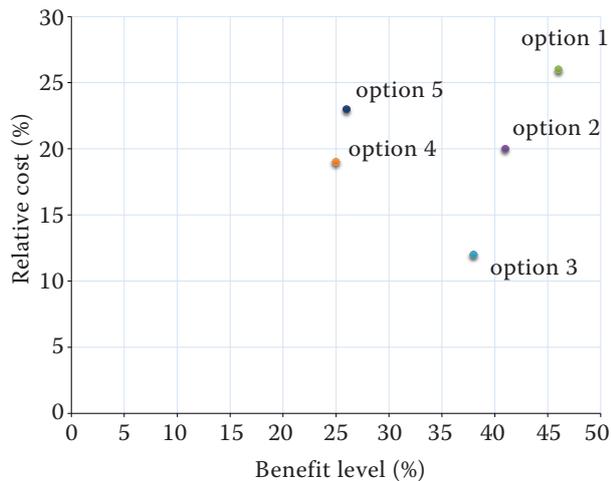


Figure 4. Benefit and relative cost levels of the competing options

Source: Authors based on the primary data gathered by the authors

and affect largely their purchasing decision (Figure 3). This decision is influenced negatively by imported dates which can be bought for lower prices in the Moroccan market. This fact is demonstrated by the difference that exists between the willingness of Moroccan consumers to pay for this product and the price level prevailing in the national market.

Our results can be generalized to the Moroccan population since the use of a random sampling method assures that every individual in the population has the same probability to be selected, while the stratification by age and gender following the distribution of the Moroccan population guarantees the representativeness of these groups of the population in our sample. The use of the three largest Moroccan cities to conduct our survey ensures that all potential selling outlets of the *Majhoul dates* variety are covered.

In the past five years, new marketing channels were established for the PGI *Majhoul dates of Tafilalet*, especially in the form of e-commerce. The new marketing channels aim at encouraging Fairtrade with small producers and promoting the sustainable development of oasis farming by having a proportion of the profit go to projects aiming at local development. The focus of these new marketing channels is mostly the international market, especially consumers in the EU.

DISCUSSION AND CONCLUSION

This paper assesses the preferences of Moroccan consumers towards a domestically produced food com-

modity labelled with a PGI, namely perceptions of *Majhoul dates* produced in the Moroccan oasis of Tafilalet. The analysis is based on a primary dataset of 303 consumers in major Moroccan cities conducted in April 2014. The insights gained are of current relevance as food preferences barely change. Complementary methods are used for analysing various aspects of these preferences.

Results indicate two consumer groups; the larger one expecting a very high product quality demonstrated by the Tafilalet origin of the product and guaranteed by the PGI label. The AHP confirms that the "Tafilalet" origin-labelling of *Majhoul dates* is the most important attribute for consumers. The attributes "big size", "medium size" and "PGI labelling" follow in decreasing importance. This result emphasizes the outstanding position the labelling has for consumer choice. The analyses of the existing product in the market show that among the *Majhoul* products currently offered in the Moroccan market, Moroccan consumers prefer the domestically produced dates of large size and labelled as "Tafilalet origin" as it provides high satisfaction to them and positively affects their purchasing decision.

This analysis provides evidence on consumer attitudes towards a governmental policy aiming at supporting the marketing of smallholder farmers located in remote rural areas. Product-of-origin labelling in the form of PGIs has the potential to provide consumers with additional value of the food product that is decisive for purchasing choices and ultimately thus boosting sales (Lambarraa 2015). The approach that the Moroccan government took appears to be a promising first step to support income perspectives in remote rural areas in North Africa as it is well recognized by domestic consumers. In order to permanently reduce the reported income and poverty rate gaps (Minot 2008; Radeny and Bulte 2012) in these regions, our analysis suggests that future efforts should best focus on broadening their economic portfolio beyond single commodities by marketing further multifunctional benefits of agriculture (OECD 2003, 2008).

Firstly, this could mean setting up the production of other high-quality food commodities beyond dates marketed by "Tafilalet" origin-labelling as those aspects are most highly valued by the largest consumer group identified. Such an approach would diversify and increase the marketing portfolio of the rural population, sustainably raising and broadening income sources and thus significantly improving resilience of the rural population (Ansah et al. 2019). Furthermore, it would

also contribute to the maintenance of national cultural heritage as pointed out by Kapelari et al. (2020).

Promoting traditional local foods marketed in distant dense urban areas would help maintaining traditional dietary diversity, but also traditional low-input agriculture which has proven to be sustainable during the past centuries as well as very well adapted to local climatic and environmental conditions (Lambarraa 2015). Such a strategy would also yield the positive externalities of strengthening the economic integration between urban and rural areas (Dobers et al. 2018) by maintaining traditional biodiversity in remote oases and, at the same time, helping in diversifying diets in urban areas (Powell et al. 2015). If the Moroccan government would deliberately set up additional support schemes to move economic activities to these regions which create value added based on such traditional food commodities, or newly establish processing or high-quality packaging facilities there, the economic portfolio of these rural areas would be considerably extended beyond primary agricultural processing. As a medium-run policy goal, the government could establish agro-clusters in such regions as they have been found to result in a number of positive effects in terms of raising farmer income and thus reducing rural poverty (Wardhana et al. 2017, 2020).

In combination with the maintenance of cultural heritage in terms of traditional land management, processing techniques of agricultural raw products as well as traditional rural lifestyle, this approach could finally enable substantial domestic heritage tourism to these regions as, for example, exemplified by Hodges (2001) for southern France or by Fleischer and Pizam (1997) for Israel. Fleischer and Tsur (2000) prove the substantial economic value agricultural landscapes are able to significantly add on top of returns from farming. Fleischer and Felsenstein (2000) find that targeted public assistance for such tourism generates considerable economic returns. The Green Morocco Plan thus seems to be a promising approach to be adopted in similar ways by neighbouring countries and to be extended to other commodities.

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