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QHSE approach (quality, health & security at work and environment) diagnosis at sectors of traditional food products in southeast oasis of Morocco

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ABSTRACT: The development of Traditional Food Products (TFP) is an important link to ensure sustainable territorial development which depends on several factors particularly the quality that is supposed to meet consumer demands. The quality of these products remains the most important criterion that reflects the approach followed to ensure the safety, health and environmental protection along the production chain.

The aim of the present work is to evaluate the significance and limitations of the adoption of the QHSE approach by producers. It is based on standards of quality (ISO 9000: 2005), safety (OHSAS 18000: 2007) and environment (ISO 14000: 2004) to make a diagnosis of the integrated management system optionally followed by eight professional organizations (POs) at the Tafilalet oasis.

The diagnosis is carried out via questionnaires concerning five areas: environment management, health and safety management at work, quality management, maintenance management and personnel management. Questions for each axis are divided into three levels: strategic, tactical and operational. This division aims to gain a better understanding of performance in decision-making.

Preliminary results of the diagnosis were subjected to statistical analysis. They show a level of overall performance between 16 and 60.7%, weakness in performance of the environment management and superior performance level of the personnel management. Indeed, most of the POs diagnosed need improvement in all axes, especially in the quality, health and environment management.

KEYWORDS: Traditional Food Products; Diagnosis; Management QHSE; Morocco's Oasis.

1 INTRODUCTION

The oasis agrosystem is an ancestral production system that allowed for thousands of years man to survive under extreme conditions and develop expertise and products, among others, food with specificities of the terroirs. Today these traditional products experiencing a development that allows them to pave their way to the local, national even international markets.

Traditional food products, by definition, are products which the recipe, the raw material or the production are limited by a preset land and limited in space ([1], [2], [3], [4]). Guerrero *et al*., [5] defined it as "a product frequently consumed or associated with specific celebrations and/or seasons, normally transmitted from one generation to another, made accurately in a specific way according to the gastronomic heritage, with little or no processing/manipulation, distinguished and known because of its sensory properties and associated with a certain local area, region or country".

Oasis TFP have long been traditionally developed and valued by the oasis population. They are currently the subject of development in the context of rural agro-industrial income-generating activities by professional organizations (POs) and within the framework of various actions for local and sustainable development.

These POs face difficulties to integrate QHSE approach in their production chain. Indeed, consciousness about food products quality continues to increases [6], which put these small producers to the obligation to be sure of their products

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and justify the superiority of their quality for consumers. This quality is no longer limited to the product himself, substantive quality, but it also reflects on the quality of the production process, management of the environment and the staff, the competitive advantage of the potential size of social responsibility in image building and in strengthening their reputation [7]. Both corporate social responsibility and sustainable development approaches should become an integral part of economic concepts used by POs to ensure a balance between economic growth, reserves of natural resources and social progress [8].

This work was undertaken to make an inventory of production systems of TFP; understand the needs of producers to integrate QHSE approach and propose answers for better integration.

Our study is to explore the sectors of TFP, identify the functional rural agribusiness units and make a diagnosis on the quality, safety and environment management systems and evaluate the performance level of its integration [9] with reference to international standards (ISO 9001 for Quality [10], OHSAS 18001 for Safety and Health at Work [11] and ISO 14001 for the Environment [12]).

The diagnosis was carried by prioritizing issues of each axis in three types: strategic, tactical and operational to carry it with the decision-making levels [13].

2 MATERIALS AND METHODS

2.1 STUDY AREA

This study was conducted at the oasis of Tafilalet (Figure 1). It comprised of several visits to 119 agribusiness units belonging to professional organizations (POs) (60 associations, 57 cooperatives and 2 Economic Interest Grouping). 8 POs designated by the letters A, B, C, D, E, F, G and H, were chosen using the following criteria:

- Producers of TFP and the production unit is located in the oasis of Tafilalet;
- Traditional expertise and local raw material;
- Concerned about the QHSE management system;
- Meets at least GMP (good manufacturing practices).

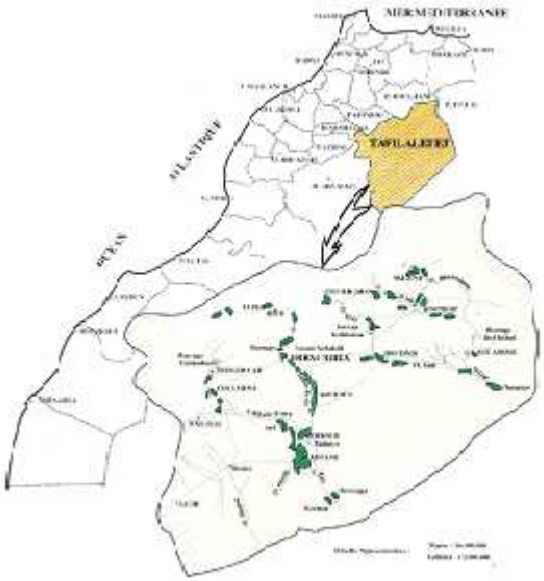

Fig. 1. Location of Tafilalet oasis in Morocco

2.2 METHODOLOGY OF DIAGNOSIS

To diagnose the management systems, we used a questionnaire to 5-axis personnel management, security & health management, maintenance management, quality management and environment management, in each of three categories: operational, tactical and strategic. ([13], [14]).

Each axis of the questionnaire has twenty questions designed to trace the essential nature of information to allow evaluation of the performance level on each axis. So on each axis we have prioritized the issues into three categories: strategic, tactical and operational.

Such prioritization allows identifying the actions recommended by the company with decision-making level. This questionnaire was inspired by items of international standards ((ISO 9001 for Quality [10], OHSAS 18001 for Safety and Health at Work [11] and ISO 14001 for the Environment [12]).

The questionnaires were filled in by production managers in different manufacturing units.

For each question, we have associated a grid of answers that contains four columns corresponding to the following assessments: "true", "mostly true", "mostly false", "false". Each response is respectively assigned a weighting coefficient: 1 to 0.7 - 0.3 to 0 [13].

The evaluation of the performance level in each axis is to calculate the total of points obtained in the four columns. So the overall performance is the average of the performance levels obtained on the corresponding axes.

The database collected by questionnaires has been the subject of statistical processing by the Excel software 2010.

3 RESULTS AND DISCUSSIONS

The results reported on performances of the management systems adopted at the sectors of traditional food products at Tafilalet oasis.

3.1 SECTORS OF TFP

Major sectors of TFP are identified, (Dates, Honey, Couscous, Olive oil and aromatic and medicinal plants) (Table 1). The most important sector is date and derivatives, related to the availability of raw materials (28% of the Morocco palm patrimony) [15]. Indeed, Morocco cultivars low quality (Bousthammi, Iklane, Bouslikhène ...) represent 40%, those of average quality (Jihel, Bourar, Bouittob ...) represent 35% against 25% for cultivars good quality (Mejhoul, Boufeggous Aziza Bouzid, ...) [16]. These fruit varieties of highest quality are reserved for direct consumption and fruit from other varieties of medium or low quality, are transformed / valued into syrup, jam, pasta (flavored or not), flour or vinegar.

Table 1. Sectors of Traditional Food Products (TFP)in Tafilalet Oasis

Sectors	Products
Date	- Dates, - Derivatives : syrup, jam, pasta, vinegar, flour, Coffee (dates'scores).
Olive oil	- Virgin olive oil, pomace oil.
Couscous	based on: hard wheat, corn, barley, 3cereals, 5 cereals, millet, flavored by aromatic and medicinal plants, with alfalfa
Honey	multiflora aromatic and medicinal plants, especially thyme and rosemary
Aromatic and medicinal plants	fresh or dried plants, floral water and essential oil of: Thyme, Rosemary, Artemisia, Marjoram, Mint, Pennyroyal, Wormwood

The sector of medicinal and aromatic plants remains the least developed and its products are as fresh plants (in bunch), sachets of dried leaves, and some extracts (floral waters and essential oils).

3.2 DIAGNOSIS OF THE MANAGEMENT SYSTEM OF QUALITY, SAFETY AND ENVIRONMENT

The diagnostic results for eight OP (A, B, C, D, E, F, G and H) representing four sectors: Dates, Honey, Couscous, Olive Oil. The diagnosis of the sector of medicinal and aromatic plants has shown a great lack of reliable data.

Table 2. Distribution of Pos diagnosed depending on the nature and types of products

Professional organization	Nature	Types of products
A	Association	Couscous
B	Cooperative	Dates
C	Economic Interest Grouping	Honey
D	Cooperative	Couscous
E	Association	Dates
F	Cooperative	Couscous
G	Cooperative	Honey
H	Economic Interest Grouping	Olive oil

POs diagnosed are as follows (Table 2), 2 Associations, 4 cooperatives and 2 economic interest grouping, covering 4 sectors: couscous, dates, honey and olive oil.

According to figure 2, it is found that:

- The overall performance is between 16 and 60.7%;
- A weakness in performance of axis 1 (Environmental Management) for most of the OP diagnosed;
- A superior performance of the axis 5 (Personnel Management) compared to other axes;
- 50% of OP diagnosed has a level of performance of Axis 3 (Quality Management) greater than 35%;
- 25% of POs have a level of performance for axis 2 (Health and Safety) greater than 50%;
- 25% of POs have a performance level of axis 4 (Maintenance Management) greater than 67%.

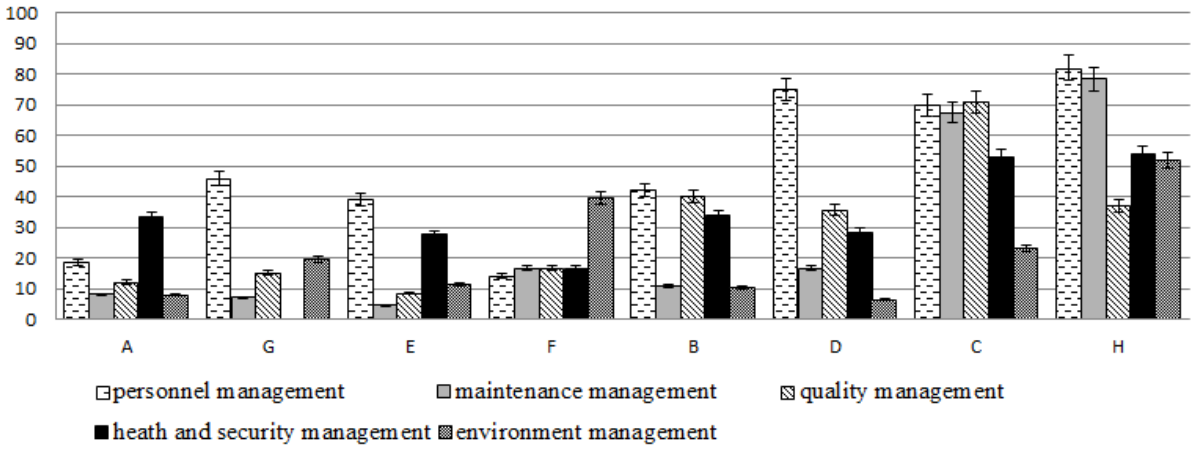

Fig. 2. Performance levels per axis and professional organizations

We Note that the less efficient OP are associations (overall performance between 16 and 18.2%) followed by cooperatives (overall performance between 20.6 and 32.4%) while the economic interest grouping (C and H) are the most effective, with overall performance levels that exceed 50%.

Figures 3 to 7 shows the comparison of performance levels for three decision-making levels (strategic, tactical and operational) of the five axes (environment management (Figure 3), security management (Figure 4), the quality management (Figure 5), maintenance management (Figure 6) and personal management (Figure 7)).

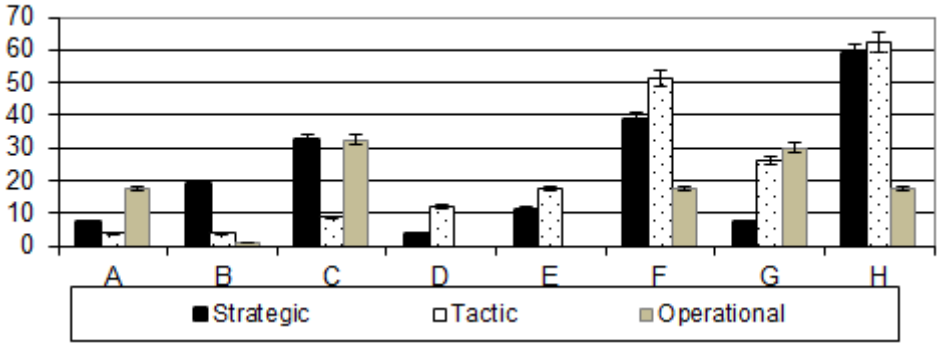

Fig. 3. Pos Performance levels of axis 1 (environment management)

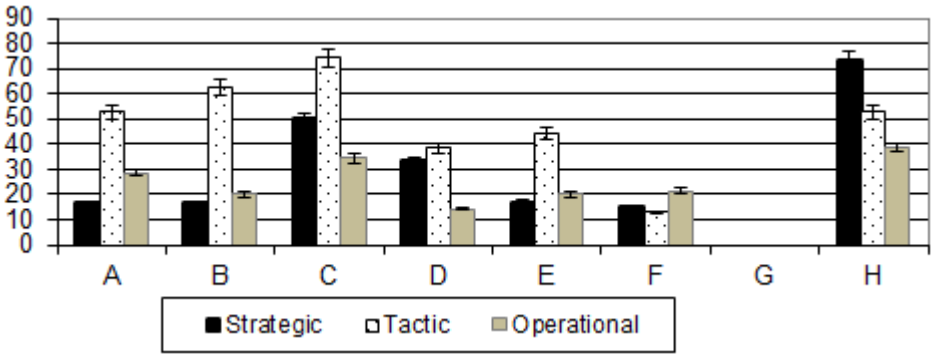

Fig. 4. Pos Performance levels of axis 2(security management)

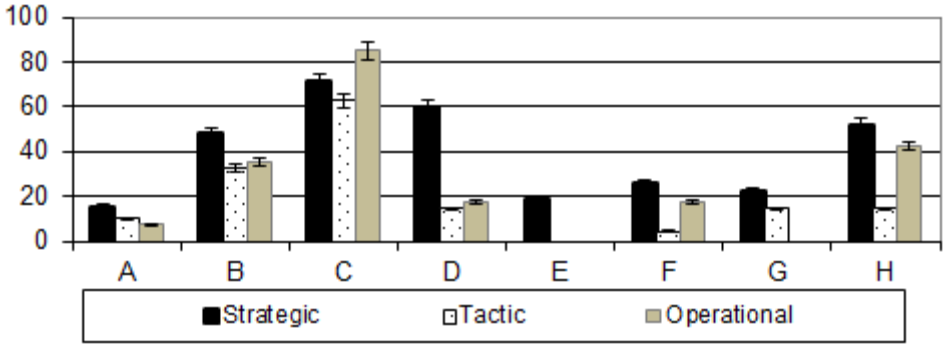

Fig. 5. Pos Performance levels of axis 3 (quality management)

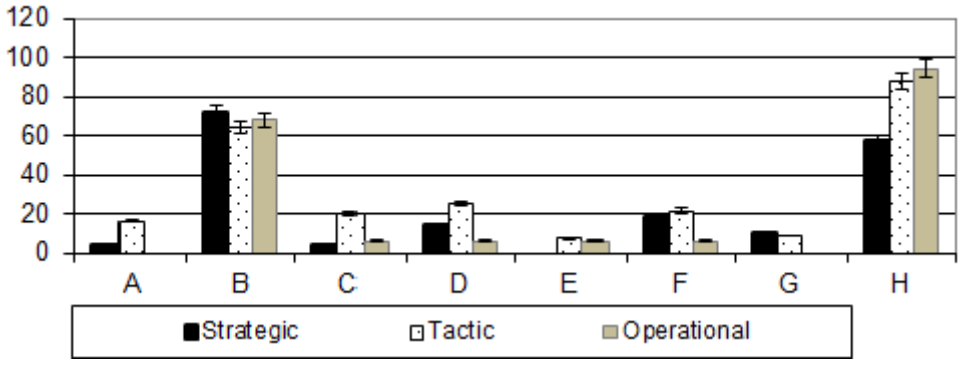

Fig. 6. Pos Performance levels of axis 4 (maintenance management)

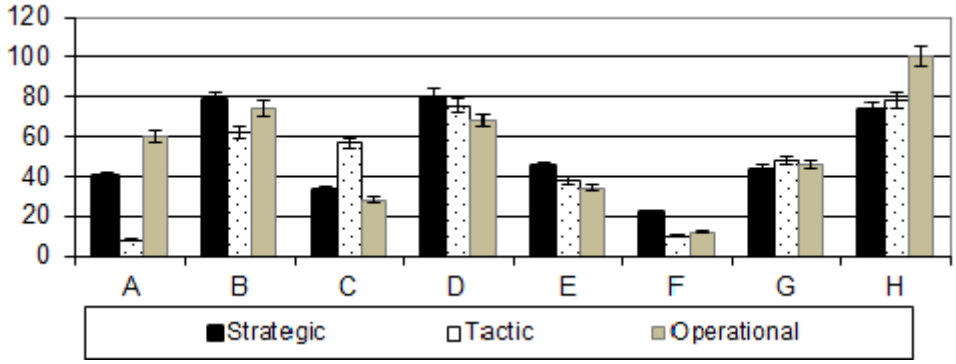

Fig. 7. Pos Performance levels of axis 5 (personal management)

The results of Figures 3, 4, 5, 6 and 7 show a performance variability of the three categories of questions (Strategic, Tactical and Operational) for all axes and for all professional organizations for example, the variability is maximal for axis 1 in PO (A), it is between 60% and 7.7%, except the management of the maintenance and management of personnel who have a minimal gap.

Indeed, the management of the axes environment, safety and quality are the priorities for improvement on which responsible should focus. Thus, for each axis and for all PO, we sought to identify weak bridges (Table 3) to reveal the causes of failure and install the most adapted action plan for better improvement.

Table 3. Common weaknesses of POs diagnosed

Axis	Weaknesses
Axis 1 (Environmental Management)	-Lack of interest in the ISO 14001certification. -Lack of environmental management officers. -Lack of training for staff. -No internal audit. -Lack of strategy for the preservation of the environment. - Construction Planning does not include the environmental requirements. - Lack of documentation about the environment.
Axis 2 (Health and Safety**)**	-Lack of security. -Lack of knowledge about of OHSAS18001. - Lack of risk analysis and assessments. - Lack of documentation and security archives.
Axis 3 (**Quality Management)**	-The non-requirement of ISO 9001for suppliers. - Lack of quality documentation. - Absence of a quality manager. - Lack of studies on the economic consequences of the absence of quality.
Axis 4 (**Maintenance Management)**	- Lack of technical and personal skills. - Negligence procedures and lack of documentation. - Lack of qualified personnel. -Neglect of preventive interventions.
Axis 5 (**Personnel** Management)	-The means of internal and external communications are ineffective or absent. -Communication problems on QSE requirements. -Lack of training on QSE. - Lack of Periodic rating.

The lack of interest in certification, lack of documentation and managers (persons in charge) are the most common weaken points. Diagnosed POs are encouraged to invest more in building management systems, reorganize their charts and designate the different department with their responsible monitoring of documentation (creates an archive), and think about the integration of management standards (quality, environment, health and safety at work) in all decision-making levels to clarify the vision of processes and increase efficiency.

Strategies success depends on several factors, namely technicality, management systems, commercial and marketing policies. But the human factor still the most limiting as it is the source and means of implementing the strategy.

4 CONCLUSION

Our work has shown that at the oasis of Tafilalet we have five key sectors of traditional food products: dates, honey, couscous, olive oil and aromatic and medicinal plants.

The level of overall performance of management is between 16% and 60.7%. It is higher for OP: H and C, which are economic interest grouping of producers of honey and olive oil; average for the OP: D, B, G and F, which are cooperatives that produce honey, dates and couscous; and lower for OP: A and E, which are associations that produce dates and couscous.

The QHSE approach seems to be quite followed and applied in the case of the sector of olive oil, honey and dates. While the couscous sector shows a great need to improve the quality management, maintenance management and especially environmental management to be able to adopt the QHSE approach.

Improving the performance of a professional organization begins with the introduction of a management system(s), the possible integration of management systems (quality, health, safety and environment) may enhance the effectiveness. In general, the actors of traditional food products in the oasis of Tafilalet are invited to further develop their management

systems, at personal level, security, maintenance and especially the quality and the environment and then think about certification as a necessity to increase competitiveness in the sector.

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