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Hybrid Conceptual Model for Assessing Quality, Production and Satisfaction (SQual4Agri), in Agricultural Production Units, in Cape Verde

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Abstract: In Cape Verde, small family farming production suffers continuously from limited essential resources such as water and soil for a steady development. This situation is further aggravated by the lack of financial resources. We have developed a hybrid and multidimensional conceptual model for improvement of those small farming units by bringing together concepts of quality management, farmers' satisfaction evaluation and production capabilities. The model we have built was the result of an inquiry based on Focus Group study with 15 farmers and it was carried out in 2019. We name the model as SQual4Agri and this is a step toward improvement in small family based agricultural organization, namely in productivity, responsibility sharing, communication and quality management.

Keywords: quality management; agriculture; hybrid model; Cape Verde



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1. Introduction

Agriculture in Cape Verde is largely based on small family farming units since the discovery of the archipelago in the 15th century. Agriculture has been a factor of familial support and development, despite the numerous factors that limit it. A good example of those factors are the erratic and unpredictable patterns of precipitation, an accentuated orography and the inherent insularity, resulting in the lack of water resources and arable soil [1].

The country's food and nutritional security depends on this sector. In addition to providing food for the domestic market and families, it can also be linked to the hospitality supply market provided that its products can match the desired quality [2]. Despite important public investments already made in the construction of production infrastructures in the sector, much remains to be done in physical and knowledge infrastructures. In addition to this, the financial resources for these investments have also become scarce. A solution for assuring future development in this setting could take into account the approach carried by Japan after the Second World War in their rebuilding of the industry which was focused on quality alongside other public policy measures [3,4].

Despite the deep commitment that Cape Verde is posing to the hospitality sector, there is an important opportunity for growth in the agricultural sector and for the farmers

along with the well-being of the population. However, such aim can only happen through a quality-driven approach in order to profit from the investments already made and improving the efficiency and effectiveness [5] of farms exploitation.

For the mentioned aspects, the application of participatory methodologies and hybrid models is pertinent. These can bring together quality, farmer satisfaction and the diversity perception of the sector into an analytical framework. The integration of these variables in the model will result in useful information for improvement actions, responding to the needs of all those who are involved and for a sustainable agriculture production.

This paper resulted from a research project [6] aimed at obtaining an integrated diagnosis of production estimate in polyculture, quality management in the exploitation, together with farmers satisfaction in the face of agricultural public policy in the irrigated perimeter of the Poilão dam in Cape Verde. This study's aim is to propose a conceptual model, easy to be implemented for collecting information for improvements and provide mechanisms to farmers to run their farms with quality standards.

Thus, this paper intends to present an analytical framework based on our review in order to assess the agricultural output development under the notion of quality management. Thus, we aim at estimation of agricultural production throughout the year [7,8]; understanding what is required to implement quality procedures with regard to the specific conditions of small irrigated agricultural production units, through the 5 Senses tool [9–11]; and through the implementation of SERVPERF we will assess the satisfaction of farmers/producers in their professional activity in regard to the public services they benefit from [12–14].

The outcome of this study is to propose a hybrid conceptual model combining the three parameters: Quality-Production-Satisfaction. This framework is hybrid under the same rationale proposed by authors [10,15,16] who have developed research and evaluative models connecting quality, customer satisfaction and other dimensions of managerial scope. In ours, we believe the increase in agricultural productivity based on volume of agricultural output is possible if deeply associated with correct handling of management of farms through quality concepts in addition to farmers' satisfaction in the face of agricultural public policies. Therefore, there is a virtuous cycle to be built and it is modeled with the framework we are presenting:

$$\begin{array}{c} \text{Public Policy} \rightarrow \text{Quality management (5S)} \rightarrow \text{Production} \rightarrow \\ \text{Evaluation of Farmers' satisfaction} \rightarrow \text{Public Policy} \end{array}$$

According to Deming [17], the implementation of quality concepts will lead to improved productivity and this is the reason for the connection of quality to the production dimension in our model. In addition, by collecting data about production and farmers' satisfaction in regard of public services and programmes will bring input for further public policy development.

One additional remark is that the hybrid model we are presenting here is original in substance: outline how quality and farmers' satisfaction can link with production issue in an island polyculture setting. On the other hand, the model can be replicated in other irrigation perimeters so that the relationships among factors and the potential benefits can be identified. Furthermore, we aim to establish a first step in a methodology that reflects the needs of producers and allows information to be obtained for quality improvements in the management of agricultural property together with the provision of public services, of which they are beneficiaries.

In the following section, a literature review of papers published in academic journals was carried out to analyze, in a systematic and accessible way, relevant information on the subject. It should be noted that there was limited literature that has addressed these issues (Production, Quality, Satisfaction) in the agricultural sector, especially in context of small agricultural production. On the other hand, but no less important, work was done with a Focus Group (FG) to understand whether the reality of these farmers could benefit from quality methodologies. Such contributions were a valuable help in supporting the

theory and in developing the model presented here. This made it possible to survey a priori technical and local issues, to identify and understand what can be resolved with the adaptation of some quality tools.

Through the FG discussions, the difficulties faced by these farmers were readily revealed and immediately became fundamental input elements for the desired improvement analysis. Consequently, these will improve the use of resources, productivity, communication, sharing responsibilities, and satisfying farmers, while establishing the basis for quality in these production units.

This article brings up a theoretical framework which includes a generic presentation of the context under analysis, the concepts associated with the dimensions we will use to build the analytical framework—Production, Quality, and Satisfaction, followed by the presentation of the model and concludes with general considerations.

2. Literature Review

2.1. Context

Agriculture in the Cape Verde archipelago, essentially of family nature, consists of 45,399 agricultural holdings, of which 33,309 are rainfed and 8580 are irrigated. The total arable area is 36,456 ha, of which 31,692 ha are dedicated to rainfed and 3913 ha dedicated to irrigation [18]. Although there are good climatic conditions, namely mild temperatures (20–27 °C) [19] and sunshine all year round, the archipelago is struggling with scarce water resources. This is exacerbated by random rainfall regimes, cyclical droughts and scarcity of water. Additionally, the potential arable land is only 10% of its land area (4033 km²). Despite these factors, the agricultural production is still an important factor for the livelihood of families [1].

The country's economy is largely service-oriented, however 38% of the population resides in rural areas, where the incidence of poverty is higher, and the agricultural sector plays an important role. As the data indicates, for every 1% of poverty reduction in Cape Verde, 3/4 results from the growth of the agricultural sector [20]. In fact, this sector has received important investments to create agricultural infrastructure to generate and improve the conditions of rural producers, especially regarding the increase in water available for irrigation.

Despite the advances made in the construction of hydraulic infrastructures, to increase the water available for agricultural production there is a need to invest in the education of agricultural and environmental sciences. For example, technicians, farmers/producers should be trained in research, in the improvement of post-harvest and packaging processes, and in the creation of logistical conditions for the flow of production from production areas to consumer markets and in tracking systems. In fact, these are, among others, recurring claims made by farmers and producers [21].

Irrigated agricultural holdings produce vegetables, fruits, roots, tubers, and sugar cane, in a polyculture system and in dimensions ranging from 0.2 ha to circa 2 ha. Due to their limited dimensions, these exploration units can be considered “vegetable gardens” [8]. However, previous studies on tropical gardens [22–24] have shown they fulfill ecological, economic and social functions, which helps to explain the maintenance of these ecosystems [23]. In Cape Verde, they effectively the ones who supply the domestic market with fresh produce and guarantee food and nutritional security for families.

The insertion of these farms into the hospitality supply chain becomes a major challenge not only due to their size and dispersion, but also due to the demanding process of converting these production units into those that invest in quality. The aims are to increase productivity and efficacy, while still guaranteeing the quality of life of the farming population and also the quality of product. Thus, it is urgent to support small producers aiming at valuing their production, competitiveness, sustainability and insertion in the market. This should be done by supporting the management aspects which precede the final product, namely in quality management systems (QMS) that guarantee markets and reduce losses, providing sustainability of production [25].

2.2. Production and Estimation in Polyculture

According to FAO (Food and Agriculture Organization of the United Nations), namely their study on small farms [26], there are 570 million farms worldwide, of which more than 500 million can be considered family farms, and of these 475 million farms are less than 2 hectares [27]. The latter represent 90% of the world's agriculture and provide 80% of the world's food in terms of value, contributing to food and nutritional security, to the promotion of sustainable livelihoods and to the reduction in poverty [22,28,29]. It appears that family farming contributes to the mitigation of rural exodus and social inequality between the countryside and the city, as it allows the generation of wealth at all levels of the country [30].

These small farm units are able to survive various economic and environmental pressures by adopting technological innovations and farming techniques, supplying urban areas, and generating income that contributes to the livelihood of families. They also contribute to creating high value products, to promote food security, and the sustainability of the region. In all, these small farm units promote the transition to a quality economy and a better relationship with the environment and the rural environment [31–33].

The heterogeneity of these agricultural units, evidenced not only by the different sizes but also by the different techniques used, from the traditional to the most modern, allows them to perform various functions. In addition to those already mentioned, they are tradition, leisure and ways of life allowing them to control food quality, promoting practices that generate social or environmental results with benefits which are not directly or indirectly related to market transactions [23,24,34,35].

The production systems of these familial agricultural units are mostly of polyculture and/or intercropping systems. Given these indications of the important role played by these agricultural production units, the estimation of their production may allow a better understanding of food production [8] and develop an informed and adequate public policies and services.

Agriculture production estimates can be made through agrometeorological models [36] which allow the subsidizing of the planning process and control of agricultural culture, or even through satellite images and a multispectral model, permitting the comparison of productivity data with real field data and with a high level of precision [37]. Harvest and remote-control models are also valuable tools in estimating production; however, these same authors say they must be validated before their use by small farmers in their production systems. Additionally, the estimation of crop yield in small-scale agriculture faces several challenges, such as unequal performance of the crops, the continuous planting, the mixed cropping, the ripening in stages of many crops, extended harvest period, and planted areas that are not the same as the harvested areas [38,39].

2.3. Quality and the 5 Senses Program

Japan's rapid economic recovery after World War II, from which it was left without resources and with a devastated economic situation, resulted from its strong commitment to quality and the concept of the 5 Senses (5 S). This was also supported by the philosophy of life and Japanese culture that defends the values of cooperation, respect, trust and harmony [40]. The term "5 S" was formalized in 1980 by Takashi Osada [41] and developed as a more practical application tool, from the perspective of Hirano [42], and it is a methodology considered the precursor to Total Quality Management (TQM).

In Japan, it is considered a method for improving the lifestyle, as its activities and actions are considered to shape the basics of morals and ethics in shared spaces, home, school, work [43]. However, it is widely used in large manufacturing industries such as Toyota and Boeing. These organizations use 5 S to lay the groundwork and standards for problem solving and the foundation for an appropriate work environment for their teams [9].

The 5 Senses are derived from the Japanese initials of the actions associated with this framework and presented here in Table 1.

Table 1. Five Senses and their meanings.

Sense	Explanation
1. Seiri—Use	Distinguish between necessary and unnecessary, eliminate waste
2. Seiton—Order	Housekeeping in the right place
3. Seiso—Cleaning and Zeal	Create a flawless workplace
4. Seiketsu—Health and Standardization	Maintain a work environment favorable to health and hygiene
5. Shitsuke—Self-discipline, Education and Commitment	Responsibility to assume responsibility and fulfill specific tasks for the implementation of the 5 S's tool.

However, quality systems, as well as the value they assess, vary depending on the country, community, or organization, not only in the way they are interpreted, but also on how they are implemented as well as in their own performance [9]. Therefore, in each of these environments the 5 S tool must be adequate and adapted. Although the results of several experiences in different countries have demonstrated their relevance and positive results, the most difficult part has been to incorporate them into the daily practice of individuals [40].

The change in habits proposed by the 5 S's establishes the foundations for continuous improvement, providing cost reduction, increasing economic efficiency and improving product quality. It is also known that quality is strongly related to cultural habits, making the implementation of any quality program a unique experiment and adjustment work [9,42].

As part of the Lean philosophy of quality [44], the framework of Five Senses is widely used as a precursor to Total Quality Management (TQM) systems [42,44] in addition to the fact that it is also adopted by the Kaizen concept [45] as means for better or continuous improvement. The 5 Senses and Kaizen have been proved to foster, in organizational contexts, increased productivity, safety, and improvements to the work environment with quick results and low implementation costs [9,41,46].

Although researchers have reported that 5 S contributes positively to Total Quality environments [42,43], the full deployment of 5 S requires training so that workers themselves can properly implement their own solutions to achieve excellence in the workplace. On the other hand, the adoption of Total Quality management will bring effective enhancing processes to organizations and provide mechanisms to meet consumer expectations at the lowest cost. Again, its proper implementation requires commitments and investments in training in addition with regular audits to processes [41].

Studies on agricultural properties [47–51] show that the implementation of 5 S is valuable in obtaining improvements in the management of rural property and the agricultural industry, since it allows better organization, hygiene and maintenance of order; reduction in waste, accidents, costs and processes; while maximizing time, decision-making, resources and productive capacity. Simultaneously, it also improves the health, quality of life and morale of employees; limitations are associated with maintaining a sense of standardization and discipline, which is required for follow-up.

The above-mentioned studies have also pointed out the main drawbacks of quality management in rural properties and this is related to the fact that rural owners do not see themselves as companies. There is also a resistance to change, because the 5 S tool is still little explored by rural owners and in the food industry, mostly because of lack of time, lack of delegation of responsibilities for the various activities and lack of incentive by the managers. However, according to [52,53], when employees adopt new habits, there are fewer complaints, greater satisfaction, less stress, greater security and they become more productive.

In the specific context of Cape Verde, according to the studies by [11,54], carried out on two Cape Verde islands (S. Nicolau and Santiago) in agricultural production units, it was found that the population target (small farmers) has little knowledge about the 5 Senses. This reflects a significant waste of resources and the need for improvements, especially in production, since this is fundamentally based on the continuation of the tradition, transmitted by their ancestors. However, there was a positive interest in the adoption of the 5 S methodology by farmers, demonstrated by their availability to contribute to the implementation of a quality program in their production units.

In short, the success of the 5 S involves cultural change of the individuals involved, as well as the acceptance and participation in the quality process, as every individual is a key element in the implementation of the methodology and in obtaining the results that were previously defined [55].

2.4. Satisfaction and the SERVPERF

SERVPERF (Service Performance) was developed by [13] with the objective of evaluating the customer's perception. This is a quality instrument to evaluate the performance resulting from satisfaction. There is a scale of 22 items, which are related and measure five dimensions of service quality: tangibility, reliability, responsiveness, guarantee and empathy. Unlike SERVQUAL, developed by Parasuraman, Zeithaml and Berry [14], in which customer expectations and perceptions are considered, SERVPERF proposed by Cronin and Taylor who have used the same dimensions of the SERVQUAL emphasized the perspective of the performance in the observation of the quality of a service [13].

For Cronin and Taylor [13], the evaluation of quality of service should aim higher than just evaluating expectation as conceived by the original authors of SERVQUAL [14,56] so that the final assessment will bring added value in terms of credibility and pragmatism.

Thus, as a matter of fact, there is a fundamental difference between service quality and customer satisfaction, since service quality is a long-term attitude and customer satisfaction corresponds to a transient judgment, based on the provision of a particular service. Therefore, according to [57], the SERVPERF score is the sum of the scores of the clients' perceptions. This suggests the higher the quality of the service, the greater the sum of these perceptions.

Some of the advantages that SERVPERF presents are related to (1) the ease of interpretation of the concept, since the items of expectations are removed and only consider the customers' perceptions; (2) the use of perceptions in predicting the behavior of companies that supply products/services; (3) less time spent applying the instrument; (4) assessments are based more on satisfaction than on the gap and interpretation; (5) the ease of analysis of the obtained data; (6) 50% decrease in the survey items, hence making participants more motivated and willing in collaborating with the studies [57–60].

With SERVPERF, the evaluation is applied only once after the service has been performed, making it a much easier model to be applied and that evaluates only the perception of customers [60–62]. Table 2 illustrates the dimensions of the SERVPERF and its meaning.

Table 2. Dimensions of Service Performance (SERVPERF) and their meanings.

Dimension	Explanation
Tangibility	Installation, equipment, physical presentation
Reliability	Satisfaction of expectations, consumer confidence
Responsiveness	Availability and goodwill of service
Guarantee	Service security, knowledge, technical skills
Empathy	Personalized service, interest in solving problems

SERVPERF also has some disadvantages related to the possibility of distortion, due to the existence of several terms, both social and cultural, or economic in multifaceted markets

which may differ from region to region, or from segment to segment [63]. In recent times, however, there has been a greater emphasis on implementing improvements in companies which use SERVPERF to assess the perceived quality by the customers [10,13].

This instrument, based on the study by [14], measures the perceived quality. This is the evaluation/judgment that the consumer has about the global superiority or not of a supplier. This concept differs from objective quality, as it is a form of relative attitude, but not equivalent to satisfaction, and results from the comparison between expectations and performance perception.

Empirical studies carried out in various industries using SERVPERF (banks, pest control, laundry, wine tourism, fast food chain, restaurant) [60–62,64–67], found a superior performance in terms of satisfaction assessment than of using other service evaluation tool. Taking into consideration that SERVPERF has a reduced a number of survey items—only 22 items altogether—the studies have demonstrated its superiority in relation to the SERVQUA. It explains larger variance in the overall assessment of service quality and it can identify areas where lack of service quality is manifested and require intervention from the management. This model has been shown to be adequate for justifying customer satisfaction and loyalty since it closely focuses on customers' perception.

We have also found studies [68–70] using SERVPERF in the agricultural sector. These studies have shown relevance of the model in this industry and contributes to characterize customers, diagnose the perception of the level of quality of the services provided, and the requirements for improvement in service features so to satisfy the customer. On the other hand, the SERVPERF scoring system is a useful tool to measure the level of quality in the dimensions of tangibility, reliability, and empathy ability of the service deliverer thus contributing to better customer satisfaction.

Despite studies [71–73] have shown varied results while crossing different sectors in addition with the need of adapting the tool to individual context, the pertinence of information SERVPERF can bring is relevant for identifying and defining improvements. These can range from specific aspects of rural extensions, such as technical assistance, pest control, agribusiness, or specific aspects of improvement, which have a greater impact on customer satisfaction and can be identified as knowledge, documentation, service, and presentation, reliability, promptness, and empathy, in which the less positive aspects are related to resistance to the change on the part of the collaborators.

As we have explained above, we consider SERVPERF adequate for evaluating farmers' satisfaction in regard to public services and policies in the agricultural sector.

3. Methods and Implementation of the Conceptual Model

3.1. Methods

The aim of developing a hybrid and multidimensional diagnostic tool is based on the literature [10,15,56] which assesses quality in the management of agricultural production units and also the farmers' satisfaction so as to contribute to improvements in the management of the rural poverty and adjustments in public policies.

This hybrid model consists of three dimensions: (1) Quality of farm management, (2) Estimation of fruit and vegetables, roots, and tuber production, and (3) Farmers' satisfaction concerning public services provided to the farmers.

In order to diagnose the level of farmers' satisfaction in the irrigation perimeter of the Poilão Dam in relation to the public services and policies, we have adapted the SERVPERF survey based on previous studies [11,54] carried out in the islands of S. Nicolau and Santiago in Cape Verde together with research works [13,61] that have used SERVPERF as a diagnostic tool for assess customers' satisfaction. For the design of the production estimates, we have resorted to the studies on the Estimation of Potential Horticultural Production in the Municipality of Montemor-o-Novo (Portugal) [8], and a study carried out by the Cape Verdean Ministry of Agriculture in 2015 on the socio-economic situation of producers/irrigators in the perimeter of the Poilão dam.

The desire to crosscheck the elements and dimensions of the model in mind we work out an evolutionarily fit-for-purpose methodology by using the information from the literature review and carried out a consultation task by organizing a focus group made up of 15 farmers. This method, a bottom-up approach, has the advantage of bringing in the participation of farmers.

The results of the focus group were of valuable help in the development of the model as they provide the understanding of technical and geographical issues and the difficulties faced by the farmers in their relationship with the local and central authorities. Furthermore, we also learned different problems that are related to the usage of resources, difficulties in improving productivity and communication, in sharing responsibilities, and the importance of implementing quality management in these units of production.

3.2. Implementing the Conceptual Model

The conceptual model we are proposing aims to evaluate three parameters: Production, Quality and Satisfaction. For the first parameter of Production, an Estimate of Agricultural Production (EstProAgri) will be constructed. This parameter has two dimensions: Characterization of the Production Unit and the Estimation of Agricultural Production in polyculture. In the first dimension, the variables present the information of personal and social identification and of the production unit characterization and production systems. In the second, the variables characterize production and markets, to obtain answers to the questions raised for this study.

For the second parameter, it is intended to analyze Quality in farm management based on the framework 5 Senses. We have followed the studies carried out by [11] and [54] focusing on the regular 5 features: Use (Seiri), Order (Seiton), Cleaning and Zeal (Seiso), Health and Standardization (Seiketsu) and Self-discipline, Education and Commitment (Shitsuke). For every sense of the 5S a set of analytical questions was established according to [11].

For the third and last parameter, related to the satisfaction of farmers with the provision of public services, of which they are beneficiaries, SERVPERF was used, which was adapted maintaining its five dimensions (Tangibility, Reliability, Responsiveness, Guarantee and Empathy) and added a sixth dimension to General Satisfaction, which seeks to know the general satisfaction of the farmer, his commitment to his activity and availability to share responsibility in technical assistance.

The model we are proposing comprehends three parameters: Production, Quality and Satisfaction corresponding to the frameworks of (1) EstProAgri, (2) 5 Senses tool, and (3) modified SERVPERF. We have also created the acronym for the model: SQual4Agri where the "S" means satisfaction/SERVPERF/Service, "Qual" means Quality representing 5 Senses, "4" means For and "Agri" means Agriculture as illustrated in Figure 1.

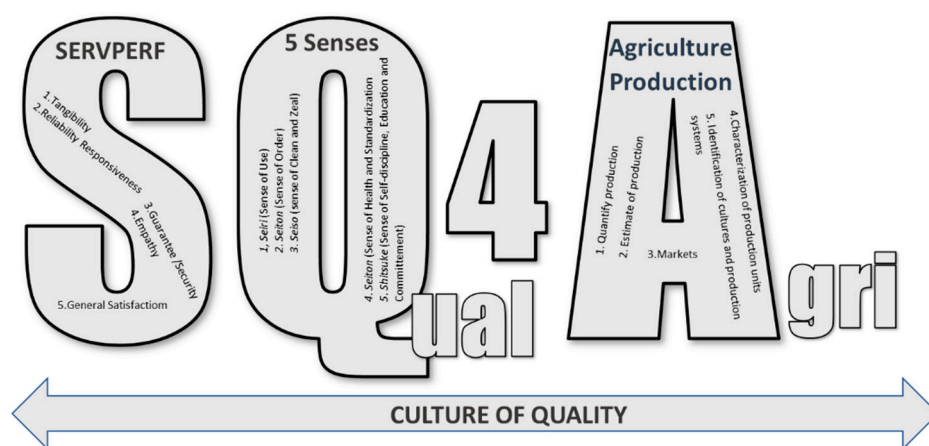


Figure 1. The model: Quality, Agricultural production and Farmer's satisfaction.

This conceptual framework is intended to be applied, as a pilot study, to farmers in the irrigation perimeter in the Poilão dam in Cape Verde in order to collect practical information for the study on farming development in small Cape Verdean family farms. The issue of farm development will generate huge benefits for local people and in particular to farmers who in general are small properties owners. Some benefits we have identified are as follows:

1. Optimization in the use of resources—given the scarcity of resources, whether natural, financial, or human, well-shaped organization and effective communication can increase the efficiency and effectiveness on the usage of available resources. For example, better water management, sustainable agricultural practices, provision of specific services to farmers' needs, production scheduling and better access to markets.
2. Increased productivity—such as the role played by scientific knowledge (e.g., combating pests and diseases, soil management and its fertility, etc.) that can contribute to the increase in agricultural productivity; on the other hand, there is an urge to increase production based on existing resources and, consequently, higher yields.
3. Improvement of farmers' satisfaction—maintaining livelihoods in rural areas in Cape Verde is not an option, it is a necessity, given the increase in population and the need for assurance of food security. It has been observed that although the unemployment rate is higher among young people, they have abandoned agricultural activities in search of more urban activities. Improving farmer satisfaction can guarantee the passing of the token from parents to their offspring and attract more young people to the sector. Moreover, challenges of climate change, lack of technological resources and poverty in general require having farmers as allies and if they are satisfied then they will be much more likely to become cooperative.
4. Greater responsibility—the process of implementing quality programs incorporates a constant effort to raise awareness, training and information distribution which also means that farmers will understand what their responsibilities are and those from public services so that it creates the understanding that there is no one "culprit", but everyone is involved (e.g., farmers, producers, public services, technicians, NGOs, companies).
5. Establishing the foundations for Quality—the implementation of 5 Senses quality tool whose application is widely observed in the industry and services sector will bring more coordinated organization in farming installations. If we look further, the habit of using the 5 Senses will improve not only farmers' working environments but also their personal lives where, little by little, they will perceive the gain they can get by having things routinely well done.
6. Developing new communication channels—implementing new procedures and namely quality management in rural installations do require coordination and communication between farmers and government authorities so does need adequate communication channels like farmers' associations, cooperatives, or associations of rural enterprises. This project will bring consciousness in establishing new communication channels with the intent of building trust between the stakeholders.

Furthermore, with the implementation of the proposed model we expect to obtain a more in-depth understanding of the organizational implications in implementing quality management in small scale farms and obtain information on production, and also knowledge about farming production systems, including markets and consumers while also getting information about the level of satisfaction of farmers in relation to their professional activity and to public services from which they receive government support.

4. Final Considerations

The development of a model for quality improvement is part of the constant need for continuous quality development as a challenge to contribute to increasing productivity, better work environments, efficiency in the use of resources, effective communication within organizations.

The adoption of quality management concepts by different industries, organizations, and communities has shown usefulness, versatility, and universality of those concepts. By and large, there are no unique solutions, as each historical, geographical, and human context requires proposals for solutions adjusted to them.

For the purpose we aim to achieve—improving production level, improving the quality of product, and increase in farmers’ satisfaction—it has to start with the adoption of quality tools by the farmers themselves, so to create an adequate work environment, satisfied interrelationships between stakeholders and increased productivity.

We also believe, as the result of the realized focus group also indicated, that our purpose will be fulfilled with the implementation of the conceived framework: diagnosing the farmers’ needs (satisfaction) by understanding their perception about requirements for an effective development of farming together with the introduction of quality tools in the farming process that could lead to more performing production and consequently better quality of product.

The commitment of the governments in Cape Verde in the fight against poverty, food insecurity, and social inequalities, as well as the insertion of this sector in the tourist hotel supply market, will pave the way to embracing a strong investment in quality issues.

Therefore, the proposed conceptual model holds an important value in Cape Verde’s irrigated agriculture production. On the other hand, we want to contribute to the field of study of quality by connecting satisfaction (of the producer) to (the level of) production through the usage of quality tools, such as the 5S.

Bearing in mind the need of improving small scale farming in Cape Verde, which is the reality in this Atlantic archipelago, with the application of the model in the Poilão dam as pilot work we intend to help local farmers to improve their capabilities in organization and development of business.

In short, the model we have developed can be thought of as a beginning of a long road for Cape Verde toward a new development in the agricultural industry through quality management and continuous improvement.

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