A Critical Review of ISO Management Systems Certification in the UK Agricultural Sector

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Abstract
Agriculture within UK has been going through continuous enhancement in terms of income generation and individuals involved in its activities. Yet, it is considered a sector whose contribution to the overall wealth of the country is not as significant as other industries. However, due to pressure groups and several scandals happening in farming enterprises or food processing industries have increased the awareness of the public for the significance of quality of agricultural products. Facing a fierce competition with alerted and educated consumers, companies regardless of the industry need to assure that product launched meets certain standards that fulfil consumers' expectations in a healthy and safe approach. Nowadays, agricultural enterprises in UK have been heavily focusing on implementation of internationally recognised standards that would facilitate the penetration and embracement of their products. Therefore, applying International Standard Organisation (ISO) management systems is seen as a pre-requisite to affirm partners and consumers for outstanding practices that an enterprise follows. ISO systems offer assistant and support in establishing strong foundations for a successful trinomial of agriculture enterprise-food, and processing-consumer which would provide a win-win scenario and maintain a well- developed relationship in the long run. This paper aims to scrutinize the ISO systems that are relevant and can be implemented within UK agriculture sector.

Keywords: ISO standards, Management systems, Agriculture, Food safety,

Introduction

Certification of systems and products in the UK agricultural sector is big business. For instance Scottish based agricultural assessment centre, SFQC (2014) declare that:

> Each year we certify over 16,000 farms, food processors and food related companies on behalf of a broad range of businesses, organisations and public sector bodies who want independent assurance that their specified standards have been met (SFQC, 2014).

More specifically market analysis shows that for, International Standards Organisation (ISO) management systems certification, the UK top five United Kingdom Accreditation Services (UKAS) accredited certifying bodies, all declare agricultural management systems as part of their portfolio of ISO assessment services, UKAS (2014).

The number of farms within the UK is 300,000 with an average size of 57 hectares they are considered to be relatively larger when compared with the average size of European farms (20 hectares). According to The World Bank (2013) agricultural sector in UK employees 1 % of the workforce and their profits reach just above medium annual earnings salary of £22.000. The agriculture in UK is categorised as organic, conventional and integrated. Almost every product within the UK is produced in accordance with quality assurance schemes that meet the regulations and fulfil quality and environmental standards also allowing full traceability of the product. According to the UK Department for Environment Food and Rural Affairs (DEFRA) total income from farming in 2012 decreased by up to £4.70 billion. This was arguably as a result of adverse weather conditions. A report published by DEFRA (2014) for farm income in England, forecasts a decrease of income by 28 percent on cereal farms and 8 percent on general cropping farms. However, the GB consumer liquid milk market comparing 2014 with 2013 shows that total market value shows growth, both in the volume growth (see tables 1 and 2)and the higher average milk prices (1.3%), with more GB households buying milk and more GB households buying more milk per supermarket visit.

Table 1: Total GB Milk Market by Volume (million litres)

	52 weeks ending 03 Mar 13	**52 weeks ending 03 Mar 14**	**Year on Year % difference**
TOTAL MILK MARKET	5,192.30	5,274.90	1.60%
Filtered	328.20	293.00	-10.70%
Pasteurised	4,423.50	4,561.20	3.10%
Soya	83.60	82.30	-1.60%
Sterilised	13.30	10.10	-23.80%
U.H.T.	310.10	283.00	-8.70%
Other Types	33.60	45.30	34.90%

Source: Kantar Worldpanel (201

Table 2: Total GB Milk Market by Expenditure **(£ million)**

	52 weeks ending 03 Mar 13	**52 weeks ending 03 Mar 14**	**Year on Year % difference**
TOTAL MILK MARKET	3,192.50	3,285.90	2.90%
Filtered	251.40	239.20	-4.90%
Pasteurised	2,612.50	2,708.10	3.70%
Soya	77.50	75.70	-2.30%
Sterilised	10.10	8.60	-14.90%
U.H.T.	194.20	189.40	-2.50%
Other Types	46.80	64.90	38.60%

Source: Kantar Worldpanel (2014)

UK Food Standards Agency (FSA)

The UK FSA is responsible for food safety and food hygiene across the UK, which includes four distinct geographical regions; a) England, b) Wales, c) Scotland and d) Northern Ireland. The FSA works with local authorities to enforce food safety regulations and also with the UK government's Department for Environment Food & Rural Affairs (DEFRA), FSA in Wales, FSA in Scotland and FSA in Northern Ireland (FSA, 2014). The FSA operates with a remit that covers five main areas of responsibility; a) policy and advice, b) business and industry, c)legislation, enforcement and regulation, d)science and research and d)media management. Those five areas of responsibility cover many sub-areas as shown in table 3. Even though the espoused values of the FSA concern i) putting the consumer first, ii)openness and transparency, iii) science- and evidence-based, iv) acting independently and v) enforcing food law fairly which overlap the principles of continual improvement espoused by proponents of implementing ISO certification, the FSA does not explicitly promote ISO certification.

Yet, as a result of scandals in the food industry the concerns and awareness of consumers are increasing and setting more pressure on food companies. Throughout the whole food chain, starting from the seed to the final processed product and distribution, there are many steps where the process might, intentionally or not, be compromised (Trienekens and Zuurbier, 2008; Karaman et al., 2012; Wyness et al., 2012). Consequently, food safety and security becomes a necessity in achieving and maintaining an outstanding service. This phenomenon has generated international quality standards utilized to eliminate any unpleasant scenario and offer products that would be safe to consume. On one hand, the implementation of these standards increases the marginal costs, utilizes more resources and compromising organisations profits'. On the other hand embracing such standards adds value to the enterprise in the long run, improving the relationship with suppliers, employers, customers and appearing as socially responsible businesses (Giraud-Héraud et al., 2012; Lee et al., 2012; Gould, 2013). So, this

conflict of high costs in short terms and business development in long terms seems to be the issue that many farmers are facing. Generally speaking, in the UK farmers are becoming more aware of quality systems introduced by the International Organisation for Standards (ISO) and implementing few of those, aiming to add value to their products (Madsen et al., 2012; Hu et al., 2012).

Table 3: UK FSA Areas of Responsibility

Policy and advice	
Additives E numbers Allergy and intolerance Bisphenol-A(BPA) BSE Food poisoning GM foods Hygiene ratings	Importing food Incidents Irradiated food Mycotoxins Novel foods Packaging Pesticides Radioactivity in food
Business and industry	
Catering and retail Farming Meat plants Manufacturers Guidance notes	Imports Exports Wine Industry committees Industry publications
Enforcement and regulation	
Approved premises Audit of local authorities Enforcement strategy and tools Training and funding Food alerts	Monitoring Regulation and legislation Search for a local authority Enforcement committees
Science and research	
Applying for research funding Management and policy Research reports	FSA approach to science Scientific committees
Media management	
Food alerts news Allergy alerts news	Consultations Campaigns

Source: FSA (2014)

Certification to Management System Standards

The International Standards Organisation released the results of its 2012 survey of management systems certifications. This is an annual study showing the number of certificates issued to management system standards in the previous year. A summary of the statistics from that study is shown in table 4 below which lists the top seven sellers in terms of actual standards published and distributed by ISO.

Table 4: The ISO Survey of Management System Standard Certifications – 2012

Standard	Number of certificates in 2012	Number of certificates in 2011	Annual increase (expressed in numbers)	Annual increase (expressed in %)
ISO 9001	1 101 272	1 079 647	21 625	2 %
ISO 14001	285 844	261 957	23 887	9 %
ISO 50001	1 981	459	1 522	332 %
ISO 27001	19 577	17 355	2 222	13 %
ISO 22000	23 231	19 351	3 880	20 %
ISO/TS 16949	50 071	47 512	2 559	5 %
ISO 13485	22 237	19 849	2 388	12 %
TOTAL	**1 504 213**	**1 446 130**	**58 083**	**4 %**

Adapted from ISO (2014)

Analysis shows that the greatest percentage growth was with ISO 50001 a relatively new introduction to management standards. It was published in mid-June 2011 and certifications started soon after that. According to the International Standards Organisation, up to the end of December 2012, at least 1,981 ISO 50001:2011 certificates, a growth of 332% (+1,522), had been issued in 60 countries and economies, 28 more countries than in the previous year.

The annual report from ISO (2014) states that,

> the top three countries for the total number of [ISO 50001] certificates were Germany, Spain and Denmark, while the top three for growth in the number of [ISO 50001] certificates were Germany, Denmark and Italy. (ISO, 2014)

This demonstrates that some European countries are interested in this relatively new standard and interest in this standard is expected to increase in the UK.

Benefits of ISO Certification of Management Systems in Agriculture

Agriculture certification provides great benefits to consumers by ensuring that the products they acquire comply with a set of norms and ecological procedures that come from sustainable standards such as ISO 9001, 22001, 14001 and ISO 27001. It also benefits agriculture workers, farmers and producers by adopting a certification program that is linked to promoting improved working conditions. These certifiable management standards encourage continuous improvement through the adoption of the widely recognised processes of the plan, do, check and act cycle (Sampaio et al., 2012). It also provides an opportunity for small-scale agriculture workers to stay in business thanks to the support of consumers that are willing to pay a higher price for products from certified sources (De Vries et al., 2012).

Certification also benefits local communities, governments and society in general since they receive much more income from exports, foreign investment and capacity building.

A less commonly adopted management standard in Agriculture would be certification to ISO 27001, but that is not to say that this is not useful for the agricultural sector. Intellectual property, data protection and data security are becoming more of an important issue in a global agricultural marketplace (Santos et al., 2013). Furthermore, a major important issue in the agricultural sector is occupational health and safety, accordingly this research paper presents a short review of the uptake of certified health and safety schemes in the UK. Often seen as a higher risk sector than other sectors, agriculture is closely monitored in the UK by the Government Body, The Health and Safety Executive (Prajogo et al., 2012).

The Potential Rewards of ISO Certified Systems

The potential rewards within the agricultural sector are related to lower costs from reduced input use or lower premiums and increased revenue from new customers or market premiums. That is because all these management standards are based on the fundamental premise that continuous improvement is at the heart of a successful and controlled business (Tricker, 2013).

ISO Certification has become a most critical pre- requisite, world over. It is argued by Prajogo et al., 2012, Sampaio et al., 2012, and Tricker, 2013, that there is no better guarantee than ISO Certification in earning the buyer's confidence and recognition for a product, internationally. Therefore, ISO standards ensure characteristics such as data security, quality, ecology, safety, economy, reliability, efficiency and effectiveness. These standards facilitate global trade, spread knowledge, and share technological advances and promote good management practices.

Certified Agricultural Related Products

Certified products are also characterized for having a special label known as "ecolabel" (Youssef and Abderrazak, 2009; Brécard et al., 2012; Daugbjerg et al., 2014). This label guarantees to the consumer that the product or service follows the criteria for environmental care. Environmental labelling is defined according to the ISO 14000 family, ISO 14020 as a set of voluntary tools aimed at stimulating the demand for products and services with lower environmental burdens as provides relevant information on their life cycle to address consumer requirements.

Many agricultural companies such as Dalefarm are now considering the environmental consequences of their activities as means to obtain competitive advantage (Dalefarm, 2014). The shift is highlighted by the significant interest found in ISO 14000. Government policy makers are also interested in the ability of such standards to address agriculture environmental concerns that lead to reduction in negative environmental impacts (Zobel, 2013).

The certification body view of management standards uptake in agricultural

The list of the top seven most popular management standards are also shown below in table 4 which has been compiled after telephone discussions with 5 UK certification bodies in order to ascertain their

views on which area of agriculture those standards may be most relevant too, based on their opinions of future certification uptake within the sector.

Table 5: The certification body view of management standards uptake in agricultural sectors beyond 2014

Standard Number	Title of Standard	Agricultural Operational Area
ISO 9001:2008	quality management systems	All aspects of agricultural management
ISO 14001:2004	environmental management systems	All aspects of agricultural management
ISO/TS 16949:2009	quality management system requirements for the automotive sector	Agricultural Machinery Manufacturers, Farm Vehicles Manufacturer, Agricultural Automotive Supply Chain
ISO 13485:2003	quality management system requirements for medical devices	Veterinary Equipment Suppliers and Manufacturers
ISO/IEC 27001:2005	information security management systems	Specialist Livestock Farmers, Pharmaceutical Companies, Agricultural Research and Development Centres
ISO 22000:2005	food safety management systems	Farm Stockists, Farming, The Food Supply Chain
ISO 50001:2011	energy management systems	Large Government Organisations , Power Hungry Farming, Alternative Energy Producers such as Bio Technology Plants, Chemical Process Industry

Quality Management Systems

ISO 9000 are a set of standards created and presented by the International Organisation for Standardisation (ISO) which intend to build and sustain sound quality assurance systems implemented into the manufacturing and service sectors. The significance of ISO 9001 demonstrates that any enterprise will assure its processes in accordance with the documented requirements to accomplish contractual responsibilities and customer needs (Zobel, 2013). ISO 9001:2008 focuses on the specific standards that any organisation needs to accomplish. The agriculture sector is easily fragmented in the manufacturing and service sector, as a result implementation of ISO 9001:2008 is widely visible and supporting the overall performance of the farm. According to Psomas et al., (2013) and Heras-Saizarbitoria et al., (2013a) implementation of ISO 9001 was first tracked by the manufacturing sector. However, considering the trends of economic developments in the agricultural sector, where services occupy a larger stake of actors, ISO 9001 was largely embraced by several services companies (Lam et al., 2012; Dora et al., 2013). Adaptation of ISO 9001 assures the farms with an efficient management system consisting of structured processes, waste management, eliminating errors and fostering continuous improvement (Hudson and Orviska, 2013).

According to Kafel,(2013)and Halaseh and Sundarakani(2012) implementation of ISO 9001 will assist farms in:

- spotting errors easily and quicker,
- updating and adjusting the farm's objectives,
- enhancing the relationships with the suppliers and customers,
- improving efficiency in terms of time and resources,
- clearly identifying roles and responsibilities and
- contributing to the overall image of the farm and its products.

The majority of farms embracing IS0 9001 highlighted its crucial impact towards enhancement in productivity and a higher level of customer satisfaction. Additionally, farm managers have noticed a decrease of costs as a result of eliminating internal pitfalls (Heras-Saizarbitoria et al., 2013 b). A survey published by the British journal of food notice a decrease of internal failures by 40 percent and an increase of 54 percent of returning customers (Tunalioglu et al., 2012).

Environmental Management Systems

ISO 14001, similarly to ISO 9001, can be adopted from any organisation regardless of the sector. In comparison to ISO 9001 where the focus is on quality of the product or service, ISO 14001 considers the environmental impact of any enterprise. Standards of ISO 14001 are grouped as evaluating and auditing tools, management systems of standards and support on tools of production or service (Castillo-Barrera et al., 2013).

Environment is a common concern for any company, however, when it comes to farming there is a higher interest as it influences production, consumption and to some extent the economic level of regions and countries. Therefore, UK farms have increasingly implemented the ISO 14001 as a sign of fostering sustainable agriculture and minimising the possible negative effects caused by society (White et al., 2014).

Moreover, this internationally recognised standard contributes to the financial aspect, by waiving any required registration or bureaucratic procedures (UKAS, 2014). Furthermore, the awareness of consumers on several standards and their meaning has set farms in a position where adaptation of ISO standards will give them a competitive advantage. In addition, farms implementing ISO 14001 set informing labels on their products, which strengthens their competitive advantage by representing the aspect of corporate socially responsibility (To and Tang, 2014).

The implementation of ISO 14001 has no restriction in terms of sector or company and with slight differences can be easily adapted throughout industries. However, from a farming perspective, Dora et al., (2013) and Marimon et al., (2011), argue that it is quite challenging to have a finalised template or guideline to apply ISO 14001 uniformly among every farm in the UK. This is due to the type and surface of the farm, technology utilized range of products and frequency, managerial practices and farms' operations. Consequently, the successful implementation of ISO 14001 might differ as a result of

several factors; however its benefits are visible on managerial practices related to waste and pollution management and cutting internal operational costs (Marimon et al., 2011).

Automotive Quality Management Systems

Introduced in 2002 on the foundations of ISO 9001, the objective of ISO 16949 is to serve as a technical standard for the development of quality management systems. Its focus is on detecting and preventing errors, variation and waste in the supply chain by applying principles of continuous improvement (UKAS, 2014). The extensive development of technology is commonly stretched among the agricultural sector as well, where farmers have continuously aimed to enhance farms' productivity. As a result of high demands regarding the quantity of products, processed or raw, there is a propensity of farmers to approach ISO 16949 as a technique of fulfilling customer expectations faster (Castillo-Barrera et al., 2013; Dangwal and Chaubey, 2013). According to a report published by the Department for Environment, Food and Rural Affairs (DEFRA, 2013) 60 percent of farms have someone with a managerial role who has achieved a college degree. Almost half of the farms are not eager to learn about key business management areas, particularly technologically related. These answers were mostly collected by owners considered relatively old, whose farms were classified as small or medium size. However, this becomes an issue when considering the fact that most farms in England, Northern Ireland and Wales are considered relatively small compared to farms in Scotland (UK Agriculture, 2014). Nevertheless, implementation of ISO 16949 is slowly being integrated into the agricultural sector. It is being adapted into the manufacturing sector of agricultural machineries, farm vehicles manufacturer and agricultural supply chain. ISO 16949 is applicable to the design, development, and installation of products related to automated machines and requirements are applied amid the supply chain (Šurinová, 2013). Therefore the implementation of this quality standard fosters an increase of farmer's profitability, improves effectiveness and efficiency of the farm's operations and set standards on food safety and food security.

Medical Devices Quality Management Systems

ISO 13485 is essential for utilization in any firm that is directly or indirectly related to the medical or pharmaceutical supply chain. Having said this, agricultural sector seems clearly to make a positive usage of this standard particularly at the veterinary equipment suppliers and manufactures. Its aim is to facilitate regulatory requirements for medical devices. Commonly, in terms of application ISO 13485 is synchronised with ISO 9001 (Leppala et al., 2013). However, ISO 9001 inquires the farm to represent continuous improvement meanwhile, ISO 13485 seeks that the farm should determine that a quality system has been effectively implemented and its maintenance is assured throughout the whole business life or the farm. The successful implementation of this quality management standard consists of accomplishing a risk analysis of product development, validating the processes, agreeing to statutory and regulatory requirements and establishing effective product traceability (Thuemmler et al.,2013; Nerbrink and Mitchell, 2012; Mc Caffery et al., 2012).

The implementation of this quality management system in association with the above standards assists the farms in increasing customer satisfaction by distributing agricultural products that meet quality, safety and legal requirements. Additionally, it reduces operational cost as a result of continuous improvement and strengthens the relationship between stakeholders. Therefore, obtaining ISO 13485:2003 demonstrates that a farm fulfils requirements for a quality management system regarding any medical device and service. In the agricultural context this improves the image of the farm among suppliers, provides a safe environment for employees and customers are more appreciative towards such practices.

Information Security Management Systems

ISO 27001 can be implemented in any industry where its main focus is to provide security on the volume and value of an organisation's data. As a result of globalisation and directives set by governments, farms are seeking the implementation of ISO 27001 as an approach that would support a sound information management system (Susanto et al., 2012). Farms in the UK aiming to extend the market presence or encompass the range of products, are considering ISO 27001 as a pre-requisite for enhancing their businesses. Within the UK any business enterprise is required by the Data Protection Act (DPA) to assure the confidentiality of customers' data. However, DPA does not guide on the protection of data, whereas, ISO 27001 deliberates the traits to achieve an effective information security management system (ISMS) (Sheikhpour and Modiri, 2012; Sharma and Dash, 2012; Hoy and Foley, 2014).

ISO 27001 pinpoints the required guideline and steps to generate, utilize, maintain and approach continuous improvement on the ISMS of the farm. Requirements of 27001 are general and aim at an extensive application regardless of the size and type of farm by helping farm managers to maintain their information safety (Crowder, 2013). Bearing in mind the development of technology and its benefits implementation of ISO 27001 allows farmers to assure the sensitive information related to employees, suppliers, customers, operational processes, financial data and the IT systems. As several ISO standards 27001 is not obligatory, however, farms should see this as an opportunity to reframe their operational structure, maintaining internal costs and enhancing the image amid customers and suppliers (Calder, 2013).

Food Safety Systems and Standards

Farms that produce livestock are now looking at adopting ISO 22000:2005 certification for its ability to control food safety hazards. In order to be awarded this certificate, companies involved in agriculture have to plan, implement, operate, maintain and update a food safety management system, demonstrating compliance with applicable statutory and regulatory food safety requirements. The standard ensures they effectively communicate food safety issues to their suppliers, customers and relevant interested parties in the food chain (Leppala et al., 2013). ISO 22000 certification covers all the processes in the food chain that impact the safety of the end product. It specifies the requirements for comprehensive food safety management systems as well as incorporating the elements of Good Manufacturing

Practices (GMP) and Hazard Analysis Critical Control Points (HACCP) (Lawley et al., 2012; Marimon et al., 2011).

This internationally recognized food safety standard should be used by all organisations in the food supply chain from farming to food services, processing, transportation and storage through packaging to retail. Developed in 2005, ISO 22000 certification creates a single food safety standard that harmonizes the various national standards into one easy to understand set of requirements that are simple to apply and recognised around the world (Escanciano and Santos-Vijande, 2014). ISO 22000 is the core basis of FSSC 22000, the Global Food Safety Initiative recognised standard which additionally addresses the specific requirements of major retailers and global manufacturers.

Energy Management Systems

This standard is introduced as a result of ISO 9001 quality management system and 14001 environmental management system. However, ISO 5001 focuses on the improvement of energy performance. The initial objective of ISO 5001 is to enhance the performance of energy within an enterprise regardless of the industry, size and type (LRQA, 2014). It relies on continuous improvement by considering opportunities of reducing energy costs and proposing suggestions that would effectively adjust systems and processes (Duflou et al., 2012). Farms aim to reduce costs, fulfil legislative or self-imposed carbon targets, minimise the consumption of fuel and establish a positive socially responsible image (UKAS, 2014).

Farming sector is very sensitive to the climate changes; therefore, the consideration of energy standards will, to an extent, positively influence several decisions in the agricultural sector. For instance, farms reducing the energy also decrease operational costs and their greenhouse gas emissions (Calder, 2013). ISO 5001 will assists the farmers in developing, measuring, reviewing and continually improving a policy for an effective use of energy management. ISO 5001 contributes to the development of an energy management system (EnMS) which helps farms to utilise energy more efficiently in the long run.

Occupational Health and Safety Certifications

OHSAS 18001 is for all organisations large or small and covers all sectors. The standard, although currently not an ISO is presented here as all the UK top 5 certifying bodies offer this, is designed to clarify an organisation's impact on health and safety issues, as well as help to reduce the risk of accidents and any breach in legal requirements.

The OHSAS 18001 standard was developed to bridge the gap where no international standard existed for occupational health and safety. Development involved input from a number of leading bodies, including certifiers, trade bodies and expert consultancies (Hudson and Orviska, 2013). The current version of the standard is OHSAS 18001:2007. This supersedes OHSAS 18001:1999, which was phased out in July 2009 (Leppala et al., 2013). Despite not currently being an ISO standard, OHSAS 18001 has been designed to be compatible with the ISO 9001 (Quality) and ISO 14001 (Environmental) standards, thus helping

organisations to achieve an integrated management strategy. In 2016, a new Health and Safety Management System standard called ISO 45001 is expected to be published - this will then supersede OHSAS 18001. No doubt this will become a popular standard and there will probably be a large take up in the agricultural sector in the UK.

Discussion

It was noticed that there is a higher level of applicability of ISO management systems in different industries and particularly within the agricultural sector. This trend was an interesting finding as justifies the significance of such management systems and their impact on the performance of the farm. Application of these systems aims to enhance the financial performance of the farm through a better housekeeping by reducing cost and adding value to the end product. Management systems such as 9001 and 14001 appeared to be the most implemented because of the main concerns related to quality and environment. The justification behind this trend consists of the awareness that customers have regarding these systems and their purchasing behaviour are highly influenced by these certificates. Attaining such certificates facilitates the communication of values between the farmer and customer.

On the other hand, quality management system for the automotive sector, 16949, appeared to have a small increase and a lack of awareness among farmers for its benefits. This is argued as a result of expensive implementation, some farms are not very technologically advanced and it is not very influential towards customer's buying behaviour, as buyers have a lower awareness of this certificate when compared with 9001 and 14001. Additionally, the age of farmers, educational background and size of the farm are highlighted as other factors impacting on the applicability of such management system. Nevertheless, the application of such certificate will positively impact the development of the farm particularly those entities applying precision agricultural concepts and techniques.

Furthermore, it was detected a significant increase in terms of applicability regarding food safety and energy management systems, 22000 and 50001 respectively. Taking into consideration numerous food scandals farms see the food management system as a pre-requisite to distinguish their products and communicate their best values to the customer. Even though implementation of energy management system does not directly impact the buying behaviour of the customer, farms implement it to reduce cost, minimise the pollution and introduce green practices.

Further Research

This research was based on the literature of ISO management systems to review their applicability within UK agricultural sector. This work enables to comprehend the beneficial aspects and challenges in terms of application and financial wealth of the enterprise. Therefore, authors propose that further research might focus on:

- Cost analysis of the implementation of such management systems among small to medium size farms and the time required to observe the positive financial impact.
- An examination of buying behaviour of customers and price margin of products produced under international management systems in comparison to products that do not fall in this category.

The proposed future research will provide more detailed information for farmers in understanding the positive impact coming as a result of implementing internationally recognised management systems.

Conclusions

International management systems standards have been used within the agricultural sector to enhance performance and improve effectiveness and efficiency. The top 7 ISO management standards are all relevant to agriculture, but not all of them are relevant or necessary for each category of agriculture. The research documented that ISO management systems are important in enhancing the efficiency of an organisation. Moreover, more companies are implementing such systems in aiming to add value to their products and have a better control of the internal environment. Nevertheless, in terms of implementation difficulties are faced because of the age of the farmers, educational level and size of the farm. As a result of competition farms are highly focusing on such practices that would also contribute to the marketing side and also enhance the image in public's eyes.

Furthermore, occupational health and safety management and control will remain a major requirement in the agricultural sector within the UK and in 2016 a management systems standard will be published by ISO. Government bodies will continue to promote the certification of management systems through their publication of codes of practice, their supply chain strategies and the drive to improve the image of the agricultural sector. This paper concludes that the uptake of ISO systems in the UK will continue and more and more areas of agriculture will feel obliged to certify their management systems.

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