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**The Faculty of Natural Resources and  
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# **Implementation of a quality management system in food production**

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# Implementation of a quality management system in food production

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## Abstract

The aim of this study was to investigate how the process of implementing a quality management system for food safety was handled in four different food producing companies in Sweden. The aim was also to analyze what difficulties the companies face and the possibilities that arise when certified. Furthermore, the reason for implementation was discussed as well as the main expectations on the certificate. Implementing a quality management system is a good way of ensuring the quality and hygiene of the food production and it also increases the traceability of food products through the whole food chain. A food safety standard provides a method of preventing problems and crisis and it can also help to handle requirements from authorities, the market and others. The main purpose of a food safety standard is to provide consumers with safe food (Lusk et al, 2011). The quality of foods is often associated with the sensory, nutritional and economic aspects of food (McDonald et al, 2005), but it is so much more than that. The quality of food is also correlated to the product safety, i.e. the guarantee the producer gives to the consumer that the food is safe and will not cause any sickness or harm. For this reason, a number of effective control systems have been created. The standards BRC global standard for food safety, ISO 22000 and IFS Food are widely used and well recognized. These standards include HACCP, quality supervision as well as GMP (Good Manufacturing Practices). There are several benefits of implementing a standard in the business, the competitive advantage is increased and it is easier to establish on new markets.

In chapter 4 and 5, the results of the interviews are presented separately and in a summarizing table. The respondents from all companies agreed on the benefits of the standard when it comes to the increased structure and order in the production but not all of them agreed on how the market advantages were affected or on the difficulties that arises when implementing a standard. A conclusion that can be made is that different standards suit different companies, the many detailed requirements of BRC makes it difficult to interpret and to implement in smaller companies or in companies in the charcuterie business. It is also of main importance that everyone working at the company is aware of the standard and the goals it is used to achieve. The implementation of a standard is facilitated if everyone in the company has the same vision and that it is clear to everyone what the vision involves.

# Sammanfattning

Syftet med denna studie var att undersöka hur implementeringsprocessen av ett kvalitetsledningssystem för livsmedelssäkerhet skedde i fyra olika svenska livsmedelsproducerande företag. Syftet var också att analysera de svårigheter, men också möjligheter, som uppstår vid implementering av en kvalitetsstandard. Även anledningen till varför företagen beslutade om certifiering och deras huvudsakliga förväntningar på standarden har undersökts. Att introducera ett kvalitetssäkringssystem för livsmedelssäkerhet är ett bra sätt att försäkra sig om kvaliteten och hygien i livsmedelsproduktionen. En standard kan även underlätta spårbarheten av livsmedelsprodukter i hela livsmedelskedjan. Huvudsyftet med en standard för livsmedelssäkerhet är att erbjuda konsumenterna säkra livsmedel (Lusk *et al*, 2011). Livsmedelskvalitet associeras ofta med de sensoriska, nutritionella och ekonomiska egenskaperna men livsmedelskvalitet är mycket mer än så. Kvaliteten av ett livsmedel är tätt sammankopplad med dess säkerhet, det vill säga den garanti som producenten ger konsumenten att maten som producerats inte utsätter någon för fara. Av denna anledning har ett antal standarder vuxit fram. Livsmedelssäkerhetsstandarderna BRC global standard for food safety, ISO 22000 och IFS Food är några av de mest tilläpade standarderna som har uppnått internationell status. Dessa standarder inkluderar HACCP-systemet såväl som GMP (god tillverkningssed) och system för kvalitetsövervakning. Det finns många fördelar en standard för med sig, certifierade företag har en konkurrensfördel mot sina icke certifierade konkurrenter och har lättare att ta sig in på nya marknader.

I kapitel fyra och fem presenteras resultaten av intervjuerna med de olika företagen, både separat och i en sammanfattande tabell. Respondenterna från alla företag var överens om fördelarna med en standard gällande ökad struktur och ordning i produktionen. Alla var däremot inte överens om hur den marknadsmässiga biten påverkades och de var inte heller överens om vilka svårigheter som var de största under implementeringsprocessen. En slutsats att dra utifrån resultatet av denna studie är att olika standarder passar olika företag på skilda sätt. BRC-standardens många "skall-krav" gör det svårt för mindre företag och företag i charkuteribranschen att tillämpa BRC, och det kom även fram att det ibland kan uppstå svårigheter med tolkningen av hur standarden ska tillämpas. Det är också av stor vikt att alla på företaget som kommer i kontakt med kvalitetsledningssystemet är medvetna om vad standarden innebär och vilka mål företaget ämnar nå genom den.

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## Abbreviations

BRC	British Retail Consortium
FSSC	Food Safety System Certification
GFSI	Global Food Safety Initiative
GHP	Good Hygiene Practices
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
IFS	International Food Standard
ISO	International Organization for Standardization
PAS	Publicly Available Specification
PRP	Prerequisite program



# 1 Introduction

A food system is a system involving many different aspects; a central issue is to transport food from the place of production to where people can buy and eat the food and from there to disposal (Neff et al., 2009). This includes production, processing, distribution, preparation, marketing, access, consumption, and disposal. These processes need resources such as people, businesses, farms, communities, interventions, policies, and politics. All steps need to be coordinated for a company to make progress (Miljöstyvningsrådet, 2007). A food safety standard helps to coordinate this through guidance and examples and see to that the distribution channels are run according to present legislations and regulations.

According to Swedish Board of Agriculture, Sweden has increased the export of commodities from agriculture and food industry in recent years (Jordbruksverket, 2011). The increased food export demands a higher knowledge of risk analysis in food production. A document of risk analysis needs to be continuously updated and there are many methods, principles and standards to work towards. A risk is defined as the probability of an event to occur and the consequences of it (*ibid.*). Risk management is all about systematically evaluating and handling risks related to the operation.

## 1.1 Background

Legislation regarding food safety have existed for a long time, already in the Pentateuch decrees (Moseböckerna) arrangements regarding hygienic aspects were recorded (Ågren, 1991). During the antiquity *Lex Julia de Anona* was created to protect consumers from food of poor quality but also from inflated food prices. The first Swedish legislation concerning food safety was described in 1622 when a constitution was laid down to regulate all slaughterhouses (Brådenmark, 1998). Slaughter of animals for food was supposed to be performed in public slaughterhouses and controlled by superintendents. Following this, a public health act was published both in 1874 and in 1919. It controlled general handling of food, food premises and rules for certain goods, such as meat, milk, fish and eggs. All previous food charters were replaced by a legislation from 1951 followed by the present Swedish food legislation that came in 1972. The Swedish National Food Administration was also founded in 1972. According to Ågren (1991) the food legislation has two main purposes, which are to protect consumers from hygienic and economic hazards. There have been modifications to the food legislation following the development in the food industry and a need to reflect the modern food consumption (*ibid.*). Today, more meals are eaten outside the home and food is often bought pre-packed. The transportation of food has also increased in recent years.

A standard regulating handling of food fulfills the requirements of current food legislation, but it also adds value to the production (Miljöstyvningsrådet, 2007). A standard provides a method of preventing problems and crisis and it can also help to handle requirements from authorities, the market and others. The main purpose of a food safety standard is to provide consumers with safe food (Lusk et al, 2011). Some food producers conduct extensive quality management without being certified. To gain the benefits of the effort, a certificate is recommended by The Swedish Environmental Management Council, if nothing else, to compete on the same conditions for public procurement as certified companies (Miljöstyvningsrådet, 2007). An established standard increases the credibility for them who use it. The concept of quality of foods have for a long time been associated with the sensory, nutritional and economic aspects of food (McDonald et al, 2005). But the quality of food is so much more, according to Bergström and Hellqvist (2004); it is also dependent on the

production method, service, place of origin, and choice of package method. Because of this a number of effective control systems have been created.

The quality of food is dependent on the product safety, i.e. the guarantee the producer gives to the consumer that the food is safe and will not cause any sickness or other harm. To ensure this, producers have to work according to the HACCP-system (Hazard Analysis Critical Control Point). HACCP is an internationally recognized control system developed by NASA and is used in food production to eliminate risk during food manufacturing (Mårdén, 1995).

The expectations on the food industry from consumers and authorities have increased over the past years (Bergström and Hellqvist, 2004). This development has led to the use of international standards regarding quality supervision by manufactures. The standards BRC, ISO 22000 and IFS are widely used and well recognized. These standards include HACCP, quality supervision as well as GMP (Good Manufacturing Practices).

The British Retail Consortium (BRC) created a standard designed for British food retailers and for other manufacturers producing food for the British market (Miljöstylningsrådet, 2007). The name of the standard is BRC Global Standard for Food Safety, further referred to as the BRC standard, and the purpose of it is to achieve safe food products and service for the consumer. The BRC standard is a technical standard based on HACCP and it includes detailed regulation regarding production, product management and traceability (BRC Global Standards, 2011). The standard was developed in 1998 as a result of the industries need for a safety evaluation system concerning the safety of retailers private label products. The purpose was to assist brand owners and retailers to produce reliable, safe food products with high quality. Another purpose was to assist the brand owners and retailers with due diligence defense in case of a prosecution by enforcement authorities, since retailers and brand owners have a legal responsibility for their brands under the EU food law. Through a searchable resource, called BRC Global Standards Directory, it is easy to access information regarding which suppliers and sites have achieved a BRC certification. The sixth version is the current version of BRC Global Standard for Food Safety.

When a manufacturer has been qualified for a certificate from a quality management system accepted by international recognized standards such as BRC, the relation to other businesses is facilitated (Bergström & Hellqvist, 2004). The primary benefit is the improved relation to other manufacturers and companies, not so much the relation to consumers and customers. The certificate will help the business to keep its customers when the certification is a requirement for making business. According to Bergström and Hellqvist (2004) it also helps the manufacturer or company to create new opportunities, to get into new markets and start producing for new consumers. The company will also earn an increased trust among customers and will ensure the communication to authorities that may have not been the case as an uncertified business.

## 1.2 Problem

In recent years the requirements have increased on food producers to be able to show a certificate that proves that they fulfill and follow a quality management system (Bergström & Hellqvist, 2004). One of the purposes in using such a system is to minimize the costs of product spoilage and stops in the production and also to minimize reclamations. Studies have shown that the costs of these kinds of defects in quality can reach up to 10-30% of the turnover of a company. A system for quality management prevents defects in the whole production chain and the sooner a defect is discovered and adjusted the lower the cost for the defect will be. There is also a risk for indirect costs if the company gets a bad reputation and therefore less customers and consumers (*ibid.*). The continuous work with a management

system also contributes to a better control of the subcontractors. It is a common problem that the production stops due to missing shipments from subcontractors and suppliers that do not fulfill their part of the established agreements; this could be managed by introducing a standard in the production.

The attitude towards food safety matters is important. The way a company manage safety issues sends an important message to the different groups with an interest in the company. In this project food producer's way of handling the implementation of the BRC standard was studied.

### 1.3 Aim and delimitations

The aim of this study was to investigate how the process of implementing the BRC Global Standard in food productions is handled and to discuss the difficulties the companies meet and the possibilities that arise for a company when certified.

The objective was to provide a picture of the development and management of the implementation process and to illustrate how the standard works in daily production. The study aims to address the following research questions:

- What reasons lead to the decision to implement BRC in the production?
- What difficulties and possibilities arise for the company when implementing BRC in the food production?
- What main expectations do the companies have on the certificate?

This study focuses on the implementation of a standard in four food-producing companies in Sweden. The data was collected through interviews with the people involved and through observations at the production sites during the spring of 2012. The implementation process is of interest due to its relevance for inspectors performing audits and consultants in the food quality management business. The delimitations in this study allows the thesis to be more detailed and performed with focus only on the relevant parts of working with a standard in food production.

## 2 Quality management systems, a literature review

This chapter interprets and summarizes earlier publications and research done in the area of quality management systems and BRC-certification. It also analyses what certification and implementing of a standard means for the market and the practicing company. A few different standards are presented as well as EC regulations and legislation.

### 2.1 Quality management systems

According to Mårdén (1995) the main advantage of certifying a food production is the competitive advantages. Other suppliers may not apply a quality management system and retailers often look for suppliers with certificates.

A certification is required by most important European retailers of suppliers included in their supply chain (Det Norske Veritas, 2009). If a supplier is not certified it is a competitive disadvantage. If a business is certified it proves commitment to producing safe food. In case of an incident related to food safety, legal defense in frames of due diligence is provided. The certification also enables the supplier to create and control a management system capable of helping the business to better meet the food quality and safety requirements as well as the legal compliance, especially regarding the legislations applied in the countries where the finished product is consumed. A certified supplier can continuously develop its safety performance by improving key features in the process. It also helps reducing product waste, product recall and product reprocessing.

According to Færgemand (2008), using the same methods and ways of interpretation will make the work with systems of quality management easier. Using the same methods is more effective and increases food safety, maximizes the use of resources and reduces the risk of critical errors and misunderstandings.

#### 2.1.1 Legislation

Sweden became a member of the European Union in 1995 and since then shares the legislation with all other member states (SLV, 2006). From January 1st, 2006, the rules regarding food safety apply for businesses in all of the European Union, these can be found in a variety of EC-regulations. Food producing companies are responsible for the safety of their produced food; this is clearly specified in the EC-regulations. The producers must follow established hygiene rules and create control plans according to the HACCP principles. These rules apply to all food producing units.

In the most recent legislation regarding food safety from the European Union, the safety of the consumer is in focus (SLV, 2006). The whole chain of food “from stable to table” is considered. Food producers in all stages of the production, processing and distribution chain have a responsibility according to (EC) 178/2002 (Article 17, paragraph 1) to guarantee that the products they produce fulfill the requirements stated in the food legislation and they also have the responsibility to control that the requirements are fully achieved.

All countries that are members of the European Union must introduce the food legislation “(EC) 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety”. They also need to control that food and feed producers fulfill the relevant requirements of the legislation in all stages of the production, processing and distribution chain. It is the responsibility of every member state to develop and maintain a system of official control and other arrangements adapted for each situation. Information to the public is

one such task, as well as information regarding food safety, supervision of food safety and supervision of other parameters in the whole food chain.

For a food producer, there are many requirements in the legislation. The main purpose of the legislation is to protect the consumer from hazards related to food (SLV, 2006). Using a standard, which purpose also is to protect the consumers and to produce safe food (Bergström & Hellqvist, 2004), helps the company to work according to the legislation and to be ensured they fulfill it.

#### 2.1.2 GFSI

Partly due to a number of food safety scares before May 2000, a group of international retailer CEOs felt the need to improve the food safety and to guarantee better consumer protection (GFSI, 2012, 1). They launched the Global Food Safety Initiative under Belgian law in 2000. The GFSI is a foundation of large and leading companies in the retail business all over the world and one of their objectives is to benchmark standards used when certifying food production, to develop the competence and capacity in food safety systems and to make them more consistent and effective (GFSI, 2012, 2). If safety standards are the same all over the world it facilitates working with food safety for producers and retailers, especially if they have a common foundation of requirements regardless the standard. When a formal recognition has been given to a standard by GFSI the purpose is that it should be recognized worldwide and accepted by international and regional retailers and suppliers. GFSI also provides a platform for international stakeholders to collaborate and exchange knowledge.

GFSI recognizes several standards worldwide, among them BRC, IFS, FSSC 22000 and the Dutch HACCP Standard (GFSI, 2012, 1). According to GFSI the foundation was not created to set up a single standard regulating all food safety, but to encourage innovation and development of different standards, which meet a common foundation of requirements set up by GFSI. GFSI does not carry out any certification activity of their own and the daily management is undertaken by the Consumer goods forum (GFSI, 2012, 2).

#### 2.1.3 Audits

There are currently seven audit bureaus in Sweden. Their role is to audit food producers before the producer earns a certificate for a specific standard. Many of the auditing bureaus offer other services too, such as inspection, testing, examination and consultations regarding food safety as well as increased profitability.

An audit is an in-depth inspection of the food producer and their facilities where they are inspected against the requirements of the food hygiene regulations or a standard (Souness, 2000). The purpose of an audit is to verify that the food producer have developed, documented and implemented a food safety management system. The audit can be planned or unplanned, but it is always performed in accordance with a written procedure and well documented. There are three kinds of food safety management system audits; first, second and third party audits (*ibid.*). A first party audit is carried out by the company itself, as an internal audit where the staff verifies their own system. During a second party audit, a government agency is responsible. The third party audit is performed by an independent organization that is not involved in the company in any way. The person performing the audit is called auditor and the main responsibility for the auditor is to verify the effectiveness of the food safety program in use. It is important that the auditor have access to appropriate records such as the HACCP system with documentation of critical control points, critical limits and corrective actions. It is also important that the frequency of the audit is related to the size and nature as well as the risk, which the products may possess to public health.

When a company is certified according to BRC Global Standard for Food Safety, issue 6, (3.4 Internal audits) (2011) it needs to be able to show that it has verified and developed an effective application of the food safety plan. The company also has to demonstrate that it has implemented the requirements of the Global standard for food safety. A program for internal audits must be planned comprising implementation of the prerequisite program, the HACCP-program and the routines introduced to achieve the standard. It must be established what scope and frequency the audits will have in accordance to previous performance during audits as well as the risks related to the production.

#### 2.1.4 Preparation

When preparing for certification there is a number of things to keep in mind (Det Norske Veritas, 2009). Companies that plan well and have enough time for implementing the certification will get an advantage and will be better prepared. To be committed, have a positive approach and to set clear target dates for the implementation and assessment is important to get a good start working as a certified company.

A few important steps when introducing a standard are to establish a quality management system, to identify the legal requirements, to identify and document the food safety hazards specific for the production as well as the relevant control measures, such as HACCP (*ibid.*). It is also important to identify the relevant Good Manufacturing Practices (GMP) and Good Hygiene Practices (GHP) that should include a pest control program, an equipment and building maintenance program, housekeeping and cleaning program as well as all the specific standard requirements. The structural improvements also need to be implemented. More information regarding HACCP, GMP and GHP will be presented further on in this chapter.

#### 2.1.5 Traceability

To ensure food safety and to enable corrective actions when risks occur in the production, it is mandatory for food distributing companies to implement a traceability system for their products (EC 178/2002, regard 28). Traceability is defined in the regulation (EC) 178/2002 (Article 3, paragraph 15) as:

*"The ability to reconstruct and follow a food, feed, a food-producing animal or substance intended to be, or to join a food or feed, through all stages of production, processing and distribution".*

It is crucial for food producers to know the origin of their raw material and to keep records of it (Bergström & Hellqvist, 2004). A well planned traceability plan results in lower costs for recall of hazardous products and minimizes disposal. When producers of food have well-established routines for traceability their credibility to customers increase as is the safety of the consumer.

According to Bergström and Hellqvist (2004) traceability needs to be done both forwards and backwards in food production. When performing traceability forward in the food production, information about where the products have been delivered is important and also in what quantities. Backward traceability is when you look for what caused the problem earlier in the food chain by identifying the raw material included in the products recalled. It is the responsibility of every food producer to be able to trace their products at least one step forward and one step backward in the food chain. To be able to trace products and their origin, a system of some kind is helpful. A system of identification helps to arrange products in batches that facilitate an effective traceability process.

### 2.1.6 GMP and GHP

A management system of processes and products is necessary for every food producer (Mårdén, 1995). Good manufacturing practices (GMP) can be described as good housekeeping in the food production (Bernhardt and Raschke, 1998). GMP ensures production of safe food products with consistent quality. Other benefits of the system are reduced waste and enhanced profits. Initially the guidelines for GMP were developed for the pharmaceutical industry but it was soon modified to suit the production of food too. GMP involves routines for management of production premises, raw material, hygiene and equipment and should be well documented and included in the company culture (Mårdén, 1995). Well-functioning GMP's are necessary when working according to systems such as HACCP or standards like ISO 22000 or BRC. HACCP is a system that goes deeper and further than GMP into the analysis of potential hazards and how to handle them. According to Bernhardt and Raschke (1998) it is:

*“...essential that management are convinced of the need to introduce GMP. They must understand not only the benefits of GMP, but also appreciate the resources required to make it work.”*

This can be said for all kinds of quality management systems developed for food production. Only if the management are supporting and understand the importance of such a system, it will work.

While GMP primarily refers to the technical aspects of the production process, the focus of GHP (good hygiene practice) is on the hygiene aspects in food production (Buncic, 2006). The terms GMP and GHP are often used simultaneously because in food processing it is hard to consider hygiene without considering the technical context. Both GMP and GHP are prerequisite programs needed to be implemented prior to introducing a HACCP plan. Using only GHP is not enough for production of high-risk food such as food of animal origin but in production of low-risk foods, such as cereals and grains, GHP alone is enough (*ibid.*).

In conclusion, GMP and GHP provide general and basic principles for producing food in a hygienic way (*ibid.*).

## 2.2 BRC global standard for food safety

The British Retail Consortium is an association of retail companies in Great Britain that have developed a standard for food producers, producing food for the British Retail Consortium private label products (Bergström & Hellqvist, 2004). The standard is named BRC Global Standard for Food Safety and the first edition was issued in 1998, the most recent edition, the sixth, was published in 2011. The purpose of the BRC standard is to assist retail companies to fulfill demands from the constitution and to guarantee and provide the consumers with safe food. The set-up of the standard is a check list designed for food producing companies and should be used to develop and evaluate its operation.

The BRC standard for food safety is based on systems for quality management, HACCP and GMP and includes requirements for routines regarding quality management (*ibid.*). The content of the management system is declared in the requirements, for example routines for internal audits and assessments of suppliers. The requirements clearly states what measures should be taken for actions and formation regarding the production, e.g. net-covered windows or metal detectable band aids.

To earn a BRC certificate the food producer must have passed a third party audit by a certification body approved by BRC (BRC Global Standards, 2011). There are detailed

requirements for audit bureaus to fulfill before becoming a certification body approved by BRC.

The BRC standard is mainly used in Great Britain and in the countries of Scandinavia (Aranea, 2011). In Sweden at least 85 companies in the food chain are certified by BRC (isodelen, 2012, 1).

### 2.2.1 Structure

The BRC global standard for food safety sixth ed. is organized in four main sections (BRC Global Standards, 2011). The first section is an introduction with background information of the standard. The second section holds requirements in six clauses following the initiating segment “Senior Management Commitment”. The clauses hold information regarding requirements of “The food safety plan – HACCP”, “Food safety and quality management system”, “Site standards”, “Product control”, “Process control” and “Personnel”. Each clause is introduced by a statement in a highlighted paragraph to declare the intent of the chapter. The statement of intent is a part of the audit and it is a required part of the audit that all companies undergo to earn the certificate. The requirements are declared in a table following the statement of intent, the requirements are specified and the purpose of them is helping to achieve the stated aim of the clause. The BRC standard includes certain requirements that are fundamental. These requirements are marked ‘FUNDAMENTAL’ and relate to crucial systems in an effective food quality operation with a safety objective. Two of the ten fundamental requirements are “Corrective action” and “Management of allergens” and if these requirements are not fulfilled the company is not ready to get the certificate. The effect of this is withdrawal of the certificate or that no certificate is handed out if it is an initial audit and another full audit is required before the producer can be certified. The third section carries the audit protocol with information regarding self-assessment, the scope of the audit and announced as well as unannounced audits among other information relating to the audit process. The fourth section “Management and governance of the scheme” followed by appendixes holds a list of the requirements for the certification bodies and technical governance of the standard.

## 2.3 Other certification methods

There are a lot of standards regulating similar processes in the food industry; BRC Global Standard for Food Safety, ISO 22000, IFS and FSSC 22000 are some of them. The standards have principally the same vision and purposes but different ways to accomplish them. In this chapter some of the main standards are described, BRC is the standard in focus of this project and was therefore presented in a previous part of this chapter.

### 2.3.2 ISO 22000:2005

ISO, the International Organization for Standardization, is an organization editing several standards regarding processes and systems for many different businesses (ISO Strategic Plan, 2010). 163 national standards bodies were members of the ISO organization in late 2010 and ISO’s portfolio then held over 18500 standards regarding economic, environmental and social sustainable development. ISO 22000:2005 is a quality management system addressing food safety issues in food production and can be applied to all types of organization in the food chain. According to Færgemand (2008), ISO 22000:2005, Food safety management systems:

*“...aims to ensure that there are no weak links in the food supply chain.”*

This is accomplished by the flexibility of the design in the standard which enables an approach tailor-made for all segments of food safety in the food chain. ISO 22000:2005 is designed to fit in different approaches since the requirements for food safety are diverse



among food producers. The standard does not provide a check-list since procedures due in one production may not be appropriate in another. ISO 22000:2005 is not recognized by GFSI due to the lack of technical specification for sector PRPs. In a combination with PAS 220, ISO 22000 is called FSSC 22000 and is recognized by GFSI.

In Sweden at least 33 companies in the food chain are certified by ISO 22000 (isodelen, 2012. 2).

### 2.3.3 IFS

In a statement done by IFS (International Featured Standards, 2010) one can read:

*“Standards of product and process quality are an inevitable part of today’s food-production landscape. In the global marketplace with international flows of goods, a verified standard has become indispensable.”*

The quality and food safety standard IFS Food was created in 2002 for the private labels of retailers and is today in use both for private and industrial label retail brands. In a pamphlet from IFS (2010) they state that their mission is to develop an umbrella brand for product safety. IFS have developed standards not only for food safety but for logistics, household and personal care products, brokers and wholesale business, the current version of IFS Food is the fifth version. After the audit introducing IFS Food in a food production site, IFS allow a period of 12 months for corrective actions. This is to give the company enough time to work on and develop their processes according to the standard.

Worldwide, 12,000 suppliers are certified according to IFS Food (IFS, 2010).

### 2.3.4 FSSC 22000

Today around 16 food producers in Sweden are certified by FSSC 22000 (FSSC 22000, 1). FSSC 22000 is a national control system developed by the Foundation of food safety certification, with the support from Food and drink industries of the European Union (CIAA) (Bureau Veritas, 2007). The standard is based on ISO 22000 and PAS 220 where the purpose of the first is to provide a tool for the management to control and minimize food safety hazards and to ensure compliance. PAS 220 was developed to specify requirements on prerequisite programs (PRP) to control food safety hazards during the food processing and to support management systems implemented to fulfill the ISO version. FSSC 22000 has received international recognition since founded in 2004 and the standard is relevant to all kinds of organizations in the food chain (FSSC 22000, 2). It applies to manufacturers and producers of perishable vegetal products, products of animal origin, long shelf-life products, food packaging manufacturing and food ingredients such as additives, bio-cultures and vitamins, regardless of complexity or size of the organization, public or privately owned or if it is profit-making or not.

Certification bodies that are licensed to issue accredited FSSC 22000 certificates are those that have an agreement with the FSSC foundation (*ibid.*), the standard is governed by a board of stakeholders involving representatives from all parties.

## 2.4 HACCP

HACCP (Hazard Analysis Critical Control Point) is a system used to control potential hazards in food production and guarantee the safety of the products in the whole food chain, all the way to the consumer (Bergström & Hellqvist, 2004). HACCP is included in all of the standards described above.

According to regulation (EC) 852/2004 article 5, 7 and 8, food producers are required to implement the HACCP principles in the food production. Also regulation (EC) 178/2002

article 3.7, 3.9, 3.14 and article 14 of food safety requirements as well as regulation (EC) 853/2004 states that HACCP must be applied in all food production. A HACCP-plan is also a prerequisite when implementing BRC into a production plant (BRC Global Standards, 2011).

The HACCP-system was developed by an American company for NASA during the 1960's since it was of outmost importance that the astronauts' food was completely safe during their time in space (Bergström & Hellqvist, 2004).

The purpose of HACCP is to produce safe food and to avoid risks related to food hygiene during processing and production (*ibid.*). There are different kinds of health hazards related to food hygiene; microbiological, physical, chemical and allergens. The microbiological hazards could be molds, viruses or bacteria that causes illness for example through formation of toxins, the physical hazard occurs if foreign objects like pieces of glass or plastic get into the product. If rests of detergent or other chemicals used in cleaning or maintenance of the production line gets into the food it is a chemical hazard, allergens like milk or nuts could be allergen hazards if found in foods where they do not belong. The HACCP-system focuses on the safety and quality of the food itself and do not cover other quality issues of the company. A Quality management system, like ISO 9001, targets the whole concept around all quality aspects of the company. HACCP is integrated into quality management systems as a tool to discover and control factors and procedures that deviates from the quality in regard to food hygiene hazards.

According to Codex Alimentarius Basic Texts on Food hygiene the HACCP-system consist of seven principles:

1. Conduct a hazard analysis.
2. Determine the Critical Control Points (CCPs).
3. Establish critical limit(s).
4. Establish a system to monitor control of the CCP.
5. Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.
6. Establish procedures for verification to confirm that the HACCP system is working effectively.
7. Establish documentation concerning all procedures and records appropriate to these principles and their application.

These seven principles are the main objectives of HACCP which main purpose is to guarantee the production of safe food, free from microorganisms causing illness, allergens, foreign objects and health endangering substances (Bergström & Hellqvist, 2004). From 2006 HACCP is a requirement for all food producers due to the regulation (EC) 852/2004, article 5.

## 2.5 Difficulties

A lot of the information regarding standards and certificates come from the certification organizations themselves or from accreditation firms. Therefore the information is often one-sided positive, but there are some negative aspects regarding certificates too. One of them is the phenomenon of 'soft grading', which means that when a company is required to implement a standard due to a requirement from a customer they might choose the most convenient way to earn the certificate (Hellqvist, personal message, 2012). This undermines the credibility of the standard and paves the way for less serious certification organs.

Standards can be barriers to trade but they can also be catalysts to trade (Lusk et al, 2011). Depending on a variety of factors there is a risk of both ‘under’ or ‘over-standardization’ when a food producer implement a standard in their production. This is one of the reasons to the existing need for controls made by a third party who monitors and accredits standards implemented in food production (Stigzelius, 2009).

Many retail businesses require that their supplier implement a standard in the production. In a study of dairy producers by Eriksson (2009) this is seen as a negative development due to the double costs and the double reviews. Many of the dairy producers in the study consider the supervision done by certification bodies and municipal controller’s very similar. DNV (2009) agrees of that food producers may have to undergo several audits based on different standards since there are no universal standard for food safety audits.

## 2.6 Possibilities

According to Bergström and Hellqvist (2004) a quality management system increases the security and safety for employees and management of the company applying it. The reason for this is that responsibilities and authorities are more visible and that documentation of procedures has been developed. This leads to employees and management getting an increased consciousness of the demands on the products, production and activity of the company. Another advantage of certifying your food production is that business-to-business relations are improved. An implementation of a standard is a way to keep existing customers in cases where a certificate is a request from the customer. It is also a way for the company to establish new contacts on other markets. The credibility of the company is improved by a certificate as well as the communication with their stakeholders.

## 3 Methods and material

How the empirical material was collected is described in this chapter. The thesis was performed as a qualitative case study based on interviews with people from the companies included in the study.

### 3.1 Research method

The purpose of the project was to evaluate the implementation of the BRC standard into a number of food producing plants in Sweden. A qualitative method was used in the study due to its qualitative focus on processes and events (Backman, 2008) in the implementation process.

#### 3.1.1 Qualitative method

The methods used in a study depends on the kind of research questions that need to be addressed (Kvale, 1997). A qualitative method is characterized by a close proximity to the object of interest (Holme and Solvang, 1997). To be able to understand the situation or phenomena of interest it is of major importance to be able to get involved in the situation where it occurs. Interviews have been made and in order to convey a prime insight into the situation in this thesis, quotes from the respondents are important. There is always a risk that the researcher will misunderstand the situation but including some quotes provides the respondents own perception directly to the reader.

To quote Holme and Solvang (1997) there are no shortcuts to achievements in qualitative research. There is a risk that the researcher will influence the respondent and that the respondent act in the way that they think is expected. This is something to be aware of during the observations and it is important to always act as an interested listener. The researcher must try to understand and carefully describe the circumstances and through this understanding create a deeper and complete interpretation of the situation. On the other hand it is a strength that the quantitative method includes the whole situation, and gives an increased understanding of the whole context of the study (*ibid.*).

### 3.2 Case study

Case studies are commonly used when the purpose of a project is to get a deeper understanding of a phenomenon and to study it in its real context (Lundahl & Skärvad, 1999). In a case study a phenomenon is analyzed in its natural environment, the boundaries between the phenomenon and its context are not given in advance (Backman, 2008).

Case studies are considered to be especially applicable when it comes to evaluations (*ibid.*) like this study. To be able to understand the whole content of a system it is of major importance to look at it from different angles and to understand the origin of it, as stated by Lundahl and Skärvad (1999). It is also important to understand different aspects of the system as well as how it developed into completion.

### 3.3 Collection of empirical data

Qualitative case studies are often based on information retrieved from observations, interviews and analyses of documents from the business as well as literature (Merriam, 1994).

#### 3.3.1 Observations

Observing real situations might be a complicated procedure due to the situation influencing the observer (Backman, 2008). When performing observations there is a major risk of introducing biased results just by being present, which is something that needs to be taken

into account? When performing a qualitative interview it is best to do so in an everyday situation and with an informal dialogue and performance (Holme & Solvang, 1997). The aim is to let the respondents influence the progress of the situation during the interview or observation as much as possible.

### 3.3.2 Interviews

Interviews are an efficient method when collecting empirical data in a qualitative study (Lundahl & Skärvad, 1999). According to Merriam (1994) interviews is the best way of finding out what the respondent thinks or knows about the studied phenomena. Structure is important to a certain extent when performing an interview, but it is also very important to get comprehensive answers (Lundahl & Skärvad, 1999). Therefore a semi structured interview was conducted in this study. A script with questions or statements was used to be free to improvise during the interview and to adapt the questions to the respondent.

A turtle diagram is a diagram used for process mapping and identifies elements such as the process owner, routines and responsibilities in a process (Canea, 2009). It is used to assistance auditors to address relevant questions by illustrating the elements of the process. The turtle diagram was used in this project to create and define the questions in the interviews. The questions were categorized under different headlines in the turtle diagram (appendix 1). The tail and head of the turtle represents input and output of the process and the four legs of the turtle represents questions answering what, whom, how and performance? When all parts are gathered the turtle element gives a picture of the key elements of the process. When creating the questions to the interviews the diagram was used as a complement and the principal questions from the diagram was developed and complemented to gain a complete picture of the process of implementing a standard in a food production.

The question manual (Appendix 1) was based on the same diagram for operators and quality managers as well as for the sale/marketing manager. There were both open questions and yes/no questions to eliminate the risk of influencing the respondents with 'leading questions'. The manual was used to get a structure of the interview so that the respondents easier could stay with the specific approach to the problem.

The respondents in this project were not chosen randomly which means that the results of the interviews do not represent all companies implementing a standard. The result can only be claimed to represent the respondents and this might be a weak point in this project. The purpose, however, was not to analyze the pattern of all implementations, but to give an example of how one can be done. The interviews were held in Swedish due to that it is all the respondents' first language; all quotes have been translated as well as the questions in appendix 1. The data from the interviews were compiled in a table and keywords and phrases were located to find a trend. The result was presented in table 1.

### 3.3.3 Analysis of documents

Documents are information collected through other methods than interviews or observations (Merriam, 1994). This could be information documented in books, articles or minutes from board meetings. To evaluate existing documents is a convenient way of collecting data (Lundahl & Skärvad, 1999). There is a risk that public records hold defects which the researcher is not aware of. It is therefore important to maintain a critical attitude when evaluating documents; the material might be angled or incomplete (Merriam, 1994). To search for information from many different sources is of major importance.

### 3.4 Material

The information in this study has been collected from four different food producers in Sweden, Svensk Honungsförädling AB, Skövde Slakteri AB, Böja-Bagar´n AB and Bubs Godis AB.

People at different positions in all companies have been interviewed. Groundwork was made by analyzing documents and procedures of food handling according to BRC; those data have also been used to complement the information retrieved from the interviews. All respondents were informed of the purpose of the study and they were given the possibility to read through the material before it was published. The interview questions can be found in appendix 1.

### 3.5 Literature review

To describe a phenomenon or a situation in an understandable way it is preferred to relate it to a set of elements in such a way that they together create a system (Merriam, 1994). All research should start off in earlier research done in the area of interest, to avoid mistakes that have already been made and to avoid reproducing studies that have already been performed. Chapter 2, Quality management systems, a literature review, interprets and summarizes earlier research and publications made in the area of quality management systems and BRC-certification. According to Merriam (1994) the function of the literature review is to introduce the reader to the topic as well as being a first contribution to the study. If attention is not paid to what has been done earlier, an important function of the study is lost. Also the results are better understood if more information about the topic is known. Articles and information about the implementation of standards and certification of food production have been retrieved from databases, such as Web of Knowledge and Scopus. Relevant information has also been collected from different EC regulations and the BRC Global Standard for Food safety, issue 6.

### 3.6 Implementation of a standard

The researcher that uses a qualitative perspective, searches for similarities or differences between individuals in various respects, sometimes as a function of a specific event (Backman, 2008); in this case the implementation of BRC into food processing plants. It is an appropriate method due to the kind of study. The interviews could have been conducted as focus group interviews but this was not possible due to the time limit, and also in order to minimize the interruption of the production at the various plants.

The most difficult stage in a qualitative study is the analysis (Creswell, 2005). A lot of time and effort was spent on it to gain sufficient reliable and authentic results. Chapter 4 offers a continued analysis in which the results of the empirical data are given and compared to other studies that were identified in the literature review.

## 4 The empirical study

The aim of this study was to investigate how the processes of implementation of a standard in food productions are handled and to discuss the difficulties and the possibilities that arise for a company once certified. In this chapter, presentations of the four companies observed in the study are given as well as a presentation of their quality assurance arrangements.

### 4.1 Bubs Godis

Bubs Godis AB (Bubs Candy) established in 1992 in Jönköping, Sweden, is a small family owned company producing candy (Bubs Godis, 2012, 1). One of the approximately 40 candy products produced by Bubs is the 'hallonlakritsskalle' (raspberry licorice skull), which is one of the most sold candy pieces in Sweden. The number of employees at the company is 29 and their turnover is 83 million SEK a year (Bubs Godis, 2012, 2). Every year 3 million tons of candy is produced at the facility, the candy is sold in Sweden but also internationally. The raw material is carefully chosen from suppliers with a high quality of their products and an environmentally friendly production. Bubs Godis has earned national recognition after several awards, among them the Gasell award, which is administrated by the Swedish daily business newspaper Dagens Industri and handed out to profitable and successful companies with a fast growth. The company has had the possibility to expand in recent years and their specialty is starch-based jelly-candy, often without gelatin and/or sucrose.

Bubs Godis has used BRC Global Standard for food safety since 2005. The standard has introduced a better orientation of the business according to quality manager and shareowner Ulrik Lindström (personal message, 2012). When the BRC standard was implemented an extern consultant was hired to facilitate the process. The initiative came from the company itself after discussion with customers. The view Bubs has on the BRC standard is that the company benefits from the structure and order it implemented but the many detailed requirements makes it badly adjusted for a small production such as Bubs. The approach used when dealing with new versions and updates of the standard has been to sort the processes in the operation under categories and to refer to them when updating the standard. The quality management system has in this way been implemented to suit the production at Bubs in the best way. When the standard was implemented some rebuilding was done and since then there are routines to follow for most tasks. The main obstacle has been to figure out to which degree the guidelines in the standard should be met. This is solved through discussions among the members of the quality group. According to Ulf Siverklev, marketing manager at Bubs (personal message, 2012), the customers attitude is that BRC Global Standard for food safety is an obvious demand and a necessity for the company to survive. The standard does not facilitate the sale, it has been a natural part of the company for such a long time now and other factors are more prominent in this matter.

### 4.2 Böja-Bagar'n

Böja-Bagar'n AB is a family owned company in the bakery business that was established in 1982 and since 2003 they produce bake off-products only (Böja-Bagar'n, 2012, 1). The two brothers Johnny and Micael Hedman run the bakery together with their 12 employees and the turnover of the company was 26 million SEK in 2011. The business concept of Böja-Bagar'n is to produce unique products in accordance with the desires from the customers. The ambition of Böja-Bagar'n is to provide products of high quality; this is accomplished by using the best raw material available, good service to customers and keeping in touch with their cooperation partners (Böja-Bagar'n, 2012, 2). Böja-Bagar'n has been certified by BRC Global

Standard for food safety earlier but in March 2009 they implemented ISO 22000, during 2012 they supplemented with PAS 220 to get the quality management system FSSC 22000.

The motive for the implementation of a food safety standard was partial an own initiative and partial a requirement from customers (Hedman, M., personal message, 2012). The standard was implemented by two reasons:

*"To become more skilled and show our customers that we care for what we do"*

Many of the routines implemented when using BRC Global Standard for food safety are still in use and have facilitated the implementation of the other standards. There are many similarities between the standards but FSSC 22000 gives the company more independency of how to meet the terms of the standard (Hedberg, personal message, 2012). The standard has introduced structure in the production which is seen as a positive development. The main complication for Böja-Bagarín has been that they lacked time during the implementation process due to an intense workload. This was solved through the recruitment of a quality coordinator. Böja-Bagarín has a food safety-group with members from the production, management and the quality manager and quality coordinator, this group has meetings once a month. The discussions in this group concern matters as introducing routines that meet the actual circumstances in the production and to engage the operators in the quality work by explaining *why* things are done in a certain way, to increase the understanding and engagement.

#### 4.3 Skövde Slakteri

Skövde Slakteri AB is a slaughter house in Skövde, Sweden (Skövde Slakteri, 2012, 1). The company is owned by Tommy Ögren (80%) and part of a business group with an unbroken chain of cattle producers to slaughter, butchering, meat processing (charcuterie) and consumers. In recent years a lot of investments have been done in the slaughter house, both regarding animal welfare and food safety. The intention of the company is to care for and refine raw material from their suppliers into supreme quality meat products. The intention is also to improve the value of Swedish meat by communicating the brand in a powerful way to wholesale and consumers. Skövde Slakteri has high demands on the quality of their products which they try to communicate to their consumers. Approximately 300 people work at the slaughterhouse or in conjunction with it. The facility in Skövde has 100 employees and the turnover is 1.1 billion SEK a year (Skövde Slakteri, 2012, 2).

The motive of the implementation was customer requirements but it was also a good opportunity for development of the company (Espfelt, personal message, 2012). Earlier, no quality certificate has been used and the plan was to implement BRC Global Standard for food safety which was also initiated by revision of the HACCP-plan. At that point the group executive board decided that all companies in the business group should implement FSSC 22000 instead and Skövde Slakteri adjusted to that. According to Espfelt (personal message, 2012) this was a positive development, due to the flexibility of the requirements in FSSC 22000 that meet the conditions of the company better. For example there was a need of rebuilding the facilities if the BRC standard had been introduced, this can now be done in the future, since one of the aims of FSSC 22000 is continuous improvement and there is room for further development all the time. During the implementation process Skövde Slakteri has hired a consultant that has facilitated the process by arranging meetings to inform the employees. The main obstacle has been lack of time and this has been solved by working overtime.

Skövde Slakteri expects that the standard will result in increased sale and new customer relations. It is important to set up goals and to have the possibility to grow and to be accepted



at the market (Andersson, personal message, 2012). The standard will facilitate this. The standard has also introduced routines in the production and it has simplified the work, since continuous planning is facilitated.

#### 4.4 Svensk Honungsförädling

Svensk Honungsförädling AB is the largest processing plant for honey in Sweden (Svensk Honungsförädling, 2012, 1) with a turnover of 47 million SEK in 2010. During the years 2005 to 2008 Svensk Honungsförädling AB invested in a new production line, new heating devices and a new process to be able to meet the increased demand for honey products. The plant with 9 employees is located in Mantorp in Sweden and has since late 2011 a new owner, Lindahls Invest (Svensk Honungsförädling, 2012, 2). The trademark and products rights were succeeded by the Haugen-Gruppen AB. Lindahls Invest, aims to implement BRC Global Standard Food at all their production facilities. The ambition for Lindahls Invest is to contribute to a better climate for apiculture in Sweden, for the benefit for the entire industry (Svensk Honungsförädling, 2012, 2). Svensk Honungsförädling works according to the quality assurance system HACCP and everybody involved in the food handling work according to an active HACCP plan (Svensk Honungsförädling, 2012, 3). The company is also certified according to Sigill Biodling (Apiculture) and IP Livsmedelsförädling.

Svensk Honungsförädling started the implementation of BRC Global Standard for food safety during fall 2011 and is now updating their routines and HACCP system with help from a consultant. The initiative of implementing a standard came from the new owner and was “*non-negotiable*” according to Ankarlid (personal message, 2012), CEO at Svensk Honungsförädling. The standard is perceived as to be too large for such a small operation as Svensk Honungsförädling and many of the requirements are very specific and will be hard to fulfill (Fransson, personal message, 2012). Some of these difficulties would be solved by the recruitment of a quality manager; CEO Ankarlid now shoulders this responsibility. The plan is to perform the recruitment next year.

The customer relations will improve after the implementation process as well as the business opportunities (Ankarlid, personal message, 2012). The implementation is still under process and there have not yet been any information meetings with all of the employees. Fransson (personal message, 2012), suspects that the standard will cause some routines in the production to be more cumbersome. Still BRC global standard for food safety will make the quality management rise in the ranks compared to the current quality management.

## 5 Result

This chapter aims to address the research questions stated in chapter one, Aim and delimitations, based on the theoretical framework and the empirical data. The research questions are presented in the following parts:

- What reasons lead to the decision to implement BRC in the production?
- What difficulties and possibilities arise for the company when implementing BRC in the food production?
- What main expectations do the companies have on the certificate?

The results from the study were collected from interviews done with two to three respondents at the four companies studied. The interviews resulted in a few features estimated as important for a well operated implementation process.

### 5.1 Reasons of implementing a standard

The demand or proposal to implement a standard in the food production came from customers in three out of four companies; the fourth company recently got a new owner that required that they implemented the standard. Most of the companies were encouraged by this process and could see the benefits it gave them. Some of the companies also answered that it was an own initiative when asking why they implemented the standard, they told it would give the company an opportunity of development. An explanation mentioned by Micael Hedman at Böjabağarn (personal message, 2012) is:

*“To become more skilled and show our customers that we care about what we do.”*

A standard can also give the company a chance to get a better orientation of the business (Lindström, personal message, 2012).

### 5.2 Difficulties and possibilities

One of the main obstacles the companies face during the implementation process seems to be lack of time. The daily chores can not be set aside during the implementation process, one of the companies made a new recruitment to solve this problem and another quality manager did some overtime. The lack of time hinders the information transfer between operators and supervising staff. The second main difficulty the companies have been facing is that some of the routines are perceived as more cumbersome when working according to the standard and that the standard requires a lot of time-consuming paperwork in the production.

An impression that emerged during the interviews was that the requirements in the BRC standard are badly adjusted for companies with a small production and few employees. The standard is perceived as too tough in relation to the small volume produced (Ankarlid, personal message, 2012). Sometimes the companies do not have the resources required to meet all the demands. Two of the companies also point out that the text formulations of the standard (Swedish version) are hard to interpret.

All companies mentioned that they have had benefit or will benefit from the standard by better control and increased order in the production. Since the standard was implemented the work is done in a more systematic way and the foresight has increased. The standards also create business opportunities for the companies according to three of the four marketing managers interviewed. Many of the big companies in retail require a standard from the suppliers and a standard can sometimes be:

“*A ticket to the market*” (Andersson, personal message, 2012).

### 5.3 Main expectations on the certificate

The main expectation mentioned by most companies in the study regards increased sales and a larger customer base. Only one of the companies states that the standard does not have anything to do with the business opportunities, but that the standard is a natural part of the food industry today and that other factors are of more importance for the sale. The expectations seem to mostly regard sales and fewer expectations are put on increased quality. Böja-Bagarín mentioned the possibility of getting more and larger customers when certified and Skövde slakteri stated that the relation to existing customers will be facilitated by the standard. Svensk Honungsförädling states that they have expectations on the sale but that it is difficult to rate them and to know exactly what to expect but that it is important to adapt to the market needs. Of the companies in the study only Bubs did not have any expectations on that the standard will result in increased sales.

Another expectation the companies have on the certificate is that it will increase the level of structure and introduce better routines in the production. Andersson (personal message, 2012), states that it is encouraging to work towards a goal and Micael Hedman (personal message, 2012) aims for a better engagement among the operators when certified. This is due to well implemented routines and understanding of the processes. The standard also induced a higher level of control in the production (Parkkila, personal message, 2012; Ankarlid, personal message, 2012).

## 5.4 Results in a summarizing table

To make the data collected through interviews reviewable, important parts of the responses and opinions have been included in this table. The information is structured on the basis of the three research questions presented in the introduction.

*Table 1. Results from interviews at the studied companies.*

<b>Company</b>	<b>Reasons to implement a standard</b>	<b>Difficulties and possibilities</b>	<b>Main expectations</b>
Bubs Godis AB	Customer requirements Own initiative	+ Increased structure and order + Better orientation of the business - Misfit for a small company, increased amount of paperwork in the production - Very precise instructions that exaggerates it - Difficult to interpret	Better routines Control of the operation and the production No expectations on BRC in terms of sales, " <i>it does not relate to that</i> "
BöjaBagarn AB	Customer requirement Own initiative	+ Better control in production + Facilitates work in the production - Lack of time and resources - Cumbersome chores - Difficult to incorporate all elements and structures	Increased sales More/larger customers Growth of the company Increased commitment from staff if routines are well-functioning and understood
Skövde Slakteri AB	Customer requirement Opportunity for the company's development	+ Increased foresight + Routines makes it easier - Lack of time - Some routines more cumbersome	Increased customer base Easier to work when aiming to achieve a goal Facilitated relationships with existing and new customers Great expectations on increased sales
Svensk Honungsförädling AB	Requirement from business owner	+ More systematic routines in the production + Business opportunities - Heavier to work according to the standard - Difficult to interpret - Too tough, too high demands for a small production	Increase the level of quality High expectations on sales, but it is hard to rate them Adapting to market needs <i>"It creates business opportunities"</i>

## 6 Discussion

The aim of this study was to investigate how the process of implementing a food safety standard is handled. The purpose was also to discuss the difficulties the companies face and the possibilities that arise when certified. Furthermore the main reasons for implementation of a standard are discussed as well as the expectations the companies have on the certificate.

### 6.1 Reasons of implementing a standard

The first research question can be answered in the same way for all the companies studied. The reason to why a certificate was needed was mostly due to customer requirements, or a requirement from the owner. Another explanation was that it was a good chance of development and an explanation given by Michael Hedman at Böja-Bagar'n (personal message, 2012) was:

*“Our customers were not satisfied with only ISO 22000, so we decided to implement FSSC 22000”*

### 6.2 Difficulties and possibilities

A difficulty associated with a standard is that some routines get more cumbersome. The paperwork in the production increases for many companies when following the requirements and this is perceived as time-consuming. Since documentation is a very important part of the quality management not much can be done about this. An advice is to adapt the design of the documents to the production. However, the purpose of the routines accompanying the standard is to facilitate the quality management work. Measurements such as traceability are facilitated and this is of main importance in quality assurance management systems.

A few of the companies in this study had the opinion that the BRC standard is too heavy and though for a company with a small production. Costly investments such as recruitments or reconstructions were often needed during the implementation process due to that the companies did not have the resources required to meet all the demands from the start.

As described in the literature presented earlier in the thesis, companies that plan well and have enough time for implementing the certificate will get an advantage and be better prepared (Det Norske Veritas, 2009). It is important to be committed and to have a positive approach to the implementation as well as to set up target dates. Lack of time seems to be a common problem and this might have been handled well if the knowledge about the implementation process had been better. Bernhardt and Raschke (1998) stated that the management must be supporting and understanding to achieve a good result with the standard. In the companies included in this study the management seems to have been relatively engaged and even if some of them lacked previous experience of certificates they aimed for a good result for the whole company.

The companies consider they benefit from the standard in a way that their customer relations improve and their sales increase. This is also described in the literature review section in this study. One company did not agree on that but this might be due to that the companies operate in quite different line of food business with different market conditions. The companies in this study produce very diverse kinds of products; the size of the companies may also affect how well the implementation process works and how the adjustment to the standard is handled. In the study Skövde slakteri is the company with the highest turnover and highest number of employees; they also produce meat products that are very sensitive in the context of quality and food safety. Skövde slakteri was not satisfied with the BRC standard for a few reasons,

for example it would force the company into immediate costly investments and reconstructions. The BRC standard is not very well suited for meat processing companies such as charcuteries. For this reason Skövde slakteri faced difficulties implementing the BRC standard and therefore chose the more flexible standard FSSC 22000. It is of main importance to control the safety of the production in every company and that the quality management system used is well suited for the production it is applied in.

#### 6.2.1 Comparison of BRC global standard for food safety and FSSC 22000

The purpose of this study was to study the implementation and application of the BRC global standard of food safety, the end result is somewhat different when it turned out that one of the companies had changed from the BRC standard to FSSC 22000 recently and another company did it a few years ago. There are many similarities between the standards used by the companies in this study, but FSSC 22000 gives the company more independency of how to meet the terms of the standard (Hedberg, personal message, 2012). According to Espefelt (personal message, 2012) the change from the BRC standard to FSSC 22000 was a positive development, due to the flexibility of the requirements in FSSC 22000 that meet the conditions of the company better. The degree of freedom is higher within the FSSC 22000 standard than with the BRC standard. The owner of the BRC standard is an organization for British retail business and the standard was originally created for private label brands. The initiative to create a national control system that resulted in FSSC 22000 came from representatives of the food industry and the standard is owned by a non-profit foundation.

The certification audit performed for FSSC 22000 is focused on the quality management system and the effects and function of it. The audit performed in accordance to the BRC standard put more focus on the processing and production systems. The degree of freedom within the standards differs and this opens up for interpretations. The requirements of BRC are more specific and very detailed which could mean that the interpretation should be facilitated both for the auditor and for the food producers. It leads to, however, that the number of requirements increase and the production can not interpret the requirements in their own manner to the same extent as with FSSC 22000.

What also emerged during some of the interviews was that the respondents regard the language of the BRC standard as hard to interpret; they have used the Swedish version. To solve this problem a consultant competent to explain and translate could be hired. Expertise seems to be just as important as insight and knowledge when it comes to the implementation and application of a food safety standard.

#### 6.3 Main expectations on the certificate

Many of the thoughts regarding quality assurance systems in this study concern sale and less expectations are put on increased quality of the products. This might be due to several facts; maybe the respondents have more focus on profitability than on food safety, and the way the questions were asked may have affected the answers even if arrangements were done to avoid it. The discussion and opinions from the management might be about profitability rather than quality and safety and this may affect the attitude of the respondents. Quality and profitability are closely connected. A study made by Tisells (1991) showed that quality is important for the profitability of a company and that it is a clear connection between the quality of a production and the profitability of it. The only company not correlating the standard to increased sales or marketing is Bubs. Firstly they introduced the standard seven years ago and have had time to adjust to it. Secondly they are a 'Gasell'-company which means that they have been awarded for having a profitable growth and is successful in other aspects too. This might be a tendency

to that the standard in itself is not the key to success for Bubs Godis AB but a facilitating factor when it comes to structure and orientation in the production.

All companies seem to benefit from the standard in the way that they got a more systematic approach. When certified the production gets more efficient and you get better control of the processes. The standard is benefiting both for the technological aspects in the production as well as for the organizational parts. The companies do not seem to have used the standard as a tool for increased engagement and understanding of the processes among the staff. The study shows that only one out of four companies take advantage of the standard as a tool for increased engagement. Micael Hedman (personal message, 2012) at Böja-Bagarín mentioned that the engagement increased when the operators had an understanding of the routines introduced by the standard. This might have to do with the lack of time and that it hinders the information transfer between operators and supervising staff. Are the routines too cumbersome when done as stated in the standard or do the lack of information cause confusion? It seems to be important to have a vision or to work towards a goal, as specified by Andersson (personal message, 2012). When the operators lack information regarding new routines they are not aware of the standards vision, they only know about the new more cumbersome routines. It is of main importance that everyone in the company has the same vision and that it is clear to everyone what the vision involves.

#### 6.4 Conclusions

The analysis of the data collected through interviews resulted in some features estimated as important for a well operated implementation process. The first thing is that it is of main importance that everyone in the company has the same vision and that it is clear to everyone what the vision involves. It is also very important that the quality management system is well suited for the production it is applied on. The BRC standard is perceived to be too heavy and tough for a company with a small production. This is due to a number of reasons; among them is that the paperwork in the production increases for many companies when applying the requirements of the standard. This is perceived as time-consuming and the many detailed requirements of the BRC standard are sometimes hard to interpret. The standard itself is also hard to interpret for some of the companies; it is sometimes hard to know exactly how to adjust the standard to the production and the help from a consultant was needed in many cases. The main benefits of a food safety standard are market oriented rather than quality or food safety oriented according to most companies studied, this might be due to the structure of the organization and that the profitability is what is discussed within the management rather than the food safety.

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## Appendix 1: Interview questions and turtle diagram

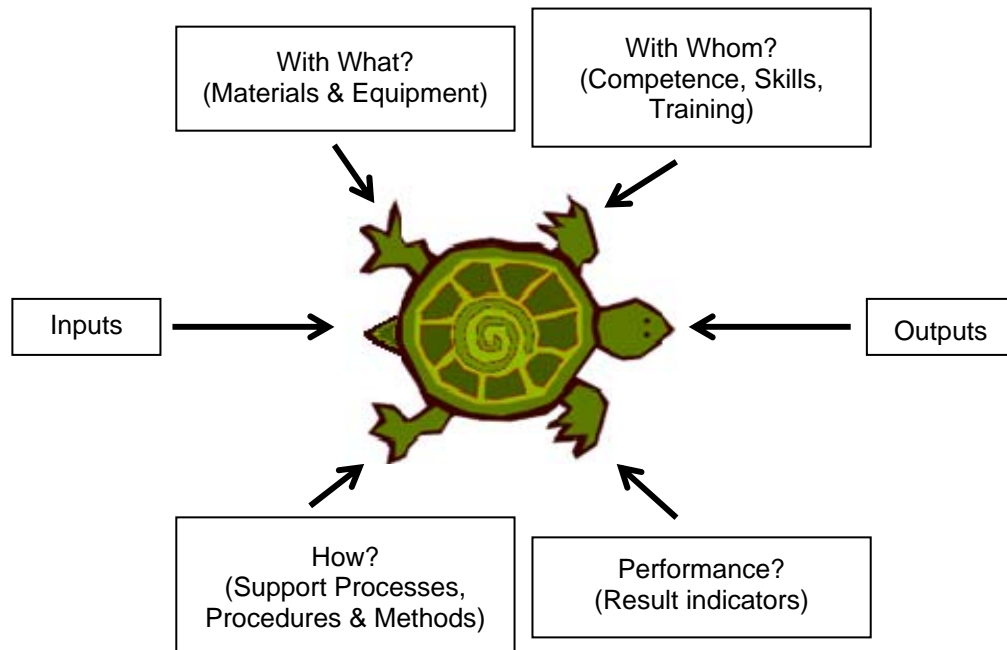


Figure 1. Turtle diagram, remodeled version CANEA (2009)

The questions in *italic* are derived from the turtle diagram, the additional questions are developed from them, and some can be found under more than one headline but was only asked once.

*What material is required? (Equipment, material, resources etc.)*

- Har du tillräcklig information om vad som sker och om produktsäkerheten i företaget?
- Vet du vad BRC är? Hur tycker du att informationen fungerar i samband med att BRC införs i produktionen?
- Vad anser du om standarden? Har den underlättat eller försvårat dina arbetsrutiner?
- Varför just BRC, har ni funderat på andra standarder? Ex. FSSC 22000, ISO 22000? Hur har frågan om standard hanterats, valde ni mellan olika standarder? Tycker du att ni kommit fram till en bra lösning?
- Hur fungerar implementeringsprocessen? Vilket angreppssätt har ni använt er av? Hur gör ni för att det ska fungera i praktiken? Har ni delat upp ansvaret på något sätt?

*Who uses the resources? (Qualifications, education, experience etc.)*

- Bakgrundsfrågor: hur länge har du jobbat här? Vilka arbetsuppgifter har du? Vad har du för utbildning?
- Hur ser ansvarsfördelningen ut?
- Har du tillräcklig information om vad som sker och om produktsäkerheten i företaget?
- Känner du dig delaktig i implementeringen?

*How is the result realized? (Procedural descriptions, methods, check lists)*

- Hur fungerar implementeringsprocessen/tillämpningen av BRC? Känner du dig delaktig?
- I vilken fas av implementeringsprocessen är företaget?

- Är era leverantörer certifierade?
- Hur fungerar implementeringsprocessen? Vilket angreppssätt har ni använt er av? Hur gör ni för att det ska fungera i praktiken? Har ni delat upp ansvaret på något sätt?

*Performance indicators? (Goals, measures, data collection, analysis, etc.)*

- Vad anser du om standarden? Har den underlättat eller försvårat dina arbetsrutiner?
- Är det något du skulle vilja förändra?
- Varför just BRC, har ni funderat på andra standarder? Ex. FSSC 22000, ISO 22000? Hur har frågan om standard hanterats, valde ni mellan olika standarder? Tycker du att ni kommit fram till en bra lösning?
- Hur fungerar implementeringsprocessen? Vilket angreppssätt har ni använt er av? Hur gör ni för att det ska fungera i praktiken? Har ni delat upp ansvaret på något sätt?
- I vilken fas av implementeringsprocessen är företaget?
- Vilka förväntningar har du på ökad eller underlättad försäljning efter att företaget fått sitt certifikat?
- Vad anser du om standarden? Har den underlättat eller försvårat dina arbetsrutiner?
- Har du tillräcklig information om vad som sker och om produktsäkerheten i företaget?
- Är det något du skulle vilja förändra?

*Input, what is needed to achieve a good result?*

- Varför beslutade ni om certifiering? Från vems håll kommer initiativet till certifiering?
- Hur fungerar implementeringsprocessen? Vilket angreppssätt har ni använt er av? Hur gör ni för att det ska fungera i praktiken? Har ni delat upp ansvaret på något sätt?
- Hur fungerade informationen i samband med att BRC infördes i produktionen?

*Output, what is achieved for the company, staff and customers?*

- Vad anser du om standarden ni håller på att implementera i produktionen?
- Hur tas certifieringen emot, är det mycket nytt för personalen, många förändringar? Vad upplever ni som det största hindret för er? På vilket sätt hanterar ni det?
- Vilka förväntningar har du på ökad eller underlättad försäljning efter att företaget fått sitt certifikat?
- Tror du att era kundrelationer kommer förändrats sedan standarden har införts? Om ja, på vilket sätt?

## Appendix 2

Hur uppfattas implementeringen av ett kvalitetsledningssystem för livsmedelssäkerhet av företagen? En studie har genomförts för att undersöka hur implementeringsprocessen av ett kvalitetsledningssystem för livsmedelssäkerhet hanteras. I studien intervjuades anställda och ägare av fyra svenska livsmedelsföretag. Syftet med studien var att undersöka hur introduktionen av en livsmedelssäkerhetsstandard påverkar personalens rutiner och andra faktorer såsom struktur och ordning i produktionen. Anledningen till varför företagen valde att tillämpa ett kvalitetsledningssystem för livsmedelssäkerhet undersöktes också, likaså de svårigheter och möjligheter de mött under processen. Företagen som studerades sysslar med tillverkning av bröd, honung, godis samt köttprodukter.

Kvalitetsledningssystem för livsmedelssäkerhet introducerades i form av certifikat, BRC global standard for food safety och FSSC 22000 var de standarder som studerades. BRC-standarderna ges ut av British Retail Consortium som är en brittisk detaljhandelsorganisation och FSSC 22000 ägs av Foundation of food safety certification som är en stiftelse med huvudsaklig uppgift att utveckla och underhålla standarden och tillhandahålla tjänster för att stödja certifiering av system för livsmedelssäkerhet. En certifiering möjliggör och underlättar kvalitetsarbetet för livsmedelsproducenter på så sätt att den tillhandahåller en väl fungerande metod för företagen att arbeta efter. När implementeringen är slutförd tillämpas ett arbetssätt som innebär att produktionen sköts på ett säkert sätt och med hög kvalitet. Att introducera ett kvalitetssäkringssystem för livsmedelssäkerhet är ett bra sätt att försäkra sig om kvaliteten och hygien i livsmedelsproduktionen. När ett företag arbetar efter en standard finns utvecklade rutiner för spårbarhet och de kan ge en garanti till konsumenterna att produkterna som tillverkats är helt säkra. Det finns även marknadsmässiga fördelar med en standard, företag som är certifierade har en konkurrensfördel mot sina icke certifierade konkurrenter och de har det lättare att ta sig in på nya marknader.

Resultaten av studien visade att fördelarna med att arbeta utifrån ett kvalitetsledningssystem för livsmedelssäkerhet var i stort sett lika för samtliga företag när det kom till arbetssätt och rutiner. Fördelarna som nämndes var att ordningen och framförhållningen i produktionen ökade samt att standarden innebar ett mer strukturerat arbetssätt. De marknadsmässiga fördelarna var enligt tre av företagen att det var eller skulle bli lättare att få nya och större kunder samt att etablera sig på fler och större marknader. För ett av företagen, som haft standarden längst tid, innebar certifikatet inga marknadsmässiga fördelar utan de ansåg att det var en naturlig del av livsmedelsbranschen och ett krav för att överhuvudtaget få förekomma på marknaden. Det är ett vanligt krav idag att livsmedelsproducenter ska vara certifierade, framförallt från större grossister och dagligvaruhandeln. I de flesta fall kom kravet till certifiering från kunder som efterfrågade ett kvalitetsledningssystem hos sina leverantörer, i ett fall kom förslaget från ägaren av koncernen. I många fall såg företagen certifieringen som en bra möjlighet till utveckling och att höja nivån på sin produktion.

Svårigheterna företagen stötte på med certifieringen var att standarden som ges ut av BRC inte passar alla företag, små företag med få anställda eller företag inom charkuteribranschen kan ibland ha svårt att tillämpa standardens många ”skall-krav”, då passar den mer flexibla standarden FSSC 22000 bättre. Olika kvalitetsledningssystem för livsmedelssäkerhet passar alltså olika företag på skilda sätt. Ibland upplevdes det även som att standarden var svår att tolka och att tillämpa i sin helhet i produktionen, då flexibilitet är en viktig faktor.

En slutsats som kan dras efter att denna studie har genomförts är att det är av stor vikt att alla inom företaget är medvetna om vad standarden innebär och vilka mål företaget ämnar uppnå genom den.