

Challenges and practices in Halal meat preparation: a case study investigation of a UK slaughterhouse

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Consumer concerns over the provenance of food that has been prepared in accordance with religious requirements has risen in importance. Instances of improper identification and sale of Halal meat-based products in particular have given rise to questions over the authenticity of such foods. Despite this and the rising demand for Halal foods across the globe, little research has been conducted around the specific issues that arise during their production. This paper presents a case study investigation of a slaughterhouse in the UK that prepares both Halal and non-Halal meat products. It aims to improve our understanding of the challenges that Halal food production presents. The extra requirements of Halal food preparation place additional burdens especially upon smaller processors. Future development of quality standards should take account of the abilities of smaller organisations and the constraints under which they operate. Additionally, food quality assurance standards and systems should highlight the specific requirements of food that has been prepared in accordance with religious requirements. While this study has highlighted the complexities of Halal food production, similar issues are likely to be present in the production of Kosher food, and such compliances may also be required of foods consumed by people of other faiths.

Keywords: food quality; Halal; contamination; slaughterhouse

1. Introduction

Islam is one of the fastest growing groups in the world with over 1.4 billion Muslims worldwide (Bonne & Verbeke, 2007a, 2007b). The Muslim population is expected to increase by 35% around the turn of the century compared to a general population growth rate of 1.6% (Kleef et al., 2007). Consequently, Muslims are making their presence known both politically and socially, for example, through demanding better food labelling and traceability of food products (Kleef et al., 2007). Halal food represents 17% of the global food industry and is worth \$632 billion annually, with the UK having one of the highest demands for Halal products (Kleef et al., 2007). The rapid growth of Islam is subsequently increasing the demand for ritually slaughtered, 'Halal' meat (Bonne & Verbeke, 2007a, 2007b).

The production of Halal meat, however, is not straightforward. The precise ritualistic requirements of the method of slaughter are contested even among some groups of Muslims. The different methods of slaughtering can have a considerable impact upon the process technologies that are employed (Rahman & Shaarani, 2012; Wood, 2012). Halal (permissible) food may also become Haram (not permissible) if it comes into contact, or is contaminated, with non-Halal food products (Riaz & Chaudry, 2003).

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Recently, the media has reported numerous instances where food products have been contaminated with meat from other animals, non-Muslim consumers have unknowingly been provided with Halal foods and foods intended for Muslim consumers were contaminated with traces of pork DNA. These have served to raise consumer concerns over the provenance of food, particularly those that are meat based and subject to the requirements of religious slaughter. Despite the global importance and demand for Halal food, surprisingly little academic literature explores this area. Tieman, van der Vorst, and Ghazali (2012) present one of the very few Halal-centred studies and highlights that additional controls are required in Halal food supply chains.

This paper addresses that gap by exploring the issues that surround the production of Halal food. It presents a case study examination of a slaughterhouse in the UK that processes both Halal and non-Halal meat products. It studies the systems that are in place for assuring quality control, maintaining traceability and preventing contamination between Halal and non-Halal meat. The following section provides an overview of the legislative and practical issues that govern the production of foods: an exhaustive examination of the pertinent legislation is beyond the scope of this paper and furthermore, is unnecessary in order to appreciate the findings of this study. Through in-depth interviews and participant observation of the organisation, this paper finds that traceability of products is not maintained, there is intentional failure to adhere to Hazard Analysis and Critical Control Point (HACCP) systems, Halal food products are improperly described and sold, and there are multiple instances where there is actual, and significant risk of, contamination of Halal foods thereby rendering them Haram.

The review of the literature is presented under three key subjects that represent the way in which food supply chains have responded to rising concerns, along with a discussion of the complications of Halal food production: food quality, and the implementation of systems to improve quality and safety (Beulens, Broens, Folstar, & Hofstede, 2005; Kelepouris, Pramataris, & Doukidis, 2007); traceability, and improvements in food tracking and process transparency (Beulens et al., 2005; Verbeke, 2013; Wiskerke, 2003); and contamination, and the recognition that detection is difficult and also that foods produced in accordance with religious requirements present added complexity (Lada, Tanakinjal, & Amin, 2009; Meuwissen, Velthuis, Hogeveen, & Huirne, 2003; Regenstien, Chaudry, & Regenstien, 2006). Following this, an overview of the religious requirements of Halal food preparation is provided. Next, the methodology chapter details the case selection, and the data acquisition and analysis techniques that were employed. The findings section is then presented, according to the themes identified in the analyses, before the conclusions are made.

2. Quality assurance

The term 'quality' is frequently used when referring to food and food service and therefore is an important factor to consider (Meiselman, 2009). Quality may be generally defined in terms of 'the degree of the product's conformance to its requirements to sustain customer satisfaction and to adjust to market conditions' (Omurgonulsen, 2009, p. 548). From the perspective of the production of Halal food, quality is further defined by dietary laws, beliefs, values or religious prescriptions (Bonne & Verbeke, 2007a, 2007b). Wiskerke (2003) and Lada et al. (2009) suggest that Halal meat is both a quality attribute and a religious requirement. Quality assurance has become the 'building block' of food safety policies, as food quality is associated with proactivity and the creation of requirements to maintain safe food supply chains (Beulens et al., 2005; van der Spiegel, Luning, Boer,

Ziggers, & Jongen, 2006). Aramyan et al. (2009) expand upon this, demonstrating that quality control systems positively influence the performance of supply chains.

The measures and standards that influence food safety and quality have progressed to the forefront of consumer concerns, industry strategies and government policy initiatives (Hobbs, Bailey, Dickinson, & Haghiri, 2005), thereby exerting increasing pressure on manufacturers to implement and maintain adequate procedures and controls to ensure quality is delivered to consumers. Orriss and Whitehead (2000) highlight the role of the government in establishing appropriate standards, legislation and the necessary enforcement programmes to ensure the control of food quality and safety, for example, through the auditing of processes and practices in abattoirs (Masanganise, Matope, & Pfukenyi, 2013). However, after regulations are established it is then the responsibility of the industry to implement the quality assurance systems, such as HACCP and the Codex General Principles of Food Hygiene.

Research conducted by Velthuis, Unnevehr, Hogeveen and Huirne (2002) suggests that an increasing number of producers of Halal food products are using HACCP whereby principles are controlled and assured through specific certifying agencies. Such standards assure consistency in producing quality and are used to identify all potential hazards in the supply chain. However, it is also important to develop appropriate operational processes to ensure that quality management techniques are efficiently utilised. van der Spiegel et al. (2006) highlight the effect of the inappropriate management of food and production operations, which causes poor quality performance, stating ‘a higher level of quality management is interdependent with a higher production quality’ (p. 705).

2.1. *Traceability*

Hobbs et al. (2005, p. 48) observe that there is no agreement on the definition of traceability but, at its simplest, it is understood to be the ‘ability to follow the movement of food through specified stages of production, processing, and distribution’. Wang, Li, and Brien (2009, p. 2866) concur, defining food traceability as ‘the ability to trace and follow food, feed, and ingredients through all stages of production, processing and distribution’. Dickinson and Bailey (2002) state that traceability can be alternatively termed ‘identity preservation’ and is the ability to track the inputs used to make food products back to their source at different levels of the supply chain.

Köppel, Zimmerli, and Breitenmoser (2009) highlight the fact that processes are not always in accordance with appropriate regulations, consequently and that there is then inadequate information regarding traceability, origin and ingredients. The benefits of developing an integrated traceability system are the ability to track and locate products accurately in the supply chain thereby facilitating the prompt detection of problems in a process (Mai, Bogason, Arason, Arnason, & Matthiasson, 2010; Wang et al., 2009). Traceability systems improve quality through the enhanced control and detection of products that fail to conform to standards and vary from paper-based recordings to computer-based information technologies (Wang et al, 2009). In recent years, various livestock identification and meat traceability systems have emerged as an attempt to reduce misconduct and mislabelling and provide consumer information (Hobbs, 2003).

Hobbs et al. (2005) however, question the value of traceability systems to consumers, suggesting that although traceability is implicitly linked to the attainment of food safety and quality there is little analysis of the value that consumers place on traceability assurances. They further add that the incentive to maintain traceability from a retailer’s view is

to reduce the costs of supply chain management rather than providing consumer information.

2.2. *Contamination*

Contamination of food products can take many forms, including the introduction of foreign bodies (debris, foul, inedible animal parts as well as mixing of beef, lamb and pork), the combining of cooked and uncooked ingredients, the inclusion of process contaminants such as oil and grease, as well as microbial infection. Intervention to reduce contamination of carcasses should begin with determining potential sources of contamination (Galland, 1997). Fraser and Monteiro (2009) identify abattoirs as the bottleneck of the food supply chain, and as products from different producers are consolidated, there is an increased risk of cross-contamination (Köppel et al., 2009). Warriner, Kaur, and Dodd (2002) and Galland (1997) suggest that there are many opportunities for contamination during meat processing; however, the most likely stage for contamination is during slaughter at the end of the evisceration. They therefore assert that there is a particular need to develop a HACCP to minimise the risk of cross-contamination at this stage of the process.

Wang et al. (2009) suggest that even different methods of work, such as batch processing, may impact upon the level of contamination and therefore, product recall. Likewise, Köppel et al. (2009) discusses the cross-contamination of different meat products with regard to fraud or incorrect processes. Galland (1997), however, warns that contamination may still occur in the best-managed abattoirs.

2.3. *Halal religious requirements*

It is interesting to observe that most people, even in the food industry, are not aware of the breadth of foods that are under religious supervision (Regenstein et al., 2006). In addition to universal food quality standards and regulation Islam requires supplementary procedures to ensure that processed meat is Halal (Talib, Mohd Ali, & Jamaludin, 2008). Halal foods can be defined as 'those that are free from any components that Muslims are prohibited from consuming' (Riaz & Chaudry, 2003, p. 2). Shafie and Othman (2003, p. 1) define Halal as referring to 'all the aspects of slaughtering, storage, display, preparation, hygiene and sanitation', signifying that 'Halal' extends beyond merely adhering to the prescribed method of slaughter.

For poultry and other non-pork meat products to be declared Halal a number of aspects must be observed and enacted. In brief, the animal must not be dead at the time of slaughter, it must be conducted by a skilled operator, the slaughter must sever a specified number of structures in the animal's throat without severing the head, the animal's blood must be drained out, and prayers must be said during the process. Halal products may become Haram if they come into contact with foods or substances that are not permissible. These include other foodstuffs that have not been slaughtered or prepared in such a way that they are declared Halal and most obviously pork-based materials. Also, contact with processing equipment that has been used in the production of non-Halal foods may be deemed to constitute contamination of otherwise permissible foods and render them Haram. The opportunity for such contamination is not merely an issue for the point of slaughter or food production but extends throughout the supply chain including transportation within the facility, packaging, distribution and retailing. Additionally, contamination with non-permissible materials that may include food ingredients, additives,

process lubricants, cleaning agents or other materials may also render the foods Haram. The range of permissible and non-permissible substances is extensive and beyond the scope of this paper to fully explore, but useful guidelines are provided by the IFI (2015) and the Food and Agriculture Organisation of the United Nations (FAO, 2015).

The issue of stunning prior to slaughter is highly controversial. According to some, an animal must be awake at the moment of slaughter in order for the meat to be declared Halal that stunning or choking prior to slaughter is not permitted (Halaseh & Sundarakani, 2012). The Malaysia Halal Certification allows the use of electrical stunning, but it is not recommended (Rahman & Shaarani, 2012). UK legislation permits the slaughter of animals without stunning if it is being performed in accordance with religious requirements. Some Halal abattoirs have adopted the method of stunning for reasons of convenience (Harvey, 2010). The recital of prayers is also debated. Some maintain that they must be said by the slaughterman while others pray over mechanical slaughtering devices, or at the start of the shift, or inscribe the words of the prayer onto mechanical cutting blades. It is clear that manual slaughter is significantly less speedy than automated methods and may have cost implications for the resultant products. Cost pressures may induce organisations to prefer to employ automated slaughtering technologies that may also preclude the recital of prayers by an operator. In this case, prayers may be provided in other ways; however, Wood (2012) states that tape recording the prayer defeats the purpose of the Halal ritual.

Many organisations exist that endeavour to monitor and certify producers of Halal products. In the UK, the Halal Food Foundation (HFF) the Islamic Foundation of Ireland (IFI) and the Halal Food Authority (HFA) are among the charitable organisations that exist to improve education, awareness and availability of Halal foods and assist their producers: similar organisations may be found in other countries around the world (List, 2015). Despite the need for improved certification and assurance of the authenticity of Halal foods and products (EBLEX, 2015; HFF, 2015) calls for changes to legislation that governs labelling, for example, have been rejected in the UK (BBC, 2014).

The HFA provide useful overviews of their certification process and auditing procedures (HFA, 2015). Certification is provided after successful completion of a formal audit of processes and practices. The certification remains valid for a period of six months subject to further successful unannounced audits. The efficacy of third party audits has, however, been questioned (Albersmeier, Schulze, Jahn, & Spiller, 2009; Jahn, Schram, & Spiller, 2004; Powell et al, 2012). One factor that is a considerable burden upon producers is the cost of certification (Mensah & Julien, 2011; Trienekens & Zuurbier, 2008). Auditing the practices of premises that produce Halal foods, particularly as the demand for those foods is rising appreciably, can be seen to be a significant issue for certifying bodies, particularly those that are voluntary or non-profit making.

Malaysia has introduced the MS 1500:2009 standard as part of an initiative to establish the country as a 'global centre' for Halal food production and forms the basis of the certification of food production companies (Standard, 2015). It details the foods and substances that are considered Halal along with those that are Haram and makes explicit reference to labelling and separating all Halal foods from non-Halal substances at all stages of production to avoid mixing or contamination. The standard even extends to providing operational parameters and instructions for the use of devices for stunning animals, even though the standard states 'stunning is not recommended' (Annex A1.3).

European Community (EC) legislation that governs food production, such as EC 1099/2009 that protects animals at the time of killing, is enacted in the UK through a wide range of regulations, principally the Food Safety Act (1990) and The General Food Regulations

(2004). Among these, The Welfare of Animals (Slaughter or Killing) Regulations (1995) governs the allowable methods of animal slaughter.

In the UK, the Food Standards Agency (FSA) is responsible for enforcing relevant food standards and legislation, and undertakes audits of production premises (FSA, 2015a). One of its key functions is to protect animal welfare during killing and slaughtering (FSA, 2015b). Quality assurance in food processing facilities is a complicated undertaking and one that is magnified by the additional requirements of Halal production, particularly where the legitimacy of methods of stunning, slaughtering and ritual remain debated (FAO, 2015). These difficulties are evident in the FSA's need to issue clarification and guidance about what constitutes Halal to its inspectors in 2010 (FSA, 2015a).

2.4. *Research purpose*

Food production and preparation is a subject of perennial interest. Recent issues surrounding the provision of Halal food in particular have served to heighten consumer and commercial interest in this growing sub sector of the food industry (Regenstein et al., 2006). Despite its increasing importance, both due to heightened consumer awareness and rapidly increasing demand, little research examines the specific issues that production of this food presents.

Halal food is subject to the general principles and practices of quality assurance that may be found throughout the industry. However, it is also governed by the religious requirements of the method of slaughter and the prevention of contamination with non-Halal products (Riaz & Chaudry, 2003; Shafie & Othman, 2003; Talib et al., 2008). These have implications for the methods that are employed by food processors, requiring robust production and quality control systems that prevent contamination between Halal and non-Halal foods both during preparation and subsequent storage and distribution (Wang et al., 2009). [Figure 1](#) presents a framework of the 'building blocks' of food safety, identifying the extant literature that discusses the 'general principles' and 'specific principles' upon which Halal food is assured.

Abattoirs are key locations in the Halal food supply chain, being the point at which meat products are prepared in accordance with the various religious requirements in order to be pronounced as Halal. They have also been identified as locations where contamination, of many forms, is a heightened risk (Fraser & Monteiro, 2009; Galland, 1997; Köppel et al., 2009). Consequently, reliable food quality assurance measures, for product traceability and the prevention of contamination are of great importance in these organisations (Hobbs et al., 2005).

This paper explores the issues that surround the production of Halal food in a slaughterhouse in the UK. It focuses upon the methods that are employed for the segregation and control of Halal and non-Halal foods that are produced at the facility. In making this examination, the paper aims to identify areas of concern and make recommendations for improvements in policy and practice.

3. Methodology

This research is exploratory in nature and aims to provide insight into a previously under researched area (Saunders, Lewis, & Thornhill, 2007). It utilises a case study approach because of its ability to generate the type of knowledge that cannot be gleaned from purely analytical or statistical analysis (McCutcheon & Meredith, 1993; Meredith, Raturi, Amoako-Gyampah, & Kaplan, 1989; Yin, 1994). Case study is defined by Yin

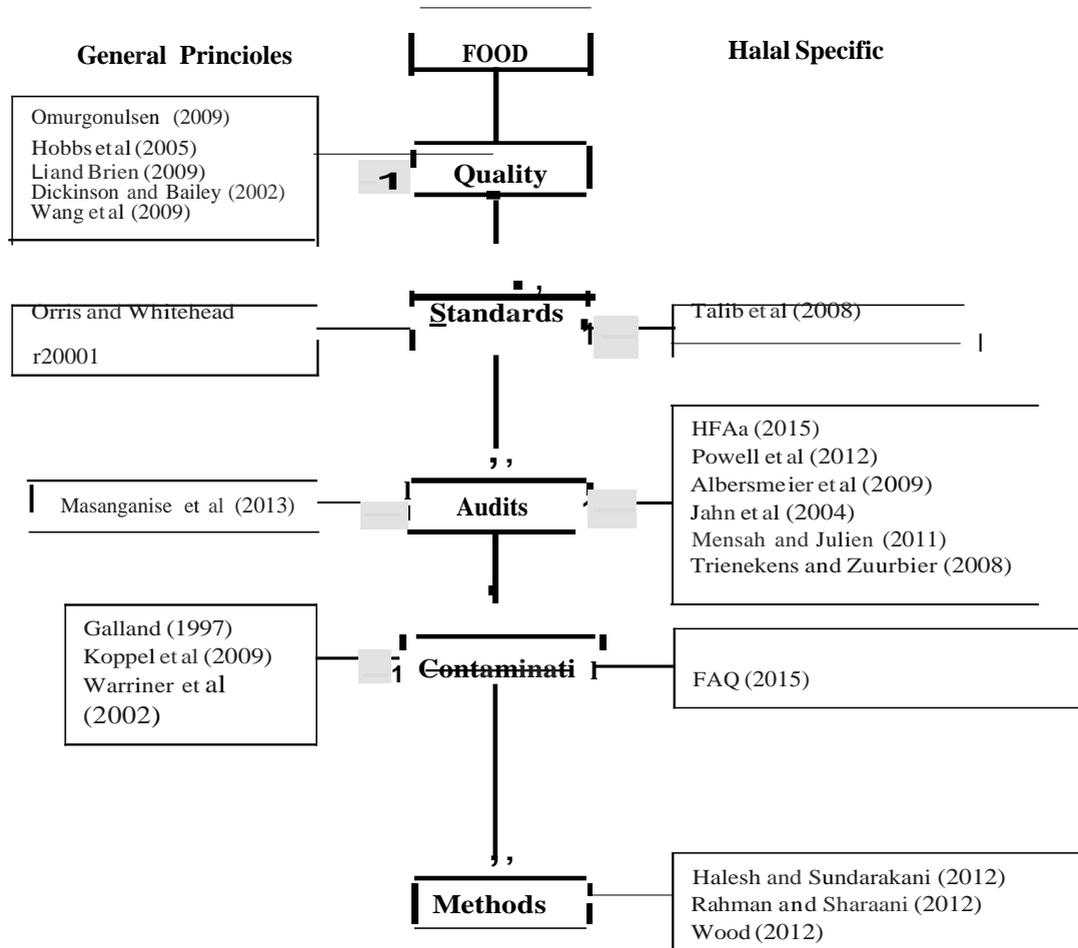


Figure 1. Food safety literature.

(1994, p. 13) as ‘an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident and relies on multiple sources of evidence’. It is especially suitable for studying phenomena in highly complicated contexts (Stuart, McCutcheon, Handfield, McLachlin, & Samson, 2002). Employing the case study approach provides a unique opportunity to understand the slaughtering practices of the case organisation in its entirety without isolating it from its context (Hartley, 1994).

Case selection often plays an influential role since the selected case(s) will have to provide valid information to support the theory building and explanation. Some academics declare the use of multiple cases is likely to create more robust and testable theory than single case research since multiple cases improve reliability and validity (Barratt, Choi, & Li, 2011; Eisenhardt & Graebner, 2007; Yin, 1994). Voss, Tsikriktsis, and Frohlich (2002), however, maintain that fewer numbers of cases affords the opportunity to engage in deeper investigation. Dyer and Wilkins (1991) suggested that single case studies enable the researchers to understand the phenomena under investigation in much greater detail. Validity and reliability are perennial topics of discussion when engaging in interpretive research. It has however been argued that they are terms of relevance only within positivist paradigms (Johnson, Buehring, Cassell, & Symon, 2006). Checkland and Holwell (1998) proffer the term ‘recoverability’ to refer to the generalisability of interpretive findings, which may be achieved through following a ‘declared in advance’ process of research while others maintain that triangulation (Eden & Huxham, 1996) and cyclic data capture and analysis aid in improving the quality of qualitative research (Becker, 1958; Bositis, 1998; Eden & Huxham, 1996; Miles, 1979, Sanday, 1979). This study incorporated instrumental triangulation through the adoption of semi-structured interviews and Process Mapping. Intertwining the interviews with key personnel during the construction of the Process Maps enabled the principle researcher to investigate salient issues and observations of the process and practices, and thereby facilitated cyclic data capture, preliminary analysis and the development of further lines of enquiry. Notwithstanding these efforts, the study is limited in that it presents the findings of a ‘snapshot’ view of activities within a single facility. The generalisability of the conclusions must therefore be considered within the constraints of this context.

The case organisation selected for this study is a slaughterhouse located in the UK. It employs around 10 management and production staff, and supplies meat to retailers and directly to consumers in the local area and the neighbouring large city. The organisation slaughters and processes around 300 sheep, 15 pigs and less than 10 cattle in a typical week. Different animals are slaughtered on different days of the week to accommodate the alterations in process equipment that are required for handling different-sized carcasses and methods of stunning. Separation of pig slaughter is essential to maintain the authenticity of Halal products. This study was made around observations of the process of slaughter of sheep.

In order to maintain anonymity, the name and location of the company are withheld (Babbie, 2009). Furthermore, every effort has been made to remove any distinguishing characteristics of the company and its products; for instance, the precise method by which carcasses that have been slaughtered by the Halal method are identified is simply referred to as ‘an identifying mark’ in the subsequent analysis and discussion. Similarly, the name of the Halal certifying organisation has been removed to avoid the actions of the case organisation or the findings of this study to be used to judge their certifying process.

3.1. Interviews

Interviews can be a very enlightening approach to gathering data (Fox, 2009; Saunders et al., 2007). Denscombe (2010) further recognises that interviews are useful when collecting privileged information and offer an insight into a particular person's position. Williams and Page (2013) suggest that body language is the single most important technique to read an individual, providing a powerful indication to their true feelings. Metcalf (1998) advances this postulate and claims that '55% of communication is nonverbal while 38% is tone of voice and 7% is actual words'. Instances where vocal intonation or body language confirmed or contradicted the articulated responses were recorded on field notes and appended to the interview transcripts to aid a deeper understanding of the interviewee's perspective: this was of notable value in the analysis of the veterinarian's responses in Section 4.2. The use of semi-structured interviews in this study provided unique and in-depth information around the themes identified in the literature review while affording the freedom to follow interesting and emerging themes.

Interviews were conducted with the owner of the slaughterhouse, the attending veterinarian and the Muslim slaughterman responsible for performing Halal slaughter. Interviews lasted around two hours and were recorded, with permission, using a Dictaphone and transcribed by the interviewer in order to reduce the risk of incorrectly interpreting responses (Opdenakker, 2006). Recording the interviews allowed the responses of the interviewees to be captured along with the additional unstructured questions that were posed by the interviewer. Interview data were thematically analysed along the themes identified in the literature review (Guest, MacQueen, & Namey, 2012). This also allowed the identification of interesting and emergent themes.

3.2. Process mapping

The principal investigator undertook participant observation of the slaughtering process and constructed a Process Map to identify the key stages (Bositis, 1988; Gans, 1999; Pohland, 1972; Vinten, 1994; Zikmund, Babin, Carr, & Griffin, 2010). In particular, activities that related to assuring product quality, traceability and contamination were noted (Figure 2). Any actions or issues arising over the course of the project were instantaneously sampled and recorded in field notes (Paolisso & Hames, 2010).

Process mapping is a useful technique that captures knowledge, which is normally retained within the organisation (Parry, Mills, & Turner, 2010). It portrays organisational knowledge and processes graphically and can generate valuable documents around which discussions of system problems and improvements may be made (White & James, 2014). Process maps can be considered to be forms of boundary objects that facilitate disparate groups to engage in collective action (Fenton, 2007; Star & Griesemer, 1989; Sullivan & Williams, 2012).

The process map was subsequently used to inform further unstructured interviews with the slaughterhouse owner, the slaughterman and the attendant vet, while it was also a valuable document that provided contextual information around which the interview data were interpreted and understood.

3.3. Ethical issues

This research poses significant ethical challenges for the research team. In undertaking first-hand observational research, the principal researcher may be seen as *both a stranger and a friend* to the organisation (Jarvie, 1969, p. 505). Tension then arises when the

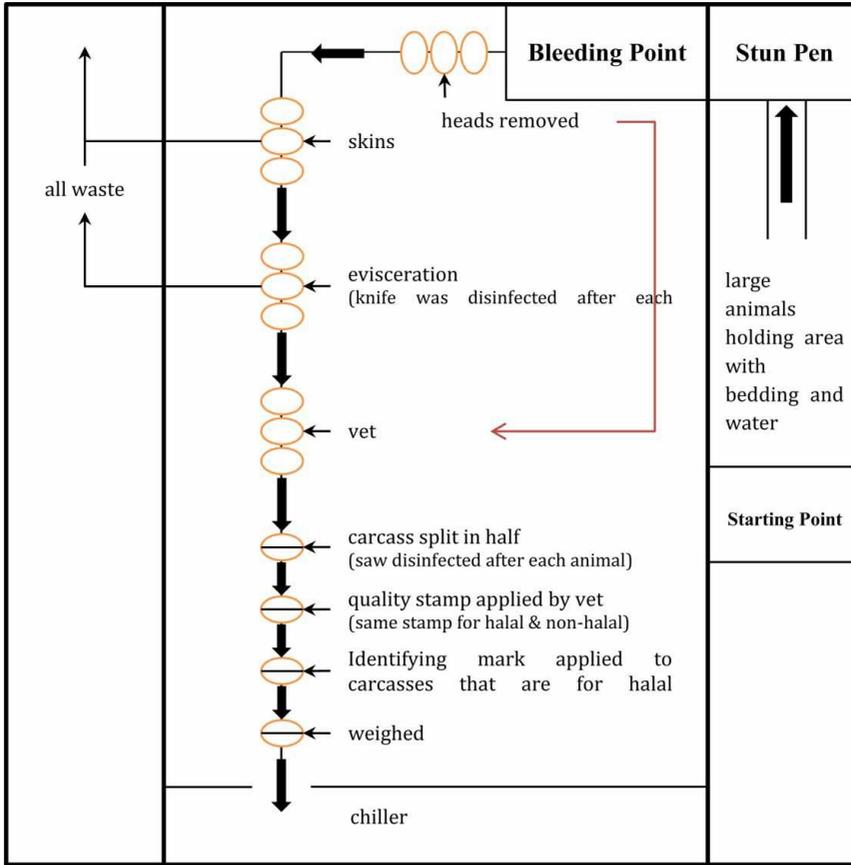


Figure 2. Process map.

researcher is faced with having to choose allegiance to either the scientific community or the organisation that they are studying (Arnould, 1998; Jarvie, 1969). This research explores the issues that surround the production of Halal foods and therefore, by definition, attempts to present problematic scenarios and practices. In seeking to satisfy the paradoxical ethical requirements of the research, this paper openly reports upon the practices that were observed and discussed but endeavours to protect the identity and trust of the organisations and individuals that were involved by maintaining anonymity throughout.

4. Findings and analysis

This section presents a discussion of the issues surrounding the production of Halal foods. In accord with the themes identified within the literature review, quality assurance practices are considered first, followed by those of traceability and finally, contamination. Following this, the paper ends with a statement of concluding remarks and suggestions for future research.

The process map of the activities conducted during the slaughtering of sheep is presented in Figure 2. The process begins when animals are introduced to the main building and enter the ‘stun pen’. From here, the physical slaughtering takes place and the carcasses

move along a motorised conveyor where they are processed in sequence before finally entering the chiller prior to despatch. Animal waste is removed through a separate exit.

Process equipment is altered according to the size and type of animal that is being slaughtered and processed on that day. During changeovers, the equipment, including hoists, hooks and knives, is disinfected, and floors, walls and surfaces are cleaned. Operator protective clothing is changed and mechanical handling devices, including pallet trucks, hand carts and trollies, are also disinfected.

4.1. *Quality assurance*

When exploring the quality assurance systems and controls, the owner explained that the organisation had implemented HACCP. However, he commented,

I could not operate without HACCP but it is rubbish. We don't use them.

The truth is they cost thousands of pounds to set up and we don't use them.

He further volunteered information about the value of HACCP, stating,

When I clean the slaughterhouse I have to write in the book 'all clean no problems', but if the place is filthy and I write 'all clean no problems' that is OK because it is in the book. But if it is spotless (which it always is) and I don't put it in the book then I haven't cleaned it.

These remarks echo the reservations that some have had over the efficacy of other quality control systems in other industries. For example, ISO9001 and 14001 have been found to be expensive undertakings for most companies, particularly small and medium-sized enterprises (White, Lomax, & Parry, 2014; White, Samson, Thomas, & Rowland-Jones, 2009). Mortimore and Wallace (1998, p. 1) make similar observations, noting that HACCP is often 'misunderstood and poorly applied in real situations', and this suggests that the problem is not one that is unique to the case organisation.

Clearly the importance of independent audits of HACCP and other systems in food production facilities is of great importance. Interestingly however, while the business owner confirmed that audits were undertaken by the FSA, there were no audits of the systems and practices that surrounded the production of Halal foods,

Not to do with Halal, no.

The religious people in [The Local City] know us (the Imams and certifying organisation).

They know who we have here and know what we do.

It would appear that the organisation has a trusted relationship with the Muslim community that it supplies. Further discussion reveals that the local consumers are satisfied if the person that conducts the ritualised slaughter is trained and the local Imam also endorses the company practices. Certifying organisations endorse food processing and distribution organisations, and this may be a useful guide for Muslim consumers: the owner confirmed that the organisation was certified by a UK certifying organisation. The owner expressed the constraints and measures that occur around the Halal slaughter of animals,

The only thing that applies in this abattoir to halal is that the animals are stunned and bled by the Muslim; that then ensures that they are Halal and not Haram.

The slaughterman even corroborated this statement. Although the individual who slaughters the animal is an important detail of Halal slaughter, it is not the only aspect that should be attended to. For example, in later discussions with the slaughterman he identified that the method of saying prayers over the animal was also an important element of the

ritualised slaughter. When asked if prayers were played from a recording or reiterated verbally he remonstrated,

No, I say it myself – it is not a recording system.

I pray on every single sheep.

If it is a recording system it is not going to be Halal; it has to be said every time, every single animal, pray over it.

The owner's statements about the factors that contribute to satisfactory Halal slaughter demonstrate the lack of regard that is given to the appropriate preparation of Halal food, something that has been observed by other studies. For example, Köppel et al. (2009) recognise that processes are not consistently operated in accordance with the appropriate regulations. While Miele, Rucinska, and Anil (2013) observed that the managers of conventional, non-Halal producing abattoirs had little concern or understanding of Halal certification or indeed the requirements of slaughter. They also confirm that trust between the consumers and the organisation is important, particularly for smaller slaughterhouses where the cost of formal certification can be prohibitive.

4.2. Traceability

Analysis of the Process Map (Figure 2) reveals an issue of considerable concern. Following the stunning and despatch of the animal, the head is removed from the carcass. All animals possess an ear-tag; this tag is numbered and uniquely identifies the animal. This enables the history of the animal to be recalled; including its place of origin, subsequent ownership and veterinary records. Once the head is removed, the carcass can no longer be uniquely identified. When the owner was asked why the head is removed first, he replied

That is how the FSA regulate the process to be undertaken.

The owner mentioned that at one time the ears of the animal were left on and the carcass would arrive at the butchers with the ear tag attached, thus maintaining traceability of the animal. However, the owner complained that

The FSA now say it is unhygienic to have wool in the chiller, and this is an argument I have had with them, that traceability is lost.

Maintaining full traceability is essential in order to allow problems to be traced to their route cause. Folinas, Manikas, and Manos (2006, p. 625) maintain 'it is necessary for the consumer to have immediate access to information related to all stages of production and treatment, from farm to fork'. During the participant observation, the researcher also took the opportunity to acquire the attendant vet's opinion (who is an employee of the FSA) regarding the early removal of the head. He replied *It is the best way* and refrained from elaborating. The body language of the vet, however, communicated a different response to what was verbally given – there was a physical shrug and an intonation of doubt in his reply. It is surprising to find that no further attempt had been made to remedy this issue. Ear tags could, for instance, be bagged and tied to the carcass, or the tag details could be manually recorded on a label that accompanied the carcass in order to maintain traceability.

4.3. Contamination

An interesting finding was made when asking the owner about the measures that were taken to prevent contamination. He discussed issues such as cleanliness but he objected

to the use of the term ‘contamination’ when used in the context of producing Halal and non-Halal products, stating,

There is no cross-contamination; the Halal meat slaughtered here today will be delivered within hours of their death. So in regards to contamination with Halal and non-Halal it really doesn’t happen.

During further discussion, it was interesting to learn that the owner of the business did not perceive Halal and non-Halal meat coming into contact as contamination, stating,

I do not like the word contamination as we do not produce contamination; when I think of contamination I think of shit.

Reflecting the observations made earlier about the apparent lack of concern and knowledge of Halal food requirements, the owner’s narrow concept of ‘contamination’ raises issues over the legitimacy of the Halal production process. One may begin to ask what impact this may have upon the diligence of the organisation in following other food quality assurances.

Following upon this line of enquiry, subsequent interviews explored the procedures that were in place to reduce the risk of cross-contamination between Halal and non-Halal products. During early discussions he replied,

Halal animals are only killed on Mondays and Thursdays.

This was mentioned by the owner a further five times over the duration of the interviews. However, on two of those five occasions there were indications to suggest that Halal animals were not in fact the only animals being killed on a Monday and Thursday. The owner made the following comments, which suggested that the practice of performing only Halal slaughter on particular days was not in fact adhered to at all times,

Everything killed here today will be Halal except the two cattle.

We kill mostly only Halal on a Monday and a Thursday.

Interviews with the slaughterman also indicated that non-Halal slaughter occurred on a Monday and Thursday in addition to Halal slaughter. At this point, the slaughterman rapidly retired from the conversation and hurriedly left the room as the owner interrupted him and said,

This is all tape recorded.

Observation of the process while constructing the Process Maps also revealed that non-Halal carcasses were kept in the chiller on Monday, a day when Halal slaughtering was taking place. Halal carcasses received an identifying mark at the point of slaughter that was used by the slaughterhouse staff, transport companies and local butchers to recognise Halal products. Furthermore, the Halal slaughter was being performed with the same blades that had been previously used for non-Halal slaughter: other process equipment had also not been cleaned between the different slaughtering operations: knives, hooks and operator clothing. This clearly presents a significant risk of cross-contamination of Halal and non-Halal products. It is debatable whether the close proximity of Halal and non-Halal carcasses would be classed as contaminating; however, our discussions with scholars of Islam suggest that the slaughtering of animals with blades that have been used for non-Halal slaughtering, without proper sterilisation in between, would constitute ‘contamination’ and consider the final products to be declared Haram.

In addition to confirming that Halal and non-Halal slaughter was performed on the same day, the owner also ventured,

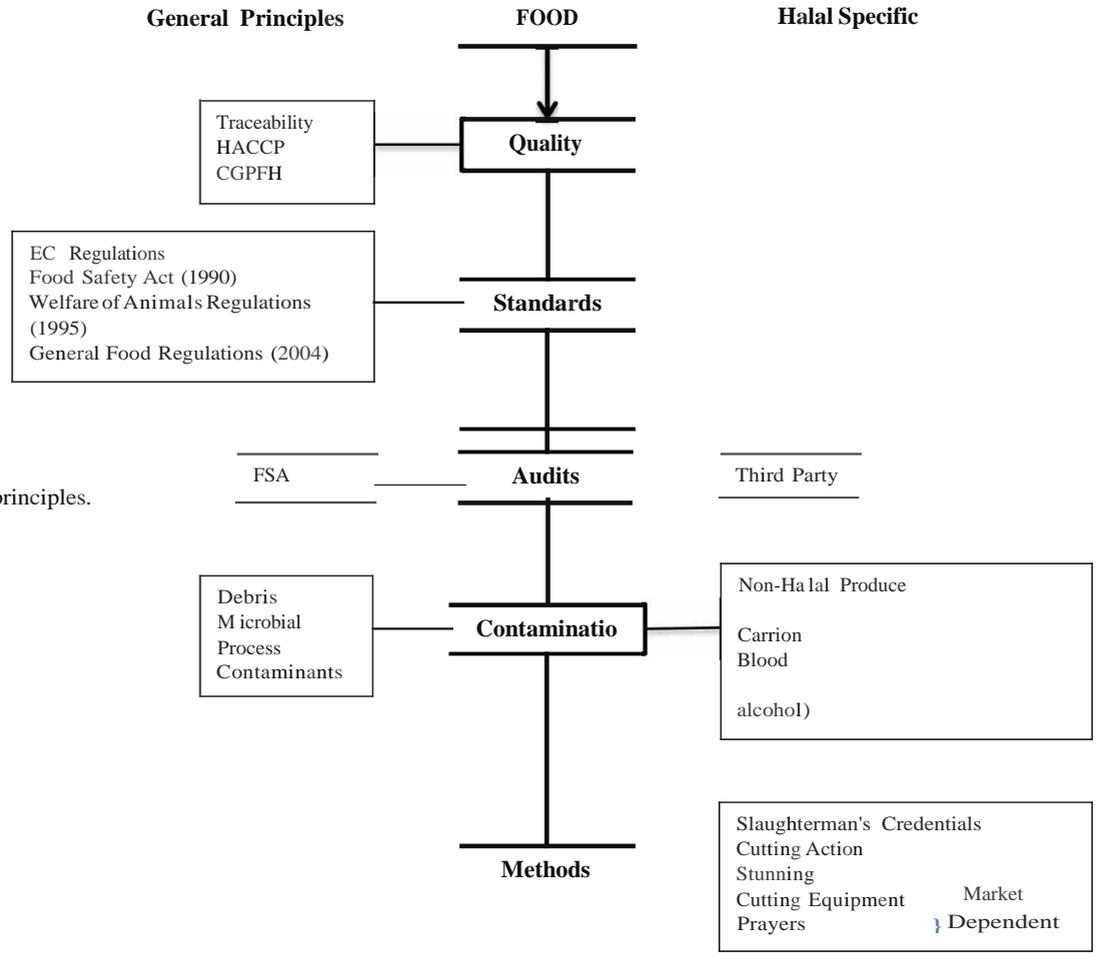


Figure 3. Food safety principles.

You will see three sheep in the chiller without [An Identifying Mark] on them. Although [The Muslim Slaughter Man] has killed them we are not selling them as Halal.

While, more worryingly, the slaughterman stated,

When we do Halal, if we got some private its non-Halal but I still do them Halal.

This is an issue of great concern. There is some assumption within policy makers and food producers, as well as some consumers, that Halal meat is quite acceptable to non-Muslims. However, it is well known that concern over animal rights and animal welfare is a powerful influencer of consumer actions (Adams, 2008; Allen, 2005; Peek, Dunham, & Dietz, 1997). It is likely that some consumers would reject meat that had been produced by the slaughter of conscious animals. Furthermore, some consumers may reject the provision of Halal sourced meat on religious grounds: even within Muslim communities there are varying degrees of religiosity that affect consumer behaviour (Mukhtar & Butt, 2012).

To summarise, Figure 3 depicts the particular requirements for the production of Halal and non-Halal foods in the slaughterhouse upon which this study is based. The analysis identifies significant concerns around the general practices that fail to maintain the traceability of products throughout the facility along with questions over the use and value of HACCP controls. The efficacy of audits is recognised within the literature and the effectiveness of third party audits appears to require attention and improvement.

Furthermore, the nature and range of substances that may be considered to be contaminants is far more complex during the production of Halal foods and requires operators to possess a considerable degree of subject-specific knowledge. Finally, the acceptability of a particular method of animal stunning and slaughter is an important and emotive subject that appears to be dependent to some considerable degree upon the expectations and perceptions of the consumer market. All of these factors conspire to make the production of Halal foods a particularly difficult undertaking and is one that is further complicated in those facilities that endeavour to process both Halal and non-Halal food products.

5. Conclusion

The Halal food industry is growing in importance due to increasing global demand and heightened consumer concerns over the legitimacy of the products. Despite this it has received surprisingly little academic attention. This study makes a detailed investigation of a slaughterhouse in the UK and reports on the practices that are employed when producing both Halal and non-Halal meat products in a single facility. The findings of this study are likely to be of interest to national and international audiences that are involved in the legislation, certification, production and consumption of Halal foods.

The case organisation is compliant with current legislation, yet significant deficiencies were found within the methods employed for both Halal and non-Halal food production. HACCP systems were in place but were viewed as 'necessary administrative evils' and were not instruments for the assurance and improvement of food quality. The organisation disclosed that records did not reflect the actual condition of the premises but that every effort was made to maintain the necessary standards of cleanliness. The mandated method of removing the head from the carcass meant that the traceability of product could not be reliably maintained through the facility.

Staff within the organisation were largely unaware of the requirements of the Halal method of food production. While the method of slaughter was managed appropriately, opportunities for contamination between Halal and non-Halal products were observed throughout the production process. The practice of performing the Halal method of

slaughter for non-Halal products is of considerable concern. This method of slaughter may be unacceptable to some consumers on the grounds of animal rights or religious differentiation. Furthermore, the sale of such products may be considered to contravene the Trade Descriptions Act (1968) and Sections 14 and 15 of the Food Safety Act (1990) since a description or claim of the product being 'non-Halal' would not accurately depict the manner in which the product was made or processed.

Overall, this study finds that Halal production in those slaughterhouses that also produce non-Halal products is complex and presents significant risk of cross-contamination that may declare the resultant food Haram. All slaughterhouse staff require detailed instruction in the requirements of Halal food production, particularly around cross-contamination. It is not just the method of slaughter that constitutes Halal food production.

The authenticity of Halal food products appears to be based to a large degree upon trust. While this is an important element of the relationship between the manufacturer and the consumer, consumers should be more aware of the day-to-day practices that are employed in the production of Halal meat products. Food standards and authorities should be more aware of the specificities of Halal food production and introduce the means to assure consumers of the legitimacy of the products that they procure.

The industry is faced with difficulties that are likely to become more pressing. On the one hand, Halal food production requires more detailed quality assurance measures to ensure the legitimacy of products. Operators and staff within this industry also need to be more understanding of the complexities of Halal food production to ensure that they are meeting customer requirements. Smaller companies however, may be unable to afford more burdensome legislation and complex quality control systems. Measures to improve this sector of the industry must take into account of the needs of small businesses and the financial constraints faced by non-profit third party certifying organisations.

The findings of this study are somewhat limited since it is based upon a case study examination of a single organisation. However, it serves to highlight the additional complications that are presented in the performance of Halal food preparation. It also identifies areas of concern around policy and practice that require addressing. Furthermore, it suggests several avenues for future research. The manufacture of food products that are subject to ritualistic methods of production is a field of research that has, as yet, received comparatively little academic attention. Yet, as consumers become more aware of food production methods and risks, there is likely to be an increased pressure for organisations to improve the transparency of their methods and engender a greater degree of trust. The notion of trust is also an interesting dimension of food consumer behaviour. Trust may be fostered through inter-personal relationships, labelling and certification. How these elements are interrelated and their relative effects upon consumer trust require explanation. The assumption that Halal food is acceptable to non-Muslim consumers also requires considered attention. Research should investigate the perceptions and expectations of religious and non-religious consumers toward food that has been ritualistically prepared.

Disclosure statement

No potential conflict of interest was reported by the authors.

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