

## Article

# The Variations in Religious and Legal Understandings on Halal Slaughter

Chandia, Mahmood and Soon, Jan Mei

Available at <http://clock.uclan.ac.uk/20376/>

*Chandia, Mahmood and Soon, Jan Mei ORCID: 0000-0003-0488-1434 (2018) The Variations in Religious and Legal Understandings on Halal Slaughter. British Food Journal . ISSN 0007-070X*

It is advisable to refer to the publisher's version if you intend to cite from the work.  
<http://dx.doi.org/10.1108/bfj-03-2017-0129>

For more information about UCLan's research in this area go to <http://www.uclan.ac.uk/researchgroups/> and search for <name of research Group>.

For information about Research generally at UCLan please go to <http://www.uclan.ac.uk/research/>

All outputs in CLoK are protected by Intellectual Property Rights law, including Copyright law. Copyright, IPR and Moral Rights for the works on this site are retained by the individual authors and/or other copyright owners. Terms and conditions for use of this material are defined in the <http://clock.uclan.ac.uk/policies/>

# The Dynamics-Variations in Religious and Legal Understandings of Halal Slaughter

## Abstract

Purpose: This paper attempts to provide an overview of ~~in~~ different understandings regarding the concept of "what constitutes halal" and "who determines this concept?" In practice, this equates to contemporary legal understandings versus religious understandings. The paper further aims to provide an overview of competing Muslim understandings regarding the concept of "What does or does not constitute halal slaughter?" In practice, this equates to evaluating the application of no stunning at all upon an animal (unanimous acceptance) versus the application of reversible stunning upon an animal (contested).

Design: The study includes a review of priori literature and considers the current scenario of the halal poultry trade and raises important questions regarding Islamic dietary practices, halal food integrity, religious and animal welfare understandings. ~~This includes evaluating the ever-increasing demand for halal products and to what extent this demand can be addressed. Three key questions were raised: "To what extent does stunning impact halal slaughter?", "Who determines what is halal slaughter?" and "What are the variations and tensions between legal and religious understandings of halal slaughter?"~~

Findings: The examination of such requirements and concomitant consumer and provider expectations is underpinned by a study of an operational framework, i.e. industry practices with poultry (hand slaughter, stunning, mechanical slaughter, etc.), ethical values and market forces to appraise whether there is a point of convergence for these that can be beneficial for both seller and consumer concerns. This paper has considered different perspectives on the religious slaughter and provided an overview of competing understandings regarding the ~~above concepts. concept of "To what extent does stunning impact What constitutes halal slaughter?", "Who determines what is halal this slaughterconcept?" and "What are the dynamics variations and tensions between legal and religious understandings of halal slaughter?" and "What are the implications for industry".~~

Originality/value – This study although academic and philosophical in nature, ~~it~~ raises questions on route to suggesting future research directions. It provides real value in stimulating more research in the area of halal food production and contributes to the understanding of different slaughter requirements ~~for~~ religious slaughter and the meat industry. It further sheds light on not only the religious and secular legal frameworks on animal slaughter and welfare but also the variations in understanding between them and provides examples of attempts to bridge any gap. The paper highlights the importance of halal food based on religious values and its implications for wider society.

39 Keywords: halal; ~~integrity; market growth;~~ poultry; ~~reversible; slaughter; productivity;~~ stunning, [law,](#)  
40 [industry practices](#)

41

## 42 **Introduction**

43 Halal is the Arabic term for lawful or permissible – and within the food context, halal refers to the  
44 Islamic dietary standard (~~HMC, 2016~~[Regenstein et al. 2003](#)). Halal food products are a growing  
45 demand among Muslims across the world. This demand is projected to ~~double in the next three~~  
46 ~~decades~~[contribute up to 17.4% of the world food market in 2018 \(Lubis et al., 2016; Thomson](#)  
47 [Reuters, 2015\)](#). The key drivers for this growth are understood to be population growth, an increase  
48 in halal consciousness and disposable income ([Thomson Reuters, 2015](#)).

49 The term halal is popularly associated with meat and food products, but it should be noted that halal  
50 is a way of life and driven by values based on the Qur'ān and Ḥadīth as well as post-Qur'ānic  
51 literature. The more elaborative expressions of this way of life can be located in the tommes of *fiqh*  
52 (Islamic legal thought). Therefore, halal encompasses a variety of sectors including pharmaceuticals,  
53 cosmetics, clothing, financial services, logistics, hospitality (Muhammad, 2015) and tourism  
54 (Henderson, 2015). The production trends of the halal food industry suggest that developed nations  
55 with minority Muslim populations are the biggest producers of meat aimed for the halal markets; for  
56 example: Australia (a beef producer), New Zealand (a lamb producer) and Brazil (a chicken producer)  
57 (Norāzmi and Lim, 2015). [The Halal food market was born in industrial countries to supply halal food](#)  
58 [to Muslim majority countries. In fact, the halal food trade was made possible by technological](#)  
59 [progress and access to free trade. \(Bergeaud-Blackler, 2010\).The provision of products by industrial](#)  
60 [countries for this market has now extended beyond halal food. \(Bergeaud-Blackler, 2010\).](#)

61

62 [Nevertheless, w](#)hilst these countries provide for the halal market, the halal nature of the meat  
63 provided by them is not void of scholarly contestations (Muftī 'Uthmānī, 1997; Muftī 'Uthmānī, 2006)  
64 ~~whilst meat products are strictly regulated in the halal food sector~~. The Islamic method of slaughter  
65 is known as *al-Dhabh* (Shragge and Price, 2014), and carrions, blood, porcine and meat of dead  
66 animals or those slaughtered without following the Islamic law are prohibited for consumption  
67 (Qur'ān: 2:168, 2:172, 5:3, 5:90, 23:51). Policy makers, scientists and food industries would benefit  
68 to understand, [in order to avoid such contestations](#), that the halal slaughtering process is rooted in  
69 the primary scriptures of Islam and is extensively discussed within classical Islamic legal texts (Al-  
70 Murghinānī, 1894) and modern day *fiqh* formulations (Al-Raḥmānī, 2006). Any compromise on these  
71 requirements renders the animal inconsumable.

72

73 The basic principles of Islamic law on the issue are quite definitive: that the animal is not one that is  
74 a prohibited animal to consume (e.g. lion, pig, shark, etc.) and the following rules are fulfilled during  
75 the slaughter process: i.e. the requisite invocation is recited upon the animal about to be slaughtered,  
76 the slaughterer is a Muslim [or a person of the Book \(as long as the latter believes in God, His Prophet](#)

77 [– Moses or Jesus – and their scriptures](#)) and the requirements of the process are fully met ([Mufti](#)  
78 [Shaf'ī, 1968](#)). This is in accordance with the interdictions contained in the Qur'ān and related  
79 sciences. This pronouncement is highly important in order to obtain permission from the Creator  
80 before taking the life of another creature (Al-Qaradāwī, 1994). The slaughterer understands that the  
81 act is not an act of aggression rather a need necessitates it, and that, it must be carried out, in the  
82 name of the Creator (Allāh) (Farouk *et al.*, 2015). Further, the act must be carried out in a merciful  
83 manner as per Islamic *fiqh* stipulations (Al-Qaradāwī, 1994).

84

85 The focus of the above discussion is all the more important in the 21<sup>st</sup> century due to the volume and  
86 commercial value of the halal market and the halal process. In order to meet the market growth and  
87 sustain productivity, the halal supply chain may need to increase productivity further whilst of course  
88 maintaining the requirements of halal. In addition to this, there are also competing understandings  
89 [between legal and Islamic stipulations](#) regarding animal welfare (e.g. -slaughter without stunning)  
90 and concerns about animals being killed whilst receiving an overdose of stunning (e.g. electrical  
91 stunning of poultry). Hence, the emerging questions are: Can science and technology be balanced  
92 with religious jurisprudence? How can halal integrity (i.e. -animals being slaughtered according to the  
93 halal method) be ensured and how can the global demand for halal meat be served? In summary,  
94 how can the 'middle way' be maintained?

95

96 In this context at the heart of this paper are the following three themes:

- 97 1. [To what extent does stunning impact impact](#) ~~What constitutes~~ halal slaughter?
- 98 2. Who determines [what is halal slaughter](#) ~~this concept~~?
- 99 3. What are the [variations in dynamics](#) ~~of~~ religious and legal understandings of halal slaughter?

100

101 The paper undertakes a ~~literature a~~ review of [commercial poultry processing, followed by](#) -halal  
102 slaughtering [and stunning](#) of poultry. [The three themes are explored](#) ~~including both non-stunned and~~  
103 ~~pre-slaughter stunned practices~~ with a view to recommend halal slaughter based on the different  
104 schools of legal thought. Likewise, this review will attempt to ensure integrity of religious slaughter  
105 whilst addressing religious regulations and promoting halal business performance in the food supply  
106 chain. This review does not intend to argue against any different school of legal thought or religious  
107 belief, but the aim is to evaluate objectively the various positions that may enable or even determine  
108 slaughter and consider the role of economics and market trends within this debate. The paper argues  
109 that halal slaughter even in the current age should be non-exploitative, fulfil Islamic stipulations, and  
110 be beneficial for both buyer and seller, irrespective of the growth in the halal food market. [In order to](#)  
111 [achieve this, there is a need for constructive dialogue between proponents and supporters of non-](#)  
112 [stunning methods. Farouk et al. \(2014\) summed up some key factors for consideration to understand](#)  
113 [the 'scientific methods that have proven to harmonize the religious and spiritual requirements must](#)  
114 [be adopted to improve animal welfare and to produce meat of both high spiritual and conventional](#)

115 qualities'. It is anticipated that t~~This review is expected will to contribute to a better understanding of~~  
116 the above themes and to recommend further areas of study.

## 118 **Poultry processing**

119 This understanding is commenced by a study of poultry processing. Food scientists argue that large-  
120 scale poultry processing plants are designed to process between 4,000 to 12,000 birds per hour on a  
121 single line in order to meet consumer demand for non-religious poultry products (Raj, 2014; Schilling  
122 *et al.*, 2014). The practice of stunning before slaughter is a statutory requirement in Europe for non-  
123 religious products and applied to render animals unconscious. This, it is argued, is to ensure that the  
124 animal experiences no anxiety, pain, suffering or distress prior to the slaughtering process (Velarde *et*  
125 *al.*, 2014). The most common stunning method is electrical stunning (ES). It is relatively inexpensive  
126 and undemanding to apply. This involves a large fibreglass bath with brine/water with an overhead  
127 shackle line where birds are hung upside down and passed through the electrified water bath, whilst,  
128 a current flows through the whole body towards the shackle that serves as the earth (Raj, 2014;  
129 Schilling *et al.*, 2014). The birds then pass through the stunner in a continuous line and it can operate  
130 up to 220 birds per minute in a high throughput production site (Raj, 2014). There is a difference  
131 between Europe and the United States (US) regarding the strength of the current. An irreversible  
132 stun (120-150 mA per bird; 50 – 400 Hz) is used in the EU and in this case the birds are stunned to  
133 death (irreversible stunning) (EC 1099/2009; EFSA 2005; Schilling *et al.* 2014)

134  
135 In the US birds are immobilized at low voltage ES (10-25 V) and high frequency (500 Hz) systems. In  
136 low voltage ES, birds will regain consciousness if not bled within 2 minutes after stunning. Other  
137 types of stunning include controlled atmosphere stunning (CAS) and low atmospheric pressure  
138 stunning (LAPS). CAS involves changing the surrounding atmosphere by reducing oxygen, increasing  
139 carbon dioxide, or a combination of both methods, or combination of oxygen with inert gases (e.g.  
140 nitrogen or argon). The LAPS, reduces atmospheric pressure (e.g. 0.20-0.29 ATM) by evacuating air  
141 from an airtight decompression chamber; this results in subsequent unconsciousness (Schilling *et al.*,  
142 2014). The above mode of immobilisation (electrical stunning) is intensely contested for its halal  
143 authenticity for the Muslim consumer market (EHDA, 2016; HAIP 2015; HMC, 2016; Muftī 'Uthmānī,  
144 1997). Other reviews of opposing and supporting views and issues are highlighted by Fuseini *et al.*  
145 (2016b), Regenstein (2012) and Zoethout (2013).

146  
147 Further~~Nevertheless~~, alongside the stunning issue there is also another concern. From an animal  
148 welfare point of view, commercial electrical water bath may cause unnecessary pain and suffering  
149 otherwise caused by un-crating, shackling and pre-stunning electric shocks, inadequate stunning and  
150 recovery of consciousness leading to live birds to be scalded. Hence killing of poultry using gases  
151 whilst birds are transported within crates will, it is argued, eliminate the handling and stressing of live  
152 birds prior to stunning. This method was, originally proposed by the Farm Animal Welfare Council in

153 the UK in 1982 (cited in Raj, 2014). It may be well in intention but challenges halal slaughter  
154 fulfilment.

155

### 156 **To What Extent Does Stunning Impact Constitutes Halal Slaughter?**

157 The practice of stunning albeit underpinned by good intentions simultaneously raises concerns  
158 regarding the fulfilment of the requirements of halal slaughter ([Nakyinsige et al., 2013](#)). One such is  
159 that the animal is not alive at the time of slaughter and the flowing blood has not completely drained  
160 out due to stunning. When poultry is stunned – although voltage and size of birds have been  
161 standardised – it is argued that some birds arrive at the slaughter process dead due to the stunning  
162 process (and different thresholds) or due to a delay in the time of reaching the slaughter process so  
163 the blood cannot be drained ([Abū Ibrāhīm, cited in HMC 2016; Lever and Miele, 2012 HMC, 2016](#)).

164 ~~This totally compromises the halal definition.~~

165

166 ~~“Stunning the animal before slaughter leaves a huge doubt into the halalness of the animal  
167 as many could be killed by the stunning especially in the case of poultry. Furthermore, it  
168 prevents the drainage of [the] entire blood resulting in it being retained in the animal and  
169 retained blood causes germs and bacteria, it deprives animals from the benefits of  
170 tasmiyah due to it being unconscious, it is inhumane to animals and causes unnecessary  
171 pain and suffering. It is in reality not done for animal rights purposes, but in order for the  
172 industry to kill more animals quicker, so as to increase profits. According to the majority  
173 of the ‘Ulamā stunning is not accepted in Islam and stunning could render the meat haram  
174 in many cases” (Abū Ibrāhīm, cited in HMC 2016; Lever and Miele, 2012).~~

175

176 Likewise, the currents used in electric stunning will induce cardiac arrest. This is linked with higher  
177 incidence of red wing tips in poultry ([Ali et al. 2007; McNeal et al., 2003](#)). ~~This is caused by  
178 inadequate bleeding of the birds after cardiac arrest where the wings of killed instead of stunned  
179 birds hang low resulting in stagnation of blood in the wing veins.~~ In order to prevent killing of birds  
180 and reducing quality defects and ensuring all blood is drained out, an alternative to whole body ES, is  
181 head only stunning where the stunning current only passes through the head of birds. Broilers (i.e.  
182 chicken produced for their meat) however may become unconscious and insensible after head-only  
183 ES with pin electrodes using a current of  $190 \pm 30$  mA for 0.5 second ([Lambooi, 2014](#)). [Velarde et al.](#)  
184 (2014) observed that 11% of poultry showed rhythmic breathing after stunning. ~~However~~ But, 15%  
185 of the electrically stunned poultry showed rhythmic breathing at the moment of neck cutting and 5%  
186 showed this reflex 30 seconds later. [Anastasov and Wotton](#) argue that it is unreliable to use an  
187 absence of rhythmic breathing movement as a method to identify a loss of consciousness in birds  
188 ([Anastasov and Wotton, 2012](#)). The high percentage of rhythmic breathing after electrical stunning  
189 indicates that the settings of the stunning system or the interval between the end of current flow and  
190 cut interval might have been sub-optimal. Hence, a set current of 250 mA is recommended for

191 practical implementation to overcome individual differences in resistance (Lambooj, 2014). ~~Lambooj~~  
192 ~~(2014) has recommended the minimal current for electrical stunning of poultry (Table 1).~~The  
193 Department of Islamic Development Malaysia (2011) has also provided specific guidelines for religious  
194 pre-slaughter stunning of broiler. For example, broilers weighing between 2.40-2.70 kg should be  
195 stunned using 2.50 – 10.50 voltage for 3.00-5.00 seconds.

196

197 ~~Insert Table 1 here~~

198

199 The Department of Islamic Development Malaysia (2011) support and argue that electrical water  
200 bath stunning is the 'most common method used at a poultry processing plant'. It also provides a set  
201 of stipulations for its lawful application. This is deemed as lawful and reversible, in its submission,  
202 thereby not compromising halal slaughter requirements. ~~On the other hand, Pakistan does not favour~~  
203 ~~stunning (Pakistan follows the Hanafī School of legal thought) whilst Malaysia adheres to the Shāfiīe~~  
204 ~~School of legal thought and allows stunning (Lever and Miele, 2012). Pakistan has a huge animal~~  
205 ~~resource base (Qureshi et al., 2012) is also one of the top halal meat producers to produce and~~  
206 ~~export halal meat to United Arab Emirates (Farouk, 2013; ITC, 2015). Pakistan's method of slaughter~~  
207 ~~also requires that the animals are laid on their left flank, preferably facing the Qibla (orientation~~  
208 ~~towards Makkah, in modern day Saudi Arabia). This position (lying on the left flank) may also~~  
209 ~~increase the likelihood of maximum draining of blood due to body pressure on the heart (Awan and~~  
210 ~~Sohaib, 2016). The distinction between contemporary law regarding animal welfare and Islamic law~~  
211 ~~does not apply to Islamic countries and Muslim majority countries. There is a conscious effort to~~  
212 ~~ensure local halal standards are adhered to in such places. However, the interpretations may slightly~~  
213 ~~vary on some issues albeit there is universal agreement on a set of benchmarks (see, Introduction).~~

214

215 However, ~~irrespective of the variance in the interpretations regarding the use of stunning~~ there is an  
216 assumption in this generic approach to the use of a predetermined electric current. This entails that  
217 whilst the weight parameter of every chicken may be set, will every chicken ~~necessarily~~ be able to  
218 bear the same current and remain alive after the set voltage has been applied. Poultry are of  
219 different strength even at a particular weight parameter and the capacity of each to bear the voltage  
220 current varies irrespective of weight (HMC, 2016). ~~– This is why those who do not accept electric~~  
221 ~~current stunning object. (HMC, 2016).~~The underlying question at the heart of the stunning debate is  
222 to assess whether the conditions stipulated by Islamic law are being met or not by the intervention of  
223 machinery. If so, then the animal would be halal otherwise not (Muftī Shaf'ī, 1968). Similarly,  
224 legislative requirements for stunning before slaughtering vary from country to country. The  
225 regulations of the United Kingdom are presented below as well as a generic overview of the European  
226 Union.

227

228 **The Practice of Stunning in the United Kingdom**



229 The Welfare of Animals' (Slaughter or Killing) Regulations 1995 (Statutory Instrument [SI]) No.  
230 1995/731 as amended by SI No.1999/400, permits slaughter of animals (cattle, sheep, goats,  
231 turkeys, chickens, hens, guinea fowl, ducks, geese and quail). Schedule 5 Part II (which relates to  
232 stunning and killing of animals) does not apply to any animal which is slaughtered in accordance to  
233 Schedule 12 Part III (relates to slaughter by a religious method). It explains that slaughtering an  
234 animal without stunning it, is allowed to meet Jewish and Muslim religious requirements using Jewish  
235 and Islamic methods, respectively. In the case (the former is not the subject of this paper) of the  
236 latter:

237

- 238 • By a licensed Muslim slaughterman;
- 239 • In a licensed abattoir or licensed poultry slaughterhouse which is under the official veterinary  
240 supervision or other officially regulated poultry slaughterhouse (DEFRA, 2009)

241

242 Whilst legislation does allow religious slaughter without stunning, some academics raise potential  
243 welfare concerns regarding animal pain sensations during neck-slit slaughter (Gibson *et al.*, 2009),  
244 whilst others discuss fear and distress during new situations such as pre-slaughter handling (Duncan,  
245 2004). There are equally concerns regarding the time taken to lose consciousness as a prolonged  
246 period of time suggests an animal experiences longer pain following the cut (Gregory *et al.*, 2010)  
247 and whether the animal experiences distress while bleeding out (Gregory, 2005). Likewise, concerns  
248 regarding suffering have also been raised regarding aspiration or inhalation of blood in the respiratory  
249 tract (Gregory *et al.*, 2009). [Interestingly, the practice of stunning in the UK was first authorised in](#)  
250 [1928 by an Islamic scholar from the Woking mosque \(Slaughter of Animals Bill 1968\). As the Muslim](#)  
251 [community grew in numbers post world war two, consequently the claims for public recognition of its](#)  
252 [needs had a similar trajectory and the discussions around Halal food for example intensified. Legal](#)  
253 [dispensations have allowed religious slaughtering as discussed above and that has been the preferred](#)  
254 [option.](#)

255

256 In essence, in the U.K. the law determines what form of slaughter can take place. It is only legal  
257 dispensations that give license to religious communities the freedom to apply religious understandings  
258 to slaughtering animals. Equally, religious communities are required to remain within legal  
259 boundaries. Whilst U.K. legislation allows minority religious communities special dispensations, this  
260 has equally attracted contestations [from among](#) animal welfare practitioners. Conversely, minority  
261 communities uphold their own concepts of animal welfare and contest [some](#) secular understandings  
262 of the same. [Some scholars argue that modern animal welfare requirements are in harmony with](#)  
263 [Islamic requirements \(Farouk et al., 2016\).](#) -These indifferent understandings, at times, gives rise to  
264 tensions and misunderstandings. It further<sub>7</sub> highlights the challenges of maintaining a balance  
265 between the secular and the religious within societies. This is, all the<sub>7</sub> more challenging for religious  
266 communities in the European Union (E.U.).



267

## 268 **The Practice of Stunning in the European Union**

269 The Council Directive 93/119/EC of 22<sup>nd</sup> December 1993 relates to the protection of animals at the  
270 time of slaughter or killing. It applies to the movement, lairing, restraint, stunning, killing, and  
271 slaughtering of animals kept and bred for the production of meat, skin, fur or other products. It  
272 advocates that animals shall be spared any avoidable excitement, pain or suffering during those  
273 times. A competent authority is the central authority of a Member State [that is](#) competent to ensure  
274 compliance with the requirements of this Regulation or any other authority to which that central  
275 authority has delegated that competence. The religious authority in EU Member states where religious  
276 slaughtering is practised should be competent in the application and monitoring of the special  
277 provisions that apply to slaughter according to religious requirements. There should be an official  
278 veterinarian and the slaughter must take place in a slaughterhouse. As regards the said provisions,  
279 the authority shall operate under the official veterinarian designated by the central authority of the  
280 EU Member States as defined in Article 2 of Directive 64/433/EEC (Directive 64/443/EEC; EC Directive  
281 93/119; EC Directive 1099/2009). The directive further explains that stunning shall not apply to  
282 animals subjected to particular methods of slaughter prescribed by religious rites, providing the  
283 slaughter take place in a slaughterhouse ([EC Directive 93/119](#); EC No. 1099/2009). [There are](#)  
284 [additional requirements under the Welfare of Animals at the Time of Killing \(England\) Regulation. For](#)  
285 [example, bBirds must be killed in a rapid, uninterrupted movement using undamaged knives of](#)  
286 [sufficient size and sharpness \(WATOK 2015a\).](#)

287 Nevertheless, slaughter without stunning is illegal in countries such as Iceland, Sweden, Denmark,  
288 Norway and Switzerland, and outside of the EU, for example, in New Zealand (Anil and Gregory,  
289 2014; Kern, 2011).

290

291 In essence, whilst E.U. legislation allows minority religious communities special dispensations to avoid  
292 pre-slaughter stunning, some European countries deem it illegal. Consequently, there is  
293 inconsistency in slaughter practice across the E.U. and this has given rise to discussions around  
294 deconstructing the term halal in its dietary context where Muslims are living as a minority community,  
295 and giving rise to different interpretations.

296

## 297 **Who Determines This Concept [of 'What is Halal' Slaughtering?](#)**

298 The concerns around how best to take the life of an animal for human consumption in a manner that  
299 by law is seen as legal and humane, and as such constitutes animal welfare during slaughtering  
300 under secular law, has challenged not only what constitutes halal but also who determines that.  
301 This legal understanding is very much driven by the practice of stunning. The legal introduction of  
302 stunning and other practices has attracted different interpretations for what constitutes halal and how  
303 best the halal stipulations can be met even among Muslims. The diversity of the Muslim population  
304 has attempted to address such concerns in different ways. [In the West, both day to day slaughter](#)

305 [and industrial slaughter need to take place at a licensed abattoir. This is not necessarily the case in](#)  
306 [the Muslim world, where day-to-day slaughtering of a very small number of poultry may well happen](#)  
307 [at a market place rather than an industrial abattoir. Nevertheless, industrial practices are scrutinised](#)  
308 [Muftī Uthmānī, \(1418/\[1997\]\).](#)

309  
310 The Muslim population is divided into two main groups, Sunnī and Shī‘ite. The Sunni make up  
311 approximately 85-90% and the Shī‘a 10-15% of the global Muslim population (Lapidus, 2014; CIA,  
312 2016). Within the Sunnī population, there are four major schools of legal thought or jurisprudence  
313 (i.e. Ḥanafī, Shāf‘ī, Mālikī and Ḥanbalī). Each of these legal schools of thought has varying degrees  
314 of regional influence (Lever and Miele, 2012). According to Codex Alimentarius Commission (CAC/GL  
315 24 – 1997), the halal term is subject to different interpretations by these different schools of thought.  
316 They do not differ about what is haram and are united on the fundamentals of Islam.

317  
318 It is important for those of the food industry interested in a share of the halal market and for food  
319 policy makers to understand that ultimately Islam is a religion of unity and that halal and haram  
320 originate from the Qur‘ān and Ḥadīth. The differences between the four major schools of thought  
321 revolve around technicalities but there is room for diversity and reasoned discussion. In essence the  
322 Sunnī legal Schools agree on the aim of the slaughtering process, the place of slaughter (upper chest  
323 and throat), and the minimum required standards but hold minor differences in opinion regarding the  
324 complete fulfilment of the process of slaughtering. There are differences though in opinion between  
325 the legal schools of thought. These are tantamount to different interpretations regarding what  
326 constitutes halal practice and what compromises it (Wan-Hassan, 2007).

327  
328 The Shī‘a group is represented by three main branches (i.e. Ithnā ‘Atharī, Ismā‘īlī, and Zaidī) (CIA,  
329 2016; van der Spiegel *et al.*, 2012). The Shī‘ite law largely revolves around Ja‘far al-Sādiq, the 6<sup>th</sup>  
330 Imam of Shī‘ism. Shī‘ite legal understanding differs regarding the sources of law to Sunnī law  
331 (Turner, 2011; Lapidus, 2014). Although there exists disagreement regarding some significant  
332 theological matters there are also overlapping areas of understandings on a range of issues. Shī‘ism  
333 advocates a similar process to Sunnī Islam. It agrees on the place of slaughter and the technicalities  
334 (Al-Sistani, n.d.).

335  
336 Stunning is widely used in the meat and poultry industry but is an ongoing source of controversy and  
337 there are differing opinions throughout the Muslim world, whilst there are strong objections to non-  
338 stunned slaughter in parts of the western world. For example, in the Western world, Denmark bans  
339 slaughter without stunning affecting both kosher and halal meat production (ITC, 2015). It is crucial  
340 for scientists to understand the difference in opinion in order to appreciate the legal impact of state  
341 policies on faith communities, e.g. as in Denmark for Jews and Muslims. In the Muslim world there is  
342 acceptance of pre-slaughter stunning practices in certain countries such as Malaysia where stunning

343 of bovine animals is allowed (Shāf'ī school of thought) but unacceptable in Pakistan (Ḥanafī, school  
344 of thought), and in areas of Europe, e.g. Russia or Poland (Lever and Miele, 2012).

345

346 The use of mechanical slaughter in halal abattoirs is also controversial and does not adhere to Islamic  
347 requirements (Muftī Shaf'ī, 1388/1968; Nakyinsige *et al.*, 2013). The DIALREL project (2010)  
348 evaluated the halal slaughter practices of poultry and visited abattoirs across Europe (Velarde *et al.*,  
349 2014). It found similar differences in practice to the extent that some may be in conflict with halal  
350 slaughtering per se. It also found that mechanical slaughtering is permitted in certain abattoirs in EU  
351 (Velarde *et al.*, 2014). Velarde *et al.* (2014) reported that three out of the five poultry abattoirs that  
352 practiced halal slaughter with stunning performed the neck cutting procedure with an automatic  
353 horizontal rotary knife. This contradicts with halal requirements, where hand slaughter needs to  
354 should be conducted by a Muslim slaughterman and accompanied with the invocation of blessing  
355 prior to incision. Such practices raise concern regarding halal integrity, especially if such meat is to  
356 be exported to the Muslim world or to other parts of the EU where Muslim communities are domiciled.  
357 An absence of harmonised standards even across the Muslim world leaves ambiguity around 'Who  
358 determines what is halal?'

359

360 Similar cases of difference in practice and standards as well as Islamic legal interpretation can be  
361 seen in the UK where the Halal Food Authority (HFA) (Halal Food Authority, 2016a) certifies stunned  
362 halal meat (HFA also certifies traditional ḥalāl slaughtering (slaughter without stunning) and hads a  
363 separate certification scheme and logo launched in October 2016 (HFA 2016b)) while the halal  
364 Monitoring Committee (HMC) (Halal Monitoring Committee, 2016) prohibits all methods of stunning,  
365 and has maintained this position since its inception.

366

367 The variance in practice and understanding within the UK ensures that the ~~was-selected~~UK becomes  
368 as a focal point of discussion, as it represents an example of a Muslim minority country and provides  
369 an essential platform to analyse the challenges faced by both pre-stun and non-stun positions. Muslim  
370 consumers in a Muslim minority country faces more challenges in meeting their halal diet due to  
371 stricter regulations in terms of slaughter and potential risk of cross contact with non-halal or haram  
372 (non-permissible) food (Masri, 2007 cited in Fuseini et al., 2016b; Thomas et al. 2017). On the other  
373 hand, in most Muslim majority countries, abattoirs or meat processors do not have halal certification,  
374 as all the food are assumed to be halal (Fuseini et al., 2016b). Halal food were unknown to Muslim  
375 minority ~~majority~~ countries prior to globalization of the food trade (Bergeaud-Blackler 2010). This  
376 creates better appreciation of the challenges faced by Muslim scholars, halal certification bodies and  
377 consumers in the UK.

378

379 HFA has been in the UK since 1994 and was one of the first few halal certification bodies (HFA 2017;  
380 Fuseini et al., 2017) and certified 75% of the UK's halal meat (Lever and Miele 2012), in particular

381 poultry in which the meats are slaughtered and electrically stunned in water baths (Higgin et al.,  
382 2011). HMC, which only certifies non-stunned halal meat, had criticised HFA's method of halal  
383 slaughter and stunning. The ~~Although~~ HFA continued to justifyied its-their method by arguing that  
384 ~~stating due to~~ due to the increasing demand for halal meat, there is a need for the use of  
385 mechanisation and stunning to render the animal immobilised. On the other hand, HMC believes that  
386 the demand for non-stunned halal meat can be met with the aid of ~~from~~ Muslim scholars or trained  
387 volunteers via a monitoring and assessment scheme (Lever and Miele 2012). 76% of Muslim  
388 consumers (n=1000) responded in EBLEX (2010) survey that they would reject stunning before  
389 slaughter and are more inclined to purchase meat from suppliers who sell only non-stunned meat or  
390 from shops selling both sunned and non-stunned meat. Although the study represents a snapshot of  
391 consumer purchasing and consumption of red meat profiles in England, it also demonstrates the  
392 demand for non-stunned halal meat. The data strongly suggests the awareness for halal food among  
393 the Muslim consumer and also alludes to lesser awareness among a small group. This is evident when  
394 HFA recently launched a separate certification for the traditional halal (stun free) sector of the meat  
395 industry (HFA 2016b) due to industry, current and potential consumers' interest. Consequently, this  
396 will impact upon whether food integrity is held to be compromised or not. Food integrity here refers  
397 to ensuring food products are halal. Both HFA and HMC are non-profit charity organisations (HFA  
398 2017; HMC 2017) who are carrying out certifications to ensure the production and compliance of halal  
399 food products that fulfil requirements from different groups of consumers.

400

401 -It is not the aim of this paper, as stated in the introduction, to discuss religious rules, rather it is to  
402 form an understanding of Islamic dietary practices and to conceptualise the dynamics-variations of  
403 legal and religious understandings of halal slaughter. The conventional cliché of supply and demand  
404 and its dictates can broadly capture the productivity scenario but the preferred consumer criteria of  
405 'halal' (possibly captured as consumer ethics) and its demand may well govern the market as  
406 consumer awareness of market practices increases. The degree of acceptance of stunning, hand  
407 slaughtering or mechanical slaughtering and recommendations for balance between valuing ethical  
408 factors and fulfilling commercial interest is of particular significance for both buyer and seller of  
409 poultry and meat. Such factors will also bear on the rate of productivity. Different groups of Muslims  
410 champion a different halal criterion for ~~on~~ some ingredients as well as the slaughter method (van der  
411 Spiegel *et al.*, 2012). The process of stunning is very much a grey area in both the legal secular and  
412 Shar'iah law and its use is still widely controversial (ITC, 2015) and attracts strong debate on halal  
413 integrity as well as animal welfare.

414

#### 415 Dynamics-Variations inef **Religious and Legal Understandings onf** Halal Slaughter

416 The religious slaughter of animals is not a form of sacrificial practice. Rather it is concerned with  
417 humane slaughter of God's creature (Shragge and Price, 2014). Table 2Figure 1 provides pointers on  
418 how halal integrity is maintained without stunning.

419

420 Insert [Table 2-Figure 1](#) here

421

## 422 **Animal Welfare and Pre-slaughter Stunning**

423 According to the Universal Declaration of Animal Rights (UDAW), all animal life has the right to be  
424 respected, and if it is necessary an animal can be slaughtered. This should be carried out

425 instantaneously, painlessly and in a way that results in no apprehension (Chapouthier and Nouët,

426 1998). In the current scenario of high demands for meat, religious slaughter at times finds itself in

427 conflict with the standard operating procedures (SOPs) of high-speed, high-throughput abattoirs.

428 There are also welfare concerns about religious slaughter without stunning – particularly regarding  
429 pre-slaughter stress, pain of the incision and the duration of time between incision and

430 unconsciousness (Anil and Gregory, 2014) ~~to address these concerns stunning is used~~. The purpose

431 of stunning is to induce lack of consciousness and sensibility so the animal can be slaughtered and

432 bled without causing pain and distress (EC Directive 1099/2009; WATOK 2015b; EC Directive 93/119

433 1993; Gregory 1998).

434

435 ~~to render the animal unconscious so they can be slaughtered and bled without causing pain and~~

436 ~~distress (EC Directive 93/119 1993; Gregory, 1998). Despite the derogation from stunning, a number~~

437 ~~of Muslim authorities have accepted stunning as part of their halal slaughter procedure (MS 1500,~~

438 ~~2009; Indonesian Standard MUI HAS 23103, 2012; OIC 2009). In the UK, up to 84% poultry were~~

439 ~~stunned at 27 establishments in 2013 (FSA 2015; Fuseini et al., 2016a).~~ -Advocates of pre-slaughter

440 stunning maintain that stunning prior to slaughter is more humane than not stunning at all.

441 Advocates of religious slaughter methods that do not practice pre-slaughter stunning equally believe

442 that their method is humane (Anil and Gregory, 2014). In fact, the unanimous view in Islam is that

443 slaughter without stunning is valid and achieves the requirements. However, there are equally other

444 views within Islamic *fiqh* that stunning subject to certain conditions is acceptable.

445

446 The discussions regarding the validity of stunning can be summarised as follows. There are a number

447 of views whether stunning before slaughter is acceptable or not in Islam:

448

449 i. Acceptance with certain conditions (i.e. reversible stunning);

450 ii. Rejection on grounds that it is against religious rules, painful induction and causes  
451 insufficient blood loss (as blood is considered *ḥarām*);

452 iii. Unsure or require assurances (Anil and Gregory, 2014).

453

454 The first view provides a level of acceptance in pre-slaughter stunning based on the interpretation

455 and application of sources of jurisprudence, namely ~~the~~ *Ijmā* (consensus of legal opinion) and *Qiyās*

456 (reasoning by analogy) to suit time, place and circumstances (Regenstein *et al.*, 2003). Hence, some

457 Muslim scholars have accepted non-lethal methods of stunning to meet legal requirements. Fuseini *et*  
458 *a/.* (2017) reported the majority of Islamic scholars and consumers from a survey in the UK said that  
459 reversible stunning is halal compliant. The adoption of stunning prior to slaughter must nevertheless  
460 fulfil three pre-requisites:

461

- 462 i) The stunning equipment must only be handled by a trained Muslim slaughter man or  
463 supervisor and is regularly monitored by a competent Islamic authority or halal certification  
464 body (Department of Islamic Development Malaysia, 2011; MS1500: 2009).
- 465 ii) The stunning must not kill the animal nor cause permanent injury and is reversible.
- 466 iii) The stunning equipment used to stun pigs must never be used to stun animals for halal  
467 slaughter (MS1500: 2004)

468

469 Figure 1-2 below summarises the above and represents the current transcending halal slaughter  
470 practices that attempt to balance the [variations dynamics](#) of secular and religious needs for halal  
471 meat.

472

473 Insert Figure 1-2 here

474

475 In summation, there are three positions on pre-slaughter stunning: non-religious slaughter, stunned  
476 halal slaughter subject to conditions and non-stunned halal slaughter. It may be a difficult task to  
477 address the concerns of all parties concerned. Whilst all parties agree that animal welfare is of  
478 paramount importance there is a degree of difference on how best to achieve this in practice.  
479 Interestingly, each view would label its position as the ethical position. The situation across different  
480 countries is very different regarding whether non-stunned religious slaughter is lawful or not. Some  
481 countries have accommodated freedom of religious choice whilst others have only allowed secular  
482 legal choice for both religious and non-religious communities.

483

## 484 **Conclusion**

485 This paper has considered different perspectives on ~~the~~ religious slaughter and provided an overview  
486 of competing understandings regarding the concept of "What constitutes halal slaughter?", 'Who  
487 determines this concept?' and 'What are the dynamics and tensions between legal and religious  
488 understandings of halal slaughter?' In practice, this equates to evaluating the application of no  
489 stunning at all upon an animal (unanimous acceptance) versus the application of reversible stunning  
490 upon an animal (contested). There are numerous studies that have focused on pre-slaughter  
491 stunning, slaughter without stunning and measurement of pain stimuli and nociception. These  
492 studies contribute to the understanding of different slaughter requirements in religious slaughter and  
493 the meat industry. Stunning, however, remains a controversial and grey area in religious slaughter.  
494 Malaysia as a leading and global halal research hub has further categorised stunning according to

495 weight categories to deliver appropriate stunning whilst ensuring the animal remains alive but  
496 unconscious prior to slaughter. [This represents an attempt by Malaysia to close the gap between](#)  
497 [religious and secular legal frameworks and stipulations.](#) There are equally other issues to contend  
498 with: the consumers' increasing demand for halal meat, different requirements from different schools  
499 of thought and fulfilling halal integrity principles; it is indeed a challenging task but not unachievable.  
500 [It is acknowledged that religious slaughter is slower, requires more skill and attention to animal](#)  
501 [handling and the extra requirements of halal preparation place additional burdens on food processors](#)  
502 [especially small and medium producers \(Regenstein, 2012; 2017; Thomas et al. 2017\). Works by](#)  
503 [Grandin \(http://www.grandin.com/\) and the collaboration between religious groups and the World](#)  
504 [Health Organization for Animals \(OIE\) and DIALREL in Europe can help to address the challenges](#)  
505 [\(Grandin, n.d.; Regenstein, 2017\).](#) In a practical sense, consumers who demand non-stunned halal  
506 meat or prefer stunned halal meat could have freedom of religious choice to meet their dietary  
507 requirements [notwithstanding the cost implicaitons](#). No doubt, there are differences in opinion  
508 regarding the use of stunning but a key question for future research is 'How did we get to where we  
509 are now?' ~~Given that, in essence Islam emphasises non-stunning h~~How did the stunning debate  
510 originate and even impact market practices? ~~-Stunning is not mentioned in the Qur'an nor in the~~  
511 [body of Hadith literature. as-It is a relatively new method. But the requirements and principles of](#)  
512 [halal slaughtering are provided in the primary sources of Islam. -This h](#)~~Has this~~[led to the issue of](#)  
513 [stunning being discussed in e](#)~~legal formulations -or edicts or Fatwas (Islamic rulings) regarding e~~  
514 [whether the technology is acceptable as halal or not? \(Fuseini et al., 2016\). The underlying question](#)  
515 [at the heart of the stunning debate is to assess whether the conditions and broad aims stipulated by](#)  
516 [Islamic law are being met or not by the intervention of machinery \(Mufti Shaf'i, 1968\). This suggests](#)  
517 [that Muslims scholars have been engaging with the outcomes of scientific research and its](#)  
518 [methodologies. At times the outcomes have been embraced and at other times not at that point of](#)  
519 [development. -The current researchers also propose that the history of stunning to be further](#)  
520 [evaluated.](#)

521  
522 Obviously, the increase in demand for halal meat (whether stunned or non-stunned) will [require](#)  
523 ~~spu~~[increased](#) production and supply. But will religious slaughter (i.e. without stunning and hand  
524 slaughter) practices be able to cope with the increase in demand? This raises another key research  
525 question, 'Will consumers be willing to pay the premium for non-stunned halal meat?' There are  
526 other interesting research questions that stem from this paper e.g. 'What constitutes animal welfare  
527 in conventional and religious slaughter and who determines this concept?' Nevertheless, there  
528 remains more unanswered questions than solutions but ultimately, it is important to understand that  
529 halal is a way of life and embraces good conduct and integrity or ethics in Islamic dietary practices  
530 [too](#). So, with the ever-changing world of science and technology versus consumerism and population  
531 increases as well as migration cycles that bring different communities with ethical dietary demands  
532 together, the intriguing question remains how will the relationship between technology and religious



533 ethics take shape? Further, how will migration cycles impact upon religious interpretation?  
534 Transnational migration and globalisation are important processes in the diffusion of dietary and  
535 cultural patterns. Since the 1970s, the migration of large Muslim communities into the EU had led to  
536 some EU countries to take their dietary needs and religious slaughter into account within their  
537 national laws (Adams, 2011; Adamson, 2006). -Finally, how will the existence of a growing halal  
538 market with huge commercial value ~~to~~ be negotiated and impact upon the practices of supplier  
539 chains? Ultimately, the absorption of migrant religious communities and how their growth and needs  
540 are addressed by host communities through the vehicle of state policies as part of a liberal  
541 democracy, may well determine the outcome. Likewise how entrepreneurs seize huge commercial  
542 opportunities and provide bespoke products may also determine the outcome. The future may not  
543 simply be captured by the cliché 'supply and demand' rather it may well be 'supply tailored for ~~the~~  
544 demand'!

545

## 546 **References**

547 Adams, I. A. (2011), "Globalization: Explaining the dynamics and challenges of the halal food surge",  
548 Intellectual Discourse, Vol. 19, pp. 123-145.

549

550 Adamson, F. B. (2006), "Crossing borders: International migration and national security",  
551 International Security, Vol. 31, pp. 1-21.

552

553 Algers, B. and Atkinson, S. (2014). Stunning: Mechanical stunning. In *Encyclopedia of Meat*  
554 *Sciences*, eds. M. Dikeman and C. Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 413-417.

555

556 Ali, A., Lawson, M. A., Tauson, A.-H., Jensen, J. F. and Chwalibog, A. (2007), "Influence of electrical  
557 stunning voltages on bleed out and carcass quality in slaughtered broiler chickens", *Archiv fur*  
558 *Geflugelkunde*, Vol. 71, No. 1, pp. 35-40.

559

560 Al-Bukhārī, M. (trans. Muḥammad Muḥsin Khān) (n.d.), *The Translation of Meanings of Al-Sahīḥ al-*  
561 *Bukhārī*, (vol. 1-9), Dār al-Fikr, Beirut, Lebanon.

562

563 Al-Murghinānī, B. (1311A.H./[1894]). *Al-Hidāya*. Islamic Books: Karachi: pp.432-441, vol. 4

564

565 Al-Qaradāwī, Y. (1994). The lawful and the prohibited in Islam. Trans: Ahmad Zaki Hammad.  
566 Indianapolis: American Trust Publications.

567

568 Al-Raḥmānī, M.K.S. (2006). *Qāmus al-Fiqh*, Haydarabad, India: Al-Ma 'had al- 'Ālī al-Islāmī pp. 451-  
569 459, vol. 3

570

571 Al-Sistānī, A.-S. A. A.-H. (n.d.). Slaughtering and hunting of animals.

572 <http://www.sistani.org/english/book/48/2367/>. Accessed 27 November 2016.

573

574 Al-Zuhaylī, W. (2002) (vol. 4) *Al-Fiqh al-Islām wa Adilatuhu*, Syria: Damascus: Dār al-Fikr, pp. 2756-  
575 2801

576

577 Anastasov, M. I. and Wotton, S. B. (2012), "Survey of the incidence of post stun behavioural  
578 reflexes in electrically stunned broilers in commercial conditions and the relationship of their incidence  
579 with the applied water bath electrical parameters", *Animal Welfare*, Vol. 22, No. 2, pp. 247-256.

580

581 Anil, M. H. and Gregory, N. G. (2014). Slaughter, ethics and the law. In *Encyclopedia of Meat*  
582 *Sciences*, eds. M. Dikeman and C. Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 280-283.

583  
584 Appelt, M., Allen, A. and Will, D. (2014). Slaughter: Immobilization. In *Encyclopedia of Meat*  
585 *Sciences*, eds. M. Dikeman and C. Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 418-420.  
586  
587 [Awan, J. A. and Sohaib, M. \(2016\), "Halal and humane slaughter: Comparison between Islamic](#)  
588 [teachings and modern methods", Pakistan Journal of Food Science, Vol. 26, No. 4, pp. 234-240.](#)  
589  
590 [Bergeaud-Blackler, F. \(2010\). Chapter 6. Islamizing food: the encounter of market and diasporic](#)  
591 [dynamics. In, Halal Matters: Islam, politics and markets in global perspective. Bergeaud-Blackler, F.,](#)  
592 [Fischer, J. and Lever, J. \(Eds\). London: Routledge, pp. 91-104](#)  
593  
594 BVA, British Veterinary Association (2014), "All-party group supports BVA call for clearer meat  
595 labelling", available at  
596 [http://www.bva.co.uk/News-campaigns-and-policy/Newsroom/News-releases/All-party-group-](http://www.bva.co.uk/News-campaigns-and-policy/Newsroom/News-releases/All-party-group-supports-BVA-call-for-clearer-meat-labelling/)  
597 [supports-BVA-call-for-clearer-meat-labelling/](http://www.bva.co.uk/News-campaigns-and-policy/Newsroom/News-releases/All-party-group-supports-BVA-call-for-clearer-meat-labelling/) (accessed 19 December 2015).  
598  
599 CAC (Codex Alimentarius Commission) (1997). *CAC/GL 24-1997 General Guidelines for use of the term*  
600 *"halal"*, s.l.: Codex Alimentarius Commission.  
601  
602 Cervero, F. and Merskey, H. (1996), "What is a noxious stimuli?" *Pain Forum*, Vol. 5 No. 3, pp. 157-  
603 161.  
604  
605 Chandia M. (2015). *Translation of the Holy Qur'ān*. London: Azhar Academy.  
606  
607 Chapouthier, G. and Nouët, J.-C. (1998), "The Universal Declaration of Animal Rights: Comments  
608 and intentions", *Ligue Francaise des Droits de l'Animal*, pp. 1-93.  
609  
610 CIA, Central Intelligence Agency (2016), "Religions: The world factbook", available at  
611 <https://www.cia.gov/library/publications/the-world-factbook/fields/2122.html> (accessed 5 December  
612 2016).  
613  
614 City Press (2015), "Muslims expect to celebrate Eid this Sunday", available at  
615 <http://www.news24.com/Archives/City-Press/Muslims-expect-to-celebrate-Eid-this-Sunday-20150429>  
616 (accessed 25 November 2015).  
617  
618 DEFRA Department for Environment, Food and Rural Affairs (2009), "Animal welfare: Qurbani/Udhia",  
619 available at  
620 [http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/foodfarm/far](http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/foodfarm/farmanimal/welfare/slaughter/qurbani-udhia.htm)  
621 [manimal/welfare/slaughter/qurbani-udhia.htm](http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/foodfarm/farmanimal/welfare/slaughter/qurbani-udhia.htm) (accessed 1 December 2015).  
622  
623 Department of Islamic Development Malaysia (2011), "Malaysian protocol for the halal meat and  
624 poultry productions", available at  
625 [http://www.halal.gov.my/v2/cms/content/editor/files/File/MALAYSIAN%20PROTOCOL%20FOR%20](http://www.halal.gov.my/v2/cms/content/editor/files/File/MALAYSIAN%20PROTOCOL%20FOR%20HE%20halal%20MEAT%20&%20POULTRY%20PRODUCTIONS.pdf)  
626 [HE%20halal%20MEAT%20&%20POULTRY%20PRODUCTIONS.pdf](http://www.halal.gov.my/v2/cms/content/editor/files/File/MALAYSIAN%20PROTOCOL%20FOR%20HE%20halal%20MEAT%20&%20POULTRY%20PRODUCTIONS.pdf) (accessed 3 December 2015).  
627  
628 Directive 64/433/EEC (1964), "Council directive of 26 June 1964 on health problems affecting intra-  
629 Community trade in fresh meat", *Official Journal of the European Communities* 2012/64, 185-197.  
630  
631 Duncan, I. J. H. (2004), "Pain, fear and distress. Applying Science to Animal Welfare", *Proceedings*  
632 *on Global Conference on Animal Welfare: an OIE initiative*, pp. 160-169.  
633  
634 [EBLEX \(2010\), "The halal meat market: Specialist supply chain structures and consumer purchase and](#)  
635 [consumption profiles in England", Available at: http://beefandlamb.ahdb.org.uk/wp-](#)  
636 [content/uploads/2016/03/p\\_cp\\_EBLEX\\_Halal\\_Meat\\_FINAL\\_111110.pdf \[Accessed 16 May 2017\]](#)  
637

638 EC Directive 93/119 (1993), "Council Directive 93/119/EC of 22 December 1993 on the protection of  
639 animals at the time of slaughter or killing", *Official Journal of the European Communities* Vol. L340,  
640 pp. 21-34.  
641  
642 EC No. 1099/2009 (2009), "Council regulation (EC) No 1099/2009 of 24 September 2009 on the  
643 protection of animals at the time of killing", *Official Journal of the European Union*, Vol. L303/1,  
644 available at [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF)  
645 [lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF) (accessed 1  
646 December 2015).  
647  
648 [EHDA \(2016\), "European Halal Development Agency", Available at: http://ehda.co.uk/faq-2/](http://ehda.co.uk/faq-2/)  
649 [\[Accessed 17 May 2017\]](http://ehda.co.uk/faq-2/)  
650  
651  
652 EFSA (European Food Safety Authority) (2005), "Opinion of the Scientific Panel on Animal Health and  
653 Welfare (AHAW) on a request from the Commission related to welfare aspects of the main systems of  
654 stunning and killing the main commercial species of animals", *EFSA Journal*, Vol. 45, pp. 1-29.  
655  
656 [Farouk, M. M. \(2013\), "Advances in the industrial production of halal and kosher red meat", \*Meat\*](#)  
657 [Science, Vol. 95, No. 4, pp. 805-820.](#)  
658  
659 [Farouk, M. M., Al-Mazeedi, H. M., Sabow, A. B., Bekhit, A. E. D., Adeyemi, K. D., Sazili, A. Q. and](#)  
660 [Ghani, A. \(2014\), "Halal and kosher slaughter methods and meat quality: A review", \*Meat Science,\*](#)  
661 [Vol. 98, No. 3, pp. 505-519.](#)  
662  
663 Farouk, M. M., Regenstein, J. M., Pirie, M. R., Najm, R., Bekhit, A. E. D. and Knowles. S. O.  
664 (2015), "Spiritual aspects of meat and nutritional security: Perspectives and responsibilities of the  
665 Abrahamic faiths", *Food Research International*, Vol. 76 No. 4, pp. 882-895.  
666  
667 [FSA \(2015\), "Results of the 2013 animal welfare survey in Great Britain", \*Food Standards Agency.\*](#)  
668 [Available at: https://www.food.gov.uk/sites/default/files/2013-animal-welfare-survey.pdf](https://www.food.gov.uk/sites/default/files/2013-animal-welfare-survey.pdf) [\[Accessed](#)  
669 [16 May 2017\]](#)  
670  
671 [Fuseini, A., Knowles, T. G., Hadley, P. J. Wotton, S. B. \(2016a\), "Halal stunning and slaughter: Criteria](#)  
672 [for the assessment of dead animals", \*Meat Science\*, Vol. 119, pp. 132-137.](#)  
673  
674 [Fuseini, A., Knowles, T. G., Lines, J. A., Hadley, P. J. Wotton, S. B. \(2016b\), "The stunning and](#)  
675 [slaughter of cattle within the EU: a review of the current situation with regard to the halal market",](#)  
676 [Animal Welfare, Vol. 25, pp. 365-376.](#)  
677  
678 Fuseini, A., Wotton, S. B., Hadley, P. J. and Knowles, T. G. (2017), "The perception and acceptability  
679 of pre-slaughter and post-slaughter stunning for halal production: The views of UK Islamic scholars  
680 and halal consumers", *Meat Science*, Vol. 123, pp. 143-150.  
681  
682 Gibson, T. J., Johnson, C. B., Murrell, J. C., Hulls, C. M., Mitchinson, S. L., Stafford, K. J.,  
683 Johnstone, A. C., Mellor, D. J. (2009), "Electroencephalographic responses of halothane-  
684 anaesthetised calves to slaughter by ventral-neck incision without prior stunning", *New Zealand*  
685 *Veterinary Journal*, Vol. 57, No. 2, pp. 77-83.  
686  
687 [Grandin, T. \(n.d.\), "Livestock behaviour, design of facilities and humane slaughter", Available at:](http://www.grandin.com/)  
688 <http://www.grandin.com/> [\[Accessed 15 May 2017\]](#)  
689  
690 Gregory, N. G. (1998). *Animal welfare and meat science*. New York: CABI Publishing.  
691

692 Gregory, N. G. (2005), "Recent concerns about stunning and slaughter", *Meat Science* Vol. 70, pp.  
693 481-491.  
694  
695 Gregory, N. G., von Wenzlawowicz, M. and von Holleben, K. (2009), "Blood in the respiratory tract  
696 during slaughter with and without stunning in cattle", *Meat Science* Vol. 82, No. 1, pp. 13-16.  
697  
698 Gregory, N. G., Fielding, H. R., von Wenzlawowicz, M. and von Holleben, K. (2010), "Time to  
699 collapse following slaughter without stunning in cattle", *Meat Science*, Vol. 85, No. 1, pp. 66-69.  
700  
701 Halal Focus (2015), "Saudi Arabia: OIC forum on global unified halal food standards", available at  
702 <http://halalfocus.net/saudi-arabia-oic-forum-on-global-unified-halal-food-standards/> (accessed 27  
703 November 2016).  
704  
705 Henderson, J. C. (2016), "Halāl food, certification and halal tourism: Insights from Malaysia and  
706 Singapore", *Tourism Management Perspectives*, Vol. 19, No. Part B, pp. 160-164.  
707  
708 HFA, Halal Food Authority (2016a), "Frequently asked questions", available at  
709 <http://halalfoodauthority.com/faqs> (accessed 27 November 2016).  
710  
711 HFA, halal Food Authority (2016b), "HFA certification of traditional halal slaughter (without  
712 stunning)", available at <http://halalfoodauthority.com/faqs/traditional-halal> (accessed 27 November  
713 2016).  
714  
715 [HFA \(2017\), "Home/Our company", Available at: http://halalfoodauthority.com/about-us](http://halalfoodauthority.com/about-us) [Accessed  
716 16 May 2017]  
717  
718 [Higgin, M., Evans, A. and Miele, M. \(2003\), "A good kill: socio-technical organization of slaughter", In,  
719 N. Charles and B. Carter \(Eds\). \*Humans and Other Animals: Critical Perspectives\*. London: Palgrave  
720 McMillan, pp. 173-185.](#)  
721  
722 HMC, Halal Monitoring Committee (2016), "Issues of mechanical slaughter and stunning", available at  
723 <http://www.halalhmc.org/IssueOfFMSandStunning.htm> (accessed 27 November 2016).  
724  
725 [HMC \(2017\). Halal monitoring committee. Available at: http://www.halalhmc.org/index.htm](http://www.halalhmc.org/index.htm)  
726 [\[Accessed 16 May 2017\]](#)  
727  
728 Hoorfar, J., Jordan, K., Butler, F. and Prugger, R. (2011). *Food chain integrity: A holistic approach to*  
729 *food traceability, safety, quality and authenticity*. Cambridge: Woodhead Publishing, pp. 1-338.  
730  
731 Ibn Al-Ḥajjāj, M. (1407A.H./1987), *Saḥīḥ Muslim*, (1st ed.) Dār al-Rayyān, Cairo, Egypt.  
732  
733 [Indonesian Standard MUI HAS \(2012\), "Guidelines of halal assurance system criteria on](#)  
734 [slaughterhouses", Majelis Ulama Indonesia.](#)  
735  
736 [ITC \(2015\). Trade map – International trade statistics. Available at:](#)  
737 [http://www.trademap.org/tradestat/Country\\_SelProductCountry\\_TS.aspx](http://www.trademap.org/tradestat/Country_SelProductCountry_TS.aspx) [Accessed 15 May 2017]  
738  
739 Kern, S. (2011), "Europe goes Halal. Gatestone Institute", available at  
740 <http://www.gatestoneinstitute.org/1799/europe-goes-halal> (accessed 19 December 2015).  
741  
742 Kettlewell, P. J. and Hallworth, R. N. (1990), "Electrical stunning of chickens", *Journal of Agricultural*  
743 *Engineering Research*, Vol. 47, pp. 139-151.  
744  
745 Lambooi, E. (2014). Electrical stunning. In *Encyclopedia of Meat Sciences*, eds. M. Dikeman and C.  
746 Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 407-412.  
747

748 Lapidus, I. M. (2014). *A History of Islamic Societies*. Cambridge University Press, pp. 842-846.  
749  
750 Lever, J. and Miele, M. (2012), "The growth of halal meat markets in Europe: An exploration of the  
751 supply side theory of religion", *Journal of Rural Studies*, Vol. 28, No. 4, pp. 528-537.  
752  
753 [Lubis, H. N., Mohd-Naim, N. F., Alizul, N. N. and Ahmed, M. U. \(2016\), "From market to food plate:  
754 Current trusted technology and innovations in halal food analysis", \*Trends in Food Science &  
755 Technology\*, Vol. 58, pp. 55-68.](#)  
756  
757 [McNeal, W. D., Fletcher, D. L. and Buhr, R. J. \(2003\), "Effects of stunning and decapitation on broiler  
758 activity during bleeding, blood loss, carcass, and breast meat quality", \*Poultry Science\*, Vol. 82, No. 1,  
759 pp. 163-168.](#)  
760  
761 MS 1500: 2009 (Malaysian Standard) (2009), "Halal food – Production, preparation, handling and  
762 storage – General guidelines", (Second Revision). Department of Standards Malaysia, available at  
763 <https://law.resource.org/pub/my/ibr/ms.1500.2009.pdf> (accessed 3 December 2015).  
764  
765 Muftī Shaf'ī (1968). *Jawāhir al-Fiqh*, India: Deoband, pp. 363-416.  
766  
767 Muftī Uthmānī, T.M. (1418/[1997]). *Ahkām al-dhabā'ih*, Karachi, New Guzār Press.  
768  
769 Muftī Uthmānī, T.M. (2006). *The Islamic Laws of Animal Slaughter*, trans. Toft, A., Santa Barbara,  
770 California, USA: White Thread Press.  
771  
772 Muḥammad, R. (2015), "The global halal market: Stats and trends", [http://halalfocus.net/the-global-](http://halalfocus.net/the-global-halal-market-stats-trends/)  
773 [halal-market-stats-trends/](http://halalfocus.net/the-global-halal-market-stats-trends/) (accessed 19 December 2015).  
774  
775 Nakyinsige, K., Che Man, Y.B., Aghwan, Z.A., Zulkifli, I., Goh, Y.M., Abu Bakar, F., Al-Kahtani, H.A.  
776 and Sazli, A.Q. (2013), "Stunning and animal welfare from Islamic and scientific perspectives", *Meat  
777 Science*, Vol. 95, pp. 352-361.  
778  
779 Norazmi, M. N. and Lim, L. S. (2015), "Halāl pharmaceutical industry: opportunities and challenges",  
780 *Trends in Pharmacological Sciences*, Vol. 36, No. 8, pp. 496-497.  
781  
782 [OIC \(2009\), "General guidelines on halal food", The Organisation of the Islamic Conference \(OIC\).  
783 Available at: <http://halalworldinstitute.org/download/standard/filegallery/60/.pdf> \[Accessed 16 My  
784 2017\]](#)  
785  
786 OIC, Organisation of Islamic Cooperation (2015), "Forum on global unified halal food standards to be  
787 held at OIC General Secretariat, Jeddah", available at [http://www.oic-](http://www.oic-oci.org//topic/?t_id=10706&t_ref=4215&lan=en)  
788 [oci.org//topic/?t\\_id=10706&t\\_ref=4215&lan=en](http://www.oic-oci.org//topic/?t_id=10706&t_ref=4215&lan=en) (accessed 13 December 2016).  
789  
790 [Qureshi, S. S., Jamal, M., Qureshi, M. S., Rauf, M., Syed, B. H., Zulfiqar, M. and Chand, N. \(2012\), "A  
791 review of halal food with special reference to meat and its trade potential", \*Journal of Animal and  
792 Plant Sciences\*, Vol. 22, No. Suppl. 2, PP. 79-83.](#)  
793  
794 Raj, A. B. M. (2014). Stunning. In *Encyclopedia of Meat Sciences*, eds. M. Dikeman and C.  
795 Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 401-406.  
796  
797 Regenstein, J. M., Chaudry, M. M. and Regenstein, C. E. (2003), "The Kosher and halal food laws",  
798 *Comprehensive Reviews in Food Science and Food Safety*, Vol. 2, pp. 111-127.  
799  
800 [Regenstein, J. M. \(2012\), "The politics of religious slaughter – how science can be misused", 65<sup>th</sup>  
801 Annual Reciprocal Meat Conference of the American Meat Science Association. Available at:  
802 \[http://www.meatscience.org/docs/default-source/publications-\]\(http://www.meatscience.org/docs/default-source/publications-resources/rmc/2012/25\_regenstein\_r2.pdf?sfvrsn=0\)  
803 \[resources/rmc/2012/25\\\_regenstein\\\_r2.pdf?sfvrsn=0\]\(http://www.meatscience.org/docs/default-source/publications-resources/rmc/2012/25\_regenstein\_r2.pdf?sfvrsn=0\) \[Accessed 17 May 2017\]](#)



804  
805 [Regenstein, J. M. \(2017\), "Religious slaughter of animals: International efforts to meet this need](#)  
806 [responsibly. Global Food Security and Wellness. New York: Springer, pp. 339-355.](#)  
807  
808 RSPCA, (2015), "Slaughter without pre-stunning (for religious purposes)", RSPCA Farm Animals  
809 Department Information Sheet, available at  
810 <http://www.rspca.org.uk/adviceandwelfare/farm/slaughter/religiouslaughter> (accessed 19 December  
811 2015).  
812  
813 Schilling, M. W., Vizzier-Thaxton, Y. and Alvarado, C. Z. (2014). Slaughter-line operation: Poultry.  
814 In *Encyclopedia of Meat Sciences*, eds. M. Dikeman and C. Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego:  
815 Academic Press, pp. 303-308.  
816  
817 Shragge, J. E. and Price, M. A. (2014). Religious slaughter. In *Encyclopedia of Meat Sciences*, eds.  
818 M. Dikeman and C. Devine, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic Press, pp. 209-213.  
819  
820 [Slaughter of Animals Bill \(1962\) 28. Dec 03 1962 Vol 245, cc27-64"](#), Available at:  
821 <http://hansard.millbanksystems.com/lords/1962/dec/03/slaughter-of-animals-bill-hl-2> [Accessed 17  
822 May 2017]  
823  
824 SMIIC [Standards and Metrology Institute for Islamic Countries] (2016), "SMIIC Committee on  
825 standards for conformity assessment (SMIIC/CCA)", available at [http://www.smiic.org/smiic-](http://www.smiic.org/smiic-committee-on-standards-for-conformity-assessment-smiic-cca/560/smiic-cca)  
826 [committee-on-standards-for-conformity-assessment-smiic-cca/560/smiic-cca](http://www.smiic.org/smiic-committee-on-standards-for-conformity-assessment-smiic-cca/560/smiic-cca) (accessed 27 November  
827 2016).  
828  
829 [Thomas, A. M., White, G. R. T., Plant, E. and Zhou, P. \(2017\), "Challenges and practices in halal meat](#)  
830 [preparation: a case study investigation of a UK slaughterhouse"](#), *Total Quality Management &*  
831 [Business Excellence](#), Vol. 28, No. 1- 2, pp. 12-31.  
832  
833 [Thomson Reuters \(2015\), "State of the global Islamic economy"](#), Available at:  
834 [https://www.flandersinvestmentandtrade.com/export/sites/trade/files/news/342150121095027/34](https://www.flandersinvestmentandtrade.com/export/sites/trade/files/news/342150121095027/342150121095027_1.pdf)  
835 [2150121095027\\_1.pdf](https://www.flandersinvestmentandtrade.com/export/sites/trade/files/news/342150121095027/342150121095027_1.pdf) [Accessed 17 May 2017]  
836  
837 Turner, C. (2011) *Islam: The Basics*, London: Routledge, pp. 91-99.  
838  
839 van der Spiegel, M., van der Fels-Klerx, H. J., Sterrenburg, P., van Ruth, S. M., Scholtens-Toma, I. M.  
840 J. and Kok, E. J. (2012), "Halal assurance in food supply chains: Verification of halal certificates using  
841 audits and laboratory analysis", *Trends in Food Science & Technology*, Vol. 27, No. 2, pp. 109-119.  
842  
843 Velarde, A., Rodriguez, P., Dalmau, A., Fuentes, C., Llonch, P., von Holleben, K. V., Anil, M. H.,  
844 Lambooi, J. B., Pleiter, H., Yesildere, T. and Cenci-Conga, B. T. (2014), "Religious slaughter:  
845 Evaluation of current practices in selected countries", *Meat Science*, Vol. 96, pp. 278-287.  
846  
847 Wabek, C. (1988), "How stunning affects product quality", *Poultry International*, Vol. Feb, pp. 48-52.  
848  
849 Wan-Hassan, W. M. (2007), "Globalising halal standards: Issues and challenges", *The Halal Journal*,  
850 Vol. July-August, pp. 38-40.  
851  
852 [WATOK \(2015a\), "Schedule 3 Additional requirements for killing animals in accordance with religious](#)  
853 [rites"](#), Available at: <http://www.legislation.gov.uk/uksi/2015/1782/schedule/3/made> [Accessed 16  
854 May 2017]  
855  
856 [WATOK \(2015b\), "The Welfare of Animals at the Time of Killing \(England\) Regulations 2015. Schedule](#)  
857 [1 Additional requirements for slaughterhouses"](#), Available at:  
858 <http://www.legislation.gov.uk/uksi/2015/1782/schedule/1/made> [Accessed 16 May 2017]

859  
860 Welfare of Animals (Slaughter or Killing) Regulations (1995), "Statutory Instruments 1995 No. 731  
861 Animals Prevention of Cruelty", available at  
862 <http://www.legislation.gov.uk/uksi/1995/731/introduction/made> (accessed 1 December 2015).  
863  
864 Woerner, D. R., Scanga, J. A. and Belk, K. E. (2014). Slaughter-line operation: cattle. In, M.  
865 Dikeman and C. Devine (eds.). *Encyclopedia of Meat Sciences*, Vol. 3, 2<sup>nd</sup> Ed. San Diego: Academic  
866 Press, pp. 284-289.  
867  
868 Zhang, Z., Cao, J., Wang, Z., Dong, Y. and Chen, Y. (2014), "Effect of a combination of green and  
869 blue monochromatic light on broiler immune response", *Journal of Photochemistry and Photobiology*  
870 *B: Biology*, Vol. 138, pp. 118-123.  
871  
872 [Zoethout, C. M. \(2013\), "Ritual slaughter and the freedom of religion: Some reflections on a](#)  
873 [stunning matter", \*Human Rights Quarterly\*, Vol. 35, No. 3, pp. 651-672](#)



