An exploratory study of Muslim consumers' halal meat purchasing intentions in Norway

Muhammad Azher Bhatti , Sosheel Solomon Godfrey , Ryan H. L. Ip , Mari Øvrum Gaarder , Shakar Aslam , Geir Steinheim , Peter Wynn , David L. Hopkins , Reinert Horneland , Lars Olav Eik & Tormod Ådnøy

Published online: 12 Nov 2020.

Submit your article to this journal ⬚

View related articles ⬚

View Crossmark data ⬚

Taylor & Francis
Taylor & Francis Group

 OPEN ACCESS   Check for updates

An exploratory study of Muslim consumers' halal meat purchasing intentions in Norway

Muhammad Azher Bhatti [a,b], Sosheel Solomon Godfrey [c], Ryan H. L. Ip [d], Mari Øvrum Gaarder [e], Shakar Aslam[a], Geir Steinheim [a], Peter Wynn [c], David L. Hopkins [c,f], Reinert Horneland[b], Lars Olav Eik[g] and Tormod Ådnøy [a]

aDepartment of Animal and Aquacultural Sciences, Faculty of Biosciences, Norwegian University of Life Sciences, Ås, Norway; bFatland Ølen AS, Ølen, Norway; cGraham Centre for Agricultural Innovation, Charles Sturt University, Wagga Wagga, Australia; dSchool of Computing and Mathematics, Charles Sturt University, Wagga Wagga, Australia; eNofima AS, Ås, Norway; fNSW Department of Primary Industries, Centre for Red Meat and Sheep Development, Cowra, Australia; gDepartment of International Environment and Development Studies (Noragric), Norwegian University of Life Sciences, Ås, Norway

ABSTRACT

Although Norway is the largest sheep meat producer in Scandinavia and Norwegian Muslims are expected to double in population in the next decade, the overall local per capita red meat consumption is still low. Meanwhile, Norwegian Muslims' purchasing preferences on lamb meat products have not been investigated. This paper presents the results of a choice-based conjoint survey which would help stakeholders to understand the niche Muslim immigrant halal meat market and potentially increase meat consumption. Post-hoc market segmentation was performed using latent class analysis, and factors affecting consumers' purchase intentions were studied within each segment. Results show that purchasing halal meat from a butcher was the top preference while there was a higher willingness to purchase from national supermarkets among younger second-generation Pakistanis. In order to benefit from niche halal meat market, Norwegian supermarkets are recommended to adapt some of the services that halal butchers are offering to their consumers.

Introduction

In Norway, Muslims comprise 3.3% (~175,500 individuals) of the total population and are the second-largest religious group after the Christian denominations. The majority of Norwegian Muslims are of Pakistani origin (Lever & Miele, 2012; Statistics Norway, 2019). The Pew Research Centre (2015) has reported an increasing Muslim population (4.9% in 2016) across Europe. It has been predicted that the Norwegian Muslim population will increase to reach 6% (~321,283 individuals) of the Norwegian population by 2030 (Brunborg & Texmon, 2011). This will create a market potential for halal food products, especially if produced by local farmers (Pickett-Baker & Ozaki, 2008) due to consumers' trust in traceable high-quality local products. Home grown meat products are widely accepted by Norwegian society due to the strict food safety regulations implemented for product quality and animal welfare (Bhatti et al., 2019).

Muslims eat halal meat as a part of their normal diet. Meat of sacrificial animals is also used at religious festivals such as Eid al-Adha. Halal is an Arabic word that means 'permissible' or 'allowed' (Wilson & Liu, 2010). Halal animal slaughtering differs from non-halal slaughtering with strict basic requirements that must be fulfilled during the slaughter process. According to Islam, all food items are permissible (halal) for the Muslims unless prohibited by 'the Quran & Hadith'. Permissible food items are called 'halal' while those forbidden to eat are 'haram'. In terms of halal, meat is a highly regulated food item compared to other halal foods.

The food market is consumer-focussed and in the case of halal meat (HM) marketing, the trust of Muslim consumers in the whole production system, including farming and slaughterhouse practices, awareness of the slaughter process and their perceptions of purchase convenience is vital (Bonne & Verbekke, 2008; Wilson & Liu, 2010; Bashir et al., 2018). All halal food items including meat (except pork) are permissible for consumption by Muslims if standard halal slaughtering procedures are followed on the slaughter line (Wilson & Liu, 2010). The development of a positive attitude along with consumer

satisfaction is vital for developing a successful meat market (Font & Guerrero, 2014). Previous studies (Ahmed, 2008) have highlighted the importance of trust while purchasing HM with a preference for an approved halal butcher.

In Scandinavia, Norway is the largest sheep meat producer with a population of more than one million ewes (Aby et al., 2014). The Norwegian sheep industry has the potential to double the quantity of meat produced with the strategic use of rangeland for grazing (Bhatti et al., 2019). Thus, increasing the consumers' appeal for Norwegian lamb and sheep meat and finding new market niches is important for sustaining the meat industry and the profitability of sheep farming. The eating preferences for lamb of the general Norwegian population are well-investigated (Helgesen et al., 1997; Kubberød, Ueland, Rodbotten, et al., 2002; Kubberød, Ueland, Tronstad, et al., 2002; Hersleth et al., 2012). However, the meat purchasing preferences of the Norwegian Muslim group have not been investigated. The potential for meat consumption in the Norwegian HM market can be better understood with knowledge of these preferences. This study aimed to understand the Norwegian Muslim consumers' purchase intentions of HM sheep meats and the impact of choice of retail outlet (supermarket or specialist halal butchery) on their purchase decisions.

Materials and methods

Survey sampling

Cross-sectional data were collected from an online survey in Oslo, Norway starting from 1 November 2019 to 28 February 2020. Since Muslims are a minority population in Norway and are difficult to reach, a snowball sampling technique was adopted as recommended by Browne (2005) for a minority group of people. The survey web-link was shared with respondents personally by contacting friends, friends of friends, and family of initial contact persons; and electronically using Facebook (Bonne & Verbekke, 2008).

Questionnaire development

A preliminary qualitative study was conducted involving 15 Muslim families living in Oslo, Norway. The selection of these families was also based on the snowball sampling method. A prior time for a home-visit was discussed and set depending upon the ease and availability of the interviewee. Face-to-face interviews were conducted with open-ended questions. A single-visit-multiple-subject survey technique was used to obtain data including personal demography, eating and cooking patterns and preferences, purchasing habits and intentions to purchase new products in the market. In each interview, the interviewee was allowed to discuss any topic related to halal lamb meat purchase in Norway. All the interviews were audio-recorded. The consent form for their intention to participate in the interview was signed by each interviewee before their interview.

Based on this qualitative data, five attributes were selected (Table 1) and used in the Choice-Based Conjoint (CBC) survey using the Sawtooth software (version 9.8.1, USA). A web link was created and shared with respondents ($n = 140$). In addition to the demography questions, the respondents had to complete 17 tasks where they had to choose one option among four choices, including three concepts formed by combining different levels chosen from five attributes plus a 'no choice' option (Figure 1).

The following three prohibitions were set in Sawtooth software so that, while choosing the CBC concepts, the consumers would not get a combination of those specific attribute levels where prohibitions were applied:

1st prohibition (†): *Meat wholesaler* option could not market a *small (less than 3 kg) package* in the CBC survey. For practical or commercial reasons, the 'meat wholesaler' could not offer a package of less than 3 kg, but rather offer meat in larger packaging (more than 8 kg) or whole animal carcasses to restaurants and halal butchers.

2nd prohibition (‡): Lower value *mixed meat cuts* obtained from all parts of the carcass could not be combined with premium quality cuts attracting the highest meat *price (150 NOK/kg)* in the CBC survey.

Table 1. List of attributes and levels for each attribute used in choice-based survey. The prohibitions set on attribute levels are shown with the symbols.

Attributes	Levels
Place of purchase	Halal butcher
	† Meat wholesaler
	National supermarket
	Online order
Product storage/shelf life	Fresh (slaughtered within last 1 week)
	Recently frozen (slaughtered within last 2–4 weeks)
	Frozen (slaughtered more than a month ago)
Meat cuts	‡ Mixed meat cuts (all parts)
	¥ Specific meat cuts
Packaging	Extra-large (8 kg or more)
	Large (5–8 kg)
	Medium (3–5 kg)
	† Small (less than 3 kg)
Meat price / kg (Norwegian Kroner)	¥ 110
	130
	‡ 150

Note: † – First prohibition; ‡ – Second prohibition; ¥ – Third prohibition.

Figure 1. An example of a choice set used in the online choice-based conjoint survey.

3rd prohibition (¥): *Specific premium meat cuts* cannot be combined with lowest value cuts *(less than110 NOK/ kg)* in the CBC survey. The specific meat cuts with better eating quality are usually sold at the higher market price compared to the mixed meat cuts.

Apart from these prohibitions, all other combinations of attribute levels were allowed, yielding a total of 174 allowable combinations from all 16 levels of the 5 attributes used in this study.

The product concepts were carefully selected by the Sawtooth software using the balanced overlap method (Sawtooth, 2019). Specifically, the software kept track of the co-occurrences of all pairs of attribute levels (or levels) and showed each attribute levels as few times as possible in a single task, and each level for an attribute appeared roughly the same number of times throughout the whole survey. In a single task, no duplicate concepts were allowed. This facilitated an efficient design to estimate the effects of the different attribute levels.

Consumer segmentation

Without prior knowledge about the market segments, a descriptive post hoc market segmentation (Wedel & Kamakura, 2012) was performed using latent class analysis (DeSarbo et al., 1995) in order to address the heterogeneity of respondents in choice data and to develop market segmentation. Latent class simultaneously detects relatively homogeneous respondent segments and calculates part-worths (i.e. utilities) for those discovered segments. Latent class analysis provides the benefits of aggregate estimation while recognizing market heterogeneity (Orme, 2014; Orme & Chrzan, 2017; Sawtooth, 2019). The minimum and maximum number of segments were specified as 2 and 10, respectively, and the optimal number of consumer segments were determined using the consistent Akaike information criterion (CAIC) introduced by Bozdogan (1987). A logistic model was then fitted within each segment to estimate the part-worths and the importance of each attribute. To present the model mathematically, denotes the part-worth of alternative j for attribute i. To ensure parameter identification, the sum of all part-worths within an attribute is always zero, that is, $\sum_{i=1}^{r_i} \beta_{ij}$, where r_i represents the last alternative of an attribute i. In other words, the part-worth of the last alternative of an attribute is the negative sum of the part-worths of the other levels. To incorporate the 'none' option, an extra parameter β_6 was added to the

model. Altogether, there were 12 parameters for each segment. The estimated probability for an individual choosing a concept can be calculated as the ratio of the antilog of the total utility for that concept to the sum of the antilog of the total utilities.

To obtain the relative importance of each attribute, the part-worths were first rescaled so that the average range of the part-worths within an attribute is 100. The importance of an attribute is calculated as the ratio of the range of the part-worths within that attribute to the sum of the ranges from all attributes, with the part-worth of the 'none' option ignored.

To estimate the market shares of some specific concepts, the part-worths of each attribute alternative for each respondent were re-estimated using the hierarchical Bayesian (HB) approach (Sawtooth, 2019). It was assumed that the part-worths of an individual follow a multivariate normal distribution and the probability of choosing a particular concept follows a multinomial logit model. Non-informative priors were used, and the final estimates were obtained using the Metropolis-Hastings algorithm.

Market shares of preference for six different meat product combinations by five consumer segments were determined by a simulation method using the HB approach. The product characteristics are described in Table 2.

In the end, an open-ended question requesting the general feedback from the consumer formed part of this choice-based conjoint (CBC) study. The study has been notified to the Data Protection Official for Research, NSD – Norwegian Centre for Research Data, and approval was obtained (No. 58377 FJORLAM). A consent to voluntarily participate in the research was attained from each respondent as a part of the introductory text screen.

Results

The average age of male and female respondents ($n =$ 140 in total) was 37 and 32 years, respectively, while the average household size was 3.8. More than half of the respondents were first generation immigrants. Regarding education, most respondents had at least a high school level education. Around two-third of the respondents were married. More details about the characteristics of the respondents can be found in Table 3.

Consumer segments characteristics, importance of attributes and their preferred levels

Based on the demographical characteristics, five consumer segments were identified: Educated-Big-Families (EBF, segment-1, 29%), Educated-Small-Families (ESF, segment-2. 19%), Dedicated-Young-Residents (DYR, segment-3, 28%), Big-Resident-Families (BRF, segment-4, 17%) and Dedicated-Big-Families (DBF, segment-5, 7%). The detailed description of each segment is given in Table 4.

The importance of attributes by consumer segments based on the latent class analysis and ranking (first, second and third) for the attributes and their levels are shown in Table 5.

Segment 1 (Educated Big Families) gave 1st priority to the *place of purchase* (halal butcher) when purchasing HM and 2nd priority was given to *meat cuts (specific cuts)*. These consumers preferred to purchase the premium meat cuts from the local halal butcher. Product *shelf life* (fresh/frozen) and meat *packaging size* were not considered important.

Segment 2 (Educated Small Families) gave 1st priority for the *product shelf life (fresh)* while 2nd and 3rd priorities were given to *price (110 NOK/kg)* and *packaging size (medium)* attributes respectively. These were also price-sensitive consumers and preferred to purchase medium size (3-5 kg) packaging of fresh HM. Compared to other segments, these consumers constituted a higher proportion of daily lamb HM eating consumers. *Meat cuts* were the least important.

Segment 3 (Dedicated Young Residents) have prioritized the *place of purchase* (halal butcher) while other attributes were not considered important. In addition to selecting a halal butcher, members of this segment placed a relatively higher trust in the supermarket. Comparatively these consumers are living independently (without partner) and were daily meat eaters who allocated a higher importance for the national supermarket as place of HM purchase.

Table 2. The definition of six different meat product classes based on place of purchase, shelf life, meat cut, packaging size and price.

Product ID	Place of purchase	Shelf life	Meat cuts	Packaging size	Price/kg (NOK)
BU1	Halal butcher (BU)	Fresh	Specific parts	Small (2 kg or less)	130
SM1	National supermarket (SM)	Frozen	Mixed all parts	Medium (3–5 kg)	110
OL1	Online order (OL)	Frozen	Mixed all parts	Large (5–8 kg)	130
BU2	Halal butcher (BU)	Frozen	Mixed all parts	Small (2 kg or less)	110
SM2	National supermarket (SM)	Frozen	Specific parts	Medium (3–5 kg)	130
OL2	Online order (OL)	Fresh	Specific parts	Medium (3–5 kg)	130

Table 3. Socio-demographic characteristics of the study sample (%, *n* = 140).

Gender	Male	76
	Female	24
Age	15–17	1
	18–26	17
	27–30	19
	31–40	36
	41–50	19
	>50	8
Immigrants' generation.	1st generation	52
	2nd and 3rd generation	44
	Other	4
Education	Primary school	9
	High school	26
	Bachelor	26
	University education	39
	No education/Do not answer	0
Marital status	Single/Divorced/Separated/Widowed	33
	Married/Partnership	66
	Others	1
Annual income (NOK)	< 250.000	19
	250.000–500.000	26
	500.001–750.000	21
	750.001–1000.000	11
	1000.001–1.5 million	5
	> 1.5 million	2
	I do not know	9
	Do not want to answer	7

Segment 4 (Big Resident Families) gave their 1st priority to the *place of purchase* (halal butcher) as in Segment 3, although packaging size and meat cuts were also of relatively higher importance. This segment preferred to purchase *medium size* (3–5 kg) packaging of meat from halal butchers with a preference for a lower purchase price (110 NOK/kg).

Table 4. Consumer segment characteristics identified using latent class analysis.

Consumer segments	Characteristics
Educated Big Families (EBF)	1st generation highly educated immigrants living with up to 5 family members with a preference to purchase local Norwegian lamb meat in addition to imported product. Their lamb meat eating frequency was at least once per week.
Educated Small Families (ESF)	Highly educated small sized families (average 3 members) 1st generation immigrants in Norway with a greater preference for Norwegian lamb meat in addition to the imported meat. The majority of these families ate lamb meat daily.
Dedicated Young Residents (DYR)	Norwegian born (2nd generation) including the young consumers (18 years old), preferred to purchase only Norwegian lamb meat. This segment consisted of a higher number of single/divorced/separated/widowed individuals. They chose lamb meat at least once per week
Big Resident Families (BRF)	Norwegian born (2nd generation) living in a big family (≥5 members). When purchasing lamb meat, they were equally satisfied with the purchase of either imported or Norwegian grown product. They ate lamb meat at least once per week.
Dedicated Big Families (DBF)	These were big families of immigrants (1st generation), preferring only local Norwegian lamb meat. They ate lamb meat at least once per week.

Segment 5 (Dedicated Big Families) emphasized the importance of all five attributes in the study, with 1st priority given to *packaging size (small)* while the 2nd and 3rd most important attributes were choice of *meat cuts (specific cuts)* and *product shelf life (fresh)*. These meat consumers preferred *small size* (less than 3 kg) meat packaging of *specific fresh meat cuts*. These consumers were dedicated to Norwegian origin meat and they gave the lowest importance to the place of purchase and were not price-sensitive in their preferences.

Market share of preferences by different consumer segments

The consumer segments have indicated their preferences for meat attributes from which market shares of each attribute was calculated using the HB method. The six meat products were designed in such a way that each 'place of purchase' had two products with different characteristics (Table 2). The market share (%) for these six products for each consumer segment is described shown in Figures 2 and 3.

(1) Segment 1 (Educated Big Families – EBF): When considered for three products (SM1, BU1 and OL1), the highest market share (63%) was attained for the halal butcher, while 16% and 19% of the market share was attributed to national supermarkets and online purchases, respectively. The consumers' preferences for these three products was changed when they get more options to choose from six products (SM1, BU1, OL1, SM2, BU2 and OL2) such that the market share for the halal butcher (BU1+BU2) declined to 57% while the overall national supermarket (SM1+SM2) share increased to 22% with the total market share for online products (OL1+OL2) remained the same.

(2) Segment 2 (Educated Small Families – ESF): The highest market share (80%) was attributed to the halal butcher, with only 13% purchased from national supermarket and 2% online. With all six products (SM, BU1, OL1, SM2, BU2 and OL2), the halal butcher (BU1+BU2) and national supermarket (SM1 +SM2) market shares were reduced to 61% and 9% respectively, with online purchases increasing to 28%. These consumers were price sensitive and placed a higher importance on a low price for meat compared with other segments.

(3) Segment 3 (Dedicated Young Residents-DYR): The preference for Dedicated Young Residents was biased in favor of the halal butcher (BU1) attracting 95% of the trade with only 5% being purchased from national supermarkets. Similar trends were found

Table 5. The relative importance (in terms of part-worth utilities) of five attributes (top) and their levels (with SE).

Consumer segments		EBF	ESF	DYR	BRF	DBF
Place of purchase		51.16	13.54	91.14	73.70	11.08
Product shelf life		2.30	41.69	1.85	3.46	19.37
Meat cuts		25.60	5.03	0.10	6.83	21.73
Packaging size		8.17	14.05	3.26	9.46	33.81
Price (NOK/kg)		12.76	25.70	3.64	6.55	14.02
Attributes	**Levels**	**EBF**	**ESF**	**DYR**	**BRF**	**DBF**
Place of purchase	Halal butcher	0.53 (0.07)*	0.34 (0.11)*	5.22 (0.44)*	3.68 (0.22)*	0.16 (0.24)
	Meat wholesaler	−0.16 (0.09)	0.11 s(0.12)	−4.43 (0.65)*	−0.94 (0.26)*	0.23 (0.29)
	N. Supermarket	−0.11 (0.08)	−0.12 (0.11)	3.33 (0.43)*	−0.87 (0.26)*	−0.15 (0.27)
	Online order	−0.25 (0.08)*	−0.34 (0.12)*	−4.13 (0.56)*	−1.88 (0.35)*	−0.24 (0.27)
Shelf life	Fresh	−0.02 (0.06)	1.11 (0.09)*	0.13 (0.13)	−0.14 (0.16)	0.46 (0.19)*
	Frozen (< 4 weeks)	0.01 (0.06)	−0.13 (0.09)	−0.06 (0.13)	0.12 (0.16)	−0.08 (0.22)
	Frozen (> 4 weeks)	0.01 (0.06)	−0.98 (0.11)*	−0.07 (0.12)	0.01 (0.16)	−0.37 (0.23)
Meat cuts	Mixed all parts	−0.19 (0.08)*	−0.13 (0.11)	0.01 (0.16)	0.26 (0.20)	−0.47 (0.24)
	Specific parts	0.19 (0.08)*	0.13 (0.11)	−0.01 (0.16)	−0.26 (0.20)	0.47 (0.24)
Package size	Extra-large (≥ 8 kg)	−0.07 (0.08)	−0.23 (0.11)*	0.07 (0.17)	−0.03 (0.20)	0.36 (0.25)
	Large (5–8 kg)	0.05 (0.08)	−0.27 (0.12)*	0.04 (0.16)	0.11 (0.20)	−0.74 (0.34)*
	Medium (3–5 kg)	−0.05 (0.08)	0.44 (0.11)*	−0.22 (0.16)	0.31 (0.20)	−0.34 (0.29)
	Small (≤ 2 kg)	0.06 (0.08)	0.06 (0.11)	0.12 (0.15)	−0.4 (0.20)*	0.71 (0.26)*
Price (NOK)/kg	110	0.03 (0.10)	0.73 (0.15)*	0.13 (0.21)	0.31 (0.25)	0.20 (0.36)
	130	0.08 (0.06)	−0.18 (0.09)*	0.12 (0.12)	−0.13 (0.16)	0.20 (0.21)
	150	−0.11 (0.09)	−0.55 (0.15)*	−0.25 (0.21)	−0.18 (0.26)	−0.40 (0.30)

Notes: The * means p-value < 0.05 for significantly different from zero. The description of consumer segments abbreviations is given in Table 4.

when all six products were combined (Figure 3). Online products did not attract this consumer segment.

(4) *Segment 4 (Big Resident Families-BRF):* Again, the highest market share (90%) was also for the halal butcher, with national supermarkets-attracting only

3% of the trade. These consumers also did not shop online. When considered over all six products (SM1, BU1, OL1, SM2, BU2 and OL2), the market share for halal butcher (BU1+BU2) was highest (96%) with only 1% of the trade being attracted by national supermarkets.
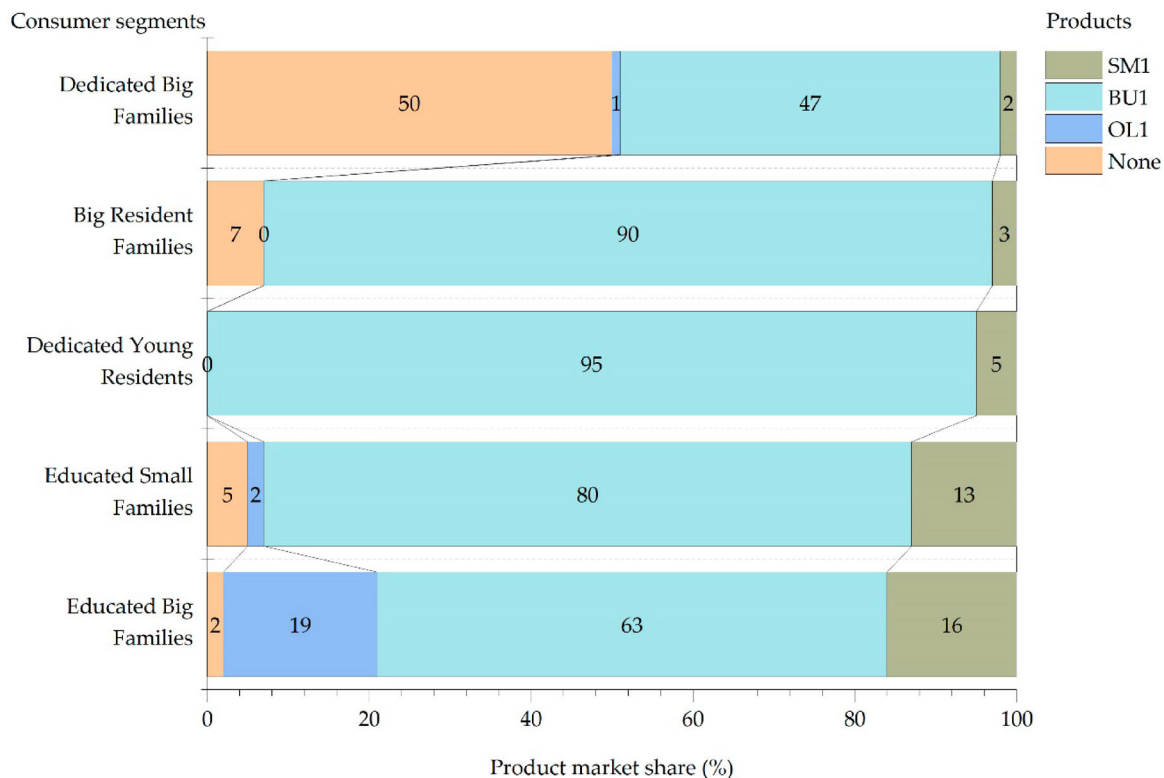

Figure 2. The halal meat consumers' preferences for three products' market share based on simulation of data using Hierarchical Bayesian approach. The description of products is given in Table 2.
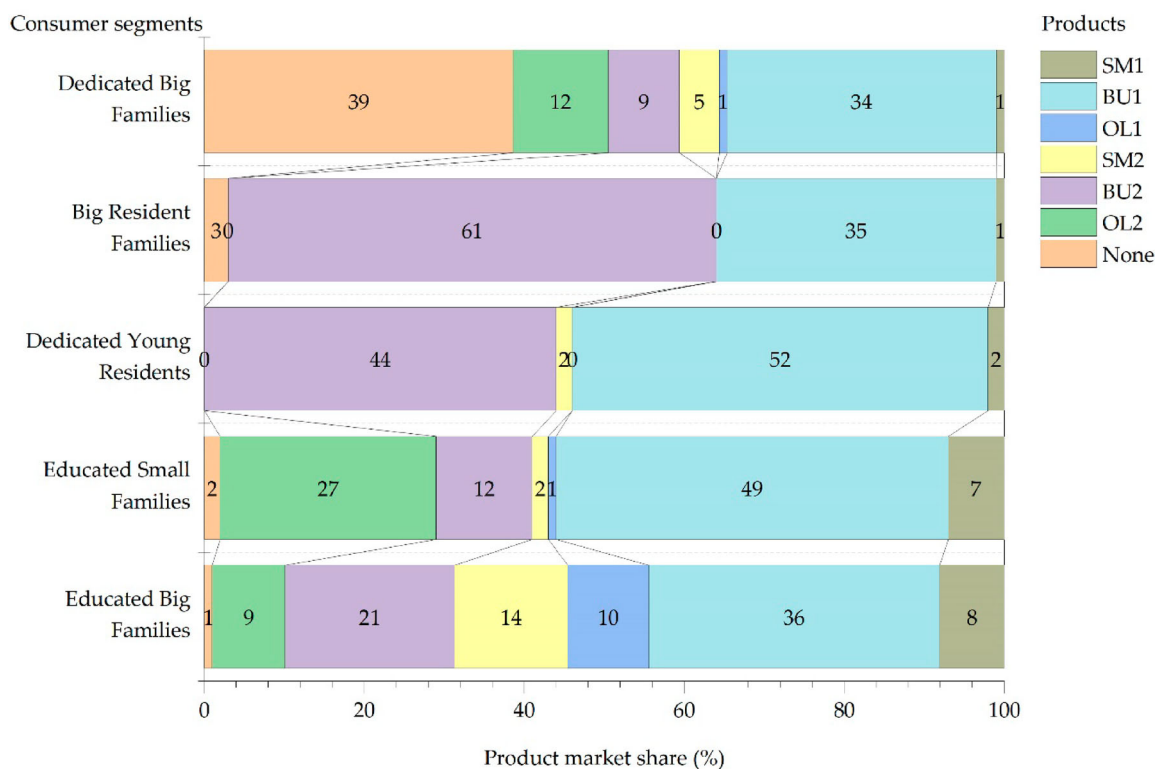
Figure 3. The halal meat consumers' preferences for six products' market share based on simulation of data using Hierarchical Bayesian approach. The description of products is given in Table 2.

(5) *Segment 5 (Dedicated Big Families-DBF):* The highest market share for this consumer segment (47%) was also for the 'halal butcher', with only 2% provided by national supermarkets and 1% by online sources.

With all six products (SM1, BU1, OL1, SM2, BU2 and OL2), the market share for the halal butcher (BU1+BU2) was reduced to 43% and the national supermarket (SM1+SM2) increased to 6%. However, in this case online (OL1+OL2) purchases were more popular attracting 13% of custom.

Overall, for the three products (BU1, SM1, OL1) for all the consumer sectors, the halal butcher attracted the most trade. The Educated Big Families were the most attracted segment to online (19%) and national supermarket (16%) outlets. For the six products considered together (SM1, BU1, OL1, SM2, BU2 and OL2), the halal butcher was the most favoured outlet overall consumer segments. Online purchases (28%) were most favoured by Educated Small Families.

Discussion

Halal meat (HM) consumers' preferred attributes

The HM purchase is based on the HM consumers' trust in the halal authenticity of meat (Ahmed, 2008). This trust provides the basis for the decision of consumers to purchase from a halal butcher, national supermarket, or online shopping outlet. When a halal butcher communicates directly ('word of mouth') with the meat consumers, he is providing assurances based on the consumers wishes and price preferences articulated in the conversation (Ahmed, 2008). The halal butcher relies very much on local and regular patrons. Familiarity with them builds consumer trust for purchasing HM. Besides, there is a greater choice of meat cuts and meat-based products at halal butcher outlets, which are developed to meet the needs of traditional meat-based dishes. On the other hand, at the supermarket, storekeepers do not have the same opportunities to communicate with HM consumers and therefore understand their preferences for the preparation of traditional meat dishes (Wilson & Liu, 2010, 2011). However, if regulatory authorities controlling halal product authenticity can gain the confidence of the consumer then purchases from national supermarkets are likely to improve (Caswell, 1992; Issanchou, 1996).

Importance of attributes by part-worth utilities

In this study, the meat consumers categorized as EBF, DYR and BRF (Table 5) gave their highest priority to

'place of purchase'. However, the ESF and DBF consumers were attracted more to 'product shelf life' and 'packaging size', as important marketing attributes. These consumer segments exhibited no preference for place of purchase, while the ESF segment was accustomed to seeking knowledge of 'product shelf life' and meat freshness. This might be related to their small family and a preference for small packaging of fresh meat. The preferences for packaging size in larger families (DBF) varied from small to extra-large. The smaller packaging may be easier to shop for while the large packaging are best purchased from a meat wholesaler. Since meat wholesalers usually sell in bulk with an option of free home-delivery, that may attract consumers with big family size i.e. DBF.

Younger consumers (DYR), showed a preference for purchasing meat from 'national supermarkets' in smaller packaging sizes. This consumer segment is comprised of second-generation Muslims, born in Norway, who over time have been influenced by the local cultural preference for 'national supermarkets' for their halal meat supply. It is possible that these younger consumers are restricted in shopping time and so prefer not to engage with staff at the halal butchery and also prefer to purchase 'mixed meat cuts'.

In assessing overall preferences, the halal butcher provided the most popular outlet for all except the younger consumers who also preferred to purchase from the national supermarket. Fresh products were most preferred by Educated Small Families (ESF) while the freezing of meat was a practical option for larger families. It is interesting to note that both large families (DBF) and younger consumers (DYR) preferred locally produced (Norwegian) product. This preference may be related to their more nationalistic outlook to support the Norwegian economy. Based on this preference these consumer segments are likely to be major targets for Norwegian lamb products (Table 5).

The number of respondents in this study was limited by the lack of access to the minority Muslim community across Norway. The number of segments formed was purely statistically motivated and the interpretations of the segments were based on the demographic variables collected. Based on the results reported, a larger scale a-priori study which accounts for theoretical, behavioral and/or cultural insights could be conducted to verify our results.

Market share for the specific products

The preferences of lamb meat consumers were changed when a larger variety of products was available at the national supermarkets. For ESF, the market share for

the products (Table 5) follows the same pattern as EBF segment. However, the market share for the fresh medium price (130 NOK/kg) range was higher for HM (27%) compared to the frozen meat (3%). For BDF, highest market share was calculated for the 'fresh HM' products available online. For DYR and BRF, highest market share was calculated for the HM available at the halal butcher. These consumers preferred locally produced meat but had less trust in the 'national supermarket'. It might indicate their confidence in the Norwegian products overall but less faith in the halal slaughtering protocols in Norway (Bhatti et al., 2019). The meat industry can attain their trust by showing more clarity with respect to the halal slaughtering practices exercised at their slaughterhouses. In addition, product branding and better communication of 'national supermarket' staff with HM consumer can increase the market share for 'national supermarket' based products. Since the Muslim consumers are price conscious as the results of current study showed (Table 5), national supermarkets are recommended to carefully price the meat since meat consumers are not willing to pay extra for halal meat. Halal meat consumers, however, were willing to pay a higher price for certified halal meat to halal butchers as they are considered to be more trust-worthy (Verbeke et al., 2013).

Norway is the largest Scandinavian sheep meat producer, but lamb consumption is declining. Increases in the size of the Muslim community clearly provides a growing market for halal meat with this study providing some guidelines on how this growing niche market can be supplied. A future study focused on the opportunities and constraints relating to marketing and brand development for 'halal butchers' may provide more insight about the consumers' trust with their 'halal butcher'. Moreover, the acceptance of a uniform halal-logo among butchers is difficult for launching their own brand in market due to their associations with various representative Muslim organizations. Integrating the 'halal butcher' outlets within the 'national supermarket' will not only increase the market share of the HM for the Norwegian national supermarket, but will also increase the HM consumption with a greater variety of high quality meat products available that the consumer can trust. Under medium level migration, the Muslim populations in Europe overall, and more specifically in France, and Germany are predicted to be 11.2%, 17.4%, and 10.8%, respectively, of total their population in 2050 (Pew Research Centre, 2017). It will create halal meat export opportunities for Norwegian halal meat across the European Muslim population. However, it is important to be mindful of the different dynamics of and similarities between each halal niche market.

Conclusions

First-generation halal meat consumers clearly prefer to purchase their meat from a halal butcher in whom they place their trust for authenticity. In contrast younger second generation consumers are also willing to trust the supply from 'national supermarkets'. Most of the consumers prefer traditional meat cuts for specific dishes which are readily available from the 'halal butcher' who is aware of traditional halal cooking methods. To gain market share for halal meat, the 'national supermarkets' in Norway need to adjust their marketing strategy to incorporate some of the services that the traditional halal butcher is able to provide on a larger scale. If they succeed, however, the viability of the traditional butcher may be threatened since economies of scale will dictate that they offer the same services at a cheaper price. The industry needs to evaluate these risks carefully before proceeding to grow the halal lamb trade.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Muhammad Azher Bhatti http://orcid.org/0000-0002-9699-0656
Sosheel Solomon Godfrey http://orcid.org/0000-0001-5705-8201
Ryan H. L. Ip http://orcid.org/0000-0001-8636-1891
Mari Øvrum Gaarder http://orcid.org/0000-0001-7186-6256
Geir Steinheim http://orcid.org/0000-0003-0201-6236
Peter Wynn http://orcid.org/0000-0002-4656-9329
David L. Hopkins http://orcid.org/0000-0002-2743-5894
Tormod Ådnøy http://orcid.org/0000-0002-6836-0809

References

Aby, B. A., Kantanen, J., Aass, L. & Meuwissen, T. (2014). Current status of livestock production in the Nordic countries and future challenges with a changing climate and human population growth. *Acta Agriculturae Scandinavica, Section A — Animal Science* 64(2), 73–97.

Ahmed, A. (2008). Marketing of halal meat in the United Kingdom – supermarkets versus local shops. *British Food Journal* 110(6–7), 655–670.

Bashir, A. M., Bayat, A., Olutuase, S. O. & Abdul Latiff, Z. A. (2018). Factors affecting consumers' intention towards purchasing halal food in South Africa: A structural equation modelling. *Journal of Food Products Marketing* 25, 1–23.

Bhatti, M., Williams, T., Hopkins, D., Asheim, L., Steinheim, G., Campbell, M., Eik, L., Wynn, P. & Ådnøy, T. (2019). Adapting seasonal sheep production to year-round fresh meat and halal market in Norway. *Sustainability* 11(6), 1554.

Bonne, K. & Verbekke, W. (2008). Muslim consumer trust in halal meat status and control in Belgium. *Meat Science* 79(1), 113–123.

Bozdogan, H. (1987). Model selection and Akaike's information criterion (AIC): The general theory and its analytical extensions. *Psychometrika* 52(3), 345–370.

Browne, K. (2005). Snowball sampling: using social networks to research non-heterosexual women. *International Journal of Social Research Methodology* 8(1), 47–60.

Brunborg, H. & Texmon, I. (2011). Befolkningsframskrivning 2011-2100: Modell og forutsetninger.

Caswell, J. A. (1992). Current information levels on food labels. *American Journal of Agricultural Economics* 74(5), 1196–1201.

DeSarbo, W. S., Ramaswamy, V. & Cohen, S. H. (1995). Market segmentation with choice-based conjoint analysis. *Marketing Letters* 6(2), 137–147.

Font, I. F. M. & Guerrero, L. (2014). Consumer preference, behavior and perception about meat and meat products: An overview. *Meat Science* 98(3), 361–371.

Helgesen, H., Solheim, R. & Næs, T. (1997). Consumer preference mapping of dry fermented lamb sausages. *Food Quality and Preference* 8(2), 97–109.

Hersleth, M., Næs, T., Rødbotten, M., Lind, V. & Monteleone, E. (2012). Lamb meat – importance of origin and grazing system for Italian and Norwegian consumers. *Meat Science* 90(4), 899–907.

Issanchou, S. (1996). Consumer expectations and perceptions of meat and meat product quality. *Meat Science* 43, 5–19.

Kubberød, E., Ueland, Ø., Rødbotten, M., Westad, F. & Risvik, E. (2002). Gender specific preferences and attitudes towards meat. *Food Quality and Preference* 13(5), 285–294.

Kubberød, E., Ueland, Ø., Tronstad, Å. & Risvik, E. (2002). Attitudes towards meat and meat-eating among adolescents in Norway: a qualitative study. *Appetite* 38(1), 53–62.

Lever, J. & Miele, M. (2012). The growth of halal meat markets in Europe: An exploration of the supply side theory of religion. *Journal of Rural Studies* 28(4), 528–537.

Orme, B. K. (2014). *Getting Started with Conjoint Analysis: Strategies for Product Design and Pricing Research* (3rd ed.) (Glendale, CA: Research Publishers LLC).

Orme, B. K. & Chrzan, K. (2017). *Becoming an Expert in Conjoint Analysis: Choice Modelling for Pros*. Sawtooth Software.

Pew Research Centre. (2015). *The Future of the World Religions: Population Growth Projections, 2010–2050* (Pew Research Centre).

Pew Research Centre. (2017). *Europe's Muslim Population Will Continue to Grow – But How Much Depends on Migration*. Accessed 26 September 2020, available at: https://www.pewresearch.org/fact-tank/2017/12/04/europes-muslim-population-will-continue-to-grow-but-how-much-depends-on-migration/

Pickett-Baker, J. & Ozaki, R. (2008). Pro-environmental products: Marketing influence on consumer purchase decision. *Journal of Consumer Marketing* 25(5), 281–293. https://doi.org/10.1108/07363760810890516

Sawtooth. (2019). *The Latent Class Technical Paper Version 4* (Provo, UT: Sawtooth Software, Inc). Available at: https://www.sawtoothsoftware.com/products/conjoint-choice-analysis/cbc/81-products/conjoint-analysis-software/223-cbc-latentclass#technical-paper.

Statistics Norway. (2019). *Religious Communities and Life Stance Communities in Norway*. Statistics Norway. Accessed 29 May 2020, available at: https://www.ssb.no/en/trosamf/.

Verbeke, W., Rutsaert, P., Bonne, K. & Vermeir, I. (2013). Credence quality coordination and consumers' willingness-to-pay for certified halal labelled meat. *Meat Science* 95(4), 790–797.

Wedel, M. & Kamakura, W. A. (2012). *Market Segmentation: Conceptual and Methodological Foundations* (New York: Springer Science & Business Media).

Wilson, J. A. & Liu, J. (2010). Shaping the halal into a brand? *Journal of Islamic Marketing* 1(2), 107–123.

Wilson, J. A. & Liu, J. (2011). The challenges of Islamic branding: Navigating emotions and halal. *Journal of Islamic Marketing* 2(1), 28–42.