Farm Animal Welfare in Canada: Role of Values, Attitudes and Knowledge on the Consumer Choice of Farm Animal Welfare Labelled Meat

by

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ABSTRACT

Consumers in developed countries are increasingly considering process attributes including Farm Animal Welfare (FAW) in their purchasing decisions. However, there have been few studies on Canadian consumers' concern for FAW and the choice of FAW labelled meat as a process attribute in meat purchasing decisions. Furthermore, the psychological constructs that drive the decision to purchase FAW labelled meat have also not been explored extensively. The objective of this study was to examine FAW concern in Canada and explore the role of knowledge, values, attitudes and beliefs on purchase intention for FAW labelled meat products. The study identifies the nature, strength and relative importance of the constructs on intention to purchase FAW labelled meat by applying a modification of the Theory of Planned Behaviour (TPB) using the Certified Humane (CH) label as a case study. Additionally, choice data were used to model consumers' relative preference for FAW labelled meat. The study hypothesised that there exists a positive relationship between the psychological constructs: attitude, self-identity, perceived behavioural control, personal and social norm with intention to purchase FAW as a process attribute. The study provides evidence to support the role of values, knowledge, beliefs on intention to purchase FAW labelled meat. There is a positive relationship between the constructs of the TPB and intention to purchase FAW labelled meat. Attitude and self-identity were the most significant in determining intention. Stated FAW concern, willingness to engage in activities that promote FAW, agricultural knowledge and income were the most significant in predicting intention to purchase FAW labelled meat. The choice analysis provides evidence to support the relative preference for a combination of organic and FAW attribute label. There is evidence of FAW concern across all sociodemographic segments with females, younger people, liberals and pet owners showing comparatively more concern.

PREFACE

This thesis is an original work by Anita Ahiney Laryea. The research project: Advancing Animal Welfare Management and Communication in Canada with project ID 2015E022R of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project title "Farm Animal Welfare in Canada how Vanishing Knowledge about Agriculture, Values and Labelling Affect Public Perceptions and Shopping Behaviours" No. Pro0006284 on June 6, 2016.

DEDICATION

In ever loving memory of my beloved father Thomas Daniel Laryea (died June 23, 2009). Thank you for raising me to be who I am today and being my number one cheerleader always believing in me and urging me on. Secondly, to my mom Jane Godwyll thanks for being understanding and supportive. Finally, to my second dad Kingsford Daniel Laryea, I doubt I would have made it this far without you.

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CHAPTER 1 INTRODUCTION

1.1 Context

A challenge the meat industry is confronted with is constantly maintaining the social license to raise farm animals, process and market animal products. Social license is defined as the privilege to operate with minimal restrictions by doing what is right as defined by society (Martin et al., 2011). Globally, there is a disconnect from the way food is produced. The disconnect from food production has created a gap in the elementary understanding of where and how food is produced (Norwood and Lusk, 2011). The gap is postulated to be a major cause of the ongoing challenge of acquiring and maintaining consumer and societal trust that is indispensable to social license (Martin et al., 2011). Furthermore, ethical concerns such as the welfare of farm animals are ingrained in the earning and maintenance of social license (Martin et al., 2011). Meat industry stakeholders and society are constantly negotiating the terms of the social license. It is noteworthy that public pressure that underlies social license debates are driven by personal and societal norms or value systems (Hamilton et al., 2003; Martin et al., 2011). Societal perspectives, beliefs and public opinion are not static but are constantly changing (McCombs, 2014).

The livestock industry in dealing with these challenges ought to adopt means to heighten consumer engagement within the food chain and aid consumers in the assessment of product attributes and claims (Goddard et al., 2007). Diverse consumer demands coupled with research, changing technology, dynamic industry practices and new regulations along with other factors have caused the meat industry to rethink some practises and policies. Producers, processors and retailers within

the meat industry will require a comprehensive understanding of the consumer demand drivers to better communicate with consumers and negotiate the terms of the social license to produce.

The meat industry in Canada is set up such that farm animals are raised by the producer then moved to the processor to be processed into meat products and then the retailer sells them to the consumers. There is an imbalance of power and communication along the chain. Producers often succumb to pressure from powerful processors and retailers to be able to access big stable markets. Consumers' interaction with the meat industry is largely at the point of retail. Retailers communicate product information to Consumers through labels and this information may be subject to marketing ploys and inaccuracies about how products have been raised. Retailers and processors can impose meat standards and animal welfare policies on producers. The responsibility of ensuring the standards and policies conform to society and consumer expectation is shared between producers, processors, retailers, government and the public.

The meat industry is essential to the Canadian economy and ought to adapt to changing dynamics to be resilient. In the face of already rising meat prices, the industry will respond to economic incentives to improve FAW if premiums are high enough to offset costs. Research must be carried out to ascertain the impact consumers' perceptions, beliefs, and attitudes have on product evaluation and purchasing decisions of FAW friendly products (Sunding et al., 2003). The primary objective of this study is to investigate FAW concern in Canada and explore the role of knowledge, values, attitudes and beliefs on purchase intentions for FAW labelled meat products. This thesis focuses on FAW as a process attribute using the Certified Humane (CH) label as a case study for intention to purchase FAW labelled meat.

1.2 Background

Consumers are becoming increasingly curious and concerned about where their foods come from and how the food has been produced (Tonsor et al., 2013). Consumer concern is caused in part by the discovery of some disturbing food related incidents and practises exposed in the media, activities of interest groups, as well as marketing campaigns embarked on by niche producers. An example in Canada is the Chilliwack cattle sales animal abuse incident. The increased concern among consumers about the origin and process by which food is produced is also driven largely by dwindling involvement of the general populace in agriculture (Grandin, 2014). Most people have never visited a real farm and thus develop ideas of what a farm is from pictures in first baby books and nursery rhymes and movies (Norwood and Lusk, 2011). They develop romanticised ideas of what a farm should be which often are very different from reality (Norwood and Lusk, 2011). About 200 years ago, about 90% of the population in the United States lived on farms and obtained most of their foods from the farms on which they lived (Johnson, 2000). People participated in the farming process and knew exactly how food was produced and distributed. In the 21st Century, just about two percent of the United States population live on farms and feed the entire U. S population (Dimitri et al., 2005). This scenario is also true of Canada. In 1931, 31.27% of the Canadian population lived on farms; by 2006, that percentage had decreased to 2.2%. In 2011, the percentage had decreased to about 2.0% (Statistics Canada, 2014). Indicating that a majority of the consuming population are no longer involved in the process and have become uninformed of how food is produced and delivered to grocery stores (Grandin, 2014). The increased consumer interest in the origin and process of food has given rise to new market products with process attributes.

Correspondingly, the meat industry has evolved from providing just meat as a product to offering several other process attributes with the meat in response to changing consumer preferences (Brom, 2000). The process attributes could relate to quality, health, origin as well as the way the animals were raised, transported and slaughtered. Communicating the process attribute to consumers is usually done through signalling using labels. Meat products with labels such as free from antibiotics, organic, cage free, free range, all natural and CH among others abound in the retail market.

The last three decades have seen the progressive movement of FAW from a fringe to a mainstream issue (Lang, 2010). The movement has been driven by factors such as increased media coverage, concern for where and how food is produced. Harper and Henson (2000) state that consumers are motivated by zoo centric as much as by anthropocentric views in their concern for FAW. Studies in various countries have found evidence that some consumers perceive products with enhanced FAW attributes to be of higher quality than conventional products for a multitude of reasons including ethical beliefs and the perception of safety, better taste, and are healthier (Ophuis, 1994; Harper and Makatouni, 2002; Lusk and Shogren, 2007; Lagerkvist and Hess, 2011a). Animal science studies have also provided evidence that reduced stress leads to increased meat quality (Grandin, 2014).

The development of FAW as a mainstream issue has contributed to the concept of the consumer citizen. The term Consumer citizen is loosely defined as a consumer who is a moral agent who makes consumption choices as an expression of his/her values. The emergence of the consumer citizen, means that societal disutility associated with the ethics of animal stockman ship, or food production practices more generally, may be decided by consumer preferences and choices (Frewer et al., 2005). Consumers thus, are beginning to express their preferences for ethical

products in the free market. Consumers expect that by expressing their preferences for ethical products such as FAW labelled meat they can ensure that producers use animal welfare friendly means during meat production and communicate such methods to consumers. Meat could be raised in animal welfare friendly manner but how is this communicated to the consumer? It could be argued that the Canadian meat industry has a long history of welfare guidelines that ensures enhanced FAW, nevertheless if consumers are uninformed about these guidelines it is perceived to be non-existent. There is the need to advance communication of FAW among all stakeholders.

In 2016, Canada's largest dairy farm Chilliwack Cattle Sales Ltd. based in British Columbia pleaded guilty to animal cruelty charges and was fined (Stephenson, 2016) and Earl's restaurant, which has a large share in the Canadian food industry, stirred discussion about FAW and FAW labelled meat when the restaurant chain announced the decision to procure beef from outside of Canada on the basis that there was not enough Certified Humane meat available in Canada to meet the company's demand (Stephenson, 2016). It is often argued that the Earl's issue was one of communication on available humane meat rather than a lack of appropriate FAW standards and supply of humane labelled meat in Canada.

The thesis was focused on exploring what the drivers for the choice of FAW labelled meat products in Canada are. The research seeks to determine if there is a unique segment of consumers in Canada willing to choose FAW labelled meat. Also, this study sought to discover the psychological constructs such as values and attitudes that are important to the purchase of FAW labelled meat. Research conducted in the field of food choice and certification provides evidence that higher income levels are a good indicator of willingness to pay for premium products. As such is FAW a luxury issue in Canada? Do producers need to renew the terms of the social license in Canada for FAW.

1.2.1 Farm Animal Welfare

FAW and food safety is of increasing concern to international associations like the World Organization for Animal Health (OIE) and the Food and Agriculture Organization (FAO). Particularly in efforts to harmonize standards, understand the concept and approaches of animal welfare because of international trade. Governments and organisations have taken steps to create laws, regulations, standards, and codes of practice in addition to labelling criteria to support food animal production in a manner that advances FAW (Vapnek and Megan, 2010). The concept of FAW is complex and multidimensional.

Animal cruelty is defined as the crime of inflicting physical pain suffering or death on an animal beyond necessity for normal discipline (Dichter, 1978). Animal welfare is a multifaceted term that encompasses so much more than the absence of cruelty. It differs from animal rights, which is the philosophical belief that animals are entitled to the freedom or privilege of being free from human intervention, free from all forms of use by humans, be it for food, research, recreation or any other purpose (Dichter, 1978). Some animal rights advocates make exceptions to the use of animals for companionship. Animal welfare definitions accepted in the scientific community and by animal welfare advocates are based on the five freedoms (Vapnek and Megan, 2010). The five freedoms have their origins in the United Kingdom's Farm Animal Welfare Council's (FAWC) (1965) Brambell report on animal husbandry following the publication of Ruth Harrison's animal machines in 1964. The five freedoms as updated by Dr. John Webster in 1993 are freedom from hunger or thirst, freedom from discomfort, freedom from pain, injury or disease, freedom to express normal behaviour, and freedom from fear and distress (FAWC, 2009). The five domains model is the new framework for defining animal welfare. Fisher (2009) in defining animal welfare argues that the five freedoms capture the essence of animal welfare. Fraser (2006) postulates that

when people champion the cause of animal welfare, they emphasize one of three views whilst encompassing the other two inadvertently. The views are that animals can exist naturally through the development and use of their natural adaptations and capabilities. Secondly, animals feel well by being free from prolonged and intense fear and pain and able to experience normal pleasures. Thirdly, animals can function well, referring to normal physiological and behavioural functioning. Fraser (2006) categorises the issues of animal welfare into three main areas namely the biological functioning, the affective states and the natural living. The OIE defines animal welfare as "the way an animal is adapting to the conditions in which it lives. According to the OIE, an animal is in good state of welfare that can be backed by scientific evidence if the animal is healthy, comfortable, well nourished, free from danger, able to express innate behaviour and is not suffering from unpleasant states such as pain, fear and distress. Good animal welfare requires disease prevention and good veterinary treatment, suitable shelter, efficient management practices and nutrition, humane handling and humane slaughter". Animal welfare refers to the state of the animal (OIE, 2010). The OIE definition is what this research implies whenever it uses the term animal welfare. Consumers define animal welfare differently based on their perceptions, values, beliefs, norms, knowledge constructed by experience (Vapnek and Megan, 2010).

1.2.2 Consumer Interest in Farm Animal Welfare

Animal production in recent decades has experienced two competing developments: the widespread adoption of confinement production facilities on one hand and increased public concern for FAW on the other (Prickett et al., 2010). The adoption of more efficient practices such as mechanization and intensive breeding (Norwood and Lusk, 2011), in addition to scientific feed selection, productivity-enhancing pharmaceuticals and increases in confinement practises

(Blandford, 2006) which sometimes results in animals barely having space to move about freely and behave normally.

Beginning in the 1960's after the Publication in 1964 of Ruth Harrison's "Animal Machines" public outcry led to the formation of the UK commission that developed the 1965 Brambell report, FAW has gained and continues to gain importance among scientists, politicians, economists and society as a whole (Mayfield et al., 2007). Additionally, social media campaigns embarked on by animal activists' often circulating videos that depict farm animal cruelty has also done much to increase public outcry and has contributed to increased consumers' interest in production methods. In a study conducted by McKendree et al. (2015) at the Kansas State University, 65% of consumers reported that the welfare of beef cattle in the United States was of immense concern. European studies also indicate increased concern for animal welfare (Blokhuis et al., 2003; Boogaard et al., 2006; Evans and Miele, 2007; Kjærnes and Lavik, 2007; Vanhonacker et al., 2008). Farm animals have a use value: being used as raw materials in the production process and a non-use value: the value that producers derive from economic goods related to the wellbeing of the livestock independent of any use, present or future, that the producer might make of the animals (Lagerkvist et al., 2011). The non-use value is an intrinsic value derived entirely from the value humans or society place on the welfare of farm animals. It is assumed that there is a perceived societal benefit from knowing and believing that although farm animals are being used for economic purposes they are being treated appropriately. The value society places on farm animals can be measured from an economic perspective by associating a financial weight to animal welfare through determining a willingness to pay for FAW. Consequently, society's economic responses to FAW is intertwined with the demand for food and the willingness to pay for livestock products with different enhanced FAW attributes.

1.2.3 Farm Animal Welfare in Canada

The FAW concern consumers have relates to the origin and way a farm animal was raised. The study uses the term farm animal to refer specifically to cattle, pigs and poultry because cattle, pigs and poultry are the most frequently consumed farm animals in Canada (Statistics Canada, 2010). The Canadian meat sector has made some strides in handling the origin issue particularly with country of origin and traceability. The Canadian beef industry has a good traceability system. Traceability systems in Canada are hinged on three pillars, namely animal identification, premise identification and movement reporting (CFIA, 2017). Although there are several provincial traceability initiatives as well as national traceability systems for sheep, bison and in 2015 a national pork traceability system was also added (AAFC, 2017). The poultry industry has an independently developed system that reports traceability information. The Canadian food Inspection Agency (CFIA) ensures compliance with the traceability requirements. Critics of the Canadian traceability system indicate that the system is largely reactionary to problems with a focus on mitigating risks as opposed to proactively adding value and gathering business intelligence as is the practice with other systems across the developed world (Gooch et al., 2015).

Activist groups are recorded to exist as far back as the 1880's. In 1869, Canada's earliest society for the prevention of cruelty to animals was founded in Montreal. In the year1892, the first Canada wide anti cruelty provision in the criminal code sections 444 to 447 was enacted (Hughes and Meyer, 2000). Nonetheless, Canada lags the developed world in possessing laws that address broad animal welfare issues (Hall, 2006). Canada's lag is evidenced by the absence of basic anti cruelty laws in its most densely populated provinces Ontario and Quebec (Hughes and Meyer, 2000). Nonetheless, there are federal laws (criminal code) that criminalises willful neglect, maim or injury to an animal (Hughes and Meyer, 2000). In Canada, the primary responsibility of ensuring the

welfare of all animals including farm animals is designated to the provinces. There are disparities in the provincial laws that regulate the care and treatment of farm animals. Alberta's anti cruelty laws are more extensive when compared to all other provinces. In Alberta the law states no animal shall be in distress regardless of intent (Hughes and Meyer, 2000). Distressed in this context captures the essence of farm animal welfare.

Animal welfare activist's groups are active in Canada. There are registered charities such as Animal Justice Canada that ensures public awareness of animal practises and advances the protection of animals within the existing laws. The Canadian Federation of Humane Societies (CFHS) is the umbrella organisation that projects the voice of humane societies at the national level. Farmers also follow the National Farm Animal Care Council (NFACC) codes of practice; these codes are science based national guidelines for handling farm animals (Nfacc.ca). Proponents of FAW criticize these regulations based on its voluntary conformity nature and lack of enforceable compliance by government authorities. It is often alleged that these codes and regulations are rudimentary and address extreme animal cruelty situations but are insufficient to address FAW (Fraser, 2006). There have been instances of animal cruelty in some Canadian animal farms but the cases of animal cruelty on some farms have been touted as bad apple examples. In the year 2014, the pork industry was under intense criticism for the industry's use of sow crates and the industry took measures to stop the practice by banning the use of gestation crates. The ban instituted has been in effect since July 1, 2014 (Huffington Post Canada, 2014).

Defining animal cruelty, distress and FAW varies widely both within Canada and among developed countries. Nonetheless, the Food and Agricultural Organization (FAO) identifies key FAW issues to be intense confinement, painful procedures without the use of painkillers, illness without veterinary care or the use of euthanasia, trampling and suffocation from overcrowding,

being transported long distances alive, being dragged and prodded to slaughter as well as imperfect slaughter practices (Matheny and Leahy, 2007; Vapnek and Megan, 2010). Some of these key FAW issues occur in the Canadian livestock industry: transporting animals for long hours in crowded conditions without water (24 to 36 hours) depending on the type and physiological state of the animal. Secondly debeaking, dehorning, castration, tail clipping without the use of painkillers, thirdly overcrowding in confinement facilities among others. Efforts are being made by Canadian stakeholders to address FAW by continually engaging with all stakeholders to improve the national FAW system for Canada. The National Farm Animal Health and Welfare Council (NFAHWC) which was created in 2010 is spearheading the process and exist to advise government and animal sourced industries on FAW issues (Nfacc.ca). In Canada, meat industry stakeholders have adopted self-initiated and regulated welfare and assessment programs an example is the national farm animal welfare system for Canada (Nfacc.ca).

1.2.4 Economic Underpinnings of Farm Animal Welfare

This study sets up the problem as the inherent tradeoff between acceptable FAW levels as perceived by society and increasing livestock productivity as pursued by increasingly intensive methods of production following McInerney (2004). The study highlights the potential divergence between socially preferred and commercially viable levels of FAW in livestock production. The study explores predominantly how the market forces can contribute to improving or driving FAW to support legislation by understanding the factors that influence consumers' willingness to pay for FAW labelled meat. From a production economics perspective, farm animals can be viewed as a form of capital in livestock farming. Livestock farming is an activity producing raw materials for the food system. As a form of capital or resource in the production process, the value of the

animal is tied to the animal's productivity or the returns the animal generates (McInerney, 2004). The care farm animals receive is often determined solely by what is vital to maintaining the animals' productivity at the profit maximizing level (McInerney, 2004). Production economics enables one to posit a generalised relationship between the productivity of livestock and their perceived welfare. The generalised relationship suggests there is complementarity between FAW and productivity at low levels of output. As production moves to higher levels owing to improved husbandry practices e.g. improved nutrition, better housing, efficient disease control practices productivity brings better welfare to the animals to a point. Advances in animal science and technology creates the possibility to expand the biological potential of the animals. The expansion of biological potential although possible might be detrimental to the animals. Expanding biological potential together with increased stocking density and mechanization of operations improve productivity and efficiency to a point. However, with continuous improvements, a point is reached where further productivity increase will inevitably come at the cost of decreasing welfare of farm animals. Rational producers when confronted with commercial pressures may adopt the innovations. A FAW-productivity model, which associates several different productivity points with different perceptions of desirable FAW outcomes are illustrated in Figure 1.1.

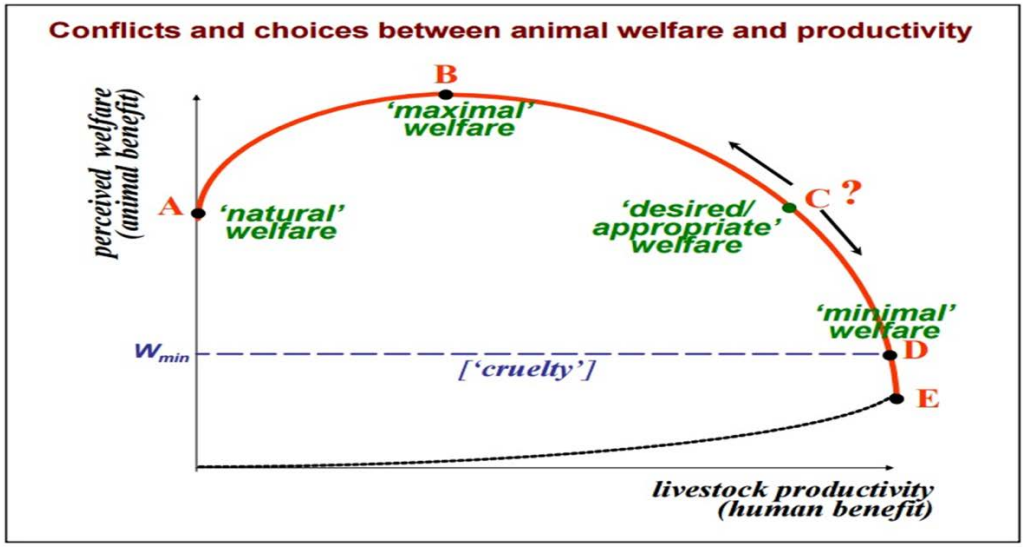

Figure 1.1: Welfare Productivity Frontier

Source: FAWC (2011).

From the Figure above, beyond a point, higher FAW standards is achieved by trading off gains in livestock productivity. The welfare of farm animals is predominantly determined in practice by the husbandry and management of livestock farmers, the husbandry practise is in turn influenced largely by the economic signals that are received from livestock product markets (FAWC, 2011). Since FAW is not traded directly in the market, FAW carries no evident price. Consequently, farmers inevitably focus on the animals' productivity, which provides a commercial reward. It has been demonstrated that market signals for cheap food cause welfare standards to fall below the socially desirable norm (FAWC, 2011). Nonetheless, with increased public awareness that the way farm animals are managed becomes a characteristic of the resultant food products. Consumers signal to producers to improve FAW by indicating a higher willingness to pay for FAW labelled meat if consumers derive utility from the product. Notwithstanding, neoclassical economic theory (an economic approach that relates supply and demand to an individual's rationality and ability to maximize utility) has limitations in the ability to explain utility derived by consumers when the

intrinsic properties of a good changes. The limitation is because the theory examines goods as whole entities and not as a combination of attributes or characteristics. Lancaster (1966) developed a model that extends the neoclassical model and allows the aforementioned limitation to be overcome. The Lancaster (1966) model postulates that consumers derive utility from the characteristics and the attributes of the good in lieu of the good itself. The theory implies that a good may possess several characteristics and that several goods may share several characteristics. The theory also infers that a combination of goods may possess different characteristics as opposed to when the goods stand alone outside of the combination. Additionally, each attribute plays a part in defining the total value of the product. Thus, Lancaster (1966) asserts that each given good has a vector of characteristics that define a linear relationship with utility (Lancaster, 1966). The linearity assumption simplifies the choice model that elicits consumer preferences. Consumers with specific preferences for product characteristics and a budget constraint will choose the combination that maximises the consumers' utility given the consumers budget constraint. In this thesis, CH meat label is used as a case study for the demand for FAW labelled meat. FAW is thus, the product characteristic of interest. If consumers perceive FAW as being important consumers would derive higher utility from FAW labelled meat products ceteris paribus. FAW is an intrinsic attribute of the meat product and will be treated as such in this thesis. From the producers perspective food choices are important because food choices create consumer demand for stakeholders in the food industry (Sobal et al., 2006). Consumers wield some amount of market power; food producers are aware of the market power wielded by consumers and continuously strive to develop products based on a thorough understanding of consumer needs and food choices. Terms like 'consumer-led product development (Grunert and Valli, 2001) or 'market-oriented product development' (Biemans and Harmsen, 1995) are widely used in the food industry. A good

understanding of the consumer will increase the likelihood of a new product succeeding; A good understanding will also ensure the continued success of existing products. From the producer point of view, the producer must translate quality as perceived by the consumer into technical characteristics of the product. Hence, production needs to be tailored so production processes most likely result in product characteristics that consumers perceive as high or of desirable quality.

FAW as an economic concept is broad and the existing literature treats it mostly as either a private or a public good. For this thesis, the public good aspect of FAW is recognized, but the thesis maintains the view the core value is s attached to the production of farm animals and subsequent processing into meat products; consequently, FAW is discussed mostly as a process attribute. The core of this thesis is structured around the relationship between attitude towards FAW and the choice of FAW labelled meat products within the context of market structures and incentives that are typical of a modern economy. We expound on how the choice of FAW labelled meat emanating from the concern for FAW could influence the network of economic interactions by providing an economic incentive to producers. The focus is however on consumers and how an understanding of the underlying factors, affects the choice and the willingness to pay for FAW labelled meat products can help in advancing communication between producers, processors, retailers and consumers on issues of FAW. The lack of information means that markets can fail to provide the level of FAW labelled meat that equates consumers' marginal utility with producers' marginal cost.

1.2.5 Farm Animal Welfare as a Process Attribute

FAW can be treated as a process quality of meat with credence character (Pirscher, 2013). Credence attributes are the qualities of a product that cannot be assessed even after the product has

been purchased and consumed (Caswell and Mojduszka, 1996); credence attributes are attributes that cannot be detected from the product. Process attributes are a type of credence attribute that relates to how the food is produced (Caswell, 1998). In the case of FAW livestock producers have full knowledge about how the animals have been raised, transported and slaughtered. Consumers on the other hand have no means of knowing how an animal was raised, except through the claims of the producers or third party verifying organisations. At the point of sale labels communicate to consumers the process attribute of the product. Consumers also have a perception of FAW and the value of FAW to the consumer. The producer does not know the value of FAW to the consumer. This informational disparity is termed information asymmetry. Information asymmetry and its attendant problems: adverse selection and moral hazard together may lead to market failure. Buyers face a difficult task in ascertaining the process attributes of a product before purchasing due to buyer–seller information asymmetries. Producers also face buyer–seller information asymmetries, as producers also might not know the exact value of FAW as a process attribute to consumers. Producers knowing animal welfare has some value to consumers might have an incentive to provide information about the process attribute on the label. Because claims cannot be verified, there is also an opportunity for moral hazard on the part of producers. Hoogland et al., (2007) have shown that the inclusion of details about animal welfare standards for dairy and meat products might lead to positive consumer reactions, albeit net impact on purchase intentions remains small. There are some challenges associated with providing information on the labels, how much information should be provided and what kind of information ought to be provided and at what cost. Consumers may use label cues as easy decision rules that enable consumers to make quality judgement decisions on the spur of the moment (Verbeke and Ward, 2006). Labels are often used to signal the credence attribute. FAW labels could become an information cue that

consumers actively search for when shopping and through the purchasing decision process. Nonetheless, how do consumers verify the credibility of the information on the labels if these are only self-claims by the producers /processors/retailers? There arises the issue of trust. Use of the labels may be inhibited by a lack of credibility or by uncertainty about the agency or organization whose duty it is to provide the certification. The agency could be processors, industry based organisation, interest groups among several others. Consumers need, and generally favour, information or assurances on which they premise purchasing decisions to satisfy the choice of FAW (Mayfield et al., 2007). Credibility could come from the labelling being verified by a third party such as private certifiers or retail supermarkets or having government certification among several options. Thus, third party certification could solve the trust problem.

Many studies on the economic aspects of FAW have been undertaken within the European Union (EU). The studies mainly explored: the financial impact along the livestock production chain (McInerney, 2004), consumer attitudes, and willingness to pay (WTP) for measures and policies supporting FAW (Bennett and Blaney, 2003; Carlsson et al., 2007c; Lagerkvist and Hess, 2011b). The studies conducted on financial impacts provide evidence that breeding systems that deliver higher standards of FAW accrue production costs that are significantly higher than conventional systems. The increased cost is a result of higher input costs for labour and feed and lower productivity owing to a decrease in stocking density (Bornett et al., 2003). The case of higher costs in animal welfare standards has also been emphasized in a cross-cultural study conducted on farmers' attitudes in several European countries (France, Italy, Netherlands, Norway, Sweden, and the United Kingdom) within the *Welfare Quality Project* (Blokhuis, 2008). Higher costs in animal welfare pose challenges to producers who must balance production costs with returns.

Nonetheless, willingness to pay estimates are invaluable for formulating competitive strategies and developing new products as well as value audits.

1.2.6 Food Choice of Farm Animal Welfare Labelled Meat

The multifaceted debate about issues such as ethical dimensions to food production and food quality has gained much interest, of worthy mention is FAW (Brunsø et al., 2002). Food choices are an integral part of the economic, moral and social aspects of life. Food choices convey preferences, identities and cultural meanings (Shepherd and Raats, 2006). At any given point in time, consumers face a myriad of food choices. Topics in consumers' food choice have garnered more attention in the last few years as food trends can easily spread and gain a tremendous following using social media. Although, consumers are removed from the production process, the use of smart phones, availability of high-speed internet, search engines and several social media platforms allow consumers to search and share information concerning food production processes (Davenport and Beck, 2013). The information obtained could be either trust worthy or not trust worthy which may lead to misinformation. Furnished with such unprecedented sources of information, consumers are better placed to make informed choices about the foods purchased and consumed thereby exerting considerable influence on which foods remain available in the market.

The consumers' food choices are made under the influence of a host of factors. The choice selection is made usually by rational consumers who consider factors such as the production systems by which the food is made (e.g. organic) beliefs about the foods including the taste and health values (all natural), value systems (Kosher, Halal), knowledge about and experience with the foods available, place of origin and simple cost and convenience among others (Shepherd and Raats, 2006). A product's quality can have an impact on consumer food choice only to the extent

the food quality is perceived. Perceptions therefore, are a vital force in determining food choice as well as food quality. Grunert (2002) asserts that from the consumers' perspective. Food quality has four major aspects namely: Sensory quality, health quality, convenience and finally process characteristics. Sensory quality pertains to taste and is perhaps arguably the most central quality aspect (Brunsø et al., 2002). Health quality captures both nutrition and safety, health quality is almost equally important in the minds of consumers if not the most important (Brunsø et al., 2002) Convenience has many dimensions some of which are the convenience in preparation, convenience in buying, storing as well as eating and disposing off. Process characteristics includes attributes such as organic production, animal welfare and free of genetically modified organisms (GMO). This thesis focuses on the fourth quality specifically FAW as a process attribute with emphasis on FAW labelled meat.

Consumers are dynamic and change over time as such food choices are also dynamic and evolve over time. The nature and composition of consumers continue to change as society develops, leading people to reconstruct food choices. For example, religious beliefs, ethnic identity and environmental concerns are fast becoming the primary considerations in food choice of some people (Rozin, 2006). For others, personally constructed expectation for quality related to the way food is grown, stored, prepared or presented determines choice (Sobal et al., 2006). The priority of food choice values varies per individual traits, personal states and situational contexts. Some values reinforce each other and lead to easier choices (e.g. health and sustainability), whereas other values are in opposition and lead to difficult selections (e.g. religious values and FAW). Because value conflicts occur, people must often make choices that are 'trade-offs' between opposing values for example, the choice between FAW as a quality attribute and affordable or cheap food prices.

1.2.7 The Certified Humane Program and other Farm Animal Welfare Certifications Available in the Canadian Retail Market

Retailers and industry stakeholders have viewed consumer interest in FAW as presenting business opportunities; consequently, companies and organisations have launched animal welfare friendly products e.g. *Olymel*, *Earls* and *A & W*. In Canada, *Sobeys*, a retail outlet that strives to provide consumers with high quality food, having understood the changing times and the importance of sustainability have rolled out the CH line of meat products in partnership with *Jamie Oliver* an internationally acclaimed celebrity chef. The CH label is the focus in this study because of a partnership the study team has with the *Sobeys* retail company that has been offering the CH line of products to Canadian consumers since late 2013 (Sobeys.com). The CH label is one of the labels emerging predominantly from FAW, which is fast becoming an issue because of modern agricultural systems.

The CH program is a third-party certification system that issues accredited labels; one institution that does this is the non-profit US based organization *Humane Animal Care* (certifiedhumane.org). The goal of this organization is to improve the lives of farm animals from birth up until the animals are slaughtered. The *Humane Animal Care* organization achieves the objective of improving animal lives by ensuring producers affiliated to the organization comply with a given set of standards developed by a 38-member committee composed of veterinarians and animal scientists from all over the world. Producers are audited annually using the criteria set by the committee. The key components of the criteria state the following: animals can behave naturally, are not kept in cages, crates or tie stalls, feed given to the animals ought to be of high quality and without antibiotics, growth hormones or other animal by products, compliance with American environmental and food safety standards, processors must adhere to a slaughter standard developed

by renowned animal scientist *Temple Grandin* for the *American Meat Institute* (certifiedhumane.org). There exist more specific standards for the different categories of farm animals. The organization was established in 2003 and has since become the most dominant third-party certification in North America (certifiedhumane.org). Other certification programs available in Canada include the *British Columbia Society for the Prevention of Cruelty to Animals* (BC SPCA) third party certification program that was also developed through scientific research and is based on the five freedoms. The BC SPCA allows for the use of pain medication during dehorning and castration, enough space for the animals, outdoor access for cattle, non-use of electric prods, battery cages and gestation stalls among several other provisions (spca.bc.ca). The Canadian organic standard is another certification program that has animal welfare dimensions. It prohibits the use of battery cages for hens, gestation stalls for pigs and tie stalls for cattle. It forbids forced moulting in poultry and tail docking in dairy cows. It ensures space requirements that exceed industry standards (cfhs.org). The *Canadian Organic Certified* label will be used vis a vis the CH label to investigate if the relationship is one of substitutes or compliments. Third parties such as *Humane Farm Animal Care* are responsible for creating the standards and regularly auditing the producers that subscribe to the program to ensure compliance with the standards. The auditing increases costs for producers both in time and monetary terms. Rational producers will opt in if there is an economic incentive.

1.3 Research Problem

Increased public interest in the origins of food and concern for the practices being used in agriculture present both economic opportunities and challenges to producers. The need for producers and the meat industry to maintain the social license to produce is more relevant because of increased public interest. Higher animal welfare standards increase costs along the supply chain

of certified animal-friendly products (Nocella et al., 2010). The increasing market power of consumers in most markets necessitates that producers must understand the needs, demands and preferences of consumers to align production and other practices to meet those needs (Vanhonacker et al., 2007). Catering to consumer demands come with increasing investment and production costs to producers. The success of FAW friendly products depends on consumer confidence in the supply chain operators and certification bodies, which ensure compliance with the set standards. Producers/retailers/processers must have a way to pass on the increased costs to consumers to be able to make a choice to invest in improved FAW of their farm animals. The industry stakeholders namely producers, processors and retailers need to know if consumers are willing to make a choice of FAW labelled meat products as well as understand the factors that drive the choice of FAW labelled meat products. Additionally, the study of food choice focuses on the question "Why do individuals eat the foods they do?" Several studies have attempted to answer the question; some have found evidence that suggests that although physiological processes are fundamental to understanding food choice, the impact on behaviour is likely to be mediated by social psychological variables. The implication is that social psychological variables such as attitudes, beliefs, and values influence food choice. Consumers' preference for FAW friendly products can be captured in their food choice.

Research all over the globe indicates there is an increased demand for FAW both as a public good and a credence attribute of a private good. The change in consumer practices shows that consumers are willing to pay for FAW e.g. (Verbeke and Viaene, 2000). The consumer choice of FAW labelled meat is influenced by a multitude of diverse factors: the information they receive on FAW, product taste (Napolitano et al., 2008), perception and relative importance of own health, and most importantly, the value ascribed to FAW (Blokhuis et al., 2003). Quality expectations influence

attitudes and behaviours that are linked to food purchasing, the satisfaction obtained from food, and tomorrow's purchase decisions (Grunert, 2005). Research has shown that there is a willingness to pay for FAW as a product attribute. Nonetheless, willingness to pay varies among individuals and across regions. The research results could mean there is a market for FAW products in Canada and there might exist a willingness to pay for FAW as a process attribute in Canada.

There could be a premium for animal welfare friendly products in Canada. Rational producers/processors/retailers seeking to maximise profits may want to capture the premium but at the least cost possible. Rational producers need to know Canadian consumers' intent for FAW through understanding the choice of FAW labelled meat products. The insight gained will be instrumental to deciding towards supplying FAW labelled products. The problem statement leads to the research question "is there a value to FAW labelled meat for Canadian consumers and what are the values, beliefs, attitudes and knowledge that drive the choice of FAW labelled meat products in Canada?"

1.4 Research Objectives

Little research has narrowed in on a conceptual approach to the determinants of public or consumer attitudes towards FAW (Kendall et al., 2006) and how the determinants translates into the choice of FAW labelled meat. Although, there is global concern for FAW, not much is known about the perceptions, beliefs and attitudes of Canadian consumers towards FAW and how this affects purchasing behaviour in the retail market. Is FAW concern the same between meat consumers and vegetarians as well as other socioeconomic groupings? Is there a preference for organic over FAW or are organic and FAW attributes complimentary to each other?

Therefore, the main research objective of this thesis is to examine FAW concern in Canada and explore the role of values, attitude, knowledge and beliefs on purchase intentions for FAW labelled meat products. This thesis focuses on FAW as a process attribute using the CH label as a case study. The specific objectives are firstly, to investigate the perceptions, beliefs, attitudes, values and knowledge of agriculture of Canadians in relation to FAW concern among socioeconomic groupings in addition to vegetarians and meat consumers. Secondly, examine the nature, strength and relative importance of psychological constructs such as attitude, self-identity, perceived behavioural control, personal and social norm on FAW and purchase intentions. The constructs are defined in chapter 3. Thirdly, analyse the relative preference of Canadian consumers for FAW labelled meat. Fourthly, this research seeks to explore whether there is a value of FAW to Canadians, leading to a willingness to pay for FAW labelled meat.

The understanding of the Canadians' concern for FAW and the psychological constructs that drive the choice of FAW labelled meat is essential to the further development of the market for FAW labelled meat products. Consequently, exploring Canadians willingness to pay for FAW would enable the elicitation of what and where the trade-offs lie between price and FAW. The knowledge of the Canadian attitude towards FAW could serve as an indicator of market opportunities for FAW labelled products, while the relative preference for FAW as a product attribute could be considered as the leverage or selling proposition to promote FAW labelled products.

1.5 Relevance

Consumer food purchase behaviour is complex; which often involves making numerous trade-offs of the attributes desired at a purchasing instance. Consumers rarely make a purchase based on a single characteristic, particularly if the characteristic has social dimensions (Bhattacharya and

Sen, 2004). Animal welfare can also be treated as a social issue by academics. Social issues must align with the price of the product to appeal to the consumer (AAFC, 2012). To create or diversify the market for animal products based on FAW, it is imperative that an understanding of consumers' willingness to pay (WTP) for FAW is acquired. A functional understanding of how this willingness to pay measure relates to psychological constructs such as belief, values and trust in FAW certification is also very useful (Nocella, 2010). Surveys and interviews with consumers from around the world report that individuals rely significantly on their social values and belief systems when making purchasing decisions (AAFC, 2012).

Research by Uzea and Hobbs (2008) and Spooner (2013), indicate that there is a growing preference for animal welfare products in Canada. Understanding how Canadian consumers' experience, knowledge and attitude towards FAW influences their purchasing behaviour and knowing if there is a willingness to pay for FAW labelled products may take us a step closer to closing the information gap and further developing the market for FAW labelled meat.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Multiple studies on society and consumers perception of FAW, along with stated preference and willingness to pay for specific FAW interventions or policies abound across the globe (Carlsson et al., 2007; European Commission, 2007; Verbeke, 2009; Blokhuis et al., 2010; Norwood and Lusk, 2011). Studies on FAW within Europe outnumber studies in North America (Lagerkvist and Hess, 2011). There exist sparse studies on the demand for specific product attributes in Canada for any other livestock product (Goddard et al., 2007) including FAW labelled meat. Moreover, although literature abounds on consumers stated preference and willingness to pay for process attributes such as food safety, environmental quality as well as nutrient content, very few studies have studied process attributes such as organic and FAW in Canada (Hobbs et al., 2005; Goddard et al., 2007; Uzea et al., 2011; Spooner, 2013). To the best of our knowledge, Canadian consumers stated preference and intent to make a choice of FAW labelled meat remains undocumented and is largely understudied. Secondly, few studies have explored the psychological constructs that drive the choice of FAW labelled meat within the economic framework (Nocella et al., 2012).

This review focuses on consumer interest, awareness, perceptions of modern agriculture and FAW concern. The discussion delves into consumer food-purchase behaviour, the food process/credence attributes and methods. The methods used to study consumer preference for FAW products are largely stated preference methods. The dominant ones are the contingent valuation and the choice experiment. A comparison of the applications of contingent valuation and choice experiment in FAW is reviewed. In like manner, literature on the TPB as the mechanism driving food choice and purchase intention is also presented.

2.2 Consumer Interest, Perceptions of Modern Agriculture and Farm Animal Welfare

Modern agriculture has come under criticism based on concerns about product quality, food safety and environmental impact (Bonny, 2000). Additionally, consumer interest in the technological and environmental challenges associated with modern agriculture is increasing. Product quality and food safety are vital to food quality and the well being of society in general (Holm and Kildevang, 1996). The average consumer is prone to believe expertly crafted media campaigns aimed at fostering distrust in modern agriculture (Croney and Anthony, 2010). Consequently, One of agriculture's biggest challenges is fostering consumer trust in modern agricultural production systems and practices to maintain the social license to produce (Croney and Anthony, 2010). Fraser (1998) highlights the changing public perception of animal agriculture from a positive traditional view of caring for the animals to a negative view of exploiting animals for economic gain. The change has been attributed to dwindling involvement of consumers in food production, circulation of abuse incidents in the media and misinformation from interest groups about large farms among others. In addition, Gellynck and Verbeke (2001) assert that issues that pertain to meat production and consumption dominates consumer concerns about modern agriculture. Among the many concerns about modern agriculture the most frequently reported concern pertains to issues about FAW, environmental degradation and genetically modified food (Tonsor et al., 2009). In developed western nations concern about FAW is a growing trend (Norwood and Lusk, 2011). Studies from Europe provide evidence of consumer FAW concern (Boogaard et al., 2006; Frewer et al., 2005; Vanhonacker et al., 2007, 2008). Studies in the literature have focused on attitudes towards FAW and find that there generally exists a positive attitude towards FAW (Boogaard et al., 2006; European Commission, 2007; Evans and Miele, 2007; Norwood and Lusk, 2011). This trend is contributed to by the easy access to information and animal abuse incidents prevalent in

the media (Croney and Anthony, 2010). It is widely accepted that consumer concern for FAW is largely due to the intensification of agricultural animal production (Harper and Makatouni, 2002), intensification of media coverage and prosperity level in western societies (Seamer, 1998).

Several studies present evidence on the divergence in the perception of FAW for example, between producers and consumers (Te Velde et al., 2002). Kendall et al. (2006), provides evidence for three structural determinants of attitudes towards FAW. The structural determinants are place based urban-rural factors; findings for this category suggests lower FAW concern among rural dwellers using utilitarian drivers as motive. Secondly, other social structural factors such as gender, socio-economic class, age and family status. It has been found that women tend to have higher levels of FAW concern and age are believed to be inversely related to FAW concerns. There are however conflicting results for other classes such as educational level and income. Thirdly, for individuals' unique animal-related experiences, studies postulate a positive relationship between high FAW concern and pet ownership. This is also observed among primary shoppers. Kellert (1988) formally discovered diversity of attitudes towards farm animals. The diversity is in the use and treatment of the farm animals. Moreover, the diversity results from society's view of what constitutes right and wrong (Swanson and Mench, 2000). The perception of right and wrong in society is driven by people's underlying beliefs. Croney et al. (2012) postulate the need to acknowledge the relationship between people's beliefs about appropriate food production practices and their diverse, latent value systems. Animal welfare is an increasingly important factor in food purchasing decisions which has led to growth in FAW labelled products available in the markets

(Napolitano et al., 2010). Insights into how consumer concerns and interest in FAW develop and manifest in society are pivotal to developing strategies for acceptable future production practices (Swanson and Mench, 2000).

2.3 Consumer Behaviour: Food Process Attributes

Consumer behaviour can be defined as the processes involved when a group or an individual chooses, purchases, uses and disposes of a product, service or idea to satisfy a need or desire (Solomon et al., 2012). Consumer behaviour draws largely from psychology, sociology and economics to explain the choices made by consumers. Moreover, consumer purchase decisions are influenced heavily by friends and social media (Solomon et al., 2012). Consequently, consumers share values and tend to conform to societal expectations (Gregory and Munch, 1996). As a result, understanding consumer demand is essential to achieving consumer satisfaction and developing new products. Granted that consumers vary and can be categorised into many different groups based on demographics such as age, gender, family structure, belief, lifestyle among other factors. Specific products can be made to target specific groups the targeting of specific groups is known as market segmentation. One example of this is the moral/ethical consumer. This group of consumers make purchase decisions based on the implied morality of the producers or retailers' business/production practices. By and large consumers buy products for the functional in addition to the process attribute (Wierenga et al., 2012).

Modern consumer behaviour has a fundamental premise that people buy products for functional as well as process attributes (Solomon et al., 2012). The premise has led to tremendous growth in the meat industry for meat products differentiated by process attributes including the country of origin, locally produced and by the production system under which the animals were raised, transported and slaughtered (Umberger et al., 2009). Some studies have been conducted to determine if and for which process attributes consumers would be willing to pay a premium. As an illustration, some studies have focused on process attributes in meat products like enhanced food safety, the food production process as well as the origin of the food (Dickinson and Von

Bailey, 2005; Loureiro and Umberger, 2003, 2007) in addition to genetically modified food (Caswell, 2000; Huffman et al, 2003; Lusk et al, 2003). Notably, a study conducted by Umberger et al. (2009) found consumer preference for naturally and regionally produced beef were driven by perceptions of personal benefit and altruistic factors. As with most consumer studies on process attributes, the researchers conducted a survey and used contingent valuation to predict the probability of paying for the process attributes. The study concluded that purchase behaviour, shopping location, awareness and interest in agricultural issues together with socio demographic factors such as income affected the willingness to pay for credence attributes. The finding agrees with work done by Sunding (2003), which asserts consumers' motivation to pay premiums for process attributes such as FAW labelled meat and organic is altruistic. The study's recommendation for producers who sought to increase or grow demand for meat products consider characteristics such as FAW labelled meat. CH is a process attribute derived from concern for FAW and was found to be important to consumers (Sunding, 2003). The study recommended additional research on the purchasing behaviour of consumers' interest in meat products with public good aspects.

2.4 Consumer Behaviour: Willingness to Pay and Food Choice

In studying consumer purchase behaviour, particularly in relation to FAW the thesis employs stated preference methods because stated preference has been used successfully in many FAW studies (e.g. Bennett and Larson, 1996; Bennett et al., 2002; Bennett and Blaney, 2003). The contingent valuation method (CVM) is an example of a stated preference method used for the valuation of non-market goods and services (Carson et al., 2001). Stated preference is commonly employed to value environmental amenities and natural resources. Survey instruments are used, and respondents are asked to state relative preferences towards a policy/good among several

options presented in a hypothetical market set up. The method combines neoclassical economic theory and empirical methods to estimate the economic value of goods, services or public programs. The theoretical framework of the CVM is the Cost-benefit analysis (CBA) (Carson et al., 2001). The CVM elicits respondents' preferences by determining whether respondents would be willing to pay (benefits) or to accept compensation (cost) for specific changes in the quality or quantity of a given good/policy or service. The analysis provides a means to estimate the compensating and equivalent variation (consumer surplus) and provides answers to questions pertaining to respondents' future intentions. The CVM is so called because the elicited values are contingent upon the hypothetical market described to the respondents (Carson et al., 2003). Although, the CVM is usually used for non-market goods CVM can be applied to credence attributes such as animal welfare. Contingent valuation methods for estimating the value that citizens in society place on assumed animal welfare benefits are worthy of exploration and could provide a much-needed input into the FAW policy debate (Bennett, 1995). As a result, the valuation of FAW by consumers has been largely estimated by applying the CVM (Mitchell and Carson, 1989; Bateman et al., 1999). The earliest known use of the CVM for the valuation of FAW was to estimate willingness to pay for policies supporting FAW (Larson, 1996; Rolfe, 1999; Bennett and Blaney, 2002; Bennett and Burgess et al., 2003; Moran et al., 2008) and for specific practices related to FAW. By illustration, four studies are provided by Bennett and Larson (1996) Bennett and Blaney (2002, 2003). One of the studies estimated respondents' WTP for changes in the conditions for the breeding of veal using confined crates and layers producing eggs housed in battery cages. The estimated mean WTP to be taxed for both veal and egg productions was approximately $7.90 (Bennett and Larson, 1996). The second study assessed consumer WTP for improved ways of slaughter. The study examined willingness to pay for a legislation that would

require slaughterhouses to use the “Head to Back” slaughter system (Bennett and Blaney, 2002).The study obtained a mean WTP of £1.37 p/week. The third of the four studies investigated WTP for a legislation to ban the export and import of live animals for slaughter and the use of battery cages (Bennett et al., 2002). The WTP estimates were £1.60 p/week for export legislation and £0.94 p/week for battery cage legislation. The final study measured the willingness to support a law to eliminate gradually battery cages in egg production within the EU (Bennett and Blaney, 2003). The study estimated a mean WTP of £0.41 per dozen eggs. In another instance, the public WTP for a number of specific improvements namely: eliminating battery cages, opting to use slower growing chicken breeds, the provision of shared lying areas furnished with deep beds of straw for dairy cows, and increasing pen sizes and including straw as well as rooting materials for pigs was estimated (Burgess et al., 2003). The WTP estimates indicated that consumers were most willing to support a policy that will ensure improved laying conditions for hens (£2.95) the second most supported policy was better living conditions for dairy cows (£2.89). Other studies where CVM has been used have concentrated on consumer WTP for food products produced with FAW attributes. A study compared consumer WTP for certified FAW labelled products including meat, eggs, and dairy products in five EU countries (Nocella et al., 2007). The study estimated stated WTP for ensuring utmost respect for animals. The WTP estimates showed that, on average, respondents were willing to pay an extra €11.11 p/week for FAW labelled products (Nocella et al., 2007) Other examples of FAW studies where contingent valuation was used include (Glass et al., 2005; Carlsson et al., 2007b; Gracia et al., 2011; Nocella et al., 2010; Verbeke et al., 2013). However, despite the wide usage, the CVM has several drawbacks. The CVM is relatively costly to use, furthermore, the CVM provides limited information about the preferences of the respondent

and can usually be prone to various biases albeit the biases can be minimised by careful design of the CVM.

Choice experiments are another stated preference method increasingly used to determine the willingness-to-pay (WTP) for credence attributes and is considered an economically efficient method for assessing consumer preferences for non-market goods (Lusk et al., 2003). The choice experiment varies from the CVM mainly in the elicitation of the question and has the advantages of informational efficiency and ability to generate values for resource attributes (Adamowicz et al, 1998). Choice experiments are also superior to other valuation methods in that the choice experiment closely depicts an actual choice situation (Carlsson et al., 2007a). The choice experiment is based on random utility theory (Manski, 1977). Several recent analyses have used choice experiments to assess preferences for animal welfare assurances in the US and Europe (Nilsson et al., 2006; Carlsson et al., 2007a; Liljenstolpe, 2008; Tonsor et al., 2009). In the study by Carlsson et al. (2007) consumer preference and willingness to pay for FAW was investigated using the example of mobile abattoirs and transportation to slaughter in cattle and broilers. The choice experiment designs used, included an opt out option for one set and excluded an opt out option for another set. Random parameter logit model was used in the analysis. The results from the study indicated that although animal transport was found to be the least FAW concern in broilers and the second least in cattle, there was a positive WTP for mobile abattoirs in cattle. Secondly the study found evidence that including an opt out option increases the variance but has no effect on WTP and preference ordering. Again, Liljenstolpe (2008) studied the demand for FAW attributes when purchasing pork fillets among Swedish consumers with the objective of estimating WTP. The multinomial logit model and random parameters model were employed in the analysis. The results showed that there was a positive valuation for FAW in addition to the

existence of preference heterogeneity among respondents. Furthermore, a study conducted by Nilsson et al. (2006) with the objective of examining the demand and market potential for a credence certification program for pork in the United States employed choice analysis. The latent class model was used for the analysis, the results from the latent class provided evidence to support the premise that the majority of consumers have additive or sub additive preference in certification space. One reason attributed for the observation was diminishing marginal patience for reading the labelling. Goddard et al. (2007) applied the choice experiment using both stated and revealed preference to model consumer interest in speciality eggs. The study found that older consumers and consumers with families were significantly more price sensitive. Furthermore, consumers with an interest in FAW were willing to pay more for free run eggs albeit, on average all households were willing to pay the most for organic eggs. Additionally, Tonnsor et al. (2009) studied consumer willingness to pay for alternative pork production attributes in the United States. The study employed the choice experiment and used the mixed logit as well as the latent class models to examine the extent of consumer preference heterogeneity. The study found strong consumer preference heterogeneity for pork chop attributes. Consumers positively associated gestation crate ban to smaller farms, thus consumers associate animal welfare attributes with smaller farms. The Random Parameter model indicated a significant preference for pork from Canada over pork from the United States with the estimated mean WTP of $1.44/lb. There was also a positive preference for pork voluntarily produced without the use of gestation crates with an estimated mean WTP of $2.11/lb. Lagerkvist et al. (2006) applied the choice experiment to study consumer preference for immunocastration, surgical castration and no castration. The results indicated there was a preference for immunocastrated pigs as opposed to surgically castrated pigs. There was a negative WTP for pork from uncastrated boars. Overall respondents were in favour of fattened pigs being

allowed outdoor access. The study implies that consumers FAW concern trumps risk aversion to biotechnology. The study also found that females and primary shoppers were the only socioeconomic characteristic to have a significant effect on the type of husbandry. The study found females derive a lower utility from the use of straws in pig housing and allowing pigs outdoor access along with other FAW fixation than men. Choice experiments have also been employed in investigating consumer response to innovation and new technology in food. Chen et al. (2013) employed the choice experiment to investigate consumer perceptions and estimate willingness-to-pay (WTP) for vacuum packaging of fresh beef when given different information treatments. The study discovered that information about the potential positive and negative impacts played a major role in shaping the attitudes and willingness to pay for vacuum packaged beef steaks. Positive information about vacuum packaging increased consumers' WTP by about $2.89 in the multinomial logit model and by $3.11 in the mixed logit model.

The choice experiment has been widely used successfully in a multitude of studies. Nonetheless, others have used different methods (Dickinson and Von Bailey, 2005) applied Vickrey auctions to derive WTP estimates for red meat traceability and other related attributes and found significantly high WTP estimates for traceability. The authors found even higher estimates for the guaranteed humane treatment of animals, the study concludes that by tailoring verifiable attributes to consumer needs producers might be able to pay for the cost of implementing traceability and humane systems whilst making a profit. The study was conducted with data from the United Kingdom, United States of America, Canada and Japan (Dickinson and Von Bailey, 2005). Food choice studies and the role that beliefs attitude and agricultural knowledge plays in influencing food choice has seen an exponential increase in the past two decades (Ellison et al., 2013). The emphasis has largely been on eliciting consumer willingness to pay for certain attributes of the

food rather than investigating the subjective beliefs that underlie the food choice (Adamowicz, 2004; Krystallis et al., 2009; Lagerkvist and Hess, 2011b; Lusk et al., 2014). The willingness to pay (WTP) values have been useful to understanding consumer behaviour to a point and have been most beneficial in cost benefit analysis in firm level marketing (Lusk et al., 2014). Buchanan (1991) asserts that a person's choice is not only a result of his/her preference but also of what he/she believes. The belief a person holds may be critical to the choice a person makes for food with specific attributes. Manski, (2004) posits that the elicitation of preference should not be limited only to data collected from choice experiments, but in combination with other data to improve the ability to predict behaviour. This thesis takes his suggestion to task and attempts to combine choice data with data on values beliefs and knowledge. Lusk et al., (2014) provide evidence to suggest that combining choice data with beliefs yields insights that would otherwise not have been obtained. The study was titled "Distinguishing beliefs from preferences in food choice". The study looked at three different studies: hypothetical as well as non-hypothetical, choice experiment as well as an auction on the willingness to pay for meat with varying attributes and beliefs. The study concluded that beliefs significantly influence the choice as well as the WTP values. The method used incorporated belief in a subjective expected utility framework. Lusk et al. (2014) concludes that incorporating the knowledge of beliefs into a food choice study has value in that it produces vital insights that would otherwise be missed. Thus, the study suggests that studies that elicit preferences should be combined with those that elicit beliefs to be able to isolate preferences from beliefs.

In another study, Boer et al. (2007) focused on the mediators between broad universalistic values and meat choices. The study conducted a survey among 1530 Dutch consumers. The Schwartz (1995) value scale was used to measure values. The Schwartz value scale can be arranged into

complementary and opposing motivations namely 1) conservation versus openness to change and (2) self-enhancement versus self-transcendence. According to Schwartz (2002) conservation means holding on to traditional views and reflects obedience, openness to change reflects independence and willingness to try new things, self-enhancement means egocentrism, feeling good about oneself Self-transcendence means benevolence and universalism. The relationship between the Schwartz values and meat choices was examined (De Boer et al., 2007). The study found that most basic human values were related to the direction of food choice motives (De Boer et al., 2007). Another study conducted by Honkanen et al. (2006) on the ethical motives of consumers for organic food it was discovered that people that were concerned about FAW had a positive attitude towards organic food. Secondly, political motives had a positive influence on food choice (Honkanen et al., 2006). Nocella et al. (2012) conducted a study that merged the constructs of the TPB with Lancaster's theory of consumer demand for product characteristics to provide insights into the relative preference for animal welfare friendly certified products. The study was carried out with data from five European countries. The psychological constructs were included as latent constructs in a structural qualitative choice model. The study found the TPB constructs to be statistically significant within the latent class model thereby lending support for the usefulness of psychological constructs in identifying preference heterogeneity. The study recommended combining economics and psychological theories in consumer food choice studies. The thesis explores this recommendation. The afore mentioned studies motivate the need to further examine the relationship between values, beliefs and attitudes to FAW and the choice of FAW labelled meat.

2.5 Theory of Planned Behaviour (TPB): Mechanism Driving Intentions/Choices

In studying the role beliefs play in food choice one of the most frequently used methods in both psychology and marketing is the Theory of Planned behaviour by Ajzen (1985). The theory assumes an individual's inclination towards a behaviour is propelled by the person's attitude toward the behaviour. The beliefs are typically measured using Likert-scale type questions. The TPB has gained wide recognition and has been used in several studies (Armitage and Conner, 2001). In a Meta-analysis of studies conducted using the TPB, it was found that 27% and 39% of the variance in behaviour and intention can be explained using the theory (Armitage and Conner, 2001). This study also discovered that intentions and self-predictions were better predictors of behaviour. Interestingly one of the constructs subjective norm was found to be a weak predictor of intentions (Armitage and Conner, 2001). The results agreed with the evidence from previous studies that confirmed that the TBP is a useful model for predicting a wide range of behaviour and behavioural intentions. The study provided further support for the efficacy of the TPB as opposed to the Theory of Reasoned Action (TRA). The studies used in the meta-analysis were conducted before 1997. The study recommended work on additional normative variables such as moral norms that may increase the predictive power of the model. Following this recommendation Arvola et al. (2008) conducted a study to examine the effectiveness of integrating constructs such as moral attitudes into the TPB model. It is noteworthy that this was done in predicting the purchase intentions of organic food. The study sample drawn from three countries totalled 672 observations. Structural equation modelling was employed to analyse the data. The results indicated that moral norms together with attitudes and subjective norm increased the explanatory power of the TPB model. Nonetheless, there were differences across the countries on the relative influence of the variables in explaining intention. They concluded that the inclusion of the construct moral attitude

improved the model fit and the predictive power of the TPB model (Arvola et al., 2008). In another study conducted by Vermeir and Verbeke (2008a), in Belgium with a sample size of 456 young adults, using stepwise multiple regression the TPB was able to predict 50% of the variance in the intention to consume sustainable dairy products. The intention to consume sustainable dairy products was explained by a combination of personal attitudes, perceived social influences, perceived consumer effectiveness and perceived availability. This study found that attitude was the main predictor of behavioural intentions. Furthermore, the confidence of the respondents did not necessarily increase or decrease the influence of social norms significantly. Moreover, different levels of confidence and value orientation produced different strengths of the determinants. They used Schwartz value scale and discovered that consumers that hold traditional values are more inclined to buy sustainable products as opposed to consumers that hold self-enhancement values who are less inclined to purchase sustainable food products. Furthermore, attitude and perceived availability were strong predictors of behavioural intention (Vermeir and Verbeke, 2008a).

In another study Cook et al. (2002) the TPB was used to study attitudes and intention towards purchasing GM foods. The additional construct added to the original TPB model here was self-identity and previous purchasing behaviour motivated by concern for the environment and personal health. The study found self-identity in combination with the other constructs were significant in determining intention (Cook et al., 2002). An ordered logit model was used to examine the relationship between the hypothesised determinants of intention and the dependant variable intention. The inclusion of self-identity improved the predictive power of the model. Once again, attitude had the greatest influence on intention and social norm was less prominent in influencing intentions compared to the other constructs. In another study ethical self-identity was

found to predict both attitudes and intention towards the purchase of organic food (Michaelidou and Hassan, 2008). Saba and Messina (2003) conducted a study with the aim of assessing the role of trust on perceptions and risk and benefits associated with the use of pesticides on food. They also investigated the attitudes towards the consumption of organic fruits and vegetables in Italy. Cluster analysis and structural equation modelling were used in the empirical analysis. Their findings indicate that respondents had positive attitudes towards fruits and vegetables produced under organic agriculture. The component attitude was found to be a major predictor of intention to consume organic fruits and vegetables. Trust had a positive influence on perceived benefits and a negative influence on perceived risks. The study found a group of respondents who possessed less positive attitudes towards organic fruits and vegetables, associated greater benefit towards the use of pesticides and perceived less risk with the use of pesticides.

Thøgersen (2009) investigated the attitudes and behaviour to both fresh and processed organic foods across several EU member states. The study conceptualised the consumer decision-making process within the context of the TPB and measured consumer values using a short version of the Schwartz value scale. They also included consumers' subjective knowledge about organic food in the consumer experience. They employed confirmatory cluster analysis and structural equation modelling in the empirical analysis. Their results showed that the construct attitude satisfactorily explained variations in intentions to purchase organic food. Social reasons seem to be as important as personal ones in the decision to purchase organic products. The study also discovered that there existed some uncertainty as to what constituted organic food. Van Birgelen et al. (2009) conducted a study to determine the relative importance of environmentally friendly packaging to pricing, convenience and other functional attributes. The study results indicate that eco-friendly purchase and disposal decisions for beverages are related to the environmental awareness of consumers and

their eco-friendly attitude. Additionally, aside from taste and price respondents were willing to trade off almost all product attributes in favour of environmentally friendly packaging of beverages. PCB did not translate into actual purchase behaviour. Following these studies, this thesis incorporates the various recommendations and adapts the TPB to explain the beliefs, attitudes and values that influence the choice of FAW labelled meat. Others have used the total food quality model by Grunert which incorporates belief into constructs such as perceived quality and perceived safety (Brunsø et al., 2002). Food quality has been shown in some studies to incorporate humane treatment of farm animals (Torjusen et al., 2001; Harper and Makatouni, 2002). Food quality is a major driver for the purchase of organic food (Hughner et al., 2007).

Research by Hill and Lynchehaun (2002) as well as by Aarset et al. (2004) provide evidence that indicates that consumers of organic food products tend to have an expectation of better FAW in organic production systems. The expectation of better FAW is an additional motivation in purchasing organic food albeit, the influence of FAW is less than environmental or health concerns (Aarset et al., 2004; Hill and Lynchehaun, 2002). This thesis does include the Canadian organic certified label to test if it is regarded as a compliment or substitute for FAW labelled meat.

2.6 Overview of some Farm Animal Welfare Studies in Canada and Contribution of this Thesis to Existing Literature

There exist sparse studies of the issue of consumer concerns/perceptions of FAW in Canada. The majority of FAW studies done in Canada are in the field of animal science e.g. (Stanford et al., 2001; Vasseur et al., 2010). Spooner et al. (2014) addressed the issue of shared animal welfare related values between producers and non-producers. Open-ended semi-structured interviews were conducted with a sample size of 24 non-producers both urban and rural. The study found that participants referred to FAW in ethical terms, and that the animals living in natural conditions or

having access to a natural environment was more important than the affective state of the animal, even though the affective state was found to be somewhat important. Participants admitted a lack of knowledge about contemporary agricultural practices. He concludes that heterogeneous socio demographic backgrounds, the extent of exposure and interaction with food animals and knowledge of food animal production practices may have influenced the nature or specificity of welfare concerns (Spooner et al., 2014).

Another Canadian study sought to analyse the role of quality verification in a market characterised by heterogeneous preferences for FAW. The study sought to determine if the demand for stringent welfare protocols signified a fundamental change by a larger sect of society or a few with a very strong preference for FAW, as well as to determine the body that consumers trust for quality verification (Uzea et al., 2011a). The study results indicate that there is a heterogeneous preference for FAW assurance and source verification. Secondly, there exist a consumer segment with a higher preference for more stringent animal welfare standards. The study used a choice experiment with a sample size of 541 respondents. Generally, respondents favour quality verification from the government or third party organisations as they are perceived to be more trustworthy (Uzea et al., 2011a). Goddard et al. (2013) compared three Canadian studies to examine the drivers of consumer interest in ethical attributes. The focus was on environmental sustainability and animal welfare vis-a-vis food safety attributes within the context of the broader notion of risk perceptions. The three studies employed surveys with choice experiments that focused on different credence attributes. The first study looked at food safety attitudes and risk perception in eggs, the second study examined ethical attitudes within the context of environmental sustainability in bread, whilst the third study explored animal welfare attributes in pork products. The empirical analysis for all three papers used the multinomial logit framework. The study finds government to be the most

trusted certification authority. The study also finds that, even though quality verification is important to a segment of consumers the effect is overshadowed by individual risk perception and interest in the credence attribute under study. The study recommended further research to gain insight into how confidence in the current state of animal welfare affects decisions (Goddard et al., 2013).

FAW concern resulting from consumer sensitivity to food production practices concerning food quality and safety has implications for consumer food choice. Consequently, food quality and traceability labels have seen a dramatic rise in the market place owing to the ever-growing need to communicate with consumers on process attributes and credence characteristics. The objective is to bolster consumer confidence in the products they buy as well as the modern agricultural industry. FAW as a process attribute or food quality credence characteristic can only be inferred relying on extrinsic cues such as labels and certification. Animal welfare as a credence attribute or food quality characteristic can influence food purchase decisions only when FAW can be differentiated and perceived on its own or alongside other process attributes (Verbeke, 2009). The confidence consumers place in the information available from labels and certification is influenced by the specific meat product, the attribute being verified and the verification authority or source (Olynk et al., 2010). Labelling and certification increase costs along the supply chain, however, the success of FAW friendly products in the market place depends on consumer confidence in the certification/labelling. The thesis presents the CH label to consumers together with the Canadian organic certified label to estimate the consumers' relative preference for FAW labelled meat and the underlying psychological constructs such as values influencing the choice preference. Few studies have addressed the issue of FAW as a credence attribute in Canada (Goddard et al., 2013). Still, other Studies indicate that consumers are interested in knowing more about animal welfare

use different methods to address the issue (Harvey and Hubbard, 2013). Some studies indicate that although consumers are interested in promoting animal welfare, FAW doesn't always show up in food purchase decisions (Hoogland et al., 2007). The phenomenon has been attributed to trade-offs between animal welfare and the price that must be paid (Norwood and Lusk, 2011). Again, research suggests that the average consumer seems to be unwilling to cover additional costs caused by animal friendly production (Naald and Cameron, 2011). In contrast there exist research that provides evidence that a subset of consumers are willing to pay more for FAW (de Jonge and van Trijp, 2013). The diversity in research findings provides stimulus for further research to provide additional insights into consumer purchase behaviour and incentives and study the association between consumers' attitudes to issues such as FAW and their actual purchasing behaviour.

This thesis uses a modified version of the Theory of Planned Behaviour (TPB) within an economic framework to gain insight into the role of beliefs, values and attitudes in FAW concern and the choice of FAW labelled meat in the Canadian context. FAW concern and purchase intention are investigated using CH label as a case study. In addition to the TPB, the study uses a stated preference method the choice experiment to elicit the Canadian consumer's relative preference and willingness to pay for FAW labelled meat.

CHAPTER 3 METHODS

3.1 Introduction

Emerging interests in the development and application of quantitative statistical methods to examine choices has led to the development of several theories whose purpose is to aid in the better understanding of the way choices are made and the possibility of predicting future choice responses (Louviere et al., 2000; Burgess et al., 2003; Lusk and Shogren, 2007). There are two theories used in this study to elicit and understand consumer preference for FAW labelled meat as an indication of concern for FAW. First, is the TPB (Ajzen, 1985). Second, Random Utility Theory (RUT) which forms the basis for discrete choice theory (Manski, 1977). RUT illustrates the framework for explaining choice behaviour. In this chapter, the theoretical underpinnings of this thesis are expounded along with the conceptual and empirical approach.

3.2 Theoretical Framework

The choice of FAW labelled meat emanating from the concern for FAW can be investigated as a food choice. Food choice studies have been an area of great interest for researchers, producers and other stakeholders within the industry. Food choice is known to be a complex phenomenon that is influenced by several factors. The factors affecting food choice can be loosely categorised as those characteristics directly related to the food like the taste, the individual making the choice, as well as the socio-economic environment within which the choice is made (Dennison and Shepherd, 1995). Research by Murcott (1988) shows that cultural, religious and demographic factors are also very important determinants in the choice of food. Shepherd et al. (1988) further asserts that the study of the relationship between choice, attitudes and beliefs offers a way to gain insight into the

factors that affect food choice. These factors can be studied using the TPB. The TPB has been applied to a wide range of consumer behaviour including food choice successfully. Armitage and Conner (2001) and Sheppard et al. (1988) after conducting meta-analyses of studies using the TPB conclude that the model has validity, both in the general study of consumer choice and the specific study of food choice. Over the years, extensions have been added to the basic TPB to improve its explanatory or predictive power. The extensions that are of interest to this study are those of moral obligation/personal norm and self-identity. This is because FAW has ethical/moral dimensions and including these additional constructs in the model might help achieve a better understanding of the psychological constructs influencing the choice of FAW labelled meat.

The classical economic theory that is often employed to explain consumer behaviour posits that consumers' purchasing decisions are the result of rational and conscious economic deliberations. The deliberations the consumer engages in results in the decision to purchase the goods that maximises their utility and satisfaction subject to a budget constraint. The constraints could also be trade offs that consumers must make. Consumers' when faced with purchasing decisions, consider all the trade offs and choose an action that will increase their utility. The act of considering all available information and the opportunity costs to arrive at a decision is what the concept of rationality embodies.

Rationality assumes the consumer has total information and reasons logically based on the facts available to him/her, but that is not always the reality. The consumer does not always have full information especially with goods that have credence attributes consequently neoclassical economic theory assumes bounded rationality. Bounded rationality means that when individuals, in our instance consumers need to decide, their ability to be fully rational is constrained by limited

information, finite time and the cognitive limitations of their mind (Gigerenzer and Selten, 2002; Simon, 1982). Thus, the decision they make is assumed to be under incomplete volitional control.

Although, incomplete volitional control, the decision-making process is complicated in any scenario and influenced by several factors both observable and unobservable. By investigating the influential factors that underpin the decision-making process, researchers can decipher the factors that are truly most important in the consumer decision-making process. The consumer decision-making process is central to consumer economics, which is focused on gaining insight into the drivers that cause consumer purchase behaviour. This insight helps economists and industry stakeholders to predict purchase behaviour and informs policy as well as marketing strategies. It is acceded to that to predict behaviour one must have insight into the intentions of the subject whose behaviour is under observation. There are several theories that enable us to explain human purchasing behaviour one that has wide spread use in food choice studies is the TPB (Ajzen, 1985).

3.2.1 Theory of Planned Behaviour

The TPB, which is an extension of the theory of reasoned action was propounded by Ajzen (1985) and has emerged as one of the major frameworks for understanding and predicting human social behaviour. The TPB traces its origins to the expectancy value model through the TRA. It is a well-established theoretical model used to predict the likelihood that individuals will perform selected behaviours, it considers behaviour to stem from a consumers' cost benefit analysis (Ajzen, 1985; Ajzen and Fishbein, 1980). The fundamental assumptions underlying this theory are: humans are rational and goal oriented when deciding (Conner and Armitage, 1998) and that they make systematic use of information by taking into consideration all options available as well as the repercussions of their intended action (Ajzen, 2005). These two assumptions are consistent with

economic theory. Ajzen (1985) states the purpose of the theory is to understand and predict motivational influences on behaviour as well as explain why a person engages in any kind of behaviour in addition to identifying strategies for changing the behaviour. This aligns well with the objectives of this thesis. In its basic form, the theory postulates three conceptually independent determinants of intention namely: attitude towards the intended behaviour, subjective norm and perceived behavioural control.

The first determinant, attitude towards the behaviour under study refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour under study. In this study, it is hypothesised that FAW labelled meat purchase is thought to be influenced by a positive attitude toward FAW. The attitude towards FAW serves as a fundamental antecedent of behavioural intentions, which would lead to FAW labelled meat being evaluated favourably or unfavourably by consumers.

The second determinant social norm is a measure of the perceived degree of pressure from external sources to perform the behaviour of interest. Ajzen (1991) describes social norm as an individual's beliefs about the influence of the social surrounding particularly friends and family. It relates to whether friends and family approve or disapprove of engaging in a certain behaviour. The social norm is decomposed into friends' influence, family influence, and social media influence. Research and studies on sustainable food product purchases such as organic food purchases provide evidence that there exists a significant positive relationship between consumers' social norms and their environmentally sensitive behavioural intentions (Vermeir and Verbeke, 2006; Gotschi et al., 2007). Thus, it is anticipated that having positive social norms would lead to relevant behaviour through increased behavioural intentions to engage in the behaviour being studied – purchase of FAW labelled meat.

The third determinant Perceived Behavioural Control (PBC) indicates the ease with which a consumer can consume a certain product or whether its consumption is difficult or impossible. PBC is assumed to reflect experience as well as anticipated difficulties or facilitating conditions (Ajzen, 1991). Ajzen originally posited PBC as a unitary construct, however subsequent empirical findings from other studies suggest that PBC could have two distinct dimensions: self-efficacy (SE) and controllability (Ajzen, 2002; Trafimow et al., 2002). Controllability is thought to be a function of beliefs, these are called control beliefs and refer to the individual's perception of the extent to which s/he possesses internal and external factors that may increase or decrease the perceived difficulty of performing the behaviour (Ajzen, 1991; Huchting, Lac, and LaBrie, 2008).

The dependent variable or the construct being explained is the behavioural intention. Gollwitzer (1999) asserts that intention to engage in a behaviour stems from implementation planning and as such it is a pivotal direct predictor of behaviour. The intention is an individuals' willingness to perform a certain behaviour. Studies from (Vermeir and Verbeke, 2008b) on buying sustainable dairy product and organic food studies by (Saba and Messina, 2003; Thøgersen, 2009), as well as sustainable beverages (Van Birgelen et al., 2009) provide evidence for the existence of a positive relationship between intention and actual behaviour.

This study uses TPB (Ajzen, 1985) to investigate and provide an understanding into the factors that determine the intention to purchase FAW labelled meat within the domain of concern for FAW. This is because the TPB is the most commonly applied theoretical framework to predict and explain consumer attitudes and behaviours regarding food choices (Barcellos et al., 2011). The model essentially implies a causal relationship between attitudes and behaviour mediated by intention. It offers a clearly defined structure that allows the investigation of the influence that attitudes, personal and cultural determinants and volitional control have on consumers' intentions

to purchase FAW labelled meat. Aside from the three determinants postulated in the basic model Ajzen (1991) indicated a willingness to include other predictors on condition that they improve the predictive power of the model and capture a significant proportion of the variance in intention. Hence, several studies (Ajzen and Fishbein, 1980; Ajzen, 1985; Sheppard et al., 1988 Conner and Armitage, 1998; Shaw et al., 2000) have suggested adding constructs such as self-identity, self-efficacy, personal norms and previous experience. Researchers such as Sparks and Guthrie (1998) provide evidence that self-identity is a separate predictor of intention. Ajzen (2002) categorised self-efficacy and controllability within perceived behavioural control. Nonetheless, research that investigates if there exist a difference between perceived behavioural control and self-efficacy conclude that PBC measures external factors whilst self-efficacy measures internal factors such as perceived ability and internal control (Trafimow et al., 2002). In this thesis, the constructs self-identity and personal norm are included, as they have been proven useful extensions of the basic model. It is believed that doing this would provide a clearer understanding of the normative factors that influence consumer choice of FAW labelled meat. Furthermore, although the model in its original form has been successful in explaining a significant proportion of the variance in intention when applied to food studies as substantiated by Godin and Kok (1996; Conner and Armitage (1998); Armitage and Conner (2001). Conner and Armitage (1998) assert there is an improvement in the predictive power of the model when additional variables related to food choice are added to the basic model. In this thesis, the concept of self-identity as postulated by Goyder (2003) is used. Self-identity is defined as the way a person perceives him/herself. It is synonymous with the self-image that a person ascribes to define his/her views of society. It can stem from a person's sociocultural environment and include a person's ethnicity, religious and political views as well as

their gender, education and socioeconomic group. Self-identity, therefore, becomes our fourth determinant.

Personal norm our fifth determinant is operationalized by subscribing to Schwartz (1992), the concept of an individuals view of right or wrong. Three concepts from the New Ecological Paradigm NEP scale are added to Schwartz's scale for personal norm. It refers to one's internalised norms that may differ from the social norm. Conner and Armitage (1998) find evidence that the personal norm is a significant predictor of intentions. Other studies that include the personal norm also validate this (e.g. Armitage and Christian, 2003; Jansson et al., 2010). Shepherd et al. (1999) emphasise the importance of personal norm when moral or ethical issues are being studied. FAW is included in the instances when personal norm should be included in the model. Thus, for our model, the Canadian consumer's intention to purchase FAW labelled meat is a function of the following determinants: (a) attitude towards FAW, (b) social norm, (c) perceived behavioural control (PBC) (d) self-identity, and (e) personal norms. It is hypothesised that:

H_0: There is a negative relationship between individuals' intentions to buy FAW labelled meat products and (a) attitude towards FAW, (b) social norm, (c) PCB (d) self-identity, and (e) personal norms.

H_1: There is a positive relationship between individuals' intentions to buy FAW labelled meat products and (a) attitude towards FAW, (b) social norm, (c) PCB (d) self-identity, and (e) personal norms.

Although the TPB has been used to explain a wide variety of behaviours with a strong level of internal validity (Bamberg and Schmidt, 2003; Kaiser and Gutscher, 2003; Ramayah et al., 2012; Steg and Vlek, 2009), it has the drawback of its consistency becoming more challenging when

extrapolated to larger fields. The relationships between variables can be difficult to measure and the causation may be difficult to determine. Research by Bagozzi (1981) as well as Taylor and Todd (1995) asserts that the explanatory constructs of intention as enumerated in the basic TPB are multidimensional constructs and not unidimensional (Taylor and Todd, 1995). These studies provide evidence that the predictive power of multidimensional approaches to understanding a variety of behaviours is superior to that of unidimensional approaches. In this study, we treat these constructs as multidimensional and capture them as such. To measure these constructs we use Likert scale type of questions, which is consistent with the way Ajzen proposed they should be measured. He articulates that they could be measured directly by means of standard scaling procedures which ought to be directly compatible with the behaviour of interest in terms of action, target, context, and time elements (Ajzen, 2002). The conceptual framework for our model is illustrated in Figure 3.1.

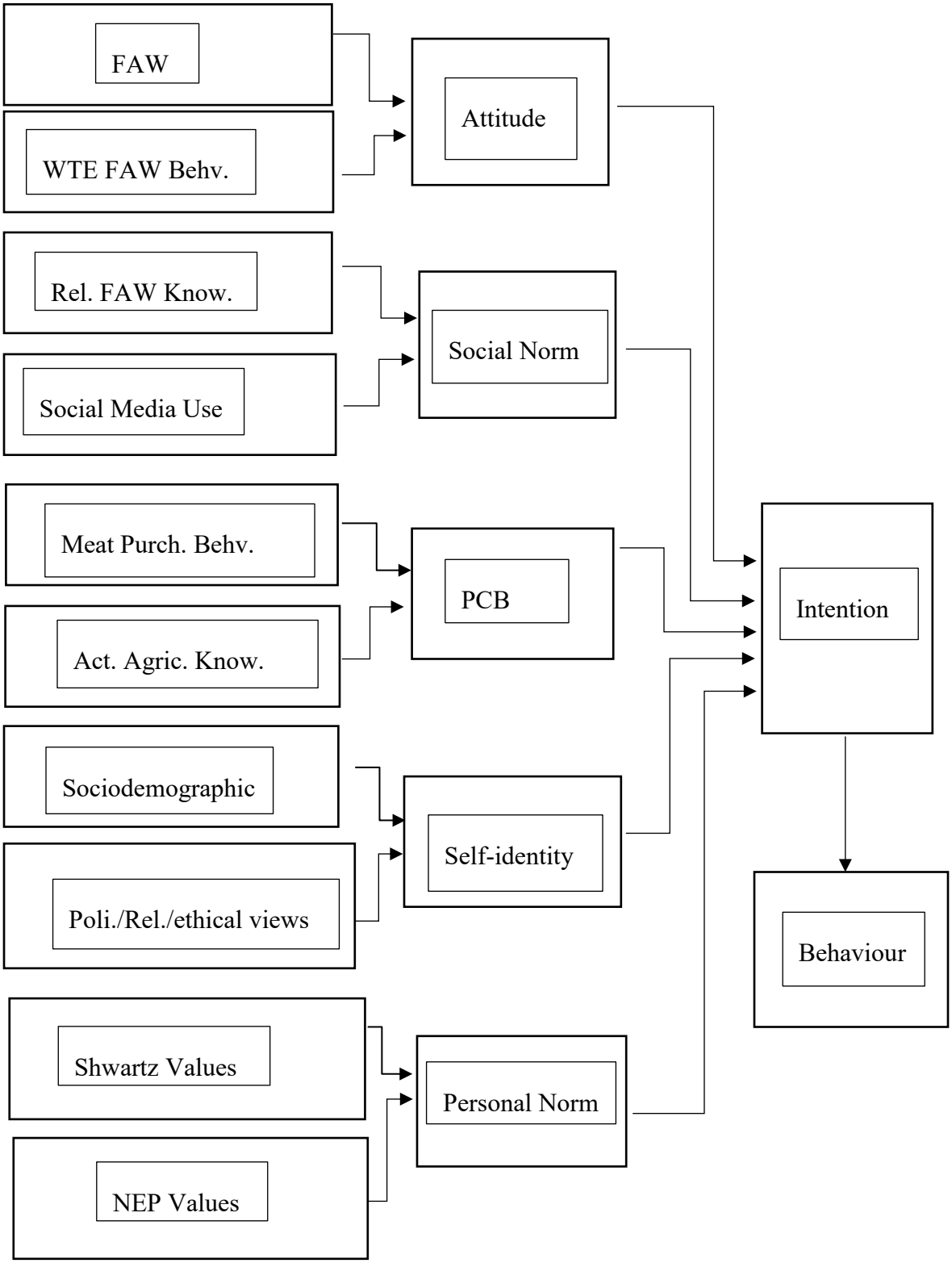

Figure 3.1: TPB Model Conceptual Framework

Source: Own design based on TPB (Ajzen, 1985).

Ajzen cautions that direct measures could be low in reliability and suggests a better way would be to measure corresponding beliefs. This concept is systematically adhered to in this thesis. Primary data for the measurement of these constructs were collected through a survey instrument.

The second theory employed in this study to explain the choice of FAW labelled meat is the choice theory.

3.2.2 Choice Theory

The final objective of this thesis is to investigate if there is a value of FAW to Canadians using the Certified Humane label as a proxy. It seeks to explore how the product attributes and individual characteristics explain variation in the Canadian choice of FAW labelled meat. To achieve this final objective a stated preference approach as opposed to a revealed preference approach was employed. There are several stated preference approaches, the two widely popular in economics and marketing are the discrete choice analysis, and conjoint analysis. These two analytical methods are used to simulate real world consumer purchasing behaviour. Hypothetical valuation methods have been employed by researchers and marketers to elicit monetary values better known as the willingness to pay values for changing situations or changing products as well as non-market goods (Adamowicz et al., 1998). This approach is founded on indirect utility or expenditure functions and has underpinnings in the RUT (Boxall and Adamowicz, 2002). Discrete choice analysis can also be used in research to guide product positioning, predict demand and market shares. Stated preference is used in this study in lieu of revealed preference for the following reasons. Although, it is possible to obtain market data for FAW labelled meat it would be almost impossible to determine the characteristics of the individuals that purchased FAW labelled meat such as their values and knowledge about livestock agriculture. Secondly, CH labelled meat is a relatively new

product in the retail Canadian market and might not have been widely purchased to provide the sample size required for this study. The CH label is carried by the retailer *Sobeys*. The product line was introduced in late 2013 (Sobeys.com). Thirdly, collecting stated preference data makes it possible to observe variability over time in a single cross section data as well as easier to estimate value changes when respondents make multiple choices that resemble panel data (Louviere et al., 2000). The stated preference method elicits an individuals' preference for alternatives in a hypothetical context usually through surveys and this, although has its merits, comes along with some disadvantages. The major disadvantage being people either understating or overstating the value they place on the product being studied (Arunachalam et al., 2009; Lusk and Shogren, 2007).

Discrete choice experiments are widely used stated preference elicitation methods in the fields of agricultural and resource economics (Adamowicz et al., 1998; Hensher et al., 2005; Hu et al., 2006; Louviere et al., 2000; Louviere et al., 2010). They have a well-tested theoretical basis in RUT and Lancaster's 1966 demand theory. The RUT is a behavioural choice theory proposed by Thurstone (1927) and was extended by McFadden in 1974 (Louviere et al., 2010). RUT and the models that can be built under it logically follow from Thurstone's law of comparative judgement. The assumptions underlying this law are firstly that choice is a discrete event and as such cannot be a continuous dependent variable. The second is the law of discriminal dispersion, which means utility towards a brand varies across individuals as a random variable. The third assumption is that rational consumers make a choice that guarantees the highest utility.

RUT postulates utility as a latent construct, it explains that an individual derives utility from each choice alternative. This latent construct of utility is made up of a systematic explainable component and a random unexplainable component (Louviere et al., 2000). The systematic explainable

component is composed of attributes that give insight into the differences in the products or goods as well as covariates that explain the variance in the individuals making the choice of an alternative as well as the differences in the choices made. The random component, on the other hand, consists of all unobservable and unidentified factors of the product as well as the individuals that influence the choice of the given good. This random component makes utility stochastic, thus researchers can predict the probability that an individual will choose alternative A as opposed to B (Louviere et al., 2000). The models under the RUT are suited for describing the response in choice probabilities to the changes in choice options, product attributes or differences between individuals making the choice. The model specifications are dependent on the assumptions made about the probability distributions for the random component. The best known statistical techniques for the analysis of the discrete choice are the binomial logit and the probit models which are most suited for binary choice models (Hoffman and Duncan, 1988). However, not all choice models are designed to be binary for these non-binary models that involve choices of three or more categories the multinomial logit is the most popularly used. The multinomial logit model and the conditional logit model both assume Gumbel distribution. The Gumbel distribution closely resembles the normal distribution with the difference being that the Gumbel distribution is slightly asymmetric. The major advantage of the multinomial/conditional logit model is that it produces closed form expressions for choice probabilities if the random components are independently and identically distributed (IID). IID implies that each random variable has the same probability distribution as the others and is mutually independent. The conditional logit model is used in polychotomous choice situations. The conditional logit model places emphasis on the set of alternatives for the individuals (product attributes) and the characteristics of those individuals. In a mixed model of conditional logit both the characteristics of the individual and the alternatives can be analysed. The

conditional logit model developed by McFadden (1973) is widely used in demand studies. To be able to elicit the preference effects of the response variable when there is a change in the attributes or levels of the other variables in a choice set a choice experiment is employed (Hensher et al., 2005). The choice set is defined by Adamowicz et al. (1998) as the subset of all alternatives in a universal set at a given time of the choice being made who have the probability of being chosen to be non-zero. The next section introduces the choice experiment used in this thesis.

3.2.3 Choice Design

The researchers decided to use a choice experiment to evaluate the choice of FAW labelled meat because of several factors, key among those factors are that FAW is a characteristic embedded within the meat product and the emphasis is on the satisfaction gained from the FAW characteristic rather than the meat product itself. The FAW product is thus, a non-market good and can be studied using methods best suited for non-market good valuations (Adamowicz et al., 1998). Secondly, using a choice experiment does enable us to estimate the marginal rates of substitution between different attributes which probably do not suffer from hypothetical bias as shown by (Lusk and Schroeder, 2004). Thirdly, choice experiment data can readily be combined with revealed preference data when revealed preference data becomes available (Adamowicz et al., 1998). Fourthly, a choice experiment is appropriate for studying an individual consumers' choice problem (Veeman et al., 2005). The choice experiment is a data generation approach in which the experiment design process is critical to eliciting the factors that explain the choice being made as well as help gain insight into the choices being made (Louviere et al., 2000).

The first step in generating the choice experiment was an identification and understanding of the problem under investigation, which is the choice of FAW labelled meat. The second step known

as stimuli refinement is where all the potential alternatives, attributes and attribute levels are defined and refined to a viable list (Hensher et al., 2005). It also includes deciding whether to include an opt-out option. The alternatives, attributes and attribute levels selected must resemble those that are present or will be present in an actual situation that a consumer is likely to encounter (Blamey et al., 2001). The emphasis in this study is on FAW as a process attribute available to the Canadian consumer as CH labelled meat. The attributes selected were certification with four levels and price with five levels. Hensher et al. (2005) assert that the determination of attributes and attribute levels can be achieved using focus groups. The attribute and attribute levels were obtained through continual discussions with industry stakeholders and academia together with informal market research and a review of the literature. The products selected for this thesis were beef, pork and chicken because they are the most widely available and widely consumed meat products available in all the certifications included in this study. Additionally, beef, pork and chicken are the most commonly purchased meat products in Canada. Consumers were asked to make a choice of either beef sirloin, pork chops or chicken breast as they are the most commonly available meat cuts in Canada. This was to reduce biases associated with unfamiliarity and non-purchase of such products in everyday life. Table 3.1 illustrates the attributes and levels used in the choice experiment design.

Table 3.1: Attributes and Levels in the Choice Experiment

Attribute	Level one	Level two	Level three	Level four
Certification	Organic	Certified Humane	Conventional	Certified Humane and Organic
Price	A	B	C	D

Source: Own choice experimental design.

Additionally, although the organic label has been around for a long time, the CH Label carried by Sobeys has been around for a little over three years (sobeys.com). It is my hope that this would limit pre-existing biases that may occur if consumers have already formed beliefs or trust/mistrust of the CH label because of long exposure to the product. This is expected to ensure that choices made by consumers reflect their true assessments. Table 3.2, further illustrates the price levels for beef, pork and chicken.

Table 3.2: Price Levels lbs/$

	Beef sirloin	Pork chops	Chicken breast
A	10.41	5.59	6.39
B	11.69	6.29	7.19
C	12.99	6.99	7.99
D	14.29	7.69	8.79
E	15.59	8.36	9.59

Note: C is the benchmark price.

The price attributes were designed to reflect as closely as possible the retail prices at the *Sobeys* retail outlet across the country. The actual price for CH as at August 2016 was taken and used as price C, then price A and B were obtained by going 20 %and 10% below price C and price D and E were obtained by going 10 and 20% above C. The selected price range covers the highest as well as the lowest price ranges that these products at the stated quantities are available in the retail market. These prices were chosen based on focus group discussions and educated guesses as was recommended in the literature (Hanley et al., 2005; Hensher et al., 2005).

The third stage in the generation of the choice experiment is the experimental design consideration. The purpose of the experimental design is to create efficient choice sets by combining product attributes and levels to create choice profiles that will generate the choice sets. An unlabeled experiment which requires a fewer number of profiles was used as opposed to a labelled experiment. A full factorial design consists of all the possible combinations of levels and attributes and allows for all main and interaction effects to be estimated (Louviere et al., 2000) For an unlabelled experiment a full factorial design will generate L^A number of possible profiles, where L is the number of Levels and A is the number of attributes (Hensher et al., 2005). It usually is too time-consuming, costly and results in respondent fatigue when respondents are presented with a full factorial design. In some situations, it is impractical to have respondents respond to a full factorial, thus Hensher et al. (2005) recommend using a fractional factorial, a blocked design or some combination of both. In this thesis, a fractional factorial design was generated using the *Ngene* software. In using a fractional factorial design the principles of balance and orthogonality must be adhered to (Hensher et al., 2005). The principle of orthogonality necessitates that all attributes are statistically independent of each other meaning that there exists a zero correlation between them. The second principle balance requires that the probability of each attribute levels

occurring often should be equal for each attribute of each alternative in a choice set. A total of 25 choice scenarios were generated from the design. It is immensely important to impose some constraints on the combinations of attributes and levels to avoid infeasible choice scenarios (Hensher et al., 2005). Five of these such combinations was developed with the chosen design as such these scenarios were eliminated. The scenarios eliminated did not satisfy the condition that the price of a meat cut with either a CH or organic label should be higher than that of a conventional or regular meat cut. This resulted in 20 scenarios for each meat type. There are three meat types consequently there are 60 scenarios. These 60 scenarios were divided into 12 blocks. Each block contains five choice sets. Each respondent was assigned one of the 12 blocks depending on the meat type they frequently purchased and consumed. This resulted in each respondent completing five choice tasks.

There are three alternatives in each choice set. The first two alternatives were described by attributes and levels, the third is no choice option. Figure 3.2 illustrates an example of the choice set used in this thesis.

Block 1 Scenario one

Alternative	Option 1	Option 2	No option
Meat type			
Certification/Labels	Organic		
Price $	10.41lb/22.91kg	15.59lb/34.33 kg	

Figure 3.2: Choice Scenario Example

Source: Own survey design.

The inclusion of a no choice option is to avoid forced choices and to replicate reality. Carson et al. (1994) assert that forced choices could bias the estimation of demand for the product (Carson et al., 1994). The utility derived from a no choice option is assumed zero.

Respondents know their preference and these preferences are stable and coherent is a fundamental assumption underlying stated preference methods (Brown et al., 2008). Consequently, from a set of alternatives respondents know the order of their preferences as well as the rate at which they are willing to trade of certain characteristics for others. Thus, in an everyday shopping experience, one could rely on the accuracy of this axiom. Nonetheless, CH as a proxy for FAW given its relatively novel nature in the Canadian market could be unfamiliar to respondents and may undermine the a priori assumption. Studies have shown that preference stability is positively correlated with repeated choice (Hoeffler and Ariely, 1999). It is expected that respondents that are highly uncertain of their preferences would make random choices, which are usually reflected in widely distributed utility functions (Holmes and Boyle 2005). Precise choices reduce the

variance of the stochastic term. To further ensure preference stability respondents were asked to rate the certainty of their choice on a rating of certain, somewhat certain and not at all certain. Repeated choice is used to test preference stability and consistency. To improve response rates, minimise the cognitive burden of repeated choice and avoid fatigue among respondents it is recommended that choice tasks be limited to four and not exceed eight (Blamey et al., 2001; Brazell and Louviere, 1998). Choice experiments are ideal to test preference stability (Brouwer et al., 2010). To overcome biases that could arise from order effects, the sequence in which the choices appear is randomised across the survey thus respondents are shown the scenarios in different orders.

3.3 Survey Development

To fulfil the objectives of this research a survey instrument was developed after clearly establishing the research goals. The survey instrument was designed after reading extensively and gaining a deeper understanding of the survey design and implementation process and consulting with academic researchers. From the existing literature, the surveys design relied on previous studies by Uzea et al. (2011) Umberger (2016) and Parkins (2016). Ideas that elicited consumer consumption and shopping behaviour in a manner consistent with the objectives of this thesis were borrowed from Umberger, because she is a known authority in the fields of consumer and producer behaviour and the implications of changing behaviour for food systems. Uzea et al. (2011) and Spooner (2014) provided guidance for FAW and engagement in the Canadian context. Parkins' (2016) survey was useful in eliciting attitudes and knowledge within the Canadian society. Other studies consulted for survey structure are (Bejaei et al., 2011; European Commission, 2007; McKendree et al., 2015; Tonsor et al., 2009).

The questions were designed to minimize the number of open ended responses this was done to minimize the effort required on the part of participants. Most the questions were five scale Likert type questions that required respondents to rate their responses on the given scale from not at all important to very important, as well as strongly disagree to strongly agree. A few were multiple choice. The options for the multiple choice was determined based on a review of the existing literature. In order, that response consistency would be achieved and to minimize bias due to responses not being applicable to respondents the options other, do not know and prefer not to answer were included in the given options.

There were seven sections in the survey (Table 3.3). The first section was on information on respondents' general meat purchase and household consumption habits as well as the kind of information they looked out for when a purchase was made, the second section, was the choice experiment. In the third section, respondents were asked about their perceptions and attitudes towards FAW, their willingness to engage in FAW related activities and FAW related issues, the fourth section was on farm experience. In the fifth section respondents were asked about their perceived and actual knowledge on crops as well as livestock agriculture. The questions for actual knowledge were formulated using provincial syllabi from Canadian high school agriculture curriculum (www.edu.gov.on.ca). The sixth section, explored beliefs, attitudes and value systems borrowing heavily from the Schwartz value scale as used by (Stern et al., 1998) and lightly from the NEP scale. It also asked about the respondents' use of social media. The last section collected information about respondents' social and economic demographic information. Table 3.3 summarizes the sections and question types as well as the purpose of the questions.

Table 3.3: Survey Sections Described

Section classification	Categories of questions	Purpose
Food consumption and purchases	Household size, shopping responsibility, preferred shopping location, meat choice, labelling consumption frequency.	To determine meat consumption and purchase patterns, and how it affects perceptions about FAW and the choice of FAW labelled meat. Secondly, to use in descriptive analysis to give insight into the sample population Lastly, to select which meat type choice experiment respondent would be given.
Choice experiment	Stated preference for beef sirloin, pork chops and chicken breast with certification labels either Certified Humane or organic or both or without any labels. A no choice option. Five price options.	To elicit the preference for FAW labelled meat. To examine trade-offs between attributes. To estimate the implied willingness to pay for FAW labelled meat. To estimate the effects of product characteristics on consumer choice.
Farm animal welfare	Engagement in Animal welfare activities, perceptions of farm animal welfare, perceptions of level of farm animal welfare in Canada, farm animal welfare responsibility, source of farm animal welfare information, familiarity with certification labels	To gain insight into the Canadian perception of FAW. To establish a correlation between preference for FAW labelled meat and FAW concern to use as attitude toward the behaviour in the TPB framework.
Farm experience	Residence on farm, farm visitation, ownership of farm animals and care of farm animals.	To gain insight into general Canadian farm experience and its impact on the choice of FAW labelled meat.
Agricultural knowledge	Knowledge of agriculture, perceived and actual	To determine impact of knowledge of agriculture on FAW perceptions and choice of FAW labelled meat.
Attitude and self-identity	Use of social media, Schwartz value scale, NEP scale, political and religious views.	To determine if there exist a difference in choice between people with opposing or similar value systems or beliefs. To determine if there exist a role of social media on FAW and choice of FAW labelled products. To use as social norm and personal norm in the TPB framework
Socio demographics	Marital status, educational attainment employment, pet experience, involvement with agriculture, age, income, Canadian residence and ethnic background, residence characteristics.	Firstly, to determine if sample matches with general Canadian population and secondly to determine if certain demographic features affect responses to other questions e.g. Value systems, knowledge and choice of Certified Humane meat product. To use as self-identity in the theory of planned behaviour framework.

Source: Own survey design.

The first and second objectives of this study were to investigate the perceptions, beliefs and attitudes, knowledge of agriculture and value systems of Canadians in relation to FAW concern. As well as to examine the nature, strength and relative importance of psychological constructs such as attitude, self-identity, perceived behavioural control, personal and social norm on FAW and purchase intentions. Descriptive and inferential statistics were employed to achieve objective one. The survey results were profiled into groups based on FAW concern, purchase of FAW labelled meat. It was expected that perceptions, beliefs and attitudes, knowledge of agriculture and value systems differed among Canadians by ethnicity and sociodemographic as well as intention to purchase FAW labelled meat and this information is presented using graphs, frequencies and percentages. Objective two was achieved by employing the model of intention to purchase FAW labelled meat that consists of the components of the TPB. Thus, the Canadian consumer's intention to purchase FAW labelled meat is a function of the following determinants: (a) attitude, (b) subjective norm, (c) perceived behavioural control (d) self-identity, and (e) personal norms.

Attitude towards the behaviour is represented by four variables created from the average score of responses to several questions that relate to willingness to engage in behaviours that promote FAW, the perception of whose responsibility it is to ensure FAW, stated FAW concern and frequency of label examination. These questions have scaled Likert scale responses. The responses are structured such that the lower ends represent the negatives or disagreement, the midpoint is neutral and the upper ends represent the positives or agreement. The sum of the responses is then divided by the number of questions in the category being used to create the new variable. The items used to construct a variable must correlate strongly with each other (Ajzen, 2002), thus Cronbach’s alpha was determined for all items scaled together. Therefore, Cronbach’s alpha

measures the internal consistency of the test (Santos, 1999). The general rule of thumb is that an alpha value of 0.07 indicates acceptable reliability.

Subjective norm is measured indirectly using the respondents' social media usage, the most frequently used social media site and family or friends' perceptions about one's knowledge of modern livestock agriculture. PBC was measured indirectly using respondents stated knowledge of livestock agriculture, actual knowledge of modern agriculture and consumption habits. Self-identity was measured using socio economic variables, political views, ethical, and religious values. Personal norm is measured using Stern (1998) adaptation of the Schwartz value scale and three questions from the NEP scale. The dependent variable intention was measured in three ordered categories following recommendations by (Cook et al., 2002; Greene, 1990; Maddala, 1986). This study differs from previous studies where categorical values have been used as a measure of intention in that it does not use the stated likelihood of a person to perform the behaviour but rather previous behaviour as a measure of intention. Previous purchase behaviour is used as a measure of individuals' future purchase intentions. Research by Jekanowski et al. (2000) provide evidence that consumers that have previously purchased a branded product were much likely to purchase it again. This finding lends credibility to the use of previous purchase behaviour as a better predictor or measure of intention. The third and fourth objectives which are to analyse the relative preference of Canadian consumers for FAW meat and to explore whether there is a value of FAW to Canadians, leading to a willingness to pay for FAW meat using the CH label as a case study were achieved using a choice experiment.

Prior to the launch of the official survey, feedback was collected via email from a diverse range of people within the province of Alberta. This group consisted of students, working professionals and

members of the general population. This served as the focus group discussion and was conducted from June 14th to July 21st, 2016. The purpose of the pretest of the questionnaire was to identify potential issues with the survey such as ease of understanding, duration or length of the survey, choice of meat cut and if respondents would have any difficulty in responding to the questionnaire per the initial design. The responses received were used to further modify the survey and a soft launch was done. The soft launch of the survey, a pilot launch of 100 respondents was done to examine potential issues with the data and this served as the pretest of the survey. The pilot launch was successful and minor changes were made to the survey. A full launch was carried out from October 4th to October 14th, 2016.

3.3.1 Selection of Respondents and Survey Implementation

The research project: Advancing Animal Welfare Management and Communication in Canada of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board. Approval was granted under the project title "Farm Animal Welfare in Canada how Vanishing Knowledge about Agriculture, Values and Labelling Affect Public Perceptions and Shopping Behaviours" No Pro0006284 on June 6, 2016.

The main objective of this study was to determine the value of FAW to Canadian Consumers thus, respondents must necessarily reside in Canada, nonetheless Canadian citizenship is not required. For reasons of cost minimization French only speaking Canadians were excluded. The survey was administered to a representative sample of 1602 Canadian consumers taken from a panel of over 200,000 households in Canada. The panel is administered by a professional global research marketing and consulting company *Ipsos-Reid* (www.Ipsos.com). The sample was a suitable distribution comparable to the Canadian population in regional distribution, age, gender and

income. To achieve this a quota system was employed. The survey was marketed as a food related survey and respondents who showed interest were given access to the survey. To decrease sampling bias within the panel, Respondents were not informed of the study topic when invited to participate. Invitation letters and consent notices appeared before the beginning of the actual survey. Each respondent to the survey was given a unique pin for identification purposes. The survey was designed in a manner that made it impossible for respondents to return to the previous question. This ensured that all responses were the initial for all participants. The survey was implemented online.

Online surveys are becoming increasingly popular and widely used in research. Online surveys have many advantages, which include allowing randomized survey approaches wider more dispersed access to respondents in relatively shorter periods and is more convenient than paper based surveys. it is comparatively cheaper than paper based surveys and provides speedy response turn around (Savage and Waldman, 2008). It also limits interviewer bias. A major drawback is that online surveys require internet access; nevertheless it is believed that the use of the internet is common and widespread in Canada. It is reported that 87% of Canadian households have access to the internet (CIRA, 2014). The actual survey used in the thesis research is attached in the appendix.

3.4 Data Analysis Approach

This section outlines the empirical models used to analyse the results from the survey to achieve the objectives of this thesis research. We apply an ordered logit model to achieve objective two although, multiple linear regression and structural equation modelling (SEM) are usually presented for empirical studies of TRA and TPB (Hankins et al., 2000). The SEM has the advantage of

possessing the ability to specify latent variable models thus, providing separate estimates of relations among latent constructs and the measurement model as well as among the relations among constructs (Tomarken and Waller, 2005). This is argued to mean that researchers can assess the psychometric properties of measures and estimate relations among constructs that are corrected for biases attributable to random error and construct-irrelevant variance (Bollen, 1989). It also has the strength of possessing measures of global fit that can provide summary evaluations of complex models involving large numbers of linear equations. It also allows for testing directly the model of interest rather than the straw man alternative. Nonetheless, the current development of SEM has several limitations notably most of the procedures suggested consists of non-standard and complex model specifications and are usually susceptible to error. Additionally, some procedures are riddled with convergence problems, the standard errors and estimates of fit might not be accurate because the products of normally distributed and latent variables are not normally distributed. Moreover, if the latent variables that denote main effects are not normally distributed the parameter estimates yielded by several procedures are not consistent (Tomarken and Waller, 2005).

In this study, we use the ordered logit model for the empirical analysis of the TPB following Cook (2002). This is because of the categorical nature of the dependent variable intention, which has a meaningful sequential order. The ordered logit model is used to determine the probability of a choice between discrete ordered categories and the determinant variables. The ordered logit model was used to examine the hypothesised relationship between the determinants of intention and the dependent variable intention. Following Greene, 1990 the ordered logit model is presented as:

$$Y^* = \beta' \mathrm{x} + \varepsilon \qquad (1)$$

Where x is a vector of independent variables, β is a vector of parameters to be estimated and (Y^*) is the counterpart of the observed outcomes (y) derived from x. Y^* unlike y which is a categorical variable is continuous. Maximum likelihood methods are used to estimate parameters for Y^* leading to an estimate of y from the determinant variables. For linear models, the R^2 is used to interpret the goodness of fit of the model. However, in ordered logit models there is no equivalent R^2 to interpret the goodness of fit for the model thus the adjusted pseudo R^2 Proposed by Horowitz will be used. The effects of the changes in determinants on the categories will be predicted using marginal effects derived from probability estimates. In this thesis, six ordered logit models are estimated.

Model one: the attitude model is given by:

$$Y^* = \beta^1 \text{Responsibilitysc.} + \beta^2 \text{Engfaw} + \beta^3 \text{labelexam} + \beta^4 \text{fawc} + \varepsilon \quad (2)$$

Model two: self-identity model

$$Y^* = \beta^1 \text{Relig} + \beta^2 \text{Educ.} + \beta^3 \text{Petowner} + \beta^4 \text{Age} + \beta^5 \text{Male} + \beta^6 \text{Income} + \beta^7 \text{Subjectethics} + \beta^8 \text{Liberal} + \beta^9 \text{Conservative} + \varepsilon \quad (3)$$

Model three: PCB model

$$Y^* = \beta^1 \text{Sskbpdec} + \beta^2 \text{Primshop} + \beta^3 \text{Actkagsc} + \beta^4 \text{Tmeatfreq} + \varepsilon \quad (4)$$

Model four: social norm model

$$Y^* = \beta^1 QF4\_8(\text{social media use}) + \beta^2 Relfawknow + \varepsilon \quad (5)$$

Model five: personal norm

$$Y^* = \beta^1 traditionalsc + \beta^2 Selfenhancementsc + \beta^3 Opennesstochangesc + \beta^4 Selftranscendencesc + \beta^5 Nep1 + \beta^6 Nep2 + \beta^7 Nep3 + \varepsilon \quad (6)$$

Model six: all the constructs together

$$Y^* = \beta^1 Responsibilitysc. + \beta^2 Engfaw + \beta^3 labelexam + \beta^4 fawc + \beta^5 Relig + \beta^6 Educ. + \beta^7 Petowner + \beta^8 Age + \beta^9 Male + \beta^{10} Income + \beta^{11} Subjectethics + \beta^{12} Liberal + \beta^{13} Conservative + \beta^{14} Sskbpdec + \beta^{15} Primshop + \beta^{16} Actkagsc + \beta^{17} Tmeatfreq + \beta^{18} QF4\_8 + \beta^{19} Relfawknow + \beta^{20} traditionalscr + \beta^{21} Selfenhancementsc + \beta^{22} Opennesstochangesc + \beta^{23} Selftranscendencesc + \beta^{24} Nep1 + \beta^{25} Nep2 + \beta^{26} Nep3 + \varepsilon \quad (7)$$

Where *Y*= previously purchased Certified Humane (CH) labelled meat (0,1,2) where 0 never purchased Certified Humane labelled meat, 1 previously purchased Certified Humane and 2 regularly purchase Certified Humane labelled meat.

Attitude towards the behaviour is measured by FAW concern (*Fawc*.), whose responsibility it is to ensure FAW (*Responsibilitysc.*), willingness to engage in FAW promotion behaviour (*Engfaw*.) and examining food labels (*labelexam*). The second construct self-identity is measured by *pet ownership*, *gender*, *income*, *political affiliation*, *religion*, *age* and subjective ethical views *(Subjectethics)*. The third construct PCB is measured by a score of actual agriculture knowledge (*Actkags*), stated agricultural knowledge primary shopper *(Primshop*), meat purchase frequency

(*Tmeatfreq*). The fourth construct Social norm is measured by use of social media usage (*QF4_8*) and relative agricultural knowledge (*Relfawknow)*. The fifth construct personal norm is measured by *traditionalsc*, *self- transcendence* score, *self-enhancement* score, *openness to change* score, *Nep1, Nep2* and *Nep3*. The sixth model puts all the constructs together to determine their influence on intention to purchase FAW labelled meat.

The third and fourth objective of this research is to explore whether there is a preference for FAW labelled meat among Canadian consumers and if there exists a willingness to pay for FAW labelled meat among Canadian consumers. To reveal consumer preference for FAW labelled meat each respondent is required to make a choice between options with different bundle of attributes in each of the five scenarios they were presented. The consumer's goal is to maximise utility consequently when given several alternatives *I,* each with an associated level of utility, rationality dictates everyone will maximise their utility

$$U_i = v_i + \varepsilon_i \quad (8)$$

Where *U* is Utility, v_i is the systematic explainable component and ε_i the random unexplainable component. The logit model is frequently used to determine consumer utility (McFadden, 1974). Logistic distribution is used because it approximates a normal distribution quite well and is analytically convenient (Luukkonen et al., 1988). A binary logit model is used when the choice to be made can be represented as a 0 or 1. When more than two choices are involved the multinomial conditional logit model is used. In this study, the conditional logit model is used because it includes both the characteristics of the choice (in these cases types of certification) as well as the characteristics of the respondent. Firstly, the choice among the alternatives is treated solely as a function of the attributes of the alternative and is estimated to determine the contribution of each

attribute to the probability of choice regarding an alternative that is to obtain the main effects. Secondly, the individual specific characteristics and interactions will be examined. Because everyone is assumed to have the same utility function, aggregation across respondents is feasible. The parameters will be estimated through maximum likelihood procedures for a conditional logit (McFadden, 1974). Since global concavity is satisfied for the conditional logit, the parameter estimates will be true maximums (Alberini et al., 2007). In this conditional logit set-up, meat purchase by certification is assumed to be conditional on a set of socio economic variables. Thus, individual *i* will obtain utility *U* if he/she is presented with a choice set and chooses an alternative *J* with attributes X_{ij} (McFadden, 1974).

The utility received from alternative j is represented by:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \tag{9}$$

The probability P_{ij} that alternative *j* will be chosen equals the probability that the utility gained from this choice is no less than the utility of choosing another alternative in the finite choice set. If U_{ij} is the highest utility obtainable among the *J* possible choices then the probability of individual *i* choosing alternative j is expressed as:

$$P_{ij} = \text{Prob}\,(U_{ij} > U_{ia}; a = 1, 2, \dots, J; a \neq J) \tag{10}$$

$$P_{ij}\left(\varepsilon_{ij} - \varepsilon_{ia} > U_{1a} - U_{ij} \; ; a = 1, 2, \dots, J; a \neq J\right). \tag{11}$$

Where $\hat{U_{ij}} = X_{ij}\beta$.

Maddala (2002), shows that when the residuals are independently and identically distributed following a Type I extreme value distribution, such as:

$$F(eij) = \exp^{(-e-\varepsilon ij)}, \tag{12}$$

then it follows that the difference in error terms, has a logistic distribution. Hence, a multinomial (conditional) logit model can represent the i^{th} consumer's probability of selecting the j^{th} meat certification choice:

$$P(yi = j) = \frac{e^{xi\beta}}{\sum_{j=1}^{J} e^{xi\beta}} \quad \text{for } j = 1, 2 \ldots J. \tag{13}$$

Where β refers to parameters that weight exogenous variables in determining the utility; and $\boldsymbol{Xij}$ is a row vector of exogenous variable values corresponding to the meat characteristics, and socio-demographics of the i^{th} consumer.

The log likelihood of the multinomial conditional logit is given by:

$$L = \prod i = y \ln \prod j = 1J Prob\,(yi = j)^{y_{ij}}, \tag{14}$$

Where $y_i = 1$ if alternative j is chosen by the ith individual, and $y_{ij} = 0$ otherwise.

In this study, consumer i faces the choice of Certified Humane, Canadian organic certified, Certified Humane and organic and conventional meat, with various attribute level combinations in each choice set, the no-purchase option is the alternative specific constant thus the empirical specification will be given as

$$U_{ij} = \beta^1 \text{Price}_{ij} u + \beta^2 \text{Organic}_{ij} + \beta^3 \text{Ch}_{ij} + \beta^4 \text{Chorganic}_{ij} + \beta^5 \text{Nith} + \varepsilon_{ij} \quad (15)$$

$$\begin{aligned} U_{ij} = {} & \beta^1 \text{Price}_{ij} + \beta^2 \text{organic}_{ij} + \beta^3 \text{ch}_{ij} + \beta^4 \text{chorganic}_{ij} + \beta^5 \text{snith} + \beta^6 \text{Fawcch} \\ & + \beta^7 \text{Fawccho} + \beta^8 \text{Fawcorg} + \beta^9 \text{Malecho} + \beta^{10} \text{Malech} + \beta^{11} \text{Maleorg} \\ & + \beta^{12} \text{Agechorg} + \beta^{13} \text{Ageorg} + \beta^{14} \text{Agech} + \beta^{15} \text{Incch} + \beta^{16} \text{Incchorg} \\ & + \beta^{17} \text{Incorg} + \varepsilon_{ij} \end{aligned} \quad (16)$$

The conditional logit model will be estimated within a maximum likelihood framework to analyse consumer choice behaviour under the condition that different certification choices have different attributes. To calculate the mean willingness-to-pay for each attribute, the coefficients obtained will be used to estimate the corresponding ratios

$$-\frac{\hat{\beta}\text{attribute}}{\hat{\beta}\text{price}} \quad (17)$$

Each of these ratios is understood to be a price change associated with a unit increase in a specific attribute. The mode of measurement of the variables in the choice model is explained below in Table 3.4.

Table 3.4: Choice Model variables

Variable name	Meaning	Mode of measurement
Price	Meat prices	$/lb.
Organic	Canadian certified organic label	0 if not chosen,1 if chosen
CH	Certified Humane label	0 if not chosen,1 if chosen
Chorganic	Both the Certified Humane and organic label	0 if not chosen,1 if chosen
Nith	Neither/opt out	0 if not chosen,1 if chosen
Fawch	FAW concern*choice of CH	0 or 1
Fawcho	FAW concern*choice of CH and organic	0 or 1
Fawcorg	FAW concern*choice of organic	0 or 1
Malech	Male* choice of CH	0 or 1
Malecho	Male*choice of CH and organic	0 or 1
Maleorg	Male*choice of organic	0 or 1
Agech	Age* choice of CH	Number of years or 0
Agechorg	Age* choice of CH and organic	Number of years or 0
Ageorg	Age* choice of organic	Number of years or 0
Incch	Inc/10000* choice of CH	Continuous number or 0
Inccho	Inc/10000* choice of CH and organic	Continuous number or 0
Incorg	Inc/10000* choice of organic	Continuous number or 0

Source: Own design.

The third chapter explained in detail the theoretical, conceptual and empirical basis of this thesis. It also explained the survey instrument used in the thesis as well as the data collection process.

The fourth chapter presents the results and interpretation of the results obtained.

CHAPTER 4 RESULTS

4.1 Introduction

In this chapter, the results of the data analysis obtained from using the survey described in chapter three are presented. Four distinct objectives drove the collection of the data and subsequent analysis. The objectives were first, to investigate the perceptions, beliefs and attitudes, knowledge of agriculture and value systems of Canadians in relation to FAW concern among vegetarians and meat consumers, in addition to other socioeconomic groupings. Second, examine the nature, strength and relative importance of psychological constructs such as attitude, self-identity, perceived behavioural control, personal and social norm on FAW and purchase intentions. Third, analyse the relative preference of Canadian consumers for FAW labelled meat. Fourth, explore whether there is a value of FAW to Canadians, leading to a willingness to pay for FAW meat using CH label as a case study. The first section of this chapter discusses the general properties of the data obtained, sample distribution among provinces and compares the sample with the Canadian population using the 2011 census results to examine sample representativeness. It includes a summary of meat purchasing behaviour of the sample population. The second section presents the overall survey demographics of respondents in relation to FAW concern and provides evidence to achieve the first objective of this study, FAW concerns whilst giving an insight into the knowledge, beliefs and values and perceptions of the respondents. The third section presents results from the analysis to achieve the second and third objective; it presents the results from the ordered logit

models applying the TPB. The final section presents the results to achieve the final objective the choice analysis results.

4.2 Sample Properties, Representativeness and Distribution

Table 4.1 presents the demographic profile of 1602 respondents and this is compared with the demographic profile of the Canadian population using the 2011 census data. The average age of respondents was 47 with the oldest respondent being 86 whilst the youngest was 18 years. Most respondents were between 40 and 60 years old. This is comparable to the general Canadian population with a median age of 48 because our sample excluded respondents who were younger than 18 years. Moreover, given that the median age of Canadians has risen by 5.7 years since 1995 and the difference between the median age for our sample and that of the Canadian population per the 2011 census data is 7.4 years it can safely be concluded that the median age of the sample is close to that of the Canadian population. There are slightly more women (51%) than men (49%) in this sample. This places the male to female ratio of this thesis at 0.96, which is sufficiently close to that of the Canadian population at 0.98. The sample population has attained basic education, about 40% have at least a high school diploma, 21.8% have some college or university education,16.3% have an undergraduate degree and a little over 8% have a graduate degree. The sample population appears to have attained a slightly higher educational level than the Canadian population this could be attributed to the use of the internet for the survey, which could have self-selected against lower levels of education. The median household income group consisted of respondents that earned between $50,000 and $59,999 per year. It is important to note that just about 33.5% of respondents stated their actual household income. The Canadian population has a higher median income ($72,240) than the sample population. The thesis sample is overly skewed

towards respondents that were born in Canada this is an unintended consequence that could have arisen from the study requiring Canadian respondents. Aside from that, the sample population seems comparable to the Canadian population overall. Regarding provincial distribution, From the Table, it is observed that Quebec is under sampled. This is attributed to the survey being conducted in English only because of the additional cost implications of translating the survey into French. This resulted in all other provinces excluding Prince Edward Islands being overly sampled to make up the numbers. The sample population is thus skewed towards English speaking Canada. Nonetheless, the results from the survey can be within limits extrapolated for all of Canada although, it is most representative of English speaking Canada.

Table 4.1: Sociodemographic Profile of Sample and Canadian Population

	Mean	**Standard deviation**
Age	47	15.350
Household size	2.7	1.329
Household Income/10k	7.676	5.137
Education	4 (some college/university)	1.740
2011 census data Canadian population		**Sample population**
Median age	40.6	48
Male/female ratio	0.98	0.96
Educational attainment		
Post-secondary education	64.1	70.41

Median household Income	72,240	55,000-59,999
Average household size	2.5	2.7
Percentage born in Canada	79.4	83.9
Marital status		
Married	46.4	46.9
Province	2011 census data %	Sample %
Alberta	10.9	13.4
British Columbia	13.1	17.9
Manitoba	3.6	3.9
New Brunswick	2. 2	2.6
Newfoundland	1.5	2.2
Nova Scotia	2.8	4.3
Ontario	38.4	47.4
Prince Edwards Island	0.4	0.19
Quebec	23.6	3.5
Saskatchewan	3.1	3.9

Source: Survey data and Statistics Canada 2011 census data.

4.2.1 Summary of Meat Shopping Behaviour

The first section of the survey attached in the appendix asks consumers about their meat purchasing and consumption patterns. The survey results reveal that 69.1% of the respondents are primary shoppers for their household, of this percentage, females account for 55% as opposed to 45% for males. This finding indicates that females are usually the decision makers regarding the purchase of meat products at retail but the males are not so far behind. This finding is surprising, as females have been shown to be in charge of household grocery shopping. Schröder and McEachern (2004) opted to use only females in their FAW study because 90% of females in the UK were found to be the main shoppers. 15% of respondents describe themselves as vegetarian, vegan or pescatarian, 85% of these respondents are primary shoppers for their household. This finding indicates that vegetarians/ vegans may be making meat purchase decisions at retail for their households. Most respondents (64%) purchased their meat products from grocery stores and a few from farmers markets. This finding indicates that efforts to communicate to consumers about FAW labelled meat would be most successful when done through grocery stores. Figure 4.1 shows the main purchase location for meat products among respondents.

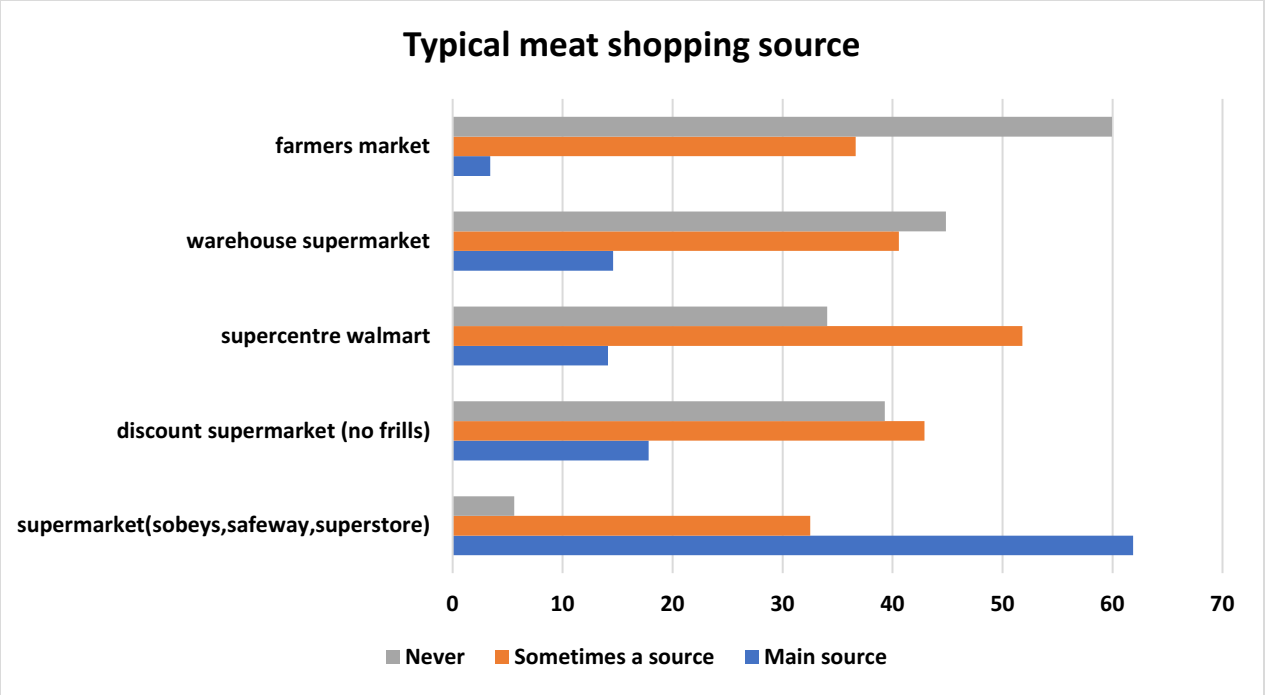

Figure 4.1: Meat Purchase Location

Source: Compiled from survey data.

For one to consciously choose FAW labelled meat products, one must examine the label, 35% of respondents always examine food labels when shopping, 32% often examine food labels and 12% rarely or never examine food labels when shopping. This finding suggests about 60% of respondents can be communicated to using labels. The most sought-after labelling information is price (97%), followed by expiry date (96%), list of ingredients (75%), nutritional information (66%), country of origin (60%), animal welfare or environmental attributes (34%) and finally other information (11%). It is of worthy mention that 50% of the 35% who always examine food labels seek labelling information about environmental and FAW attributes.

Table 4.2: Labelling Information

	Frequency	% of Respondents
Label information		
Expiry date	1444	96.20
Country of origin	883	60.03
Nutritional information	965	65.47
Price	1459	97.33
Ingredients	1100	74.53
FAW/ environmental attributes	497	34.28
Other	65	10.80
Label exam frequency		
Never examine label	42	2.71
Rarely examine label	138	8.90
Sometimes examine label	325	20.97
Often examine label	497	32.06
Always examine label	548	35.35

Source: Compiled from survey data.

The survey findings indicated some respondents had previously purchased meat products advertised to have some FAW dimensions. 20% of respondents regularly purchased organic, 30% regularly purchased free range and 20% regularly purchase FAW labelled meat. Cage free has the highest percentage of buyers. Cage free is a label most frequently associated with chicken or poultry. This evidence of previous purchase behaviour is used as a predictor of intention in this thesis.

Table 4.3: Certifications and Purchase Frequency

Label	Never	Rarely/Occasionally	Regularly	Don't know
Organic	23.74	41.42	19.48	15.35
Free Range	12.19	38.32	29.48	20.00
Cage Free	20.32	30.58	19.81	29.29
Humane Choice	17.81	31.42	22.90	27.87

Source: Compiled from survey data.

Furthermore, Fig 4.2 shows how frequently respondents purchase meat products and the type of meat purchased. Poultry seems to be purchased more frequently daily and weekly compared to beef and pork whilst, pork seems to be purchased more biweekly and monthly. This finding validates the assertion of chicken and pork as everyday staples and beef as a treat meat.

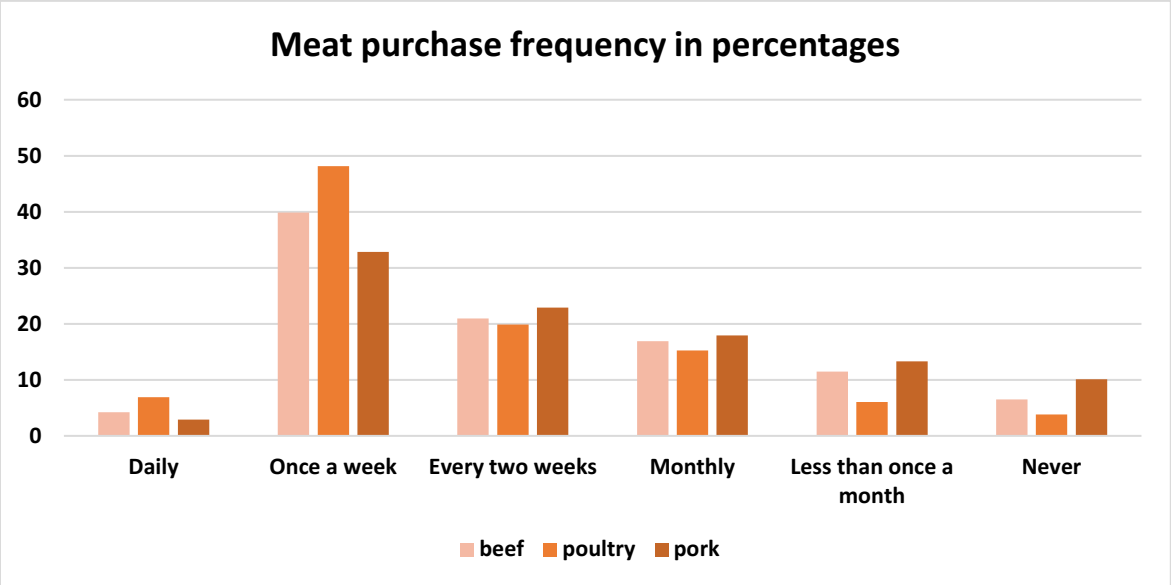

Figure 4.2: Meat Purchase Frequency by Type

Source: Compiled from survey data.

Respondents were asked what was most important to them when shopping for meat products 84% of respondents stated that getting the best value for their money was important to them, about 70% said nutritional value. This finding validates price as the more important determinant in purchase decisions as opposed to the functional or credence attributes.

4.3 Farm Animal Welfare Concern

In section three of the survey instrument, respondents were asked about their FAW concern (see Appendix). The respondents were asked to rate their FAW concern using Likert type scale statements where 1 is not at all concerned, 2 not concerned, 3 neutral, 4 somewhat concerned, and 5 very concerned. 23% of respondents were neutral, 43% stated they were somewhat concerned and 25% of respondents stated they were very concerned. In the analysis, not at all concerned and not concerned were put together to mean not concerned, somewhat concerned and very concerned were also lumped together to indicate concern. In Table 4.4, different sociodemographic groups within the sample are compared based on the percentage of respondents that stated their concern or lack thereof for FAW. From the Table 4.4, of a sample population of 819 women, 77% of the women are concerned about FAW as opposed to 58% of 783 men, moreover, a higher percentage of men 15% in comparison to 5% percent of women state they are not concerned about FAW. This finding indicates women are more concerned about FAW. This agrees with findings from several studies (European Commission, 2007; Lagerkvist and Hess, 2011a; Vanhonacker et al., 2007). When FAW concern is compared across educational attainment there seems to be comparable concern across all levels with 63-70% of respondents in all categories stating they are very and somewhat concerned about FAW. This finding seems to suggest there is little or no difference in

FAW concern across different levels of educational attainment. The same phenomenon is observed among income classes with the percentage of respondents being concerned hovering between 66% and 68%. About 75% of respondents living with a partner state they are concerned about FAW, this is the highest among the marital status grouping. This finding shows respondents who are married or living with a partner are more likely to be concerned about FAW. About 14% of 379 respondents that identify as being conservative, state they are not concerned about FAW in contrast with 7% 0f 604 respondents that identify as being liberal. On the other hand, 63% of conservatives as opposed to 77% of liberals' state they are concerned about FAW. This finding indicates that identifying as politically liberal increases the probability of respondents being more concerned about FAW and is in agreement with Deemer and Lobao (2011). Furthermore, 74% of pet owners in contrast with 59% of non-pet owners state they are concerned about FAW. It is noteworthy that 14% of respondents identify as vegetarians and 86% as meat consumers. About 74% of vegetarians out of the 14% as opposed to 67% out of the 86% of meat consumers state they are concerned about FAW. This finding indicates that the vegetarians are relatively more concerned about FAW, this agrees with work done by Vanhonacker et al. (2007). Approximately 81% of respondents had pets growing up and 58% are currently pet owners.

Table 4.4: Demographics by FAW Concern

	Percentages	N=1602 Total no	Concerned about FAW%	Neutral %	Not concerned about FAW%
Gender					
Female	51.12	819	77.17	18.68	4.15
Male	48.88	783	57.85	27.15	15

Age category					
18-39	35.14	563	68.03	22.91	9.06
40-61	45.32	726	68.04	22.17	9.79
61 and above	19.54	313	66.44	24.28	9.28
Education					
Some grade/High school	4.18	67	68.66	25.37	5.97
High school diploma/equivalent	25.41	407	66.83	24.57	8.60
Trade certificate or Technical school	10.55	169	70.41	21.89	7.6
some College/University	21.79	349	69.05	22.07	8.88
College degree/diploma	13.55	217	67.74	19.82	12.44
Undergraduate degree	16.29	261	63.98	25.29	10.73
Graduate degree	8.24	132	70.45	19.70	9.85
Household income					
Under 40,000	27.22	436	67.66	22.48	9.86
40,000-79,999	34.08	546	68.13	23.26	8.61
80,000-124,000	22.66	363	67.77	22.59	9.64
Above 124,000	16.04	357	66.93	22.96	10.11
Employment					

Employed	51.37	823	67.80	21.87	10.32
Self employed	7.93	127	70.87	22.83	6.30
Student	3.94	63	68.25	22.22	9.52
Retired	20.72	332	64.16	25.90	9.94
Unemployed	7.68	123	70.73	20.33	8.94
Other	8.37	134	70.15	23.88	5.97
Marital status					
Single Never Married	28.46	456	68.20	23.03	8.77
Living with a Partner	11.67	187	75.40	17.11	7.49
Married	46.94	752	66.76	23.27	9.97
Divorced or Separated	9.24	148	63.51	25.00	11.49
Other	3.68	59	62.71	28.81	8.47
Community type					
Urban	37.70	604	69.20	19.87	10.93
Sub Urban	40.26	645	65.27	26.20	8.53
Rural	21.47	344	70.06	21.22	8.72
Political Affiliation					
Liberal	36.83	604	76.95	16.27	6.78
Conservative	23.66	379	63.32	22.99	13.98

Born in Canada	83.90	1344	68.38	22.10	9.50
Not born in Canada	15.92	255	64.31	26.67	9.02
Pet Ownership Growing up	80.96	1297	69.78	20.89	9.33
No Pet Ownership Growing up	19.04	305	59.01	31.15	9.84
Currently owns pet	57.93	928	74.24	18.64	7.11
Currently does not own a pet	42.07	674	58.75	28.64	12.6
Vegetarian	13.17	211	73.93	22.75	3.32
Meat consumer	86.83	1391	66.79	22.86	10.35

Source: Compiled from survey data.

Figure 4.3, compares FAW concern by meat type. From the graph, it is observed that there is a comparable level of concern for FAW across meat types. Nonetheless, a higher percentage of respondents' state they are not very concerned about FAW in beef, whilst a lot more respondents are neutral about FAW in chicken as opposed to pork and beef. This finding indicates FAW concern is relatively similar in everyday staples chicken and pork and not very different from treat meat beef.

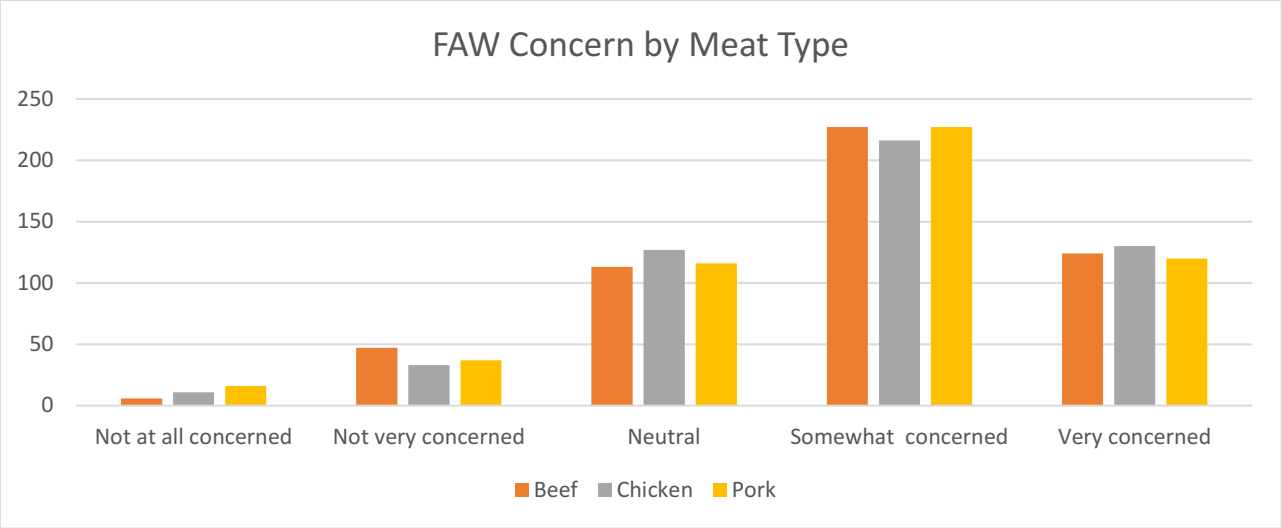

Figure 4.3: FAW Concern by Meat Type

Source: Compiled from survey data.

Although 68% of respondents claim to be somewhat concerned or very concerned about FAW only 24% of respondents have actively sought information about FAW. Documentaries about FAW was the leading information source for our respondents (38%), followed closely by newspapers and magazines (30%), then farmers. Surprisingly social media was a source of FAW information for just about 18% of respondents. This finding seems to differ from work done by the European Commission, (2007) where television was the main source of FAW information. It could be speculated that these documentaries are shown on television and the findings are the same. On the other hand, the documentaries could also be seen on streaming sites such as Netflix. This finding suggests that social media is not a major influencer of FAW concern among respondents in Canada. Albeit, 42% of respondents obtain information and engage in discussions on social media, blogs and internet forums.

Table 4.5: FAW Information Source

FAW information source	Frequency	% of Respondents
TV/Documentaries about FAW	600	37.45
Newspapers and magazines	485	30.27
Farmers	360	22.47
Social media	293	18.29
Websites other than social media	522	32.58
FAW organisations	284	17.73

Source: Compiled from survey data.

Respondents were asked to state the extent to which they agreed or disagreed with several interesting statements that relate to FAW, agriculture, the environment as well as government responsibility to protect FAW and the environment. 33% of respondents agree or strongly agree that the current level of FAW in Canada is acceptable, 33% are neutral and just a little under 20% disagree or strongly disagree. About 40% of respondents agree or strongly agree that concerns about FAW affect their food purchase decisions. About 38% of respondents agree or strongly agree with the statement that animal welfare organisations are too radical in their protection of FAW in contrast with 23% who disagree with the statement. Table 4.6 presents a summary of respondents' perceptions about FAW. The findings show that perceptions about FAW in Canada align towards neutrality and positive perceptions.

Table 4.6: Perception of Agriculture and FAW

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The government must put higher mandatory welfare standards	2.5	5.56	23.53	35.27	25.78
Government policy should be used to ensure sustainability and farm animal welfare	2.06	3.31	22.97	44.63	27.03
Government must take responsibility for protecting the environment	1.81	3.31	19.04	45.51	30.34
Producers must take responsibility for the environmental	0.69	1.5	16.35	50.37	31.09
If food companies and farmers improve animal welfare, the price of meat will increase	1.94	8.93	22.1	37.27	20.54
Concern for the welfare of farm animals affect my food purchase decision	6.37	15.61	34.02	26.28	13.67
Canada's agricultural system is sustainable compared to other countries	1.75	6.87	35.77	43.88	11.74
The current level of farm animal welfare in Canada is acceptable	4.99	14.92	33.4	26.03	6.55
Animal stocking densities are too high	1.12	6.37	31.21	26.88	14.86
Farm processes are too mechanized	2.5	13.11	32.65	25.41	11.49
Farm animals are confined all year round	3.87	19.91	26.97	24.53	8.99

Source: Compiled from survey data.

Figure 4.4, compares FAW concern by cultural affiliation. Respondents that identify as French Canadians are largely neutral or concerned about FAW. Respondents that identify as English or western European also show the same tendencies. This is also observed in respondents that identify as Asian as well as respondents that identify as Aboriginals/First nations /Metis.

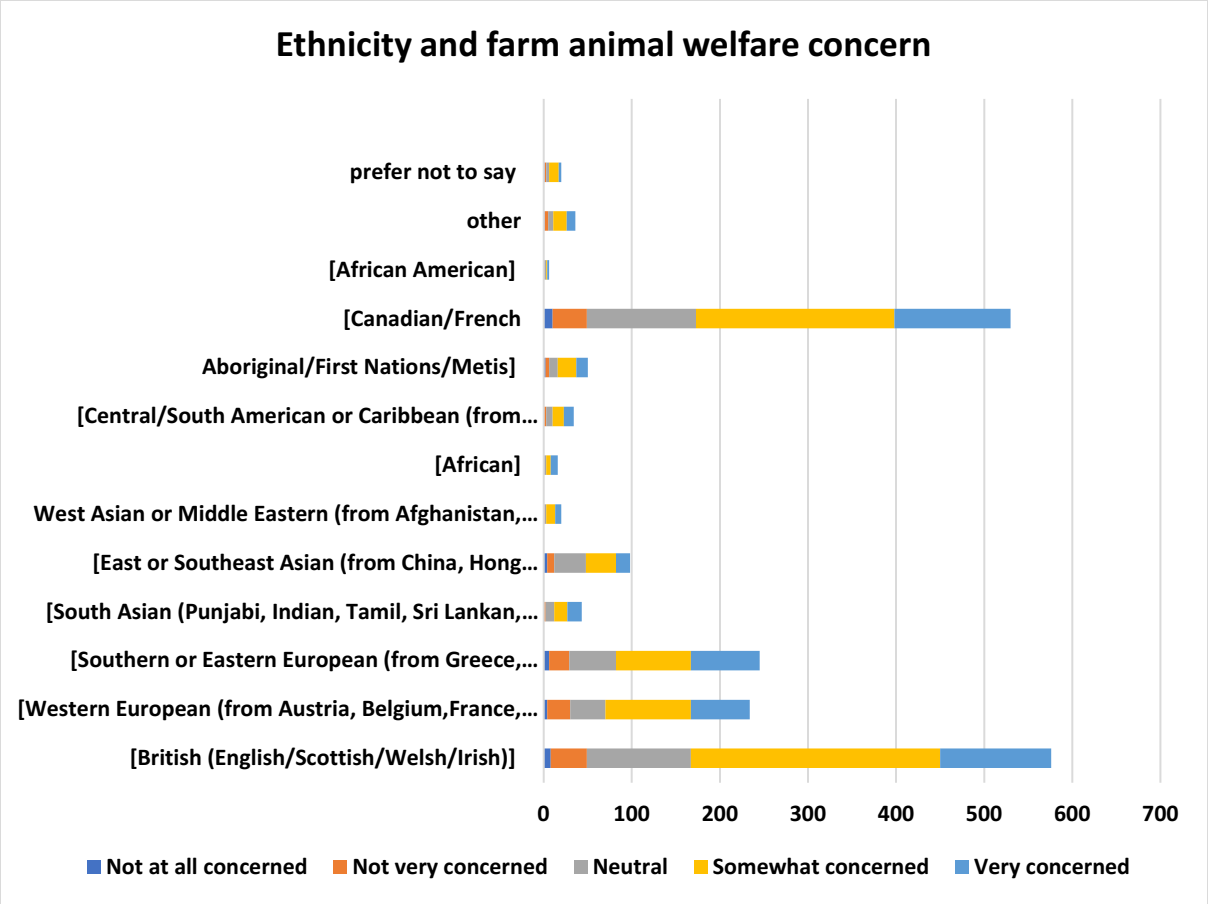

Figure 4.4: FAW Concern by Cultural Affiliation

Source: Compiled from survey data.

Aside from stated FAW concerns, respondents were asked if they would engage in activities that promoted FAW. Figure 4.5 shows respondents who have previously engaged in some selected activities that are thought to advance the cause of FAW. It also includes information about those that have not engaged but are willing to engage. The results indicate most respondents are unwilling to actively involve themselves in activities that promote FAW. About 63% were unwilling to attend a rally about FAW and 62% were unwilling to join an advocacy group for FAW. Nonetheless, 34% will be willing to start paying attention to FAW reports and 33% share information with their friends and family. This finding suggests that FAW concern among

respondents is passive and unlikely to propel respondents to engage in activities that promote FAW.

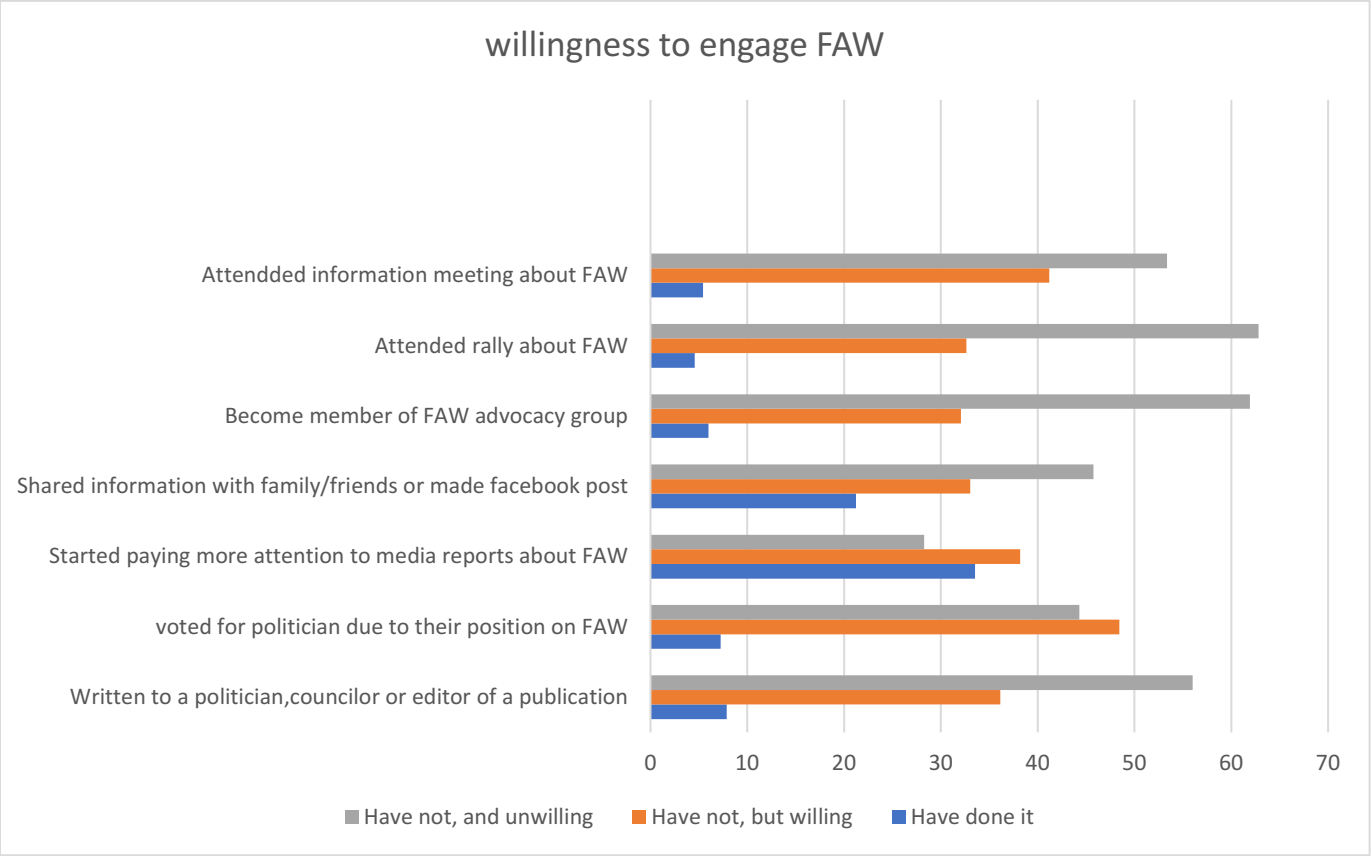

Figure 4.5 : Willingness to Engage to Promote FAW

Source: Compiled from survey data.

Respondents were asked which organisations they trusted to certify or verify FAW claims.

Figure 4.6 shows the organisations respondents trust with FAW certification. Corporate food industry is the most mistrusted organisation when it comes to FAW certification. The most trusted organisations are farmers, FAW organisations and government. There are large segments of respondents that are neutral. This finding agrees with work done by Uzea et al. (2011) and Goddard et al. (2013).

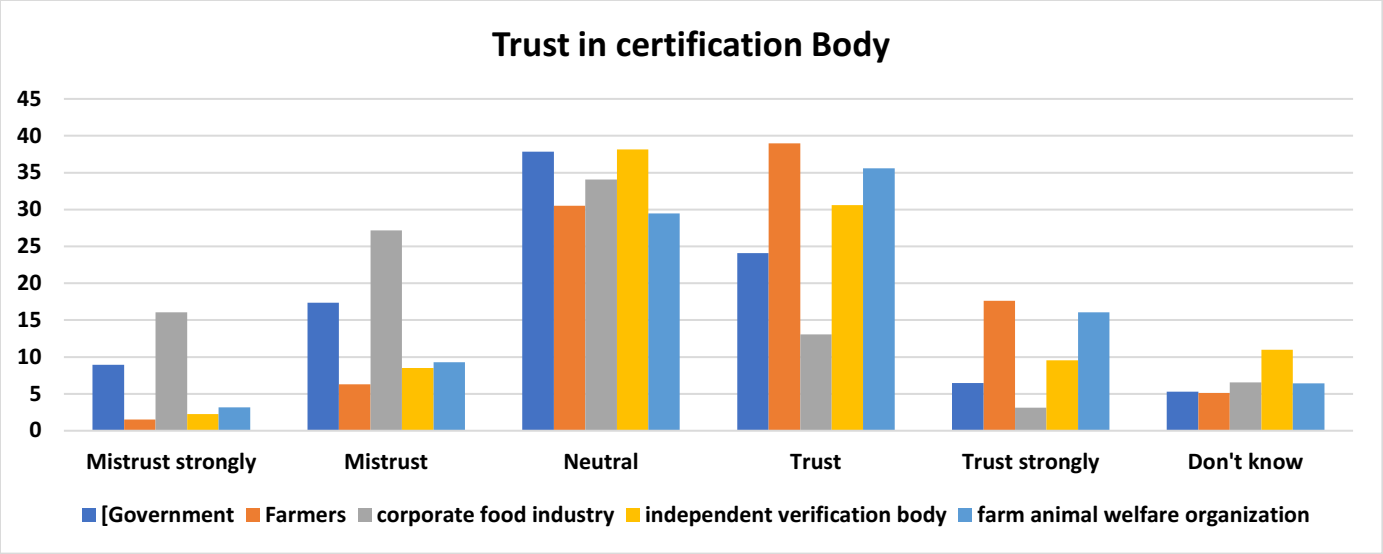

Figure 4.6: Trust in Certification Body

Source: Compiled from survey data.

Respondents were presented with definitions that define different components of FAW and were asked about the importance of these components to them. From Figure 4.6, it can be alluded to that freedom from hunger and thirst is the most important to consumers, 57% said it was very important and 26% somewhat important. This was followed by freedom from pain 53% very important 28% somewhat important, then freedom from stress 48% very important and 38% somewhat important. Freedom from injury or lameness was also deemed to be very and somewhat important by 80% of respondents. Long life expectancy seems not to be very important to consumers with only about 40% stating it was very and somewhat important. Freedom from loneliness coming in as a close second with just about 64% stating it was very or somewhat important to them. This finding indicates support for farm animals being given the basic freedoms (physiological function) and natural access in contrast to less support for affective functions (e.g. freedom from loneliness). This finding is in line with findings from Spooner (2011).

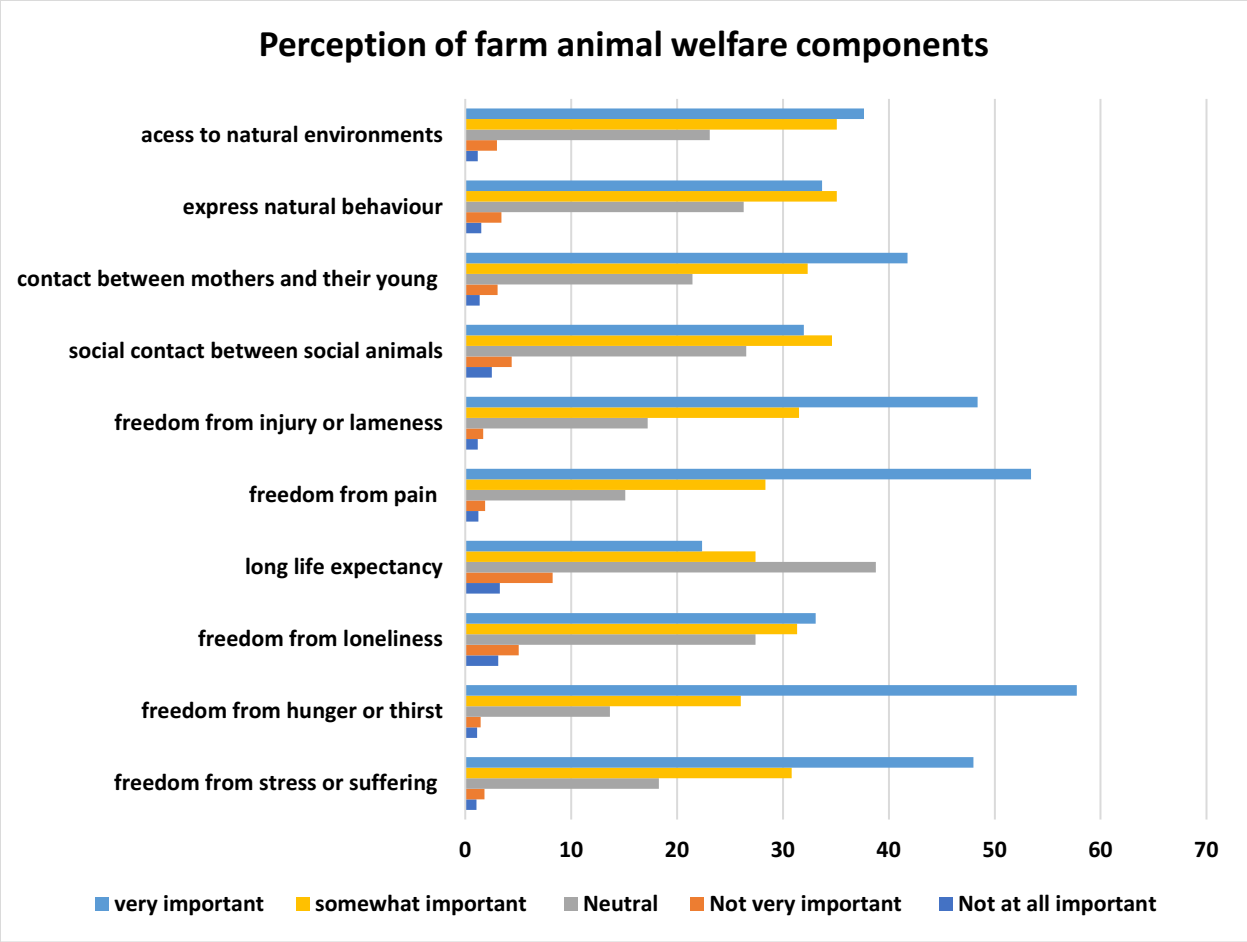

Figure 4.7: Degree of Importance of FAW Components

Source: Compiled from survey data.

4.3.1 Knowledge and Values

86% of respondents use social media and have at least one active social media account. Facebook was the most dominant with 73% of respondents having a Facebook account. Although, respondents did not primarily rely on social media for information about FAW 53% of respondents used social media to find information. The primary use was to keep in contact with family and friends 71%, most people 39% spent less than an hour on social media whilst 27% spent an hour, the remainder spent more than an hour on Facebook daily. 35% of respondents indicated that

religion or spirituality played an important part in their lives, 22% were neutral whereas the rest disagreed that religion was an important part of their lives. About 49% of the respondents consider themselves more ethical than most people they know. The Schwartz value scale was used to identify values most important to respondents. Figure 4.7 indicates that family security, safety for loved ones, which is one of the measures for traditionalism was the most important guiding principle for respondents. Followed by a world at peace and equal opportunity for all human beings, which are two of the measures for altruism/self-transcendence. Having authority, the right to lead was the least important value to respondents. This was followed by being influential and having an impact on people and events. These three values measure self-enhancement or egocentrism. Respondents were also asked a few questions about their farm experience. About 16% of respondents live on farms; this is much higher than the percentage of Canadians that live on farms. This implies the thesis data is skewed more towards respondents that live on farms.

Table 4.7: Farm Experience

Experience on a farm	Frequency	% of Respondents
I currently live / lived on a farm in the past	263	16.42
I have visited a farm	1,138	71.04
I have never visited a farm or lived on	201	12.55
Times visited a farm		
Once	115	10.11
Twice	170	14.94
Three times	85	7.47
More than three times	768	67.49

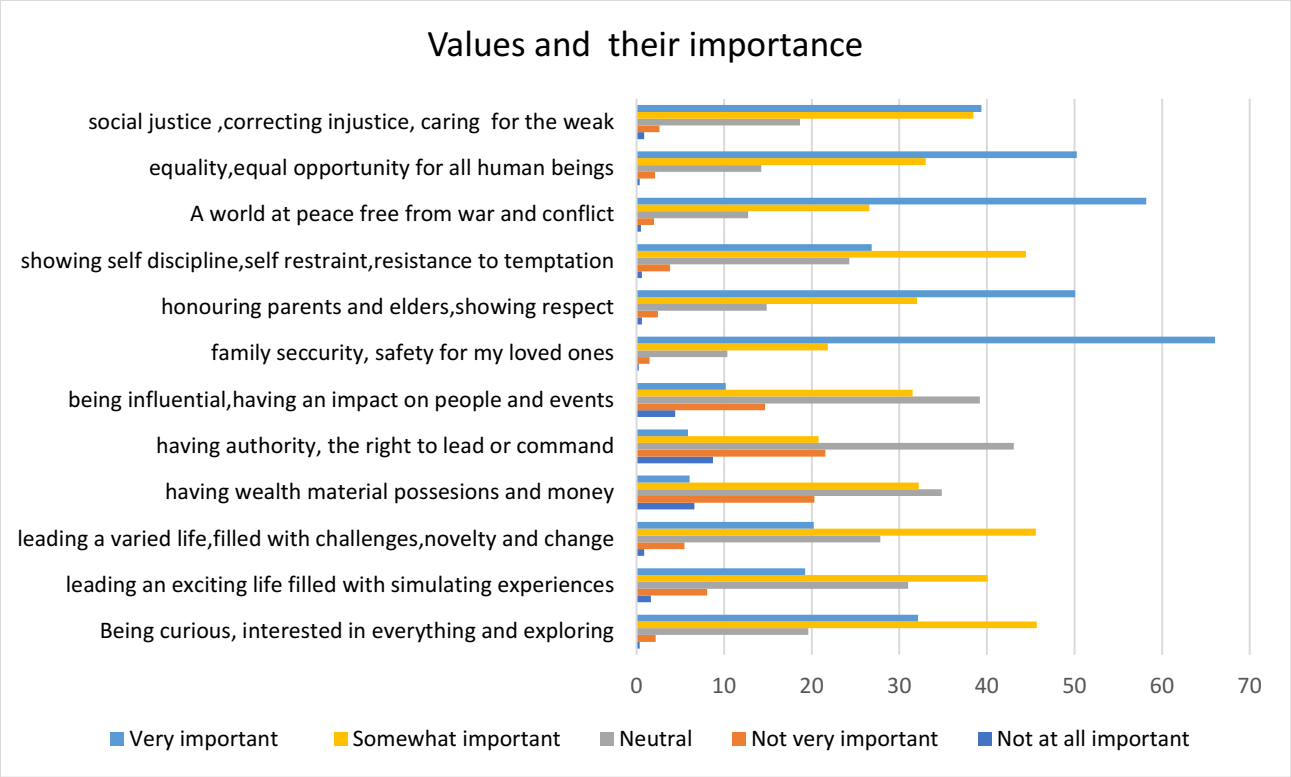

Figure 4.8: Degree of Importance Schwartz Values

Source: Compiled from survey data.

From all the results presented in the preceding section, it is evident that there exist sufficient levels of FAW concern in Canada. About 60% of all groupings compared are concerned about FAW. Consumers purchase meat products mainly from supermarkets. Chicken and pork are more frequently purchased than beef confirming the assertion of chicken and pork as everyday staples as opposed to beef a treat meat. There is very little difference in FAW concern across meat types. The women are more concerned about FAW than men are. More women than men also make the purchase decision at retail as primary shoppers. There is FAW concern among all educational attainment levels and income classes. Respondents living with a partner, liberals, vegetarians and pet owners are more concerned about FAW. Documentaries are the leading source of information

about FAW among respondents and not social media. Social media is thus, not a major influencer of FAW concern among respondents. When FAW concern is compared across ethnicity all groupings tend to gravitate towards neutral and concerned about FAW. A clear majority of respondents have visited a farm at least once debunking the assertion that most consumers have never visited a farm. The perception among respondents is that it is the responsibility of government to ensure higher FAW, thus this could imply respondents are in favour of using government policy to regulate FAW in lieu of the free market. Albeit, concern for FAW influences the purchase decisions for four out of 10 respondents. Farmers are the most trusted body to verify or certify FAW claims as well as government. The least trusted organisation are corporate food companies. Freedom from hunger and thirst are the most important FAW components to respondents. This finding implies the basics of animal care (biological/ physiological functioning) are the more important to respondents than access to natural environments and affective functioning is the least important to respondents. FAW concern among respondents leans more towards the passive side as most respondents are unwilling to actively engage in activities that promote FAW. This lends credence to the public good aspect of FAW. Traditional values seem to be the guiding principle for most respondents. Thus, objective one, which was to investigate the perceptions, beliefs and attitudes, knowledge of agriculture and value systems of Canadians in relation to FAW concern among vegetarians and meat consumers, in addition to other socioeconomic groupings is achieved. The knowledge of agriculture is explored in the quantitative analysis.

4.4 Results from Quantitative Analysis

In this section, the results from the quantitative analysis of the data obtained are presented. The results here relate directly to the second, third and fourth objectives of this thesis. Firstly, the results from the TPB using ordered logit models are presented followed by the results from the choice analysis. From the conceptual framework described in chapter three, previous purchase behaviour is used as a proxy for intention to predict the probability of respondents purchasing FAW labelled meat using the CH label as a case study. According to the modified TBP Table 4.8, lists the categories of purchase frequencies for FAW labelled meat. From the Table 22.9% (355 respondents) of respondents regularly purchase humanely raised meat in contrast to 17.8% (276 respondents) who never purchase it. Furthermore, 31.4% of respondents have purchased it at least once or occasionally. These are used as intention in the ordered logit models.

Table 4.8: Previously Purchased FAW Labelled Meat

	Never	Rarely Occasionally	Regularly	Don't know
Frequency	276	487	355	432
Percentage	17.81	31.42	22.90	27.87

Source: Compiled from survey data.

The mean and standard deviations for all the model components are presented in Table 4.9. All variables are defined and mode of measurement is discussed in chapter three. For variables that were created from scores, the Cronbach's alpha is provided, along with the number of items in the score. The Cronbach's alpha assesses the reliability of the instruments scored and showed satisfactory levels of internal consistency since most scores are above 0.7 (Santos, 1999).

Table 4.9: Summary Statistics of Model Components

Construct	Component Variable	Variable defined	N	Mean	Std. dev.	Cronbach's alpha	Range, Items in score
Intention	Ppch	Previously purchased CH	1602	0.747	0.795		0-2
Attitude	Responsibilitysc	Perception of responsibility to ensure FAW	1602	4.00	0.732	0.820	3
	Engfaw	Willingness to engage in pro FAW behv.	1602	1.621	0.479	0.897	9
	Label exam	Frequency of food labels examination	1550	3.885	1.073		1-5
	Fawc	Farm animal welfare concern	1602	3.812	0.961		1-5
Self-identity	Relig.	Role of religion in decisions	1602	2.806	1.447		1-5
	Educ.	Education	1602	3.969	1.740		1-7
	Pet owner	Pet ownership	1602	0.580	0.494		0,1
	Age		1602	46.968	15.350		18-86
	Male	Gender	1602	0.48	0.500		0,1
	Income10k	Income	1602	7.676	5.137		0.5-25
	Subjethics	Subjective ethical view	1602	3.510	0.888		1-5
	Liberal	Liberal political views	1602	0.368	0.482		0,1
	Conservative	Conservative political views	1602	0.237	0.425		0,1
Perceived behavioural control	Sskbpdec	Subjective knowledge of livestock industry	1602	2.397	0.876	0.948	5
	Primshop	Primary shopper	1602	0.691	0.462		0,1
	Actkagsc	Actual knowledge of agriculture	1602	0.382	0.314	0.805	8
	Tmeatfreq	Meat purchase frequency	1602	3.920	1.138	0.837	3

Social norm	QF4_8	Use of Facebook	1602	0.767	0.423		0,1
	Relfawknow	FAW knowledge compared to friends and family	1602	2.818	1.052		1-5
Personal norm	Traditiona~c	Traditional	1602	4.245	0.652	0.711	3
	Selfenhanc~c	Self-enhancement	1602	3.109	0.771	0.739	3
	Openness to~c	Openness to change	1602	3.844	0.699	0.661	3
	Selftransc~c	Self transcendence	1602	4.278	0.700	0.789	3
	Nep1	Humans modification right over nature	1602	3.330	1.065		1-5
	Nep2	Human dominance of nature	1602	3.344	1.150		1-5
	Nep3	Human and nature coexistence	1602	3.854	0.969		1-5

Source: Compiled from survey data.

4.4.1 Ordered Logit Analysis

Results from the ordered logit analysis when the constructs of the TPB are tested independently are presented below together with the predicted marginal effects. It was hypothesised in chapter three that there is a positive relationship between the constructs of the TPB and intention to purchase FAW labelled meat (previously purchased CH meat). Therefore, by extension, it is postulated that there is a positive relationship between attitude and intention to purchase FAW labelled meat. In Table 4.11, it can be observed that there is a negative relationship between the variables used to measure attitude and outcome 0 which is never purchased FAW labelled meat and a positive relationship between the attitude variables and outcome 1 (rarely purchased FAW labelled meat) as well as outcome 2 (frequently purchased FAW labelled meat). Thus, we reject

the null hypothesis. Label examination frequency, willingness to engage in activities that promote FAW and being concerned about FAW are all significant at 1%.

Table 4.10: Model One – Attitude Construct

Ppch	Variables	Coefficients	Marginal effects		
Attitude Toward FAW			**Never purchase**	**Rarely purchase**	**Frequently purchase**
	Responsibilitysc.	0.161*	-0.040	0.015	0.025
		(0.080)	(0.020)	(0.008)	(0.012)
	Engfaw.	0.971***	-0.240	0.091	0.149
		(0.121)	(0.030)	(0.014)	(0.019)
	Label exam	0.492***	-0.122	0.046	0.0754
		(0.053)	(0.013)	(0.007)	(0.008)
	Fawc	0.366***	-0.090	0.034	0.056
		(0.068)	(0.017)	(0.007)	(0.010)
Number of obs.	1,550	**LR chi^2**	362.72	**Prob. chi^2**	0.000
Log likelihood	-1460.4594	**Pseudo R^2**	0.1105		

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

This finding implies people who are willing to engage in activities that promote FAW are 9% more likely to have previously purchased FAW labelled meat and 15% more likely to have frequently purchased FAW labelled meat and therefore, more likely to have an intention to purchase in the future. This means that there is a 15% likelihood of purchasing FAW labelled meat if a respondent has previously engaged in an activity that promotes FAW or is willing to engage in an activity that promotes FAW. There is a 7% likelihood of frequently purchasing FAW labelled meat if a respondent state that they are concerned about FAW.

Table 4.11 presents the results for model two, the self-identity construct model. The results show that there is an inverse relationship between age and intention to purchase FAW labelled meat/previously purchased CH meat. Younger people are more likely to purchase FAW labelled

meat in contrast with older people. Respondents for whom religion plays an important role are more likely to have previously purchased or frequently purchased FAW labelled meat. Both age and religion are weakly significant at 10%. Owning a pet, identifying as liberal and considering oneself more ethical than others is positively related to intention to purchase FAW labelled meat/previously purchased CH meat and this is strongly significant at 1%. People that identify politically as liberal are 6% more likely to have frequently purchased FAW labelled meat. Additionally, people that identify as being more ethical than others are 4% more likely to have previously purchased FAW labelled meat. Pet owners are also 7% more likely to frequently purchase FAW labelled meat. This finding lends validity to the self-identity construct as a predictor of intention to engage in a behaviour. The finding also implies that perceiving oneself or identifying as a liberal, pet owner and subjectively ethical increases the likelihood of intention to purchase FAW labelled meat. Efforts to develop the FAW labelled meat market should target individuals or consumers that fit the above-mentioned identity.

For the construct perceived behavioural control, it is observed in Table 4.12, that stated subjective knowledge of the modern livestock industry along with having a higher actual agricultural knowledge score has a positive relationship with intention to purchase FAW labelled meat/previously purchased CH labelled meat. Actual agricultural knowledge makes respondents 10% more likely to frequently purchase FAW labelled meat. Buying meat frequently also increases the probability of having previously purchased FAW labelled meat. These are all strongly significant at 1%. Overall, the constructs that measure perceived behavioural control are positively related to intention to purchase FAW labelled meat. Consequently, we reject the null hypothesis.

Table 4.11: Model Two – Self-identity Construct

Ppch	Variables	Coefficients	Marginal effects		
Self-identity			**Never purchase**	**Rarely purchase**	**Frequently purchase**
	Relig	0.091**	-0.023	0.007	0.015
		(0.035)	(0.009)	(0.003)	(0.006)
	Educ	0.003	-0.001	0.000	0.000
		(0.030)	(0.007)	0.002	(0.005)
	Pet owner	0.401***	-0.100	0.032	0.068
		(0.100)	(0.025)	(0.009)	(0.017)
	Age	-0.009**	0.002	-0.001	-0.002
		(0.003)	(0.001)	(0.000)	(0.001)
	Male	0.017	-0.004	0.001	0.003
		(0.097)	(0.024)	(0.008)	(0.016)
	income10k	0.012	-0.003	0.001	0.002
		(0.010)	(0.002)	(0.008)	(0.002)
	Subjethics	0.244***	-0.061	0.020	0.041
		(0.057)	(0.014)	(0.005)	(0.010)
	Liberal	0.381***	-0.095	0.031	0.064
		(0.112)	(0.028)	(0.010)	(0.019)
	Conservative	0.059	-0.015	0.005	0.010
		(0.128)	(0.032)	(0.010)	(0.022)
Number of obs.	1,592	**LR chi^2**	83.73	**Prob. chi^2**	0.0000
Log likelihood		**Pseudo R^2**	0.025		

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

This finding means that the likelihood of purchasing FAW labelled meat increases with the more knowledge one has about modern livestock agriculture and the frequency of meat purchase. This finding makes sense, as lack of knowledge is perceived as a barrier to intention to engage in a behaviour.

Social norm was found to be positively related to intention to purchase FAW labelled meat / previously purchased CH meat from Table 4.13. The null hypothesis is thus rejected. This finding means the more a person perceives himself/herself to be relatively more knowledgeable about agriculture when compared to friends and family the likelihood of FAW labelled meat purchase increases. This is significant statistically at 1%. This finding implies one would not be influenced by friends and family if one perceives himself/herself to be relatively more knowledgeable.

Table 4.12: Model Three – Perceived Behavioural Control Construct

Ppch	Variables	Coefficients	Marginal effects		
Perceived behavioural control			**Never purchase**	**Rarely purchase**	**Frequently purchase**
	Sskbpdec	0.457***	-0.114	0.040	0.074
		(0.061)	(0.015)	(0.006)	(0.010)
	Primshop	0.133	-0.033	0.012	0.022
		(0.105)	(0.026)	(0.009)	(0.017)
	Actkagsc	0.606***	-0.151	0.053	0.098
		(0.165)	(0.041)	(0.015)	(0.027)
	Tmeatfreq	0.253***	-0.063	0.022	0.041
		(0.044)	(0.011)	(0.004)	(0.007)
Number of obs.	1,602	**LR chi^2**	153.78	**Prob.chi^2**	0.000
Log likelihood	-1604.6748	**Pseudo R^2**	0.0457		

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

Table 4.14, presents the results for the construct personal norm. Respondents that agree that humans were meant to rule the whole of nature have a negative relationship with intention to purchase FAW labelled meat, although this is not statistically significant. Respondents with altruistic/self-enhancement values or view of life are more likely to purchase FAW labelled meat and this is significant statistically at 1%. This finding agrees with the results from studies conducted by (Magnusson et al., 2003).

Table 4.13: Model Four – Social Norm Construct

Ppch	Variables	Coefficients	Marginal effects		
social norm			**Never purchase**	**Rarely purchase**	**Frequently purchase**
	QF4_8	0.228*	-0.057	0.018	0.039
		(0.112)	(0.028)	(0.009)	(0.019)
	Relfawknow	0.286***	-0.071	0.0226	0.0486
		(0.046)	(0.011)	(0.004)	(0.008)
Number of obs.	1,602	**LR chi^2**	43.14	**Prob.chi^2**	0.000
Log likelihood	-1659.9947	**Pseudo R^2**	0.0128		

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

Respondents that hold the view that plants and animals have as much right as humans to exist are more likely to purchase /have previously purchased FAW labelled meat this is significant statistically at 1%. This finding means that altruism or self- transcendence is a driving value that increases the likelihood to purchase FAW labelled meat. This is in contrast to findings by Vermeir and Verbeke, (2008a) where traditional values were a major predictor of intention to purchase sustainable food and in agreement with findings by Sunding (2003) as well as Magnusson et al. (2003).

Table 4.15, presents the results from a five-step hierarchal ordered logit model. It is observed that income has a positive relationship with intention to purchase FAW labelled meat and is weakly statistically significant at 10%. In the overall model when all the constructs are put together respondents that frequently examine meat labels are 5% likely to have previously purchased FAW labelled meat and 7% more likely to frequently purchase FAW labelled meat. Willingness to engage in activities that promote FAW predicts 11% more the likelihood to frequently purchase FAW labelled meat. FAW concern predicts 6% more the likelihood to frequently purchase FAW labelled meat. These are all statistically significant at 1%. Age is still inversely related to intention to purchase FAW labelled meat and is statistically significant at 1%.

Subjective agricultural knowledge and actual agricultural knowledge are all statistically significant at 5% and predict likelihood of having frequently purchased and by extension, intention to purchased FAW labelled meat. Meat purchase frequency is weakly statistically significant at 10%. Income is also weakly statistically significant at 10%. Higher income predicts the probability of having previously frequently purchased FAW labelled meat by 16%.

Table 4.14: Model Five – Personal Norm Construct

Ppch	Variables	Coefficients	Marginal effects		
personal norm			**Never purchase**	**Rarely purchase**	**Frequently purchase**
	traditiona~c	-0.063	0.016	-0.005	-0.011
		(0.097)	(0.024)	(0.008)	(0.0165)
	selfenhanc~c	0.251***	-0.063	0.020	0.0427
		(0.069)	(0.017)	(0.006)	(0.012)
	opennessto~c	0.132	-0.033	0.011	0.022
		(0.082)	(0.020)	(0.007)	(0.014)
	selftransc~c	0.140	-0.035	0.011	0.024
		(0.094)	(0.023)	(0.008)	(0.016)
	nep1	0.057	-0.014	0.004	0.010
		(0.053)	(0.013)	(0.004)	(0.009)
	nep2	-0.018	0.005	-0.002	-0.003
		(0.051)	(0.013)	(0.004)	(0.009)
	nep3	0.264***	-0.066	0.021	0.045
		(0.057)	(0.014)	(0.005)	(0.010)
Pseudo R2	0.0128	**Number of obs.**	1,602	**LR chi^2**	68.04
Prob. > chi2	0.000	**Log likelihood**	-1647.54		

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

Pet ownership, religion, subjective ethical beliefs become insignificant in the overall model. This finding lends validity to the thesis statement that the Canadian consumer's intention to purchase FAW labelled meat is a function of the following determinants: (a) attitude towards FAW, (b) social norm, (c) PCB (d) self-identity, and (e) personal norms. Consequently, we reject the null hypothesis that there is a negative relationship between individuals' intentions to buy FAW labelled meat products and (a) attitude towards FAW, (b) social norm, (c) PCB (d) self-identity, and (e) personal norms.

The results presented for the ordered logit models based on the TPB enable the second objective of this thesis, which was to examine the nature, strength and relative importance of psychological

constructs such as attitude, self-identity, perceived behavioural control, personal and social norm on FAW and purchase intentions to be achieved.

Table 4.15: Model Six – Theory of Planned Behaviour Constructs

Variables	Coefficients	Marginal effects		
Ppch		**Never purchase**	**Rarely purchase**	**Frequently purchase**
responsibi~c	0.168	-0.042	0.017	0.025
	(0.091)	(0.091)	(0.009)	(0.014)
Label exam	0.458***	-0.113	0.045	0.068
	(0.055)	(0.014)	(0.007)	(0.008)
Engfaw	0.756***	-0.187	0.074	0.112
	(0.129)	(0.032)	(0.014)	(0.019)
Fawc	0.375***	-0.093	0.037	0.056
	(0.073)	(0.018)	(0.008)	(0.011)
Relig	0.020	-0.005	0.002	0.003
	(0.041)	(0.010)	(0.004)	(0.006)
Education	0.004	-0.001	0.000	0.001
	(0.033)	(0.008)	(0.003)	(0.005)
Pet owner	0.005	-0.001	0.001	0.001
	(0.111)	(0.027)	(0.011)	(0.016)
Age	-0.0132***	0.003	-0.001	-0.002
	(0.004)	(0.001)	(0.000)	(0.001)
/Male	0.111	-0.027	0.012	0.016
	(0.114)	(0.028)	(0.011)	(0.017)
income10k	0.0239*	-0.006	0.002	0.004
	(0.011)	(0.003)	(0.001)	(0.002)
Subjethics	0.022	-0.005	0.002	0.003
	(0.065)	(0.016)	(0.006)	(0.010)
Liberal	0.167	-0.041	0.016	0.025
	(0.123)	(0.030)	(0.012)	(0.018)
Conservative	0.161	-0.040	0.016	0.024
	(0.140)	(0.035)	(0.014)	(0.021)
Sskbpdec	0.255**	-0.063	0.025	0.038
	(0.083)	(0.020)	(0.008)	(0.012)
Relfawknow	-0.052	0.013	-0.005	-0.008
	(0.065)	(0.016)	(0.006)	(0.010)
Primshop	0.055	-0.014	0.005	0.008
	(0.115)	(0.028)	(0.011)	(0.017)
Actkagsc	0.488**	-0.120	0.048	0.072
	(0.180)	(0.045)	(0.018)	(0.027)

Tmeatfreq	0.113*	-0.028	0.011	0.017
	(0.053)	(0.013)	(0.005)	(0.008)
QF4_8	-0.080	0.020	-0.008	-0.012
	(0.126)	(0.031)	(0.012)	(0.019)
traditiona~c	0.015	-0.004	0.001	0.002
	(0.113)	(0.028)	(0.011)	(0.017)
selfenhanc~c	0.059	-0.015	0.006	0.009
	(0.076)	(0.019)	(0.008)	(0.011)
opennessto~c	-0.071	0.018	-0.007	-0.011
	(0.092)	(0.023)	(0.009)	(0.014)
selftransc~c	0.070	-0.017	0.007	0.010
	(0.108)	(0.027)	(0.012)	(0.016)
Nep	0.072	-0.018	0.007	0.011
	(0.074)	(0.018)	(0.007)	(0.011)
Number of obs.	1,540	**LR chi^2**	432.29	
Prob. > chi2	0.000	**Log likelihood**	-1416.71	
Pseudo R^2	0.1324			

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

Attitude and self-identity are major predictors of intention to purchase FAW labelled meat as was found by Cook et al. (2002). The results from this section to some extent contribute towards achieving the third objective, which was to analyse the relative preference of Canadian consumers for FAW labelled meat. The next section presents results aimed towards achieving the final objective.

4.5 Choice Analysis Results

The choice model was employed to achieve the third and fourth objective of this thesis. Results obtained from the empirical specification of the choice model in chapter three are reported in table 4.16 and 4.17. Respondents gained an increase in utility from making a choice rather than opting out. The neither /no option coefficient is statistically significant at 1% across all meat types and negative.

Table 4.16 Discrete Choice Conditional Multinomial Logit Model Results

CHOICE	BEEF	PORK	CHICKEN
ORGANIC	-0.053	-0.034	-0.159**
	(0.071)	(0.072)	(0.071)
CH	0.055	-0.275***	-0.026
	(0.081)	(0.081)	(0.079)
CHORGANIC	0.158	0.221**	0.198**
	(0.098)	(0.096)	(0.096)
PRICE	-0.091***	-0.045	-0.132***
	(0.019)	(0.038)	(0.033)
NEITHER	-2.25711***	-1.509***	-2.537***
	(0.245)	(0 .256)	(0.257)
Pseudo R2			
Log likelihood value	-2581.362	-2580.993	-2465.659
AIC	5172.700	5172.000	4941.300
AIC/N	2.001	2.005	1.912

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

The organic certification is negative for all meat types albeit, only statistically significant at 5% in chicken. This implies the presence of the organic certification /attribute decreases the associated utility level associated with the choice relative to the other labels. This could be interpreted as consumers viewing the organic label as a substitute for the CH label. For the CH certification, there is a decreased utility from the presence of the CH label in pork and chicken, and an increased utility for the presence of the CH label in beef, although this is statistically significant at 1% only for pork. The highest increments are observed when, both CH and organic labels are combined as a single product attribute/certification there is an increased utility obtained from the presence of the attribute/certification across all meat types, albeit, only statistically significant at 5% in pork and chicken. This finding aligns with rational economic reasoning where more is preferred to less. Increasing increments on the price variable decrease the associated utility obtained from the choice this is statistically significant at 1% in beef and chicken but not significant in pork. This could be attributed to the relatively low prices of pork used in the study. Thus, the finding indicates

respondents found pork prices to be inexpensive and were indifferent to increments because of attribute certification.

4.5.1 Estimating Willingness to Pay for Attribute Certification

The multinomial conditional logit estimates above represent the direct effects accompanying the explanatory variables on the unobserved utility function. These associated direct effects can be used to determine the average willingness to pay estimates for each of the certification attributes (Loureiro and Umberger, 2003). Nonetheless, they cannot be interpreted as the direct effects of the explanatory variables on the probability of choosing each certification attribute (Loureiro and Umberger, 2003). Only the willingness to pay for Certified Humane and organic, as well as organic certification in chicken is statistically significant at 10%. There is a positive WTP for the CH and organic label in chicken $1.5lb. The WTP estimates are dollar values per pound of meat. The results show that consumers' valuation of organic relative to CH and a combination of both CH and organic is negative. This could be interpreted to mean the organic label is viewed as a substitute for the CH label and that both attributes present dominate just either one of the attributes in chicken and pork but not in beef.

To allow for preference heterogeneity in attribute levels Table 4.18, presents results from the multinomial conditional logit when the certification attribute is combined with some socioeconomic characteristics gender, age and income. FAW concern is also combined with the attribute levels, as it is the subject of interest.

Table 4.17 Willingness to Pay Estimates

Attribute	Beef	Pork	Chicken
Organic	-0.578	-0.739	-1.204*
	(0.801)	(1.860)	(0.655)
Certified Humane	0.606	-6.056	-0.199
	(0.852)	(6.044)	(0.619)
Certified Humane & Organic	1.733	4.871	1.496*
	(1.144)	(4.875)	(0.834)

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

The interaction between FAW concern (FAW concern=1 if concerned and 0 if not concerned, neutral responses were dropped) and CH is positive and statistically significant across all meat types, 1% in chicken, 5% in beef and 10% in pork. Thus, people concerned about FAW are more likely to opt for the CH attribute/certification. The interaction between CH and organic label with FAW is negative and statistically significant across all meat types, 5% in beef and chicken, 10% in pork. Interestingly the interaction between FAW concern and organic is positive and statistically significant at 1% across all meat types. This contrasts with findings from the WTP estimates. Furthermore, the interaction between age and CH is negative and significant at the 1%-level in beef and 10%-level in pork and chicken. The interaction between age and organic is negative and significant in pork 5% and chicken 10%. The interaction between age and CH and organic is positive across all meat types. Implying older generations are more likely to opt for the combination of organic and CH. This implies there is heterogeneity in the valuation of FAW labelled meat. The combination of CH and organic is preferred to either one alone.

Table 4.18 Discrete Choice Conditional Multinomial Logit Interactions Results

CHOICE	Beef	Pork	Chicken
ORGANIC	-0.472	-0.512	-0.878**
	(0.321)	(0.327)	(0.360)
CERTIFIED HUMANE	0.250	0.332	-0.389
	(0.339)	(0.498)	(0.400)
CHORGANIC	0.086	-0.967***	0.854
	(0.467)	(0.365)	(0.534)
PRICE	-0.100***	-0.049	-0.135***
	(0.022)	(0 .044)	(0.038)
NEITHER	-2.372***	-1.710***	-2.672***
	(0.281)	(0.295)	(0.303)
FAWCCH|	0.560**	0.878*	0.858***
	(0.228)	(0.229)	(0.254)
FAWCCHO|	-0.719**	-0.565*	-0.763**
	(0.325)	(0.329)	(0.354)
FAWCORG|	0.686***	0.861***	0.985***
	(0.223)	(0.212)	(0.242)
MALECHO|	-0.256	-0.255	0.124
	(0.218)	(0.213)	(0.214)
MALECH|	0.212	0.291*	-0.126
	(0.159)	(0.156)	(0.157)
MALEORG|	0.196	0.125	-0.022
	(0.150)	(0.143)	(0.152)
AGECH|	-0.015***	-0.009*	-0.010*
	(0.005)	(0.005)	(0.005)
AGEORG|	-0.007	-0.011**	-0.010*
	(0.005)	(0.005)	(0.005)
AGECHORG|	0.018**	0.013*	0.005
	(0.007)	(0.007)	(0.007)
INCCH|	-0.007	0.028*	0.022
	(0.015)	(.015)	(0.016)
INCORG|	0.010	0.024*	0.047***
	(0.014)	(0.014)	(0.015)
INCCHORG|	-0.009	-0.026	-0.045**
	(0.020)	(0.020)	(0.021)
Log likelihood value	-1989.257	-1943.625	-1805.251
AIC	4012.500	3921.300	3644.500

Note: ***, **, * Significance at 1%, 5%, 10% level. Source: Compiled from survey data analysis.

The findings from the multinomial logit model although mixed do indicate that age and income influences relative preference for FAW labelled meat as well as the combination of FAW labelled and organic labelling. The combination of FAW label and organic is the most preferred followed by the FAW labelled meat (CH) then organic.

CHAPTER 5 DISCUSSION

5.1 Introduction

This chapter presents a summary of the results obtained in the context of the study objectives. It examines the results in relation to the related relevant literature and emphasises the implications of this work. It points out the limitations of the thesis and outlines directions for future research. It begins by expounding on the evidence from the descriptive and quantitative analysis in relation to the central findings of the study.

The premise of this thesis was conceived within the context of rising consumer concern about FAW among developed countries, in the age of little farm experience, knowledge of modern agriculture and social media influence together with the meat industry's challenge to constantly secure and maintain social license. To acquire and maintain social license the meat industry ought to first understand the societal values, attitudes, perceptions and belief that underlie society's or consumers' acceptance or rejection of a practice or product. The research was designed with the aim to better understand FAW from the consumer perspective to help mitigate the information asymmetry between producers, processors, retailers and consumers.

Consequently, this thesis set out with the overarching objective to examine FAW concern in Canada and explore the role of knowledge, values, attitudes and beliefs on purchase intentions for FAW labelled meat products. The results obtained from the research provides evidence that indeed there exist concern for FAW in Canada and gives some insight into the nature and strength of the concern as well as the groups with relatively higher concern levels. Additionally, the influence of some psychological constructs like attitude, identity and values on intention to purchase FAW

labelled meat was predicted and the likelihood of purchase attributed to the constructs was determined. The results obtained from this thesis provides evidence to validate the inclusion of the self-identity construct in the TPB model. The thesis results show that there is a positive relationship between the constructs of the TPB and intention to purchase FAW labelled meat. Attitude towards FAW was the biggest contributor towards predicting intentions to purchase FAW labelled meat; this was followed by self-identity and perceived behavioural control.

Furthermore, from the overall TPB model, the main drivers for the FAW labelled meat among respondents are actual agricultural knowledge, age, examining meat labels, income, subjective agricultural knowledge, meat purchase frequency and willingness to engage in activities that promote FAW. Finally, from the choice analysis although, the results are mixed, there is a value of FAW to respondents. Age and income influences relative preference for FAW labelled meat, as well as the combination of FAW labelled meat and organic labelling. The combination of FAW label and organic is the most preferred followed by the FAW labelled meat (CH labelled) then organic. The results indicate heterogeneity in preference for FAW labelled meat. Nevertheless, the study failed to yield significant WTP estimates for FAW labelled meat. The overall results indicate that the meat industry does have the social license to operate in Canada but has some work to do in the areas of improving credibility and trust to maintain the social license. Credibility can be improved by consistently providing clear and true information as opposed to marketing gimmicks used by retailers that sell half-truths. By way of illustration labelling broiler chicken products as cage free is a marketing ploy that does not promote credibility of the meat industry. It is recommended the meat industry take proactive measures to constantly stay abreast with consumer attitudinal and perception changes and communicate effectively to assure the sustenance of the industry's social license. The study results do indicate that just about 40% of respondents make

purchase decisions based on FAW concerns. This percentage does not seem large enough to cause drastic changes to the market for FAW labelled meat products in the short term but does give perspective and ought to be taken into consideration for the future direction of meat markets.

5.2 Study Results within the Context of Relevant Literature

From the descriptive analysis about 60 percent and above of all socioeconomic groupings compared are concerned about FAW (Table 4.4) for example gender, age groups, income levels, educational attainment and marital status among others. The result is consistent with citizen interest in FAW across the developed world (Verbeke, 2009). Women unsurprisingly are more concerned than their male counterparts as evidenced by the higher percentage of stated concern which agrees with findings from several other studies (Umberger et al, 2016; Vanhonacker et al., 2007) and contradicts findings from Lagerkvist et al. (2006) where women were found to derive lower levels of utility than men for specific animal friendly practices. Pet owners and childhood pet owners are more concerned about FAW than non-pet owners and vegetarians are more concerned about FAW than non-vegetarians. The afore mentioned result agrees with findings from (Paul and Serpe, 1993). The relatively higher concern among pet owners is attributed to the projection of their compassion towards their companion pets unto the farm animals (Boogaard et al., 2006).The findings are intuitive and conform with prior expectations. The strong interest in FAW can be explained as attitudinal ambivalence and is not linked to consumer choice of FAW labelled meat. Attitudinal ambivalence is defined as a state in which one is inclined to give an attitude equivalently strong positive and negative evaluation (Armitage and Conner, 2000). Consumers as members of society evaluate Farm animal welfare positively and are concerned about it. Nevertheless, at point of purchase are generally unwilling to pay more or engage in

activities to promote farm animal welfare. Just a little over 40% of respondent's state that concern for FAW affects purchase decisions. The phenomenon of the disparity between concern for FAW and FAW motivating purchase decision has been found in studies by Lusk and Norwood (2011) as well as by Verbeke (2009). The finding lends support to the theory that there exist disparities in the attitude and behaviour of consumers as citizens and citizens as consumers. The finding implies that the market for FAW labelled meat products acting alone cannot be relied on to significantly shift the welfare of farm animals on the FAW productivity frontier (Figure 1.1). About 68% of respondents explicitly stated they are somewhat or very concerned about FAW. Nevertheless, only 24% of respondents had actively sought information about FAW. The low percentage of respondents actively seeking information about FAW further consolidates the argument that respondents concern about FAW as consumers may be strong but passive. Respondents do not assume responsibility for the stated FAW concern. To buttress this point, 67% of respondents agree that government policy must be used to ensure sustainability and FAW whilst 81% believe the responsibility lies on the producer/meat industry to protect the environment and farm animals Thus, although respondents are concerned about FAW they place the responsibility of ensuring FAW on government and producers. Verbeke (2009) provides evidence to validate the point. Verbeke states that even though the perceived FAW concern among respondents remain strong, consumers interest in obtaining and acting on FAW information remains moderate when compared with other product attributes. Consumers often claim to associate strong importance to FAW yet the share of the market that goes to FAW labelled products remains comparatively small. One argument advanced to explain the low share of FAW labelled products is the insufficient activation of attitude systems. The results from this study lends support to this claim as attitude was found to be the biggest predictor of intention to purchase FAW labelled meat. On the other hand, one can

argue that low perceived availability of FAW labelled products may explain why intentions to purchase FAW labelled products remains low. This was found in a study by Vermeir and Verbeke (2006) in relation to sustainable food consumption.

A majority 55% believe agriculture in Canada is sustainable whilst 35% are neutral. Generally, the respondents seem to have a favourable view of agriculture in Canada, approximately 40% of respondents think farm animal stocking densities in Canada are too high, 36% think farm processes are too mechanised and 34% think farm animals are confined all year round. A little over 20% of respondents disagree that the current level of FAW in Canada is acceptable. The perception of FAW in Canada is very positive when compared to the perception of FAW in Europe where about 82% of respondents perceive FAW in Europe to be between moderate and very bad (European Commission, 2007). Contrary to expectation over 80% of Canadians have had some form of farm contact with about 60% having visited a farm at least three times. The high percentage of respondents with farm contact may mean that the respondents' concern about FAW, is not a consequence of ignorance about how food is produced. The farm experience may account for the positive view of FAW in Canada. A study by Boogaard et al. (2006), found evidence that emotional experience with farms or farm animals correlates with a positive perception of FAW. The social media influence on FAW concern was not prominent; rather television documentaries on FAW did more in increasing FAW awareness.

Respondents that identify with the Schwartz value of conservation/traditional values tend to be more concerned about FAW, which is surprising because intuitively one would expect respondents that identify more with self-transcendence or altruism to be more concerned about FAW. Indeed Kalof et al. (1999) found that altruistic values increased the beliefs about the benefits of

vegetarianism to FAW whilst traditional values decreased the beliefs about the benefits of vegetarianism to FAW.

The descriptive analysis used a modified version of the TPB to study intention to purchase FAW labelled meat among respondents in Canada. The study found that there is a positive relationship between attitude and intention to purchase FAW labelled meat. Attitude towards FAW was the biggest contributor towards predicting intentions to purchase FAW labelled meat. Cook et al. (2002) also found attitude to be the biggest predictor of intention to purchase GM food. Self-identity and perceived behavioural control followed as other contributors of intentions to purchase FAW labelled meat, whilst social norm was the least contributor. Vermeir and Verbeke (2008) on the other hand found that 50% of the variance in intention to purchase sustainable food was explained by attitude, social norm and perceived behavioural control. The thesis results indicate that a higher score from a willingness to engage in activities that promote FAW predicts a 15% probability of intention to purchase FAW labelled meat and a 9% probability in intention to at least purchase FAW labelled meat once. This is intuitive. Respondents who read labels are 7% more likely to have previously purchased FAW labelled meat. The study results also provide evidence that respondents who identify as being more ethical than others are 40% more likely to purchase FAW labelled meat, whilst those that identify as being religious are 15% more likely to purchase FAW labelled meat. Again, this is intuitive as FAW has moral and ethical dimensions. Being politically liberal, owning a pet increases probability of purchasing FAW labelled meat frequently by about 6% to 7%.

Although, Honkanen et al. (2006) provides evidence that self-transcendence is a better predictor of intention to purchase organic food. Magnusson et al. (2003) also discovered self-enhancement

motives to better predict intention to purchase organic products. The thesis discovered that self-enhancement was the only value statistically significant in predicting intention to purchase FAW labelled meat. The findings mean that producers and the livestock meat industry could market FAW labelled meat products by appealing to the self-identity, attitudinal beliefs of consumers. Communication efforts ought to be designed both with psychographic and demographic segmentation. It is noteworthy that FAW labelled meat as a credence attribute or marketable product has less than 40% of the market share. The shift in the welfare productivity frontier attributable to the market mechanism is unlikely to be substantial.

The thesis contributes to the literature by providing insight into farm animal welfare concerns in Canada, and helps us to understand how psychological constructs such as attitude and self-identity predict intentions to purchase FAW labelled meat. The thesis provides a starting point to addressing the challenge of which segments of consumers ought to be targeted with information and FAW labelled products. The thesis also highlights passive consumer attitudes and recommends activating these attitudes, as they are key to increasing the marketability of FAW labelled products.

5.3 Implications for Farm Animal Welfare in Canada

The findings from this study imply that FAW in Canada ought to be addressed both as a public good and as a private good. As a public good, there seems to be public support for government intervention in improving FAW in Canada through policy, regulation and intervening in the market for FAW labelled meat. The respondents' place a relatively higher level of trust in government certification. The assertion is supported by Lagerkvist and Hess (2011b) that the public good aspect of FAW merits further studies. There is the perception that ensuring FAW is the responsibility of the government and producers/meat industry. As a result, it can be inferred that there exists support

for producers to take measures that improve FAW. As a private good there exists a market for FAW labelled meat albeit the market share remains small as asserted by Verbeke (2009). Marketing efforts for FAW labelled meat should be designed to target both psychographic and demographic segmentation. For example, targeting consumers with liberal or ethical values as well as younger people and women. The combination of both public and private good approaches will enable the goal of obtaining the optimum levels of FAW that will satisfy both the consumer and the citizen as well as the producer. Furthermore, combining both the public good and market approaches will be more effective in shifting the welfare productivity frontier.

5.4 Study Limitations

The study relied on data obtained from an online survey that relies on respondents choosing to participate in the survey. This use of an opt-in survey approach could have resulted in a sample selection bias. The responses are also subjective and rely heavily on Likert scale type responses, which could introduce social desirability bias, as people tend to avoid choosing the extremes. Choice experiments are considered to provide information that is more reliable. Nevertheless, the results may suffer from hypothetical bias owing to the nature of stated preference. The design of the choice set with two attributes, price and certification with five levels for the price and four levels for certification may be considered too simplistic for understanding consumer trade-offs between meat attributes. The use of a very specific FAW meat label the CH, which is largely still unknown may have contributed to the negative WTP estimates. Additionally, the CH label is carried by the retailer *Sobeys* who has a comparatively smaller share of the meat retail market. It is also entirely possible that the organic label will have captured multiple FAW dimensions. Research has shown that some consumers confer FAW attributes to the organic label. Lastly, some

respondents were familiar with the CH label and this could have introduced some favourable or unfavourable bias in the choices made.

5.5 Recommendations for future studies

The public good aspect of FAW could be delved into deeper to determine the specific FAW policies that respondents in Canada would be willing to support as well as the psychological constructs underlying them. This is also recommended by Lagerkvist and Hess (2011b). The private good aspect could also be explored further by examining the attitude, values and perceptions of consumers in French speaking Canada and comparing with findings from this study. Other empirical approaches could be employed to the conceptual framework outlined in this study (e.g. Nocella et al., 2012).

CHAPTER 6 CONCLUSIONS

Summary

This thesis uses a modified version of the Theory of Planned Behaviour (TPB) within an economic framework to gain insight into the role of beliefs, values and attitudes in FAW concern and the choice of FAW labelled meat in the Canadian context. FAW concern and purchase intention are investigated using CH label as a case study. In addition to the TPB, the study uses a stated preference method the choice experiment to elicit the Canadian consumer's relative preference and willingness to pay for FAW labelled meat.

The main objective of the thesis was to examine FAW concern in Canada and explore the role of knowledge, values, attitudes and beliefs on purchase intentions for FAW labelled meat products. This thesis focused on FAW as a process attribute using the CH label as a case study. The specific objectives were firstly, to investigate the perceptions, beliefs and attitudes, knowledge of agriculture and value systems of Canadians in relation to FAW concern among vegetarians and meat consumers, in addition to other socioeconomic groupings. Secondly, examine the nature, strength and relative importance of psychological constructs such as attitude, self-identity, perceived behavioural control, personal and social norm on FAW and purchase intentions. Thirdly, analyse the relative preference of Canadian consumers for FAW labelled meat. Fourthly, the research sought to explore whether there was a value of FAW to Canadians, leading to a willingness to pay for FAW meat using CH label as a case study. The objectives of the thesis were achieved by designing a survey and embedding a choice experiment within the survey. The survey was pretested on a hundred respondents and was administered to a sample of 1602 respondents in

the summer of 2016. The survey collected information about respondents' meat purchase behaviour, FAW concern, agricultural knowledge, values, beliefs and socioeconomic characteristics. The TPB and RUT were the underlying theories used to formulate the conceptual framework. For the empirical analysis, an ordered logit model based on the constructs of a modified TPB and a multinomial conditional logit model was used to determine the value and relative preference of respondents for FAW labelled meat. The results obtained provide evidence that there exists FAW concern among respondents in Canada and this concern is not specific to any group/segment of people. Nonetheless, some groups showed more concern than others (e.g. women and younger people). Secondly, religious and ethical beliefs, liberal political view, pet ownership, increased the probability of purchasing FAW labelled meat. FAW concern affected the purchase decision of only 40% of respondents. There was a positive relationship between the constructs of the TPB and intention to purchase FAW labelled meat. The attitude construct was the biggest predictor of intention to purchase FAW labelled meat. The results from the choice analysis indicated a heterogeneity in the relative preference for FAW labelled meat. The combination of FAW and the organic label was the most preferred. The thesis found evidence to support the use of both psychological and economic approaches to studying consumer choice. The study finds strong concern for FAW as citizens, which do not translate significantly into consumer purchase decision. The finding confirms the intention behaviour gap observed for ethical issues such as FAW and sustainability. The thesis recommends that both private and public good approaches of FAW need to be used to further the cause of FAW in Canada. Relying solely on the market for FAW labelled meat would not significantly shift the welfare productivity frontier to levels that are optimal for society. The livestock industry in designing marketing communications to further develop the market for FAW labelled meat ought to use both psychographics and socio-

demographics. The policy recommendations from this study are the government ought to understand the perspectives of both the meat industry and consumers and serve as a neutralising force that ensures trust and credibility in the earning and sustenance of the social license to produce. This could be done by providing oversight to ensure FAW label certification are credible and not marketing gimmicks or providing the certification through a governmental organisation. Lastly, the government could also improve legislation to extend beyond animal cruelty and factor in more FAW components that are important to consumers. However, using regulatory mechanisms to further FAW outcomes may face hurdles owing to the structure of Canadian meat supply chains that is characterized by significant concentration at the processing and retail market levels. While agricultural producers who work directly with farm animals may be more receptive to government intervention to improve FAW, multinational meat processors and retail chains may have different objectives that are less well aligned with public policy or agricultural sector objectives; and thus could be more of an impediment than a catalyst to achieving the goal of improving FAW outcomes in agriculture.

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APPENDIX

INVITATION TO PARTICIPATE IN SURVEY

Canadian Consumers Food Preferences and Shopping Behaviour

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Background: You are invited to participate in a survey about consumer food choices, product preferences and factors underlying retail choice decisions in Canada. Results of this study will be used in support of a graduate student thesis and a report. The report may be viewed by researchers, policy makers and industry members.

Purpose: To gather information about how several factors may affect your grocery purchasing and food consumption choices. The information will be used to improve food marketing and labelling policies to better inform Canadian retail shoppers' product choice decisions.

Study Procedures: You will be asked to complete a survey. We will ask you about your views on several topics. The survey should take approximately 30 minutes to complete.

Benefits: You will receive rewards points from Ipsos in exchange for completing this survey. We anticipate the results of this research study to enable Canadian food consumers to make better informed future purchase decisions at the grocery store.

Risks: There are no anticipated physical or psychological risks involved with this survey.

Voluntary Participation: Participation in this survey is voluntary. You can end the survey at any time by closing your browser window. If you do not complete the survey, none of your answers will be used in the analysis of survey findings.

Confidentiality: No personal identifiers will be collected as part of the data. We will assign you a random ID number that will not be linked to any personal identifiers. Responses from all who responded to the survey will be combined. No individual responses will be identified in any reports. Data will be password protected, stored electronically on a secure server and deleted after 10 years. Data may only be viewed by the investigators or the Research Ethics Board. Data will be used to complete a graduate student thesis and report. Policy makers, researchers and industry members may view the report. Results may also be published in academic journals.

Further Information: If you have any questions about this study, please contact the investigators, Sven Anders (Sven.Anders@ualberta.ca) or Anita Ahiney Laryea (laryea@ualberta.ca**).** The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at the University of Alberta. For questions regarding participant rights and ethical conduct of researchers, contact the University of Alberta Research Ethics Office at (780) 492-0459.

Consent to Participate in this Research: Completing and submitting this survey means that:

- This optional study has been explained to me;
- I have been given information to contact the investigators and ask questions;
- I have read the information above;
- I am aware there are no risks of participating in this optional survey; and,
- I voluntarily consent to take part in this optional survey.

If you decide to withdraw your consent for your survey responses to be used, you may do so simply by exiting the survey.

Proceed to Survey?

Yes – I have read the information above and wish to take the survey

No – I do not wish to take this survey

Survey Questionnaire

SECTION A: FOOD CONSUMPTION AND PURCHASES [DO NOT SHOW HEADING]

In this section please tell us about your food consumption and purchases.

A1. How many people, including yourself, live in your household?

Please enter a whole number.

[NUMERIC RESPONSE. RANGE: 1 TO 20]

A2. Which of the following categories best describes your role in the food shopping for your household?

Please select one response only

Primary shopper
Share the shopping
Someone else does most of food shopping for my household

A3. Would you describe yourself or any member of your household as a vegetarian, vegan or pescatarian?

Please select all that apply

Yes – myself
Yes –other household member(s)
No [SINGLE PUNCH]

[ASK A4 IF YES – OTHER HOUSEHOLD MEMBER(S) AT A3]
A4. In total, how many members of your household identify as vegetarian, vegan or pescatarian?

Please enter a whole number

[NUMERIC RESPONSE. RANGE: 1 TO 20. CANNOT EXCEED NUMBER AT A1.]

A5. How often do you *personally* purchase the following types of **meat** products for yourself **or** for your household? By **meat** products, we mean fresh or processed – such as luncheon/deli meats, bacon, ham and sausages.

Please select one response for each item

[ACROSS TOP OF GRID]
Daily
Once a week
Every two weeks
Monthly
Less than once a month
Never

[DOWN SIDE OF GRID – DO NOT RANDOMIZE ORDER]
Beef (includes veal)
Poultry (e.g. chicken, turkey, duck)
Pork (including ham, bacon, etc.)

[IF NEVER TO ALL ITEMS AT A5 AND YES – MYSELF AT A3, CLASSIFY AS VEGETARIAN NON-PURCHASER AND SKIP TO SECTION C: FARM ANIMAL WELFARE.

IF NEVER TO ALL ITEMS AT A5 AND ANY OTHER RESPONSE AT A3, CLASSIFY AS MEAT EATING NON-PURCHASER AND CONTINUE WITH A6.

IF DAILY, ONCE A WEEK, EVERY TWO WEEKS, MONTHY OR LESS THAN ONCE A MONTH TO ANY ITEM AT A5 AND YES – MYSELF AT A3, CLASSIFY AS VEGETARIAN PURCHASER AND CONTINUE WITH A6.

IF DAILY, ONCE A WEEK, EVERY TWO WEEKS, MONTHY OR LESS THAN ONCE A MONTH TO ANY ITEM AT A5 AND ANY OTHER RESPONSE AT A3, CLASSIFY AS MEAT EATING PURCHASER AND CONTINUE WITH A6]

A6. On average, how often do **[IF VEGETARIAN PURCHASER, INSERT:** members of your household / **ALL OTHERS, INSERT:** you] **consume** each of the following types of meat products (fresh or processed – such as luncheon/deli meats, bacon, ham and sausages) at home **or** outside of the home?

Please select one response for each item

[ACROSS TOP OF GRID]
Daily
Once a week
Every two weeks
Monthly
Less than once a month
Never

[DOWN SIDE OF GRID – DO NOT RANDOMIZE ORDER]
Beef (includes veal)
Poultry (e.g. chicken, turkey, duck)
Pork (including ham, bacon, etc.)
Other meat (such as lamb, goat, rabbit, bison, elk, deer, etc.)

[IF MEAT EATING NON-PURCHASER, SKIP TO A11]

A7. Where do you typically purchase meat products from?

Please select one response for each item

[ACROSS TOP OF GRID]
Main source
Sometimes a source
Never

[DOWN SIDE OF GRID – DO NOT RANDOMIZE ORDER]

Supermarket (e.g. Sobeys, Safeway, Save-On, Loblaws, Superstore)

Discount supermarket (e.g. No Frills)

Supercentre (e.g. Walmart)

Warehouse supermarket (e.g. Costco)

Farmers market

Gourmet/ Specialty food stores

Ethnic grocer

Directly from farm

Community Supported Agriculture (CSA)

Internet or Direct Mail order

A8. When shopping for meat products, how frequently do you examine food labels?

Please select one response only

Always

Often

Sometimes

Rarely

Never

[IF NEVER AT A8, SKIP TO A10]

A9. What labelling information are you seeking when you examine meat products?

Please select one response for each item

[ACROSS TOP OF GRID]
Yes
No

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Expiry date

Country of origin

Nutritional information

Price

Ingredients

Animal welfare or environmental attributes
Other (Please specify)

A10. How often have you previously purchased meat products with any of the claims listed below?

Please select one response for each item

[ACROSS TOP OF GRID]
Never
Rarely Occasionally
Regularly
Don't know

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Organic

Free range

Cage free

Humane choice / Humanely raised

Antibiotic-free

No added hormones

Grass-fed

No added steriods

Natural

Sustainable

A11. How important is the following information to you when you when shopping for meat products **or** dining away from home?

Please select one response for each item

[ACROSS TOP OF GRID]

Not at all important
Not very important
Neutral
Somewhat important
Very important

[DOWN SIDE OF GRID – RANDOMIZE ORDER]
Locally produced
Brand
Country of origin
Getting the best value for your money
Nutritional value
Health claims
How the food was produced (e.g. Organic, Grass-Fed)
Convenience
Meat type or cut
Expiry date
Price

[IF MEAT EATING NON-PURCHASER, SKIP TO SECTION B: CHOICE SCENARIOS]

A12. Sometimes, you may **invite guests** over for a meal. We would like to know whether your meat purchasing habits are the same or different in these events compared to a normal meal. Are the following product attributes…?

Please select one response for each item

[ACROSS TOP OF GRID]
Less important
No more or less important
More important

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Quality verification (e.g. AAA, Organic)

Price

Brand

Locally produced

Meat type or cut

Highest quality available

SECTION B: CHOICE SCENARIOS [DO NOT SHOW HEADING]

[ASK THIS SECTION TO MEAT EATING PURCHASERS, VEGETARIAN PURCHASERS AND MEAT EATING NON-PURCHASERS]

[FOR MEAT EATING PURCHASERS AND VEGETARIAN PURHASERS CREATE A LIST OF MEAT TYPES PURCHASED DAILY, ONCE A WEEK, EVERY TWO WEEKS, MONTHY OR LESS THAN ONCE A MONTH AT A5

Beef

Chicken

Pork

IF ONE ONLY, ASSIGN RESPONDENT TO THAT MEAT TYPE. IF TWO OR THREE, RANDOMLY ASSIGN RESPONDENT TO A MEAT TYPE USING LEAST FILL (I.E. MEAT TYPE WITH THE FEWEST RESPONDENTS)]

[FOR MEAT EATING NON-PURCHASERS CREATE A LIST OF MEAT TYPES CONSUMED DAILY, ONCE A WEEK, EVERY TWO WEEKS, MONTHY OR LESS THAN ONCE A MONTH AT A6

Beef

Chicken

Pork

IF NONE, SKIP TO SECTION C: FARM ANIMAL WELFARE. IF ONE ONLY, ASSIGN RESPONDENT TO THAT MEAT TYPE. IF TWO OR THREE, RANDOMLY ASSIGN RESPONDENT TO A MEAT TYPE USING LEAST FILL (I.E. MEAT TYPE WITH THE FEWEST RESPONDENTS)]

In the next part of the survey, **imagine that you are in your regular grocery store planning to purchase [INSERT: BEEF / CHICKEN / PORK]** and you should make a choice between two products. The attributes of each product differ in terms of price and other labelled information.

In each set of product choices, you will be asked to choose the option you would purchase at the store. Please respond to each scenario as if it were a real purchasing situation, keeping in mind that in a real-life situation, you are paying for the product you choose.

[NEW SCREEN]

We will now show you 5 scenarios

- Choose only **ONE** option for each scenario
- Assume that the options on each screen are the **ONLY** ones available
- Do **NOT** compare options on different screens

[RANDOMLY SELECT BLOCK 1 TO 4 USING LEAST FILL – CAPTURE BLOCK NUMBER IN THE DATA. RANDOMIZE ORDER OF SCENARIOS. CAPTURE THE SCENARIO NUMBER AND THE ORDER OF PRESENTATION IN THE DATA.]

SCENARIO 1

Please assume you are shopping for **[INSERT: Beef Sirloin / Chicken Breasts / Pork Chops].**

If these were your **only choices**, which option would you choose?

[INSERT SCENARIO 1] [DISPLAY SCENARIO AND QUESTIONS AS PER BELOW]

Alternative	Option 1	Option 2	
Top Sirloin Steak			Neither
Certification/Labels	Organic	Certified Humane	
Price $	$10.41lb (22.91kg)	$15.59lb (34.33 kg)	
I would choose: (*Please select one response only*)	❍	❍	❍

Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain
Somewhat certain
Not certain

SCENARIO1. I would choose:

(*Please select one response only*)

Option 1

Option 2

Neither

SCENARIO1A. Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain

Somewhat certain

Not certain

SCENARIO 2

Please assume you are shopping for **[INSERT: BEEF / CHICKEN / PORK].** If these were your **only choices**, which option would you choose?

[INSERT SCENARIO 2]

SCENARIO2.. I would choose:

(*Please select one response only*)

Option 1

Option 2

Neither

SCENARIO2A. Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain

Somewhat certain

Not certain

SCENARIO 3

Please assume you are shopping for **[INSERT: BEEF / CHICKEN / PORK].** If these were your **only choices**, which option would you choose?

[INSERT SCENARIO 3]

SCENARIO3.. I would choose:

(*Please select one response only*)

Option 1

Option 2

Neither

SCENARIO3A. Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain

Somewhat certain

Not certain

SCENARIO 4

Please assume you are shopping for **[INSERT: BEEF / CHICKEN / PORK].** If these were your **only choices**, which option would you choose?

[INSERT SCENARIO 4]

SCENARIO4.. I would choose:

(*Please select one response only*)

Option 1

Option 2

Neither

SCENARIO4A. Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain

Somewhat certain

Not certain

SCENARIO 5

Please assume you are shopping for **[INSERT: BEEF / CHICKEN / PORK].** If these were your **only choices**, which option would you choose?

[INSERT SCENARIO 5]

SCENARIO5.. I would choose:

(*Please select one response only*)

Option 1

Option 2

Neither

SCENARIO5A. Please indicate how certain you are that you would choose your preferred option in real life?

Please select one response only

Certain

Somewhat certain

Not certain

[ASK B1 IF NEITHER TO 3 OR MORE SCENARIOS]

B1. You have selected the "neither" option in at least 3 or more scenarios, what were your reasons for this choice?

Please select all that apply

[RANDOMIZE ORDER]

Both options were too expensive

I would not buy that type of meat

I don't trust the labelling information

I don't trust the Certified Humane label

I don't trust the Organic label

[ALWAYS SECOND LAST] Other (Please specify)

[ALWAYS LAST] Don't know

SECTION C: FARM ANIMAL WELFARE [DO NOT SHOW HEADING]

In this section, we are interested in your views about the food system and farm animal welfare.

D1. To what extent do you agree that each of the following labels reflects best practices in farm animal welfare?

Please select one response for each item

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral
Agree

Strongly agree
Don’t know

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

[INSERT LOGOS] [DO NOT DISPLAY TEXT]

Animal Welfare Approved

All Natural

Certified Humane

Food Alliance Certified

Free Range

Organic

SPCA Certified

D2. How much do you trust each of the following groups regarding the certification of Farm Animal Welfare?

Please select one response for each item

[ACROSS TOP OF GRID]
Mistrust strongly
Mistrust
Neutral
Trust
Trust strongly
Don’t know

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Government

Farmers

Corporate food industry

Independent Verification Bodies

Farm Animal Welfare Organizations

D3. How concerned are you about farm animal welfare?

Please select one response only

Very concerned

Somewhat concerned

Neutral

Not very concerned

Not at all concerned

D4. Have you ever actively sought information about farm animal welfare?

Yes

No

D5. Where do you acquire knowledge/information about farm animal welfare?

Please select all that apply

Farmers

Farm animal welfare organizations

Newspapers and magazines

Websites other than Social media

Social media websites

Books that specialise on Farm Animal Welfare

TV programs/documentaries

Retailers

From family/friends/neighbours

Other (Please specify)

None of the above

D6. Have you watched any of the following documentaries or movies about food or agriculture?

Please select all that apply

Cock Fight

Consumed

Cooked

Cows piracy

Farm to Fridge

Farmageddon

Fast Food Nation

Fat, Sick and Nearly Dead

Fed Up

Food Fight

Food Inc.

Food Matters

Forks Over Knives

Hungry for Change

Indigestible 2015

Meat the Truth

Mind of a Chef

Supersize Me

The Emotional World of Farm Animals

Vegucated

Other (Please specify)

None of the above

D7. DELETED

D8. Do you get information from or engage in social media, blogs or internet forums?

Yes

No

[ASK C9 IF YES AT C8]

D9. Have you ever obtained information about or engaged in discussions about the following topics on social media, blogs or internet forums?

Please select all that apply for each item

[ACROSS TOP OF GRID]
Yes – Obtained information
Yes – Engaged in discussions
No [SINGLE PUNDH]

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Farm animal welfare

Livestock agriculture

Food policy in Canada

Sustainability

Organic food

Local food

International food trade

D10. The following statements reflect opinions about the environment and food system. Please indicate whether you agree or disagree with the following statements.

Please select one response for each item

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral

Agree
Strongly agree

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Producers must take responsibility for the environmental impacts of their activities

Government must take responsibility for protecting the environment through policy

Government policy should be used to ensure Sustainability and Farm Animal welfare

Today's food system poses a threat to our future

Canada's agricultural system is sustainable compared to other countries

D11. Please indicate if you agree or disagree with the following statements about farm animal welfare in Canada.

Please select one response for each item

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral
Agree
Strongly agree
Don't know

[DOWN SIDE OF GRID – RANDOMIZE ORDER]
The current level of farm animal welfare in Canada is acceptable
Concerns for the welfare of farm animals affect my food purchase decisions
Meat from animals raised with higher welfare standards is healthier for me
Meat from animals raised with higher welfare standards tastes better
Meat from animals raised without the use of antibiotics may carry a higher risk of food safety
If food companies and farmers improve animal welfare, the price of meat will increase
The government has to put higher mandatory welfare standards in place that require farmers to treat animals humanely
Animal welfare organizations are too radical in their protection of animals

D12. In your opinion, how important are the following components of farm animal welfare to you?

Please select one response for each item

[ACROSS TOP OF GRID]
Not at all important
Not very important
Neutral
Somewhat important
Very important

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Freedom from stress distress, discomfort, suffering

Freedom from hunger or thirst

Freedom from loneliness

Long life expectancy

Freedom from pain

Freedom from injury or lameness

Social contact between social animals

Contact between mothers and their young

Express natural behaviour

Access to natural environments

D13. From your perspective, what is the most important farm animal welfare issue in your province?

Please be detailed and specific in your response

[VERBATIM RESPONSE] [INSERT LARGE TEXT BOX]
No response

D14. Have you engaged in any of the following, with a specific focus on farm animal welfare, in the last five years?

Please select one response for each item

[ACROSS TOP OF GRID]
Have done it
Have not, but willing

Have not, and unwilling

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Attended an information meeting or hearing about farm animal welfare

Attended a rally for farm animal welfare

Joined a group or become a member of an advocacy organization for farm animal welfare

Shared information with family and/or friends or made a post on Facebook/Twitter about farm animal welfare

Started paying more attention to media reports about farm animal welfare

Voted for a particular politician due to their position on farm animal welfare

Written to a politician, councilor or editor of a publication; posted online comments in response to media stories; signed a petition; and/or used a toll-free telephone number to register your point of view about farm animal welfare

Completed public surveys like this one about farm animal welfare

Gave a presentation in formal public meetings about farm animal welfare

D15. In the last five years, are you aware of any meetings, public hearings, surveys (other than this one), rallies, or other public or formal opportunities to communicate with stakeholders in your province about farm animal welfare?

Please select one response only

No – none
Yes – one or two
Yes – three or more

D16. Please indicate if there are any barriers to you participating in farm animal welfare discussions or activities.

Please be detailed and specific in your response

[VERBATIM RESPONSE] [INSERT LARGE TEXT BOX]
No response

SECTION D: FARM EXPERIENCE [DO NOT SHOW HEADING]

In this section we would like to learn about any farm experience you may have

D1. Which describes most accurately where you grew up?

Please select one response only

A farm
A rural area
Suburban area of city
Downtown area in a city
Other (Please specify)

D2. Which of the following best describes your experience on a farm?

Please select one response only

I have lived on a farm in the past or currently live on a farm

I have visited a farm

I have never visited a farm or lived on a farm

[ASK D3 IF I HAVE VISITED A FARM AT D2]

D3. How many times have you visited a farm?

Please select one response only

Once

Twice

Three times

More than three times

[ASK D4 IF I HAVE VISITED A FARM OR I HAVE LIVED ON A FARM AT D2]

D4. Which of the following describes your experience taking care of a farm animal (e.g. feed, clean housing, etc.)

Please select all that apply

I have raised or owned livestock

I have taken care of a farm animal(s)

I have not taken care of a farm animal(s)

SECTION E: AGRICULTURAL KNOWLEDGE [DO NOT SHOW HEADING]

The following questions are meant to assess your knowledge about different aspects of agriculture. Pease answer all questions to the best of your ability.

E1. Compared to your friends and family how would you rate your knowledge about modern agriculture?

Please select one response only

I know nothing

Much less

About the same

A bit more

A lot more

E2. How much do you believe you know about the following aspects of modern livestock agriculture?

Please select one response for each item

[ACROSS TOP OF GRID]

Nothing
Not much
A medium amount
Quite a bit
A lot

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Beef cattle production
Dairy production
Egg production
Chicken meat production
Pork meat production

E3. To what extent do you agree or disagree with the following statements about modern animal agriculture?

Please select one response for each item

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral
Agree
Strongly agree
Don't know

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Farm animals are confined all year round
Farm processes are too mechanized
Animal stocking densities are too high
Takes good care of individual animals
Animal agriculture relies a lot on research and innovation

[DISPLAY E4 TO E11.1 ON THE SAME SCREEN IN A GRID WITH QUESTION ON THE LEFT AND CERTAINTY ON THE RIGHT]
Please answer the following questions to the **best of your knowledge**.

E4. Which of the following is **not** an advantage of using a no-till (tillage) system? (No or zero tillage systems are systems of planting without disturbing the soil through the use of chisel plows, field cultivators, discs and ploughs, instead seeds are inserted in small slits).

Please select one response only

Plant material on the soil's surface prevents erosion by water and wind

Reduces soil compaction

Reduces the risk of runoff of nutrients

Encourages earthworms

Soil retains more moisture

Reduces risk of disease from crop residues

E4.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E5. Crop rotation is practiced for the following reasons **except…?** (Crop rotation is the system of successive planting of varying crops on the same piece of land in a definite sequence or cycle).

Please select one response only

To minimise pest population build up

To improve soil health,

To avoid pesticide resistance issues,

To diversify the crops grown

To improve soil aeration

E5.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E6. What is the average size of beef cow herds in Canada?

Please select one response only

Less than 30

50-70

100-150

Over 500

E6.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E7. How much water do you think a full-grown beef cow will drink each day?

Please select one response only

Less than 9 litres
10-20 litres of water
40-60 litres of water
Over 100 litres of water

E7.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E8. Approximately how many days does it take for a fertilized chicken egg to hatch?

Please select one response only

7 days
14 days
21 days
28 days
35 days

E8.1 How certain are you of your response?

Certain
Somewhat certain
Not at all certain

E9. Chickens for meat consumption are typically slaughtered at what age?

Please select one response only

1-2weeks
3-4 weeks
5-6weeks
9-10weeks

E9.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E10. At what age are practices such as castration and tail clipping in pigs usually carried out? (Castration is the removal of the testicles in male pigs. Tail clipping is the removal of a part of the pigs tail).

Please select one response only

From birth to 3 weeks

3weeks to 6 weeks

6 weeks to 9 weeks

9weeks to 12 weeks

At any age

E10.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

E11. The gestation period for pigs is approximately: (The gestation period is the time period from conception until birth).

Please select one response only

75 days

115 days

140 days

180 days

E11.1 How certain are you of your response?

Certain

Somewhat certain

Not at all certain

SECTION F: ATTITUDES AND PROFILE [DO NOT SHOW HEADING]

The following questions are meant to tell us more about yourself.

F1. Please indicate if you agree or disagree with the following statements.

Please select one response for each item

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral
Agree
Strongly agree
Prefer not to say

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

I consider myself more ethical than most people I know

Religion\spirituality plays an important role in my life and guides my decisions

Would you describe your political views to be…?

Please select one response only

Primarily liberal

Somewhat liberal

Moderate

Somewhat conservative

Primarily conservative

Don't know

Please indicate whether you agree or disagree with the following statements

[ACROSS TOP OF GRID]
Strongly disagree
Disagree
Neutral
Agree
Strongly agree

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Humans have the right to modify the natural environment to suit their needs

Humans were meant to rule over the rest of nature

Plants and animals have as much right as humans to exist

Here we briefly describe some guiding principles that may or may not matter to you. Please read each principle and think about how important each statement is as a guiding principle in your life.

Please select one response for each item

[ACROSS TOP OF GRID]
Not at all important
Not very important
Neutral
Somewhat important
Very important

[DOWN SIDE OF GRID – RANDOMIZE ORDER]

Leading an exciting life filled with stimulating experiences

A world at peace, free of war and conflict

Being influential, having an impact on people and events

Family security, safety for my loved ones

Leading a varied life, filled with challenges, novelty and change

Showing self-discipline, self-restraint, resistance to temptations

Having authority, the right to lead or command

Equality, equal opportunity for all human beings

Having wealth, material possessions, and money

Social justice, correcting injustice, and caring for the weak

Honouring parents and elders, showing respect

Being curious, interested in everything and exploring

Do you use any of the following social network sites?

Please select all that apply

Twitter

Instagram

LinkedIn

Snapchat

Tumblr

Google+

Pinterest

Facebook

None of the above

[IF NONE OF THE ABOVE, SKIP TO DEMOGRAPHICS]

On average, how much time do you spend daily on a social networking sites?

Please select one response only

Less than an hour

An hour

2 to 3 hours

4 to 6 hours

Over 6 hours

What do you use social media for?

Please select all that apply

To find information

To form an opinion

To engage in discussions

To socialize

To get professional contacts

To share pictures/videos/music

To keep in touch with family and friends

None of the above

DEMOGRAPHICS [DO NOT SHOW HEADING]

The final few questions allow us to group responses and to sort the information we collect. All your responses will be held in strict confidence and will not be attributed to you.

Demo1. Do you work in any of the following?

Please select all that apply

Agriculture industry (e.g. production, retailer, marketing)
Food processing and wholesaling
Agriculture Research
Grocery/retailing
Food or Agricultural Inspection Food Standards
Government Regulation (agriculture)
Market research
None of the above

Demo2. Are you involved in any of the following?

Please select all that apply

Livestock services (e.g. Animal health, feed, genetics or pharmaceutical supplier)
Livestock production/Farming
RSPCA
Meat processing
Meat wholesaling
Meat retail
Meat marketing /Advertising
Chef/Restaurant/Hospitality
Other Animal Welfare Organisations
None of the above

Demo3. Are you a pet owner?

Yes
No

Demo4. Did your family have a pet when you were growing up?

Yes

No

Demo5. How would you describe environment you live in?

Please select one response only

Urban area

Suburban area

Rural area

Prefer not to say

Demo6. As you know, we all live in Canada, but we come from many different ethnic backgrounds. What is your **main** ethnic background(s)?

Please select all that apply

British (English/Scottish/Welsh/Irish)

Western European (from Austria, Belgium, France, Germany, Netherlands, or other)

Southern or Eastern European (from Greece, Italy, Portugal, Spain, Bosnia, Croatia, Serbia, Czech Republic, Hungary, Poland, Slovakia, Ukraine, former Soviet Republics, or other)

South Asian (Punjabi, Indian, Tamil, Sri Lankan, Pakistani, Bangladeshi, Nepalese)

East or Southeast Asian (from China, Hong Kong, Japan, North or South Korea, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam or other)

West Asian or Middle Eastern (from Afghanistan, Iran, Iraq, Israel, Lebanon, Saudi Arabia, Syria, Turkey or other)

African

Central/South American or Caribbean (from Argentina, Brazil, Columbia, El Salvador, Guatemala, Mexico, Venezuela, Barbados, Jamaica, or other)

Aboriginal/First Nations/Métis

Canadian/French Canadian

African American

Other (Specify)

Prefer not to say

Demo7. Were you born in Canada?

Please select one response only

Yes

No

Prefer not to say

[ASK Demo8 IF NO AT Demo7]

Demo8. For how many years have you lived in Canada?

Please enter a whole number. If less than one year, please enter 0.

[NUMERIC RESPONSE. RANGE: 1 TO 100]

Prefer not to say

Demo9. What is the highest level of education you have completed?

Please select one response only

Some Grade School or High School

High School Diploma or equivalent

Trade Certificate or Technical School diploma

Some College or University

College degree or diploma

University undergraduate degree

University graduate degree (e.g. Masters, PhD, MD)

Prefer not to say

Demo10. Which of the following best describes your employment status?

Please select one response only

Employed - full-time (30 hours or more per week)

uEmployed - part-time (less than 30 hours per week)
Self-Employed - full-time (30 hours or more per week)
Self-Employed - part-time (less than 30 hours per week)
Retired
Full-time student
Part-time student
Military
Full-time parent/ Homemaker
Not currently employed
Prefer not to say

Demo11. What is your marital status?

Please select one response only

Single, never married

Living with a partner

Married

Widowed

Divorced or separated

Prefer not to say