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**The Determinants of Consumer Confidence in Credence Attributes:  
Trust in the Food System and in Brands**

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**Abstract** – Given the credence nature of food quality and food safety attributes, consumers rely on abstract systems of regulation as well as quality signals such as brands to make informed choices. Motivated by the need to further investigate what influences consumer confidence in credence attributes, this paper develops a conceptual framework in which trust in the food system (i.e. government, farmers, manufacturers, and retailers) and brand trust are posited to influence public confidence in credence attributes. The proposition is tested using Structural Equation Modeling techniques based on survey data from a sample of Canadian consumers of fresh chicken meat and of packaged green salad. Survey results indicate that while both trust in the food system and brand trust are positively associated with consumer confidence in credence attributes, the influence of system trust on public confidence is more pronounced than the effect of trust in individual food brands. The effect of brand trust also appears to vary across product categories. The paper offers insights into the use of SEM to model the complexity underlying the determinants and outcomes of trust within food networks.

**Key words:** brand trust, structural equation modelling, food safety, food quality, chicken, salad

**The Determinants of Consumer Confidence in Credence Attributes:  
Trust in the Food System and in Brands**

**1. Introduction**

The extent to which consumers trust the food system and, in particular, how food brands affect confidence in quality attributes remains an open question. While consumers are increasingly demanding safer and healthier food, they cannot easily assess these attributes due to their credence nature. Furthermore, consumers cannot determine with certainty if the food produced through increasingly complex food systems meets their quality expectations with respect to how the food was produced. Thus, an important element of confidence in food is a matter of consumer trust in abstract systems of regulation and codes of practice as well as in quality signals such as brands (Caswell and Mojduszka, 1996; Yee and Yeung, 2002; Berg et al. 2005; Romanowska, 2009; Drescher et al., 2011). As such, there is a need for consumers to rely with confidence on market actors to supply safe food that also meets their quality expectations.

Trust has been recognized as having a crucial role in consumer purchasing decisions and product loyalty, however, only recently has more attention been given to the notion of trust in the relationship between business and the consumer. Most of the empirical studies on the evaluations of trust are business to business in nature (Yee and Yeung, 2010). Indeed, there is a vast literature dealing with institutional and organizational trust within a business to business frame, including contributions from psychology, sociology, economics, marketing and management. From a food economics perspective, recent empirical research (e.g., Frewer et al., 1996; Dierks and Hanf, 2006, De Jonge et al., 2008a; 2008b; Innes and Hobbs, 2011; Uzea, Hobbs and Zhang, 2010; Goddard et al., 2013) that has investigated public trust in quality signals and in different sources of information. For instance, Yee and Yeung (2010) study the factors that build

consumer trust in British livestock farmers regarding food safety and whether consumer trust positively affects purchase likelihood for meat. Ding, Veeman and Adamowicz (2011) examine the influence of generalized trust on consumer reactions to a series of three *Bovine spongiform encephalopathy* (BSE) events in Canada in 2003 and 2005. Results show that Canadian households who do not trust the information sources are more sensitive to food risks than those who trust. Similarly, Innes and Hobbs (2011), Uzea, Hobbs and Zhang (2010) examine Canadian consumer trust toward different organizations (government, industry, independent third parties) for quality assurance in terms of environmental sustainability and animal welfare, respectively. Both studies find that although trust varies across these organizations, government garners the most trust in terms of verification and knowledge of standards. This finding is also supported by Goddard et al. (2013) who emphasize the leading role of public authorities in assuring product quality in the Canadian food market and its importance in enhancing consumer trust. While these studies found significant heterogeneity among Canadian consumers with respect to trust in different food actors in isolation, public trust in the food system as a whole remains unclear and appears to be worthy of investigation in the context of the food system-consumer relationship.

In addition to trust in the food system, consumers rely also on quality signals, such as brands, to form expectations about the product's performance. Some studies (e.g., Innes and Hobbs, 2011; Uzea, Hobbs and Zhang, 2010) recognize the significant role of brands in affecting consumer trust, but do not analyse the concept in any depth. De facto, and despite the increase in food brands particularly private label store brands, "brand trust" is still a relatively unexplored concept in the food economics literature. Thus, this paper explores the concept of brand trust, its influence on consumer confidence in credence qualities and on the development of brand loyalty. This paper draws upon signaling theory from the Economics of Information literature in

recognizing the informational aspects of a brand as a quality cue. A brand is a quality signal on which consumers may rely to form expectations about quality and food safety.

The paper focuses on how trust in the food system and in brands contributes to public confidence in credence qualities. In addition to the considerable amount of attention given to institutional trust, a number of researchers have examined trust in the context of food safety and risk perceptions (e.g., Peters, Covello and McCallum, 1997; De Jonge et al., 2004, 2007, 2008a, 2008b; Berg et al., 2005; Dierks, 2005; Saghaian and Shepherd, 2009; Ding, Veeman and Adamowicz, 2011; Goddard et al., 2013). It is evident that food crises contribute to the erosion of consumer confidence in food safety. Indeed, the literature suggests an inverse relationship between trust and perceived risk (Siegrist, Cvetkovich and Roth, 2000; Eiser, Miles and Frewer, 2002). However, consumer confidence in food is not only limited to safety attributes. In fact, “there is evidence that consumers are concerned about production-related aspects beyond specific food safety incidents” (Drescher et al., 2011: 3). As such, this paper looks at trust from a broader dimension that includes other quality attributes of which food safety is a component.

The research premise here is that consumer confidence in food safety and quality attributes is built when consumers have trust in food actors and in brands. Hence, consumers tend to have a positive intent to purchase. Stated differently, public trust (related to values and intentions) in the food system and in brands may evolve to confidence (related to performance) resulting from positive experiences and ongoing satisfaction and lead to consumer loyalty. By combining the effect of trust in the food system and the influence of brand trust on consumer confidence, this study endeavours to contribute to the understanding of consumer confidence in credence qualities from a food economics perspective.

The remainder of the paper is organized as follows: section 2 presents a review of literature on the determinants and outcomes of consumer confidence in credence attributes. A set of eight hypotheses mapping the key expected relationships between consumer confidence, trust in the food system, brand trust, purchase intentions and brand loyalty are developed. Section 3 presents the process of data collection and measures. The hypotheses are tested using a Structural Equation Model (SEM) of which the results are discussed in section 4. The paper concludes in section 5 with a discussion of the implications of the analysis. Limitations are also identified and recognized.

## **2. Literature review and hypotheses**

The underlying conceptual model for this analysis explores a number of postulated relationships between the drivers and the outcomes of consumer confidence in food quality and food safety attributes. These relationships are presented below.

### ***Determinants of Consumer Confidence in Credence Attributes***

In the food industry, confidence is rooted in the quality of products and trust in the supply chain. As such, confidence in food attributes refers to trust that is embedded in food products and brands as well as to the main actors that provide these final consumer products. As Poppe and Kjærnes (2003: 16) point out “when we talk about trust in food the underlying understanding is that food is not merely a material and biological “thing” (...) above all, the food eaten is the outcome of what has been done with it at all stages of production and distribution until it ends up on somebody’s plate”. The belief that consumer confidence in credence attributes is dependent on the degree to which consumers trust actors within the supply chain (government, farmers, processors and retailers) with responsibility for food safety and food quality is supported by a host of studies (Frewer et al., 1996; Rousseau et al., 1998; Grunert, 2002; Berg et al., 2005;



Dierks and Hanf, 2006; De Jonge et al., 2004, 2007, 2008a, 2008b; Kjærnes, Harvey and Warde, 2007). For instance, Grunert (2002: 284) suggests that “consumers may infer the extent to which they trust the safety of a product from their general beliefs about regulators, producers and distributors”. Similarly, Kjærnes, Harvey and Warde (2007) argue that trust in food is primarily the result of trust in pertinent and particularly powerful actors involved in its production, delivery and regulation.

In the context of increasingly complex food systems, with consumers considerably removed from the source of production, trust in the food system as an abstract concept becomes more important. This is what Kjaernes and Dulsrud (1998) describe as “structural” or “system oriented” trust. According to Greenberg and Elliott (2009: 194), “trust in the abstract system of food production takes the form of a faceless commitment”. Building on these insights, this paper posits that consumer confidence in food attributes is affected directly by: (i) system-oriented trust (i.e. trust in the food system including regulatory institutions and market actors within the food chain) and (ii) by brand-oriented trust. This means that trust (which involves risk of disappointment and uncertainty) may evolve into confidence (which involves specific knowledge and faith). As such, it is postulated that:

*Hypothesis 1: Food system-oriented trust increases consumer confidence in credence attributes.*

*Hypothesis 2: Brand trust increases consumer confidence in credence attributes.*

Trust in brands, and more generally in food products, is expected to depend on the trust placed in the different actors within the food system. This led Sodano (2002: 7) to argue that: “Consumers who pay a premium price for high quality products which have quality

characteristics they can check neither before nor after the purchase, need a certain amount of “blind” trust in suppliers.” As such, it is anticipated that:

*Hypothesis 3: Trust in the food system increases brand trust.*

### ***Outcomes of Consumer Confidence in Credence Attributes***

It has been recognized that trust predicts future intentions, guides consumers’ decision-making and influences customer loyalty (e.g., Moorman, Deshpandé and Zaltma, 1993; Morgan and Hunt, 1994; Garbarino and Johnson, 1999; Yee, 2002). In fact, by investing in branding strategies, firms seek to build and sustain brand loyalty as a way to gain consumers’ trust (Sodano, 2002). For instance, Yee and Yeung (2002) found a significant and positive causal relationship between consumer trust in livestock farmers and their likelihood of purchasing meat, while in an analysis of over 100 food and non-food brands Chaudhuri and Holbrook (2001) found a strong positive relationship between brand trust and brand loyalty. In other words, brand trust appears to serve as a key determinant of brand loyalty. According to Morgan and Hunt’s Commitment-Trust theory (1994), brand trust leads to brand loyalty because trust creates highly valued relational exchanges. Thus, purchase intentions and brand loyalty are modelled as direct outcomes of (system- and brand-oriented) trust and consumer confidence in credence attributes.

In this paper, brand loyalty refers to the willingness of a consumer to repurchase a product or the brand. It is the deeply held commitment to repurchase a preferred product or a brand consistently in the future. It is expected that this commitment is generated by a certain level of trust in the food system and in brands. In fact, if consumers hold a positive attitude toward the food system (say they perceive it as trustworthy) or toward particular food products, then perceived uncertainty will be reduced. In contrast, if consumers have a low level of trust, this might discourage the decision to purchase presently or repurchase in the future. Thus, it is

anticipated that both trust in the food system and consumer confidence in credence attributes enhance purchase intentions and lead to brand loyalty. Hence, it is postulated that:

*Hypothesis 4: Consumer confidence in credence attributes increases purchase intentions.*

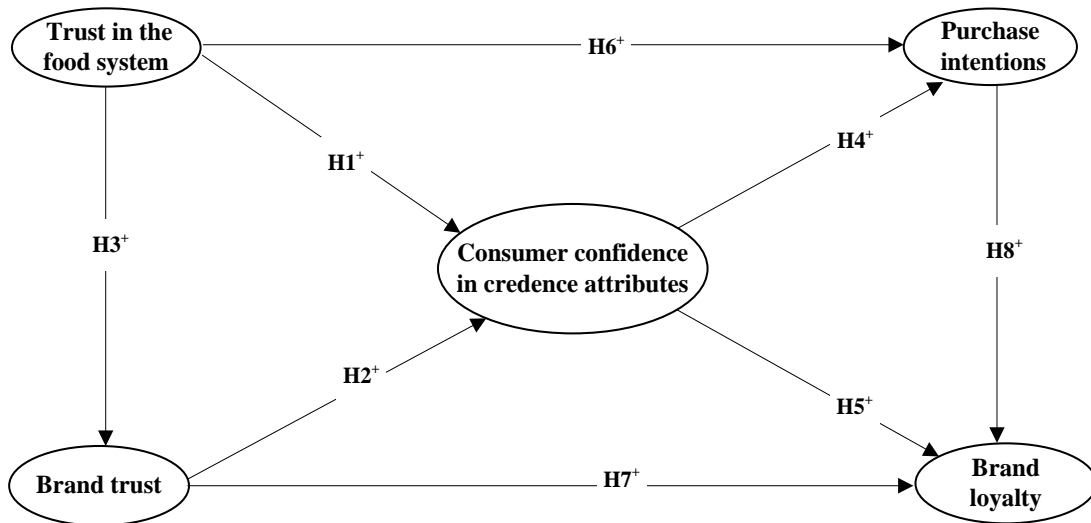
*Hypothesis 5: Consumer confidence in credence attributes increases brand loyalty.*

*Hypothesis 6: Trust in the food system increases purchase intentions.*

*Hypothesis 7: Brand trust increases brand loyalty.*

*Hypothesis 8: Positive purchase intentions increase brand loyalty.*

The postulated determinants and the consequences of consumer confidence in food safety and quality attributes are captured in Figure 1 below. Hypotheses 1, 2 and 3 describe the postulated relationships between trust in the food system, brand trust and consumer confidence in credence attributes. Hypotheses 4 through 8 describe the postulated outcomes of public trust and confidence.



*Figure 1: Determinants and consequences of consumer confidence in credence attributes*

### 3. Data Collection and Measures

A two-phase procedure to developing a Structural Equation Model (SEM) as proposed by Anderson and Gerbing (1988) is used to test the proposed relationships in Figure 1. A SEM is an estimation technique for a series of separate multiple regression equations estimated simultaneously. A SEM comprises two components: a measurement part that describes the relationship between latent variables and their observed indicators, and a structural part that specifies the causal dependencies between the constructs, represented by H1 to H8.

Data for the SEM were gathered through an online survey of Canadian consumers conducted in July 2012. The survey was administered nationally to a survey panel managed by a market research company, with respondents given the option to respond in either English or French. The survey was designed to elicit items for the constructs in the model and focused on fresh chicken meat and packaged green salad. Within the chicken sample (N=461), 70% of respondents purchased generic chicken and 30% purchased branded fresh chicken<sup>1</sup>. These proportions are not surprising as an estimated 94% of Canadian fresh chicken was sold as a generic product in 2007 (Goddard et al., 2007), although branded chicken products are becoming more common. For salad, the majority of respondents (70%) buy branded packaged green salad<sup>2</sup>. The purchasers of non-branded products were asked to give their opinions about branded chicken and salad products.

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<sup>1</sup> About 65% of the respondents buy national brands such as *Maple Leaf*, *Lilydale*, *Exceldor*, *Granny's* and *Maple Lodge*. *Maple Leaf* emerges as the most frequently purchased brand, followed by *Lilydale*. Thirty percent of those who buy chicken brands purchase private labels such as *President's Choice* (Real Canadian Superstore/Loblaw's), *PC Bleu Menu*, *Compliments* (Sobeys/IGA) and *Safeway*.

<sup>2</sup> About 75% of the respondents bought national brands while 25% purchased retailer private label (store) brands. *Dole*, *Fresh Express* and *Earthbound Farm Organic* were among the most purchased manufacturer brands with 33%, 15% and 10% of respondents purchasing these brands, respectively. *President's Choice* and *Compliments* were the most purchased retailer private label brands.

The reasons for choosing fresh chicken and packaged salad include the recent well-publicized food safety incidents regarding chicken and salad products in North America (e.g., the widespread recall of bagged spinach in 2008, a 2012 recall of bagged salad by *Dole*), the increased consumption of chicken (ALMA report, 2012) and of refrigerated bagged salads in Canada (ACNielsen, 2003), and the increased differentiation of fresh chicken products and salad greens.

Both samples were closely representative of the Canadian population in terms of median age and regional distribution, yet had a slightly higher proportion of female respondents, reflecting the fact that females likely remain the dominant primary food shoppers. As well, the samples are slightly biased toward higher income and better-educated respondents, which is to be expected with an internet-based survey. Table 1 provides a detailed description of the survey samples in comparison to the Canadian population.

<i>Demographics</i>	<i>Chicken</i>	<i>Salad</i>	<i>Canadian population</i>
<b>Gender</b> (Female)	57%	61%	51% <sup>b</sup>
<b>Age</b> (Median)	44 years	44 years	40.6 years <sup>a</sup>
<b>Income</b> (Mean)	\$62,905	\$65,000	\$55,500 <sup>b</sup>
<b>Number of children &lt;18 in household</b>	.84	.72	1.1 <sup>c</sup>
<b>Education</b>			
High school and less	33.8%	34.90%	52.60% <sup>d</sup>
Technical/College/University	53%	53.11%	42.51% <sup>d</sup>
Graduate studies	10.85%	11.83%	4.91% <sup>d</sup>
<b>Geographic distribution</b>			
Eastern Canada	3.7%	4.27%	4.50% <sup>a</sup>
East-Central (QC+ON)	62.26%	61.95%	61.92% <sup>a</sup>
West-Central (Prairies)	18%	18.16%	17.66% <sup>a</sup>
Western Canada (BC)	13.23%	13.12%	13.26% <sup>a</sup>
Territories	2.81%	2.58%	2.66% <sup>a</sup>

*Table 1: Sample information compared to the Canadian population*

Notes:

<sup>a</sup> Statistics Canada (2011b)

<sup>b</sup> Statistics Canada (2011a)

<sup>c</sup> Statistics Canada (2006)

<sup>d</sup> Statistics Canada (2012)

## *Measures*

The survey explored respondents' general perceptions of the players within the food system (i.e. government, farmers, food processors and food retailers), and purchasing habits for fresh chicken and bagged salad products, including identifying the brand that a respondent purchased most often. Respondents were asked to consider their primary chicken or bagged salad brand when responding to the brand perception questions. Accepted measures from marketing and psychology were used to examine the hypothesized relationships in Figure 1, with adjustments to the wording to capture the context of food attributes.

The model encompasses five latent variables that were measured as follows. Trust in the food system was examined with two measures: perceptions of the trustworthiness and the reliability of the food system (e.g., Lau and Lee, 1999). These measures are described in Table 2. Brand trust was also measured using a two-item scale previously used by Delgado-Ballester and Munuera-Aleman (2001) tapping respondents' perceptions of the quality and safety of the product. Confidence in food attributes was gauged with a three-item Likert scale measuring a consumer's certainty, optimism and familiarity with the product's quality and safety (De Jonge et al, 2008a). Adapted from Quester and Lim (2003), brand loyalty was examined as a three-item scale related to commitment to a brand. Finally, a two-item scale measuring purchase intentions was also constructed for this study. Most items were measured on five-point scales with the following anchor points: "Strongly disagree", "Disagree", "Neutral", "Agree" and "Strongly agree". A "Prefer not say" was included to avoid biased results from forced choices.

## 4. Results

### *Measurement model*

The measurement model describes the relationship between latent variables and their observed indicators, therefore it is first necessary to assess the fit and the validity among the construct measures. To do so, the covariance structure of the five-factor measurement model was estimated using Amos 20, a SEM program. Two items were removed as their corresponding standardized loadings were below the minimum recommended cut-off of .30 (Nunnally, 1978; Byrd and Turner, 2000). The purified scales were retested for reliability and validity, with the results shown in Table 2.

In addition to the normalised Chi-square (CMIN/DF), model fit was assessed via the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Values  $\geq 0.90$  have been recommended for CFI, and values  $\leq 0.08$  have been recommended for RMSEA (Browne and Cudeck, 1993; Hu and Bentler, 1999). For the chicken and salad products, the estimated measurement model shows a satisfactory fit (CMIN/DF=2.094, CFI=.985, RMSEA=.034). In terms of construct reliability, all constructs exhibit good composite reliability exceeding the threshold of .70 except for purchase intentions and brand loyalty (Nunnally, 1978). Similarly, the extracted variances are above 50% for confidence, system trust and brand trust, thereby demonstrating that the variance accounted for by the scale is larger than the variance due to measurement error (Fornell and Larcker, 1981). In sum, the measurement model can be supported.

<i>Item description</i>	<i>Standardized loading</i>		<i>Reliability</i>			
			<i>Composite reliability</i>		<i>Average variance extracted</i>	
	<i>Chicken</i>	<i>Salad</i>	<i>Chicken</i>	<i>Salad</i>	<i>Chicken</i>	<i>Salad</i>
<b>Consumer confidence</b>			.819	.798	.694	.664
1. How certain are you about the quality and safety of the chicken/salad you buy?	.85	.84				
2. How optimistic are you with the overall quality of the chicken/salad you will buy in the future?	.81	.78				
3. How knowledgeable do you consider yourself about the overall quality of the chicken/salad you buy?			Dropped due to its low reliability			
<b>System trust</b>			.953	.890	.910	.890
1. In general, I can rely on the food system to provide high quality chicken/salad.	.93	.93				
2. In general, I think that the food system can be trusted to assure that chicken/salad is of high quality.	.95	.97				
<b>Brand trust</b>			.843	.867	.730	.766
1. I think that the chicken/salad brand I buy can be trusted for its high quality.	.83	.84				
2. I think that the chicken/salad brand I buy has reliable quality.	.87	.91				
<b>Purchase intentions</b>			.324	.280	.194	.163
1. I think that the chicken/salad brand I buy has consistent overall quality.	.45	.42				
2. Suppose the media reported the presence of salmonella in the chicken/salad you buy regularly. How likely are you to avoid purchasing that product completely for some time after the story has left the news?	.43	.38				
<b>Brand loyalty</b>			.480	.449	.321	.295
1. As long as I am satisfied, I will usually stick with purchasing the same chicken/salad brand.	.62	.61				
2. When the chicken/salad brand I usually buy is not available in my usual shopping store, I go and look for it in another store.	.47	.45				
3. When another chicken/salad product or brand is having a sale, I generally buy it instead of my usual product or brand. [reverse coded]			Dropped due to its low reliability			

*Table 2: Measurement and reliability of Constructs*

### ***Structural model***

The postulated structural model, specifying the causal dependencies between the constructs (hypotheses H1 through H8) was estimated. The Maximum Likelihood estimation of the model yielded a good overall fit to the data (CMIN/DF=2.106, CFI=.984, RMSEA=.035),



thereby confirming that the proposed theoretical network of relationships fits the data (Figures A1 and A2 in the appendix present the estimated models). As Table 3 shows, six of eight paths were significant for chicken (H1, H2, H6, H7, and H8), and four of eight for salad (H1, H3, H6, and H7). The model explained more than 40% of the variance of each of confidence, brand trust and brand loyalty. As such, there is support for a number of the relationships within the hypothesized model depicted in Figure 1, with some apparent product-specific effects.

<i>Paths</i>	<i>chicken</i>		<i>Salad</i>	
	<i>Path estimate</i>	<i>P-value</i>	<i>Path estimate</i>	<i>P-value</i>
H1: System trust → Consumer confidence	.46	***	.61	***
H2: Brand trust → Consumer confidence	.22	.002	-.01	.891
H3: System trust → Brand trust	.69	***	.71	***
H4: Consumer confidence → purchase intentions	-.06	.600	-.04	.746
H5: Consumer confidence → brand loyalty	.14	.114	.17	.182
H6: System trust → purchase intentions	.35	.002	.38	.002
H7: Brand trust → brand loyalty	.33	***	.34	***
H8: Purchase intentions → brand loyalty	.40	.004	.17	.272

*Table 3: Results of the hypotheses testing*

\*\*\*: < .001

**H1: Trust in the food system and consumer confidence**

The current findings provide strong support for the hypothesized relationship (H1) between confidence in credence attributes and trust in the food system for chicken ( $\beta_{\text{stand}}=.46$ ,  $p<.05$ ) and salad ( $\beta_{\text{stand}}=.61$ ,  $p<.05$ ). For chicken (salad), when system trust goes up by 1 standard deviation, consumer confidence in credence attributes goes up by 0.47 (.61) standard deviations, indicating that the more consumers confer trust in actors of the food chain, the more confident they are about the quality of chicken (packaged salad).

The result lends support to extant findings reported from different studies in the food context, showing that a higher level of institutional trust is associated with higher levels of confidence in food (e.g., Berg, 2004; De Jonge et al, 2004; De Jonge et al., 2006; De Jonge et al., 2008b). According to De Jonge et al. (2004: 840), “trust in regulators and actors in the food chain is a minimum requirement for confidence in the safety of food, assuming such trust is one of the mechanisms by which confidence is created and sustained.” On the other hand, the current result suggests that when trust in the food system is damaged, it causes erosion in consumer confidence in food.

### **H2: Brand trust and consumer confidence**

While the hypothesized relationship between confidence and brand trust is confirmed for chicken ( $\beta_{\text{stand}}=.22$ ,  $p=.002$ ), it is rejected for salad ( $\beta_{\text{stand}}=-.01$ ,  $p=.891$ ). The finding reveals that a higher degree of trust in chicken brands tends to increase consumer confidence in the quality and safety attributes of chicken. This result aligns with those of Bredahl (2003) who shows, in an analysis of the use of quality cues with regard to branded beef, that brand is the predominant quality signal for consumers to form expectations about the healthiness and the eating quality of unprocessed meat brands. However, the present results suggest that consumers’ trust in salad brands is not a significant predictor for confidence in food attributes. This means that the degree to which trust in brands influence consumer confidence depends upon the category of the food product (meat versus produce) and perhaps on the range of the brands available on the market. Potential explanations of the variability in results are further explored in section 5.

A comparison between the effect of system trust and brand trust on public confidence in chicken indicates that the impact of trust in the food actors as a group is twice the effect of brand trust. As such, public trust in the food system appears to be more influential in leading to

confidence in credence attributes than trust in individual food products. While brands as signalling mechanisms are useful, perhaps trusting them is not sufficient for consumers to make confident expectations about credence qualities and may not work for every food category. According to Singh and Sirdeshmukh (2000), as the relationship between a consumer and an agent evolves (through repetitive purchase), consumers rely more on trust expectations than on the provided signals (e.g., brands) and premiums to judge product quality. Furthermore, the authors speculate that “for ongoing exchanges, the trust mechanism for affecting performance expectations and price perceptions will be increasingly more prominent relative to the influence of signaling investments and price premiums established by market agents” (Singh and Sirdeshmukh, 2000: 164).

### **H3: Trust in the food system and brand trust**

Results from both products indicate that trust in the food system has a positive and significant impact on brand trust, which supports H3. Furthermore, the magnitude of the influence is about the same for both products:  $\beta_{\text{stand}}=.69$  with  $p<.05$  for chicken and  $\beta_{\text{stand}}=.71$  with  $p<.05$  for salad. This infers that increased trust in the actors within the food supply chain fosters consumer trust in food brands, regardless of the type of product. In fact, previous work suggests that most Canadians assume that production standards and practices adopted in the Canadian system adhere to strict guidelines that are well enforced, allowing them to have more confidence in food (AAFC, 2007).

### **H4: Consumer confidence and purchase intentions**

Unexpectedly, the influence of confidence on purchase intentions is not significant for either chicken ( $\beta_{\text{stand}}=-.06$ ,  $p=.60$ ) or salad ( $\beta_{\text{stand}}=-.04$ ,  $p=.75$ ), which does not validate H4. This reveals that positive purchase intentions are better explained by trust in the food system rather

than by reliability on food attributes. Perhaps for consumers who are uncertain about the overall quality of the food products, trusting the food system appear to be more important than trusting food products.

**H5: Consumer confidence and brand loyalty**

The effect of consumer confidence on brand loyalty was not significant for either product ( $\beta_{\text{stand}}=.14$ ,  $p=.114$  for chicken;  $\beta_{\text{stand}}=.17$ ,  $p=.182$  for salad). This hints that consumer confidence is not an important predictor for brand loyalty for the produce and the meat categories, thereby rejecting the postulated relationship of H5. The finding suggests that confidence in food quality and food safety may be not sufficient to secure brand loyalty, a result supported also by Tan, Hishamuddin and Devinaga (2011) in the context of fast food brands. As such, loyalty does not flow automatically from confidence in individual brands.

**H6: Trust in the food system and purchase intentions**

As theorised, the path coefficient for hypothesis H6 is significant for both chicken ( $\beta_{\text{stand}}=.35$ ,  $p<.05$ ) and salad products ( $\beta_{\text{stand}}=.38$ ,  $p<.05$ ), indicating that trust in the food system positively influences intent to purchase. This yields support to a number of previous studies reporting that trust in market actors such as retailers (e.g., Macintosh and Lockshin, 1997) or farmers (e.g., Yee, 2002) enhances purchase likelihood. For instance, in an EU project on “Food Risk Communication and Consumers’ trust in the Food Supply Chain”, Cavicchi et al. (2005) found that safety information provided by food chain actors (farmers, processors, retailers) has a very large positive impact on purchase intentions for chicken meat in Italy and France. Likewise, Yee (2002) shows a significant and positive causal relationship between consumer trust in livestock farmers and their likelihood of purchasing meat.

### **H7: Brand trust and brand loyalty**

The direct path coefficient between brand trust and brand loyalty reveals significant support for H7 for the chicken ( $\beta_{\text{stand}}=.33$ ,  $p<.05$ ) and the salad products ( $\beta_{\text{stand}}=.34$ ,  $p<.05$ ). The result implies that trusting a brand tends to be an influential factor in establishing brand loyalty. The finding aligns with previous marketing studies. For instance, Chaudhuri and Holbrook (2001) found a strong positive relationship between brand trust and brand loyalty based on a data set of 107 brands of 41 different product categories (ice cream, cheese, cereal, bacon, canned fruit, perfume, computers, gasoline, etc.).

### **H8: Purchase intentions and brand loyalty**

The relationship between purchase intentions and brand loyalty is corroborated for chicken ( $\beta_{\text{stand}}=.42$ ,  $p=.004$ ), but not for salad ( $\beta_{\text{stand}}=.21$ ,  $p=.162$ ). This result infers that purchase intentions enhance consumers' commitment to a particular brand of chicken but not to salad brands. The finding from the chicken sample is in line with a number of studies within the food and non-food contexts. For instance, in a study on "The antecedents of purchase intentions and its effect on brand loyalty of private label brand of Apparel," Gogoi (2013) found that purchase intentions have a significant impact on developing brand loyalty for a private label. The difference in results suggests that purchase and loyalty in the food context vary among product categories. More explanation on this discrepancy is discussed in section 5.

## **5. Discussion and Conclusions**

The analysis focused on consumer decision-making during the course of normal consumption rather than in response to a food safety crisis, which is useful in mapping baseline consumer perceptions about food quality and food safety. This paper finds evidence for a number

of the postulated relationships between trust, consumer confidence, brand loyalty and purchase intentions. Results were compared and contrasted with the existing research on trust from food and non-food contexts. Two key findings emerge from this analysis and deserve further discussion: (i) trust in the food system exhibits a stronger impact on consumer confidence than trust in food brands, and (ii) the effect of brand trust on public confidence and the impact of purchase intentions on brand loyalty differ across product categories.

The results suggest that trust in the food system is more pronounced in building consumer confidence than trust in brands. In other words, Canadian consumers appear to implicitly place more weight on trusting the actors involved in the food system than trusting individual food products and brands. It seems that the effect of brand trust on overall consumer confidence in food is marginal compared to the effect of trust in the food system as a whole. Because consumers cannot easily verify the credence qualities of food, they rely on those who have the responsibility to assure food quality and food safety. This implies that making the public well informed about the practices of the food system (e.g., good manufacturing and handling practices, preventive food safety controls) is a key element in gaining public trust and, ultimately, consumer confidence. As such, perhaps decision-makers would benefit by investing in building trust relationships with the public, for instance through transparent communication about the practices of the different actors comprising the food system.

Trust in market actors within the food system was significant for both products, yet survey results suggest that brand trust has an influence on consumer confidence in chicken but not for salad. Several implications flow from these results. While brands are useful signalling mechanisms, trusting the brand alone does not seem sufficient in the case of fresh produce to enhance consumer confidence in credence attributes. In fact, through repeated purchases,

consumers acquire knowledge that facilitates independent evaluations of the product. This likely reduces reliance on quality signals and enhances the role of trust expectations.

While not directly explored in the survey, a number of differences between raw chicken and packaged salad greens may explain the product-specific effects and could be explored in further research. These products differ substantially in terms of preparation and consumption contexts. For instance, consumers may be purchasing chicken as a main component of a meal, while salad is typically purchased as an accompaniment to a meal. It is possible that these different contexts influence how brand signals are perceived. Furthermore, bagged salad greens are usually precut and prewashed by the manufacturers or retailers, so they are ready-to-eat fresh and are consumed in their raw state. In contrast, consumers cook the raw chicken before consumption, which reduces the risk of foodborne pathogens (e.g., *E. coli*, *Salmonella*). Differences in the level of processing and the relative degrees of risk therefore also characterize these product categories.

The extent to which these differences affect underlying propensities to trust, and to trust brands, is an interesting question. Although it is not possible to determine from the survey data the extent to which survey respondents' perceptions of food safety risks differed across these product categories, this represents a potential area for future research in the context of trust. If indeed differing risk perceptions drive brand trust attitudes across product categories, it may be that communicating the produce safety standards and sanitation processes in use in the sector is important to fostering public trust in fresh produce brands.

With the gap in the literature on trust in food brands, the current findings related to brand trust contribute to the understanding of how food brands are perceived and how they contribute to overall public confidence in credence attributes. Nevertheless, certain limitations are of note

and provide scope for extensions to the research presented in this paper. First, psychographic characteristics, as well as demographics, could affect the strength of relationships in the model. For example, the relationships between consumer confidence and brand loyalty for salad could be affected by risk aversion. Do personal traits influence the likelihood of purchase and commitment to a particular brand? Other consumer characteristics (e.g., income, education) may also account for those who buy branded versus generic food products. Research that includes these variables is ongoing and may help extend our understanding of public trust perceptions and purchase responses.

Second, this paper looks at a broad spectrum of brands and does not distinguish between public perceptions of manufacturers' brands versus retailers' private label brands. As such, it remains unclear whether consumers buying food manufacturers' national brands perceive these brands differently than purchasers of retailers' private labels. Considering the recent trends showing higher levels of penetration and wider extension of national brands, and in particular private label brands, at leading grocery chains in North America, future research could investigate differences in consumer perceptions of store brands versus national food brands.

Third, the few extant studies that looked at trust in food chain actors found the level of public trust varies among actors, who may not behave in the same fashion (Peters, Covello and McCallum, 1997; De Jonge et al, 2006). These studies indicate that consumers place different levels of trust in actors within the food system and thus they are heterogeneous in the sense that they may perceive some actors as more trustworthy than others. Since the current analysis deals with trust in the food system as one entity rather than examining trust in separate food actors, it is not possible to determine which actor(s) are the most trusted. Applying the model to the food



actors in isolation would address this limitation and is a possible extension to the model presented in this paper, the focus of which was the food system as a whole.

Finally, one more extension of this research is to expand the treatment of the food system by considering other important players. While this paper focuses mainly on four actors directly involved in the food supply chain, trust in other key elements such as the scientific community, consumer groups, and the media is worthy of investigation. Indeed, consumers are expected to rely on brand images, labels, advertising and increasingly on social networks to form opinions and make informed consumption choices. Social media and social networks are gaining a progressively prominent role as a source of information and means of communication about food (e.g. twitter, Facebook, LinkedIn, YouTube, etc.). Furthermore, research has shown that consumers are more likely to trust people within their social circle. As such, understanding how these emergent popular online forums and social networks affect public trust in the context of food offers a rich area for further research.

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7. Appendix: Estimated SEM

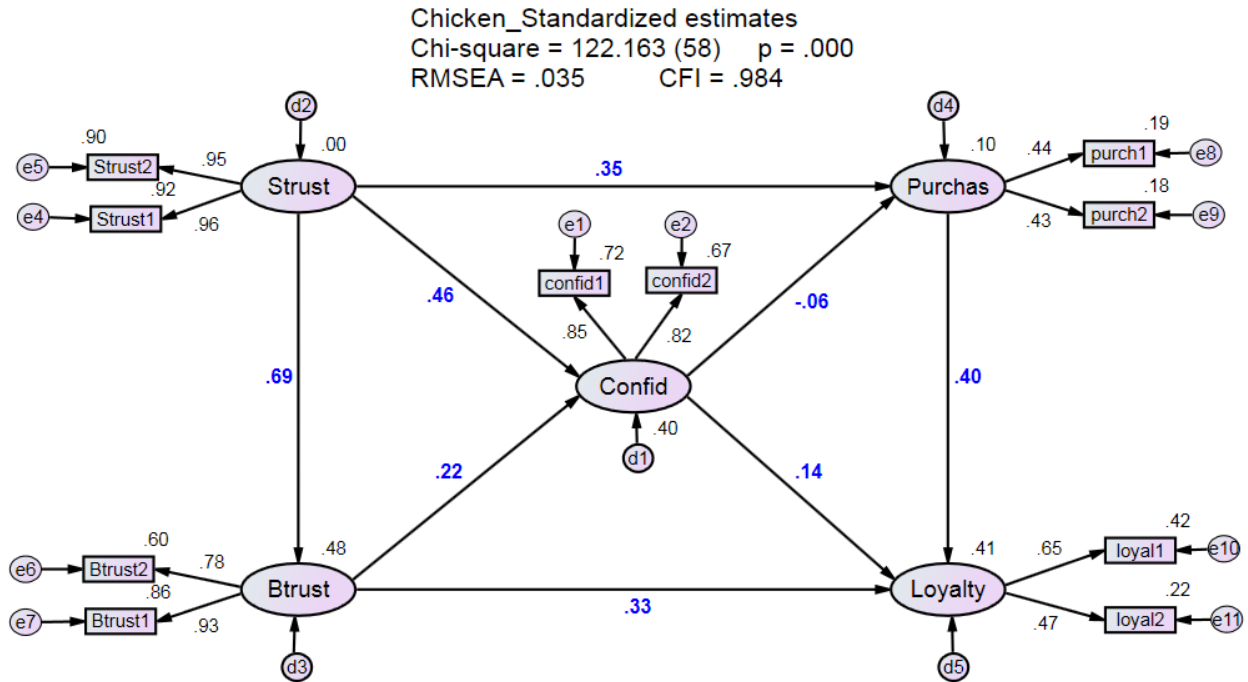


Figure A1: Drivers and consequences of confidence: chicken

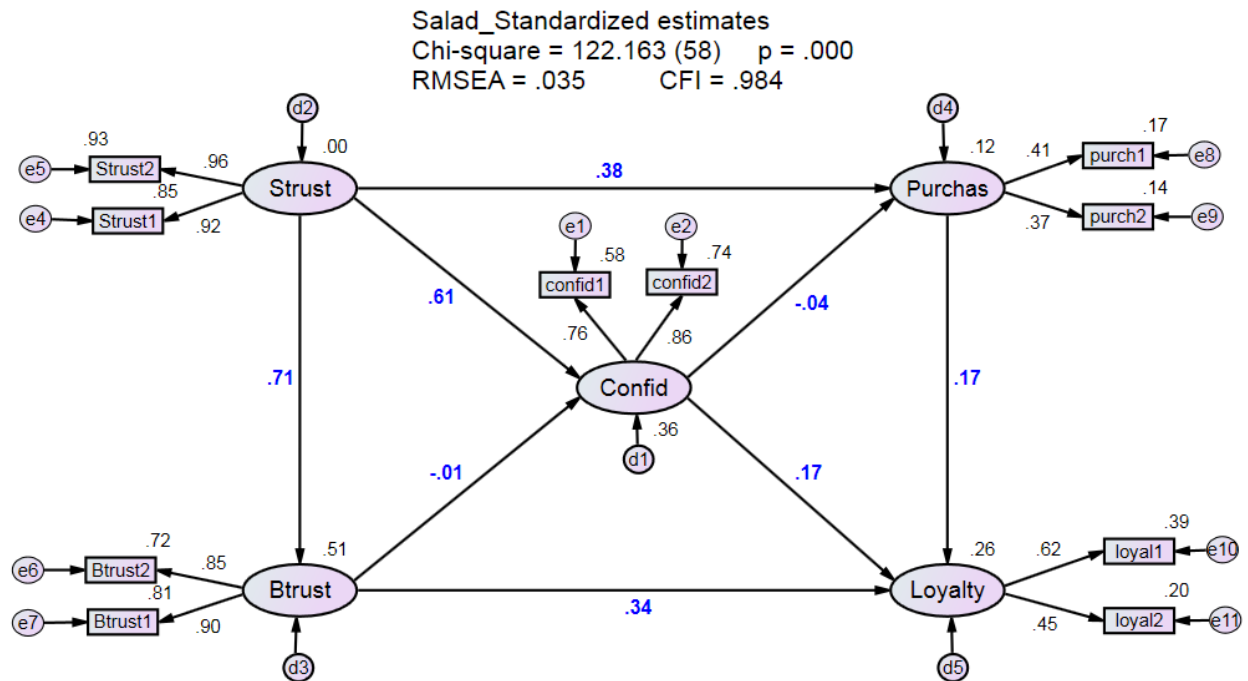


Figure A2: Drivers and consequences of confidence: salad