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The Missing Link between Research and Reality: the significance of the relationship between retail format and organic food consumption¹

Chad M. Baum²

Abstract

The impact that the retail format has on the level of individual motivation tends to be overlooked in discussions of the determinants of organic consumption, this neglect due to the tendency to model individual and contextual factors separately. Hence, the dominant research paradigm has difficulty accounting for the differences in energy and motivation across consumers. Moreover, in spite of the expansions to the set of contextual factors, this paradigm is unable to increase the ‘reality’ of descriptions of consumer behavior so long as such attempts are then filtered back through modeling frameworks initially developed to address different questions. To illustrate the dual importance of asking the right questions and using appropriate models, this paper utilizes a modeling exercise to explore the consequences of using two prevalent modeling approaches that utilize a limited form of the relationship between individual and retail format to explain the level of motivation. By illustrating the potential for omitted variable bias and misleading policy implications, it is argued that novel modeling approaches are necessary to integrate the broader range of relationships that exist, as well as the relevance of these relationships to the level of motivation.

Keywords: organic food; consumer behavior; retail formats; motivation; economic modeling

JEL Classification: B41, C60, D03, D11

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1. Introduction

The continuing evolution of the organic food industry, specifically in light of the changes in consumer behavior and retail formats, illustrates the need for a re-evaluation of this industry. On the one hand, the prominent growth of this sector indicates the increasing familiarity with these products. Global organic food sales now account for \$59.1 billion (€44.5 billion) (Willer and Kilcher, 2012). In fact, the United States alone accounts for more than half of these sales (\$31.5 billion), and this sector represents 4.2% of total food sales (OTA, 2012). Furthermore, contrary to expectations of its demise due to the recession, the organic market continues to grow above 5% per year, even attaining growth of 9.5% in 2012 and creating jobs at four times the national average (OTA, 2012).

The increasing prevalence of organic consumption is also illustrated by its familiarity in the shopping bags of consumers and on the shelves of retailers everywhere. Most families (81%) can now be characterized as (at least) occasional consumers of organic food (OTA, 2013), and the substantial majority of retail formats (82%) offer organic products (Food Marketing Institute, 2008). Although the prevalence of organic consumption is increasing over time, however, the depth and frequency of this behavior occurs unevenly across consumers. It is, in fact, only a minority of consumers that are substantially deepening their level of consumption, as well as expanding to new product categories at a much faster rate (Hartman, 2010). The greater motivation and energy of the most passionate consumers is therefore a central factor in understanding the continuing evolution of the organic industry.

As a result, the (re-)emergence of alternative retail formats and consumption networks takes on greater significance. The number of farmers' markets, for instance, increased by 150% from 1994 to 2006, now accounting for national sales of \$1 billion, and, moreover, underscoring the

diversity in this sector beyond the emphasis on ‘mainstream’ retail formats (Brown and Miller, 2008). What is more, similarly explosive patterns of growth for more novel arrangements such as community-supported agriculture (CSA) accentuate the different types of relationships that exist between individual and retail format (Local Harvest, 2011).³ In part, the existence of these relational aspects reiterates the importance of the shopping venue as a significant determinant of consumer behavior (e.g. Thompson and Kidwell, 1998; Zepeda and Li, 2007). With regards to the greater association between these formats and the greater depth and frequency of organic consumption, however, the growth of alternative formats and networks thus intimates the deeper relationship between consumer behavior and retail context. The particular foundation of this relationship is, however, left generally unexplored. Consequently, the different sources of motivation are used to orient the discussion of the determinants of organic consumption. In contrast to the emphasis on individual factors, the differences in the level of motivation depend on the degree of the fit between individual and retail format, making it necessary to consider aspects of this relationship.

Nonetheless, attempts to increase the ‘reality’ of descriptions of consumer behavior by acknowledging the importance of both retail format and their deeper relationships to motivation remain incomplete so long as such attempts are then filtered back through modeling frameworks initially developed to address different questions. It is argued, therefore, that the research paradigm that dominates the field of organic consumption comprises an emphasis on both the set of individual factors, in separation from the context, and the reliance on certain model structures that conform to this assumption. For this reason, this paper develops a modeling exercise to explore the consequences of using two common types of modeling

³ For ease of exposition and the sake of variety, this paper utilizes terms such as ‘retail format,’ ‘retail context,’ and ‘shopping venue’ to refer to the ‘space’ in which producers/retailers and consumers interact, even where a defined venue does not exist.

approaches that utilize a limited form of the relationship between individual and retail format to explain the level of motivation. By illustrating the potential for omitted variable bias and misleading policy advice, it is argued that the inclusion of the relational aspects of organic food consumption is necessary to integrate the broader range of the relationships that exist between individuals and retail formats.

The next section (Section 2) discusses the importance of the relationship between retail format and individual motivation in the context of organic consumption. Section 3 contrasts this approach with more limited understandings of this relationship in the literature. Section 4 then develops the modeling exercise, describing the three models that illuminate the different relationships between individual and retail format. Section 5 presents the results of this exercise. Section 6 discusses the implications for the understanding and modeling of organic consumption, and Section 7 concludes.

2. Relationships between Retail Format and Consumer Behavior

2.1 Review of Individual Determinants of Consumption

The starting point of most discussions of organic consumption is the identification of specific characteristics associated with the increased probability of consumption, often highlighting the impact of socio-demographic characteristics such as age, gender, and income. However, in their survey of the literature on ‘green’ consumption, Diamantopoulous and colleagues (2003) conclude that these factors do not adequately predict environmental knowledge and environmental behavior. The ambiguous effect of demographic variables is reinforced by many studies specifically focusing on organic consumption (e.g. Li et al., 2007; Yiridoe et al. 2005; Zepeda and Li, 2007).

Accordingly, there is an impetus to integrate psychological factors such as attitudes and intentions to enrich these profiles (e.g. Ajzen, 1985; 1991; Armitage and Conner, 1999; Conner and Armitage, 1998). When additional difficulties emerge regarding “why not everyone behaves in accordance with their intentions” (Conner and Armitage, 1999: 1450; Niessen and Hamm, 2008; Vermeir and Verbeke, 2006), further additions are made to the set of individual factors to explain why certain individuals engage in these behaviors more frequently. A sampling of these supplemental factors includes: self-identity as a ‘green consumer’ (Sparks and Shepherd, 1992); strength of habits (De Bruijn et al., 2007; Verplanken, 2006; Verplanken and Wood, 2006; Wood et al., 2005); goal frames (Lindenberg, 2001; 2006); motivational orientations (De Boer et al., 2009); and values (Stern, 2000; Stern et al., 1999).

2.2 Significance of the Retail Format

The expansion of the set of individual factors can be seen as the ‘fleshing out’ of socio-demographic profiles to increase the ‘reality’ of its descriptions of consumer behavior. However, as research comes to terms with the insufficiency of explaining consumption solely in terms of the barriers of, for instance, insufficient income, knowledge, and time, it becomes imperative to elucidate the process of behavioral change and, what is more, what prevents individuals with a stated desire to change from developing these behaviors. Given the difficulty of explaining how the additional motivation to actually engage in these behaviors emerges, and the related difficulty of understanding the behavior of more passionate consumers, Thøgersen (2005: 159) therefore argues that “[i]t is not sufficient to make them *do it*, or to explain *why* they do it... [but] to explain the variations in the *energy* that people put into this endeavor.”

The importance of explaining differences in individual motivation requires a re-consideration of the impact of the retail format. First and foremost, the consideration of the retail format is necessary to avoid a discussion of context in relatively abstract and general terms. Namely, the list of contextual factors tends to be heavily weighted towards the economic and cognitive aspects that orient the choice set presented to consumers: cf. material costs and rewards; laws and regulations; available technology; social norms and regulations; supportive policies; and advertising (e.g. Steg and Vlek, 2009). Using such an approach, there is some scope to discuss how, for instance, a specific type of market structure effectively limits the ability of consumers to fully express their preferences (Scitovsky, 1962; 1992).

By emphasizing the constraints on undertaking a specific behavior, however, this version of context limits the possibility of exploring the relationships between context and behavior more deeply. In specific, Thøgersen (2005: 153) notes that the ability for consumers to take greater control of their consumption decisions cannot be simply understood “in the “negative” sense of removing or reducing constraints and limitations that impede consumers’ ability to change lifestyles in a sustainable direction [but also] in the positive sense of strengthening intrinsic tendencies and capabilities ... to initiate changes themselves and to persist in their striving for change.” In this light, the difference in passion and motivation of some consumers needs to be seen less as an indication of stable individual differences than the result of an ongoing process of learning emerging from the interaction between the preferences and capabilities of the individual and the relevant context (Baum, mimeo). The discussion of the greater passion and interest of some consumers must therefore begin, not with a set of integral individual factors, but rather aspects of both consumer behavior and context and, moreover, of the relationship between these different aspects.

Establishing the importance of the retail format, it is important to recall an obvious, though sometimes overlooked aspect of food consumption, namely the perception of the product and the possibility of preference learning occur in a particular environment (Schubert, 2010; Witt, 2001). On the one hand, the appreciation of the role of the situational context on consumer decision-making, generally understood with regards to memory and product familiarity, illustrates one aspect of this connection (e.g. Ariely and Norton, 2008; Kahneman et al., 1997). In fact, Ariely and Norton (2008) contend that the impact of situational factors on preferences is so strong that “actions create- not just reveal- preferences.” Moreover, the context that individuals inhabit, and by which they are influenced every day, is central given that interactions within these formats act as vital inputs to consumption decisions. Specific to organic food, Welsch and Kühling (2009) demonstrate that the consumption patterns of friends, neighbors, and relatives explain half of the variance in individual consumption, that is, as much as demographic variables, attitudes, and economic and cognitive factors like income, price, and incentives combined. Therefore, it is not possible to separate the retail context from those individuals both ‘inhabiting’ and frequenting it, especially given that these formats provide the forum to learn from and imitate these other individuals.

Seen from this perspective, the explosive growth in alternative retail formats and networks that is occurring parallel to the evolution of organic consumption assumes greater significance, especially given the importance of the credibility of claims about product quality in this sector.

Ayres and Midmore (2009: 29) underscore how “consumers’ perceptions about rewards revolved around a core of trust” and, therefore, consumption depends on the ability to get to know the people involved as more than just faceless agents. The perception of a given retail

format as credible and deserving of confidence has, moreover, been linked to the sense of ‘not feeling anonymous,’ and the possibility of attaining advice from sales personnel (Brown, 2002; Hinrichs, 2000; Zanolli and Naspetti, 2004). For this reason, there is a strong dynamic connection between aspects of the ‘point of sale,’ notably the degree of interaction involved, and the level of expertise of consumers (Padel and Foster, 2005; Zanolli and Naspetti, 2004). Reflecting the degree to which consumers ‘adapt’ to the type of format, Russell and Zepeda (2008) determine, for instance, that continued CSA membership over time is linked to a greater preference for seasonality and an appreciation for the task of farming, with similar associations also found for the enjoyment of cooking. In this respect, the greater degree of interaction of this type of retail-consumer relationship is a necessary condition for preference learning.

2.3. Relationship between Motivation and Retail Format

In addition to the manifold influences that characterize these settings, ‘feelings of rightness’ about the context in which an activity takes place have been shown to affect the judgments of the activity. In specific, Regulatory Fit Theory (Higgins, 1997; 2000) emphasizes how the perceived fit between the context of an activity and an individual’s perception about how such a context should look and feel like fosters an increase in its perceived value. Regarding organic consumption, the greater fit between these products and a type of retail format is thus potentially relevant to the benefits that can be attained from consumption, specifically by providing additional benefits separate from those directly provided by the product. Hence, the more holistic and ineffable aspects of formats such as CSAs are also relevant, most clearly in relation to more difficult-to-measure attributes such as environmental and social considerations

that are found to be critical to participation (e.g. Bougherara et al., 2009). The importance of the retail context cannot therefore be subsumed by the availability of specific products or even the information provided by people. Rather, it is the overall experience cultivated in these formats, and what the context as a whole expresses about these products, that helps determine individual behavior.

More than the fit between product and context by itself, it is the quality of the connection between the individual and the social context in which an activity takes place that fully expresses the fit that exists. In this respect, Self-Determination Theory (SDT) argues that individuals ‘require nutriments or supports from social environments to function effectively,’ these nutriments being the basic psychological needs of autonomy, competence, and relatedness (Deci and Ryan, 2000: 262). In addition to the fact that these needs recall the descriptions of the uniqueness of alternative formats, i.e. the need to feel close and connected to others, it is more significant how the quality of the relationship between individual and context impacts the level of individual motivation. In specific, Ryan and Deci (2000: 70) note that, when “social-contextual events (e.g. rewards, feedback, communication) ... conduce toward ‘feelings of competence’ during action,” there is an increase in the energy and motivation necessary for behavioral change. Correspondingly, Green-Demers and colleagues (1997) have shown that the level of self-determination, i.e. the feeling of receiving support from the context, is a significant predictor of behavioral frequency and persistence, especially for behaviors perceived to be more difficult.

Moreover, irrespective of the specific qualities identified, it is significant that this increase in motivation reflects an aspect of the relationship between the individual and context, and cannot be described by either individual factors or contextual factors alone. The quality of motivation

that results from the fit between individual and context represents a separate motivational component that extends the understanding of the relationship between consumer behavior and retail format. That is, although there are aspects of motivation that owe their origins to the individual alone, motivation is not only an individual factor, instead also being fostered by the quality of the relationship between individual and context. The additional passion and commitment that certain individuals enjoy, rather than an inherent characteristic, is thus the result of the greater fit that occurs on two levels, namely that between product and context and that between context and individual. These two degrees of fit underscore the importance of the relational aspects of consumer behavior, and of emphasizing the type of relationship envisioned between individual and context.

3. Connection between Relationships and Models

The understanding of the relationship between individual and context varies in the literature on organic consumption. Generally speaking, there is widespread acknowledgment of the significance of the retail format as a fundamental determinant of organic consumption (Thompson and Kidwell, 1998; Zepeda and Li, 2007). In addition, it has been observed that quality perception and price sensitivity of organic products vary by retail format, in part due to differences in consumer loyalty (Hsieh and Stiegert, 2012). Not to mention, the samples of organic consumers used are often drawn from a specific format (e.g. Schifferstein and Oude Ophuis, 1998). The preferences of these individuals thus implicitly depend on their experiences in these ‘latent’ formats.

Specifically, two distinct aspects concerning the function of the retail context can be delineated:

(1) a separate entity from individual preferences that is selected by certain consumers for its

perceived characteristics; and (2) a set of facilitating conditions that makes consumption cheaper and easier. The first type can be seen most clearly in the discussions of the relevance of ‘store effects’ to the frequency and commitment of organic consumption (Schifferstein and Oude Ophuis, 1998; Thompson, 1998; Zepeda and Li, 2007). The second aspect, meanwhile, is evidenced by discussions characterizing the retail format as “*indirectly* important for understanding decisions to buy organic produce” (Thompson and Kidwell, 1998: 285, *emphasis added*), specifically through the assistance it provides in accomplishing individual goals and motivations. This facilitating role, consequently, is generally described in terms of the greater opportunity and availability of organic products (e.g. Vermeir and Verbeke, 2008; Zepeda and Li, 2007).

Moreover, both aspects of the retail format are connected to a specific understanding of the relationship between individual and context. In contrast to the more formative relationship outlined in the previous section, the underlying foundation of these approaches is the set of relevant individual factors such as socio-demographic characteristics and levels of product knowledge that are relevant to organic consumption. In the case of ‘store effects’, the type of retail format is then included as an additional control variable to further explain consumer behavior. That is, the retail format is fundamentally distinct from the set of individual factors such that the type of relationship here understood is one where the respective factors have an additive effect on consumer behavior.

Consequently, there is an increasing incidence of studies that attempt to correlate shopping venue choices with, for instance, behavioral motivations, demographics, and economic factors as a means to characterize the relationship between individual and context (e.g. Bond et al., 2008; Keeling-Bond et al., 2009). In this respect, there are discussions of how shopping venues

play a role in “‘sorting’ consumers with similar motivations and values,” given that the existence of specific preferences is likely to occasion a change in shopping venue as well (Onozaka et al., 2011: 583). The shopping venue thus represents another characteristic that can be used to segment consumers. From this perspective, each decision, whether regarding the consumption of organic food or the choice of a specific store format, is characterized in terms of static characteristics and dispositions of the individual and the function of the retail format limited accordingly. In spite of the greater role ascribed to context, the ultimate explanations of differences in energy and motivation therefore principally remain innate differences between individuals.

Responding to the shortcomings of this approach, the understanding of the retail format as ‘enabling’ organic consumption can be seen as extending the types of relationships possible between individual and context to increase the reality of descriptions of consumer behavior. Building on the foundation of individual factors, there are multiple approaches that seek to describe the constraints on undertaking a specific behavior (Ölander and Thøgersen, 1995; Zepeda and Li, 2007). In this respect, the Motivation-Opportunity-Ability (MOA) framework of Ölander and Thøgersen (1995) describes the role of the context to providing the facilitating conditions so that the existing level of motivation can fully express itself. The significance of the retail format can thus be portrayed here as the unlocking of the inherently individual potential for organic consumption, understood in terms of the socio-demographic characteristics and attitudes and values of the individual. What is more, the conception of the retail format is circumscribed around the characteristics that impact the cost and convenience of the product. Rather than the relationship between retail format and individual motivation, the differences in passion and energy across consumers are explained in terms of the relationship between product

and context. In this respect, this discussion reflects the “negative” sense empowerment described by Thøgersen (2005).

More importantly, when combined with the type of motivation outlined in Section 2, these two relationships identify three different sources of ‘motivation’: (1) a strictly individual source of motivation; (2) another emerging from the facilitating role of context on motivation; and finally (3) the increase in the quality of motivation that arises from a specific type of relationship between individual and retail format. The consideration of all three of these sources is significant to the explanation of organic consumption. Due to the connection the sources of motivation and specific relationships between individual and context, the difficulty of considering the third source of motivation therefore seems linked to the types of models utilized. That is, there is a continued emphasis on both a specific set of questions to be answered, as well as a set of modeling techniques that have proven successful in completing these tasks. On the strength of the success of this paradigm (e.g. Kuhn, 1962), the emergence of new problems is greeted by the continued refinement and elaboration of these methods to further advance the understanding of organic consumption.

From this perspective, the paradigm that currently dominates the field of organic consumption comprises the combination of both an emphasis on the set of individual factors, in separation from the context, and the reliance on certain model structures that conform to this assumption. In her rather critical discussion, Hobson (2006: 297) argues that the “[t]reatment of contextual factors, material capabilities and habits as additive is inevitable given... methodologies that necessitate the isolation of a multitude of factors to be tested and modeled.” Consequently, the acknowledgment of puzzles such as the importance of the retail format and the differences in energy of consumers is insufficient so long as the increasing complexity of consumer behavior

is then filtered back through modeling frameworks that were initially developed to address different questions. The concessions made to fit the understanding of context into existing modeling frameworks, accommodating in particular the centrality of individual factors, thus lends itself to a specific kind of relationship between the individual and the contextual and diminishes the influence that the retail format can have on consumer behavior.

4. Modeling Exercise

Due to the link between the three sources of motivation and the different relationships between individual and context, the types of relationships ‘allowed’ to exist by specific modeling frameworks are used to explore the consequences of different types of modeling. Three types of relationships between retail format and individual motivation can be highlighted in specific: (1) the ‘additive’ model that where contextual and individual factors have distinct effects on behavior, exemplified by discussions of ‘store effects’; (2) the ‘interactional’ model that envisions the retail context as a set of enabling conditions that make consumption easier and more convenient; and (3) a ‘transactional’ model where behavior is determined by the level of ‘fit’ that exists between motivation and retail format.

The names of the final two models are adopted from Dewey and Bentley’s (1949: 134) discussion of the importance of “seeing together, when research requires it, of what before had been seen in separations and held severally apart.” Accordingly, apparently individual characteristics such as passion and behavior cannot be seen “as *of* the organism alone, any more than *of* the environment alone, but always as of the organic-environmental situation, with organisms and environmental objects taken as equally its aspects” (Dewey and Bentley, 1949: 192). The growing acknowledgment of puzzles and the difficulty of explaining, for instance,

the greater energy of certain consumers, therefore indicates the need to re-consider the fundamental separation of individual and contextual factors.

Consequently, this exercise simulates a data-generating process to explore the consequences of mis-specification by modeling a more limited form of the relationship between individual and retail format. A sufficiently large sample size of 1000 ‘observations’ of the data-generating process is utilized in order to avoid an over-weighting of extreme results. Moreover, for the sake of simplicity and clarity, the exercise sets the genuine effect of each coefficient to be equal to 1 in the transactional model. As a result of the large number of observations included, the sizes of the relevant test statistics are all grossly inflated. Consequently, both the absolute magnitude of the coefficient estimates and their levels of significance are less important than the relative disparity between these estimates and the genuine effect, i.e. 1. In particular, this divergence indicates the size of the omitted-variable bias in a model.

Furthermore, the transactional model doubles as the data-generating process that represents the underlying structure of the data that we seek to estimate, thus making it possible to explore the consequences of neglecting the more relational aspects of consumer behavior. Given that the use of the transactional model as the reference model means that its performance cannot be assessed, the primary insights of this exercise relate to how the use of an additive or interactional model impacts the estimation of the parameters. In this respect, by having the actual relationship between motivation and context known beforehand, it becomes possible to make such evaluations. The specific rationale for these modeling choices is therefore paramount, each reflecting specific theoretical assumptions that mirror different understandings of the relationship between behavior and context, and the specific features of the models

essential to yielding informative results regarding the consequences of specific modeling approaches. Here are the three models in equation form:

1) ‘Additive Model’: $DV = \beta_0 + \beta_1 D1_i + \beta_2 M_i + \beta_3 C1_i + u_i$

2) ‘Interactional’ Model: $DV = \beta_0 + \beta_1 D1_i + \beta_2 M_i + \beta_3 (M_i * C1_i) + u_i$

3) ‘Transactional’ Model: $DV = \beta_0 + \beta_1 D1_i + \beta_2 M_i + \beta_3 FIT_i + u_i$, where

$$FIT_i = \beta_4 + \beta_5 M_i + \beta_6 C1_i + \beta_7 (M_i * C1_i) + u_i$$

The dependent variable in this simulation is the likelihood of purchasing organic food products and, as such, the independent variables are selected from the foregoing discussion for their relevance as determinants of consumer behavior. To keep this exercise relatively straightforward, I focus on three variables: socio-demographic characteristics ($D1_i$); individual motivation (M_i); and retail format ($C1_i$).⁴ The individual factors in this model are ‘socio-demographic characteristics’ and ‘individual motivation,’ each of which is included to account for a different type of individual factor. Accordingly, ‘demographics’ signifies the fundamental barriers of insufficient time, money, or education to the development of organic preferences given the broad set of life conditions of the individual. Viewed from a different perspective,

⁴ All three independent variables have a range from 1 and 7, so modeled due to the correspondence to Likert-scale variables, but moreover for the ease this affords when analyzing relationships between variables. Further information about the modeling procedure and distributions of these variables is available from the author upon request.

higher values of this variable suggest a closer approximation to the prototype of an ‘organic consumer,’ for whom the overall life situation makes additional energy less necessary. Meanwhile, the level of ‘motivation’ indicates the importance and energy with which a given activity is pursued.⁵ The distinction of demographics and motivation in this fashion lends itself to partialling out the determinants of consumer behavior that transact with the retail context from those that do not.

Unlike these two variables, the specific role of ‘retail format’ depends on the model in question, though, generally speaking, it reflects how the retail format influences the expression and/or development of organic preferences. Regarding the ‘additive model,’ the simple introduction of each of the variables into the equation represents that each of the variables has an independent effect on consumer behavior. Consequently, this model helps illustrate the consequences of reducing the interaction between contextual and individual factors to null. Accordingly, the ‘interactional model’ reflects the introduction of more theoretical considerations into the model, denoted by the addition of an interaction term between motivation and context ($M_i * C1_i$). This term signals that the retail format has an influence on motivation *only* by establishing the necessary conditions for this behavior. In other words, the characteristics of the retail format are essential to whether the motivation of the individual receives its full expression in behavior or is otherwise thwarted. In addition, this approach facilitates the distinction between two of the sources of motivation: an independent motivational component that impacts behavior, with or without any assistance from the context (M_i), and another component that benefits from the greater availability and convenience of purchasing these products ($M_i * C1_i$).

⁵ Partly for the sake of simplicity, this variable combines capabilities and motivation together, suggesting the importance of being both motivated and efficacious when acting. The use of a factor that combines skill and motivation together is, however, not unfamiliar in the literature on pro-environmental behavior (Corral-Verdugo, 2002).

This model makes it difficult, however, to determine if context has any further impact on the level and quality of individual motivation. The transactional model thus integrates additional theoretical assumptions to present a richer conception of the relationship between organic consumer behavior and the retail format. Hence, this model introduces a mediation term (FIT_i) to establish that the full effect of the variables depends on the fit between individual motivation and the type of retail format. In this respect, mediation illustrates the mechanism through which motivation affects behavior, namely that part of the impact of individual motivation only becomes present through the interaction with a retail format with specific characteristics (e.g. Baron and Kenny, 1986).

Furthermore, the interaction between motivation and context within FIT_i indicates a ‘moderated mediation’ of the effect of motivation on behavior (Muller, Judd, and Yzerbyt, 2005). That is, within the mediation term, motivation has both an independent effect on behavior as well as an effect that is strengthened by the interaction with the retail format. It can be observed that this term is identical to the interactional model. The fundamental difference, however, is that the mediation term in the transactional model further clarifies the mechanism through which this moderating effect occurs, namely through the fit between context and motivation, thus making it possible to illustrate more complicated types of behavior. In specific, the mediated moderation term articulates that, in addition to the strictly individual source of motivation and the part that is mediated through context, there is another component that is expressed specifically through the relationship between these factors. The partial mediation of motivation on behavior is thus useful to facilitate a discussion of the greater diversity of relationships that exist between individual motivations and retail formats. For the sake of illustration, the importance of the price, convenience, and variety of a retail format would therefore be associated with a value in the mid-to-lower range of the distribution, i.e. 3 or 4.

The potential that the context has for directly increasing the quality of individual motivation would, meanwhile, have a value closer to the upper threshold of the distribution.⁶

Finally, in order for the data-generating process to more closely approximate real-world conditions, correlation is built into the model between ‘context’ and ‘demographics’ to account for the fact that certain types of retail formats are more likely to exist in certain socio-demographic areas (equal to 0.278 in this exercise), and between ‘context’ and ‘motivation’ to reflect that people high in motivation are likely to select an alternative retail format (0.337). The modeling of these dependencies helps with the stability of the data-generating process. For reasons already mentioned, ‘motivation’ and ‘demographics’ are uncorrelated (0.020).

5. Results

5.1 Results of Modeling Exercise

Given that this modeling exercise explores the consequences regarding the relationship between context and behavior that result from using each of the three models, this section proceeds by presenting and discussing the results at the same time. Again, recall that, as the reference model, the results of the transactional model serve to verify that the simulation of the data performs as expected, i.e. all variables are found to be statistically significant with coefficient estimates approximately equal to one. Therefore, this section proceeds by first comparing the additive model against this baseline before then considering the difference between the interactional and transactional models.

⁶ ‘FIT’ has positive skewness, i.e. the data is shifted to the left, appropriate given the relative novelty of organic consumption and thus the likelihood that, if such relationships exist, the majority of them are likely to be of a relatively limited nature.

Turning our attention to the results in Table 1, it can be seen that the additive model yields large and significant estimates of the variables of motivation and context, equal to 5.927 and 5.023, respectively. Given that the genuine effects for each of these parameters are equal to 1 and 0, however, additive specifications have the potential to greatly exaggerate the estimates of the effects of interest.⁷ The sole exception in this respect is ‘demographics’, which is significant and close to 1, accurately reflecting its genuine effect. In fact, this is the case in all three models, although not surprising given the construction of the exercise. In addition to the problems that omitted-variable bias presents for interpreting the results, there are further problems regarding the general understanding of the relationship between behavior and context. Another consequence of the additive model is that the intercept is estimated to be -15.087 when it should actually be 0. In one respect, this is a reflection of the amount of information that is excluded from this model. More remarkably, the fact that this estimate is consistently and significantly negative implies that the probability of organic consumption is heavily biased downwards, that is, against organic consumption for individuals not valuing these products highly or frequenting an alternative store format.

In sum, these results imply the presence of a strong bias against organic consumption unless specific individual and contextual factors exist. It is intriguing to extrapolate, consequently, how the resulting interpretation of organic consumption as the domain of altruistic and ideologically unique individuals might cultivate research seeking to identify factors that correlate with a greater likelihood of consumption. The performance of this model can be summarized, therefore, as illustrating the perils of completely neglecting the relationship between retail format and individual behavior.

⁷ A variety of other modeling structures were attempted, particularly with regards to the retail format, with very little, if any, impact on the results. For instance, setting the genuine effect of ‘format’ equal to 1 in the ‘transactional model’ only causes its estimate to increase to around 6 in the additive model. That is, the size of the omitted-variable bias remains the same. The same holds true for the specification of the mediating term.

Table 1: Results of Modeling Exercise

	Estimate	Standard Error	T-value	P-value
Additive Model				
(Intercept)	-15.08652	0.31280	-48.23	***
D1	0.99231	0.05079	19.54	***
M	5.92731	0.05360	110.59	***
C1	5.02349	0.06547	76.73	***
Interactional Model				
(Intercept)	-0.14365	0.40020	-0.359	
D1	0.99778	0.03040	32.820	***
M	2.03731	0.09751	20.894	***
C1	1.05965	0.10168	10.421	***
M:C1	0.98955	0.02342	42.247	***
Transactional Model				
(Intercept)	0.105812	0.286725	0.369	
D1	0.979670	0.021780	44.979	***
M	0.942381	0.078381	12.023	***
C1	-0.007509	0.080663	-0.093	
FIT	1.014938	0.032999	30.757	***
M:C1	-0.006827	0.036481	-0.187	
FIT Regression				
(Intercept)	-0.19539	0.26890	-0.727	
M	1.07750	0.06706	16.068	***
C1	1.05831	0.06949	15.230	***
M:C1	0.98165	0.01611	60.922	***
*** $p < 0.001$				

5.2 Strengths and Shortcomings of Interactional Models

The second feature of these results that is readily apparent is the better job that the interactional model does in capturing the overall impact of the determinants on organic consumer behavior. Owing to the use of moderation to characterize the relationship between context and behavior, the estimates of motivation and context decrease to 2.037 and 1.060, respectively, representing

a fourfold correction to the problem of omitted-variable bias. The presence of any type of ‘relational factor’ in the regression equation is able to capture a substantial amount of the heterogeneity that is otherwise left unexplained, thereby reducing the significance that motivation and retail format seem to have as separate components. Moreover, notice how the intercept is no longer significant in this model, hence implying that it is not only the most committed and passionate of consumers that engage in organic consumption.

In fact, the improvement of this model is so substantial that the differences between these models become quite subtle, especially without knowing the transactional model is the ‘true’ model. Regarding the size and significance of the coefficient estimates, the only notable difference is the doubling of the coefficient of M_i . Meanwhile, the estimates of context and the interaction term are nearly identical to those in the ‘FIT’ regression, such that their ‘true’ effect is re-directed through new channels rather than over-estimated. In this respect, the misspecification of the transactional model has a limited impact on the estimation of these variables. For this reason, however, the subtlety of these differences underscores the difficulty of only relying on such criteria to adjudge model performance.

It is vital to recall that the results emerging from such models help define a research agenda that is then widely applied for policy purposes, especially in light of the supposedly narrow focus of this research. In this respect, the use of additive models demonstrates the significance of the retail format, although without being able to disentangle the nature of these ‘store effects’. Meanwhile, the exaggerated importance of individual motivation provides a rationale for behavioral interventions into the attitudes and values of consumers to cultivate a resemblance to the prototypical ‘organic consumer.’ Hence, the policy implications provided seem to be

directly consequent on the type of modeling framework, which in turn depends on the understanding of the relationship between context and individual.

Regarding the interactional model, the influence of the model on policy implications can be recognized by considering how, even though effect sizes are similar, the role of retail format seems to change. When compared with the estimate of context in the mediation term of FIT_i (1.058), the estimate in the interactional model of 1.060 differs little. Nonetheless, the consequence of using the interactional model is that the motivation that is actually the outcome of the relationship between individual and context instead seems to be the result of context alone. In other words, when the path through the mediating term FIT_i is not available, the weight of this effect is re-directed. As a result, by capturing the full scope of the relationships that exist between individual and retail format, the inclusion of FIT_i causes $C1_i$ to completely lose all its apparent significance. Similarly, the coefficient of M_i declines to 0.942, less than half its estimate in the interactional model, while the interaction term ($M_i * C1_i$) decreases from 0.990 to become insignificantly different from zero. The implications of this model change drastically as a result.

6. Implications for Modeling

With regards to pro-environmental behaviors like organic consumption, it has been emphasized that “contextual factors have not been examined systematically... remarkable given [the supposed emphasis on] transactions between humans and their environment” (Steg and Vlek, 2009: 312). In this respect, both interactional and transactional models can be seen as distinctive solutions to the lack of context and, moreover, different responses to the central question of how best to improve the reality of descriptions of organic consumption. In

particular, is it better to maintain the existing modeling approach while enriching the sets of individual and contextual factors or to instead fundamentally re-consider the basis of the relationship between individual behavior and retail format?

Supporting the former, Stern (2000: 418) argues that, in order to facilitate a better understanding of environmental and ethical behavior, “[t]he field now needs synthetic theories or models that incorporate variables from more than one of the above broad classes [of individual and contextual factors], postulate relationships among them, and use them to explain one or more types of environmentally significant behavior.” The means of cultivating a greater understanding of consumer behavior is, from this perspective, not the reduction of the boundaries between individual and contextual factors, but rather leaving them in place and grafting further explanations on top of this framework.

Given that the majority of consumers are now familiar with sustainable consumption and yet behavioral change is progressing for only a passionate minority, however, “the question can be raised as to whether the research was being conducted on the right issues” (Brown, 2002: 169). Namely, with regards to the apparent association between differences in energy and passion across consumers and retail formats, it becomes significant to ask not only if such an association exists, but moreover to identify the foundation of these differences. The possibility of pinpointing this foundation, however, requires a fuller perspective of how motivation, not merely an individual factor, is supplemented by the quality of the relationship between retail format and consumer.

Conversely, the improved performance of interactional models does not make it easier to describe how this particular ‘characteristic’ emerges, given the enduring emphasis on individual factors. Rather, the retail format is significant only concerning cheap and convenient access to

the (standardized) product. The relationships between the people and places involved in food production are consequently overlooked. As a result, it is somewhat predictable that “store choice is a critical variable in explaining purchases of organic produce *so long as organic products persist in not being regularly available in most mainstream supermarkets*” (Thompson, 1998: 1116, *emphasis added*). The expiration date of their relevance is subject to the ultimate function of product provision being fulfilled. Furthermore, if a study determines that the retail context is important, the only possible conclusion is that “increasing availability of organic foods in conventional shopping venues would support continued growth in demand” (Zepeda and Li, 2007: 27). Such a statement, however, is more or less tautological given that, availability is more or less synonymous with context as it is defined. It is informative, incidentally, that Zepeda and Li (2007) are unable to explain the behavior of the most passionate organic consumers.

Rather than distinguishing the passion and increasing motivation of committed organic consumers and the (re-)emergence of alternative retail formats as ‘peripheral’ to the focus of this research agenda, the existence of these puzzles is thus central to understanding the possibility of misspecification and, therefore, the shortcomings of existing models. Namely, if an expectation exists regarding the size of the effect of context, and this expectation is fulfilled by the estimation, then the only indication that the foundation of this approach is fallacious is the existence of such puzzles. In this respect, it is not the accuracy alone that serves to properly evaluate a model and its assumptions, but also how fully this model accounts for the range of phenomena that exist in this domain.

In light of the importance of the fit between both product and context and context and individual, the complexities of the organic food industry therefore require particular emphasis

on the relationship between retail format and individual motivation. In contrast, continuing to adapt existing models to provide answers to new questions, or utilizing the same frameworks in spite of the shifting attention of research, limits how much of the relationship between individual and context that can be described. In the words of Dewey and Bentley (149: 141), the need to ‘see things together’ is particularly significant when, instead of providing an explanation of these puzzles, there is a tendency to rely on vague descriptions such as ‘store effects’ that “insert a name in place of a problem, and let it go at that”.

When attempting to model the transaction between actual contexts and consumer skills and preferences, consideration must be given, therefore, to the specific type of retail format, how it is organized, and the use of other types of estimation techniques to capture the difficult-to-model contextual aspects. Even though only concentrating on the characteristics of price, convenience, and variety, the study by Hsieh and Stiegert (2012), for instance, advances the understanding of the interactions between organic products and store characteristics. In fact, this more relational approach helps to identify how consumer loyalty and willingness to pay a price premium on organic products varies across retail formats. Another possibility is the use of techniques such as stochastic frontier modeling that mitigate the problem of omitted variable bias that emerges in the presence of difficult-to-model contextual aspects (Carriazo et al., 2013). Similarly, the use of mixed-effects models has also demonstrated the ability to capture the significant place-to-place variation in environmental behavior that results from the particulars of social and physical environments (Hamilton et al., 2010). A commonality in these two approaches is the emphasis on the residual variation that is unaccounted for when taking a ‘limited context’ perspective. Regarding the depth of the relationship between context and behavior, in fact, mixed-effects models depict individual behavior as nested within specific contexts, thereby reflecting the more constitutive nature of this relationship.

Accordingly, the transactional model here utilizes mediation to reflect the change in the quality of motivation that results from the dynamic and ongoing experiences of the individual with a product in a specific context, providing the basis for future extensions of this modeling framework. Not only a question of ‘getting the conditions right’ for this motivation to express itself, this term, by emphasizing the significance of the relationship between context and individual, makes it possible to illustrate more complicated types of behavior. The integration of relational aspects in the model thus facilitates the distinction between: (1) those that consume more because of an inherently higher level of motivation, perhaps due to greater health-related or environmental values, the pressure from perceived social norms, and/or greater abilities and perceived levels of competence; (2) those individuals that will be encouraged to consume more as it becomes cheaper, easier, and more convenient; and (3) individuals that find greater motivation due to their ongoing engagement with specific types of formats and have thereby been able to further develop these preferences. In this respect, the additional complexity of a model, if founded solidly in theory, is able to both illustrate the greater richness of the retail-consumer relationship as well as the relevance of these relationships to individual motivation. Such complexity is, therefore, the price of developing the more integrated view of organic markets and their participants necessary to provide a more solid foundation for continued research.

7. Conclusions

The significance of the relational aspects of organic food consumption is established here using a modeling exercise that explores the consequences of neglecting the impact the retail format has on individual motivation. To underscore the different types of relationships involved, three

different sources of motivation are identified: a strictly individual source of motivation; another emerging from the facilitating role of context on motivation; and finally the increase in the quality of motivation that arises from a specific type of relationship between individual and retail format. Consequently, the results of the modeling exercise establish how only incomplete or partly accurate conclusions can be drawn from a framework that fails to consider the diversity of relationships that exist between retail format and motivation. As a result, the understanding of these relationships alone is not sufficient, but must be realized in appropriate modeling approaches.

Of course, it needs to be said that the straightforward nature of this exercise makes it difficult to wade into a deeper analysis of how these models perform. For instance, it is not possible to determine whether, concerning the comparison of the interactional and transactional models, the direct effect of individual motivation on purchasing behavior dominates the mediated effect that occurs through the ‘fit’ between motivation and context. It could be possible therefore to develop a more elaborate simulation that includes more than the three variables utilized here in order to answer this question, perhaps integrating dynamics as well. Moreover, the use of a data-generating process that is not identical to one of the models could be helpful, so that the performance of the transactional model could also be analyzed.

More generally, the fundamental point is that it is important to first understand how things fit together before they can be taken apart to explore specific problems more deeply. The consideration of relational aspects, often dismissed as peripheral to the problem at hand, is critical to modeling decisions, only reducing the scope of this model when this fuller understanding is sufficiently clear. Hence, this paper underscores that the type of retail formats available are important features of organic consumer behavior that require policy attention.

Beyond informational and structural strategies that focus on the economic and cognitive aspects of decision-making (e.g. Gardner and Stern, 1996; Steg and Vlek, 2009), contextual aspects such as the diversity of retail formats and a broader understanding of how they are relevant therefore represent important features of organic consumption that require policy attention. Finally, the use of retail-consumer dyads, here represented by 'FIT', provides the foundation through which novel empirical methods and theoretical insights, such as those of self-determination theory, might be used to explore if and how the expression of organic preferences depends on the level of support provided by the retail context. Such a relational approach thus represents a framework to model how retail formats are relevant to the greater energy and motivation of some consumers with the aim of improving the understanding of the relationship between context and consumer behavior.

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