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Home chef meal kits: Product attributes, perceived value and repurchasing intentions: the moderating effects of household configuration

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\textbf{ABSTRACT}

Considering the growing popularity meal kits are undergoing in today's grocery sales market, and also with respect to barriers presented for restaurant dining due to the Covid-19 pandemic, it is essential to obtain more knowledge surrounding those product and service attributes pertaining to consumers and meal kits. Thus, this study was designed to investigate meal kits' essential attributes representing food quality, menu variety, health-oriented, convenience and price in association with their effects upon users' perceived value, and intention to continuously use. Two attributes representing high quality food dishes and menu variety were found to be the most important meal kit attributes because they both strongly improved hedonic and functional value for consumers. Results identified meal kit food quality as having more positive effects upon perceived value for the multi-person household segment when compared with the single-person household group. Comparatively, the effects of menu variety upon perceived value were more positive in the single-person household group than in the multi-person household group. Based on our findings, theoretical, managerial implications, limitations and recommendations for future research are provided.

\section{1. Introduction}

Today’s contemporary family household demographic structure has undergone diverse changes in terms of various configurations and forms representing size and patterns to now commonly reflect situations involving married couples with no children, cohabitation households (unmarried households with no children), single-person households and traditional families (Lamidi, 2014). Over the course of three decades, the dynamics involving US lifestyle trends, and specifically regarding attitudes about marriage, have directly attributed to the current situation of experiencing a dramatic reduction in household size (Bachman & Barua, 2015). During the 1980's, approximately 30% of all US households were reported to have four or more family members, but by 2010, this number dropped to 24%, while at the same time, the number of single-person households increased from 22% to 27% (Murdock, Cline, Zey, Perez, & Jeanty, 2015).

An early study addressing average household size documented its effect upon consumer consumption and purchase patterns, which further significantly impacted the foodservice industry’s development of new products and service offerings (Ritonga, 1999). Jang, Kim, and Yang (2011) focused on changes in food consumption driven from smaller household sizes and discovered that change in household structure became a major driver of new food product growth and new meal solutions. During the five-year period from 2014 to 2018, the U.S. food delivery service market grew significantly in sales (Cochrane, 2018). As an example of this explosive growth, U.S. consumer spending on food delivery service in 2015 surpassed $30 billion in annual sales, setting an historic performance record (Lock, 2019). The recent Covid-19 Corona virus pandemic has also presented new barriers and challenges facing the food service industry, including behavioral changes pertaining to the ability of consumers to dine out in restaurants, along with their perceptions of safety regarding those potential dining experiences, creating unexpected opportunities for specific segments of the foodservice industry, such as chef-produced home meal kits (Estrella, 2020; Webb, 2020).

Food delivery service is divided into two categories: 1) Ready-to-Eat (RTE), which requires no preparation, or only mid heating before consumption, and 2) Ready-to-Cook (RTC), which includes prepared meals requiring only re-heating or provides minimally prepared raw food ingredients (trimmed, shelled, peeled, cut, washed), but still requires full cooking of some or all of its components (Costa, Dekker, Beumer, Rombouts, & Jongen, 2001). One representative type of the
RTC category is called ‘meal kits,’ which were developed to offer extreme ease and convenience in order to provide end-users with the ability to produce restaurant quality food at home (Levy, 2018). Food service companies now offer consumers the opportunity to purchase meal kits on a monthly subscription basis averaging about $10.00 per meal. Pre-portioned ingredients, recipes and cooking tips are delivered to their specified address, making the home-cooked meal preparation non-intimidating, extremely easy, and quick to prepare, with entrees averaging 30 min from process initiation to the meal’s completion (Levy, 2018). Thus, meal kits greatly assist consumers by allowing them to save driving and shopping time for groceries, while appealing to their excitement and involvement for learning how to prepare high quality meals in the privacy of their own kitchens using innovative, yet simplistic recipes (Hill & Maddock, 2019).

The U.S. meal kit market is rapidly growing in popularity. As a result of meal kit sales tripling from 2015 to 2017, there are now over 150 meal kit delivery service companies currently operating in the U.S. (Levy, 2018). According to a recent national consumer survey, the top three reasons for purchasing meal kits were reported to be: 1) saving time for grocery shopping; 2) trying new recipes, and 3) preparing healthy in-home meals (Birth, 2017). Troy and Acosta (2017) stated that meal kits were expected to continue achieving tremendous successes due to various benefits such as learning how to prepare high quality food simply, reducing food waste, and increased quality time spent with the family when engaging in what is perceived to be by many consumers using meal kits, as an entertaining and enjoyable upscale meal preparation process.

Today’s consumers are increasingly embracing opportunities associated with convenience and enjoyment of experiencing upscale, tastier and healthier foods that they are able to efficiently prepare at home. This relatively new consumer demand for seeking unique home dining experiences has led to meal kits now being aggressively promoted by producers as the new meal solution (IRi, 2017). Considering the growing popularity meal kits are undergoing in today’s foodservice industry, it is essential to obtain more knowledge surrounding those product attributes pertaining to consumers and meal kits. Although meal kits offer many opportunities for today’s consumer, they are not without challenges including price, renewal rates, dropout rates and other factors (Woods, 2000), which should be addressed in academic research. Thus, in order to gain a more precise understanding of today’s consumer’s perception of meal kit product attributes, values, and intent to repurchase these products, further research is required. No relevant information about important meal kit product attributes has to date investigated meal kit attributes and how they affect consumers’ perceived value, and intentions to repurchase.

To begin this investigation, it is important to understand implications of society’s changing demographics regarding single-person and multi-person households. Research documents that food consumption patterns are found to be significantly different between these two groups (Daniels & Glorieux, 2015). In fact, the behavioral differences related to these demographic groups are so different that one specific study (Tariq, D’Souza, & Allaway, 2016), asserted that single-person households should be recognized as a different consumer category in consideration of their consumption patterns and preferences towards food products. A more recent study conducted by Cho, Bonn, and Li (2018) identified significant differences in perceptions about food delivery application attributes between single-person and multi-person households. In that particular study, findings documented that single-person households using food delivery apps prefer the wide variety of restaurants and menu choices from which they could order, while multi-person household users were mostly concerned about menu prices.

Thus, the study’s objectives were developed to: (a) identify salient product attributes of meal kit products, (b) investigate how those meal kit product attributes influence the consumer’s perceived value and further their intent to repurchase meal kits, and (c) explore whether or not significant differences exist between single-person and multi-person households and the effects meal kits’ attributes may have upon each of these group’s perceived value and their intention to repurchase.

2. Theoretical framework and hypotheses

2.1. Meal kits

Meal kits represent a single unit commodity item that provides pre-portioned food ingredients along with recipes for consumers to easily prepare and serve at home, and are made available on a daily basis to consumers for purchase in grocery stores, and also on a home delivery subscription service basis (SBWire, 2018). Thus, representative meal kit products assume the format of “Ready-to-Cook” kits which include raw ingredients that are weighed, measured, cut and assembled in a prepared tray involving no clean up or prep work. A 2016 survey conducted on New York consumers who tried meal kits during the previous two-year period reported that 77% of those respondents placed two or more orders, with 48% of them placing five or more orders (Kaiser, 2017). Another research report found that about 30 million households would consider using meal kits within the next six months, and reported that value for the money and product quality would be extremely important attributes in their decision to do so (Nielsen, 2018).

Given their rise in popularity, research studies pertaining to meal kits have identified specific consumer benefits as follows: Meal kits contain foods that are perfectly prepared with measured ingredients. This assists consumers by saving them time grocery shopping and helps them to reduce food waste and control ingredient usage (Troy & Acosta, 2017). Meal kits can lead to a more desirable way to increase quality time with family (Scherr, 2018); Easy-to-follow cooking instructions make consumers feel confident to cook independent of others (Levy, 2018). Highly inspired recipes provide an opportunity to experience the sensation of gourmet cooking, while also developing culinary skills associated with activities involving preparing and then enjoying upscale restaurant quality meals in the privacy of your own home (Nielsen, 2018).

2.2. Meal kit product attributes

Choi, Han, and Choi (2015, p. 464) documented that “product attributes signify product components that are required to carry out functions that consumers desire while a product refers to all methods associated with activities involving preparing and then enjoying upscale restaurant quality meals in the privacy of your own home (Gwin & Gwin, 2003).

Meal kits are perhaps the most well-known food delivery service among all Ready-to-Cook (RTC) products (IRi, 2017). Reilly (2019) stated that consumers expect that they will be able to cook high-end quality food using meal kits offering fresh ingredients and gourmet recipes, and ‘food quality’ of meal kits should be delicious restaurant-quality food just like chefs prepare. Convenience offered from pre-preparation food products is generally defined by the extent of preparation time, culinary skills, the use of appliances and energy input which are transferred to a home kitchen from manufacturers or distributors in fully or partially preparing a meal (Costa et al., 2001). Likewise, meal kits focus on providing great ‘convenience’ by eliminating the need to plan meals, find recipes, travel and shop for groceries and then prepare ingredients (Birth, 2017). According to Nielsen’s analysis (2018), a relatively high price became a major obstacle of frequent meal kit use, with 50% of all responding consumers
indicating they would buy meal kits more frequently if those products were less expensive. This implies that ‘reasonable price’ would be one key attribute associated with meal kits. Thus, this study anticipates that the three factors representing ‘food quality,’ ‘convenience,’ and ‘reasonable price’ would be also important attributes for meal kit products.

A report by Nielsen (2018) stated that because meal kit consumers want to continuously try new and different foods, they value variety of menu items. Supporting this, Chang (2019) emphasized the importance of offering a wide range of recipes for consumers (i.e., vegetable, meat, seafood or starch options) in order to appeal highly to consumers seeking a variety of choice and having the willingness to experience learning how to prepare gourmet meals, and perhaps even challenging them to further develop their culinary skills through more meal kit choices and opportunities. Thus meal kit companies attempt to include a wide variety of food ingredients for consumers to experience a more diverse assortment of different meal plan options, and to begin segmenting the meal kit consumer market based upon benefits sought by consumers (Chen & Picks, 2018). In addition, consumers have become more concerned with eating healthier. Reflecting upon such phenomenon, many meal kit companies heavily advertise the use of organic, antibiotic-free and sustainable ingredients as well as their low-calorie and diet-friendly options (Jin & Lee, 2017). Thus, one primary reason that consumers purchase meal kits is that they perceive them to be healthier than any other HMR options (Birth, 2017). Thus, ‘menu variety’ and ‘health-oriented’ attributes are also expected to be essential for meal kit products.

2.3. Meal kit product attributes and the consumer's perceived value

Because consumer food purchases represent what they want, what they care about, and how frequently they are able to afford these purchases, it is extremely important that consumers have positive perceptions pertaining to food product attributes (Kim, Lee, & Lee, 2018). In terms of meal kit product attributes, consumers would expect that they can cook high-end restaurant quality food using fresh ingredients at reasonable prices. Also, they expect to save time compared with how long they would spend driving to grocery centers and shopping for food items (Scherr, 2018). Therefore, when their product expectations have been satisfied, these consumers would acquire high levels of perceived value related to the overall meal kit experience.

McDougall and Levesque (2000) defined ‘perceived value’ as an individual’s evaluation about what is received and what is given. Perceived value about a product or service has received much attention due to its critical effects upon consumers and their future buying behavior (Ha & Jang, 2010). Thus, many previous scholars have focused upon identifying important determinants of consumer’s perceived value in a variety of study contexts. One early study (Hirschman & Holbrook, 1982) stated that consumers perceive value of a product while experiencing the product attributes. Ozturk, Nusair, Okumus, and Hua (2016) later demonstrated that critical consumer determinants of perceived values are those product attributes.

Within the context of foodservice businesses, scholars have highlighted the importance of better understanding consumers’ perceived value by adopting multi-dimensional concepts. One early study by Sheth (1983) proposed two universal value perceptions including emotional (or hedonic) and functional which would be the most appropriate to predict consumer behavior. Hedonic values reflect an individual’s desire for emotional pleasure in conjunction with entertainment and affective benefits (i.e., joy, pleasure and excitement) (Hirschman & Holbrook, 1982). Functional value represents an individual’s assessment about functional benefits, and is more related to cognitive aspects such as value for the money, time savings and convenience (Hirschman & Holbrook, 1982). Thus, hedonic value is likely to be more subjective and depends on individual preferences while functional value is more objective and is assessed based on more efficiency and economic-oriented aspects (Overby & Lee, 2006).

The two-dimensional value has been widely applied and studied in the foodservice context. For instance, Park (2004) and Ha and Jang (2010) demonstrated significant effects restaurant attributes have upon both hedonic and functional value. Additionally, literature began to report that determinants of those two value dimensions could be quite distinct. Rust, Zeithaml, and Lemon (2000) proposed that functional value is formed based upon consumer perceptions about their practical needs such as product quality and price while hedonic value is developed by consumer perceptions about self-enhancement and sensory pleasure. Supporting this, Chen & Hu, 2010 found that functional value was determined as an overall assessment of coffee shop consumers’ perceived value incorporating product quality, value for money and convenience attributes. Also, Wang and Yu (2016) demonstrated that high quality ready-to-drink products improved consumers’ perceived functional value significantly more than did those associated with hedonic value. Additional research specifically applied within the fast-food restaurant context (Park, 2004) found that menu variety and food taste were associated significantly more with hedonic value when compared to utilitarian value. Based on this discussion, this study expects to find significant relationships between specific meal kit quality attributes and the consumers’ perceived hedonic and functional value. Thus the following hypotheses were developed:

H1a. Meal kit food quality increases the consumers’ perceived hedonic value

H1b. Meal kit food quality increases the consumers’ perceived functional value

H2a. Meal kit menu variety increases the consumers’ perceived hedonic value

H2b. Meal kit menu variety increases the consumers’ perceived functional value

H3a. A meal kit’s health-orientation increases the consumers’ perceived hedonic value

H3b. A meal kit’s health-orientation increases the consumers’ perceived functional value

H4a. Meal kit convenience increases the consumers’ perceived hedonic value

H4b. Meal kit convenience increases the consumers’ perceived functional value

H5a. Meal kit price reasonability increases the consumers’ perceived hedonic value

H5b. Meal kit price reasonability increases the consumers’ perceived functional value

2.4. Meal kit consumers’ perceived value and their intentions to repurchase

The topic of consumers and perceived value has been widely examined in a variety of areas due to its critical roles in determining future purchasing behavior (Cronin, Brady, & Hult, 2000). Because repurchasing intention is regarded as the most important determinant of re-patronizing a certain product, studies have focused on the positive effect of perceived value upon consumer repurchase intention (Cheng & Lu, 2013; Sweeney & Soutar, 2001).

Given this well-established relationship between perceived value and repurchase intention, the effect of perceived value on consumer repurchase intention has also been investigated in the foodservice industry. Scholars empirically demonstrated that both hedonic and functional value significantly improved restaurant consumers’ revisit intention (Ha & Jang, 2010; Wang & Yu, 2016). Adopting this, perceived hedonic value can reflect a high level of emotional worth from the meal kit consumption experience, facilitating the formation of
consumer commitment and loyalty to the same products (Hirschman & Holbrook, 1982). Similarly, consumers having high perceptions about the functional value of meal kits are more likely to achieve practical needs from their meal kit consumption experience, and further they intend to purchase the same products in the future (Babin, Darden, & Griffin, 1994). Thus, it is reasonable to expect that the two fundamental perceived value dimensions (hedonic and functional value) about meal kits should be important to consumers' repurchase intention.

H6. Consumers' perceived hedonic value positively increases their intentions to repurchase meal kits

H7. Consumers' perceived functional value positively increases their intentions to repurchase meal kits

2.5. Single-person households vs. multi-person households in the United States

Bachman and Barua (2015) focused upon the increase in single-person households in America household types, and the trend that represents adults living alone. The United Nations Statistics Division defines single-person and multi-person households as follows: 1) a single-person (one-person) household is an arrangement in which one person makes provisions strictly for their own food and other living essentials without combining their household goods with others that would essentially establish a multi-person household; and 2) a multi-person household represents a group of two or more persons living together who make common provision for food and other living essentials. During 1999–2014, the number of single-person households in the U.S. increased from 26.6 million to about 34.2 million, representing a 2.8% growth trend (Bachman & Barua, 2015). Single-person households in the U.S. now represent the second largest household segment at 36.48 million, compared with about 60 years ago (6.9 million) (Duffin, 2019).

Increasing numbers of single-person US households has led to profound challenges and opportunities for many businesses, including those in the foodservice industry. This is due to the fact that changes in household composition significantly influence consumer spending patterns, which further impacts foodservice outlets (NPD, 2015). The situation involving single households is associated with the “eating alone” behavior. Single-person households have led to changes in food consumption patterns, which has created a new segment within the market, previously dominated by multi-person households. Thus, food manufacturers and retailers are now required to have a better understanding of what this individual consumer's unique demands and preferences are when developing food products and marketing strategies in order for them to remain competitive.

It has generally been acknowledged that single-person households underutilize their kitchen. However, this trend has reversed itself due to the rise of HMR products, including meal kit subscriptions, the growth of smart appliance sales and the ability to download cooking apps (Henderson, 2014). Supporting this, a recent study confirms that single-person households now tend to spend more time at home and enjoy cooking for their personalized experience; they tend to post food pictures of their cooked meals on social media, and as a result, meal kit subscriptions have become a major category among new meal-solutions (Byron, 2019).

Several prior studies have demonstrated a significant difference in perceptions about food products and purchasing behaviors between single-person and multi-person households. For instance, Ezell and Russell (1985) found that food assortments were the most important attributes to single-person households while product quality and prices were more important to multi-person households. Supporting this, Mintel (2016) reported that most single-person households seek more effective options to healthier eating. Thus, small-portioned healthy meal alternatives appeal more to the single-person household group, leading to more positive attitudes and ultimately, heightened behavioral intentions to repurchase. This same report also highlighted food waste as a significant concern among single-households, thus, small pack-sized food products have become more attractive to them. In contrast, price is more important to multi-person households as full-sized food products are cheaper than small-sized options, thus more cost-effective products would positively influence the multi-person household group and their repurchase intention.

This current study therefore expects to find significant differences in consumer perceptions about meal kit attributes, their perceived values and their repurchasing intention between single-person and multi-person households. Thus, this study developed the following hypothesis. Our research model is presented in Fig. 1.

H8. The relationships between meal kit product attributes, consumers' perceived values and their intentions to repurchase would be significantly different between single-person and multi-person households

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Fig. 1. Research framework.
3. Method

3.1. Data collection and sampling

Operational measurements of each construct in the hypothesized framework were arranged in an electronic questionnaire made available to a panel of U.S.-based consumers affiliated with Amazon’s Mechanical Turk (MTurk) crowdsourcing marketplace. The MTurk platform was determined to be an appropriate sampling frame for several reasons: First, MTurk is useful when a large and geographically diverse sample is required (Buhrmester, Kwang, & Gosling, 2011). Additionally, MTurk has been shown to be a relatively representative source of consumer-level data in the United States (Mason & Suri, 2011). Finally, MTurk samples are often significantly more diverse than standard Internet samples (Goodman, Cryder, & Cheema, 2012). Respondents were pre-screened to validate that they were over 21 years of age and had purchased at least one meal kit within the past month. The time constraint pertaining to meal kit purchases was important to minimize the potential of common method bias based upon recall. Subsequent analysis documented that length of time associated with meal kit purchase behavior was normally distributed across the sample, establishing proof that measurement error affected by recall was not a problem attributed to artificial sample variance.

Respondents were asked if they were meal kit plan subscribers, and if so, to provide the names of meal kit companies they used. Respondents were also asked to identify menu items they had ordered along with prices paid for those items. In order to enhance Mturk data quality, respondents taking longer than 5 min to answer these screening questions were deleted from the sample. Additionally, respondents providing incorrect information pertaining to meal kit company names and/or prices paid for associated menu items were also eliminated from those respondents. Using this methodology, a total of 323 responses were collected. However, after analyzing the results of several embedded attention check items, 71 responses were identified as spurious and were omitted from further analysis. The final sample consisted of 252 usable entries.

3.2. Characteristics of the study sample

The sample was nearly split between single-person households (51.2%) and multi-person households (48.8%). A total of 55% of the overall sample represented males living in single-person households, with about 48% being under 30 years of age. In comparison, 61% of multi-person household respondents were females, with just 22% being under the age of 30. This is not surprising as research confirms younger generations have been shown to consume more food away from home than older generations (Zan & Fan, 2010). Additionally, Table 1 offers further details pertaining to income, marital status, and numbers of children living in households, suggesting the sample was representative of the FAFH marketplace (Kim & Geistfeld, 2003).

3.3. Measures

In order to develop the survey questionnaire, a comprehensive literature review process was conducted. The first five parts of the survey questionnaire were developed to measure consumer perceptions about meal kit attributes including ‘food quality’ (Kim et al., 2018; Kim & Lee, 2013), ‘menu variety’ (Naderi, Paswan, & Guzman, 2018), ‘health-oriented’ (Jang et al., 2011; Kim et al., 2018), ‘convenience’ (Jang et al., 2011; Pham, Tran, Misra, Maskelius, & Damaševičius, 2018), and ‘price’ (Kim, Lee, & Kim, 2012) using 12 items (see Table 2).

The following three sections of the survey instrument was designed to assess two dimensional values using eight items. ‘Hedonic value’ was measured using four items and also, ‘functional value’ was measured using the other four items (Babin et al., 1994). Respondents’ intention to repurchase meal kits were measured using three items (Cho et al., 2018). All of the measures were rated using a seven-point Likert scale (1 = “strongly disagree” and 7 = “strongly agree”). The final part of the survey instrument was developed to correct information regarding participants’ socio-demographics including family size and their meal kit purchasing and consumption patterns.

4. Results

4.1. Reliability and validity assessment of the study’s measurement

In order to assess reliability and validity of the study’s measures, a confirmatory factor analysis (CFA) with a maximum likelihood estimation method was conducted. Table 1 presents the CFA results, supporting the overall satisfactory fit of the measurement model (CFI = 0.934, GFI = 0.925, TLI = 0.920 and RMSEA = 0.057). All standardized loadings between the latent constructs and the observed

| Socio-demographic | Single-person; n (%) | Multi-person; n (%) |
|-------------------|----------------------|---------------------|
| Family size       |                      |                     |
| 1 person, alone   | 129 (51.2%)          | ~                   |
| 2 persons or more | ~                    | 123 (48.8%)         |
| Gender            |                      |                     |
| Male              | 71 (55.0%)           | 48 (39.0%)          |
| Female            | 58 (45.0%)           | 75 (61.0%)          |
| Age               |                      |                     |
| 20–29             | 63 (48.8%)           | 27 (22.0%)          |
| 30–39             | 47 (36.4%)           | 66 (53.7%)          |
| 40–49             | 10 (7.8%)            | 18 (14.6%)          |
| 50–59             | 8 (6.2%)             | 12 (9.7%)           |
| Over 60           | 1 (0.8%)             | ~                   |
| Marital Status    |                      |                     |
| Married           | 2 (1.5%)             | 97 (78.9%)          |
| Unmarried         | 127 (98.5%)          | 26 (21.1%)          |
| Educational level |                      |                     |
| High school graduate | 8 (6.2%)           | 9 (7.3%)            |
| Some college/College degree | 89 (69.0%) | 77 (62.6%) |
| Graduate studies/Graduate degree | 32 (24.8%) | 37 (30.1%) |
| Occupation        |                      |                     |
| Housewife         | 0 (0.0%)             | 9 (7.3%)            |
| Professional      | 34 (26.4%)           | 41 (33.3%)          |
| Self-employed     | 20 (15.5%)           | 14 (11.4%)          |
| Official/educator | 7 (5.4%)             | 9 (7.3%)            |
| Student           | 16 (12.5%)           | 3 (2.4%)            |
| Corporate employee| 47 (36.4%)           | 44 (35.8%)          |
| Other             | 5 (3.9%)             | 3 (2.4%)            |
| Monthly household income |          |                     |
| $<3000            | 39 (30.2%)           | 13 (10.6%)          |
| $3000 – $4999     | 44 (34.1%)           | 41 (33.3%)          |
| $5000 – $6999     | 22 (17.1%)           | 41 (33.3%)          |
| $7000 – $8999     | 13 (8.5%)            | 13 (10.6%)          |
| $9000 ≤           | 13 (10.1%)           | 15 (12.2%)          |
| Monthly usage frequency |            |                     |
| 3 times or <      | 49 (38.0%)           | 31 (25.2%)          |
| 4 times           | 30 (23.3%)           | 28 (22.8%)          |
| 5–7 times         | 25 (19.4%)           | 28 (22.8%)          |
| 8 times           | 10 (7.8%)            | 19 (15.4%)          |
| > 8 times         | 15 (11.6%)           | 17 (13.8%)          |
| Usage duration    |                      |                     |
| < 6 months        | 49 (38.0%)           | 30 (24.4%)          |
| 6 months – less than 1 year | 54 (41.9%) | 56 (45.5%) |
| 1 year – less than 2 year | 22 (17.1%) | 31 (25.2%) |
| ≥2 years          | 4 (3.1%)             | 6 (4.9%)            |
| Monthly spending  |                      |                     |
| $<100             | 57 (44.2%)           | 23 (18.7%)          |
| $100 – $199       | 39 (30.2%)           | 45 (36.6%)          |
| $200 – $299       | 23 (17.8%)           | 19 (15.4%)          |
| $300 – $399       | 4 (3.1%)             | 10 (8.1%)           |
| $400 – $499       | 6 (4.7%)             | 14 (11.4%)          |
| $500 or more      | ~                    | 12 (9.8%)           |
Variables were found to be significant \((p < 0.001)\) and to range from 0.711 to 0.934. All average variance extracted (AVE) values ranged from 0.608 to 0.830. Therefore, convergent validity of the measurement was evident (Hair, Anderson, Tatham, & Black, 1998). All composite construct reliability (CCR) values ranged from 0.822 to 0.936 that were greater than the suggested threshold of 0.70. All of Cronbach’s \(a\) coefficients were greater than 0.70. These results supported acceptable internal consistency among the observed variables for each latent construct (Nunnally, 1978).

Table 3 presents the mean values, standard deviations and correlations between the study’s constructs. All five meal kit product attributes were found to be positively correlated with both hedonic and functional values. Further, hedonic and functional value were also positively associated with repurchase intention. Additionally, all values of the square root of the AVE were found to be greater than the correlations between the study’s constructs. This provided support for discriminant validity of the measurements (Hair et al., 1998).

### Table 2

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### Table 3

Discriminant validity and correlations.

| Constructs       | Mean | S.D. | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  | (7)  | (8)  |
|------------------|------|------|------|------|------|------|------|------|------|------|
| Food quality     | 5.46 | 1.04 | 0.885*|      |      |      |      |      |      |      |
| Menu variety     | 5.54 | 0.93 | 0.545 | 0.779|      |      |      |      |      |      |
| Health-oriented  | 5.52 | 1.01 | 0.570 | 0.516| 0.821|      |      |      |      |      |
| Convenience      | 4.96 | 1.20 | 0.337 | 0.440| 0.422| 0.909|      |      |      |      |
| Price            | 4.73 | 1.44 | 0.467 | 0.507| 0.355| 0.557| 0.911|      |      |      |
| Hedonic value    | 5.09 | 1.19 | 0.459 | 0.577| 0.462| 0.580| 0.650| 0.867|      |      |
| Functional value | 5.09 | 1.12 | 0.472 | 0.602| 0.539| 0.610| 0.660| 0.649| 0.850|      |
| Repurchase intention | 4.81 | 1.47 | 0.380 | 0.491| 0.321| 0.532| 0.549| 0.629| 0.630| 0.899 |

Note. *Diagonals: Square root of AVE from the observed variables by the latent variables.
p < 0.001) than functional value (β = 0.757, p < 0.001). However, ‘health-oriented’ had no significant effect upon either hedonic (β = 0.057, p > 0.05) or functional value (β = 0.084, p > 0.05). ‘Convenience’ had no significant effect on hedonic value (β = 0.146, p > 0.05), but it significantly affected functional value (β = 0.299, p < 0.01). Similarly, ‘price’ also had no significant influence on hedonic value (β = 0.172, p > 0.05), but it had a significant effect on functional value (β = 0.273, p < 0.001). Therefore, hypotheses 1a, 1b, 2a, 2b, 4b and 5b were supported, but hypotheses 3a, 3b, 4a and 5a were not supported.

Results supported our expectations by demonstrating that hedonic value and functional value significantly and positively influenced meal kit consumers’ repurchase intention. Especially, functional value (β = 0.643, p < 0.001) had a more positive effect on repurchasing intention than hedonic value (β = 0.298, p < 0.01). Thus, hypotheses 6 and 7 were supported.

4.3. Results of testing hypotheses 8

To test hypothesis 8, this study sample was divided into two groups; single-person (n = 129) and multiple-person households (n = 123). The χ2 test in the SEM was utilized to verify path coefficients of the relationships between the five meal kit attributes, hedonic value, functional value and repurchasing intention. Results are presented in Table 4. The effects of meal kit ‘food quality’ and ‘menu variety’ upon consumers’ perceived hedonic value were significantly different between single-person and multi-person households. Specifically, the effect of ‘food quality’ upon hedonic value was found to be more positive in the multi-person household segment (β = 0.920, p < 0.05) than in the single-person household group (β = 0.944, p > 0.05). However, the effect of ‘menu variety’ upon hedonic value was seen to be more positive in the single-person household group (β = 2.111, p < 0.05) than in the multi-person household group (β = 0.599, p < 0.01). The remaining attributes (health-oriented, convenience and price) and their effects upon hedonic value were not significantly different between single-person and multi-person households.

As depicted in Fig. 3, the effects of the ‘food quality,’ ‘menu-variety,’ and ‘price’ attributes upon functional value were significantly different between single-person and multi-person households. The effect of ‘food quality’ upon functional value was more significantly positive in the multi-person household segment (β = 0.730, p < 0.05) than in the single-person household group (β = 0.029, p > 0.05). However, the effect of ‘menu variety’ upon functional value was found to be more positive in the single-person household group (β = 0.474, p < 0.01) than in the multi-person household group (β = 1.729, p > 0.05). The effect of ‘price’ upon functional value was significantly positive in the multi-person household group (β = 0.941, p < 0.05), but its effect upon functional value was not significant (β = 0.032, p > 0.05) in the single-person household group. The effects of the other three attributes upon functional value were not significantly different between those two groups.

In addition, results found a significant difference in the relationships between hedonic value and repurchase intention between single-person and multi-person households. The effect of hedonic value upon repurchase intention was revealed to be more significantly positive in the multi-person household group (β = 0.985, p < 0.01) than in the single-person household group (β = 0.214, p < 0.05). However, the effect of functional value upon repurchase intention was not significantly different between single-person (β = 0.516, p < 0.001) than in the multi-person household group (β = 1.134, p < 0.001).

Results implied that meal kits’ food quality would be more important for the multi-person household group to perceive high levels of hedonic and functional value while the menu variety attribute would be more critical to the single-person household group in order to have a high level of hedonic and functional value. In addition, when multi-person households perceive higher hedonic value, they have a higher intention to continuously use meal kits than single-person households. However, the effect of functional value upon repurchase intention would be significantly positive regardless of whether an individual lives alone or in a multi-person household.

5. Implications, limitations and future studies

5.1. Theoretical implications

Given that distinct meal kit attributes allow consumers to prepare and consume high-end restaurant quality dishes using a wide variety of fresh/seasonal ingredients, and in consideration of the growing number of single-person households in the U.S., our study provides timely and useful information that addresses the continuously changing demands
of consumers. Based on our findings, several important theoretical implications are provided.

Four specific attributes were identified as the main drivers of meal kit success for consumers: the provision of high quality food dishes, labor savings, menu variety and reasonably priced. In particular, the two attributes representing high quality food dishes and menu variety were found to be the most important meal kit attributes because they both strongly improved hedonic and functional value for consumers. This is very important information as related to consumers and meal kit businesses. Today's consumers are challenged to prepare three meals each day. Findings imply that meal kits are able to offer consumers the opportunity for themselves to quickly prepare and enjoy excellent quality entrees having perfectly balanced flavors and ingredients in their own homes similar to when they dine out at gourmet restaurants.

Two additional meal kit attributes, ‘convenience’ and ‘reasonable price’ were found to play a significant role in improving functional value. Because functional value is rooted in a product’s functionality (e.g., low price, good for losing weight, or convenience), it is not surprising that this study identified the significant effects that ‘convenience’ and ‘reasonable price’ had upon functional value. However, attention must be directed to findings emphasizing the ability of meal kit users to cook high-end restaurant quality dishes at home, and that the attractiveness of these meal kits was attributed to the product’s ability to offer a broad range of menu options. These were identified as being the most important meal kit attributes that provide consumers with hedonic and functional benefits. This implies that today’s consumers interested in cooking at home can now do so without the hassle of shopping for all necessary ingredients which are provided through the meal kit solution, making this a distinct category from those traditional and highly convenience oriented HMR products.

This study confirmed findings reported in prior academic literature involving relationships between the consumer’s perceived value and their future behavior pertaining to a new meal solution. Results supported the position that hedonic and functional values were significant

| Table 4 | Results of testing Hypothesis 8. |
|---------|------------------|------------------|------------------|------------------|
|         | Single-person (n = 129) | Multi-person (n = 123) |         |
| Food quality | Hedonic value | Coefficient | 0.044 | 0.292 | 0.929 | 1.987*** | \( \Delta \chi^2 (1) = 3.857, p < 0.05 \) | Yes |
| Menu variety | Hedonic value | Coefficient | 0.509** | 2.900** | 2.111 | 1.956* | \( \Delta \chi^2 (1) = 6.044, p < 0.05 \) | Yes |
| Health-oriented | Hedonic value | Coefficient | 0.116 | 0.793 | 0.357 | 0.667 | \( \Delta \chi^2 (1) = 0.254, p > 0.05 \) | No |
| Convenience | Hedonic value | Coefficient | 0.333*** | 3.092*** | 0.229 | 0.773 | \( \Delta \chi^2 (1) = 2.814, p < 0.05 \) | No |
| Price | Hedonic value | Coefficient | 0.204 | 1.857 | 0.147 | 0.773 | \( \Delta \chi^2 (1) = 0.455, p > 0.05 \) | No |
| Food quality | Functional value | Coefficient | 0.029 | 0.230 | 0.730 | 1.974*** | \( \Delta \chi^2 (1) = 3.882, p < 0.05 \) | Yes |
| Menu variety | Functional value | Coefficient | 0.474 | 3.008** | 1.729 | 1.862 | \( \Delta \chi^2 (1) = 3.925, p < 0.05 \) | Yes |
| Health-oriented | Functional value | Coefficient | 0.020 | 0.160 | 0.280 | 0.569 | \( \Delta \chi^2 (1) = 0.257, p > 0.05 \) | No |
| Convenience | Functional value | Coefficient | 0.492 | 5.028*** | 0.089 | 0.323 | \( \Delta \chi^2 (1) = 2.786, p > 0.05 \) | No |
| Price | Functional value | Coefficient | 0.032 | 0.303 | 0.941 | 1.962*** | \( \Delta \chi^2 (1) = 3.835, p < 0.05 \) | Yes |
| Hedonic value | Repurchase intention | Coefficient | 0.214 | 1.973*** | 0.985 | 2.923*** | \( \Delta \chi^2 (1) = 3.975, p < 0.05 \) | Yes |
| Functional value | Repurchase intention | Coefficient | 0.516 | 3.882*** | 1.134 | 4.460*** | \( \Delta \chi^2 (1) = 2.042, p > 0.05 \) | No |

Baseline model fit: \( \chi^2/df = 1.940 (p < 0.01); CFI = 0.898, IFI = 0.900, TLI = 0.894, RMSEA = 0.061. \)

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

“The Single” represents single-person household; “Multi” represents multi-person household; Bold straight lines indicate significantly positive moderating effects of household configuration upon the relationships between meal kit attributes and perceived value.

Fig. 3. Results of testing the moderating effects of single-person vs. multi-person households.
antecedents of repurchase intention. Although the explanatory power of the functional value dimension was stronger in relation to repurchase intention, the significant relationship between hedonic value and repurchase intention should be of interest to meal kit marketers. This association indicates that consumers may think of meal kits as interesting food and buy meal kits to serve as formal meal solutions while traditional HMR products are well-known as providing the most convenient way to provide a meal.

It has been reported that although modern consumers are constantly seeking solutions that minimize their time and effort regarding meal preparation and procurement methods, they are not necessarily using more convenience-oriented food products or prepared ingredients (Hill & Maddock, 2019). Rather, they have an increasing desire to cook from scratch due to their moral judgement and other reasons (Lyon & Kinney, 2013). Mintel (2016)’s study of the U.S. market reported that about 112 million adults consider themselves to be ‘cooking enthusiasts’ and that about 80 percent of all Americans prepared in-home meals once or twice per week. Another study conducted by the Report Linker (2016) validated that one third of Americans included more than one homemade item at their dinner table even if it was something simple or already prepared. Consumers today are more willing to spend significant time preparing meals at home because they are more interested in consuming fresh food and they also enjoy the experience of involvement associated with in-home food preparation (Goble, 2019). Thus, our findings regarding two meal kit attributes (food quality and menu variety) and their more significant effects upon hedonic value reflect the desire for today’s consumers to prepare restaurant quality food at home using more diverse menus that incorporate seasonal and fresh ingredients.

Our results identified meal kit food quality as having more positive effects upon perceived value for the multi-person household segment when compared with the single-person household group. This is an important observation since the study’s sample indicates the largest single-person segment (38.0%) purchases meal kits just three or less times per month, with spending reported at less than $100 per month. Comparatively, 38.2% of multi-person households purchase meal kits between five and eight times per month versus single person households (27.2%), and account for much greater monthly spending (8.1% spent between $300-$399 per month, compared with only 3.1% of single person households spending this amount).

Costa (2013) asserted that a sense of moral obligation prompts consumers to form negative evaluations about HMR products and creates a deep antipathy against highly convenience-oriented food, thus decreasing their intent to purchase HMR products. This indicates that a consumers’ moral obligation leads to the psychological burden of compromising one’s meal preparation duty. Roh and Park (2019) empirically demonstrated that individuals governed by a high sense of moral obligation are reluctant to express themselves as having high convenience-seeking tendencies and instead they attempt to act on the belief that meals should be prepared and shared with other family members. Thus, individuals belonging to a multi-person household are more likely to have a high sense of moral obligation, which leads them to prepare meals in order to be shared with family members. Perhaps the nearly 80% married, multi-household segment also has children that have basic tastes. Although households with children is something our study did not explore, it stands to reason that a part of the 80% married segment would also have children in their households. This could explain why food quality was significantly more important to multi-person households than to single-person households. Accordingly, meal kit solutions that assist consumers with being able to prepare high quality dishes in their own homes might be perceived as having higher value to the multi-person household group than it would by the single-person household group based upon usage and spending behavior from our study’s sample.

In contrast, we found that the effects of meal kits’ menu variety upon the consumer’s perceived value were more positive in the single-person household group than in the multi-person household group. Restaurants offering the availability of a variety of menu options is documented as being a critical factor in dining experience. Han (2018) explored solo dining experiences and found that solo diners hesitate to eat alone because of restaurants offering a limited selection of menu items. Additionally, some restaurant menus are prepared and served for two or more diners, while most fine dining restaurants are perceived as being inappropriate to visit alone. Solo diners also remarked that being able to order what they want to eat makes their dining experience more pleasurable. Thus, our finding imply that single-person household members would place a high value for meal kits that provide a variety of menu items. Single-person families would experience more positive benefits while cooking meal kits at home, leading to a high level repurchase intention.

Finally, multi-person households indicated receiving significantly higher hedonic value compared to functional value, indicating they are more likely to repurchase meal kits than those single-family households. Because hedonic value involves consumers receiving immediate gratification from the meal kit experience involving production and consumption, it is assumed that multiple-person households comprise families receiving immediate benefits associated with the consumption of a self-prepared gourmet entrée for their family members. Support for the repurchase of meal kits by multi-family households may be observed in Table 1 where over 27% of these consumers purchased meal kits eight or more times per month compared with 19% of single-family households. As well, the period using meal kits by multi-person households for one year and longer was over 30%, compared with just over 20% by single-person households.

### 5.2. Managerial implications

As the changing demographics of the US household evolve, so do the preferences, wants and needs of the consumer. More single US households have led to changing consumer foodservice product tastes and desires. Today’s single households require different products for their individual lifestyles. As noted in our findings, elements of consumer inspiration through culinary education were apparent. Accompanied by the construct of experience associated with perhaps the entire experience of creating a gourmet meal, the meal kit phenomenon transcends itself much deeper into the consumer’s lifestyle than initially expected when this research project was first initiated. Along these same lines, challenges pertaining to meal kits and consumer subscriptions have been identified. One study documented that over half of all meal kit subscribers cancelled their subscriptions within the first six months, and about three quarters of consumers cancel their subscriptions within 12 months (Wells, 2020). Still, more research suggests that meal kit subscribers defect from one company to another due to introductory price discounting and competition issues (Woods, 2020). Additionally, consumers become unchallenged with the educational or learning aspect of meal kit preparation once the newness has diminished, which is attributed to limited product variety. Therefore, adopting the following ideas from the gurus of the subscription economy would retain subscribers. Tzuo and Weisert (2018) proposed the subscription economy model that states that its inherent outcomes are convenience and time saving. Also they suggested that the subscription economy model can be successful by a firm’s ability to continuously identify and promote novel outcomes in the fast-changing world. This should be applied to the meal kit subscription model. For example, as of July 2020 during the COVID-19 pandemic, the outcome of meal subscription service promotions may emphasize a feeling of safety removed from possibility of pandemic transmission. Supporting this, Manu (2017) also proposed that a successful subscription platform leads subscribers to navigate the emerging present and gain intrinsic value in order to satisfy their desire for personalized services. Thus, meal kit firms may consider creating a platform where subscribers can engage and participate in sharing their family recipes with others and also suggesting alternative ingredients.
available in their local communities. Finally, allowing consumers the option to skip deliveries or suspend their subscriptions could offer meal kit managers strategies for increasing retention (Woods, 2020).

What then, are the messages learned for the meal kit manufacturing sector from these findings? Education in any experience has been well established as being of significant importance to consumers, and in particular, to modern consumers. Particularly, we found that in the multi-person household group, meal kit food quality had a significant positive effect upon their perceptions of hedonic value. As well, food quality and reasonably priced meal kits had a significant positive effect upon their perceptions of functional value. Therefore, meal kits should improve dimensions related to education, excitement, entertainment and successfulness with the preparation of high quality gourmet meals. Modern consumers in particular are drawn to unique experiences, and are not necessarily brand loyal. So the high quality menu items presented to these consumers, the higher the potential they will gravitate towards meal kit opportunities.

Comparatively, the single-household group revealed that menu variety was shown to have a significant positive effect upon their perceptions of hedonic and functional value. This leads to the development of more advanced meal kits requiring and incorporating a wider variety of menu options directed to single-person household consumers whom have been meal kit subscribers for longer durations. Based upon these results, there is a clear possibility that this household segment represents sub-segments that may seek different benefits from the meal kit purchasing process. It does suggest interesting managerial applications worthy of future exploration in order to obtain further detail. Thus, meal kit companies should continue to emphasize those attributes associated with meal kits, and hedonic and functional value perspectives to improve consumer repurchase intention.

If a consumer selects a meal kit company that is not compatible with their particular tastes and preferences, the particular company and the subscription come into question. Thus, decisions made by consumers based upon advertising could jeopardize the lifetime value of the relationship between the meal kit business and the consumer. Many meal kit businesses have begun to partner with grocery chains where consumers are able to experiment with the experience involving meal kits without having to commit to a long-term time period. Although limited in variety, these individually marketed meal kits offer flavor combinations already familiar to consumers. Italian foods, steak and potatoes, Mediterranean entrees, salmon with vegetables and curried rice are now featured regularly at grocery chains such as Whole Foods, Safeway, Kroger and Publix. Amazon’s acquisition of Whole Foods has led to the meal kit business called “AmazonFresh”. Amazon’s relationships with businesses such as Whole Foods, allows for the integration of consistently fresh and well-balanced entrees to be marketed publicly. Thus, it can be more pragmatic for meal kit businesses to allow consumers the opportunity to purchase weekly subscriptions, rather than longer term plans.

5.3. Limitations and recommendations for future research

This research was based upon a convenience sampling of an online consumer panel. Although this method has been proven to generate geographically representative samples, it is necessary to replicate this study using a more scientific and rigid method of sampling. It would also be necessary to compare different ethnic groups within single and multi-person households across more diverse age groups and actual size of multi-family households (numbers of persons), to further refine these findings. While measuring “repurchasing intention” as our outcome variable, we did not ask if consumers intend to repurchase the same product or the same brand. Thus, future studies should more specifically address associations between attributes, perceived value and brand loyalty or product loyalty. As well, this study focused on only meal kit product attributes. Other important meal kit product attributes should be identified. Thus, additional scale items focusing more comprehensive product and service quality-oriented attribute dimensions are recommended to be tested.

Finally, the Covid-19 pandemic has provided additional opportunities for meal kit marketing and sales. Constraints placed upon restaurant operations in terms of their ability to offer in-dining experiences involving social distance practicing, along with the unknown aspects surrounding consumers and their perceptions of safety regarding dining out in restaurants have presented even greater opportunities for meal kit companies and their future products and services developed for the general public. This offers exciting opportunities for future meal kit research and consumer behavior issues.

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