Full Title

Attributes and perceptions: Understanding regional Chinese mango buyers

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ABSTRACT

Regional cities in The People's Republic of China (China) are rapidly becoming a significant market for a range of tropical fruit varieties. There is an increasing importance to Chinese consumers of what they eat and where they shop. Consequently, studies specifically identifying Chinese buyer preferences are needed to aid the success of agri-food expansion opportunities.

This study employed an exploratory approach to profile regional Chinese mango buyers using a sample of 1148 consumers. The purpose was to determine consumption frequencies of different socio-demographic groups and to identify mango attributes that buyers perceived as important. The results revealed a dependence on income. Interestingly, many of the socio-demographic factors such as age, gender, education and marital status were not correlated with consumption. *Feeling for ripeness* was identified as the most important attribute. Other attributes in order of importance were: *color*, *smell* and *amount of blemishes*. Regular and occasional buyers shopped at the supermarket for their mangoes and predominantly liked to eat their mango as fresh fruit. A PCA revealed 3 factors: appearance, knowledge and experience with mangoes that motivated Chinese consumers to engage at the point of purchase. A significant number of consumers identified with the mango as a healthy fruit but a lesser number of them would consider the mango for inclusion in recipes or for gift giving. Overall, Chinese buyers presented an encouraging view of mangoes and a sound understanding of the product attributes and intrinsic features.

Keywords: consumer attitudes; attributes; mangoes; perceptions and China

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1. Introduction

China has emerged as one of the most important consumer markets for fresh fruit in the last twenty years (Zhou, Arnold, Perira & Yu, 2010). Key cities such as Beijing, Guangzhou and Shanghai are now well-developed metropolises. Supermarkets in these cities present a large selection of local and imported fresh fruit varieties. However these cities are not the whole face of China, representing less than one-third of the total population (China Statistical Yearbook 2011). Regional areas of China have experienced rapid economic growth generating consumer affluence and a corresponding desire for fresh and premium food products including tropical fruit (Cui & Lui 2000). Schmitt (1997) argued as far back as the late 1990's that regional Chinese cities should be watched as they could set trends and become the testing ground for future marketing opportunities. Thus, understanding the emerging modern Chinese consumer from a regional city perspective is needed.

Imported tropical fruit has been available in China since 1993 (Sun & Collins, 2007). With the considerable improvement in Chinese living standards and education, access to and knowledge of fruit and tropical fruit varieties such as mangoes has grown (Sun & Collins, 2004, Sun & Collins 2007; Zhu, Li, Geng & Qi, 2013). The consumption of mangoes and other tropical fruit is not new to the Chinese. The diet paradigm and the taste preferences of Chinese differ to those of their western counterparts such as in Australia (Veeck and Burns, 2005). Differences that may exist within a regional Chinese context are likely to be reflected in different patterns of preferences in the mango purchase occasion. To date, no study has been conducted to identify regional Chinese consumers purchasing preferences relating to mangoes. Due to the increase in regional trading of mangoes it would be of value to understand the regional Chinese consumers' buying behaviours.

This study utilized an exploratory approach to examine the consumer preferences for mangoes in the regional city of Shenyang located in northern China. We chose the target location since it is categorized as a rising tier two Chinese city and the researchers had an established local familiarity (China Statistical Yearbook, 2011). The objectives of the study were to: (1) provide a snapshot of the

regional Chinese mango buyer; (2) identify mango buyer types; (3) examine socio-demographic variables influencing purchase frequency; (4) identify attributes of importance in the purchase decision; (5) examine buyer attitudes towards place of purchase; (6) uncover buyer attitudes towards intended use; (7) ascertain buyer motivations; and (8) analyze buyer perceptions of mangoes.

This study provides an increased understanding of regional Chinese consumers' perceptions and attitudes towards mangoes as well as the impact of various socio-demographics on the incidence of purchasing mangoes. For the marketing of mangoes it is advantageous to identify those attributes of the fruit valued by consumers, the preferred locations for purchasing mangoes, and the intended use of mangoes. Further, the various factors that affect regional Chinese consumer purchase behaviors and consequently the decision to buy or not to buy mangoes are examined. This knowledge can be a key influencer to formulate strategies to increase mango purchasing.

A growing number of agri-food stakeholders are seeking greater economic opportunities in the lucrative Chinese retail grocery market. Understanding the purchasing behaviors of regional Chinese consumers is one key factor that will help to achieve this objective. Literature specifically covering mango and/or tropical fruit purchasing in China is scant. Quantitative studies identifying consumer-purchasing frequencies of mangoes in China have not been published at the date of writing this paper.

Historically, high-volume mango producing countries principally supplied mangoes for domestic consumption. International trade of mangoes has increased significantly in the last decade with the introduction of globalization, access to previously closed markets and improvement in the handling and transport of mango products. The Food and Agriculture Organization (FAO) of the United Nations predicted that global production for mangoes would rise from 24.9 million tonnes in 2000 to 28.8 million tonnes by 2014. In fact, global production of mangoes surpassed this estimate at 31.2 million tonnes in 2005 and increased by approximately 4.3% annually during the period 2000 to 2010, to reach 38.6 million tonnes in 2010. Exports for the last decade have been experiencing tremendous growth, with the main production region being continental Asia. In 2010 continental Asia contributed 76.5% of world mango production, followed by the Americas with 12.6 %, Africa with 10.8% and the remaining 0.1 % from the Oceania region (FAO 2012).

According to FAO estimates, in 2008 world exports of mangoes reached 1.19 million tons, up by an average 11.5% annually since 2000. In value terms, exports reached US \$993,858 in 2008, up 19.7% annually over the period 2000-2008. Among internationally traded tropical fruits, the mango ranks second to the pineapple in quantity and value. The world per capita consumption of fresh whole mangoes has doubled over the past decade (FAO 2012). The increase is due in part to changes in global demographics, increases in supplies from other countries and increased promotional and educational efforts in and from major trading countries (Gale & Huang 2007). In analyzing mango export industry development, the maintenance of high quality fruit (from production to consumer purchase) and the understanding of buyer attitudes, present as the two overarching imperatives. The focus firstly on quality has improved the fruits' ability to withstand the rigors of picking, handling and shipping and has resulted in a high level of consumer purchasing. This considerable attention on product by stakeholders in the agri-food sector over the last twenty years has meant substantial gains have been made in improving the quality platform. What has then emerged in the last decade is a shift towards addressing the second component in the development proposition, which is to understand attitudes and behaviors that contribute to increased consumer purchasing and to achieve industry profitability.

The agri-food industry is constantly changing and competition on a global scale is escalating, thereby highlighting the need to access insightful understanding of consumer attitudes within a given market place. The emphasis on understanding psychographic and behavioral variables has been identified by a multiplicity of researchers (Fram, Le, & Reid 2004; Van Loo, Caputo, Nayga Meullenet, Crandall, & Ricke 2010; Wang, Dou, & Zhou 2008). Treadgold (1999) argued "the most compelling Asian retail opportunities are at the value end of the market given that consumers in Asia today are . . . much more value conscious than they were in the mid 1990s." More specifically, if it is said to be true that the retail agri-food consumer is value driven, then there is a need to understand what the Chinese mango buyer values and where exporters should focus their attention to achieve a market place advantage.

The overall goal of this study was to obtain an understanding of the buyers' perception of mangoes in regional China. Food consumption plays an important role in Chinese culture as an appropriate diet contributes to achieving harmony within the body and with the universe (Jusaumme, 2001; Simoons, 1991). Yau, Chan and Lau (1999) argued Chinese cultural values could be used as strong predictors

for shopping behaviors among Hong Kong people. Yau, Chan and Lau (1999) have demonstrated the understanding of Chinese cultural values can be an effective aid for market segmentation, positioning and new business development. Even with the growing accessibility to fresh fruit varieties, not all Chinese consumers are eager to purchase new and imported fruit varieties (Veek, & Burns, 2005). While the overall demand for fruit has rapidly increased in suburban areas of China, the rate at which individual homes have accepted a range of fruit differs (Eves, & Cheng, 2007; Veek, & Burns, 2005).

This study examined the relationship between purchase frequency and socio-demographic variables of the regional Chinese mango buyer. Additionally this study examined the attributes of mangoes that Chinese buyers perceive as important in the purchase decision. Furthermore, the study utilized a Principal Component Analysis (PCA) to analyze Chinese buyers' motivations in relation to intrinsic and extrinsic attributes of the mango.

2. Material and Methods

2.1 Subjects and Procedure

This was an exploratory research study utilizing a questionnaire delivered through mall intercept interview technique to study buyers who purchased fresh mangoes in regional China. The research study was conducted in the peak summer period when mangoes were in abundant supply. The size of the sample for the region as a whole was established taking into consideration the objectives of the research and the resources available (Aaker, Kumar, Day, & Leone, 2010; Hair, Bush, & Ortinau, 2000). The survey was carried out in Shenyang, population 8 million, the capital city of the northeastern province of Liaoning (*China Statistical Yearbook*, 2011). The retail sector has evolved from a predominance of department stores to a more diverse retail format with large shopping centers scattered throughout the city. Additionally, chain stores, supermarkets and community shopping centers and convenience stores have all grown in popularity amongst the city's residents. A number of international supermarkets (for example Carrefour, Isetan and WalMart) have set up in many of the city's residential areas and these stores are located in Dadong, Heping, Huanggu, Shenhe and Tiexi districts. Mandarin is the official Chinese dialect in Shenyang and is spoken by a majority of the population.

The socio-demographics of Shenyang's inhabitants and their exposure to and experience with mangoes make them suitable for this research. To ensure the samples included a broad range of mango buyers, interviews were conducted in three districts. These areas included: Heping, Shenhe and Tiexi districts. Using mall intercept interviews, a convenience sample of respondents was first chosen and then further refined by a screening question to identify only respondents who had purchased mangoes. All interviews were conducted in Mandarin. The screening question asked: "Have you previously purchased fresh mangoes for your family or self this summer?" Responses to this question were used to exclude non-buyers of mangoes from the final sample.

The questionnaire was developed after reviewing published literature in broader food categories relating to purchasing and preferences for fruit and niche agri-food products (Chinnici, D'Amico, & Pecorino, 2002; Fitzsimons & Shiv, 2001; Gomez, & Campbell, 2008; Lee 2009; Napier, Tucker, Henry, & Whaley, 2004; Sin, & Ho, 2001; Sun, & Collins, 2002, 2004, 2006). The survey instrument was first developed in English and then translated to Mandarin and back translated to English for confirmation.

2.2 Measurement and scaling

The questionnaire consisted of five sections: (1) socio-demographic characteristics; (2) purchase frequency; (3) mango attributes that buyers perceive as important; (4) shopping preferences towards mangoes such as place of purchase and intended use and (5) attitudes and perceptions that motivate buyers to purchase mangoes.

This paper focuses on two questions from sections 3 and 5 of the survey which centered on attributes and attitudes involved in the purchase of mangoes. The first selected question is a direct measurement of importance: 'When purchasing a mango how important are the following?'. This measurement included a five-point Likert scale, secured with 'very unimportant' to the left, 'neither unimportant or important' at the mid point and 'very important' at the right side. The second selected question measures the buyers' motivations regarding a range of intrinsic and extrinsic product attributes of mangoes. A set of 11 items with 5-point semantic differential scales was presented. They were secured from the left with a negative item (strongly disagree) and a positive item on the right (e.g. strongly agree). The selection of survey items relating to attributes and attitudes were adapted from

results of tropical fruit studies conducted in China (Gomez & Campbell, 2008; Sun & Collins 2002, 2004, 2006).

2.3 Statistical analysis and Factor analysis

The survey data was analyzed in SPSS (release 19.0) with various cross tabulations carried out to investigate specific behaviors within a particular area of mango purchasing. Relationships between variables were identified using bivariate analysis of frequencies. To test the independence of the cross tabular data, a Pearson χ^2 test was used. In all statistical tests, a 5% level of significance was used.

We conducted an exploratory factor analysis to identify the theoretical dimensions (factors) of behaviours and attitudes linked to purchasing mangoes. Further, a PCA was conducted as a variable reduction procedure on 11 scale items relating to the motivations. In the first instance assumption testing was undertaken to identify outliers. A test for multivariate outliers was conducted using the techniques described by Tabachnick and Fidell (1996). Using data from the set of 11 variables, the Mahalanobis distance was calculated for each case. Tabachnick and Fidell (1996) state the Mahalanobis distance should be interpreted as χ^2 statistic with the degrees of freedom equal to the number of IVs. The authors recommended that a criterion of p-value <0.001 be used to evaluate whether a case was judged to be a multivariate outlier and therefore a critical value of $\chi^2 = 31.26$ was used. No case was identified with a Mahalanobis score in excess of this value and so no multivariate outliers were identified.

The preparation for the PCA included the construction of a matrix of correlation coefficients in order to identify items in excess of 0.30. Consequently, two tests were undertaken to confirm the application of a PCA to the data set was appropriate. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was conducted to reveal items greater than 0.60, then the Bartlett's Test of Sphericity was applied to confirm the sample size was statistically significant with a p-value < $\alpha = 0.05$. Following the criteria of Comrey and Lee (1992) the sample size was considered excellent with over 1,000 respondents recorded. Thus, by each of these measures, the data set was deemed appropriate for PCA.

3. Results and Discussion

3.1 Overview of the regional Chinese mango buyer

The survey was completed by 1148 Chinese respondents. Socio-demographic characteristics of gender, age, marital status, education and income were examined. The data revealed the gender split of respondents was 56.4% female and 43.6% male. By age, the majority (more than two-thirds) of the respondents was in the younger to middle age group. About one-sixth of the participants were over 45 years old.

Most respondents were either married (49.7%) or single (47.3%). The highest level of education attained by most respondents was tertiary (66.4%), followed by senior high school (20.5%), some junior high school (6.3%), technical and/or vocational (5.7%) and primary school education level (1.1%). About one in three respondents had an average monthly household income below ¥3000 (US\$439), one in four had an average monthly household income over ¥7000 (US\$1,025) and one in two had income between ¥3000 (US\$439) and ¥7000 (US\$1,025) per month.

3.2 Types of regional Chinese mango buyers

Different types of consumers were compared based on their frequency of buying fresh whole mangoes in summer. This enabled the examination of different behaviors and perceptions among consumers with different mango buying habits. The respondents were asked ‘How often have you or your family personally purchased fresh mangoes this summer?’ Depending on the response, three mango buyer types were identified with different purchase frequencies: regular buyers (once a week or more than once a week), occasional buyers (once a fortnight or once a month) and irregular buyers (less often).

The distribution of mango buyers among the three purchase categories revealed that most respondents (40.6%) were *regular* buyers. About one-third of the respondents (32.7%) were *occasional* buyers. About one-quarter (26.6%) of respondents were *irregular* buyers. Overall, a significant majority of the respondents (73.3%) therefore purchased mangoes either regularly or occasionally.

3.3 Socio-demographic variables influencing purchase frequency of mangoes in regional China

Cross-tabulation analysis was used to determine whether purchase frequency varied depending on the socio-demographic characteristic of the mango buyer. The majority of regular buyers were earning an average household income between 3,000RMB (USD439) and 7,000RMB (USD1,025) per month (42%) or earning below 2,999RMB (USD438) (41%) per month. As shown in Table 1, among various socio-demographic variables only income has a significant relationship with purchase frequency.

When the impact of average household income is considered, it can be seen that the χ^2 -test statistic for this test is 22.21 with a p-value of 0.035 that is smaller than the five per cent level of significance. This indicates that the higher the monthly income the more likely the Chinese buyer would purchase mangoes.

In terms of gender, males and females are more or less evenly split under each buyer type. The dependency of the two factors, gender and purchase frequency, using a χ^2 independent test was conducted. The test statistic for such a test is $\chi^2 = 4.8$ with a p-value of 0.309. Since the p-value is greater than the level of significance, we conclude that gender, at the 5% level of significance, has no significant impact on purchase frequency.

When separating the respondents into five incremental age groups (24 and below, 25 to 34, 35 to 44, 45 to 54, 55 and over), the frequency of buying mangoes is fairly similar across age groups. The χ^2 -test statistic for the test of independence of these two variables (age group and purchase frequency) is 15.1 with a p-value of 0.517. The test demonstrates that the age group and purchase frequency are independent. However, the results also reveal that in all age groups, except 55 and over, most consumers were regular buyers.

The marital status of consumers did not have an influence on mango purchasing as the corresponding χ^2 -test statistic was 9.3 with a p-value of 0.902 (which is greater than the level of significance $\alpha = 0.05$). When the link between mango purchasing was compared between respondents with five levels of education (primary, junior high, senior high, technical and/or vocational and university degree), the results indicated that the education level of the buyer did not seem to influence the purchasing behavior of the three types of mango buyers. The χ^2 -test statistic for testing this relationship is 21.4 with a p-value of 0.162.

Previously published British and Australian studies (for example see AMIA, 2010) showed gender, income, education and marital status determined the purchase of mangoes in a developed country. However a study conducted by Jussaume (2001) in relation to produce including tropical fruit argued that in the case of China the higher the income the more frequent the purchase of premium fruit and vegetables. This could be explained via the different mango buyer profile in China. The expansion of the tropical fruit market in China has made mangoes more attractive to buyers of various socio-demographics. The mango is a familiar fruit to Han Chinese and is not exotic to them. Additionally, the lack of insights to date concerning the socio-demographic profile of mango buyers makes comparisons difficult. Conversely, when evaluating the socio-demographics of regular mango buyers against irregular buyers, differences can be observed but no causal relationships can be identified since different variables maybe related (for example, education and household income). To uncover causal effects, further research into controlling correlations will be needed.

3.4 Attributes of importance in the purchase decision

Respondents rated the importance of six different mango purchasing attributes using a 5-point Likert scale (1= very unimportant and 5 = very important). Table 2 summarizes the importance of each individual attribute against the purchase frequency of mangoes for all buyer types. A contingency analysis was conducted to establish the level of importance between the attributes and purchase frequency. The most important attribute was feeling for ripeness (90.9% of the respondents found this to be a [very] important mango attribute). Other important purchasing criteria identified by respondents were: the color of the mango (79.8%); smelling the fresh mango (77.2%); and amount of blemishes (66.9%). The least important criteria were: the size of the mango (41.6%) and the readiness of the mango for gift giving (33.9%). The results supported that the perceived importance of the mango attributes was related to purchase frequency for the individual buyer types (regular, occasional and irregular). With the increase in frequency of buying mangoes the importance of the 6 attributes increased.

Specifically, feeling for ripeness was significantly related to purchase frequency ($\chi^2=27.19$, $p=0.007$), with 92.3% of regular buyers as compared to 89.9% of occasional buyers and 89.9% of irregular buyers, indicating that the attribute was either very important or somewhat important.

The color of the fresh mango demonstrated a relationship to purchase frequency ($\chi^2=46.55$, $p < 0.05$), with 82.4% of regular buyers signifying this attribute of strong importance when considered with 79.2% of occasional buyers and 76.4% of irregular buyers.

Smelling the fresh mango was related to purchase frequency ($\chi^2=46.71$, $p < 0.05$), with 83% of regular buyers, as compared to 74.2% of occasional buyers and 72.1% of irregular buyers indicating that the attribute was of significant importance (very important or somewhat important).

The amount of blemishes on a mango showed a relationship to purchase frequency ($\chi^2=38.25$, $p < 0.05$), with 71.1% of regular buyers revealing this attribute of strong importance when considered with 65.1% of irregular buyers and 63.5% of occasional buyers.

The size of the mango was related to purchase frequency ($\chi^2=57.7$, $p < 0.05$). This attribute was of importance to 45.5% of the regular buyers, as compared to 44.6% of occasional buyers and 31.9% of irregular buyers, indicating that the attribute was very important.

Readiness for gift giving demonstrated a relationship to purchase frequency ($\chi^2=41.75$, $p < 0.05$). This attribute was observed to be of limited importance. The buyers perceived this attribute of low importance with only 37.3% of occasional buyers and 36.6% of regular buyers identifying this attribute to be of importance.

In summary, this research shows that the perceived importance of the mango attributes increases as the frequency of the purchase increases. This finding shows that the sensory appeal of the mango when purchasing is paramount. Therefore the action of touching, viewing the colour, smelling the mango and the amount of blemishes noticed are cues when purchasing mangoes in China. The statistical results presented in this section reveal that the levels of importance of each mango attribute and purchase frequency were statistically dependent.

In relation to important mango purchasing criteria, our results were in contrast to two previous studies conducted in China. Gomez and Campbell (2008) reported, based on a focus group study, that taste was of high importance as an attribute. Also a broader category study looking at tropical fruit imported to mainland China conducted by Sun and Collins (2006) revealed the three key appealing physical attributes that motivate Chinese consumers to purchase imported fruit were appearance, packaging and the amount of chemical residue. Both of these studies combined intrinsic and extrinsic criteria. The focus of our study was to probe the intrinsic elements of feeling and smelling. These intrinsic elements engage with the buyer at the point of purchase, rather than as a post purchase

association or consequence. The challenge for practitioners is to capture these triggers when communicating with the Chinese mango buyer. Highlighting the mango attributes connects the consumer in the buying process from familiarity to favoritism in their fruit purchase selection.

3.5 Buyer attitudes towards place of purchase

The survey itemized five categories relating to the place of purchase for mangoes from which the respondents were to choose: international supermarket; local supermarket; fruit stall; fruit peddler (door to door); and wholesale market. Table 3 presents the summary of preference for mango purchase location against the mango buyer type. More than one-third of all buyer types purchased their mangoes from fruit stalls; 33.5 per cent of buyers purchased from international style supermarkets such as Wal-Mart and Carrefour; about one-fifth purchased from local supermarkets; a small percentage from fruit peddlers (8.3%) and wholesale markets (4.4%).

Regular buyers (37.4%) were more likely to purchase their mangoes from an international supermarket. As a second preference, regular buyers chose fruit stalls (30.9%), followed by local supermarkets (20.8%). For occasional buyers first preference for place of purchase was from a fruit stall (32.8%), however this was only a slight increase over choosing an international supermarket (32.4%). Local supermarkets (23.3%) were a third preference. When asked about place of purchase irregular buyers were more likely to buy their mangoes from a fruit stall, with 40.6 per cent of irregular buyers stating they purchased their mangoes from fruit stalls. For the irregular buyers international supermarkets were next at 28.7 per cent, with the remaining irregular buyers selecting local supermarkets (13.8%), fruit peddlers (9.7%) and wholesale markets (7.2%). When considering all buyers as a total group, the preference for place of purchase was fruit stalls, closely followed by international supermarkets.

Over the last decade significant changes have been observed in the Chinese retail grocery sector. This is due in part to the rapid increase in domestic supermarkets and large international supermarket chains emerging in China (*Consumer Currents*, 2011). To offer the right product, at the right time and in the right place has been a focus for emerging supermarket giants. Additionally, China's economic competition and changing consumer tastes have compelled supermarkets to make their fresh produce offering more attractive. A variety of initiatives implemented by Category Managers, including communicating product information, country of origin and health benefits, have resulted in some

category stimulation. While the overall demand for fruit has rapidly increased in urban areas of China, the rate at which individual homes have accepted a range of fruit differs (Eves, & Cheng, 2007; Veeck, & Burns, 2005).

3.6 Buyer attitudes towards intended use of a mango

Table 4 presents the intended use of mangoes among different types of Chinese buyers. The distribution of intended use for the three buyer types presents as similar. Furthermore, the table reflects significant responses by all buyers that mangoes purchased were primarily for eating as a piece of fresh fruit (76.5%). To a significantly lesser extent, mangoes were somewhat purchased as part of a healthy diet (13.7%). A very small percentage of mangoes were purchased for gifting (5.7%) or for inclusion as a recipe ingredient (4.1%).

In western societies fruit has been consumed from childhood as a part of meal, a snack or included as a recipe ingredient (for example, cake, dessert or salad). However, the Chinese prefer to eat fruit, as is their custom, as a part of their daily diet. In summary, overall a significant percentage of Chinese buyers purchased mangoes to eat as a piece of fresh fruit. The percentage of consumers who bought mangoes to eat as a piece of fresh fruit is similar among the three types of buyers.

3.7 Buyer motivations towards mango purchase

Cross tabulation analysis was conducted to identify relationships between buyer motivations and mango purchase frequency. Table 5 presents the frequency of distribution among the 11 statements relating to mango purchase motivations for three different Chinese buyer types. The test of independence of these motivations and purchase frequencies showed all variables to be dependent ($p < \alpha = 0.05$).

Overall, when buyers were asked if they believed mangoes offered significant health benefits, 82.3 per cent of all buyer types agreed with this statement and 79.3 per cent strongly agreed that mangoes are good value for money. This may well reflect the cultural understanding of fruit and its role in a healthy diet. Reviewing the motivation in relation to the regular buyer type, health benefits of the mango were most important.

The sensory motivation of taste was explored. Of the total buyers surveyed, 82.1 per cent agreed that *they just loved the taste of mangoes*. Notably, of this group of respondents, regular buyers agreed

more with this statement than the other two buyer types, which revealed that 87.8 per cent of regular buyers bought for the love of the mango taste. The perceived value of mangoes to the respondents was examined. The regular buyer type (84.5%) agreed or strongly agreed to the statement *mangoes are good value for money*.

Questions relating to the colour of the mango were explored. A majority of all buyer types (75.9%) agreed that the *colour of the fresh mango* they purchased was important to them. Looking specifically at the regular buyer type, they too significantly agreed with this statement, with a combined 79.0 per cent supporting that the colour of the fresh mango they purchased was important. Further, regular buyers strongly agreed (76.4%) that *the best mangoes were yellow and orange in colour with a red blush*. Over half of all buyer types (59.5%) believed that *a mango would only taste good if it smelled good* and over half of all buyer types (52.4%) believed that *if a mango had no smell it would have no taste*.

Motivations connecting with buyers' experience and usage of mangoes were examined. Only half (51.9%) of all buyer types would give mangoes as a gift, leaving 48.1 per cent of the remaining buyers neither agreeing nor disagreeing with this statement.

Similarities between types of buyers were evident with 60.7 per cent of regular buyers strongly agreeing that *the best mangoes are orange in colour* and 57.6 per cent agreeing they *knew how to select a good mango*. Motivations relating to the appearance of the mango were more strongly agreed by the regular buyer type, in particular colour attributes of the mango. Selecting a good mango was not a motivation that overall respondents scored strongly (46.7%). This suggests that while respondents knew what a good mango should look like from a sensory viewpoint, such as smell, colour and taste, they were less confident with selecting the mango at the point of purchase.

When considering the usage of mangoes as a motivation variable, respondents were asked if fresh mangoes were great to include in recipes, less than half of all buyers agreed. The interesting point of note is that while a majority of Chinese buyers believed that the mango was healthy for them, a much less number would consider the mango for inclusion in recipes. Overall, the analysis revealed all motivations had a dependent relationship with purchase frequency in the case of the Chinese buyer.

Measures of a large number of motivational variables have been obtained from this section's analysis. The variables on their own do not provide a clear picture to aid the development of a mango buyer profile. Grouping a smaller number of variables (principal components) that account for most of the variables in this instance presents as an appropriate action (Manning & Munro 2007, Martens & Martens 2001). In order to further understand and identify a connective structure behind the motivations of Chinese buyers to purchase mangoes, a PCA was undertaken.

3.8 Buyer perceptions: sensory appeal, knowledge and usage experience

Table 6 presents the PCA correlation loadings on the perceptions of mango attributes. The first two model dimensions reproduce 43% of the total variation and give insights into the main patterns within the attributes. Examination of the factor loadings supported the conclusion that the three components were interpretable.

Component 1 accounted for 22.2 per cent of the variance (refer Table 7). The item with the largest loading on Component 1 was item 1, '*a mango will only taste good if it smells good*'. Other items with large loadings on this item were: item 2, '*I just love the taste of mangoes*' and item 3, '*if a mango has no smell it will have no taste*'. Given this pattern of results it was decided to label this component *Sensory appeal of mangoes*.

Component 2 accounted for 16.3 per cent of the variance. The item with the largest loading on component 2 was item 8, '*I believe mangoes offer significant health benefits*'. The other item which loaded on this component was item 9, '*mangoes are good value for money*'. Given this pattern of results it was decided to label this component *Knowledge of mangoes*.

Component 3, accounted for 13.9 per cent of the variance with two items having significant loadings on this component. These were item 10, '*I would give a mango as a gift*', and item 11, '*mangoes are great to includes in recipes*'. Generally, if a component has less than four items loading onto it and does not have any loadings on other components they would often be considered as unreliable and the researcher may choose not to attempt to interpret it (Manning and Munro 2007). Given the pattern of these results it was decided to consider the component and label this component *Usage experience with mangoes*.

Three factors were generated on the basis of the PCA. The first factor was calculated by taking the arithmetic mean of items 1, 2, 3, 4, 5, 6, and 7, to represent the factor *Sensory appeal of mangoes*. The second was calculated by taking the mean of items 8 and 9 to represent the concept of *Knowledge of mangoes*. The third factor was calculated as the mean of items 10 and 11 and represents the factor of *Usage experience with mangoes*.

4. Implications

4.1 Implications for marketers of mangoes in regional China

The analysis revealed that household income was the only characteristic that influenced purchase frequency of mangoes among the Chinese mango buyers. Gender, age group, marital status and education level did not influence the purchase frequency of mangoes. The high level of regular buyer types (40.7%) may be due to the well-accepted familiarity with the mango fruit as this product is not new to the Chinese market. Improvements in distribution infrastructure in mainland China have meant that all manner of agri-food products are now being transported to distant geographic regions of the country. A significant number of buyers in this study purchased mangoes regularly or occasionally in the summer season.

The four most important mango attributes at the point of purchase sought by Chinese buyers in order of importance were: *feeling for ripeness, the colour of the mango, smelling the fresh mango and the amount of blemishes*. The least important purchasing attributes were: *the size of the fruit and the readiness of the mango for gift giving*. More significantly, this research reveals that the perceived importance of the mango attributes increases as the frequency of the purchase increases. The statistical results revealed that the levels of importance of each mango attribute and purchase frequencies were statistically correlated.

It is interesting to note that while a majority of Chinese buyers believed that the mango was healthy for them, a much lesser number would consider the mango for inclusion in recipes. Only half (51.9%) of all buyers would give mangoes as a gift, leaving 48.1% of the remaining buyers neither agreeing nor disagreeing with this statement. This is in contrast to the published study from Gomez and Campbell (2008) where results revealed that the Chinese consumer would be willing to give a mango as a gift.

The Chinese mango buyers who participated in this study's survey evidenced an encouraging view of mangoes. They demonstrated a sound understanding of the product attributes and intrinsic features of a mango; however Chinese buyers' experience with mangoes requires development. From a practitioner point of view this presents an opportunity to consider education strategies that instruct the

usage of mangoes in recipes and present the mango in a packaged gift ready format to stimulate a change in motivation.

Foundations for attitude research proposed by Schuman and Presser (1996) have been used in this analysis to describe the attitude motivations and beliefs related to the statements. 'Attitudes' has been used as a term to cover conceptual distinctions; and 'beliefs' used as term to link objects to product attributes in this study (Fitzsimon & Shiv 2001; Lee 2009; Sun & Collins 2004). Intrinsic motivations are those that have been generated from the buyers' own familiarity and physical experience with the fruit. The extrinsic motivations have come from outside the situational instance of the purchasing decision.

The PCA revealed that the component *sensory appeal of mangoes* plays an overwhelming role in the motivation to purchase mangoes for Chinese buyers. In particular the colour and shade of colour, such as yellow, orange and red blush, provide cues to stimulate purchase. Chinese buyers' *knowledge of mangoes* is sound and well developed. From a sensory perspective the respondents have salient views relating to the taste of mangoes that are positive. The perceived health benefits have been flagged by buyers as a motivation, as is the feeling that mangoes offer value for money. *Usage experience with mangoes* is less developed, with buyers agreeing that giving a mango as a gift and including mangoes in recipes are important but not necessarily considered as a motivation for the intended use.

5. Conclusion

Since Den Xiaoping launched the open door policy in 1978, which has reformed the Chinese economy, China has now grown to become one of the largest consumer markets globally and an attractive destination for international agri-food exports. Recent agricultural trade agreements between various countries are a potential conduit for agri-food exporters to gain access to this lucrative market. There is a misconception worldwide that China is a homogenous market and this often leads to difficulties for companies to assess and manage in-market demand and to enact effective strategies for export. The increasing importance to Chinese consumers of what they eat, where they shop and how they live is reflected in the growing number of studies measuring Chinese consumer behavior towards domestic and imported agri-food products. The significance of identifying and clarifying purchasing

motivations that exist within specific Chinese socio-demographic groups is driven by the need for produce traders to make judicious decisions regarding segmentation and product positioning.

Our results show that among Chinese mango buyers, the socio-demographic characteristics of gender, age group, marital status and education level did not influence the purchase frequency of mangoes. This may be due to Chinese buyers' existing familiarity with the mango fruit. Improvement in distribution infrastructure in China has meant that all manner of agri-food products are now being transported to distant geographic regions of the country. Household income influences the purchase decision and this is not new. Consumers may find the price of specialist tropical fruit challenging and consideration towards other elements such as product education and packaging should be considered when planning strategies for category growth.

The leading attributes of importance identified in the purchase process are: feeling the mango for ripeness, smelling the fresh mango and the color of the mango. To some extent the amount of blemishes and the size of the mango is of concern to consumers. With an increase in supply from mango-producing countries in both hemispheres, thereby delivering all year round supply to Chinese supermarkets, the price may well decrease in the long run. In the short term premium-priced mangoes continue to capture the attention of Chinese consumers seeking the bright gold fruit.

The use of a multivariate analysis has demonstrated some modeling capabilities of these methods. The exploratory ability of a PCA revealed 3 factors: appearance, knowledge and experience with mangoes that motivate Chinese consumers to engage at the point of purchase. A significant number of consumers identified with the mango as a healthy fruit but a lesser number of them would consider the mango for inclusion in recipes or for gift giving. Further, this paper contributes to understanding of general fruit purchasing in China and calls for confirmatory and complementary work by expanding the research to additional fruits and other product attributes.

Finally, studies have not yet been undertaken and published which focus on Chinese consumers' acceptance of different mango varieties. Additionally, the existence or not of a behavioral attitude regarding the mango's country of origin has not been fully examined. Moreover, with the introduction of mangoes from southern hemisphere countries such as Australia, Chinese consumers are now seeing supply of fruit outside their traditional seasons. It will be important to further research Chinese consumers' acceptance of different varieties of mangoes, whether a country of origin prejudice exists and to compare the acceptance of on-season and off-season produce offerings to determine if a cultural

limitation is present. Increased understanding and confirmatory knowledge of what Chinese consumers value in this vital sector is essential for the successful international trade of fresh mangoes.

References

- Aaker, D., Kumar, V., Day, G., & Leone, R. (2010). *Marketing research*. 10th edn. New Jersey, USA: John Wiley & Sons.
- Australian Mango Industry Association (AMIA) (2010). *Mango Industry Annual Report 2009/10*. Retrieved from http://cms2live.horticulture.com.au/admin/assets/library/annual_reports/pdfs/PDF_File_132.pdf.
- China Statistical Yearbook 2011*. Beijing, China: China Statistics Press.
- Chinnici, G., D'Amico, M., & Pecorino, B. (2002). A multivariate statistical analysis on the consumers of organic products. *British Food Journal*, 104(3/4/5), 187–99.
- Consumer Currents* (2011). Issues driving consumer organizations, 11. Middlesex, UK: KPMG International.
- Cui, G., & Lui, Q. (2000) Regional market segments of China: opportunities and barriers in a big emerging market. *Journal of Consumer Marketing*, 17(1), 55-72.
- Eves, A., & Cheng, L. (2007). Cross-cultural evaluation of factors driving intention to purchase new food products – Beijing, China and south-east England. *Journal of Consumer Studies*, 31, 410–17.
- FAO (Food and Agriculture Organization of the United Nations). (2012). *Mango and mangosteen production 2010*. Rome, Italy. Retrieved from <http://faostat.fao.org/site/339/default.aspx>.
- Fitzsimons, G., & Shiv, B. (2001). Nonconscious and contaminative effects of hypothetical questions on subsequent decision making. *Journal of Consumer Research* 28, 224–38.
- Fram, E., Le, L., & Reid, D. (2004). Consumer behaviour in China: an exploratory study of two cities. *Journal of Asia-Pacific Business*, 5(4), 25–42.
- Gale, F., & Huang, K. (2007). *Demand for food quantity and quality in China* (White Paper, Economic Research Report 32). Washington, USA: United States Department of Agriculture.
- Gomez, E., & Campbell, J. (2008). *The Chinese mango market: consumer and supply chain market research*. Department of Primary Industries, Brisbane: Queensland Government Press.

- Hair, D., Bush, R., & Ortinau, D. (2000). *Marketing research: a practical approach for the new millennium*, USA: McGraw-Hill.
- Jaeger, S., Harker, R., Triggs, C., Gunson, A., Campbell, R., Jackman, R. and Requejo-Jackman, C. (2011). Determining consumer purchase intentions: the importance of dry matter, size, and price of kiwifruit. *Journal of Food Science*, 76(3), 177–84.
- Jusaumme, Jnr. R. (2001). Factors associated with modern urban Chinese food consumption patterns. *Journal of Contemporary China*, 10(27), 219–32.
- Napier, T., Tucker, M., Henry, C., & Whaley, S. (2004). Consumer attitudes toward GMOs: the Ohio experience. *Journal of Food Science*, 69(3), 69–76.
- Lee, K. (2009). Gender differences in Hong Kong adolescent consumers' green purchasing behaviour. *Journal of Consumer Marketing*, 26(2), 87–96.
- Martens, H. & Martens, M. (2001). *Multivariate analysis of quality: An Introduction*, Chichester, Great Britain: John Wiley & Sons.
- Schmitt, B., (1997). Who is the Chinese Consumer? Segmentation in the People's Republic of China. *European Management Journal*, 15(2), 191-94.
- Schuman, H., & Presser, S. (1996). *Questions and answers in attitude surveys: experiments, on question form, wording, and context*. California, USA: Sage Publications.
- Simoons, F. (1991). *Food in China: a cultural and historical inquiry*. Florida, USA: CRC Press.
- Sin, L., & Ho, S. (2001). An assessment of theoretical and methodological development in consumer research on greater China: 1979–1997. *Asia Pacific Journal of Marketing and Logistics*, 13(1), 3–42.
- Sun, X., & Collins, R. (2002). Attitudes and consumption values of consumers of imported fruit in Guangzhou, China. *International Journal of Consumer Studies*, 26(1), 34–43.
- Sun, X., & Collins, R. (2004). A comparison of attitudes among purchasers of imported fruit in Guangzhou and Urumqi, China. *Food Quality and Preference*, (15), 229–37.

- Sun, X., & Collins, R. (2006). Chinese consumer response to imported fruit: intended uses and their effect on perceived quality. *International Journal of Consumer Studies*, 30(2), 179–88.
- Sun, X., & Collins, R. (2007). Application of fuzzy logic in measuring consumption values: Using data of Chinese consumers buying imported fruit. *Food Quality and Preference*, 18, 576-84.
- Treadgold, A. (1999). The outlook for Asian retailing. *Discount Merchandiser*, 39, 45–6.
- Van Loo, E., Caputo, V., Nayga, R., Meullenet, J., Crandall, P. & Ricke, S. (2010). Effect of organic poultry purchase frequency on consumer attitudes toward organic poultry meat. *Journal of Food Science*, 75(7), 384–97.
- Veeck, A., & Burns, A. (2005). Changing tastes: the adoption of new food choices in post-reform China. *Journal of Business Research*, 58, 644–52.
- Wang, G., Dou, W., & Zhou, N. (2008). Consumption attitudes and adoption of new consumer products: a contingency approach. *European Journal of Marketing*, 42(1/2), 238–54.
- Yau, O., Chan, T., & Lau, K. (1999). Influence of Chinese cultural values on consumer behavior: a proposed model of gift-purchasing behavior in Hong Kong. *Journal of International Consumer Marketing*, 11(1), 97–116.
- Zhang, X., Guo, H., Zhao, L., Sun, W., Zeng, S., Lu., X., Cao, X., & Ren, F. (2011). Sensory profile and Beijing youth preference of seven cheese varieties. *Food Quality & Preference*, 22, 101-9.
- Zhou, J., Arnold, M., Pereira, A., & Yu, J. (2010) Chinese consumer decision-making styles: A comparison between the coastal and inland regions. *Food Quality & Preference*, 63, 45-51.
- Zhu, Q., Li, Y., Geng, Y., & Qi, Y. (2013). Green Food consumption intentions, behaviors and influencing factors among Chinese consumers. *Food Quality & Preference*, 28, 279-86.