

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE
Faculty of Tropical AgriSciences



Master thesis

**Tourists' perception and preferences of traditional plant food products in
Cambodia**

Prague 2018

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“I hereby declare that I have done this thesis entitled “Tourists’ perception and preferences of traditional plant food products in Cambodia” independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.”

in Prague 27.4.2018

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Thomas Brenner

Acknowledgement

I would like to thank my supervisor Ing. Petra Chaloupková, PhD for her patience during the consultations and for provision of important advice and materials during the work on this research.

Abstract

Purpose: The purpose of this research is to focus on tourists' perceptions and preferences of fresh or processed traditional plant food products of Cambodia, based on tourist's knowledge of the products, socio-demographic factors and purchasing habits.

Design/Methodology: The data were collected from the sample of 167 international tourists using convenience sampling method in the most visited tourist spots in Cambodia during August and September 2017. The data collection is focused on 10 plant food products (familiarity, attitude), purchasing and sociodemographic data. The gender, Euro Asian preferences and food safety concerns were evaluated. Based on the collected data were evaluated three hypotheses concerning the food preferences of international tourists.

Findings: Familiarity with the plant food products is similar among the respondents, most of the products are not widely known. Products are generally perceived as safe to eat, but tourists lack information and offer of the traditional products. Socio-demographic characteristics such as gender, age, education and place of origin were evaluated in coherence with the preference evaluation. According to the results were discovered no difference between gender willingness to try the products except for Kramsang citrus ($p>0.05$). Preferences according to the tourist's place of origin were assessed with the findings that Kampot Pepper, Rumduol Rice and Ma-om herb show statistical difference between Asian and European tourists ($p>0.05$). The traditional foods have strong potential in the tourism sector and as the income increase for local people. Based on the results, most of the tourist are willing to try the new food products, however, the products are not much available unless intentionally searched. In fact, not only products but also the information about it is not available and can be provided mostly by locals. Except for Kampot pepper with a long history of cultivation in Cambodian southern region, the information about traditional products is very scarce.

Keywords: food tourism, consumer behaviour, traditional food, Cambodia

1. Introduction

Tourists have various reasons for visiting Cambodia such as tropical climate, rich historical sites or natural wonders. Either combination of these or else a visit necessarily brings the question of food. Food became except for the basic human need also enjoyable and social event. Trying previously unknown and exotic foods is a significant part of the travel experience for many tourists. As well as Southern Europe is known for the cuisine of France, Italy, Greece or Spain, Southeast Asia is also a region of distinct specialities and exotic tastes. People tend to be very selective in what they consider as appropriate food for them and what part of the day they consume it. One of the experiences for tourists in Cambodia is local traditional cuisine, which is considered as unique to the region of Southeast Asia. Therefore, for many tourists' food is one of the main reasons for visiting the country or region, which may be famous for certain kind of dish or a set of specialities. The majority of visitors prefer consuming fresh local food than from global chains (UNWTO 2016) what makes a great opportunity for local people to offer food items of their own production and reach the quick income. Understanding consumer preferences and offering is crucial for reducing leakages of tourism sector revenue (Jonsson 2003) and maintaining the local economic, cultural and environmental sustainability of the host country (Amuquandoh et al. 2013).

Nowadays food products are offered across Cambodia at very low prices, which also attracts foreign travellers into the region from all over the world and each of them perceives the food products differently and picks the food items according to many decision-making aspects. Traditional foods take place as the part of the travel experience and in understanding the cultural and social aspects, thus tourism dining became one of the major experiences in vacation travelling (Kivela 2006).

Cambodia is opened for international tourists almost thirty years, but the food & beverage perception research has not been conducted yet. Previous food perception research was mostly aimed at western countries but the area of food and drink perception in Cambodia remains highly unexplored.

2. Literature review

2.1 Food Tourism

According to the World Food Travel Association food tourism is defined as *"The pursuit and enjoyment of unique and memorable food and drink experiences, both far and near."*(WFA 2017). Cuisine, as a manifestation of culture, is a subset of cultural tourism (Wolf 2006).

Food as a fundamental need is one of the main economic aspects of tourism but also a subject of which much of the travel enjoyment and experience comes from. People tend to have strong feelings about the food they consume because each food product is subject to the perception of the individual, thus not every human considers particular food product as appropriate. Tourists have various kinds of perception of food products, depending on age, sex, health, nationality, religion, visual perception, smell, or personal patterns of consumption (vegan). Evidence suggests that human taste and preferences for food is not static but changes with time and age (O'Donnell 1994).

Knowledge of tourist preferences is known to be very significant in terms of income from tourist dining sector. The kinds of food and drinks offered may have a major impact on local cultural and economic sustainability (Ilbery et al. 2003). Food preference, as one of the main behaviour aspects, refers to the selection of one food item over the other (Chang et al. 2010). The research on human preferences of food is one of the main aspects of maximizing the potentials of tourism sector on local, regional and national scale (Amuquandoh et al. 2015).

Food tourism includes everything ranging from street bars and vendors to one-of-a-kind restaurants (WFA 2017). According to the research of the World Food Travel Association, 93% travellers are considered as food tourists but only 18% of the food tourists were interested in gourmet experiences in 2016. Increase in gourmet demand by 10% since 2010 may be linked to the increased production of TV programmes and competitions with gourmet and culinary topics (WFA 2017).

Most of the areas have some local speciality, either beverage or dish, which is typical or for which is the area known. For example, the Belgian chocolate or beer, Italian pasta

and pizza or cheese from the Netherlands. South-east Asia became the famous location for tourists from all over the world for a year-long tropical climate, culture and natural sites. Trying previously unknown and exotic foods is a significant part of the travel experience for many tourists. It is known that food constitutes essentials at understanding the culture and society (Fieldhouse 1986).

Previous studies revealed that traditional foods could become one of the significant factors that can attract tourists to the country. Tourists' food preference could provide a valuable clue of future supply for farmers and food retailers in destinations and regions where tourism is a significant part of the national development (Amuquandoh et al. 2015). The consumption of locally produced food items and the utilization of local ingredients in the preparation of tourist menus are known to reduce imports and leakage of tourism revenue from the local economy (Enteleca 2001). Good experiences with local food may recall emotions and memories of a certain place or district and bring the tourist to repeat the visit (Clark et al. 2007).

Evaluation of previous studies also indicates that many tourist perceptions are influenced by poor hygiene conditions, which may negatively affect the overall success of the business (Amuquandoh et al. 2015). Poor hygienic conditions with high ambient temperature and humidity cause quick spoilage and promote the growth of potentially harmful bacteria. Sanitary conditions are many people's top priority, therefore poor conditions usually present in developing countries may negatively affect the perception of individual or group and cause loss of income for the local seller.

2.2 Traditional food

Traditional food is defined as "a product frequently consumed or associated with specific celebrations and/or seasons, normally transmitted from one generation to another, made accurately in a specific way according to the gastronomic heritage, with little or no processing/manipulation, distinguished and known because of its sensory properties and associated with a certain local area, region or a country" (Guerrero et al. 2009) (Nummedal et al. 2006) described traditional food as a product which is grown, produced and processed locally in certain area or country and symbolises small part of

national identity. Traditional food from local sources with minimal or no after-processing may provide a quick and sustainable income for locals in touristic areas, preserve the knowledge of traditional cuisine and provide quick refreshment for tourists. In some areas are also offered special insect sticks which attract tourists with very different perception, either for watching or daring to taste.

Using local sources is also beneficial because there are no import costs and very low cost for processing, meaning higher profit for the seller however when purchasing goods there is still the main argument price.

2.3. Cambodia Overview

Cambodia is located in the Southeast Asian region, surrounded by Vietnam in the east, Laos to the north, Thailand to the west and has access to the Gulf of Thailand along the coast. Cambodia is found in tropical part of Asia with high temperature and humidity throughout the whole year. Average rainfall per year is around 1887 mm and the temperature never drops below 20°C, however around 80% of the yearly rainfall occurs during the monsoon from May to October (Tourism Cambodia 2017).

The Khmer New Year marks the beginning of the monsoon season which causes the Tonlé Sap lake to extend on the floodplains and irrigate the rice fields. Cambodia is second in the area of wetlands after Bangladesh. The great lake is home for many people living in the floating villages or in near distance. More than 90% directly rely on the resources from the lake and flooded areas (CI 2017). Cambodia has access to vast resources of fresh water in Tonlé Sap lake and Mekong river, which supports the rural areas with water for irrigation of plant production and fishing. Tonlé Sap river connects the Mekong to the lake which is the natural reservoir of the huge amount of water and allows passage for fish. Tonlé Sap lake is the biggest lake in South-East Asia and is estimated to have more fish than any other lake in the world. The area of flooded plains is nearly four times bigger at the peak of the rainy season (CI 2017).

The temperature in combination with regular monsoon makes the country ideal place for growing and harvesting more times a year, but require appropriate crop species selection, especially in pre-monsoon season. Cambodia as the other tropical countries has rich biodiversity in plant species, but some of the crops may be underutilized and removed from the food market in favour of well-known and established crops.

The main reason why Cambodia remains less developed country is historical aspects of last centuries. Cambodia was repeatedly attacked by neighbouring Vietnam and Siam and in the 15th century ended under their control. The pressure of constant attacks led Cambodian king to ask France for protection in 1863 which brought the country into a position of the colony as a part of French Indo-China (Chandler 2009).

Cambodia reached the independence of France in 1953 and next seventeen years are known as the era of King Sihanouk. The year 1970 marked the beginning of the new

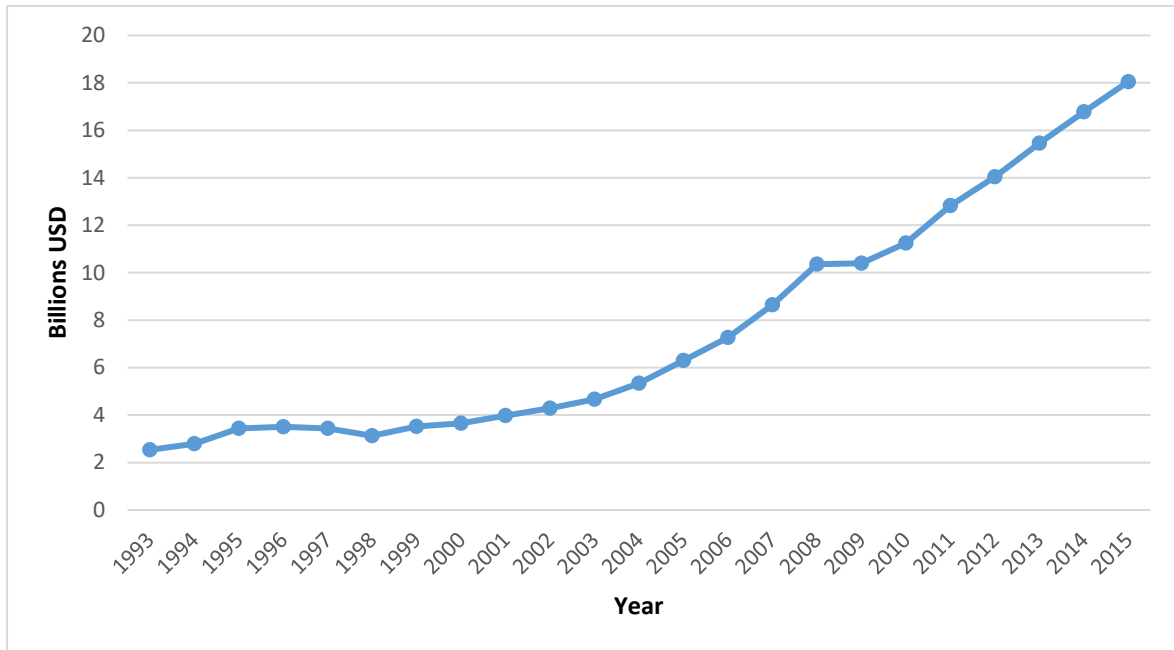
government led by Lon Nol, who managed to dethrone King Sihanouk while he was abroad and establish the Khmer Republic. Communist Red Khmer fighters at first gained strong support from local citizens unsatisfied with Lon Nol's government. When Red Khmers seized Phnom Penh in 1975, Lon Nol fled to the USA.

After that, there were no obstacles for Red Khmers, under the leadership of Pol Pot, to reveal the real nature of their ideology, close all borders and start the terror on Cambodian people. Red Khmers were killing all educated classes and thus drove the country few centuries backward (Sharp 2006).

Cambodia suffered from the brutal communist regime of Red Khmers till 1979 when Vietnamese army overturned the Khmer attack and got Cambodia under their control for another ten years. Red Khmers then became guerrilla fighters hidden near Thai border, supported by China and USA. After fall of Soviet Block in 1989, the impact of Soviet Union decreased, and Vietnam could not finance the occupation of Cambodia and step back. Fast opening of state, as happened in Cambodia, must necessarily bring the damage to the economy, loss of income and damage to natural resources. In 1991 an agreement of democratic elections in Cambodia was signed in Paris and in 1993 first democratic election in Cambodia under surveillance of UN resulted in Royalist party victory, but the results were not accepted by former governing People Revolution party (Chandler 2007).

Sustainable development after long decades of conflicts is challenging, as most of the population lacks adequate productive skills and education, particularly in rural areas. A significant part of the population in the rural areas also still suffer from malnutrition and poverty. Huge amounts of money for development aid were spent in Cambodia after the last regime, but most of the rural areas still lack even basic infrastructure, particularly because low financial resources and climatic conditions such as flooding, however, this situation is nowadays becoming less frequent after implementation of numerous development projects (ADB 2017). Cambodia is experiencing rapid development and economic growth, particularly because of the Chinese investments, textile industry and tourism sector as seen in Figure 1.

Figure 1: GDP Growth (billions USD)

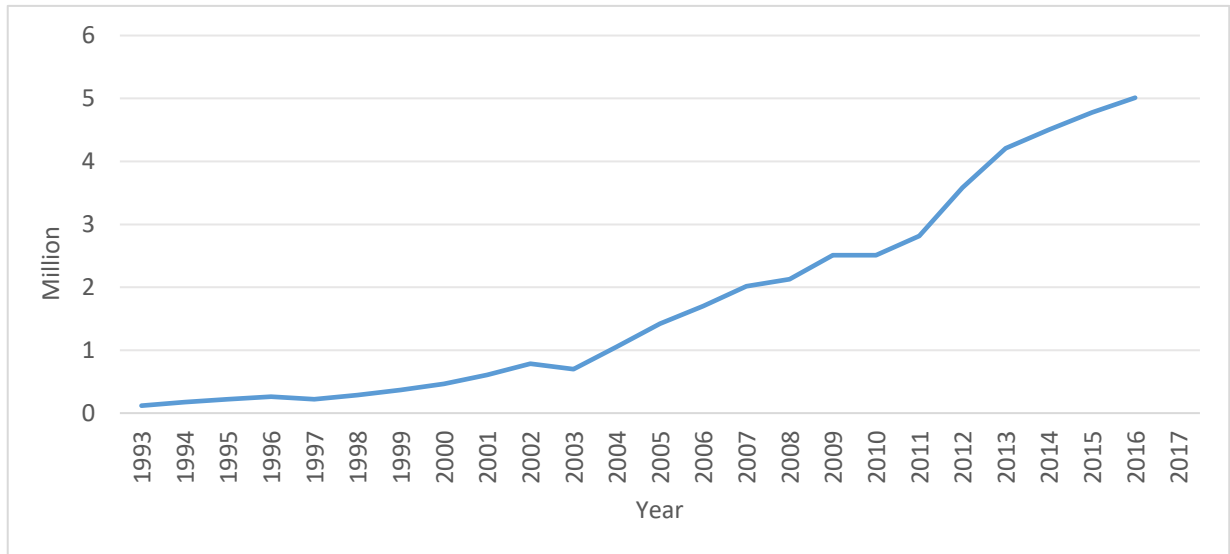


Source: World Bank 2017

2.4. Tourism in Cambodia

The tourist sector was basically re-established in 1993 after these events, but in 1960s Cambodia was a famous spot for travellers. The tourism sector increased rapidly from 1,7 million in 2006 to 5 million foreign visitors in 2016 as written in Figure 2.

Figure 2: Number of inbound tourists



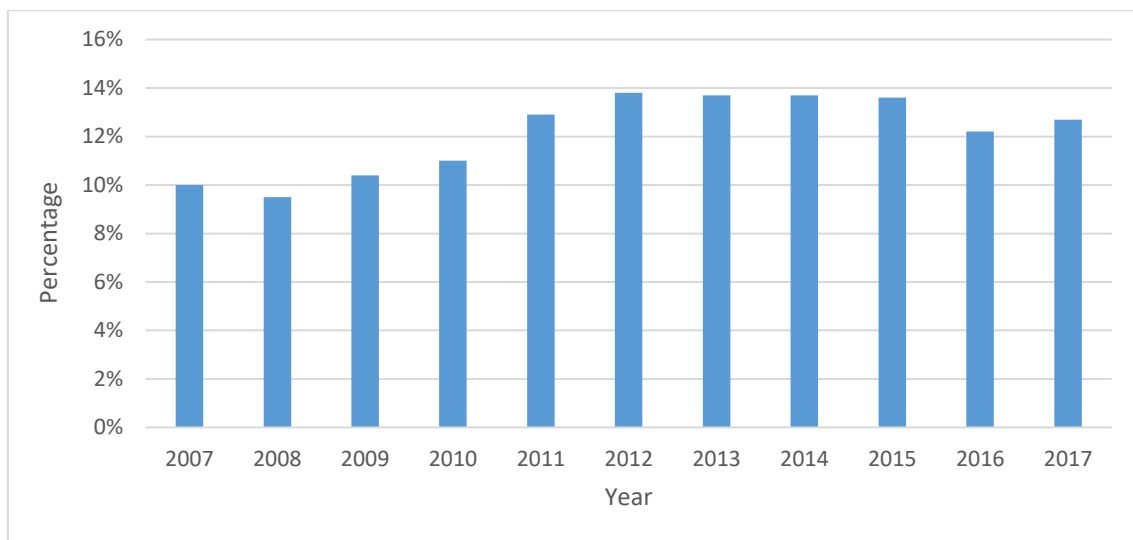
Source: Cambodian Ministry of Tourism, 2017

The highest numbers of visitors go to the main tourist spots, mostly cultural and historical heritage such as Hindu and Buddhist temples of Angkor and historical sites at Phnom Penh such as Royal Palace, National Museum, and Tuol Sleng as a reminder of Red Khmers brutality. The statistical report reveals that 2.8 million tourists visited Phnom Penh and 2.2 million Siem Reap in 2016 (Min. of Tourism 2017). Temples of Angkor are situated near Siem Reap city which benefits mostly from tourism (Chheang 2011). Siem Reap has an international airport, where most of the tourists go directly into from neighbouring countries. However, most of the rural areas have no profit from tourism at all, particularly because there are very low-quality infrastructure and slow transportation. However, several agro-touristic spots are emerging close to the touristic sites. Another area which benefits from tourism dining and accommodation is Sihanoukville. Coastal areas and surrounding islands like Koh Rong and Koh Rong

Samloem were visited by rough 600 thousand of tourists in 2016, however, Sihanoukville is larger city and is not only tourist-dependent. The last part is eco-tourism spots in Koh Kong, Tonlé Sap lake, Mekong river, Ream, Mondulkiri or Ratanakiri (Tourism Cambodia 2017).

The tourist industry has very quickly become the second largest industry in the country. However, Cambodia’s leading industry is still textile (Chheang 2011). Tourism industry generates approximately from 10 % to 14 % of the Cambodian GDP (Figure 3), produced mainly by hotels, travel agents, airlines, leisure activities and dining industries supported by tourists.

Figure 3: Direct contribution of Tourism and Travel sector to GDP

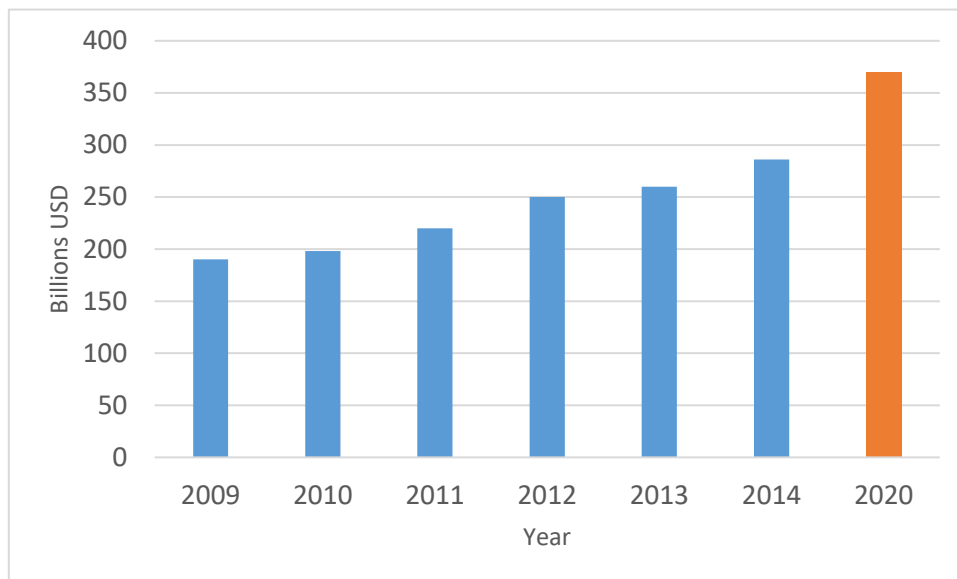


Source: World Travel and Tourism Council 2017

According to World Tourism Organization youth and student, travellers have become increasingly important for various destinations over the world. Young travellers comparing to older travellers usually travel longer period of time thus spend more in total. Many countries and regions have realized that welcoming young travellers is translated to a higher value for their destinations. Young travellers between the age of 15 and 29 had estimated share of 23 % out of all international travellers in 2015. World Tourism Organization estimated that the total value of the international youth travel

market had risen from 190 billion USD (2009) to 286 billion USD (2014). Based on UNWTO forecast the total value of youth tourism in 2020 will reach almost 370 billion USD (Figure 4).

Figure 4.: Global youth travel expenditure



Source: UNWTO 2016

Most of young travelling people today coming from the generation born between the early 1980s and 2000s. They are yet a very influential group of travellers enthusiastic about “live like a local” which is an adventurous and enriching experience for them, enabling them to get to know local communities and their culture. They rather tend to spend their travelling expenses in local businesses and reach direct connection to local culture and social contact with its residents. Young travellers search for new and unique experiences in places which are usually out of well-known, proven destinations. This travel group is not afraid to travel to remote rural areas and explore the local niches within city neighbours. Young travellers are very part of tourism segment, valuable mostly for developing destinations around the world, such as Cambodia (World Tourism Org. 2016).

Since 1993 each year (except for 1997 and 2003) the number of inbound tourists has risen. The highest amounts of visitors are citizens of surrounding countries such as Vietnam, Thailand, Laos, and China (Tourism Cambodia 2017).

2.5. Khmer cuisine

Traditional food in southeast Asia is sold mainly at the local markets, along with the roads and in local street restaurants. Development necessarily comes with globalization which is reflected also in the food industry. Western food and drinks such as hamburgers, pizza, steak, Coca-Colas are offered in all the main tourist locations where traditional Khmer dishes are pushed sideways. South-east Asia is a region of distinct specialities and exotic tastes for western tourists. Food may become one of the main reasons for visiting the country or region, which may be famous for certain kind of dish or a set of specialities. Cambodian small city Kaeb (Kep), located on the seaside of the southern part of the country, is famous for its crab dishes and Kampot for its high quality and special flavour peppers. The clear majority of food tourists prefer consuming fresh local food than from global chains, what makes a great opportunity for local people to offer food of their own production and reach the quick income. Most of the restaurants are for foreign visitors, so they offer a set of international dishes and few Khmer foods such as Amok, spicy sauce with meat pieces with lemongrass and coconut milk served on a banana leaf or Lok Lak – stir-fried beef with a sauce of red onions, tomatoes and Kampot pepper (Thaithawat 2000). Nowadays quality food is offered across Cambodia at lower prices compared to most of the western countries. Set of various food specialities originated in Cambodia are evaluated in this thesis.

Average Khmer food consists of multiple dishes, commonly contrasting with tastes and temperatures. Cambodian cuisine utilizes many kinds of herbs, spices, fruit, and vegetables. Rice is the essential part in most of the dishes either as an accompaniment or as an ingredient (Thaithawat 2000). International Rice Genebank contains 4.895 rice varieties from Cambodia and 766 traditional varieties were already reintroduced back after the civil war (IRRI 2017). Cambodian variety Phka Rumduol was multiple times awarded as world's best rice for its fragrant jasmine-like flavour. Rice is the most typical staple food eaten in most countries of the South-east Asian region.

People in Cambodia offer quick meals along the streets, such as fried rice, grilled freshwater fish, noodle soup *kuy teav* or various fruit dishes. Khmer cuisine has a lot in common with surrounding Thailand and Vietnam. Khmer cuisine uses less chilli and

coconut cream for flavouring than Thai cuisine but has a lot in common with Vietnamese cuisine. From the historical point of view – the states were colonized by French and most visible legacy of colonial times is eating French baguette *nom pang*, which is very popular and can be found almost everywhere across Cambodia. Khmers also maintain the tradition of consumption of *paté* and eggs. Noodles of Khmer cuisine are also influenced by Chinese immigrants, especially from the French colonial times. Curry dishes shows the influence of India. In the 16th century, Spanish and Portuguese merchants introduced chilli into Asia, but it never reached the same position in Khmer cuisine as in neighbouring Thailand, Laos, Indonesia or Malaysia (Thaitawat 2000). However, pepper is very popular, and Cambodia has a long history of aromatic variety production known as Kampot pepper (Bethune 2014).

3. Objectives

Visitors from various countries with different cultural background or traditions have a different perception of traditional food products. This thesis is aimed to evaluate tourist's perception and preferences of 10 traditional plant food products in Cambodia and fill the gap of information about traditional food consumption in the Cambodian tourism sector. Findings bring insight into how each group of tourists know and perceive particular fresh or processed plant food product. Results are used for improving the quality of offered food products and services in tourist areas with the cooperation of the Royal University of Agriculture in Phnom Penh. The overall goal refers to identifying the most preferred traditional food products in tourist areas of Cambodia.

The evaluated products are Rumduol Rice, Kampot Pepper, Cambodian Red Wine, Sraa Sor, Palm Sugar, grape wine, Samraong, Maprang, Kramsang, Ma-om. These products were chosen under the assumption of its underutilization in the tourist sector.

Table 1.: Plant foods

Product	Description
Rumduol rice	Improved traditional variety of rice (<i>Oryza sativa</i>) with very good agronomic properties such as high resistance to pests and diseases and has overall higher market value (Wang et al. 2012). The highest percentage of field area cropped with Phka Rumduol is in Pursat, Northwest Cambodia (32 %) and Kampong Thom in central (21 %) (IRRI 2010). Taste of this variety is aromatic, similar to jasmine rice. First introduced to farmers in 1999 by Cambodian Agricultural Research and Development Institute (CARDI 2017).
Kampot pepper	Pepper (<i>Piper nigrum</i>), usually grown by smallholder in Kampot province. Pepper has typical aromatic and qualitative properties thanks to the special porous soil type which allows ideal drainage of the water during the rainy seasons. Pepper was cultivated in

	Cambodia since the 13 th century but the highest expansion of Kampot pepper occurred during the French colonial era due to the strong appreciation of the pepper taste in Europe. Kampot pepper is certified by <i>Protected Geographical Indication</i> mark (K.P. Promotion Association 2018).
Cambodian red wine	Wine from first Cambodian winery established in 1999, in Battambang's Chan Thay Chhoueng plantation. Vineyards are planted by cabernet sauvignon, Shiraz and other varieties for rosé wines. Wines taste very different than normal wines, particularly because of differences in processing. In Chan Thay Chhoueng winery maturing of the wines takes only several months and producers still lack automation, therefore, most of the process is done by hands (khmertimeskh.com).
Sraa sor	Traditional Khmer liquor made from distilled rice. Methods and other ingredients may vary across Cambodia. In general, Sraa sor is first fermented using yeast and later distilled (Chay et al. 2011).
Palm sugar	Juice extracted from <i>Borassus flabellifer</i> palm tree is processed into palm sugar cubes or crystal form, commonly used in Khmer cuisine.
Wild grape wine	Wild grown grapes (<i>Vitis spp.</i>) collected and processed in Tbeng Chrum village, Pursat Province, Cambodia.
Samraong	Beverage from Malva seeds (<i>Malva sylvestris</i>) soaked in water, Malva seeds provides many health benefits such as immune system improvement, bacterial resistance, pain relief, digestive issues etc. (Shale et al. 2005).
Maprang	Maprang (<i>Bouea macrophylla</i>) from Anacardiaceae family is orange/yellow fruit resembling a mango with sour flavour and a light smell of turpentine. Maprang contains protein (112 mg) and fibre (600 mg) per 100 g (PROSEA 2017).
Kramsang	Kramsang (<i>Limonia acidissima</i>) is green citrus fruit eaten as a vegetable or the fresh pulp of the ripe fruit is mixed with sugar and eaten like sherbet (PROSEA 2017).

Ma-om	Ma-om (<i>Limnophyla aromatica</i>) is traditional Cambodian herb which grows in watery environments usually within the rice fields. Ma-om used in traditional Cambodian and Vietnamese soup dishes for its taste of lemon and cumin (PROSEA 2017).
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The main hypotheses are following:

H1: Tourists do not try local products because of possible health consequences.

H2: Gender has the influence on consumer preferences of the selected local food products.

H3: There is a difference between the perception of local food products by the respondents coming from Asia and Europe.

4. Methodology

4.1. Research design

The data were collected using questionnaire-based survey with convenience sampling method during August and September 2017. The study was based on a sample of 167 international tourists. The fieldwork took place at various locations in tourist most visited areas in Siam Reap, Phnom Penh and Sihanoukville and surrounding islands of Koh Rong as well as at the international airport of Phnom Penh, serving as one of the main hubs for international tourist, making it a good spot for convenience sampling. The choice of participants was based on the researcher's judgement, considering peoples willingness to participate.

The questionnaire was divided into three main sections (Appendix 1). First part assessed 10 of the Cambodian fresh and processed plant products for overall familiarity evaluation. The assessment of familiarity with the selected products was evaluated by allowing the respondent to answer by multiple-choice-based questions if they know it, tried it, liked it and whether they are willing to buy it again.

The second part of the questionnaire is aimed at gathering the general information about the way how tourists got the information about traditional food products, what influenced them to try the products and places where the goods were purchased. The average amounts of money spent per one purchase were also evaluated as well as the places and possible reasons for not trying the food products. Another part is dedicated to building a simple profile based on socio-demographic data of the respondents such as the nationality, age, education, religion and the length of stay in Cambodia.

Sample size calculation determines the number of observations to estimate the variability of a phenomenon. The sample collected for this study consists of 167 questionnaires of the average number of tourists visited Cambodia per one month (400 000). The calculated margin of error is 7.5 % of inaccuracy. The formula for sample size calculation is shown below:

$$\text{Finite population: } n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2 N}}$$

4.1.1. Data collection

4.1.2. Data analyses

Collected data were evaluated using Z-score statistical method for two groups with given characteristics in the sample. The Z-score statistical method is used to determine if there is a statistically significant difference between two groups in one given characteristic or preference in traditional foods in Cambodia. The level of significance for statistical methods is set to 0,05.

Null Hypothesis:

H0: $p_1 - p_2 = 0$, where p_1 is the proportion of the first population and p_2 the proportion from the second. The null hypothesis stands for that there is 0 difference between the two population proportions.

The equation of the z-score test:

$$\frac{(\bar{p}_1 - \bar{p}_2) - 0}{\sqrt{\bar{p}(1 - \bar{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

The z-score statistical method is suitable for evaluation of hypotheses concerning the influence of gender on food preferences and for accepting or denying of consumption patterns between European and Asian tourists.

5. Results

In order to assess the tourists' familiarity with given traditional plant food products, the respondents were asked to mark in each plant food product if they know it, tried it, liked it and whether they would buy it again. The sociodemographic data are evaluated in Table 2. The data about particular plant food products collected during the fieldwork in Cambodia are evaluated in Figure 5.

This section explores socio-demographic data collected from each respondent in the last part of the questionnaire (Table 2.), followed by evaluation of the information sources about traditional plant food products, reasons of trying it, places of purchasing and average expenditures for traditional products. The total number of respondents is 167 of which 142 marked the first question as Yes asking whether they know any traditional Cambodian plant food product.

The gender division was 73 males and 94 females. The respondent's age division is following, first age group 18 or under contain 5.4%, the highest number of respondents 60.5 % fit into the second age group 19 – 29 years. In descending order follow the third group reached 22.2% comprising age between 30 and 39 years. Ten respondents belong to the 40-49 group. The lowest number of respondents precisely 2.4% belong to age group 60 and above.

Education was assessed as the next socio-demographic indicator investigated the highest reached education of the respondents. The highest percentage of respondents (61.7%) reached University education and 22.2 % post-graduate. High school 15.6 % and only 0.6% Primary School.

The length of stay in Cambodia was assessed due to possible influence on the experience with the particular plant products. The results suggest that majority of the respondents spend in Cambodia 2-3 weeks (31.1 %), followed by one week (21%) and the least respondents (11.4%) stayed in Cambodia for more than 3 months.

The last question investigates respondent's religion. The question was put because of possible differences in perception or willingness to try particular plant products. The highest number of respondents are atheists (45.2%), 24.7 % Christians, and about 12% Buddhists and Hinduists. Judaists and Muslims are less than 4% of the respondents.

Following Table 2. contain the collected socio-demographic characteristics of the respondents.

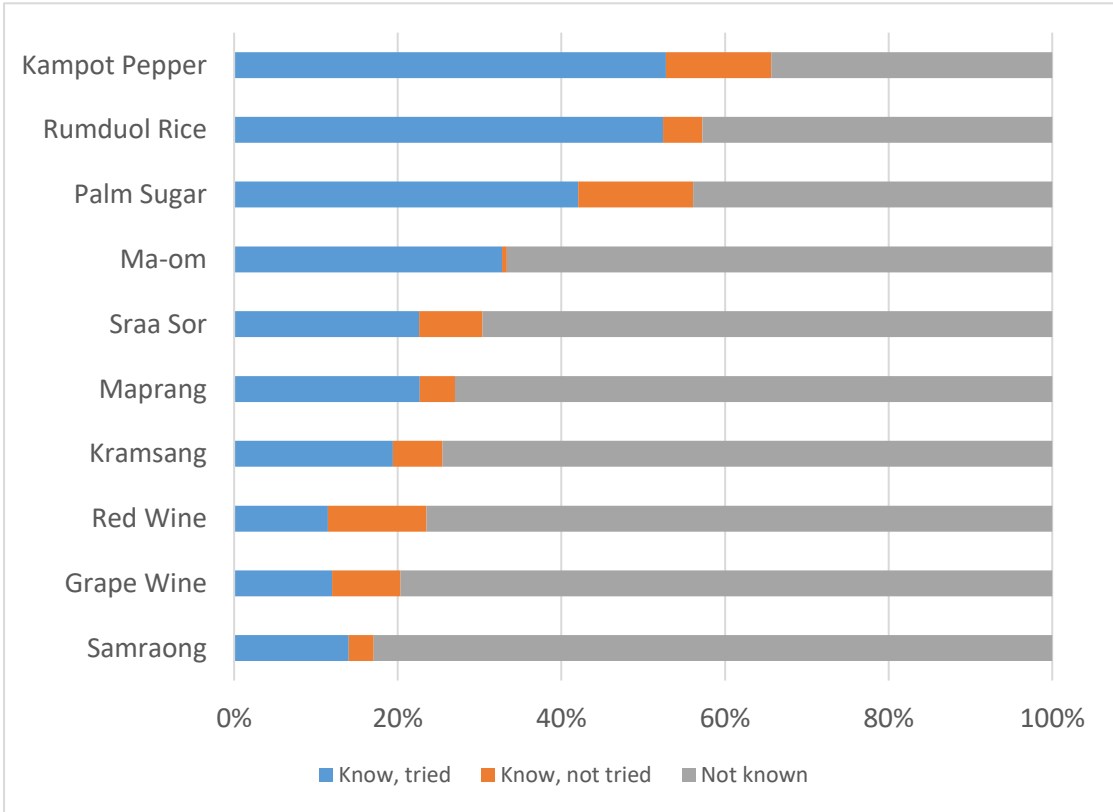
Table 2.: Socio-demographic characteristics of the respondents

	Frequency	Percentage
Gender		
Male	73	43.7 %
Female	94	56.3 %
Age		
18 or under	9	5.4 %
19-29	101	60.5 %
30-39	37	22.2 %
40-49	10	6.0 %
50-59	6	3.6 %
60 and above	4	2.4 %
Marital Status		
Married	28	17.0 %
Single	137	83.0 %
Education		
Primary School	1	0.6 %
High School	26	15.6 %
University	103	61.7 %
Post Graduate	37	22.2 %
Length of Stay		
Less than one week	29	17.4 %
One Week	35	21.0 %
2-3 weeks	52	31.1 %
1-3 months	32	19.2 %
More than 3 months	19	11.4 %
Religion		
Buddhism	21	12.7 %

Christianity	41	24.7 %
Judaism	3	1.8 %
Islam	6	3.6 %
Hinduism	20	12 %
Atheism	75	45.2 %

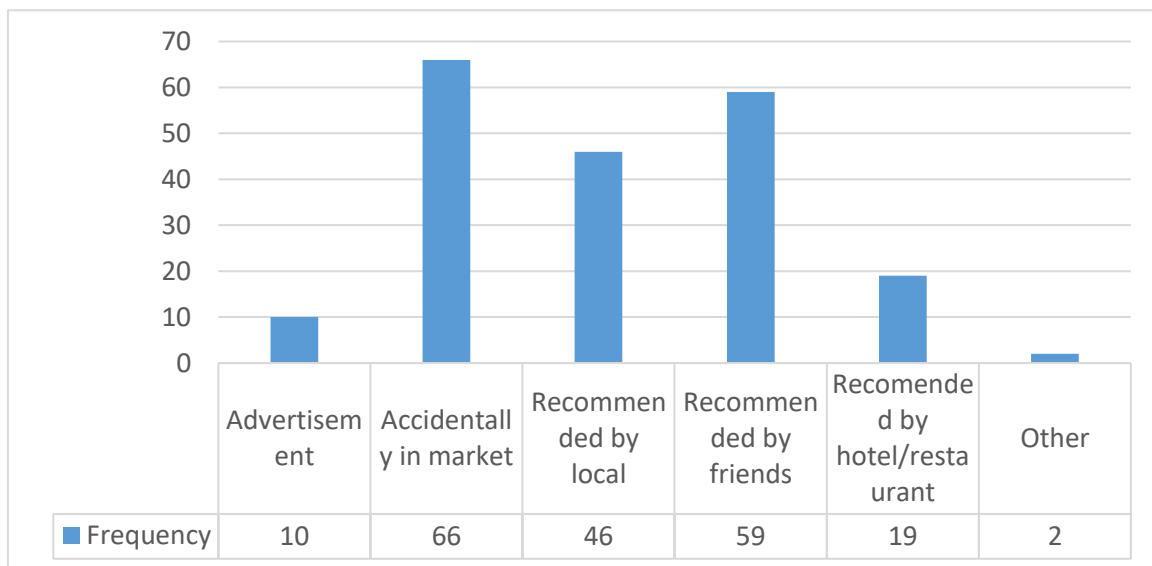
Descriptive analysis of the consumer-related experiences revealed that the most known Cambodian traditional plant product is undoubtedly Kampot pepper, known by 114 of total 167 respondents. Phka Rumduol - Cambodian jasmine rice, also very well known among the tourists was familiar to 95 respondents which are 16.7 % less comparing to Kampot pepper. The last product which is according to the research known to more than 50 % of the respondents is palm sugar. Ma-om, plant used mainly in Khmer soups (55 respondents). Sraa Sor liquor is known to 51 respondents. Maprang, plum-shaped mango relative is known to 44 of the respondents, almost the same amount as Kramsang citrus, (42respondents). Cambodian red wine is known only by 39 respondents of which just 19 also tasted. The wild grape wine is known only to 34 respondents. Samraong drink is known only to 28 of all respondents.

Figure 5: Tourist knowledge of plant products



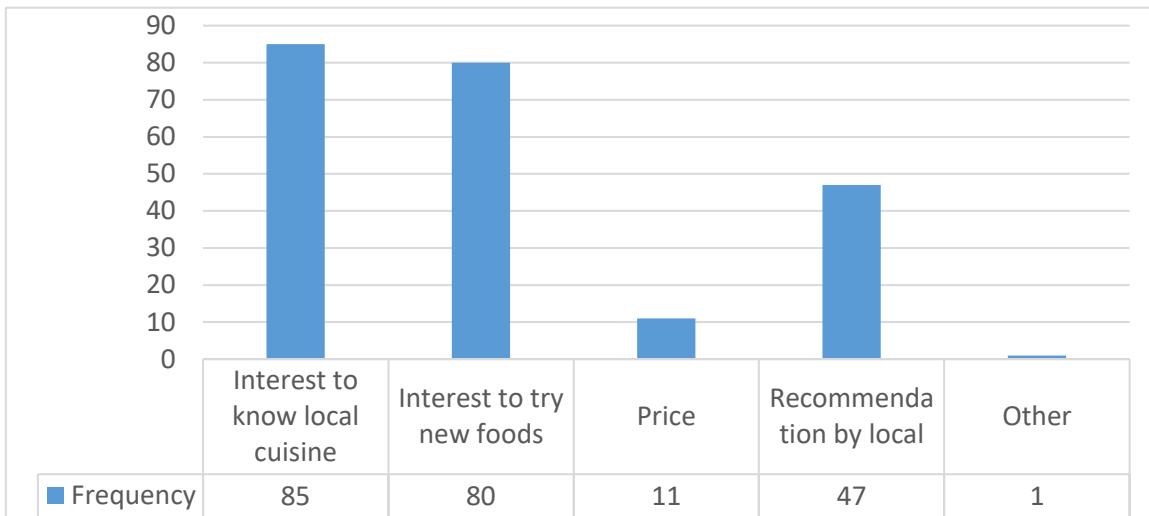
The sources of information about individual products may be received from the product vendor, colleague or friend whom the person travels with. Most of the respondents (32.7 %) answered they found the traditional products accidentally in the market. Relatively high number of respondents (29.2 %) stated that the traditional food was recommended by friends. This is the source of information most of the people might trust the most because it is easier to trust a friend who has probably no intention to receive profit out of the recommended product. Further, 22.8 % of the respondents stated recommendation by local as their information sources, the number of respondents is rather higher in comparison with other sources. The traditional food recommended by hotel/restaurant was used by 9.4 % of the respondents, 5 % of the respondents obtained the information from advertisement and only 1% respondents used another source of information about traditional food. Frequencies of answers are shown in Figure 6.

Figure 6.: Information sources about traditional food



Findings of respondents' reasons to try the food products revealed that 38 % of the responses were related to interest to know local cuisine while 35.7 % were interested in trying new food products, more than one fifth tried the food product because it was recommended by a local person. Price was a less important indicator in proportion to the total sample. Frequencies of answers are shown in Figure 7.

Figure 7.: Reasons for trying the food products



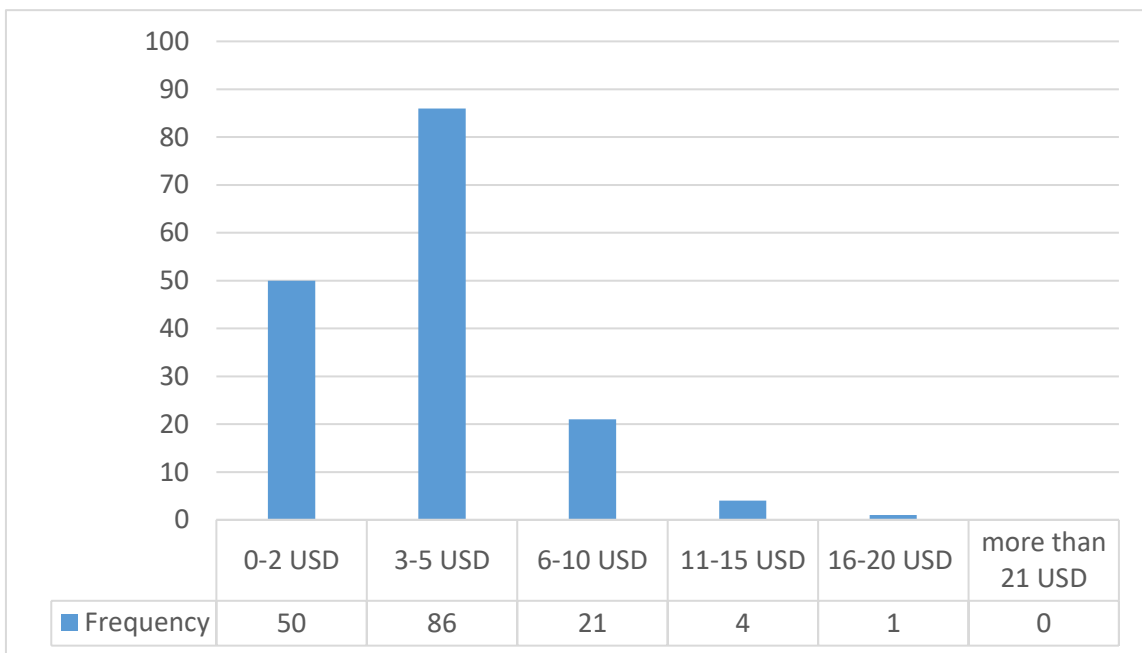
In order to evaluate the consumer behaviour, the tourist most common shopping places were assessed. The local market is the most favourite shopping places according to 50.3 % of responses, followed by the restaurant (33.4 %) and supermarket (14.8 %) The distribution of responses is demonstrated in Figure 8 below.

Figure 8.: Tourists' most common shopping places



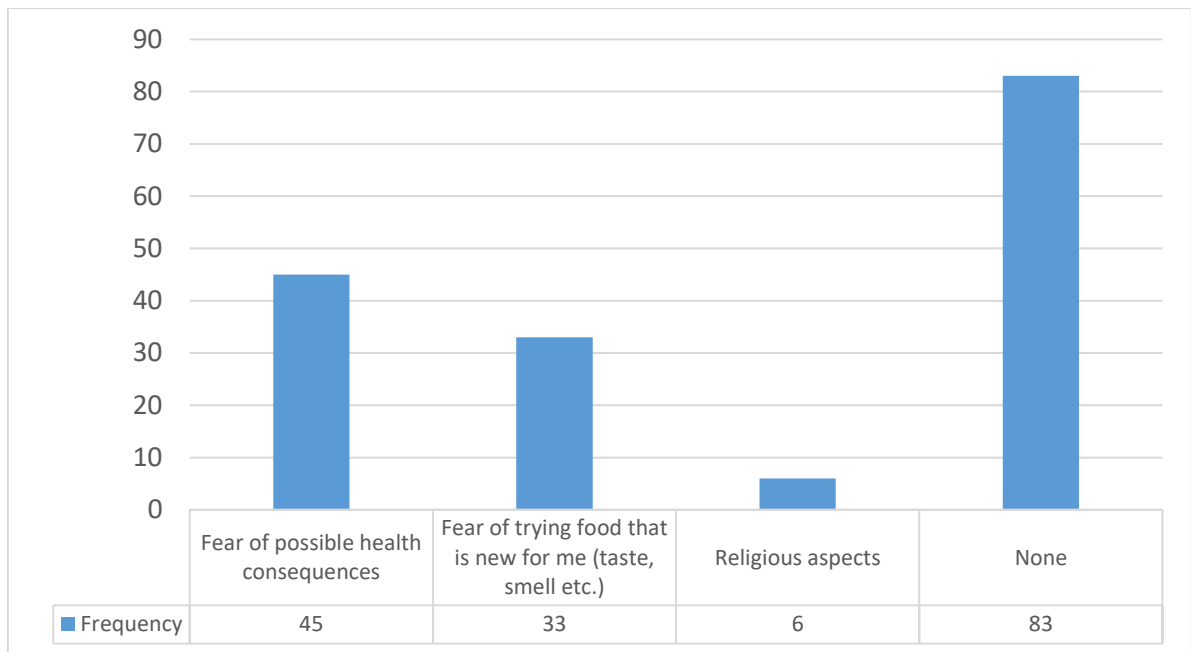
This section explores customers purchasing habits, the average expenditures per one purchase were evaluated. Respondents stated their average expenditures per one purchase. The majority of respondents reported 3-5 USD (53 %) as their average expenditure per one purchase, by contrast, there are no reported data for more than 21 USD. Reported frequencies of tourists' average expenditures are shown below in figure 9.

Figure 9: Tourist's average expenditures per one purchase



Fear of possible health consequences due to consumption of the traditional products is evaluated below in Figure 10. According to the collected data from the sample was evaluated the H1 hypothesis. The majority of tourists have no fear of trying the products due to possible health consequences, which was stated by 49.7 % of the respondents compared to 27 % who are concerned about health consequences.

Figure 10.: Tourists' reasons for not trying the food product



Hypothesis H2 was evaluated using the z-score statistical method. Testing determined whether the statistically significant difference in willingness to try the traditional food products is present between the two genders of the stated assumption H2: Gender has the influence on consumer preferences.

According to the results of the z-score test for comparison of the statistical difference was discovered, that there are no statistically significant differences between men and women except for one of the products - Kramsang citrus which showed 91 % higher willingness for trying within the male sample. The hypothesis H2 is therefore denied except for one of the products.

Table 3.: Z-score statistics for H2

		Rumdu ol Rice	Kampot Pepper	Red Wine	Sraa Sor	Palm Sugar	Wild Grapes	Samrao ng	Mapran g	Kramsang	Ma-Om
Men	Try	39	40	9	19	32	10	13	17	21	24
	n=73										
Women	Try	47	46	10	19	37	10	9	20	11	30
	n=94										
Z-score	(α =0,05)	0.4392	0.7514	0.3413	0.889	0.5824	0.6042	1.5606	0.3104	2.7794	0.1318
p-value		0.65994	0.45326	0.72786	0.37346	0.56192	0.5485	0.11876	0.75656	0.00544	0.89656
Result		SI	SI	SI	SI	SI	SI	SI	SI	SS	SI

Differences between preferences of tourists are evaluated in Table 4. Hypothesis H3: There is a difference between the perception of local food products by the respondents coming from Asia and Europe is evaluated below. The hypothesis was confirmed in three of the products (Rumduol Rice, Kampot Pepper and Ma-om herb). Following Table 4. contains sums of European, Asian, American and Australian tourists whose answer was that they liked the taste of individual food product. Using Z-score statistical testing was determined whether the statistically significant difference is present between the two continents according to the stated assumption H3: There is a difference between the perception of Asian and European citizens. According to the results of the z-score test for comparing the statistical difference is present between Asian and European respondents in multiple cases. Rumduol rice, Kampot pepper, and Ma-om show the statistically significant difference between the perception of Asian and European tourists.

Table 4.: Z-score calculation for H3

	Rumduol Rice	Kampot Pepper	Red Wine	Sraa Sor	Palm Sugar	Wild Grape Wine	Samrao ng	Maprang	Kramsang	Ma-Om
Europe n=85	46	51	3	8	31	6	9	15	16	28
Asia n=56	20	14	4	4	17	5	3	11	7	7
Z-score (α =0,05)	-2.1429	-4.0796	0.9666	-0.4724	-0.7496	0.4051	-1.0892	0.299	-0.9944	-2.7494
p-value	0.03236	0	0.33204	0.63836	0.45326	0.6818	0.2757	0.7642	0.32218	0.0060
Results	SS	SS	SI	SI	SI	SI	SI	SI	SI	SS
America n=13	8	8	1	0	7	2	0	5	0	7
Z-score (α =0,05)	-0.501	-0.1055	-0.7065	1.1542	-1.1975	-1.0211	1.2311	-1.7342	1.7101	-1.465
p-value	0.61708	0.9124	0.4777	0.25014	0.23014	0.30772	0.2187	0.08364	0.08726	0.14156
Results	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI

Australia	3	4	0	1	1	0	0	0	0	0
n=7										
Z-score (α =0,05)	0.574	0.1482	0.5054	-0.4172	1.1846	0.727	0.9064	1.214	1.263	1.8206
p-value	0.56868	0.88076	0.61006	0.67448	0.238	0.4654	0.36282	0.22628	0.2076	0.06876
Results	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI

6. Discussion

The research reveals that out of 10 plant food products typical for the region of Cambodia only 3 products, namely Kampot pepper, jasmine rice Phka Rumduol and Palm sugar reached a higher level of awareness. Based on most respondents like to try typical Cambodian food products, however, they might often struggle with discovering them unless they are already informed by local people or by an intentional search in advance.

As Wang (1999) has stated, tourists look for typical signs of places which follow their own perceptions, it seems that Kampot pepper at first place, followed by Rumduol rice and palm sugar already have been serving that purpose. This fact together with tourist perception that there is not any reason to not to try plant food products and mostly prevailing interest in trying traditional products and cuisine clearly show that there exists the strong potential for the other lesser known Cambodian food products in the future. It implies that there should be realized a change not to put forward already known and proven food products but also those indicated by the research as less known. Tourist food preference is mainly shaped by the awareness, already known traditional food products will be most likely preferred, consumed and bought again as souvenirs so there is a minor chance for those lesser known products to be purchased.

If there is put more attention to the level of promotion for the traditional food products, customers will soon or later respond, and this will have a positive impact on local people. Clark and Chabrel (2007) stated that local food helps to reconnect consumers with people and places that produce them. They also claim that unlike popular decorative souvenirs like craft items, traditional food products engage all the senses and stimulate a stronger connection with a place due to human personal and sensory memories of consuming them in the specific place.

Traditional products in Cambodia have a lower level of promotion, therefore, products already known by tourists are preferred by the sellers and so the willingness to try other products is significantly lower. In case there are tried less known products it is mostly found and tried in the local market by chance.

According to the research results, most of the tourists are interested in trying traditional products and cuisine and stated that there is no reason to not to try the plant food products. Allen and Hedricks (2007) stated that tourists prefer to try the local food because of the interest to get to know local cuisine and the culture of local dining as well as to support locals and getting the feel-good factor.

An important fact which also supports a lesser amount of sold Cambodian food products is that Cambodians sellers themselves perceive Cambodian products as inferior and large fees are required to be paid to secure premium placement for the products at the retailers and supermarkets. The situation is also discussed at national level. Minister of Commerce Pak Sorasak stated that he would meet supermarket, hotel and restaurant representatives to discuss ways to gain more prominent places for Cambodian products. The first hypothesis about health concerns was denied because 49.7 % of the respondents stated they have no concerns about health complications because of consuming plant products compared to 27 % who are concerned. This is understandable because plant products carry significantly lower health risks than meat or dairy products.

From another point of view, increasingly culturally driven young travellers, less conservative and more flexible, desire to experience the culture of the destination while seeking opportunities to interact with local people and testing local cuisine (UNWTO 2011). Health concerns might be often pushed aside at the cost of new exciting experience. And so local food and products in destinations is something which is increasingly popular and young travellers are willing to spend a substantial part of their budget on.

Results from the second hypothesis evaluation of differences between men and women preferences show that there was no difference found except for one case of Kramsang citrus fruit, used more as a vegetable. Women are more likely to control their food intake especially when they are on diets and generally tend to avoid fat and high energy value food products. According to Wardle et al., dieting status explained around 22 % difference in high-fat food products, 23 % in fibre choices, and 7 % in fruit. Wardle et al. found that gender explains the food consumption differences by almost 50 %. Gender differences in food choices seem to be partly attributable to women's greater weight

control efforts and their beliefs in healthy eating. However, there were no significant differences found in the sample of Cambodian tourists in this research, probably due to the lower amount of respondents and plant food products are generally considered as healthy, so there are no significant differences in preferences.

More differences were expected between Asian and European tourists due to different cultural background as well as Asian cuisine is mingling among close regions as Pine (2002) pointed that inhabitants of China mainland are more accustomed to Asian food products and very little to western kinds of food compared with Hong Kong inhabitants who had much higher exposure to Western cuisine as a former British colony.

The results of the z-score test provided for evaluation of hypothesis H3 showed that statistical differences between Asian and European respondents are significant in three following cases Rumduol rice, Kampot pepper, and Ma-om herb. In the case of Rumduol rice variety is impossible to distinguish whether the respondent meant the actual variety or mistaken with any other jasmine rice. Kampot pepper is the only plant product which has a certain name in the western countries, where was famous before civil war for its strong fragrance and taste especially in gourmet French restaurants. In recent years Kampot pepper received the geographical indication certification and is gaining back its previous position in world trade and gourmet dining. Thanks to the fact that Kampot Pepper has the certain level of promotion is known to large part of the respondents. Ma-om as the traditional herb used for Khmer soups, occurring mainly in rice fields is widely distributed and used in Cambodian dishes, therefore, is known to many tourists from Europe and Asia as well.

Promoting and offer of the traditional products is very important as proven in many western countries i.e. Netherlands cheese or Parma ham. The importance of promoting traditional products lies not only in future economic success but in the preservation of traditional knowledge and cultural heritage. During the pursuit of the commercial success of the western products, the traditional products are usually pushed sideways. Overall results show that Kampot pepper is the most known plant product typical for Cambodia, followed by Rumduol rice and palm sugar. Palm sugar is mostly known to respondents because it is available for sale worldwide and has distinct taste and colour. Sugar palms are also part of the Cambodian landscape. Results show that most of the

respondents are shopping on local markets where most of the plant food products are available, which is coincident with expectations because most of the products are not available elsewhere because hotels count on classical or local well-known food.

Limitations of this research lie in the fact that the convenience sampling method is not fully representative because the sample of the respondents is not randomly selected.

A collected sample size of 167 questionnaires of the average number of inbound tourists per month shows a higher margin of error (7.5 %), therefore the confidence interval is $50\% \pm 7.58\%$. For the average margin of error set at 5 % would be necessary to collect 384 questionnaires.

The informative value of the results is also limited by respondents' time spent in Cambodia up to the moment questionnaire was filled. In case, respondents spent only short time in Cambodia before filling the questionnaire, they did not have enough time to encounter traditional food products and they might get to know them later during their stay in Cambodia.

This limitation refers to all questionnaires except those filled in the departure hall at the Phnom Penh International airport.

The questionnaires might not have sufficient description of the products, to recognize the products some respondents may need to see them in the picture or as an authentic product demonstration.

There might be suggested a recommendation for local producers and retailers to concentrate their product promotion mainly on the two main age groups (19-29 and 30-39) of tourists visiting Cambodia. Results emerged from socio-demographic characteristics of the respondents discovered that these two age groups comprised as much as 82.7 % from the whole sample.

International tourists belonging to these age groups are more flexible and more willing to experiment with previously unknown food products. These travel groups are not afraid of travelling to remote rural areas and explore local culture including traditional food products.

7. Conclusion

The purpose of this research is to focus on tourists' perceptions and preferences of fresh or processed traditional plant food products of Cambodia, based on tourist's knowledge of the products, socio-demographic factors and purchasing habits.

The data were collected from a sample of 167 international tourists using convenience sampling method in the most visited tourist spots in August and September 2017. Based on the main findings, 3 main conclusions were drawn.

According to the results, there are no statistically significant differences between men and women consumer preferences, except for one of the products - Kramsang citrus which showed 91 % higher willingness to try within the male sample. The hypothesis H2 - gender has no influence on consumer preferences is therefore confirmed except for one of the products. Consumer preferences are closely connected to respondents' familiarity with the plant food products which was also researched within the sample. Results are similar among the respondents. Most of the products are not widely known, except for Kampot pepper and Rumduol Rice both known by more than 50 % of the respondents followed by Palm Sugar known by more than 40 % of respondents. Regarding Kampot pepper recognition, there might be a few reasons why Kampot pepper reached higher International recognition in comparison to the lesser known food products from this research. Its long history of cultivation in Cambodian southern region is well known. Pepper has been cultivated in Cambodia since the 13th century but the highest expansion of Kampot pepper occurred during the French colonial era due to the strong appreciation of the pepper taste in Europe. Apart from historical context, Kampot pepper also received the certification mark of Protected Geographical Indication which is recognized also in Europe which also might influence that. Very similar level of recognition was also found in case of Rumduol Rice variety developed by the Rice Research Institute with multiple awards for best rice is famous for its fragrant smell and other qualitative properties. Palm Sugar prepared from the juice of *Borassus flabellifer* palm is available worldwide and so is well known among the travellers. Hypothesis H1 concerning the fear of possible health consequences of consuming the traditional products was evaluated with findings that most tourists have no fear of trying the

products, which was stated by 49.7 % of the respondents compared to 27 % concerned of health consequences. Most of the tourists are willing to try the new food products, however, the products are not much available unless intentionally searched. In fact, not only products but also the information about it is not available and can be provided mostly only by locals, except for Kampot pepper with a long history of cultivation in Cambodian southern region the information about traditional products is very scarce.

Hypothesis H3: There is a difference between the perception of local food products by the respondents coming from Asia and Europe revealed that only Rumduol rice, Kampot pepper, and Ma-om show the statistically significant difference between the perception of Asian and European tourists.

The traditional foods have strong potential in the tourism sector as well as income increase for local people. The Cambodian region is highly perspective for food tourism industry. There is a market gap of traditional food products which open new possibilities for local producers and for becoming part of the rural development.

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Appendices

Appendix 1: Questionnaire design

Tourists' perception and preferences of traditional plant food products in Cambodia

Research organized by Royal University of Agriculture, Cambodia (RUA) and Faculty of Tropical AgriSciences, Czech University of Life Sciences Prague (CULS), Czech Republic

Objective of the Study:

This is a joint study by RUA and CULS Prague is designed to understand the tourists' perception and preferences of traditional plant food products of Cambodia. The information gathered will be used to improve and provide a better quality and range of traditional Cambodian plant foods and services to the visitors at locations they often visit and buy foods. Your sincere response will be very much appreciated.

1. Do you know any local traditional plant food products?

A. Yes B. No (please continue with question n. 6)

2. Can you please select local traditional food products which you know and/or tried it?

Name of the food/product	I know it	I tried it	I like it	I would like to buy it again
Rumduol rice (Cambodian jasmine-like rice variety)	Yes / No	Yes / No	Yes / No	Yes / No

Kampot pepper (black, red and white peppercorns)	Yes / No	Yes / No	Yes / No	Yes / No
Cambodian red wine (grape wine)	Yes / No	Yes / No	Yes / No	Yes / No
Sraa sor (rice liquor)	Yes / No	Yes / No	Yes / No	Yes / No
Palm sugar	Yes / No	Yes / No	Yes / No	Yes / No
Wild grape wine (red wine made from grapes harvested from wild plants growing in the forest)	Yes / No	Yes / No	Yes / No	Yes / No
Samraong (beverage from malva seeds soaked in water)	Yes / No	Yes / No	Yes / No	Yes / No
Maprang (orange/yellow fruit resembling a mango with sweet-sour flavour and light smell of turpentine)	Yes / No	Yes / No	Yes / No	Yes / No
Kramsang (green citrus fruit eaten as a vegetable)	Yes / No	Yes / No	Yes / No	Yes / No
Ma-om (herb used in traditional Cambodian soup dishes)	Yes / No	Yes / No	Yes / No	Yes / No
Other (please specify):				

3. How did you get to know about the traditional food products in Cambodia?

- A. Advertisement/promotional material (leaflet, billboard, internet etc.)
- B. I found it (accidentally) at the market/shop/restaurant
- C. Recommendation by local person (at the market, in restaurant)
- D. Recommendation from a friend, family, other tourists
- E. Recommendation/offer by hotel, restaurant, tour guide
- F. Other (please specify):.....

4. What influenced you to choose the above mentioned food products?

- A. Interest to know local cuisine

- B. My interest to try new foods
- C. Price
- D. Recommendation from a friend/other tourist/local person
- E. Other (please specify):.....

5. Where do you usually purchase the product?

- A. Local market, street vendors
- B. Restaurant, hotel
- C. Supermarket, shop
- D. Other (please specify):.....

6. What is your reason not to try any traditional food?

- A. Fear of possible health consequences
- B. Fear of trying food that is new for me (taste, smell etc.)
- C. Religious aspects
- D. Other (please specify):.....

7. How much do you spend on traditional products per one purchase?

- A. 0-2 USD
- B. 3-5 USD
- C. 6-10 USD
- D. 11-15 USD
- E. 16-20 USD
- F. More than 21 USD

8. Gender

- A. Male
- B. Female

9. Age

- A. under 18 years
- B. 19-29
- C. 30-39
- D. 40-49
- E. 50-59
- F. 60 and above

10. Marital status

- A. Married
- B. Single

11. Education

- A. Primary school
- B. High school
- C. University
- D. Post graduate

12. Religion

- A. Buddhists
- B. Christians
- C. Jews
- D. Muslims
- E. Atheists
- F. Other: please specify

14. How long did you stay in Cambodia?

- A. Less than one week
- B. One week
- C. 2-3 weeks
- D. 1-3 months
- E. More than 3 months

15. In which country do you live?

.....

Thank you very much for your support!