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Editor's Note



As of May 1, 2021, the number of COVID-19 infection cases has risen to more than 153 million globally, and 3.2 million related deaths have been reported (WHO). In the midst of this crisis, there is hope for an end of the pandemic by COVID-19 vaccines and public health measures. However, unequal vaccine distribution may be an unexpected obstacle. According to United Nations (April 16, 2021), of the 832 million vaccine doses distributed worldwide, 82 percent have gone to high- or upper-middle-income countries, while only 0.2 percent have gone to low-income countries. However, WHO and UNICEF have urged all relevant departments to work together to ensure fair and equitable access to the COVID-19 vaccine, which is critical for the end of this pandemic. Under this complicated situation, our society needs to learn new knowledge and ideas for ending the pandemic and having sustainable development, with the principle of “leaving no one behind.” Our journal intends to act as a medium for presenting the said knowledge and ideas to our society.

Let us go through all seven articles from various disciplines to provide some discussion and information to our readers. In the first paper by Ngoc Dung Tran and Thi Hong Hoa Nguyen, the authors studied the international trade of northern Vietnam (the kingdom of Tonkin) in the seventeenth century by using British primary materials. This study confirmed that, during the period, products and roles of Tonkin were suitable for the intra-Asian trade. Tonkin's trade with European countries was quite small.

In the second article, Hau Le and Ratanasuda Punnahitanond determined the impact of Google score ratings and reviews on Vietnamese consumers' hotel booking decisions. Their study found that both Google score ratings and reviews on the 5-star hotel characteristics had significant impacts on the Vietnamese consumers' online booking decisions.

Next, Varin Pulpol, Tanpat Kraiwanit, and Narong Petprasert studied the effects of demographic factors and knowledge and understanding of information operations (IOs) on the attitudes of Thai people towards economic impacts. Surprisingly, they found that only the education level had a significant effect on the people's attitudes. However, the study suggested that the knowledge and understanding of IOs could help Thai people to admit the need to scrutinize news.

The fourth article by Kotchawan Trirattanavanich, Thanyarat Khamproh, Anantachai Thongchareon, and Attapol Moungsawad brought us into the safety perception of pilots of a commercial airline in Thailand. This study reported that the safety policy and operational norms of the company had a positive effect on the safety perception of the pilot. Nevertheless, it was concluded that their characteristics such as gender, age, and education level had no impact on the safety perception.

In the fifth article, based on a post-modernism approach, Denny Euprasert composed an original work, "Like What?" for Jazz Orchestra. This excellent creative work has been performed by several professional ensembles such as Siam Jazz Orchestra (2018) and Taipei Jazz Orchestra (2016). Most importantly, this masterpiece has been published by Jazz Education Abroad of the United States.

Next is the article by Pakarat Jumpanoi and Pongyuth Glayuth. The authors studied the digital marketing strategy of sole proprietorship in food and beverage services. The study had

conducted several surveys and found interesting findings. The results of their work indicated that these proprietors had knowledge of the digital marketing strategy at moderate to high levels. However, despite their knowledge level, these sole proprietors could only implement digital marketing tools at low to moderate levels. It is believed that the high cost of investment and high commission fee charged by the food delivery application providers are barriers to their implementation of digital marketing tools.

Last but not least, our journal concludes this current issue with an article by a researcher from the Philippines who run her experiments for developing a strategic framework aiming to reduce the urban heat effect for the high-density communities in the Philippines by integrating a green concept through a collaboration of various stakeholders.

We welcome your comments and, of course, your manuscripts. Links to our manuscript submission site can be found at RJSH Online Submission and Review System: www.rsu.ac.th/rjsh. We look forward to hearing from you and thank you in advance. On behalf of the RJSH team, we wish you, our beloved readers, good health through this crisis pandemic of the COVID-19.



Editor-in-chief



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Northern Vietnam's overseas Trade in the Seventeenth Century by investigating the British primary Materials

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Abstract

In the late seventeenth century, both European and Asian merchants arrived to Tonkin for the silk-silver trade. Together with their appearance, they recorded quite clearly the situation of Tonkin, in which commerce was one of the main content of their writing. During the existence of the English factory in Tonkin (1672-1697), the English provided a series of diaries, journals, reports and records mentioning the political, social and commercial issues in Tonkin. By investigating those primary documents in comparison with Vietnamese, Dutch and Chinese sources, the paper wants to clarify the decline of Tonkin trade in the late seventeenth century. After the civil war, Tonkin performed a hard policy towards foreigners and therefore, European merchants gradually paid less attention to this market and finally they withdrew from this place while Asian traders still maintained their influence there. In doing so, the article applied quantitative, qualitative and comparing methods to show the fact of foreigners' activities in Tonkin. Beyond that, the author evaluates the role of Tonkin in the intra-Asian trade, the importance of Asian network towards the development of Tonkin overseas trade. Then after, the paper raises a suggestion of focusing deeply in the trading connection with regional countries.

Key words: *British primary materials, Tonkin's trade, the English East India Company, age of commerce, trading knowledge*

1. Introduction

The English East India Company (hereafter the EIC) was established in 1600 to compete with the Dutch and other European merchants in collecting spices, pepper, and other Asian commodities (This day in history, 1601, p. 5-6; Lawson, 1993, p. 20). The EIC sailed to Bantam (a famous trading port in Java, Indonesia) in 1602 to find potential goods and settled its first factory there. Because China, Japan, and Vietnam (which was divided into two kingdoms namely Tonkin and Cochinchina) had little or no spices, the EIC did not focus on them in the early seventeenth century. The English only expanded their commercial influence in East Asia and Southeast Asia as spices and pepper found hard to trade in Europe and the EIC wanted to find other regional commodities in exchange for Japanese silver. Accordingly, some voyages were settled to Siam, Tonkin, Cochinchina, and then several factories were established in the region in the late seventeenth century.

The English arrived to Vietnam in the 1610s but they quickly neglected this market in the mid-seventeenth century because it could not serve their aim of exporting goods. They only returned to Tonkin in the late century and formed a factory there in 25 years (1672-1697) as they tried to trade with mainland China and Japan. During this period, the English recorded the change of Tonkin's society after the war with Cochinchina with the appearance of many foreigners from both Asia and Europe. Besides materials of the Dutch, Chinese, Japanese, the British documents are valuable to provide information about Tonkin's political, economic, and social issues. In this paper, we investigate the EIC's sources to understand more Tonkin's overseas trade in the late seventeenth century.

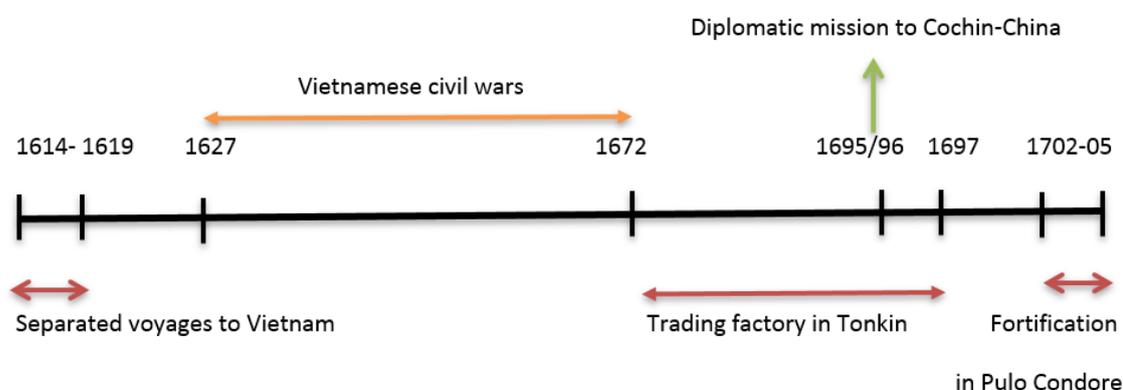


Figure 1 Timeline of the EIC's appearance in Vietnam (1614-1705)

The seventeenth century is important not only with Southeast Asian countries but also with European Companies in their trading expansion. Reid (1993) argued that Southeast Asia developed overseas trade in the “age of commerce”. This is the first century of European Companies and they still experimented to find suitable trading markets in Asia. The appearance of European merchants together with the expansion of Chinese traders encouraged overseas commerce in Southeast Asia, in which Tonkin and Cochinchina also obtained high profits. Tonkin can be seen as noticeable evidence as this kingdom witnessed the arrival of several merchants from Britain, Holland, Portugal, China, Macao, Japan, Batavia and Siam. Both Asian and European traders tried to exploit the intra-Asian trade to obtain profits and then build a global trading network via the case of Tonkin.

This study partly provides a picture of foreign trading activities in Tonkin to show how they worked, competed and obtained profits in the “age of commerce” via the case study of Tonkin. This research argues that although European merchants had relative advantages to trade in Asia, until the late seventeenth century, Asian merchants, especially the Chinese one still were a large competitor and influencer in trade of Southeast Asia. European traders performed various approaches to trade with Asia but they still faced difficulty and competition from Asian rivals. In the case of Tonkin, both the Dutch and English could not maintain their influence while Chinese merchants were always dominant there. In fact, Tonkin was only an intermediary to help European to connect with mainland China and the English or Dutch did not create an effective intra-Asian network as the Chinese could do.

Previous studies partly supply information about Tonkin's trade with different perspectives in this period. It is noticeable that because Vietnamese primary documents were rare and unsatisfactory to draw a picture of Tonkin's overseas trade, most scholars investigated original documents from the English, Dutch, Chinese, Japanese. Some scholars (Li & Reid, 1993, 1998, Momoki, 1998; Nguyen, 2007; Li, 2012; Hoang, 2006, 2014) indicated that Tonkin played a key role in the regional trade as it was a go-between port to link Japan, China with Southeast Asia. Other scholars argued that Vietnam could provide potential products for Asian merchants in the regional trading network (Vuong, 1959; Nguyen, 2002; Tran, 2007). Nguyen (1970) illustrated that Vietnam witnessed a money economy in this period and it had several advantages to attract overseas merchants. Innes (1980), Tarling (1992) and Li (1998) showed that Chinese and Japanese traders had a large influence in Tonkin's trade in this period. Boxer (1963) and Souza (1986) demonstrated that from the late sixteenth century onwards, the Portuguese traded with Tonkin in the silk-silver line. Other studies of Buch (1936, 1937) and Hoang (2006, 2010, and 2019) focused on Tonkin-Dutch relationship by investigating the VOC's materials. Naoko (2009, 2011) used different sources to research Tonkin-Nagasaki trade and presented a large influence of Chinese merchants in Tonkin. In 1994, an international conference was conducted in Pho Hien including many studies to show the role of this port in history of Tonkin overseas trade and the appearance of foreigners there in the seventeenth century (Association of Vietnamese Historians, 1994). Dror and Taylor (2006) reviewed the situation of Vietnam in the seventeenth century by examining European writing at that time, which also covering the appearance of foreigners. In brief, Tonkin overseas trade in the seventeenth century receives a large attention of many scholars. However, previous

studies often view Tonkin in a large background of Southeast Asian trade, means that they consider Tonkin as a part of the intra-Asian trade. Another researching subject is focused on special relationship between Tonkin and overseas merchants as the Dutch, Chinese or English. Based on the previous studies, the research investigates British primary documents to view the fact of Tonkin overseas trade in the late seventeenth century including its commercial conditions and foreign activities. This research thus fills the gap of previous studies about overseas merchants in Tonkin in early modern period as there was not detail and comprehensive paper to review the appearance of foreign traders in Tonkin in the period 1670s-1690s. By showing the fact that Asian traders were still dominant on Tonkin trade, the paper suggests that local government always needs to have a balanced view about the role of regional traders and conduct welcomed policies towards outside merchants and investors to develop their economy.

2. Materials and Methodology

2.1 Primary materials

Because Vietnamese historical materials mostly paid attention to issues relating to Kings and their royal family, the situation of trade was partly neglected. As a result, the research mostly investigates primary materials from the EIC, G series keeping in British Library, London. They include Tonkin factory' records, diaries, consultations, and journals in ten parts referenced IOR/G/12/17/1-10 (1005 pages). They include:

IOR/G/12/17-1, Tonqueen Journal Register, 25/12/1672-7/12/1672, fos.1-58.

IOR/G/12/17-2, W. Gyfford's Journal at Tonqueen, 13/12/1672- 28/6/1676, fos. 59-149.

IOR/G/12/17-3, Tonqueen Journal Register, 29/6/1676-26/6/1677, fos.150-200.

IOR/G/12/17-4, Diary and Consultations of T. James and W. Keeling, 06/6/1677- 24/6/1678, fos. 201-224.

IOR/G/12/17-5, Tonqueen Journal Register, 02/7/1678- 28/5/1679, fos.225-251.

IOR/G/12/17-6, Tonqueen Journal Register, 1/6/1679-31/5/1680, fos.252-273.

IOR/G/12/17-7, Tonqueen Letters of Consultations, 15/12/1681- 28/7/1682, fos. 274-288.

IOR/G/12/17-8, Diary and Consultations of W. Hodges, 29/7/1682- 26/8/1683, fos. 289-315.

IOR/G/12/17-9, Tonqueen Diary and Consultations, 13/5/1693- 29/7/1697, fos. 316-479.

IOR/G/12/17-10, Tonqueen Diary and Consultations, 27/7/1697- 30/11/1697, fos. 480-503.

This article also uses other documents in the E/3 series including letters relating to Tonkin factory between London and Bantam and Madras (IOR/E/3/87-92 for a period 1666 - 1697). The B series, the Court Books, supplies information about selling Tonkinese goods in London.

2.2 Research Methods

The research applies both qualitative and quantitative methods to analysis the EIC's primary materials and secondary data of previous studies about European Companies and Asian traders in Tonkin. While a quantitative approach is useful to narrate and examine both data of number of ships, commodities, value of stock, money in primary and secondary documents, a qualitative method is applied to evaluate the developing trend of foreigners in Tonkin as British primary sources are missing in some important periods (1680-1681, 1683-1693). A comparison method is also useful as the author compares information in British primary materials with those in Dutch and Chinese sources which is researched in previous studies. By doing so, the article expects to provide a comprehensive picture about Tonkin's trade in the late "age of commerce" to argue that Tonkin was a potential and interesting market for both European and Asian merchants. However, the Europeans seemed to gradually give up this market while the Chinese still presented their dominance there.

By using the above methods to investigate British primary documents, the paper challenges the previous view of scholars arguing that European Companies dominated Asian trade which is somewhere presented in "Why Europe grew rich and Asia did not: global economic divergence, 1600-1850" of Prasanna Parthasarathi or "Why did Europe conquer the world?" of Philip Hoffman.

3. Research Results

3.1 Tonkin's trading potentials

In this section, the authors argue that Tonkin in the seventeenth century was attractive in the silk-silver trade as it could produce substitutes of Chinese silks and Tonkin played a significant role in the intra-Asian network. However, Tonkinese Court's policies limited its trading potential with foreigners. In the early connection, Tonkin presented a difficult viewpoint towards the EIC as this kingdom paid attention to developing agriculture and it had no demand of expanding its trade. The English arrived to Vietnam and Southeast Asian countries in the 1610s to find substitute goods in exchange for Japanese silver to cover the EIC's regional trade. They sent experienced factors to Tonkin to discover its trading potentials including governmental policies, commodities and the ability of trade with other merchants. On 17/3/1619, the English invested 700 taels of silver in the trading voyage to Tonkin, but its result was quite limited. In the 1610s, the English found little information about Tonkin's potential as they had no direct connection with Tonkin and all knowledge was transferred via the Dutch, Chinese and Japanese merchants in Japan. Most knowledge about Tonkin was recognised in the late seventeenth century as the EIC returned to East Asia.

Tonkin's role in the intra-Asian network was highly evaluated by both regional and global merchants as it could provide a useful way to connect with mainland China and link East Asia with Southeast Asia (Li, 2006, p. 86-90; Li, Cooke, and Andersons, 2011). The English also recognised the role of Tonkin in the regional trading network and in 1658 Quarles Browne, the EIC's former chief factor in Cambodia (1651-1656), supposed a plan to use Tonkin as a go-between to link with Japan and China (IOR/B/26, 1658, p. 142; Bassett, 1955, p. 311). In 1661 and 1664, Browne suggested a new proposal to settle factories in Cambodia, Japan, China, and Tonkin (IOR/G/21/4B, p. 4-8). He argued that the VOC built and obtained a great silk-silver trade between Tonkin and Japan as this kingdom could supply a large number of raw silk, silks and musk (Ibid, p. 8). Although his information was not sufficient to help London to decide to trade or settle a factory there, it still presented the potential of Tonkin in the East Asian trading network.

In 1672, William Gyfford, the first chief factor of the English Tonkin factory sent a 30-page report to London to show the potential of this market. He recognised a possibility of establishing a trade in a land-border between Tonkin and China and Tonkin's Mandarins could be English brokers (IOR/G/12/17/1, 1672, p. 38b). Importantly, he confirmed London's previous knowledge about the potential of Tonkin in the intra-Asian trading network, particularly in the link with Japan of the silk-silver trade (Ibid, p. 46b - 47a). Unlike London's opinion of sending one ship to Tonkin yearly, Gyfford thought that London could send two small ships to Tonkin and they could call at other Southeast Asian trading ports to collect pepper (Ibid, p. 52b). Understanding London's failed attempts to trade with Manila in the 1640s and 1660s, Gyfford considered and proposed a plan to build a new trading system linking Tonkin, Japan and Manila. In 1672, he advised London to negotiate with Madrid government in order to obtain permission to trade between Tonkin and Manila in the silk-silver line (IOR/G/12/17/1, 1672, p. 53a). The Manila-Macao-Tonkin trading model would help the EIC to buy both Chinese commodities in Macao and silver in Manila and then the English could balance the intra-Asian trade and London did not need to export money to Tonkin and Asia.

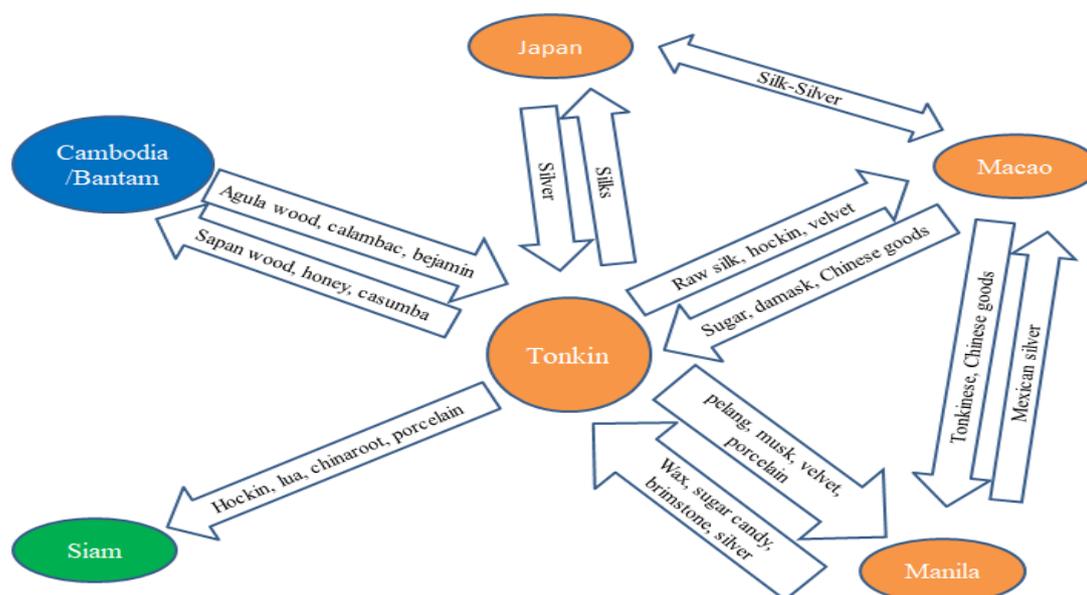


Figure 2 Gyfford's suggestion to exploit Tonkin's role in the intra-Asian trade in 1672

Source: This figure is built from the report of Gyfford to the English East India Company, 7 December 1672, in IOR/G/12/17/2, *Tonkin factory*, p. 46a-b; 48a-b.

In the 30-page report from Tonkin to London in 1672, Gyfford demonstrated that the English could build Tonkin as a part of the intra-Asian trade. In which, he focused more on trade with Japan, Macao and Manila while its trade with Cambodia and Siam was supplemental. As the above figure, Tonkin could provide diversified commodities (both local and Chinese products) for Macao and Manila in exchange for silver (rial of eight) (IOR/G/12/17/1, 1672, p. 46b, 48b). It can be seen that, Gyfford's idea was deeply affected by the fact of Dutch trading in Tonkin in that period and it shows the importance of regional trading network towards European Companies. The Portuguese, Dutch and then English had to use Tonkin as an intermediary to link with other potential markets in Asia. And Tonkin's role in the intra-Asian trading chain was not a new subject towards previous scholars about Asian trade. From Gyfford's suggestion, during the existence of Tonkin factory, the English also understood the necessity of building a trading network with regional markets. For example, in 1677, London required English factors to connect with traders from Siam to purchase sapan wood in highest quality (IOR/G/12/17/4, 1677, p. 205a). In 1679, Captain Dedousy of the ship *Formosa* traded privately in Siam and the English wanted to re-connect with Manila (IOR/G/12/7/6, 1679, p. 259a, 264a-b). In 1681, London expected that their commercial branches in Tonkin, Siam, Taiwan and Amoy would create the EIC's East Asian trading network and help the English to balance their long-distant trade (IOR/G/12/17/8, 1681, p. 294b). In 1685, London required Tonkin to find the way to purchase Japanese merchandises, copper and tutenague to export to London and India (IOR/E/3/90, 1685, p. 506-07).

Regarding to Tonkin's commodities, the English and Europeans mostly focused on local silks and other exported goods. The paper argues that Tonkin was only interesting in silk while other local products were in little market or could not serve the demand of foreigners. Although in the mid-seventeenth century, the Dutch and Chinese could purchase porcelain, sugar, money in Tonkin, in the late period, they mostly focused on silks. Even, Tonkinese silks lost their position in the intra-Asian market after China opened its trading ports in 1684 and Bengali silks improved their quality. The EIC expected to export textiles, from England (broadcloth) and India (dungarees, Cambay cloth and chintz) to Tonkin to cover the global trade as those products made up more than 50 per cent of the Zante Frigate's stock in 1672. The English also carried to Tonkin other commodities of lead, brimstone, guns, and luxury ones (coral, ivory, looking glasses) (IOR/G/12/17/1, 1672, p. 7b-8a). However, they quickly recognised that it was hard to cover money by exporting European goods to Tonkin and they had to find information about Tonkin's exported goods to Japan

and Europe to make a trading balance. In 1672, Gyfford mentioned several types of Tonkinese silks such as raw silk, baas, chomongees (chiourons), pelang/lyng/peling, hockin, the thua/loa, Thea Ming Whing and Chinese velvet and musk (Ibid, 1672, p. 45b-46a). In detail, “bass a sort of silk made here very good for Japon, both raw & diet of a pure color”, while “Chomongoos was a sort of wrought silk called by the Dutch chiourons, they are well flomish long ½ well broad & better vety good for Japon”, “Pelangs or Lyngs plained & flowers for merchadise... good for Japon”, “white hockins or lua a few are proper for Japon they are... long & broad... they maybe painted at Japon”, “The Thua in Portuguese called Loa both flower & plain”, “The Lua plain the silk much twifres proper for y^t coaft for woomans badgoods.” Interestingly, most of those products were raw and simple silk piece-good. He argued that Tonkinese silks could not only serve the demand in Japan but also was available to export to Europe together with Chinese goods collecting in Tonkin (IOR/E/3/33, 1672, p. 10-11).

However, besides positive evaluation, English reports also show that Tonkin’s commodities were quite poor and limited in both quantity and quality. An English customer, Alderman Bathurst returned several pieces of Tonkin’s silk in 1679 because of its poor quality (IOR/B/35, 1679, p. 212). Because Tonkin’s silks were considered as substitutes of Chinese products to serve the market in Japan, the silk industry in Tonkin was a part-time job of farmers and they had no upgraded technics to make satisfactory silks. Tonkin’s labors had no reason to increase the quality of silks (IOR/G/12/17/6, p. 275b; IOR/G/21/7, 1678, p. 35). English reports also demonstrate that natural disasters affected the quantity and quality of Tonkin’s silks negatively and therefore reduced Tonkin’s overseas trade with foreign merchants. Natural disasters were recorded such as floods (in 1679), drought and famine (1681), hunger and epidemic (1682), famine and floods (1683) (IOR/G/21/7, 1682, p. 81; Truong, 1999, 394-398; Naoko, 2009, p. 41-45; 2011, p. 126). Due to the famine, Tonkinese people did not focus on producing silk and therefore in 1683, 1684, 1686 this kingdom could not provide silks satisfactorily for overseas traders (IOR/G/21/7, 1683, p. 87; 1686, p. 93; Naoko, 2009, p. 45). Such terms as “silk was rare and dear” and “insufficient silk” are mentioned many times in Java factory records in the period 1682-1686 as they discussed Tonkin’s commodities.

Via English reports, we recognise that Tonkin’s hard policy on trading with foreigners was one of main reasons led to the decline of European trade there. Previous studies argue that “there was no specific law in this country alongside the arbitrary judgment of the Trinh Lords.... Madanrins could do what they wanted if they knew that the Lord was not vexed with those things” (Hoang, 2010, p. 51). Comparing with Vietnamese materials, we can see that Trinh Lords always controlled all trading activities and there was no specific law for trade. Most documents, decree, edicts tended to prevent foreign traders in living in and near the capital, exported goods or related to monopolised commodities (Tran, 2007, p. 42). When the English arrived to Tonkin in 1672, they recognised that Tonkin maintained a hard policy towards the foreigners and prevented them to stay in Thang Long or important towns, markets due to the problem of national security (Dampier, 1931, p. 18; Do, 2015, p. 49). Gyfford reported that the King of Tonkin (Trinh Lord) kept his power for long time and he did not need or welcome any foreigner in his country (IOR/G/12/17/1, 1672, p. 6b-7a). Foreigners had to answer precisely the reason they came to Tonkin and type, number and value of goods they carried, and of course gifts for the King and his royal family (Hoang, 2006, p. 61-96). Sometimes the King ordered silver as a compulsory condition when foreigners’ ships arrived in Tonkin (IOR/G/12/17/2, 1674, p. 102b; Nguyen, 1995, p. 31). As a result, Gyfford required the EIC to present the King of Tonkin as the VOC had done in order to obtain the same trading privileges (IOR/G/12/17/2, 1674, 1675, p. 122a-b, 137a). Accordingly, previous scholars argued that the EIC trade in Tonkin was under “a system of gifts, perquisites and exactions” (Morse, 1926, p. 36; Ma, 1958, p. 80-84; Lamb, 1970, p. 31; Hoang, 2005, p. 75).

The English primary materials also present the trading monopoly of the Tonkin Court and all overseas traders had to serve royal family and Mandarins before trading with other merchants in Tonkin (IOR/G/12/17/1, 1672, p. 35a). In 1672, Gyfford demonstrated that the King monopolised products of lead, brimstone, salpêtre, and gun (Ibid, 1672, p. 47a). (Baron, 1811, p. 663) illustrated that foreign traders faced difficulty to trade in Tonkin, they had no detail and certain exchanging rate, and sometimes their customers maintained their debt for long time without payment. Due to the monopolised policy of the Tonkinese Court, foreigners needed permission to trade with local and other traders in Tonkin. However, local brokers and traders were quite small in power, few in number and had insufficient money to perform a large purchase. As

Baron (1811, p. 664) stated, no Tonkinese trader could pay 2,000 dollars to purchase European commodities in one time.

In brief, British primary materials illustrate both positive and negative perspectives of trading conditions in Tonkin. This reflection is balanced and meaningful in comparison with records of European adventurers who was bias in potential of Tonkin to serve their own aim at that time. It is no doubt that Tonkin was a necessary and significant part of the intra-Asian trade, especially to connect with mainland China due to its geographic strategy. British materials also demonstrate a fact that Tonkinese silks were only in high demand as China and Japan were in political crisis and closed situation. As Chinese and Bengali products re-appeared, European traders reduced its attention to Tonkin's goods. Moreover, trading situation in Tonkin was not perfect as European Companies expected. Tonkinese commodities were in little quantity and quality as the silk industry was dependent on natural environment while policies of local government made foreigners difficult to trade. All the above factors affected the appearance of European and Asian traders in Tonkin as those led to the decline of Tonkin trade in the 1680s and 1690s.

3.2 Foreign merchants in Tonkin

In this section, the authors draw a picture of trading activities of foreign traders in Tonkin, especially the English, Dutch and Chinese in comparing perspective. The paper focuses on the number of ships, the stock of goods, the value of money and commodities foreigners carried to Tonkin. Beyond that, we show the improving trend of outside merchants' trading in Tonkin.

3.2.1 English traders in Tonkin

As this paper investigates British primary materials, it is no doubt that the main information is about the EIC's trade. All sources show that the English only sent 21 ships to Tonkin in the period 1672-1697, less than the number of Dutch ships and Chinese junks in this market (IOR/E/3/87-92; IOR/G/12/17/1-10; IOR/G/21/7; IOR/L/MAR/A; Farrington, 1999, p. 169-70, 549, 611, 655, 724; Hoang 2006, p. 228-229;). They were Zante Frigate (1672), Flying Eagle (1676-1677), Formosa (1678), Advice (1680), Taiwan Frigate (1681), Tonqueen Merchant (1682), Smyrnaote (1683), Dragon (1685), Rainbow, Prospect (1687), Tywan, Bona Vista (?), Rainbow (1688), Saphire Frigate, Curtana (?), Bencollen (?), Pearl Frigate (1693), Mary Bowyer Frigate (1697). However, their trading ships appeared mostly in the period 1676 - 1688 while in other periods the English prevented sending ships to Tonkin due to the effect of wars with Netherlands and France. As other European merchants, the EIC went to Tonkin with the aim of collecting substitute silks to supply Japan and then Europe in exchange for silver.

The EIC "have not yet experienced of the kinds of commodities and merchandizes, which are or will be vendible, or to be uttered in the faid parts of the Eaft-Indies, and therefore shall be driven to carry to thofe parts, ..., which are likely to be returned again into this our Realm" (This day in history, 1601, p. 14). It often exported to Asia woollen textiles, metals, and luxury products which was diversely original from Spain, France, Venice, Leghorn, Amsterdam (Chaudhuri, 1965, p. 26; 1978, p. 220). The EIC's investment in Tonkin was only remarkable in the period 1676-1688 as Tonkin-EIC relationship was fulfilled. In 1672, because London expected to collect Japanese silver to cover their trade in East Asia, no money was directly sent to Tonkin and the English in Bantam had to borrow 10,000 Spanish dollars for the Tonkin factory (IOR/E/3/87, 1671, p. 479-480; Ma, 1958, p. 60-61). In 1676, the Flying Eagle carried a stock of 19,775 rials of eight including money and goods (IOR/G/12/17/3, 1676, p. 180a). In 1677, this number was 43,977 rials and London also sent more 5,000 rials for building a factory in Tonkin (IOR/G/12/17/4, 1677, p. 204a, 205a-b). In 1678, their investment was 32,000 rials together with European goods valued at 2,853 rials and Asian goods valued at 1,255 rials (IOR/G/12/17/5, 1678, p. 227a). The investment was high in 1679 with 35,000 rials as Tonkin's products started to find a market in London in 1678 (IOR/B/34, 1678, p. 451; IOR/G/12/17/6, 1679, p. 254b). However, from the early 1680s, the English investment changed continuously as Chinese market was gradually opened. In 1681, their investment was 39,565 tales of silver (around 52,753 Spanish dollars) but in 1682, it reduced to 62,086 rials (7,760 dollars). In 1683, this number was 87,829 rials (10,978 dollars) and in 1685 was 88,000 rials, but in 1686 it increased to 30 - 40,000 Spanish dollars (IOR/G/21/7, 1685-1686, p. 93, 95). From 1687, no record of English investment was kept so we have no

information about their activity, but the fact is that from the Nine Years War (1688-1697), the English seemed to neglect Tonkin as they found a direct connection between China and India.

In comparison with the Dutch and Chinese, we can see that the EIC invested less money than their rivals. For example, in 1672, London sent only 5 factors and no money to Tonkin to settle a factory while the VOC maintained around 50 employees and 170,000 Spanish dollars (Ma, 1958, p. 89). In the period 1672 – 1700, the VOC decreased its exporting money to Tonkin, but it was still higher than the EIC's investment (more than 100,000 guilders per year). Especially in 1671, 1672, 1675, 1677 the Dutch carried to this market more than 300,000 guilders (Hoang, 2006, p. 226). The Chinese were also a remarkable competition in Tonkin's trade. From 1671 to 1685, they sent 585,000 taels of silver (around 780,000 dollars) to Tonkin, double the EIC's investment (maximum 370,000 dollars) and less than the VOC money of 787,887 taels (Naoko, 2009, p. 240, 242). It is interesting that while Chinese traders maintained their investment in Tonkin, both VOC and EIC reduced their exporting money to Tonkin as the trade in this market was declined.

In the first English cargo to Tonkin, textiles were valued at more than 50%, while weapons, lead, brimstone, and luxury goods were small (IOR/G/12/17/1, 1672, p. 7b-8a). However, during the trade with Tonkin, the English changed their exported goods with the increase of Asian products replacing European commodities. In 1677, London sent only 10 bales of cloth to Tonkin (IOR/G/12/17/4, 1677, p. 201b, 205a-b). In 1678, European and Asian exporting commodities to Tonkin were equal (IOR/G/12/17/5, 1678, p. 227a). In 1679, Tonkin's Mandarins found little textiles and more pepper, brimstone, rose water in the EIC's ship to Tonkin (IOR/G/12/17/6, 1679, p. 263a). Remarkably, the *Pearl Frigate* from Madras in 1693 carried to Tonkin a lot of Asian goods and saltpetre, brimstone, rosewater (IOR/G/12/17/9, 1693, p. 325b). Besides sending more Asian goods, the English also provided weapons for Tonkin during their trade. In 1683 the Court of Committees "desired to send 80 arms to Tonkin" (IOR/B/37, 1682, p. 40). In 1685, the *Rainbow* sent to Tonkin a lot of brimstone and saltpetre (IOR/G/21/7, 1686, p. 95). In 1686, the *Prospect* carried iron guns and saltpetre while in 1688 the *Rainbow* transferred 20 guns to Tonkin (Ibid, p. 114).

The English mostly focused on local silks as substitutes and then Chinese products as luxury goods to export to Europe. English factors in Tonkin were ordered to buy 300 pieces of velvet, 4,000 pieces of damask, 1,000 pieces of satin (all from China) and 25,000 pieces of local silks (IOR/E/3/88, 1675, p. 243). The Company expected that "[Tonkinese] white silk and other wrought silks have in such quantity of all such reasonable rate at might turn to good accompany in Europe" (IOR/G/12/17/3, 1676, p. 154b). The materials demonstrate that the English was failed in the competition with the Chinese and VOC as their ships arrived to Tonkin late in July, and even August, as the trading summer season was nearly finished. Accordingly, they had to purchase Tonkinese "winter silks" with lower quantity and quality (IOR/G/12/17/3, p. 174a-175a). English factors thus gave deposit earlier for Tonkinese brokers to purchase goods before English ships arrived to (IOR/G/12/17/6, p. 256a, 262b, 272b; IOR/G/12/17/8, p. 302b). From the 1680s, the English tried to collect more Chinese commodities of musk, chinaware, lacquer indirectly in Tonkin (IOR/B/37, 1682, p. 9; IOR/E/3/90, 1682, p. 80-82). In 1684, the EIC only wanted pelangs, musk and lacquer while in 1685 it only wanted Chinese musk (IOR/B/38, 1684, p. 92-93; IOR/E/3/90, 1685, p. 506-507; Ma, 1958, p. 192-193).

3.2.2 Dutch merchants in Tonkin

The English reported quite clearly and precisely about the VOC's trading activities in Tonkin in 25 years (1672-1697) with information about number of ships, names and value of goods (in general). Noticeably, in the period 1672-1683, all records were quite clear but after 1683, as British materials were missing, we had no detail of the Dutch trade from the English materials. There were 35 Dutch ships arrived to Tonkin in the period 1672-1697 (Hoang, 2019, p. 361), double than the number of English ships there. They are Meliskercken, Bleyswyck, Armuyden (1672); Papegay, Meliskercken (1673); Papegay, Voorhout (1674); Experiment, Marken (1675); Janskercke, Croonvogel (1676); Experiment, Croonvogel (1677, 1678); Croonvogel (1679, 1680, 1681, 1682, 1683); Croonvogel, Bombay (1684); Wachthond (1685, 1686); Gassperdam (1687, 1688, 1689, 1690, 1691); Boswijk (1692); Westbroek (1693); De Wind (1694); and Cauw (1695, 1696, 1697). From 1672 to 1678, 2-3 ships came to Tonkin annually with quite large money and stock (of pepper, brimstone, spices, guns, and rice). In 1672, 3 Dutch ships namely Meliskercken, Bleyswyck and Papegay from Batavia to Tonkin with an investment of 318,327 guilder and a stock of 300 cattles (kg) of pepper, 5,000 round gun-shots, 6 million of Japanese money, and 10,000 tales of silver (G/12/17/1, 1672, pp.

11b, 30b). They came back to Batavia with 337,706 guilder and a lot of silk, raw silk (Hoang, 2019, pp. 544-545). In 1674, two Dutch ships came with 167,386 guilder with copper money, brimstone, spices, saltpetre (Ibid, p. 548) and they called for Batavia on 21-22/1/1675 with Tonkinese silks, bass, pelang (G/12/17/2, p. 127a). In 1675, 2 ships called at Tonkin with a large number of silver, Japanese zen money, spices, saltpetre, and pepper and then they leaved with a stock at 147,668 guilder (IOR/G/12/17/2, p. 135a, 137a; Hoang, 2019, p. 551). In 1676, 2 Dutch ships arrived with 244,933 guilder (Hoang, 2019, p. 555) and the stock of 4 guns (for Trinh Lord), 500 piculs of saltpetre, brimstone, gun-shoot and 1,400 chests of Japanese silver (G/12/17/3, p. 148b). The ship Janskercke obtained a number of goods valued at 135,303 guilder and the Croonvogel got 195,434 guilder (mostly silks) (Ibid, p. 176a). In 1677 and 1678, while British primary materials show that 1 Dutch ship came to Tonkin each year; other studies using Dutch primary materials mentioned the appearance of 2 ships (Ibid, p. 198b; IOR/G/12/17/4, p. 213b, 224a). It seems that the EIC did not know the arrival of the second ship with a little money and investment of 19,284 guilder. However, both English and Dutch resources indicate that trading result was poor due to the political crisis in China and Chinese merchants could not sail to Tonkin for trade with the Dutch or Europeans (Ma, 1958, p. 155; Hoang, 2019, p. 560).

Dutch ships carried mostly copper money, silver, saltpetre, brimstone to serve the Tonkinese Court. From the Dutch investment and their result, it can be seen that Tonkin's overseas trade went down. After 1678, the Dutch only sent 1 ship to Tonkin each year. In 5/7/1679, the ship *Croonvogel* came with an investment of 110,576 guilder and leaved with a stock of 94,922 guilder including musk and pelang (IOR/G/12/17/6, p. 253b; Hoang, 2019, p. 566). From 1687 to 1697, the Dutch reduced a half of number of trading ship to Tonkin and their investment was decreased as Tonkin trade was not attractive enough.

3.2.3 Chinese and other merchants in Tonkin

The Chinese and East Asian merchants went to Tonkin regularly in the intra-Asian trade. Under the English viewpoint, Chinese traders were potential competitors as they understood this market, and when their junks arrived to Tonkin, the balance of trade was broken. In the period 1672-1697, 36 Chinese junks came to Tonkin (Hoang, 2019, p. 361). The Chinese did not send trading ships to Tonkin annually but around 3-4 junks arrived in one year. For example, in 1672, the VOC's documents show that 4 Chinese ships sailed to Tonkin while British materials mentioned 5 Chinese junks. On 1/8/1672, 1 Chinese junk arrived to Tonkin with pepper, sugar and sandal wood; on 3/8, 2 Chinese junks came but there was no information about commodities; on 5/10, 2 Chinese junks maybe from Siam and Batavia called at Tonkin with pepper, wood, sugar and candy (IOR/G/12/17/1, 1672, p. 20a, 21b, 36b). In 1687, the English recognised the arrival of 7 Chinese junks from Amoy, Canton and Taiwan (IOR/G/21/7, 1687, p. 105) while Dutch materials show only 4 Chinese junks (Hoang, 2019, p. 363). In years of 1676, 1679, 1680, 1682 and 1695 the EIC recorded that 2 junks came to Tonkin each year.

British sources present the difference between type of commodities the Chinese and European merchants carried to Tonkin. The Chinese carried mostly Asian products and silver which fitted the demand in Tonkin. For example, on 7/4/1675, a Chinese junk from Japan called at Tonkin with 10 chest of silver (the King took 4 chests), 3,500 tales of Japanese money, and 93 chests (100 kg each) Japanese copper coin (Hoang, 2010, p. 311). On 21/2/1680, a Chinese merchant, Nethoe carried a lot of porcelain, medicine, a little of copper coin (G/12/17/6, p. 272b; Hoang, 2010, p. 367). They bought mostly Tonkinese silks as substitute to serve the market in Japan. On 16/7/1677, 2 Chinese junks obtained many types of local silks as pelang, bass, chemonges while the third one invested money to collect winter-silk for the next trading season (IOR/G/12/17/4, p. 211b; Hoang, 2010, p. 344).

Besides recording the activities of Chinese traders, British materials also noted the appearance of Siam, Portuguese and French traders. 1 Siamese ship arrived to Tonkin in 1673, 1676, 1677, 1678 respectively while 2 ships came in 1679 and 1696. They mainly carried dry nuts, saltpetre, silver, wood and Chinese medicine (IOR/G/12/17/2, p. 105a; IOR/G/12/17/3, p. 164b, 165a; IOR/G/12/4, p. 213b; G/12/5, p. 244a). There were 3 Portuguese ships arriving to Tonkin in this period. On 1/2/1673, the first one arrived but the EIC had no information about commodities and money. The second one came in 27/2/1673 to bring the missionary Philipin Mario to Macao. The last one appeared in 6/4/1694 with iron and saltpetre (IOR/G/12/17/2, p. 62b; IOR/G/12/17/9, p. 353a). Spanish ship from Manila arrived in 5/5/1674 with 600 catties of saltpetre, 20 bags of cloth and 8,000 rials of eight (IOR/G/12/17/3, p. 109b) while there was no

French trading ship calling at Tonkin. It means that besides the Dutch, English and Chinese, other merchants still arrived to Tonkin with less number. In which, Siam traders or Southeast Asian merchants broadly came to this market more regularly.

In brief, Tonkin still received foreign merchants as this market was valuable in the intra-Asian trade. In comparison with the VOC and Chinese, the English got the lowest position with 21 trading ships, while the VOC had 35 ships and the Chinese had 36 junks. As the Chinese had advantages in geography and investment, it is easy to understand the reason they could dominate Tonkin's trade. However, their ships and trade reduced in this period which shows that the role of Tonkin in the East Asian and global trade was decreased. British materials also present the difference between European and Asian merchants in their trade with Tonkin. While Asian merchants, especially the Chinese carried most Asian products in exchange for Tonkinese silks, Europeans had to carry more money and European goods to cover the global trade. Especially, the EIC had to export a lot of silver from London to buy Tonkin's silks as their commodities were not suitable with Tonkin.

4. Conclusions

The EIC settled a factory in Tonkin in 25 years (1672-1697) and although they obtained little trading success, their records and reports became valuable materials to understand not only the British – Vietnamese relationship but also the situation of Tonkin's overseas trade with European and Asian traders. Together with the Dutch, Chinese, Japanese materials, the British sources contribute to draw a comprehensive picture about Tonkin in this period. Firstly, they provided a viewpoint about the trading potential of Tonkin including governmental policies, its trading position in Asia, and type of exported and imported commodities. They show that Tonkin in this period was hard to trade because of the effect of civil wars and of the Trinh Lords' opinions about foreigners. About trading ability, British sources provide not only an evaluation of Tonkin's goods but also the fact of local merchants. They show that mostly foreigners tended to collect Tonkinese silks as substitute for Chinese products and they found little market for European commodities. As a result, overseas merchants had to carry silver and ready cash to trade with Tonkin.

Secondly, those materials present quite clearly trading activities of foreigners in Tonkin with information about number of ship, exported and imported goods, investment and type of popular commodities. It is no doubt that the English activities were demonstrated more detail, but in fact the English provided a general view about the appearance and daily-work of other merchants. English sources confirm that Tonkin's products and role were suitable with the intra-Asian trade and its ability to trade with Europe was quite low. Tonkin could only supply some types of silks directly in a short-period in exchange for European silver, several types of goods such as pepper, saltpetre, brimstone, weapons, cloth. As China opened its trading ports in 1684, the role of Tonkin as an intermediary was no longer necessary and Tonkin's overseas trade went down. English materials therefore make clearly the situation of Tonkin's commerce after the "age of commerce", and argue that Tonkin was only valuable with Asian merchants while European traders gradually leaved this market in the late seventeenth century. As such, the late seventeenth century witnessed the decrease of Tonkin's role in East Asian trade as its products were quite poor and limited. Tonkin's advance on substitute and cheap goods was no longer valuable in this period and foreigners reduced their activities in Tonkin.

Beyond the above ideas, the paper argues that the attraction of Tonkin trade was deeply dependent on the situation of China, and it was more valuable in the network of East Asian and Southeast Asian countries. Both previous studies and British primary documents illustrate that European Companies arrived to Tonkin to find a go-between to connect with China, and Japan as those markets were closed towards European Companies. Tonkin's products were mostly suitable and meaningful in the intra-Asian trade, not for Europe. It means that although Tonkin could develop in the "age of commerce", it could not leave the regional environment. The decline of Tonkin's trade happened as this kingdom performed a "prevented policy" towards foreigners while China was tended to open the kingdom. However, trading decrease was only available for Europeans because Chinese merchants still dominated trade in Tonkin and Southeast Asia. That fact raises us a consideration about the role and dominance of China towards Southeast Asian countries' trade and a thought of how to explore this fact to expand overseas trade and improve domestic economy.

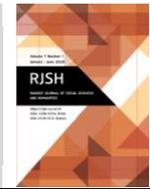
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The Influence of Google Score Ratings and Reviews on Vietnamese Consumers' Online Hotel Booking Decision: A Case Study of Five-star Hotels in Vietnam

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Abstract

This study investigates whether Google score ratings and Google reviews on four hotel characteristics, namely, Facilities, Location, Staff, and Services, influence Vietnamese consumers' online booking decisions for the 5-star hotels in Vietnam. Samples were Vietnamese consumers in the Northern, Central, and Southern regions of Vietnam who booked the 5-star hotel online after reading Google score ratings and reviews. Online surveys were conducted with 300 participants using the self-administered questionnaire. Multiple Regression Analysis was undertaken to determine the impact of Google score ratings and reviews on Vietnamese consumers' hotel booking decisions. The results from the analysis revealed that both Google score ratings and reviews on four hotel characteristics significantly influenced Vietnamese consumers' online booking decisions. Interestingly, Google reviews on hotel services had the highest impact, followed by reviews on location, staff, and facilities.

Keywords: *Google reviews, Google score ratings, Vietnamese consumers, Five-star hotel, Purchasing Decision*

1. Introduction

As a developing country in Southeast Asia, Vietnam has developed significantly in all fields of economy, culture, and education in recent years. With opening policies from the government, the country attracts significant investment from foreign companies and multinational corporations. In 2007, Vietnam became a member of the World Trade Organization (WTO), which has supported all aspects of Vietnam's economic development since then. Besides the development of other fields, Vietnam also possesses a traditional culture and natural ecosystem, which is being explored for tourism purposes, with a 3,260-kilometers length of coastline from the north to the south, together with a rich tropical rain forest system. Therefore, Vietnam has become a country with tourism potential, and it has attracted investment from foreign companies. The tourist industry has concentrated on building restaurants, hotels, and tours. According to the report of the Vietnam Tourism Administration at the beginning of the year 2019, for the whole year of 2018, Vietnam welcomed 15,497,791 visitors, an increase of 19.9% compared to 2017 (Ministry of Culture, Sports & Tourism, 2019). Also, the standard of living of Vietnamese people has increased, they tend to spend their leisure time and money on traveling. As a result, the hospitality industry received attention from foreign partners and sources that have been supported by practitioners, government agencies in Vietnam. That is the reason why investors have built five-star hotels in famous tourist destinations throughout the whole country. In Ha Noi, Da Nang City, and Ho Chi Minh City, hotel chains owned by multinational corporations or jointly owned by Vietnamese partners at the beginning of the establishment include Sheraton, Hilton, Nikko, InterContinental, Grand Plaza, and Metropole in recent decades, which has caused a high competition in the hotel market. In the future, it is forecasted that the competition in this field will become more and more intense. Thus, in this situation, these hotels are attempting to build their brand image through high ratings and positive reviews in the online environment, which Google is an effective tool. The tourists are increasingly surfing the internet to seek the information they want, and it becomes extremely helpful in their travel planning. So far, the majority of people use Google to enquire about travel and hotel-related information. Today, the consumers often obtain more information and recommendations from role models such as influencers and their friends through word of mouth or posts and refer to the media when making their decisions on which tourist destinations or hotels for their journeys.

In this digital age, when it's time for international tourists to plan their trip, they increasingly rely on the aggregated opinions of online peers. Contributions made by users on technological platforms facilitate the interaction between like-minded community members who share shopping interests, thus facilitating the decision-making process (Amblee & Bui, 2011). Before consumers make a purchase on an e-commerce website, they are accustomed to using online reviews as basic information to decide whether they should make their purchase. After the consumers buy the particular product or service, they are likely to post their comments on the commodity on the e-commerce sites (Mo, Li & Fan 2015). Online ratings and reviews have become one of the most trusted sources for consumers involving in online purchase decision-making. Besides recommendations from friends and family, consumers' ratings and reviews, for almost a decade, have been the second most-trusted source of brand information (The Nielsen Company, 2012). As we are immersing in the digital marketing era, most hotels and resorts are utilizing digital platforms to build their brand image. Google is one of the fastest ways as mentioned above to enhance their image. It is becoming increasingly common for customers who previously used/ booked their services to express their feelings as well as to present their bad/ good experiences by giving ratings or reviews via those digital platforms (Bui & Jolliffe, 2011; Das, 2019; Chaffey, 2020).

Marketers also notice the impact of ratings and reviews, acting as electronic word of mouth. In other words, potential customers of the hotels and resorts tend to receive and read various brand or product information from online ratings and reviews. The researchers on the hospitality industry in the Vietnam market are still rare or unofficial. Accordingly, there is still a limited understanding of the interaction between the influence of ratings and reviews on Vietnamese consumers' online booking decisions. Based on this aforementioned background information, this study aims to answer the following two main research questions:

RQ #1: Do Google reviews on hotel characteristics influence Vietnamese consumers' online five-star hotel booking decisions?

RQ #2: Do Google score ratings influence Vietnamese consumers' online five-star hotel booking decisions?

2. Objectives

This study was conducted to understand Vietnamese consumers' hotel booking decisions through the internet. The objectives of this study are listed as follows.

1) To examine whether Google reviews on hotel characteristics influence Vietnamese consumers' online five-star hotel booking decisions.

2) To examine whether Google score ratings influence Vietnamese consumers' online five-star hotel booking decisions.

3. Materials and Methods

3.1. Online Ratings and Reviews as a Type of Electric Word of Mouth (eWOM):

Traditional "word-of-mouth" (WOM) is defined as "informal communications directed at other consumers about the ownership, usage, or characteristics of particular goods and services and/or their sellers" (Westbrook, 1987) or "an oral form of interpersonal non-commercial communication among acquaintances" (Cheung & Thadani, 2010). Besides, over several decades, Arndt (1967) together with (Westbrook, 1987) also agreed that WOM has become a form of informal interpersonal communication, between non-commercial contributors and real-life recipients about the ownership, usage, or characteristics of goods and services. Researchers in the modern era also make new comments about WOM that WOM is without third-party handling, individuals' processing, and transmitting information on a particular product, brand, manufacturer, or seller. Any two-way interactive communication activity may be reminiscent of any company or individual information being targeted, leading the viewer to acquire information, alter behaviors, and even influence purchasing behavior (Kotler & Keller, 2012). For the past decade, WOM is

considered to have had a strong impact on consumer decision-making. People often consider reviews, opinions, and advice from their friends, relatives, or someone who has previously experienced or a traditional travel agency before making a travel plan for themselves or their family (Cox, Burgess, Sellitto & Buultjens, 2009).

Historically, electronic word-of-mouth communication (eWOM) has been viewed as any positive or negative comment about a product or business made accessible to numerous people and/or organizations and distributed across the internet by potential, current or former customers (Cheung & Thadani, 2010). eWOM has a close relationship with user-generated content (UGC) (Rodgers & Wang, 2011), UGC becomes eWOM when people share content with the online branding community (OBC). Marketers try to apply eWOM to their communications processes and engage consumers UGC (Rodgers & Wang, 2011) because eWOM has a strong influence on consumers' buying decisions.

eWOM communication is defined based on traditional WOM communication, therefore, it has many common points, but they differ in some respects. If the traditional WOM was the spread of messages only between individuals, since the advent of the internet, messages have become viral to reach more people if the message was deemed convincing enough or funny (Estrella-Ramón & Ellis-Chadwick, 2017). Many studies also showed that, with eWOM, messages expand and spread rapidly because messages are exchanged multidimensional in asynchronous mode (Hung & Li, 2007). Content is discussed by users on various electronic technologies such as forums, newsgroups, blogs, review sites, and social networking sites, which is the reason why traditional WOM became eWOM in the modern era. Also, the comparison between traditional WOM and eWOM can be seen that the messages spread in the traditional way disappear after speaking but the messages propagated by eWOM are likely to persist for a while.

Online consumer ratings and reviews as a form of eWOM experienced massive growth from the early millennium years (Brown, Broderick & Lee, 2007). They provide customer viewpoint, product details, and recommendations (Lee, Park & Han, 2008) and are one of the most reliable sources of information for choosing holiday destinations (Murphy, Mascardo & Benckendorff, 2007), and obtain trustworthy and considered credible information, compared with the information provided by the marketers that might be viewed with skepticism and possible disbelief (Park & Nicolau, 2015).

Online customer reviews (OCR) become an important tool for potential customers before they make an online purchase decision. In the online shopping environment, the consumers are not able to directly experience and evaluate the products, so they often rely on reviews and recommendations from previous buyers, intending to minimize the risks of product quality and the seller's dishonesty (Yayli & Bayram, 2009). The Opinion Research Corporation agreed with this view and assessed that OCR has been playing an increasingly important role in consumers' buying decisions, up to 61% of the respondents in their research said they consult online reviews before buying a new product or service.

3.2 Positive and Negative Online Reviews

3.2.1 Positive Online Reviews

Online reviews have a positive and important effect on the intentions of booking hotels. It has been observed that the more positive the reviews, the more likely they would be to affect buyers on online hotel bookings (Bulchand-Gidumal, Melián-González & Lopez-Valcarcel, 2013). Increases in positive feedbacks tend to lead to more positive consumer attitudes whereas negative feedbacks have the opposite effect (Ladhari & Michaud, 2015). An earlier study by Park, Lee and Han (2007) had also found that the quality of the reviews increases consumers buying intention.

3.2.2 Negative Online Reviews

Negative reviews on a mass level cause negative attitudes towards hotel bookings. However, a single negative comment does not impact the booking intention of the customers (Vermeulen & Seegers, 2009). It has been observed that individuals are more likely to be affected by negative information relative to positive information (Jansen, Zhang, Sobel & Chowdury, 2009).

Online reviews have a positive and important effect on the intentions of booking hotels. The more positive the reviews, the more likely they would affect buyers on online hotel bookings (Bulchand-Gidumal et al., 2013). Bulchand-Gidumal and other (2013) found that, when compared with negative reviews,

positive reviews of more than 16,680 hotels in 249 tourist destinations were accounted for 70% of the total reviews on TripAdvisor, showing that online reviews are important in the hospitality industry, and are managed as a strategic communication channel as the hotel managers try to increase the rate of positive reviews. The more positive the feedbacks tend to be, the more positive the consumer's attitude, whereas the negative one has the opposite effect (Ladhari & Michaud, 2015). Another study by Park and other (2007) found that the quality of the reviews increases consumers' buying intention.

3.3 Uses and Gratification Theory (UGT)

This paper utilizes the Uses and Gratifications Theory (UGT) to explain this phenomenon. The UGT provides a framework for understanding when and how individual media consumers become more or less active and the consequences of that increased or decreased involvement (Reichard & Lynn, 2018). UGT is a model that takes into consideration the importance of the audience. A theory that is based on the assumption that media consumers are active must delineate what it means by "the active audience" (Reichard & Lynn, 2018). The following assumptions from the UGT were applied to support the idea in this study. Firstly, the audience is active, and his/her media use is goal-oriented. Secondly, people have enough self-awareness of their media use, interests, and motives to be able to provide the researchers with an accurate picture of that use. Thirdly, value judgments of media content can only be assessed by the audience.

3.4 Source Credibility

Online reviews allow users to access detailed information with a high degree of trustworthiness and credibility, compared with information provided by advertisers (Park & Nicolau, 2015). With the same point of view, Kusumasondjaja, Shanka and Marchegiani (2012) also agreed that the reviews are more trustworthy and credible than commercial sources or intermediaries.

Previous studies on the trustworthiness of social media impacting users seeking travel information include that of Fotis, Buhalis and Rossides (2012). In their report, reviews are ordered in the third position in the list of most trustworthy sources, following relatives and friends. Specifically, the list of the trustworthy sources was ranked in order from high to low as follows: relatives, friends, reviews from other travelers on social media, official travel websites, travel companies, and advertisements on TV, radio, newspapers. As the source of information the users reach has been enormous, when travelers receive a variety of contents about their desired location, they build their trust in those contents and expect to experience similarly with travelers who wrote previous reviews (Narangajavana, Fiol, Tena, Artola & García, 2017).

Customers agree that WOM contact knowledge is more credible to minimize the risk of product purchases because people's real-life experience without a commercial intent is more convincing than media ads (Herr, Kardes & Kim, 1991). Credibility is interlinked with trustworthiness and is also a major factor in planning and decision-making (Dusíková, 2018). All contents created by the internet users are considered to be highly credible among travelers (Llodra-Riera, Martínez-Ruiz, Jiménez-Zarco & Izquierdo-Yusta, 2015). Travelers do not have any profit purpose while sharing their reviews (Chung & Buhalis, 2008), and most of them are anonymous so their reviews would be more objective and highly reliable. Thus, online reviews become a vital reference for travelers to reserve hotels online (Yu, Guo, Zhang & Zhao, 2016). Besides, the credibility of user-generated content is determined by prior experiences of the travelers, knowledge, and the author of the reviews. The travelers need to perceive high-quality content since it is beneficial to them (Zeng & Gerritsen, 2014).

A review or post that is considered credible had significant impacts on travelers' decision-making process and their expectations are higher (Narangajavana et al., 2017).

3.5 Research Hypotheses

Score ratings and reviews on Google are considered customer-to-customer (C2C) review systems. There were three types of reviews in this system: positive, moderate, and negative. This study examined the numbers of star ratings and types of reviews that belong to the hotel category on how Google influences the booking behavior of Vietnamese consumers. There are several previous studies on the influence of ratings

and reviews on customer behavior in e-commerce websites of Chinese (Mo et al., 2015) and hotel booking consideration (Gavilan, Avello & Martinez-Navarro, 2018). To fill the research gap in the hotel area, this study proposes the following research hypotheses:

HP#1: Google reviews on hotel characteristics have an effect on Vietnamese consumers' online hotel booking decisions.

HP#1.1: Google reviews on "Facilities of the hotel" have an effect on Vietnamese Consumers' online hotel booking decisions.

HP#1.2: Google reviews on "Location of the hotel" have an effect on Vietnamese Consumers' online hotel booking decisions.

HP#1.3: Google reviews on "Staff of the hotel" have an effect on Vietnamese Consumers' online hotel booking decisions.

HP#1.4: Google reviews on "Services of the hotel" have an effect on Vietnamese Consumers' online hotel booking decisions.

Reputation is one of the company's intangible brand assets and is also a factor that attracts attention from the consumers. Star ratings help increase customer confidence in each purchase decision (Mo et al., 2015). The second hypothesis related to star ratings was proposed as follows:

HP#2: Google score ratings have an effect on Vietnamese Consumers' online hotel booking decisions.

3.6 Methodology

3.6.1 Research design, Population, and Sample

This research was done by a quantitative approach method through two steps of preliminary research and official research. After researching and deducing from the previous research and fundamental models about the variables that affect consumers' buying decisions, a conceptual framework and research hypotheses were formed.

The survey was created using Google Forms, then and was sent directly to the samples via email, Facebook Messenger, online Forum, and Facebook Groups. The target population of this study was Vietnamese citizens aged over 25 years who have booked a room at any five-star hotel at least once during the past two years. A combination of the stratified and purposeful sampling technique was used, and to ensure a higher representation for the samples, the samples were also selected based on income. Due to limited time and cost and the COVID-19 pandemic during the data collection, the questionnaires were sent to the respondents in the North, Central, and South of Vietnam where the majority of five-star hotels are located.

3.6.2. Research Measurement

The questionnaire was originally designed in the English language and reviewed by experts. Then, to reach Vietnamese respondents, the questionnaire was translated into Vietnamese. After that, it was sent out to three bilingual experts who are working in the hospitality and communications industry in Vietnam to ensure that it is guaranteed the validity of the content and feasibility of the questionnaire.

Based on the results obtained from a pilot pre-test with 30 respondents, the reliability of the measurement scales through Cronbach's Alpha coefficients were tested and necessary adjustments of the scales and questionnaire items were made before its official use for data collection. Observed indicators with low Cronbach's Alpha reliability were eliminated from the final version of the questionnaire.

The questionnaire was composed of five sections as follows:

1) Screening questions

The screening questions were composed of three questions regarding past experiences of online hotel booking and the name of the hotel they booked. These questions help classify the respondents to

survey questions. If they do not pass the screening questions, the respondents were deemed not qualified to answer the proceeding questions in the questionnaire.

2) Demographic data

Demographic questions in this study were aimed at identifying the characteristics of the respondents in terms of age, education, gender, and income.

3) Google reviews

The measurement of the first independent variable (IV1), Google reviews, including four hotel characteristics in the review content: 1) Facilities (FA), 2) Location (LO), 3) Staff (ST), and 4) Services (SV). For the questions on each hotel characteristics, the respondents were given answer choices of a 5-point rating scale (1 = Very negative, 2 = Negative, 3 = Neutral, 4 = Positive, and 5 = Very positive).

4) Google score ratings

The measurement of the second independent variable (IV2), Google score ratings, consists of four questions related to the five-star hotel that the respondents answered in the screening question based on the 5-point rating scales, ranging from 1 to 5 (1= Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, and 5 = Strongly agree).

5) Consumers' Online Hotel Booking Decision

The dependent variable (DV), Vietnamese consumers' online hotel booking decision, was measured with four questions asking the respondents to select answers based on the 5-point rating scales (1= Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, and 5 = Strongly agree).

3.6.3 Data Analysis

Multiple Linear Regression (MLR) was utilized to represent the relationship between two or more independent variables and one quantitative dependent variable (Nguyen & Nguyen, 2011). To test the proposed causal relationship between two independent variables and one dependent variable, the MLR model was run and tested at the 5% significance level. The study performed multiple regression according to the Enter method: all variables were included at one time and the related statistical results were considered.

The regression results are used to test the assumptions about the multicollinearity phenomenon (correlation between independent variables) through tolerance value or VIF (Variance Inflation Factor). The coefficient of VIF or Tolerance is used to observe if there is a multi-collinearity phenomenon (Nguyen & Nguyen, 2011). It also determines the influence of factors affecting consumers' hotel booking decisions through the coefficient β . The larger β , the greater the influence on booking decisions.

3.6.4 Validity of the Study

This study examines the validity of measurement in the questionnaire by using the Index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977). Each item in the questionnaire had an IOC score of greater than 0.5. The IOC for the entire questionnaire was 0.671 (greater than 0.5). As a result, there were no items in the questionnaire that need to be adjusted or removed. Since the content of this questionnaire had been validated, the online survey was conducted among the samples.

3.6.5 Reliability of the Study

The pilot pre-test results showed that the reliability of the questionnaire based on the criteria set forth previously was acceptable (alpha greater or equal to 0.7), and it was transformed into an official questionnaire for the actual study.

Table 1 Results of alpha reliability tests

Coding	Variables	Round 1		Round 2	
		Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
OR	Online Reviews	0.860	18	0.895	15
- FA	- Facilities	0.690	6	0.817	4
- LO	- Location	0.871	4	0.871	4
- ST	- Staff	0.877	3	0.877	3
- SV	- Services	0.772	5	0.853	4
RA	Score Ratings	0.882	4	0.882	4
BD	Booking Decision	0.865	4	0.865	4

Base on Table 1, in the first round of the reliability test, all Cronbach's Alpha coefficients of the scales are 0.69 or higher. However, the corrected Item-Total Correlation Coefficients of FA5, FA6, and SV2 are lower than 0.4. Therefore, they need to be removed and retested. After removing those items, the Cronbach Alpha coefficient of each scale is higher than 0.69. Moreover, all corrected item-total correlation of these items is higher than 0.4. Therefore, the scales are reliable for the actual study.

After two rounds of reliability tests, the questionnaire was revised by eliminating three indicators from the questionnaire – “swimming pool” (FA5), of which alpha is 0.093, and “gym equipment/fitness (FA6), of which alpha is 0.292, in the Facilities dimension (FA), and “Free Breakfast” (SV2), of which alpha is -0.006 in the “Services” dimension (SV). Table 2 shows the adjusted codebook after eliminating these indicators.

Table 2 Adjusted codebook after eliminating variables

Description	Coding	Indicators
Google Reviews on “Facilities of Hotel”	FA1	Design and style
	FA2	Rooms
	FA3	Beds
	FA4	Bathrooms
Google Reviews on hotel characteristics “Location of Hotel”	LO1	The environment and the surrounding landscape
	LO2	Distance from the hotel to the town center
	LO3	The safety and security
	LO4	Taking taxi/ parking available for private car
Google Reviews on “Staff of Hotel”	ST1	The staff's service mind
	ST2	Staff's problem-solving
	ST3	Staff's physical appearance
Google Reviews on “Services of Hotel”	SV1	Hotel dining and dinner
	SV3	The spa/health service
	SV4	Hotels' emergency helps
	SV5	Babysitting/ child care services
	Google score ratings	RA1
RA2		The Google score ratings of the hotel help me to believe in the quality of the hotel.
RA3		The Google score ratings of the hotel I booked are reliable.
RA4		The number of stars the hotel received on Google score ratings is not enough to reflect its quality.

Description	Coding	Indicators
Vietnamese Consumers' Online Hotel Booking Decision	BD1	I definitely booked the hotel after reading its Google reviews.
	BD2	I decided to book the hotel after reading its Google reviews.
	BD3	I booked a hotel because it has a high rating score on Google score ratings.
	BD4	I did not make a reservation at the hotel that has the low Google score ratings.

4. Results

4.1 Results of Descriptive Statistics on Survey Respondents

Data were obtained via an online survey from October 1-31, 2020. More than 300 respondents answered the questionnaires, however, invalid questionnaires were filtered out. The remaining data from 300 questionnaires were subjected to reliability testing and statistical analysis.

Table 3 Demographic Information

Variables	Characteristics	Frequency	Percent
Age	22-30 years old	69	23.0
	31-40 years old	103	34.3
	41-50 years old	95	31.7
	Over 50 years old	33	11.0
	Total	300	100.0
Gender	Male	174	58.0
	Female	126	42.0
	Total	300	100.0
Educational level	Bachelor's Degree	259	86.3
	Master's Degree	36	12.0
	Doctoral Degree	5	1.7
	Total	300	100.0
Occupation	Government Officer	43	14.3
	Small Business Owner	83	27.7
	Large Business Owner	84	28.0
	Corporate Employee	49	16.3
	Artist/ Designer/ Working in Creative field	22	7.3
	Others	19	6.3
	Total	300	100.0
Monthly income	10,000,000 – 18,000,000VND	43	14.3
	18,000,001 – 32,000,000VND	92	30.7
	32,000,001 – 52,000,000VND	115	38.3
	52,000,001- 80,000,000VND	36	12.0
	Over 80,000,000VND	14	4.7
Total	300	100.0	

Table 3 shows the frequency and percentage of the respondents based on their demographic characteristics. For gender, there are a higher percentage of male (58%) than female (42%) respondents. In terms of age, the respondents' age range is from 22 to 50 years. The majority of the respondents are 31 - 40 years old (34.3%), followed by 41 - 50 years old (31.7%), 22 - 30 years old (23.0%), and over 50-year-old (11%), respectively.

In terms of educational level, most respondents in this study are Bachelor's degree holders (86.3%), followed by Master's degree holders (12%) and Doctoral degree holders (1.7%).

For occupations, the majority of the respondents are large business owners (28.6%), followed by small business owners (27.7%), corporate employees (16.3%), government officers (14.3%), artists/designers/ working in the Creative field (7.3%), and others (6.3%), respectively.

In terms of monthly income, the majority of the respondents have monthly incomes from 32,000,001 to 52,000,000VND (38.3%), followed by the range of 18,000,001 to 32,000,000VND (30.7%), 10,000,000 to 18,000,000VND (14.3%), 52,000,001 to 80,000,000VND (12%), and over 80,000,000VND (4.7%), respectively.

4.2 Results of Descriptive Statistics on Examined Variables

Table 4 Descriptive Statistics and Alpha Reliability Test of Examined Variables

Scales	Mean	S.D.	No. of Items	Cronbach's Alpha
Google reviews on hotel characteristics				
Facilities (FA)	3.917	0.4989	4	0.851
Location (LO)	3.382	0.5653	4	0.853
Staff (ST)	3.770	0.5621	3	0.793
Services (SV)	4.043	0.5626	4	0.836
Google Score Ratings (RA)	3.932	0.5090	4	0.815
Booking Decision (BD)	3.982	0.5744	4	0.810

Based on the above table, it was found that the observed variables' mean values are above 3.0, and the standard deviation is less than 1.0. Besides, all scales have Cronbach's Alpha coefficients of over 0.7 and can be considered that the data is reliable (George & Mallery, 2003). These scales are appropriate for this study. It proved that the scales are reliable and can be used in the next steps.

Among six predictors, "Services" has the highest mean (SV = 4.043 between positive to very positive), followed by Booking Decision (BD = 3.982 between neutral and agree), Hotel Score Ratings on Google (RA = 3.932 between neutral to positive), Facilities (FA = 3.917 between neutral to positive), Staff (ST = 3.770 between neutral to positive), and Location (LO = 3.382 between neutral to positive), respectively.

4.3 Results of Hypothesis Testing

4.3.1 Correlation analysis

Table 5 Correlations between Variables

		FA	LO	ST	SV	RA	BD
Reviews on Facilities (FA)	Pearson Correlation	1	.073	.210**	.244**	.361**	.387**
	Sig. (2-tailed)		.207	.000	.000	.000	.000
	Interpretation		+	+	+	+	+
Reviews on Location (LO)	Pearson Correlation	.073	1	.166**	.163**	.116*	.356**
	Sig. (2-tailed)	.207		.004	.005	.045	.000
	Interpretation	+		+	+	+	+
Reviews on Staff (ST)	Pearson Correlation	.210**	.166**	1	.261**	.344**	.435**
	Sig. (2-tailed)	.000	.004		.000	.000	.000
	Interpretation	+	+		+	+	+
Reviews on Services (SV)	Pearson Correlation	.244**	.163**	.261**	1	.355**	.718**
	Sig. (2-tailed)	.000	.005	.000		.000	.000
	Interpretation	+	+	+		+	+
Score ratings (RA)	Pearson Correlation	.361**	.116*	.344**	.355**	1	.467**
	Sig. (2-tailed)	.000	.045	.000	.000		.000

		FA	LO	ST	SV	RA	BD
	Interpretation	+	+	+	+		+
Booking decision (BD)	Pearson Correlation	.387**	.356**	.435**	.718**	.467**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	Interpretation	+	+	+	+	+	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

+ = Positive correlation

- = Negative correlation

It can be seen from Table 5 that the Pearson r coefficient was positive with the correlation of 2 independent variables (Google reviews and Google score ratings) and one dependent variable (BD), which means that as each independent variable increases, so does the dependent variable (BD). Secondly, Pearson's correlation level between predictors and dependent variable (BD) ranged from $0.3 < r < 0.5$ (Cohen, 1988). It is shown that they are significantly positively correlated. It can be seen that the Sig. 2-tailed between each independent and dependent variable is 0.000 (p is less than 0.05), which means that the correlation results are statistically significant at the 5% level. Besides, it meets the required conditions to make the Multiple Regression analysis.

4.3.2 Regression analysis

Table 6 Regression analysis results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
(Constant)	-.977	.223		-4.383	.000			
1	FA	.176	.042	.153	4.199	.000	.849	1.178
	LO	.214	.035	.210	6.135	.000	.956	1.046
	ST	.183	.037	.179	4.905	.000	.843	1.187
	SV	.565	.038	.554	15.045	.000	.830	1.205
	RA	.145	.044	.129	3.319	.001	.745	1.342

Adjusted R^2 : 0.664

Durbin-Watson: 1.794

ANOVA^a (sig.): 0.000

Dependent Variable: Booking Decision (BD)

From Table 6, the adjusted R^2 (Adjusted R-square) is 0.664 ($p < 0.001$). This statistic means that 66.4% of the booking decision (BD) change can be explained by five independent, conditional-responsive variables. In this test, the Durbin-Watson coefficient is 1.794, which is in the acceptance zone. Therefore, there is no relationship between the residuals.

ANOVA sig (F) = 0.000, which is less than 0.05. Therefore, there is a linear relationship between each independent variable and the dependent variable; that is, the independent variables can explain the dependent variable (BD) variation.

The VIF magnification coefficients of FA, LO, ST, SV, and RA, are between 1 and 10, indicating that the multicollinearity phenomenon does not occur (Trong & Chu, 2008). Therefore, the relationship between the independent variables does not affect the multiple linear regression model's interpretations.

With all results, it can be seen that the regression model is consistent and statistically significant. A regression model with unstandardized beta coefficients (Churchill & Iacobucci, 2006) is as follows;

$$BD = -0.977 + 0.176 FA + 0.214 LO + 0.183 ST + 0.565 SV + 0.145 RA + \varepsilon$$

4.4 Hypothesis Testing Results

Based on the above equation, the results of hypothesis testing can be inferred below.

Table 7 Results of Hypothesis Testing

Hypothesis	Description	Result
HP#1	Google reviews on hotel characteristics have an effect on Vietnamese consumers' online hotel booking decisions.	Accepted
HP#1.1	Google reviews on "Facilities of hotels" have an effect on Vietnamese Consumers' online hotel booking decisions.	Accepted
HP#1.2	Google reviews on "Location of hotels" have an effect on Vietnamese Consumers' online hotel booking decisions.	Accepted
HP#1.3	Google reviews on "Staff of hotels" have an effect on Vietnamese Consumers' online hotel booking decisions.	Accepted
HP#1.4	Google reviews on "Services of hotels" have an effect on Vietnamese Consumers' online hotel booking decisions.	Accepted
HP#2	Google score ratings have an effect on Vietnamese consumers' online hotel booking decision	Accepted

5. Discussions

5.1 Discussions Based on The Uses and Gratification Theory

According to the Uses of Gratification Theory (UGT), individuals use media for four basic purposes; surveillance, personal identity, personal relationships, and diversion. With the support of modern technology devices, consumers can access communication and information more easily, so they tend to look for useful and objective information that suits their needs and their preferences. They also tend to travel freely and are willing to plan their travels ahead, thus renting a hotel room during their travels is inevitable. Also, to avoid the risks in the booking process, the consumers are likely to carefully consider previous hotel guests' reviews. The reviews shared on the Google platform are those that meet the information needs of Vietnamese consumers. Thus, the findings of this study reinforced the core assumption of the UGT by showing that the consumers take an active role as media users in terms of information seeking.

5.2 Discussions Based on Source Credibility

Based on the theory regarding source credibility, three characteristics of sources -- physical attractiveness, trustworthiness, and expertise - influence persuasive communication (Hovland, Janis & Kelley, 1953). Potential consumers generally trust product reviews more than the commercial information given by the product producers or brands. Relatives, friends, and other individuals with relevant expertise and/or expert communicators are considered trustworthy, product reviews by these sources become trustful information for the consumers when making purchase decisions. As a consequence, the hotels take advantage of positive customer reviews to convey to their target audience, what they desire their customers to have, and their first impression of their hotel via social media. It can be seen as a form of enhancing hotel branding through the customers' reviews.

5.3 Discussions Based on the Past Studies

All the proposed research hypotheses were supported by the findings of this study, which confirmed the hotels' characteristics on Google Reviews (namely Facilities, Location, Staff, and Service), and the hotels' Google score ratings influence Vietnamese consumers' decisions on 5-star hotel bookings. Research concerning the influencing factors on the booking decision of Vietnamese consumers was shown to be positive, as it was observed that the beta coefficients of the independent variables in the regression equation had values greater than 0. Thus, when these factors increase, the Vietnamese consumers' booking decisions also show an increase. Experimental research has provided evidence of the impact of Google reviews on the consumers' decisions (Gavilan et al., 2018; Mo et al., 2015; Danish, Hafeez, Ali, Shahid & Nadeem, 2019).

The results of this study are consistent with some previous studies. The study of general consumer online shopping behavior by Mo et al (2015) found that positive reviews have a positive effect whereas neutral reviews have no impact and negative reviews have a negative impact on the purchasing behavior of the consumers. However, in the hospitality sector, the findings of this study do not only support another finding by Danish et al (2019) that positive online reviews influence consumer booking intentions but also reject the findings that negative online reviews affect the consumers' decisions. Another study by Gavilan et al (2018) concluded that web users trust lower numeral ratings than higher ratings, and for the hotel industry, web users tend to choose hotels with better ratings.

In the above studies, reviews and ratings are one of the factors in their conceptual models and the researchers tend to consider whether or not they have an impact on consumer decision making. This study, instead, considers reviews and ratings as the two main factors in the proposed research model, dimensions of those factors mentioned by the reviewer in their Google reviews influencing customers' booking decisions were further examined. Therefore, this study does not only strengthen previous research results but also reveals new findings regarding the content of the product reviews concerning the characteristics of the 5-star hotel that have a significant impact on Vietnamese consumers' hotel bookings. Those hotel reviews include facilities, service, location, and staff.

5.4 Discussions Based on Researcher's Expectations

The research results have addressed the two Research Questions:

RQ #1: Do Google reviews on hotel characteristics influence Vietnamese consumers' online five-star hotel booking decisions?

RQ #2: Do Google score ratings influence Vietnamese consumers' online five-star hotel booking decisions?

In addition to these questions, the findings also showed that the content of the consumer reviews regarding the four main hotel characteristics - Facilities, Location, Staff, and Service - significantly influenced Vietnamese consumers' booking decisions.

Surprisingly, Google reviews on Service and Staff are the two most influencing factors, demonstrating that Vietnamese consumers are more concerned with intangibles factors than tangible factors of the hotel. The findings are useful for hotel managers to pay more attention to investing in hotel-based human and services factors rather than over-focusing on building hotel facilities. The reason is that when visiting the hotel, the consumers would prefer to contact and communicate with humans (staff) first. It can also serve as a role of communication; interpersonal communication is considered to be more important than any other mass media. It is, therefore, an important observation that, in the current context, with the adoption of new digital technology and communication, the advent of social networking sites increases this impact. Google's role in the modern life of Vietnamese C2C activity is extremely important and also increases the interaction between users, creates a community, and forms new behaviors among Vietnamese consumers. It becomes a habit of potential customers to read Google hotel reviews and/or Google score ratings before making booking decisions in their travel plan.

6. Conclusions

In addition to positive and significant correlations between four hotel characteristics in Google reviews, Google score ratings, and Vietnamese booking hotel decisions, this study also successfully provides empirical evidence that Google score ratings and reviews have a significant impact on Vietnamese consumers' hotel booking decisions. It was found that Vietnamese consumers rely strongly on Google hotel reviews before deciding to book a 5-star hotel. The findings also reveal the varying influences of review contents regarding four hotel characteristics. In particular, the hotel characteristics that most affected Vietnamese consumers' booking decisions are services, followed by staff, location, and facilities of the hotel, respectively. Interestingly, it was found that Google score ratings are rated as the least important factor when compared with other factors.

This study has some limitations in terms of time and research subjects. The research time was limited as being part of a graduate study. As for research participants, it is challenging in reaching the participants who are busy and belong to the five-star class. Therefore, it was quite difficult for the researchers to access the participants in person. Another limitation is that the questionnaire was created using Google Forms so the researchers did not grasp the respondents' emotional nuances but depended entirely on the responses received.

The study has some implications for future studies. Firstly, the study could benefit from a more longitudinal run to reach a higher number of samples. Besides Google, several third-party websites provide consumer reviews and star ratings such as Booking.com, Agoda, and others. Future studies could focus on hotel ratings and reviews on these third-party websites and how they affect Vietnamese consumers' booking decisions. The tourism market in Vietnam is in exponential growth, and it is attracting not only domestic visitors but also millions of foreign tourists annually. Therefore, a similar study on foreigners' behaviors when they travel to Vietnam is also essential. Future studies should consider which hotel characteristics this group prefers when deciding to reserve a hotel in Vietnam. Social media is still an essential channel to implement hotel branding campaigns. Furthermore, a study on how Vietnamese consumers are affected in booking decisions when examining the reviews of 5-star hotels on social media such as Facebook should be investigated.

As for implications for communication practitioners and the hotel industry, this study will be a valuable reference source for them in their strategy development to win over Vietnamese consumers. Businesses need to be aware of the importance of Google reviews. It is necessary to develop a clear and smart strategy and utilize these approaches effectively for their marketing or brand communication. Based on the consumers' reviews, the communications administrators need to recognize and respond to the customers' problems, which helps prevent future communication crises for their businesses while improving the hotel service quality, which will, in turn, attract more consumers.

During the booking process, the consumers tend to consider hotel reviews from various trustworthy sources as a reference such as from their friends, relatives, or reviews on Google before making the final decision. Web-users are also very interested in the featured reviews, particularly on the reviews that show up first, then they will form an idea of the hotel, the quality of the hotel, and the expected experience. Therefore, a recommendation to Google is to prioritize full reviews that cover the full range of hotel properties that are allowed to be displayed first. It helps the web-users to quickly shape their impression of the hotel before making a booking decision. With modern engineering and technology, creating this attribute is easy.

Besides, it is necessary to understand which hotel characteristics in Google reviews affect Vietnamese consumers' booking decisions. From there, the communications administrators need to listen and respond to their customers' problems, which helps prevent future communication crises for their businesses while improving the hotel service quality, which will, in turn, attract more consumers.

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Understanding Information Operations and Economic Impacts in the Digital Era

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Abstract

This research aimed to investigate whether demographic factors and the knowledge and understanding of information operations (IOs) affect the attitudes of Thai people towards economic impacts. Data were collected from 602 Thai Internet users, aged 18 years or over, via an online survey. Then, the data were analysed through ordered logistic regression to test the hypotheses. The dependent variables consist of three directions: positive attitude, uncertain attitude, and negative attitude. The set of independent variables includes gender, education level, occupation, average monthly income, average monthly savings and social media tools. The value of the knowledge and understanding of information operations is a covariate variable in this study. The analysis shows that the respondents' education level is the only factor that has significance for their attitude towards economic impacts. The paper suggests that the knowledge and understanding of IOs can help society to recognize better the need to scrutinize news and whether news should be trusted. Meanwhile, education levels contribute to the understanding of IOs and predictions of economic impacts; therefore, the competent authorities should widely the information operations disseminate at all levels of education to create a better society, eliminate distorted news and contribute to economic growth.

Keywords: *Knowledge and understanding of information operations, IOs, Attitude towards economic impacts, Ordered logistic regression, Digital era*

1. Introduction

Information influences people's attitudes in many respects, such as their attitudes towards the dimensions of economics, politics, investment or psychology. Nowadays, even though the rapid development of information technology enables quick and boundless information consumption, the potentiality of information operations is still increasing because information operations are not just used in battles or wars but are weapons that anybody can create. For example, in the case of the US presidential election of 2016 between Donald Trump and Hilary Clinton, Cambridge Analytica harvested profile data from 87 million Facebook users, without their permission, and used those data to exploit Donald Trump's campaign for the Republican Party. Many people believe that this basic information was used to conduct information operations in support of Donald Trump. Therefore, it can be said that, if anyone has the ability or "skill" to use different types of media better or more effectively, they will be able to use information operations better than another party. The purpose of this research is to perform a case study of information operations (IOs) (Workpointtoday, 2019).

Information operations (IOs) could be a category of coordinated and backhanded bolster operations for the United States military. They are the integrated businesses of electronic warfare (EW), computer network operations (CNOs), psychological operations (PSYOPs), military deception (MILDEC) and operations security (OPSEC), in concert with indicated supporting and related capabilities. Information operations (IOs) are used to affect, disturb, degenerate, or wrest the antagonists, by using human or robotized choice making, whereas securing the security of themselves. It can be said that IOs are activities undertaken to influence one's adversary's data and data frameworks while protecting one's own data and data frameworks (Command, 2012).

As mentioned above, as a rough indication, to use the most efficient IOs, it is necessary to rely on all media, through word of mouth or proclamation or through an intermediary, such as newspapers and television. In the past, the government made the most effective use of IOs because of its role and power to

communicate and reach most people. Nowadays, most people have access to various social media, and everyone can produce their own media, so the most efficient use of IOs is not just made by governments, as can be seen from the case of Cambridge Analytica and Facebook, which are both private companies. IOs are not used just for one's own benefit or for attacking an opponent. They can also be used for development in various fields, for example to raise the popularity of someone or something without causing any harm to others (Puengnetr, 2020).

2. Literature review

Economic impacts stem from any economic events that occur in a specific area and can influence a single neighbourhood or affect the whole world. For example, the economic impacts of COVID-19 might be a dramatic decrease of national GDPs globally, a reduction of household consumption and a decrease of business revenues and profits (Chetty, Friedman, Hendren, Stepner & The Opportunity Insights Team, 2020).

Attitudes can be defined as the feelings and thoughts of an individual, both negative and positive, such as perspective, fear, belief and bias regarding a particular topic. Attitudes are usually presented through personal opinions; hence, the opinions of an individual are representations of personal attitudes (Zunick, Teeny & Fazio, 2017). Phalusuk and Ponghanyut (2002) divided attitudes into three types: positive, negative and passive. A positive attitude is having positive feelings or being satisfied with something, while a negative attitude means having negative or unpleasant feelings towards something. A passive attitude involves feeling neutral towards something, which might be caused by a lack of knowledge and understanding of that issue.

The dependent variable in this study is the attitudes of Thai people towards economic impacts; therefore, the definition of this dependent variable is the personal feelings of Thai people about economic impacts, which might be affected by the independent variables in this study, together with the covariance, the level of knowledge and the understanding of information operations.

There are many factors that can influence individuals' attitudes, for example demographic factors such as education level and income. Boonsri (2013) produced a study titled "The Media Effect on Political Participation: The Case Study of Ratchadamnoen Political Rallies, 2013". The results of this study indicate that participants with different education backgrounds and monthly incomes were exposed to the media differently and participated in politics differently.

Cordero, Muniz and Polo (2016) aimed to extend the literature about the role played by socio-economic and family backgrounds in educational outcomes by comparing the determinants of two different dimensions of educational output: academic achievement and non-cognitive traits. They explored the information provided by a self-reported survey developed specifically for the purpose of their research. This provided an innovative measure of non-cognitive performance based on particular personal traits, such as responsibility, effort, motivation and critical capacity, as well as a common measure of cognitive proficiency. They used a Bayesian approach to estimate the potential influence of multiple individual and family variables on both dimensions of educational output. From the results, they found that, despite some similarities, there are several important divergences with regard to some socio-economic variables that have traditionally been considered to be the most influential determinants of academic achievement, which do not appear to have a significant impact on non-cognitive outcomes.

Vaarmets, Liivamagi and Talpsepp (2019) assessed how different types of learning affect the disposition effect by using the NASDAQ OMX Tallinn data set. They employed survival analysis to show that intelligence and potentiality of learning based on education levels and types of education can reduce the disposition effect. Investors who are smarter or have obtained higher education are able to learn faster by trading. The findings showed that mathematical abilities are beneficial for overcoming the limitations of management skills and learning abilities are an important factor for intelligence, affecting management skills.

3. Objectives

- 1) To study and analyse people's understanding and knowledge of information operations.
- 2) To study the variables affecting economic predictions in the digital era.

4. Materials and methods

For this survey research, the population is Thai citizens aged 18 years or above from six regions of Thailand (north, northeast, west, central, east and south), who access social media regularly. People aged 18 years or above are assumed to have sufficient psychosocial maturity, base knowledge and cognitive skills to engage in critical thinking and independent decision making. Meanwhile, internet users who usually access social media such as Facebook and Twitter are more likely to perceive a larger amount of online information created by information operations (IOs) than those who do not use social media regularly. Through convenience sampling, 602 people were selected as samples. To decrease the bias of the data and to represent the population in each region, 100 samples from each region of Thailand were selected; therefore, 602 samples are adequate to represent the population of the whole country. The data were collected via an online survey created by Google Form and were then analysed using ordered logistic regression (OLR) since the dependent variable is ordinal. The independent variables are demographic factors, including gender, education level, occupation, average monthly income, average monthly savings and social media platforms. The dependent variable is people's attitudes towards economic impacts, measured with a covariate variable, the score of the knowledge and understanding of information operations.

5. Results and discussion

5.1 Results

Table 1 Determination of score values for demographic factors

Demographic factors	Chi-square	Percentage weight
Age	241.211	20.70
Education level	87.243	7.49
Occupation	204.356	17.54
Status	66.842	5.74
Average monthly income	204.347	17.54
Average monthly savings	192.65	16.54
Social media platforms	168.369	14.45
Total	1165.018	100

From Table 1, it is apparent that the most significant factor is age, which has the largest weight value of 20.70%, followed by occupation and average monthly income, which present the same weight values of 17.54%. Status shows the lowest percentage weight of 5.74%.

Table 2 Percentage weight of individual variables in each group of dependent variables

Variable	Weight	Sub-weighted
Age (years)	100	20.70
18–24	48.84	10.11
25–31	23.09	4.78
32–38	5.98	1.24
39–45	7.14	1.48
46–52	8.47	1.75
53 or over	6.48	1.34
Education level	100	7.48
Lower than bachelor's degree	20.10	1.51
Bachelor's degree	71.93	5.39
Master's degree or higher	7.97	0.60

Variable	Weight	Sub-weighted
Occupation	100	17.54
Student	47.67	8.36
Government officials/state enterprises	10.80	1.89
Private employee	13.95	2.45
Employee	5.15	0.90
Self-employed	18.94	3.32
House husband/housewife	2.49	0.44
Others	1.00	0.17
Status	100	5.74
Single	75.25	4.32
Married	21.76	1.25
Widowed/divorced	2.99	0.17
Average monthly income	100	17.54
15,000 baht and lower	50.00	8.77
15,001–30,000 baht	27.41	4.81
30,001–45,000 baht	9.47	1.66
45,001–60,000 baht	5.81	1.02
60,001–75,000 baht	2.16	0.38
75,001 baht and over	5.15	0.90
Savings	100	16.54
5,000 baht and lower	55.32	9.15
5,001–10,000 baht	27.41	4.53
10,001–15,000 baht	8.47	1.40
15,001–20,000 baht	3.49	0.58
20,001–25,000 baht	1.50	0.25
25,001 baht and over	3.82	0.63
Social media platforms	100	14.45
LINE	17.28	2.50
Facebook	53.49	7.73
Twitter	16.45	2.38
Instagram	11.46	1.66
Others	1.33	0.19

Table 2 shows the percentage weight of individual variables in each group of dependent variables. The variables 18–24 years old, bachelor's degree, student, single, average monthly income of 15,000 baht and lower, savings of 15,000 baht and lower, and Facebook have the greatest weights of 48.84, 71.93, 47.67, 75.25, 50, 55.32 and 53.49, respectively.

Table 3 Test of the data distribution and adjusting the values for normality

		Before adjusting*	After adjusting*	Formula for adjusting data
Age	Skewness	-2.27	0.29	Cubic
	Kurtosis	-8.487	-9.965	Cubic
Education	Skewness	-10.26	-0.28	Square root
	Kurtosis	-4.387	-9.62	Square root
Occupation	Skewness	-0.56	Constant	
	Kurtosis	-9.020	Constant	
Status	Skewness	-12.37	-11.77	Square root
	Kurtosis	-1.7234	-3.065	Square root
Average monthly income	Skewness	-5.05	-1.62	Square root
	Kurtosis	-6.442	-8.9598	Square root
Savings	Skewness	-6.31	-3.12	Square root
	Kurtosis	-5.683	-8.93467	Square root
Social media Platforms	Skewness	-1.87	Constant	
	Kurtosis	-9.512	Constant	

* Statistic/std error normality test.

In Table 3, the data are not normally distributed (negatively skewed) and need to be adjusted to the most normal distribution by using the square root (education level), square root (status), square root (income) and square root (savings). The results after adjustment do not provide a perfectly normal distribution, and they indicate that age is highly *negatively skewed*, so the cubic (age) formula was used.

Table 4 Attitudes of Thai citizens towards economic impacts

Predicted impact	Frequency	Percentage
Negative	171	28.4
Uncertain	221	36.7
Positive	210	34.9
Total	602	100.0

In Table 4, the economic impacts estimated by 602 participants show that 34.9% of the participants assessed economic impacts with a positive attitude, while 36.7% viewed them with uncertainty. In addition, 28.4% of the samples estimated negative impacts on the economy.

Table 5 Model-fitting information of attitude towards economic impacts

Model	Model-fitting criteria		Likelihood ratio tests	
	-2 log-likelihood	Chi-square	df	Sig.
Intercept only	959.802			
Final	902.441	57.361	42	0.047

Table 5 shows the model-fitting criteria test statistics. The intercept only of the -2 log-likelihood equals 959.802, and the final of the -2 log-likelihood equals 902.441. In the likelihood ratio test, the final has a Chi-square equal to 57.361 and a significance of 0.047, indicating the significance level of 0.05. Therefore, the test indicates that the model can explain the dependent variables.

Table 6 Pseudo R-square of attitude towards economic impacts

Cox and Snell	0.091
Nagelkerke	0.102
McFadden	0.044

Table 6 shows that the pseudo R-square coefficient of Cox and Snell equals 0.091, the Nagelkerke R-square equals 0.102 and the McFadden R-square equals 0.044. These results indicate that the model can explain the dependent variables.

Table 7 Likelihood ratio tests of attitude towards economic impacts

Effect	Model-fitting criteria	Likelihood ratio tests		
	-2 log-likelihood of reduced model	Chi-square	df	Sig.
Intercept	902.441 ^a	.000	0	0.000
SCORE	907.303	4.861	2	0.088
sqrt_ed	916.001	13.560	4	0.009
sqrt_status	908.131	5.689	4	0.224
sqrt_income	915.793	13.352	10	0.205
sqrt_savings	908.907	6.466	10	0.775
cub_age	908.803	6.362	10	0.784
GENDER	903.445	1.004	2	0.605

Note: The Chi-square statistic is the difference in the -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all the parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

From Table 7, it can be seen that the only factor that affected the attitude towards economic impacts was the level of education (sqrt_ed), which resulted in a -2 log-likelihood of 916.001, a Chi-square of 13.560 and a sig. value of less than 0.05; therefore, this means that the education level is suitable for use as a predictor of the knowledge and understanding of information operations and attitudes towards economic impacts.

Table 8 Model-fitting information on the education level

Model	Model-fitting criteria	Likelihood ratio tests		
	-2 log-likelihood	Chi-square	df	Sig.
Intercept only	211.778			
Final	195.234	16.544	6	.011

In Table 8, the model-fitting criteria test statistics show that the intercept only of the -2 log-likelihood is equal to 211.788 and the final is equal to 195.234. In the likelihood ratio test, the final Chi-square is equal to 16.544 and the sig. value is equal to 0.011 at the significance level of 0.05. Therefore, the statistics indicate that the attitude towards economic impacts depends on the respondents' education and understanding of information operations.

Table 9 Pseudo R-square of the education level

Cox and Snell	0.027
Nagelkerke	0.031
McFadden	0.013

Table 9 shows that the pseudo R-square coefficient of the Nagelkerke R-square equals 0.031, which indicates that the dependent variable can be described as scoring 3.1%.

Table 10 Likelihood ratio tests of the education level

Effect	Model-fitting criteria	Likelihood ratio tests		
	-2 log-likelihood of reduced model	Chi-square	df	Sig.
Intercept	195.234 ^a	0.000	0	0.000
SCORE	202.364	7.130	2	0.028
sqrt_ed	206.003	10.769	4	0.029

Note: The Chi-square statistic is the difference in the -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all the parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Table 10 shows that the factors influencing the knowledge and understanding of information operations and attitude towards economic impacts are education (sqrt_ed) with the sig. value of less than 0.05. These results show that independent variables are appropriate for forecasting people's attitudes towards economic impacts at the significance level of 0.05.

Table 11 Coefficient of variables in the ordered logistic regression of education level

EXPECT ^a	B	Std error	Wald	df	Sig.	Exp(B)	95% confidence interval for Exp(B)	
							Lower bound	Upper bound
Negative	Intercept	-1.039	0.379	7.501	1	0.006		
	SCORE	0.119	0.058	4.239	1	0.040	1.127	1.006 1.263
	[sqrt_ed=0.36]	0.413	0.430	0.921	1	0.337	1.511	0.650 3.513
	[sqrt_ed=2.28]	0.429	0.269	2.554	1	0.110	1.536	0.907 2.601
Uncertain	Intercept	-0.949	0.358	7.017	1	0.008		
	SCORE	0.133	0.055	5.964	1	0.015	1.143	1.027 1.272
	[sqrt_ed=0.36]	0.939	0.377	6.190	1	0.013	2.557	1.220 5.358
	[sqrt_ed=2.28]	0.572	0.252	5.149	1	0.023	1.772	1.081 2.904

a. The reference category is positive.

b. This parameter is set to zero because it is redundant.

Table 12 Predictor coefficients of the education level by the ordered logistic regression model

Variables	Negative vs positive		Uncertain vs positive		Uncertain vs negative	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Education group (reference = master's degree and higher)						
Lower than undergraduate	0.413	1.511	0.939	2.557*	-0.939	0.391*
Undergraduate	0.429	1.536	0.572	1.772*	-0.572	0.564*

It can be seen from Table 12 that, when comparing a positive attitude with a negative attitude, if the education level is lower than a bachelor's degree, there is a negative attitude score of 1.511. If the education level is a bachelor's degree rather than a master's degree or higher, there is a negative attitude towards economic impacts of 1.536. This means that groups with lower education levels have a lower likelihood of having negative attitudes than higher educated groups.

When comparing an uncertain attitude with a negative attitude, people with an education level lower than a bachelor's degree show an uncertain attitude towards economic impacts of 0.391. Meanwhile, people

who have obtained a bachelor's degree show an uncertain attitude towards economic impacts of 0.564. This means that people with lower education have a lower likelihood of having an uncertain attitude than more educated groups.

The ordered logistic regression analysis shows that the factor that influences the knowledge and understanding of information operations and attitudes towards economic impacts in the digital era is education (*sqrt_ed*), which can be described in the two following points:

1. If the knowledge scores increase by 1 point, the negative attitude will be increased by 0.119 (Table 11). If people have reached an education level lower than a bachelor's degree, it tends to increase the chance of having a negative attitude towards economic impacts by 0.413 (Table 12). Meanwhile, when the population has education higher than a bachelor's degree, there is no significant difference in the attitude towards economic impacts.

2. If the knowledge scores increase by 1 point, the estimation of an uncertain impact will increase by 0.133 (Table 11). If people have attained a lower education level than a bachelor's degree, the chances of having a negative attitude towards economic impacts will increase by 0.939 (Table 12), while, when the population has an education level higher than a bachelor's degree, there is no significant difference in the attitude towards economic impacts.

5.2 Discussion

The personal attitudes towards economic impacts of 602 respondents show that 65.1% of Thai citizens have uncertain and negative attitudes towards economic impacts; this may be because of anxiety about the economic conditions, politics or pandemics, especially COVID-19, which is a current global problem. The Thai economy depends on the economies of foreign countries; therefore, it has shrunk severely during the COVID-19 pandemic as the COVID-19 virus is affecting the global economy heavily (Siam Commercial Bank, 2020). The tourism sector, which contributes 15% of the Thai GDP, has been extremely badly affected due to the complete lack of foreign tourists since March 2020. Moreover, exports and private consumption in Thailand were projected to decline by 6.3% and 3.2%, respectively, in 2020 as the COVID-19 pandemic is ongoing and countries have not recovered from the world economic crisis yet (The World Bank, 2020). Therefore, the perception of all these crises might lead people to have uncertain and negative attitudes towards the economic impacts in Thailand.

In this study, the education level is the only variable affecting the attitude of Thai citizens towards economic impacts. The findings indicate that participants in higher education groups have a greater likelihood of holding a negative attitude towards economic impacts than people with lower education levels. Highly educated people tend to engage in more critical thinking, which is the skill that allows people to trust, reject or be sceptical about the information received (Cooke, 2017; Yue, Zhang, Zhang & Jin, 2017). Therefore, it is hard to assess this group of people quickly as they will consider an issue from all perspectives and this might affect the adoption of economic measures and policies specified by the government. For example, when the government launches a measure to stimulate the domestic economy during the COVID-19 crisis, such as a half-price co-payment campaign, people with higher education might be sceptical about this campaign and tend to research and analyze the pros and cons using many sources before adopting it. Recognizing the attitude of people with higher education based on this study can help to create a strategy for acceptance of government campaigns. In this case, the government should provide sufficient and reliable information to enhance the adoption of economic campaigns among people with higher education. When the campaign is conducted and participated in quickly, there will be a larger cash flow in the local economic system, leading to an increase in private consumption and the recovery of the domestic economy.

Other variables that were not significant in this study, including the score of the knowledge and understanding of information operations, have not been tested for multicollinearity yet as this is not the assumption of ordered logistic regression. Therefore, for further studies, these factors should be tested for multicollinearity by using other statistical methods, such as a correlation plot, to ensure that they are really uncorrelated with people's attitudes towards economic impacts. In addition, the insignificance of variables might be caused by an abnormal distribution of dependent variables. Even though the data were adjusted by using the square root, the distributions of many groups of data were still not normal, and this can be overcome by increasing the size of the samples.

6. Conclusion

The analysis showed that the education level is the only factor with significance for Thai people's attitudes towards economic impacts. If the knowledge scores increase by 1 point, the negative attitude towards economic impacts will increase by 0.119. If people have obtained a lower than a bachelor's degree, their chances of having a negative attitude towards economic impacts will increase by 0.413. In addition, if there is a shift in the education level to having a bachelor's degree, there will be no significant difference in the attitude towards economic impacts. If the knowledge scores increase by 1 point, the uncertain attitude towards economic impacts will increase by 0.133. The Nagelkerke R-square equals 0.031, and the dependent variable can be described as scoring 3.1%.

Suggestions

The knowledge and understanding of information are very important nowadays because, if people are aware of whether the information that they receive is true, it will benefit the knowledgeable and have a positive impact on others; for example, people will not be deceived or distrustful. To combat "fake news" to make society livable and to receive more truthful news by informing responsible agencies, the following recommendations are made:

- 1) The knowledge and understanding of information operations can help society to recognize better the need to scrutinize news and identify which news should be trusted or not trusted. Therefore, it is vitally important to spread the content or articles to be thoroughly informed about information operations.
- 2) At the same time, education levels contribute to the understanding of information operations, the predictions of economic impacts in the digital age and whether they are positive, uncertain or negative; therefore, the competent authorities should disseminate the information operations widely at all levels of education to create a better society, eliminate distorted news and contribute to economic growth.

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Factors Affecting the Safety Perception of Commercial Pilot

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Abstract

This research aims to study factors that affect the safety perception of commercial pilots as well as to study the relationship between personal characteristics and level of safety awareness. The samples in this study consisted of 145 commercial pilots. The statistics implemented in the data analysis included frequencies, percentage, means, standard deviation, T-test, One-way ANOVA, and enter multiple regression analysis.

The result of this research indicated that the participants with different personal characteristics such as gender, age, education level, marital status, working position, aircraft fleet, and working experience had no difference in the perception of the safety level. The study also analyzed a multiple regression by using enter method to understand the factors affecting the safety perception of the commercial pilots, including the company's safety policy and the company's operational norms. The company's safety policy provided a positive influence in accordance with the safety perception of the commercial pilots at a significance level of 0.05. Therefore, if the pilots recognize more regarding the company's safety policy, the safety perception will increase significantly. Similarly, the positive company's operational norms also strongly influence the safety perception of the commercial pilots at a significance level of 0.05. Thus, if the pilots concern more about the company's operational norms, the safety perception will increase. For this reason, the airlines should emphasize their safety policy and operational norms to increase the safety perception of the commercial pilots and ensure that their employees, passengers, and all relevant agencies can operate the flight to the highest degree of safety.

Keywords: *Commercial pilot, Perception, Safety*

1. Introduction

In 2018, The Civil Aviation Authority of Thailand (CAAT) began implementing the State Safety Policy; SSP, to determine the intention, direction, vision, and state safety mission to meet the requirements of the standard of the International Civil Aviation Authority as identified by the guidelines and necessity of safety management (Civil Aviation Authority of Thailand, 2019). The State Safety Policy is done in the form of an Announcement of the Civil Aviation Authority through the Minister of Transport as the chairman of the Civil Aviation Authority. It is one of the shortcomings that Thailand must promptly resolve to implement Thailand's safety management plan that includes regulatory, roles and responsibilities, guidelines, and activities of related organizations (CAAT, 2019).

Even though Thailand has received a red flag from International Civil Aviation Organization (ICAO) in the last 10 years, it still has a very high-frequency flight growth rate when considering the circumstances. It is in accordance with the forecast of the International Air Transport Association (IATA). With this progress, Thailand will be among the top ten countries with the highest air travel rate (International Air Transport Association, 2018).

In 2020, the Coronavirus 2019 outbreak severely affected the aviation industry. The Civil Aviation Authority of Thailand announced the closure of Thai airspace to protect against foreign infected people, which inevitably led to a sharp decline in the economy, with airlines not being able to operate overseas (CAAT, 2020). Multiple airlines had to temporarily suspend their operations as well as downsize their employees. Furthermore, some airlines were forced to close down due to massive financial losses. Despite the severe

decline in the number of flights in Thailand and all over the world, it does not mean that accidents will not occur. Statistically, an accident occurs around the world at the rate of 3.02 times per million flights, or a record of 115 times in 2019 (International Civil Aviation Organization (ICAO), 2020).

According to the worldwide statistics provided by ICAO regarding aircraft accidents, from 1950 to 2010, accidents were caused by several factors, which 49% are due to pilot error, 23% are due to aircraft issues, 10% are from weather, 8% are because of terrorism, and the remaining 10% are due to other factors (Kebabjian, 2020). In the same way, the analysis result of the Bureau of Air Safety Investigation (BASI), in Australia concluded that according to BASI databases, the largest proportion of accidents, or 36%, occurred on private or business flights. Factors such as loss of control in flight, collision with terrain, and wiring connection are the most common issues. Furthermore, most of the accident indicates more than one contributing factor, and more than 70% of the accidents are caused by factors related to errors in situation assessments as well as poor decision-making of pilots (Bureau of air safety investigation, 1996).

These findings indicated how the safety perception affects the safety of the flight. For this reason, the researchers are motivated to determine which factor affects the safety perception of the commercial pilots to understand the guidelines, thus increasing the safety perception of the commercial pilots, which for ensuring that the employees, passengers, and all relevant agencies can operate the flight at the highest level of safety.

2. Objective

- 1) To study the relationship between the personal factors and the safety perception of commercial pilots
- 2) To study the factors that affect the safety perception of the commercial pilots

3. Material and Methods

Perception is a process in which a person recognizes the feeling and interprets it from the received stimulus through the analysis based on memory, knowledge, combined with existing experiences, and resulting in knowledge as well as understanding and behavioral responses. Even with the same incoming stimulus, it can result in two different perceptions. The fact that humans can recognize things requires plenty of factors and how well people can perceive it depends on the person's perception (Suvanseng, 2000).

Aviation Safety is the state in which the risks associated with aviation activities, related to or directly support the operation of aircraft are reduced and controlled to an acceptable level (ICAO, 2018).

Safety Management System; SMS is a systematic approach to managing safety, which includes the necessary organizational structures, accountability, responsibilities, policies, and procedures. It is determined by (ICAO) to ensure the performance of the aviation industry with effective safety management. The system is designed to continuously improve operations with hazard identification and data analysis methods, as well as safety risk assessment. The system must be the right size for the structure and complexity of the organization to comply with the rules, regulations, and safety targets. ICAO categorizes Safety Management System into four different frameworks and 12 elements, which includes Safety policy and objective (management commitment and responsibility, safety accountabilities, appointment of key safety personnel, coordination of emergency response planning, and SMS documentation), Safety risk management (hazard identification and risk assessment and mitigation), Safety assurance (safety performance monitoring and measurement, the management of change, and continuous improvement of the SMS), and Safety Promotion (Training and education and safety communication) (ICAO, 2018).

Swiss cheese model is the theory that discussed the accidents caused by various combinations of errors. The model is done by comparing the accident prevention to a cheese sheet based on factors such as personal protective equipment to protect against hazards, safety rules, and regulations. A hole or gap on the cheese plate represents a mistake that occurs, and the accident will occur when the protection measures of different systems are neglected on multiple cheese plates. For example, vulnerability is an assumption that the accident is caused by a malfunction of the device or a mistake made by the operational personnel. The swiss cheese model consists of 4 cheese sheets, each of which is unsafe acts, preconditions for unsafe acts, unsafe supervision, and organizational Influences (Reason, 1990).

Domino theory illustrates the sequence or principle of the cause of the accident, by focusing on the behavior or the unsafe acts of the operational personnel. This theory represents the relationship between behavior, situations, and working environment. The Domino theory can be divided into 5 groups as follows; 1) Social environment and ancestry, 2) Fault of person, 3) Unsafe act and Unsafe Condition, 4) Accident, and 5) Injury (Heinrich, 1931)

SHELL Model was coined by Elwyn Edwards in 1972 to help people to understand the concept of people, machinery, and working environment. In 1987, Frank Hawkins' data was applied to the shell model, which demonstrates the relationship between people and other elements within the aviation industry. The alphabet SHEL stands for S = Software such as manual, rules, and regulations, H = Hardware such as equipment used in operations, E = Environment such as operating environment, and L = Liveware such as the operators (SKYbrary, 2019).

Human Factor Analysis and Classification System; HFACS was invented and developed by Shappell and Wiegmann. This system base itself on the description of human and organizational behavior. The HFACS framework is used as a tool to assist in the investigation process and target training and prevention efforts. Investigators can systematically identify active and latent failures within an organization that culminated in an accident. The goal of HFACS is not to attribute blame, but to understand the underlying causal factors that lead to an accident. Not only the aviation industry applies HFACS theory but also the atomic energy production organization, in which the theory is used to analyze corporate defects and potentially dangerous humans (Shappell & Wiegmann, 2000).

The Dirty Dozen refers to twelve of the most common human error preconditions, or conditions that can act as precursors, to accidents or incidents. These twelve elements affect people to make mistakes. The Dirty Dozen is a concept developed by Gordon Dupont in 1993. The mentioned 12 elements are detailed as follows.

- 1) Lack of communication
- 2) Complacency
- 3) Lack of Knowledge
- 4) Distraction
- 5) Lack of teamwork
- 6) Fatigue
- 7) Lack of resources
- 8) Pressure
- 9) Lack of assertiveness
- 10) Stress
- 11) Lack of awareness
- 12) Norms (SKYbrary, 2020)

The research on Perception of Employees towards Aviation Security System of Thai Airways International Public Company Limited at Suvarnabhumi International Airport: The objectives of this research are (1) to study the perception level of employees on the aviation security system of Thai Airways International Public Company Limited at Suvarnabhumi International Airport; (2) to study the relationship between personal characteristic factors of employees and the level of employee perception on the security system; (3) to study the relationship between aviation security knowledge of employees and the level of employee perception on the security system; and (4) to recommend improvement of the perception level of employees on the aviation security system of Thai Airways International Public Company Limited at Suvarnabhumi International Airport. This research uses the method of survey research. The population size consisted of 18,602 employees of Thai Airways International Public Company Limited at Suvarnabhumi International Airport. The samples were 400 employees using stratified random sampling. The methods used to collect data are questionnaires while statistical analysis was percentage, mean, standard deviation, One-Way ANOVA, t-test, F-test, Multiple Comparison, and Pearson Chi-Square. The result of the research revealed that (1) the perception level of the employees on the security system is at a good level, (2) personal characteristic factors of the employees in terms of age, position, and year of employment were relative to the employees' perception on the aviation security system with a statistical significance at 0.05, (3) aviation security knowledge of the employees were not related to the perception on the aviation security system of

Thai Airways International Public Company Limited at Suvarnabhumi International Airport, and (4) the recommendation is that the management of Thai Airways International Public Company Limited should provide aviation security training courses for the employees (Kruajaturat & Esichaikul, 2016).

Hypothesis

1) Personal factors, namely gender, age, education level, marital status, working position, aircraft fleet, and working experience, are associated with the safety perception of commercial pilots.

2) The company's safety policy, the company's operational norms, fatigue, communication, education and training, and environmental factors outside the organization affect the safety perception of the commercial pilots.

Research Methodology

The study on the factors affecting the safety perception of commercial pilots is quantitative. The population used in this research was recruited from a commercial airline in Thailand, consisting of 227 pilots. A calculated sample from Taro Yamane's table, at a 95% confidence level and a 5% tolerance level from a calculated formula, had resulted in a total of 145 pilots.

The researcher studied and researched various variables of factors involved in this research's topic ranging from conceptual documents, academic theory, manuals, to both domestic and international research related to factors affecting the safety perception of commercial pilots to create and develop the questionnaire. Furthermore, the researcher followed recommendations from a counselor and 3 experts to consider the validity using the Index of the item-Objective Congruence; IOC. Then, the reliability was confirmed using Cronbach's Alpha Coefficient by conducting a survey on a group of 30 participants. The result demonstrated a 0.88, meaning that the questionnaire was highly reliable (Ursachi et al., 2015). The questionnaire can also be further used to collect data. The data collection will take place between June 2020 to August 2020, which consist of 4 parts as follows:

Part 1: Questions concerning gender, age, education level, marital status, working position, aircraft fleet, and working experience of the commercial pilots.

Part 2: Questions concerning the company's safety policy, the company's operational norms, fatigue, communication, education and training, and environmental factors outside the organization that affect the safety perception of the commercial pilots.

Part 3: Questions concerning the level of safety perception.

Part 4: Open-ended questions to find out other factors that may affect the safety perception of commercial pilots and other recommendations.

Data Analysis

This study was divided into two analytical parts consisting of general analysis and hypothesis analysis. The researcher implemented descriptive statistics, namely, frequency, percentage, mean, standard deviation, and inferential statistics, which consist of a t-test for independent samples One-way Analysis of Variance, ANOVA. Besides, the researcher also examined the relationship between the variables by using Pearson's correlation coefficient analysis and multiple linear regression analysis.

4. Results and Discussion

Part 1 Preliminary analysis of the sample

The majority of the respondents were commercial pilots of a commercial airline. Out of 145 respondents, 130 were male, which is equivalent to 89.66%. 70 respondents or 48.28% were in the age range of 31-40 years. Most of them (117 respondents or 80.69%) had a bachelor's degree. 79 people, or equivalent to 54.48%, were married. 85/117 or 58.62% were first officers. Among them, 107 participants were flying aircraft type A, equivalent to 73.79%. Lastly, their working experience was mostly between 4-10 years, accounting for 62 participants or 42.76%.

Part 2 Analysis results to test the hypothesis

Hypothesis 1: The comparison of safety perception level of the commercial pilots based on gender, age, education level, marital status, working position, aircraft fleet, and working experience had no difference in the safety perception level at a statistically significant level of 0.05.

Hypothesis 2: According to the analysis of multiple regression analysis, the result concluded that the factors affecting the safety perception of the commercial pilots consisted of the company's safety policy and the company's operational norms at a statistically significant level of 0.05.

The conceptual framework of the analysis of 7 variables consisted of 6 independent variables, namely, the company's safety policy, the company's operational norms, fatigue, communication, education and training, and environmental factors outside the organization, and a dependent variable; the safety perception of the commercial pilots. The analysis of the relationship between the variables found that all 6 independent variables were associated with the dependent variable regarding the safety perception at a statistically significant level of 0.05. The independent variables that most associated with the safety perceptions were the company's operational norms ($r = 0.710$, $p < 0.001$), which showed a positive relationship, followed by the company's safety policy ($r = 0.631$, $p < 0.001$) that also showed a positive relationship. The least correlated factors was fatigue ($r = -0.252$, $p = 0.001$), which showed a negative relationship. The finding concluded that the independent variables and dependent variables are well correlated.

Besides, the results of the analysis found that various factors were statistically significantly correlated at the level of 0.05 for every pair. The most highly correlated independent variables were the company's operational norms and communication ($r = 0.691$, $p < 0.001$) whereas the least correlated independent variables are environmental factors outside the organization and fatigue ($r = -0.202$, $p = 0.007$).

As a result, the relationship between independent variables constitutes not more than 0.80. Therefore, this analysis has no problem with multicollinearity (Hair, Black, Babin & Anderson, 2010). Moreover, it is appropriate to continue to analyze the multilateral regression coefficient.

Table 1 Correlation coefficient between variables of factors affecting the safety perception of commercial pilots and the level of safety perception of commercial pilots.

independent variables	1	2	3	4	5	6	7
1. Company's safety policy	1.00						
2. Company's operational norms	.631*	1.00					
3. Fatigue	.710*	.639*	1.00				
4. Communication	-.252*	-.262*	-.328*	1.00			
5. Education and training	.478*	.541*	.691*	-.316*	1.00		
6. Environmental factors outside the organization	.560*	.518*	.667*	-.331*	.680*	1.00	
	.369*	.416*	.409*	-.202*	.390*	.572*	1.00

Notes: $p < 0.05$

Multiple linear regression coefficients analysis using all independent variables to predict simultaneously (Enter method) found that the 6 factors, which include company's safety policy, company's operational norms, fatigue, communication, education and training, and environmental factors outside the organization, were associated with the variable related to the safety perception of the commercial pilots ($R = 0.757$) and can predict the safety perception at 57.40% with $R^2 = .574$ (adjusted $R^2 = .550$) The six factors are considered to predict a level of moderate to high safety perception and statistically significant at the level of 0.05 ($F = 30.93$, $p < 0.001$). The analysis results are shown in Table 2.

Table 2 The result of multiple regression analysis

R	R ²	adjusted R ²	SE	F	p
.757	.574	.555	0.35	30.93*	.000

Notes: $p < 0.05$

According to the analysis, at least one independent variable predicts the variable accordingly. Therefore, it is necessary to determine which independent variable influences the variable accordingly. The

consideration of the multiple linear regression coefficients of factors affecting the safety perception of commercial pilots found that two factors affect the safety perception of commercial pilots, which the explanations are as follows:

1) The company's safety policy has a positive influence on the safety perception of commercial pilots at the statistically significant level of 0.05. ($\beta = 0.300, p < 0.001$), meaning that, if the pilots recognize more about the company's safety policy, the safety perception will be increased.

2) The company's operational norms have a positive influence on the safety perception of commercial pilots at the statistically significant level of 0.05. ($\beta = 0.512, p < 0.001$), meaning that, if the pilots recognize more about the company's operational norms, the safety perception will be increased.

Table 3 The influence coefficient of independent variables on dependent variables

independent variable	b	SE	β	t	p
a (Constants variables)	-0.41	0.46		-0.90	.372
Company's safety policy	0.42	0.11	.300	4.00*	.000
Company's operational norms	0.59	0.10	.512	5.69*	.000
Fatigue	0.00	0.04	.002	0.03	.974
Communication	-0.13	0.07	-.151	-1.78	.078
Education and training	0.20	0.11	.167	1.85	.066
Environmental factors outside the organization	0.00	0.07	-.001	-0.01	.989

Notes: $p < 0.05$

5. Conclusion

Regarding the research on the factors affecting the safety perception of the commercial pilots, below are the discussion of the results by sections.

The respondents' personal information: After comparing the level of the safety perception of commercial pilots as classified by their personal information, the result concluded that the pilots with different personal characteristics such as gender, age, education level, marital status, working position, aircraft fleet, and working experience had no difference in the safety perception level, which corresponds to the research on Safety awareness. Furthermore, the effect on the safety behavior in work of operation workers of Polyfoam Group Co., Ltd. (Sutarrom & Nurittamont, 2018) mentioned that people with different demographic characteristics such as gender, age, education level, work experience, received safety training, and accidents in work have no difference in the safety behavior of the employees at the operating level.

The company's safety policy: The results of the analysis demonstrated that the company's safety policy affected the safety perception of the commercial pilots. Overall, the pilots had the highest level of perception of the company's safety policy, which corresponds with the regulations of The Civil Aviation Authority of Thailand. Moreover, they prioritized the safety policy as required for all airlines to have a safety policy to ensure that everyone within the organization is informed. CAAT also established a state safety policy to determine the intention, direction, vision, and state safety mission. It identifies important and necessary approaches to safety management that are clearly reflected in practice (Civil Aviation Authority of Thailand, 2019). Besides, the result also corresponds to the research on the Implementation of Occupational Safety and Environment Policy of Kanemitsu Pulley Co., Ltd (Santimit & Wongtong, 2018), as described in the result section. The relationship of the factors involved in implementing the policy concluded that the clarity of the policy objectives positively related to the implementation of the policy as well as the success of achieving the policy implementation objectives. It can be determined that the employees will undergo implementation and follow the organization's safety policy.

Company's operational norms: The results of the analysis showed that the company's operational norms affected the safety perception of commercial pilots. Overall, the pilots had the highest level of perception of the company's operational norms, which corresponds to the Theory of Reasoned Action (TRA) by Icek Ajzen in 1985 that was developed from the Theory of Planned Behavior (TPB). The theory can be described as a Subjective Norm and is one of the factors that affect human behavior. The result also

corresponds to the research on the Perception of the Organizational Climate and Organizational Citizenship Behavior of the Department of Human Resources and Compliance, Thai Airways International Public Co., Ltd (Srisirarak & Pasunon, 2016). The findings were described as an influential organizational climate with a positive influence on the organization's good membership behavior. It, in turn, will support the organization to achieve its goals as well as maintain a good working environment.

The researchers found that the factors that affect the safety perception of the commercial pilots were the company's safety policy and the company's operational norms. Further researches are recommended as follows.

1) Study the safety perceptions of other types of pilots, such as military pilots, personal pilots, or helicopter pilots. The different types of pilots may have different corporate cultures and different practices.

2) Study the guidelines to promote the safety policy that should be taken as a model for the organization.

3) Study the guidelines to help establish the norms for good flight practice.

Lastly, the factors affecting safety perceptions with the sample being commercial pilots of one airline found in this study were from the samples of only one airline, the results may not cover every commercial pilot of other airlines due to their different corporate cultures and different practices.

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“Like What?” for Jazz Orchestra: A Creative Research in Music Composition

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Abstract

Like What? for Jazz Orchestra is creative research in music composition. This project aims to juxtapose different post-bop jazz musical concepts combining upper-structure triads, pentatonic scales, constant structure, irregular pulses, and polyrhythmic texture. It derives from the post-modernism trend with the knowledge to use and combine jazz harmonic and rhythmic tools available through history. The composition was orchestrated for a jazz orchestra, or in other words, a jazz big band. The length of the composition is approximately 7 minutes. The piece was performed by several ensembles such as Siam Jazz Orchestra (Euprasert, 2018), Thailand All-Star Jazz Orchestra (Euprasert, 2017a), Fu Jen Big Band (Euprasert, 2017b), Taipei Jazz Orchestra (Euprasert, 2016), and Ruamsmai National Youth Big Band (Euprasert, 2015). The composition was published by Jazz Education Abroad, USA.

Keywords: *jazz orchestra, music composition, jazz composition, jazz harmony*

1. Introduction

As jazz scholarship progresses, various knowledge, techniques, and secrets behind jazz historical musical artworks have become commonly available to today's artists. Jazz musicians now have been trained to be able to execute and appreciate different musical tools that had been used and developed by their jazz predecessor throughout the whole twentieth century. Also, with this handful of knowledge, we cannot help but experiment with our knowledge by combining different musical methods and create such a rich history and rich musical knowledge-based musical artworks. In the era of gigantic information and big data, the trend of post-modernism within our jazz field has been flourishing.

Since post-modernism is still one of the important trends in jazz, the researcher cannot look away from this high potential musical opportunity. In this creative research project, the author composed a new musical composition using various jazz composition techniques and knowledge available in his arsenal. The piece is a post-modernism collaging between harmonic tools and rhythmic tools under the umbrella of jazz style. The format for this creative research is a composition for a jazz orchestra, or in other words, a big band. The piece has been performed by several ensembles such as Siam Jazz Orchestra (Euprasert, 2018), Thailand All-Star Jazz Orchestra (Euprasert, 2017a), Fu Jen Big Band (Euprasert, 2017b), Taipei Jazz Orchestra (Euprasert, 2016), and Ruamsmai National Youth Big Band (Euprasert, 2015). Taipei Jazz Orchestra released the recording of *Like What?* in 2019 (Euprasert, 2019).

2. Objectives

The objectives of this research are to contribute to the repertoire of jazz orchestras by composing an original work using a post-modernism approach and to compose an original work for professional ensembles.

3. Materials and Methods

Like What? is based on various compositional techniques from different points and corners in jazz history. The composition is a juxtaposition between these concepts and placed carefully next to each other to create a united jazz compositional structure in a post-modernistic manner. The researcher split the methodology into two stages (1) scouting and preparing harmonic and rhythmic compositional materials and (2) composing stage.

3.1 Musical Material Preparation

3.1.1 Gather information regarding harmonic and rhythmic tools available in jazz in the twentieth century through recordings, scores, books, and articles

3.1.2 Select and pair harmonic and rhythmic tools to be a collage with each other and look for the possibility to create the composition out of the materials on hands

3.1.3 Study post-modernism and collage techniques in jazz to be used in the composition

3.2 Compositional Method

3.2.1 Conceptualize and select compositional techniques

3.2.2 Materialize the composition by composing the piece

3.2.3 Appropriately select musicians to perform the composition

3.2.4 Assign the solo improvisation roles to the selected chairs of the band

3.2.5 Rehearse with the band and make some minor adjustment to the score if necessary

3.2.6 Perform the original composition

3.2.7 Complete the written research document based on the composition

4. Results

This creative research juxtaposes various concepts from different parts of the jazz tradition through materials in the piece: melodic materials, harmonic materials, and rhythmic materials. Concepts in these materials were invented and used in different decades and different groups of musicians. *Like What?* has the post-modernism characteristics in the piece through the unification of musical concepts originated from multiple parts of jazz history. The creative process is to connect these musical fragments from different historical backgrounds and chronological locations into a composition. The analysis will go through the form of the piece (Table 1).

4.1 Main Melody

Like What? consists of four melodic concepts: constant structures, pentatonic, diminished scale, and polychords arpeggiation. These concepts could happen separately or simultaneously depending on the musical appropriation. The main theme is in a modified minor blues form (Example 1).

The main theme is 18-measure long with two sections, 12 measures and 6 measures. The first part (mm. 9-20) can be easily distinguished as the main theme, while the second part (mm. 21-26) can function dually as another part of the main theme and the transition to the next section of the grand scale of the composition.

The first part of the main theme can be divided into 4 phrases. The first two phrases (mm. 9-11 and mm. 12-14) are each 3-measure long accompanied by an only jazz-funk groove from the drums. The first measure is the actual melodic phrase followed by two measures of drums solo fills.

The first phrase carries the first five notes of D and C-flat (B) major scales. The shape of the melodic cell starts in the D tonality then maintains its shape to be on B tonality creating the same structure and polytonality (Example 2).

The second phrase is similar to the first one. There are two melodic cells within the phrase, but this time, they do not create the constant structure nor polytonality. This time the phrase is in the octatonic scale or diminished scale in jazz term. The first cell of the second phrase outlines A13b9 while the second cell outlines C13#11 (no 9th). Superficially this seems to be polytonality but they both convey the A half-whole diminished scale (Example 3).

The melody continues with the arpeggios of D and Gm7 then lands and holds on the 7th degree of the next chord Emaj7#11 which is Eb (D#). The counter-melody comes in Eb minor pentatonic as the D# was held. At this point, it shows the combination of Eb minor pentatonic on top of bass E can give us an E Lydian modality (Example 4).

Table 1 Form

Hypermeter	Idea/Musical Event	Measure	Rehearsal Mark
Introduction	Tempo 126 bpm, Time Signature 4/4, Drums alone set the main groove, jazz-funk.	1-8	N/A
Main Theme (Head-in)	The main theme is played in unison by the top half of the saxophone section, the top half of the trumpet section, and the pitched rhythm section in the modified extended minor blues form. The theme is played conservatively with drums fill-ins, countermelody from lower horn sections, and background pads by the trombone section.	9-20	A
Transition	Drums maintain 4/4 jazz-funk groove, while the rest of the band play 10/16 or (2+3+2+3)/16 chordal punches creating the polyrhythmic feeling of 10/16 or (2+3+2+3)/16 over 4/4.	21-26	B
Transition	Drums maintain 4/4 jazz-funk groove, while the rest of the band play 10/16 or (2+3+2+3)/16 chordal punches creating the polyrhythmic feeling of 10/16 or (2+3+2+3)/16 over 4/4.	21-26	B
Improvisation	Piano solo (with the optional 1 st tenor saxophone) over the modified extended minor blues form. The modification uses Lydian and a fully-diminished modality instead of the traditional bVI7#11-V7alt-i turnaround at the end of the form, which makes the form consist of 14 bars instead of 12 bars.	27-40	C
	The solo continues with background and countermelody sparsely played by the horn section.	41-54	D
Tutti	Saxophone unison exchanges melodic conversation with brass unison. These two rehearsal marks occasionally have chordal pads and harmonized kicks from the brass section.	55-83	E-F
	Drums solo with tutti punches from the whole ensemble. The whole ensemble plays thick chordal rhythmic kicks while the drums solo around the kicks.	84-100	G
	Open drums solo until the cue	101-108	H
The Return of the Main Theme (Head-Out)	Exactly the same as rehearsal mark A.	109-120	I
Ending	Using the same materials from the transition (rehearsal mark B) but extends the end to set for another brief drums solo before the last chord as the ending.	121-130	J

9 *f* N/C

12 N/C

15 Emaj7(#11) Cm

18 Emaj7(#11) Dmaj7(#11) Cmaj7(#11) G/Ab

21 C/D \flat D \flat /E \flat B \flat /C C/B \flat D \flat /C B \flat /A \flat C/D \flat D \flat /E \flat B \flat /C C/B \flat

23 D \flat /C B \flat /A \flat C/D \flat D \flat /E \flat B \flat /C C/B \flat D \flat /C B \flat /A \flat C/D \flat

25 D \flat /E \flat B \flat /C C/B \flat D \flat /C E \flat /D \flat

Example 1 The main theme and transition of *Like What?*

9 *f* N/C

Example 2 Pentatonic cells in constant structure in D and B

14

Alto 1

Alto 2

Tenor 1

Tenor 2

Bari. Sax.

Tpt. 1

Tpt. 2

Tpt. 3

Tpt. 4

Tbn. 1

Tbn. 2

Tbn. 3

B. Tbn.

Gtr.

Pno.

Bass

Dr.

E Δ (#11)

Example 4 E \flat pentatonic minor on top of E Lydian

Gtr.

Pno.

Bass

$E_{\Delta}(\sharp 11)$ $D_{\Delta}(\sharp 11)$ $C_{\Delta}(\sharp 11)$ G/A_{\flat}

Example 5 Constant structure on Lydian modality, three over four, and diminished scale and modality

21

C/D_{\flat} D_{\flat}/E_{\flat} B_{\flat}/C C/B_{\flat} D_{\flat}/C B_{\flat}/A_{\flat} C/D_{\flat} D_{\flat}/E_{\flat} B_{\flat}/C C/B_{\flat} D_{\flat}/C B_{\flat}/A_{\flat} C/D_{\flat} D_{\flat}/E_{\flat} B_{\flat}/C

mp

24

C/B_{\flat} D_{\flat}/C B_{\flat}/A_{\flat} C/D_{\flat} D_{\flat}/E_{\flat} B_{\flat}/C C/B_{\flat} D_{\flat}/C E_{\flat}/D_{\flat}

sfz p

Example 6 The 10/16 or (2+3+2+3)/16 over 4/4

C/D \flat D \flat °maj7 Whole-Half Diminished Scale
 D \flat /E \flat E \flat 9(sus4) Mixolydian
 B \flat /C C9(sus4) Mixolydian
 C/B \flat B \flat maj9(#11) Lydian
 B \flat /A \flat A \flat maj9(#11) Lydian
 E \flat /D \flat D \flat maj9(#11) Lydian
 D \flat /C C(sus4 \flat 9) Phrygian

Example 7 Polychord formula and their related modes or scales

27 C Cm Piano solo

31 Fm Cm

35 $E_{\Delta}(\#11)$ $D_{\Delta}(\#11)$ $C_{\Delta}(\#11)$ G/A_{\flat}

39 C/D_{\flat} On Cue

Example 8 The solo form and harmony

4.3 Ensemble Playing and Shout Chorus

The background eventually takes over the solo and enters the ensemble playing section. The form and the chord progression are still the same as the solo section. The bass and drums keep the accompanying roll throughout the ensemble playing section (mm. 55-82). The rest of the ensemble divides into two groups, in which the first group consists of alto saxophones, tenor saxophones, guitar, and right-hand piano and the other group consists of baritone saxophones, trumpets, trombones, and left-hand piano. The two groups exchange some musical conversations and create call and response textures.

During the minor chords, Cm and Fm that were preserved from typical minor blues form, the melodic materials playing over them are in pentatonic minor. The melodic materials adjust accordingly to the major 7th #11 chords with Lydian modes as well as when the diminished-major 7th chords appear, the melodic material changes to whole-half diminished scales.

In mm. 79-82, the instrumentation grouping changes and stirs the texture up to launch to the tutti shout chorus in mm. 83-100, which focuses mainly on rhythmic hits. The whole ensemble hits the rhythmic figures together as tutti in forte dynamic. These hits leave rooms for the drums to fill in. Thus, this section also functions as drums soloing section with chordal rhythmic hits by the whole ensemble. The drums eventually take over the whole ensemble in rehearsal mark H, which turns to be an open drums solo section without any accompaniment.

4.4 Melody Out and Ending

The main melody returns in rehearsal mark I after the drums solo. Followed by the transitional material with the 10/16 or (2+3+2+3)/16 over 4/4 in rehearsal mark J. A fragment from the main theme returns briefly afterward launching a brief drums solo and ends the piece with the big last chords afterward.

1. Discussion

The author surveyed different jazz harmonic and rhythmic tools and experimented with selected musical-tool candidates by pairing them and juxtaposing them to come up with a perfect solution, resulting in this composition, *Like What?* The tools used in this main melody section are constant structures, pentatonic, diminished scale, and polychords arpeggiation. The rhythmic tools are polyrhythm of 10/16 or (2+3+2+3)/16 over 4/4 and a funky groove appears in the transition toward the end of the main melody section.

The author employs a minor blues form with some modifications by changing from measure 9 of the form to a constant structure harmony, followed by upper structure triads on the whole-half diminished

scales. Instead of having a total of 12 measures like a typical minor blues form, the author expands the solo form to 14 bars. The solo instrument choice is piano with instrumental substitutions as tenor saxophones or guitar.

The ensemble playing divides the band into two groups and has them exchange musical activities in a call and response fashion. The grouping of instrumentation scrambles mid-way and evolves into a full tutti texture in a shout chorus manner. The shout chorus focuses on hitting the rhythmic figures in a forte dynamic which gives opportunities for the drums to fill in and that is turned into a quasi-drums solo and enters to a full unaccompanied drums solo.

2. Conclusion

The Creative research, *Like What?* was derived from the post-modernism trend with the knowledge to use and combine jazz harmonic and rhythmic tools available through history. The composition is orchestrated for a jazz orchestra, or in other words, a jazz big band. The length of the composition is approximately 7 minutes. The piece has been performed by several ensembles such as Siam Jazz Orchestra (Euprasert, 2018), Thailand All-Star Jazz Orchestra (Euprasert, 2017a), Fu Jen Big Band (Euprasert, 2017b), Taipei Jazz Orchestra (Euprasert, 2016), and Ruamsmai National Youth Big Band (Euprasert, 2015). Taipei Jazz Orchestra released the recording of *Like What?* in 2019 (Euprasert, 2019). The composition was published by Jazz Education Abroad. This creative research, *Like What?* expands the jazz existing tools and composition approaches as well as stretches the boundary of jazz compositional vocabulary and merging jazz elements from different points in time. By combining available musical substances, these musical experimental reactions produce new substances to be used and keep being experimented with in the future.

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Digital Marketing Strategy and Implementation of the Tools in Food and Beverage Services: Case Study of Sole Proprietorship in the Bangkok and Metropolitan Region of Thailand

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Abstract

Thanks to the change of the lifestyle towards the digitalization of Thai people, digital marketing is known as one of the well-known marketing strategies that can be used to increase a firm's sales by promoting products and services through digital media and customers' responsiveness. Nevertheless, business owners must learn to adapt digitalization to achieve their business successfully. For this reason, this research aims to study (i) the knowledge of digital marketing strategy of sole proprietorship in food and beverage services, (ii) their implementation of the tools of digital marketing, (iii) the relationship between digital marketing strategy knowledge and the implementation of digital marketing tools, and (iv) the problem and barriers of implementation of the tools of digital marketing. Data were collected from a sample of 310 sole proprietors aged 18 years and above in the Food and Beverage Services located in the Bangkok and Metropolitan Regions. In-depth interviews were conducted with ten respondents in this study. Descriptive statistics, including frequency, percentage, means, and standard deviation, were employed for the analysis. The hypothesis test was conducted by using a T-test, one-way ANOVA, and Pearson's product-moment correlation coefficient. According to the results, it was found that the sole proprietors' digital marketing strategy knowledge was regarded as high to moderate levels. In contrast, the implementation level of digital marketing tools was at low to moderate levels. The knowledge of digital marketing strategy was positively correlated with the implementation of digital marketing tools at the moderate level. The in-depth interviews revealed that the most critical barrier to food delivery application platforms is a high commission fee charged by food delivery application providers, which enormously deducts from their food and beverage sales.

Keywords: *Marketing Strategy, Digital Marketing, Tools of Digital Marketing*

1. Introduction

The Thai population aged six years and above was approximately 63.6 million in 2019, 25.3 percent of the Thai people aged six years and above were computer users, and 66.7 percent of them were internet users. During 2015-2019, computer users had decreased from 34.9 percent to 25.3 percent whereas internet users had increased from 39.3 percent to 66.7 percent (National Statistical Office, 2019). Thai people use the internet, with an average of 10 hours and 22 minutes per day, due to changes in their lifestyle towards digitalization. Thais prefer to use social media such as Facebook, Instagram, Twitter, and Pantip (a popular Thai website and discussion forum) up to 3 hours 30 minutes per day, whereas watching video streaming such as YouTube or Line TV has an average hour of use. The average usage of chat applications such as Messenger and LINE is 2 hours 35 minutes per day, online gaming is 1 hour 51 minutes per day, and reading articles or books online is 1 hour and 31 minutes a day. The top five online activities are messaging, hotel bookings, ticket reservations or purchases, payments for goods and services, and watching movies or listening to music, respectively (Electronic Transactions Development Agency, 2019). Several studies showed that there are opportunities to implement digital strategies for all businesses to gain revenues due to the high growth of buyers' online shopping through the internet and mobile phone applications (Marketing oops, 2019). A survey of Electronic Transactions Development Agency (ETDA) also found that the online purchase of food and beverages had increased from 26.5 percent in 2019 to 49.8 percent in 2020 (Electronic Transactions Development Agency, 2020). The rapid growth of consumer's use of the internet and mobile phone applications creates an opportunity for any business to generate sales through digital marketing strategies.

Various researchers have defined the terms *digital marketing* and *digital marketing strategy* differently. For some, a digital marketing strategy is a series of actions that helps businesses to use online marketing channels to achieve their goals (Strom, 2020). Digital marketing is the marketing of products or services using digital technologies such as the internet, social media, mobile phones, or any other digital medium. It also covers different marketing strategies such as social media marketing, search engine optimization (SEO), and e-mail marketing (Kwok, 2018). A digital marketing strategy is a set of planned actions performed online to reach specific business goals. Those actions are taken consistently and timely through the most appropriate online channels to increase revenue and improve customer relationships (Sendpulse, 2020). Cravens and Piercy (2009) defined that the marketing strategy consists of the analysis, strategy development, and implementation of activities. The activities are comprised of developing a vision about the market of interest to the organization, selecting market target strategies, setting objectives, developing, implementing, and managing the market program positioning strategies designed to meet the value requirements of the customers in each market target. Rowan (2002) also identifies that digital marketing is more than simply adding website addresses to television commercials or sending customer service text messages. Digital networks are beginning to connect consumer's computers to their televisions, phones, and game consoles. Business customers see the bottom-line profit benefits of free-flowing information between their company, suppliers, and customers.

Bang and Hell (2015) found that social media can contribute to a firm's competitive position as long as the firm has a well-established network and has sufficient platforms to utilize before the implementation. Social media can also increase brand awareness among business-to-business (B2B) companies. Khankaew (2019) discovered that digital marketing strategy in content marketing and online corporate reputation management had a positive correlation and impact on marketing performance and also on relationships between buyers and sellers. Online corporate reputation management strategy had a positive correlation and impact on brand awareness. Brand awareness and relationships between buyers and sellers had a positive correlation and impact on marketing performance. Furthermore, Patrutiu-Baltes (2016) proposed the study of inbound marketing. They indicated that the most important digital marketing strategy, the main form of digital marketing, was the inbound marketing, which represents an organic marketing form, based on the close relationship between the company and its prospects or customers, who have expressed their interest in the company's products voluntarily and who have been attracted and involved by a high quality of the content marketing.

Digital marketing tools (sometimes called internet marketing, online marketing, or electronic marketing) are tools that businesses use to develop and promote their products and services via the internet. The popular tools for online marketing consist of blog marketing, affiliate marketing, classified and webboard marketing, email marketing, social network marketing, mobile marketing, video marketing, and search engine and blog marketing (Apikulwarasit, 2017). Digital marketing tools by the strategy are organic social media, paid social media, email marketing, display retargeting, programmatic advertising, website testing, video hosting, content creation, content curation, website analytics, customer service, search engine optimization, affiliate marketing (Barnhart, 2020). Not all digital marketing tools are suitable for all types of businesses. Kongthananon and Kamthornpasinee, 2017 stated that for the food and beverage business, key factors that lead to success in sales besides taste and service are also comprised of how to create brand stories such as shop decoration, signature dishes, photo spots, and other selling points. The suitable digital marketing tools for the food and beverage business are social media marketing by using Facebook, Instagram, and also another tool as Google my business. In this research, questionnaires concerning the digital marketing tools focus on popular and well-known tools in Thailand. They are divided into three groups: social media marketing, website and search marketing, and food delivery mobile application.

Most of the research studies focus on consumer behavior and have consistent findings that consumers nowadays are very interested in and perceived information through digital media. Therefore, this research aims to study the relationship between digital marketing strategy knowledge and the implementation of digital marketing tools, which can be used to increase a firm's sales by promoting products and services via digital media and customers' responsiveness.

2. Objectives

This research aims to study as follows:

1. The knowledge of digital marketing strategy of sole proprietorship in food and beverage services,
2. The implementation of the tools of digital marketing of sole proprietorship in food and beverage services,
3. The relationship between digital marketing strategy knowledge and the implementation of digital marketing tools of sole proprietorship in food and beverage services, and
4. The problem and barriers of implementing digital marketing tools of sole proprietorship in food and beverage services.

3. Materials and Methods

This study used mixed methods; the quantitative survey method was used to collect data and test hypotheses, while qualitative in-depth interviews were used to increase the reliability of the data. There was no data from any organization for the number of sole proprietorships in food and beverage services in Thailand, so the authors used the sample size formula for the unknown population as follows:

$$n = p(1-p) \frac{(Z)^2}{e^2}$$

Where:

Z = Z value (=1.96 for 95% confidence level)

p = percentage picking a choice (=0.5)

e = confidence interval (=0.0557)

So, sample size, n = 310

Bång and Hell (2015) mentioned that qualitative interviews aim to give flexibility and a deeper discussion in the subject area. Qualitative interviews also contain open questions to ask the interviewee to answer in greater detail and with their own words. It is closely connected to the descriptive research design, and it takes the interviewees' view of the topic and enables the questions how and why that are asked in this study to be answered more deeply. For this study, ten key informants were selected using a purposeful random sampling method with a small sample selection instead of large samples to increase the reliability of the data, as mentioned above. They were of the selection criteria that they could facilitate the answering of the research questions and that the characteristics of the actively chosen sole proprietorships had some sort of connection to the digital marketing strategy.

Descriptive statistics, including frequency, percentage, means, and standard deviation, were employed for the analysis. The hypothesis test was conducted by using a T-test, one-way ANOVA, and Pearson's product-moment correlation coefficient.

The questionnaire consisted of 5 sections; Sections 1-4 were close-ended questions, and Section 5 was an open-ended question.

More specifically, section 1 of the questionnaire consisted of 6 questions of demographic factors such as gender, age, education, income or sale per month, business location, and type of product for sale of sole proprietorship in food and beverage services.

Section 2 consisted of 20 questions on a 3-choice scale with 1 for 'true,' 2 for 'not true,' and 3 for 'not sure.' The scoring was 1 point per correct answer and no point for incorrect or not sure answer. The highest score for each sample was 20, and the lowest score was 0. The knowledge of digital marketing strategy was divided into three levels with a 6.66 size interval (finding range from the difference between the highest and lowest scores and dividing the range by the number of knowledge levels). The high-level score was between 14-20, the moderate level score was 7-13, and the low-level score was 0-6.

Section 3 used 11 questions on a 4-point scale with 0 for 'never use' and 3 for 'most use' to measure the implementation of the digital marketing tools that were divided into three categories; (i) website/search Marketing, (ii) social media marketing, and (iii) food delivery application. Levels of the implementation of the tools were divided into four levels with a 0.75 size interval (finding range from the

difference between the highest and lowest scores and dividing the range by the number of the implementation levels). The very high-level score was 2.26-3.0, the high-level score was 1.51-2.25, the moderate level score was 0.76-1.50, and the low-level score was 0.00-0.75.

Section 4 focused on the problem and barriers to the implementation of the tools of digital marketing

by using six questions on a 3-choice scale with 1 for ‘true,’ 2 for ‘not true,’ and 3 for ‘not sure.’

Section 5 was an open-ended question.

Ten in-depth interviews were conducted in this study for a qualitative research method. These samples were chosen by the researcher using the purposeful random sampling method. The questions focused on their current use of digital marketing, the problem and barriers to the implementation of the tools of digital marketing, and their need or suggestion for the service providers and also any stakeholder such as the regulators.

There were three hypotheses of this study: (i) the sole proprietors’ knowledge of digital marketing strategy was different due to their demographic factors, (ii) the sole proprietors’ implementation of the tools of digital marketing was different due to their demographic factors, and (iii) there was a relationship between the knowledge of digital marketing strategy and the implementation of digital marketing tools of the sole proprietorship in food and beverage services. Hypotheses 1-2 were tested by using a T-test and one-way ANOVA, whereas hypothesis 3 was proved by using Pearson’s product-moment correlation coefficient.

4. Results and Discussion

4.1 The knowledge of digital marketing strategy of sole proprietorship in food and beverage services.

The research found that 91.3% of the sole proprietor samples knew that at present, there was a rapidly growing number of food delivery businesses such as Line Man, Grab Food, and Food Panda, and the consumers had been increasingly using them. 84.8% knew that creating a brand story such as shop decoration, signature dishes, photo spots, and other selling points could increase their sales, and 78.4% knew that in addition to posting a video for promotion, they could also make money from social media such as the YouTube channel.

Overall, it was found that most of the sole proprietor samples had the knowledge of digital marketing strategy at a high level (46.5%), followed by a moderate (40.6%) and a low (12.9%). Table 1 summarizes this finding.

Table 1 The knowledge level of digital marketing strategy

Knowledge Level	number	%
High (14-20 score)	144	46.5
Moderate (7-13 score)	126	40.6
Low (0-6 score)	40	12.9
Total	310	100.0

4.2 The implementation of the digital marketing tools

Table 2 shows that most sole proprietorships had used food delivery application with a mean of 1.52, followed by social media marketing with a mean of 1.06, while the lowest was website and search marketing with a mean of 0.95.

Table 2 The implementation of the tools of digital marketing

Implementation of the tools	Mean	SD
Website and search marketing	0.95	1.11
Social media marketing	1.06	1.14
Food delivery application	1.52	1.35

Table 3 shows that most sole proprietorships had a low level of implementing the tools of digital marketing (45.8%), followed by a moderate level (21.9%), a high level (16.8%), and a very high level (15.5%).

Table 3 The level of the implementation of the tools digital marketing

Implementation Level	number	%
Very high (2.26-3.00 average score)	48	15.5
High (1.51-2.25 average score)	52	16.8
Moderate (0.76-1.50 average score)	68	21.9
Low (0.00-0.75 average score)	142	45.8
Total	310	100.0

4.3 Hypothesis Testing

4.3.1 The sole proprietors' knowledge of digital marketing strategy was different due to their different demographic factors.

The result of the hypothesis testing found that there was no statistically significant difference between males and females in the knowledge of digital marketing strategy with Sig. equal .547, as shown in Table 4.

Table 4 The difference in knowledge of digital marketing strategy in terms of gender

Gender	Mean	SD	t	Sig.
Male	11.6111	4.41076	.363	.547
Female	12.1881	4.25485		

There was a statistically significant difference in the knowledge of digital marketing strategy between those aged 21-30 years and 51-60 years. The finding is shown in Table 5.

Table 5 The difference in the knowledge of digital marketing strategy in terms of age

Age (years old)	Mean	SD	F	Sig.	Pair Comparison (Scheffe)
(1) 15-20	12.6667	2.16025	3.705	.003	(2) and (5)
(2) 21-30	13.3095	3.15837			
(3) 31-40	12.1509	4.26903			
(4) 41-50	11.1970	4.70424			
(5) 51-60	10.3810	5.19828			
(6) more than 60	9.8333	4.53505			

There were two pairs of statistically significant differences in the knowledge of digital marketing strategy between the upper-undergraduate degree level and the lower-undergraduate degree level and between the undergraduate degree level and the lower-undergraduate degree level, as shown in Table 6.

Table 6 The difference of knowledge of digital marketing strategy in terms of education

Education	Mean	SD	F	Sig.	Pair Comparison (Scheffe)
(1) Lower undergraduate	10.0138	4.63829	36.482	.000	(3) and (1),
(2) Undergraduate	13.5442	3.15844			(2) and (1)
(3) Upper undergraduate	15.1667	2.25571			

The testing also found a statistically significant difference in the knowledge of digital marketing strategy between the incomes or sales per month of 30,001-60,000 baht and lower than 30,000 baht. The finding is shown in Table 7.

Table 7 The difference in the knowledge of digital marketing strategy in terms of income or sales per month

Income/Sale per month (Baht)	Mean	SD	F	Sig.	Pair comparison (Scheffe)
(1) Lower than 30,000	11.0127	4.72037	3.740	.003	(2) and (1)
(2) 30,001 – 60,000	12.9886	3.50531			
(3) 60,001 – 90,000	13.2222	4.35635			
(4) 90,001 – 120,000	12.6471	2.99877			
(5) 120,001 – 150,000	11.0000	2.12132			
(6) More than 150,000	14.0000	2.58199			

In conclusion, the result of hypothesis testing one found that three demographic factors led to statistically significant differences in the knowledge of digital marketing strategy, namely, age, education, and income/sales per month. Although there was no statistically significant difference in gender, it was found that females had more knowledge of the digital marketing strategy than males. This finding is in accordance with the study that reported the differences in communication behavior from the gender difference, in which the females want to communicate more than the males (Subphawong, 2011).

The finding also conforms to Subphawong's (2011) study that age indicates a person's ability to understand content and news, as well as to perceive things. An experience of each age group affects their thought processes and emotional control. The results of the study showed that the population aged between 21-30 years had the highest mean of knowledge, which was statistically significantly different from those of 51-60 years old.

4.3.2 The sole proprietors' implementation of the tools of digital marketing was different due to their different demographic factors.

The result of the hypothesis testing found that there was no statistically significant difference between males and females in the implementation of the digital marketing tools with Sig. equal .944, as shown in Table 8.

Table 8 The difference in the implementation of the digital marketing tools in terms of gender

Gender	Mean	SD	t	Sig.
Male	1.0816	.89573	.005	.944
Female	1.0522	.90404		

There were two pairs of significant differences in the implementation of the tools of digital marketing. The first pair is the difference between the ages of 21-30 years and 41-50 years. The second is the difference between the ages of 21-30 years and 51-60 years. The finding is shown in Table 9.

Table 9 The difference in the implementation of the tools of digital marketing in terms of age

Age (years old)	Mean	SD	F	Sig.	Pair Comparison (Scheffe)
(1) 15-20	1.0909	1.32241	7.258	.000	(2) and (4),
(2) 21-30	1.4372	.92208			(2) and (5)
(3) 31-40	1.1209	.78200			
(4) 41-50	.7066	.77053			
(5) 51-60	.8377	.99110			
(6) more than 60	.2424	.47296			

The testing also found two pairs of statistically significant differences in the implementation of digital marketing tools between the upper-undergraduate degree level and the lower-undergraduate degree level and between the undergraduate degree level and the lower-undergraduate degree level, as shown in Table 10.

Table 10 The difference in the implementation of the digital marketing tools in terms of education

Education	Mean	SD	F	Sig.	Pair Comparison (Scheffe)
(1) Lower undergraduate	10.0138	4.63829	36.482	.000	(3) and (1),
(2) Undergraduate	13.5442	3.15844			(2) and (1)
(3) Upper undergraduate	15.1667	2.25571			

The testing also found three pairs of statistically significant differences in the implementation of digital marketing tools between different incomes or sales per month. The first pair was 30,001-60,000 baht and lower than 30,000 baht, the second was 60,001-90,000 baht and lower than 30,000 baht, and the third was 90,001-120,000 baht and lower than 30,000 baht. The finding is shown in Table 11.

Table 11 The difference in the implementation of the digital marketing tools in terms of income or sales per month

Income/Sale per month (Baht)	Mean	SD	F	Sig.	Pair comparison (Scheffe)
(1) Lower than 30,000	.8089	.84300	6.900	.000	(2) and (1),
(2) 30,001 – 60,000	1.2521	.85333			(3) and (1),
(3) 60,001 – 90,000	1.4419	.95499			(4) and (1)
(4) 90,001 – 120,000	1.5829	.98494			
(5) 120,001 – 150,000	.5818	.69413			
(6) More than 150,000	1.4935	.42916			

The finding to the second hypothesis found that the three demographic factors; age, education, and income/sale per month, also led to a statistically significant difference in the implementation of the digital marketing tools. Almost 50% of the sole proprietorship used the tools of digital marketing at a low level, whereas 21.9% were at a moderate level.

There was a study that the digital marketing strategies for the ability to create content, organization reputation management, and brand awareness had a positive correlation and impact the marketing performance (Khankaew, 2019), which corresponds to our finding that although the use of the tools of digital marketing in average was at low to moderate levels, the sole proprietorships still mostly used social media marketing through Facebook and food delivery applications to promote their sales.

4.3.3 There was a relationship between the knowledge of the digital marketing strategy and the implementation of the digital marketing tools of the sole proprietorship in food and beverage services.

The testing showed that Pearson Correlation Coefficient was a positive number and equal to .441, which indicated a direct and moderate-level relationship between the knowledge of the digital marketing strategy and the implementation of the digital marketing tools. The result is shown in Table 12.

Table 12 The relationship between the knowledge of the digital marketing strategy and the implementation of the digital marketing tools

		Correlations	
		Knowledge	Implementation
Knowledge	Pearson Correlation	1	.441**
	Sig. (2-tailed)		.000
	N	310	310

Correlations			
		Knowledge	Implementation
Implementation	Pearson Correlation	.441**	1
	Sig. (2-tailed)	.000	
	N	310	310

** . Correlation is significant at the 0.01 level (2-tailed).

The finding to the third hypothesis revealed that there was a positive relationship between the knowledge and the implementation of the digital marketing tools. Otherwise, the result showed a moderate level of the relationship, which indicated that other factors were affecting the decision to use the tools. Factors found in the study on the issue of the problem and barriers of implementation of the tools of digital marketing are described in the next topic.

4.4 The problem and barriers of implementation of the tools of digital marketing.

The study found that more than 50 percent of the samples mentioned that the problems and obstacles in implementing the digital marketing tools were i) having a budget constraint and concerning large investments, ii) desiring to use the digital tools but not knowing how to start them, and iii) not having enough time to study digital marketing tools and not receiving any help from anyone. However, they still desired to use digital marketing tools.

These data were supported by the results of the in-depth interviews, which indicated that the most anxiety in using the tools of digital marketing was the high cost of investment and high commission fee charged by the food delivery application providers.

4.5 The analysis from In-depth interviews

In-depth interviews revealed that i) more than 50 percent of the samples joined the food delivery application services and most of them used more than one service provider, such as Food Panda, Line Man, and Grab food, ii) the satisfaction towards the food delivery application services was at a moderate level due to an increase in sales they had to trade off with the less per unit profit, and iii) the most critical barrier to food delivery application platforms is a high commission fee charged by food delivery application providers, which enormously deducts from their food and beverage sales.

All of the sole proprietorship in food and beverage services had experienced at least one of the tools of social media technology such as using Facebook or Instagram for sharing photos and posting information for the customers, and joining the food delivery application for sale.

This research was conducted during the COVID-19 situation, which was in an unusual condition. Most people kept themselves in their homes and ordered food to be delivered more than usual. Most of the sole proprietors in food and beverage services were contacted directly by a salesman of the food delivery application providers to offer and introduce their services. This situation led to a rapid increase in the food delivery service providers, more competition to get more market shares, and expansion of service areas to other provinces in Thailand.

5. Conclusion

The findings of this study showed that the sole proprietorship in food and beverage services had knowledge of the digital marketing strategy at moderate to high levels, while the implementation of the digital marketing tools was at low to moderate levels. The relationship between the knowledge of digital marketing strategy and the implementation of the digital marketing tools was positive at a moderate level. Problems and barriers to the implementation of the digital marketing tools were a budget constraint and large investment concerns. Besides, the sole proprietors did not know how to start, did not have enough time to study digital marketing tools, and did not receive any help from anyone while they still desired to use the digital marketing tools. The sole proprietorship, who used the tools, mainly used social media marketing through Facebook and Food delivery applications to promote their sales. The most critical barrier to food delivery application platforms is a high commission fee charged by food delivery application providers, which enormously deducts from their food and beverage sales.

Although the sole proprietorship in food and beverage services had knowledge of the digital marketing strategy at the moderate to high levels, they still need more specific skills to gain more advantages, such as building a brand on social media. Social media is one of the good ways to build a strong brand identity or reputation and get in touch with current and potential customers. The research findings may be productive for the sole proprietorship and any other businesses if there is supervision from the government by supporting and contributing comprehensive technology access with higher efficiency and lower cost. The development of digital networks has created both new opportunities and challenges for marketers. The marketers can personalize their messages like never before, and customers have the option of allowing the marketers to communicate with them or not. The customers can choose to support corporates that aim to respond to society, reduce the cost of living, and return a profit to society. For a good example, the development of a food delivery application named 'Robinhood' by Siam Commercial Bank or SCB Group offers food delivery services without charging any fee from the sellers; thus the customers only pay for their actual food and delivery (Siam Commercial Bank, 2019).

Finally, this research studied the knowledge of digital marketing strategy in general. Future research can be developed by exploring an in-depth study of digital marketing strategies such as content marketing, branding, each one of four (or seven) of the marketing mix throughout social media technology.

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Developing a Strategic Framework in Reducing Urban Heat Island Effect for Cooler High-density Communities: The Case of Sampaloc, Manila

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Abstract

As a tropical country, the Philippines experiences a micro-climate phenomenon that is referred to as the urban heat island effect. It is considered as an environmental risk felt particularly during the hot seasons and becoming worse in the succeeding years. In response to this issue, there is a need for alternative strategies appropriate for a local setting. This study aims to provide approaches that can help mitigate the urban heat island effect in high-density communities in the City of Manila. It formulated a framework serving as a model that can be applied to any high-density community in Metro Manila regarding the negative effects of the urban heat island and its reduction. It provides useful information for the residents, experts in the field of architecture and urban planning, and academicians in finding alternative ways of reducing the urban heat island applicable in the local setting. The study employed a mixed-method research approach by collecting both quantitative and qualitative data. The descriptive research method was used in choosing the site to describe its existing conditions and relate the factors and elements that influence the UHI effect in the area. It utilized ground-truthing that assessed GIS maps. Purposive sampling, key informant interviews, observations, and field visits extracted data from the residents directly affected by the urban heat. The analysis produced a framework in mitigating an increase in the UHI effect in the community. These are to control the climate and adapt green architectural strategies, to re-examine functions in zoning, and to develop a community small-scale initiative in green environment awareness.

Keywords: *urban heat island effect, heat stress, comfort zone, cool high-density community*

1. Introduction

The urban heat island phenomenon is an environmental risk experienced in an urban area, particularly during hot seasons. It observes a higher temperature evident in cities or urban locations compared with the surrounding areas (Tiangco, Lagmay & Argete, 2008). The urban heat island (UHI) phenomenon in major cities shows changes in land use and land cover that impose a great deal of load on the environment (Akinaru, 2002). According to Yang, Qian, Song, and Zheng, (2016), the UHI effect is widely recognized as a heat accumulation phenomenon, which is the most obvious characteristic of urban climate caused by urban construction and human activities. This study proposed to develop a strategic framework that can help mitigate or somehow reduce the urban heat island effect in high-density communities located in the City of Manila. Using Sampaloc, Manila, as the setting for investigation, the proposed framework shall serve as a guide for urban planners, architects, and other experts in this field to help mitigate, if not avoid, the effect of the UHI in an urban setting like Manila. The present situation of the district will be the sources of information on the factors contributing to it. The developed framework is also envisioned to provide guidelines in designing urban communities to minimize the urban heat island effect in the area. Moreover, congruent with the proposed strategic framework, it will create mitigating designs to alleviate the UHI effect in the chosen location of the study, which is the District of Sampaloc. It can also serve as a model that can be applied to other high-density communities in Metro Manila to help achieve a cooler community. Likewise, it can serve as a blueprint in developing a strategic framework for the reduction of the UHI effect appropriate in a tropical country such as the Philippines. The City of Manila is considered a highly dense community. Thus, the challenge that will be encountered is the diversity of the community in terms of building types, socio-economic status, transport-related function, and economic activities. This study shall be the map of the local

government of Manila in its vision in mitigating the urban heat island effect, and it can promote urban greening ideas to achieve a cooler community, with its primary beneficiaries being the residents not only in Manila but also in the whole National Capital Region.

2. Objectives

The research aims to formulate a strategic framework for mitigating the urban heat island effect in the district of Sampaloc that can be applied to high-density communities in Metro Manila.

- 1) To identify the areas with high and low UHI using Sampaloc, Manila, as the study area.
- 2) To determine and assess the factors that directly and indirectly influence the urban heat island effect on the study area.
- 3) To determine the elements that affect the factors identified and relate their influence on the UHI effect.
- 4) To formulate a strategic framework aimed at mitigating and alleviating the impacts of the urban heat island to achieve a cooler high-density community in Sampaloc.

3. Material and methodology.

3.1 Location of Site

The City of Manila is divided into six (6) congressional districts as shown in Figure 1 with 100 barangay zones composed of 895 barangays. Sampaloc is the 4th congressional district of Manila, comprising 241 barangays, namely, barangays 395-636. District 4, with 17 zones, comprises Sampaloc alone (Table 1). It is a high-density mixed-use residential and commercial area known also as the “University Belt.” The study used the Sampaloc district, which has a population of 375,119 as of population census on January 8, 2015, as the setting for investigation



Figure 1 Boundary of Sampaloc district (<https://www.openstreetmap.org>)

Table 1 The political districts of Manila (Manila Comprehensive Land Use Plan and Zoning Ordinance 2005-2020)

Land area and zone per district of manila			
District	Land Area (ha)	Zones Covered	Number of Zones
I	624.11	1-16	16
II	375	17-24	8
III	613.67	25-40	16
IV	523.12	41-57	17
V	1125.38	68-89	32
VI	784.52	58-67, 90-100	11
Total	4045.8		100
Source	Computed	CEO, 2002	CEO, 2002

3.2. Method

The research employed a strategy of triangulation wherein a mix of qualitative and quantitative methodologies was used. It used a mixed-method approach to have a comprehensive understanding of the relationship of the UHI effect in the affected areas of the community. It also used a convergent parallel mixed method wherein the probability of converging and merging the collected data drawn from the quantitative and qualitative means provided an in-depth analysis of the research problem. A descriptive method in choosing the site was also adapted, which described its existing conditions and related the factors and its elements. Furthermore, ground-truthing was also utilized, which helped assess and verify the GIS or satellite image maps against what was physically seen in the ground.

3.2 Data Collection Procedure

The City Planning and Development Office of the Manila City Hall provided the District and barangay boundary maps for the study. To get the highest, medium, and lowest temperatures of the chosen area, the Sampaloc district was divided using the systematic sampling technique. The study used a random number generator via Microsoft Excel to select barangays in random at every fifth subject. The district was divided into seventeen (17) zones and 241 barangays, with the latter selected at random. The air temperature (AT), land surface temperature (LST), and humidity were measured in the selected barangays in the month of May and June 2019. The measurement was done for three consecutive weeks and three times a day for each month. The vicinity maps for the highest air temperatures were acquired in the specific barangays.

3.3 Instruments used for temperature measurement

The air temperature was determined by DBT (dry-bulb thermometer) as shown in Figure 2(a), which is the alcohol thermometer. Simultaneously, it used a digital Thermometer and a Hygrometer for the measurement of indoor and outdoor air temperatures and humidity, respectively. The land surface temperature was determined by the Infrared thermometer (IR) that was used at the same time as the alcohol thermometer. A downloaded GPS application on a mobile phone was used to note the latitude and longitude of each zone/barangay visited. Photographs of the area were also taken at every place where the temperatures were measured.

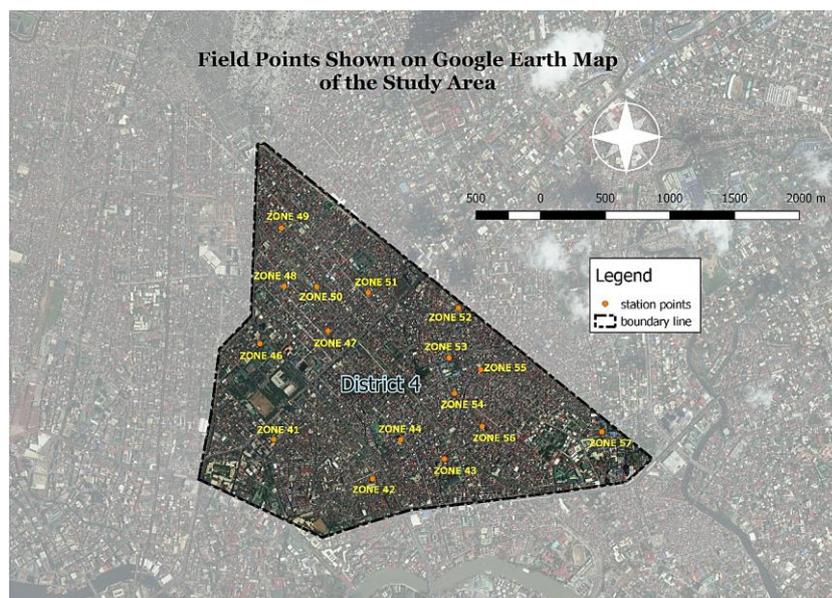


Figure 2 The field investigation points shown in the Google Earth image

3.4 Measurement of land surface temperature (LST), air temperature (AT), and humidity (HU)

The basic data, particularly the district map and its different zones, were collected from relevant sources such as the City Planning and Development Office of Manila City Hall. Aside from this, an open street and satellite map from QGIS was used to create and develop a shapefile of the study area shown in Figure 2. Temperature measurements were simultaneously taken by riding a tricycle and stopping at designated barangay as station points. It was done for three (3) hours with specific times in the morning, noon, and evening during the month of May and June 2019, each for three consecutive weeks.

3.5 Field Data Investigation

In documenting the building and site configurations on the selected barangays relative to the urban heat, the study identifies the physical elements to determine how the urban heat island contributes to the physical features and spatial organization of the district. It utilized the land use type based on the official zoning map of Manila to categorize the area. Site layout helped describe the area, the type of building, and how it functions whether it is used as residential, commercial, or both. The materials and colors used in a building can ascertain its heat absorption and emissivity. Openings found in structures served as a source of ventilation, which determined the thermal comfort of occupants. Property setbacks were viewed in their relationship to building arrangement and the number of openings affecting ventilation.

4. Results and Discussion

4.1 Areas with high and low land surface temperatures (LST)

For the dry season (May) and wet season (June), the measurement of land surface temperature (LST) between 11.00 a.m. to 2.00 p.m. was chosen. LST is the radiative temperature of the ground surface that depends on the albedo, vegetation cover, impervious surfaces, and soil moisture. It is generally a mixture of surface temperatures of both vegetation and bare soil (Kumar, Bhaskar & Kumari, 2017). The study was similarly done in India, which used field investigation and measurement such as IR thermometer during the daytime from 11.00 a.m. to 2.00 p.m. local time. Thus, Zone 52 (highest), Zone 44 (medium), and Zone 52 (lowest) were the identified locations for May while Zone 52 (highest), Zone 56 (medium), and Zone 43 (lowest) were the identified locations for June, as shown in Figure 3.

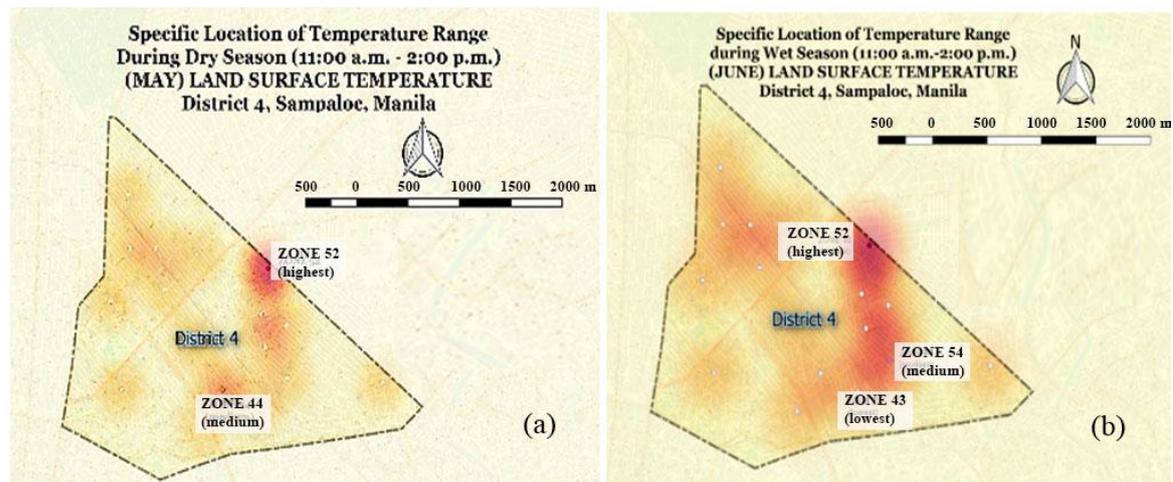


Figure 3 Areas with high and low land surface temperatures (LST) during the daytime from 11.00 to 2.00 p.m. on (a) May 2019 (b) June 2019

4.2 Areas with high and low air temperatures (AT)

The air temperature during the period between 11.00 a.m. to 2.00 p.m. was again considered for the wet and dry seasons. Its purpose was to ascertain the residents’ response to the urban heat experienced compared with the nighttime air temperature. Figure 4 shows the identified location for the highest air temperature for May, which was revealed to be located at Zone 52, while the medium and the lowest values were recorded on different days at Zone 44 and Zone 52, respectively. For June, Zone 56 had the highest recorded air temperature, with Zone 41 being the medium air temperature, and the lowest air temperature was located at Zone 43.

Furthermore, Figure 5 shows the measurement of the highest and lowest air temperatures done during the nighttime from 9.00 p.m. to 12.00 a.m. It shows that Zone 42 (highest), Zone 47 (medium), and Zone 57 (lowest) were the identified locations of the barangays for May for air temperature. For June, Zone 47 (highest), Zone 43 (medium), and Zone 56 (lowest) were the identified barangays.

4.3 Areas with high and low humidity (HU)

During the nighttime from 9.00 p.m. to 12.00 a.m. for May, Zone 56 & 44 (highest), Zone 56 (medium), and Zone 48 (lowest) were the identified locations of barangays where humidity was measured. For June, Zone 56 (highest), Zone 53 (medium), and Zone 55 (lowest) were the identified locations of barangay as shown in Figure 3. As shown in Figure 4, for May, Zone 47 (highest), Zone 45 (medium), and Zone 47 (lowest) compromised the humidity values measured from 11.00 a.m. to 2.00 p.m. while during June, Zone 43 (highest), Zone 50 (medium), and Zone 56 were the identified locations.

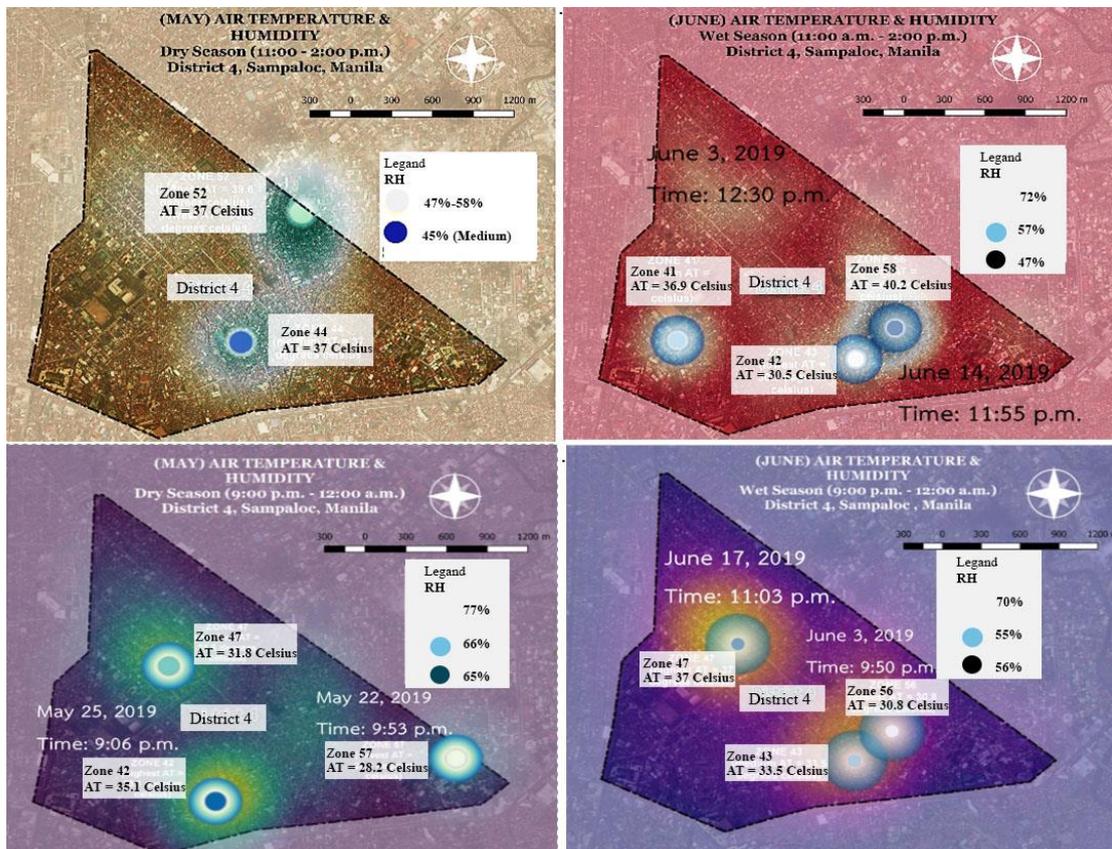


Figure 4 Profile of the highest, medium, and lowest temperature and humidity values during 11.00 p.m. -12.00 p.m. (wet & dry season) May & June 2019.

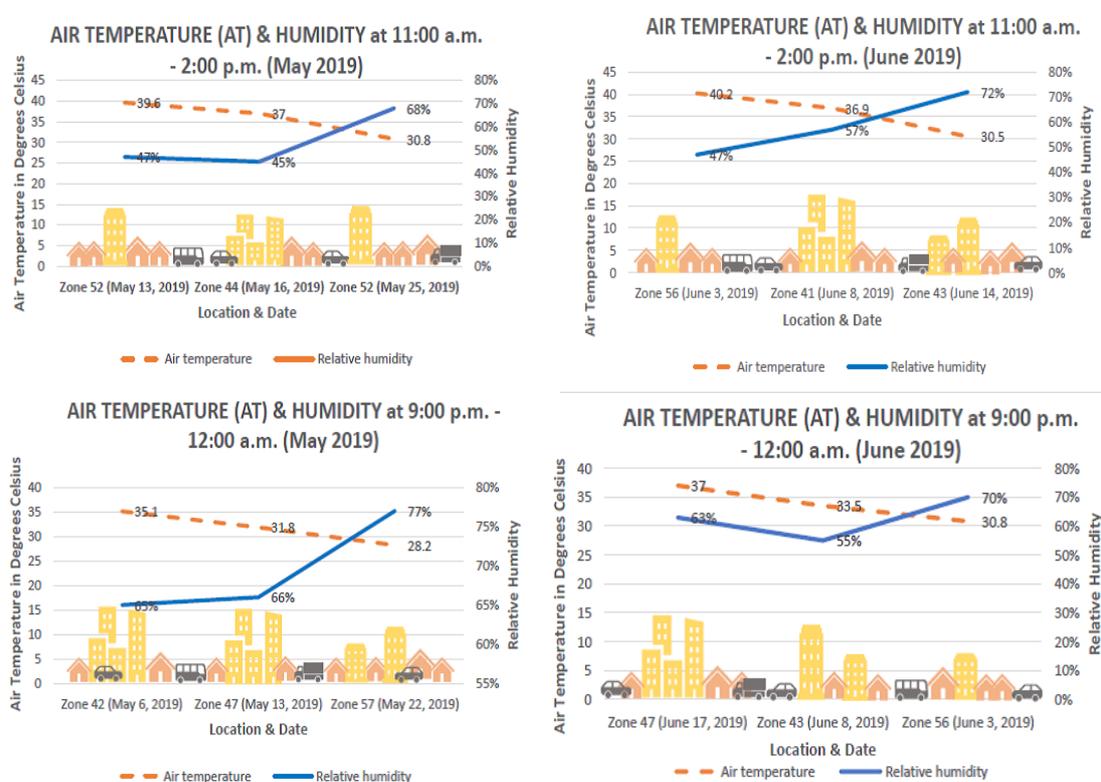


Figure 5 Profile of the highest, medium, and lowest temperature and humidity values during 9.00 p.m. 12.00 a.m. (wet & dry season) (a) May 2019, and (b) June 2019.

4.4 Factors that influence UHI effect in the study area and the elements affecting the factors identified in relation to its influence on the UHI effect

Factors that directly contribute to the “urban heat island” effect in these areas involved the incidence of solar radiation and its actual contact with the urban canopy layer, which were the albedo of building materials, the minimal amount of vegetation, lack of open spaces, and anthropogenic sources. Based on the survey conducted, the indirect factors are related to the repercussions of the identified direct factors, which consisted of the increased use of air conditioners, heterogeneity of structures, the density of the area, and the obstruction of wind flow. The identified elements are the age of the structures concerning its construction, economic status represented on the quality of materials and cooling appliances used, number of openings that served as ventilation, floor area with regards to the number of household members, conversion or expansion of spaces, burning of waste, heat that comes from cooking, road repairs, street parking, traffic due to increase of vehicles, and the heterogeneity of land use. Figure 6 shows the relationship of the direct and indirect factors as well as the identified elements that influence these factors to help increase the urban heat island effect.

4.5 The factors and elements that affect UHI increase and distinguished the barangays with the highest, medium, and lowest temperatures

Based on the data collected and observation through the time of measurements and field visits along the area, the similarity of the district’s physical features for each zone are diverse, dense, and mixed-used in functions. However, there is still a distinctive quality that impacts an increase in the UHI in the study area. The data analyzed showed that the district’s similarity with regards to physical features contributed to the increase in the urban heat that every urbanized community or city experiences. Its distinctive quality was the

density and heterogeneity of the area wherein its function is mixed-used ranging from low, medium, to high-rise structures, whether residential or commercial in function, and maximized lots (conversion or expansion) that resulted in cramped spaces and inadequate ventilation. Moreover, its diverse functions comprised the different zones with the number of barangays within these, which provided different activities in a single location. It can have areas that are depopulated during the night such as institutions while the opposite is evident in nearby areas like residential and commercial areas. The areas that recorded the highest temperature were highly populated, composed of man-made materials with a high albedo, and lacked green spaces. The areas that have lower temperatures were influenced by the weather condition at the time it was recorded since the district exhibited similar physical features. As observed, the day and time temperatures recorded in these different barangays remain the same yet vary because of the factors identified in addition to wind velocity. A spatial and temporal variation can appropriately describe this case because some factors were changing from one time to another but remain constant across space (White, Ernest, Adler, Hurlbert & Lyons, 2010).

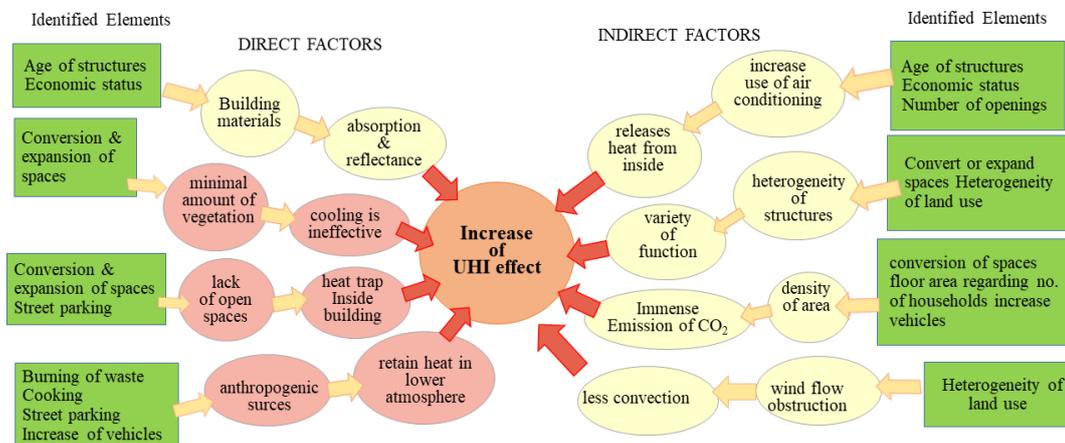


Figure 6 The influence of the identified elements on the factors influencing the UHI effect in the study area.

4.6 Correlating Physical and Social impacts that generate UHI effect in the development of an initial framework

The barangay with the highest daytime and nighttime air temperatures was given the questionnaires, and the highest response was selected from the residents. Table 2 shows the responses that revealed the influence of the physical features on the UHI effect, which led to the architectural design solutions and initial framework in mitigating the UHI effect. Likewise, the responses of the residents, as shown in Table 3 regarding heat stress, indicated the social impact influencing the UHI effect in the selected areas associated with the heat index or human discomfort index and thermal comfort zone.

4.7 Heat Index relation to heat stress

The air temperatures from May and June were calculated using the heat index calculator from calculator.net. It estimated the temperature felt by the body as a result of air temperature and relative humidity. The data collected used the nighttime temperature from 9.00 p.m. to 12.00 a.m. due to the more pronounced UHI effect at that time. To further enrich the gathered data, it also used the daytime temperature from 11.00 a.m. to 2.00 p.m. to know the response of the residents at this time of the day. It used the highest air temperature with its equivalent humidity value on a specific day. Under the description of the heat discomfort index, the resulting temperatures posed danger due to the increased likelihood of heat cramps, heat exhaustion, and heatstroke if the activity is continued, as shown in Figure 7. From the data collected,

mitigation strategies were extracted and led to the formulation of a framework to achieve a cool high-density community.

Table 2 The physical impacts that influence the UHI effect in the area

Physical impacts		Architectural means		
<i>Respondents - Barangays that have the highest temperature (highest response)</i>		<i>Indication</i>		
		<i>Consideration</i>		
Myriad structures – apartments – function – renting – highest number – Barangay 575		Houses converted to commercial purposes (renting)		Configuration of building
3- to 4 storeys – Barangay 527		Middle-income earners		Affordable & cost-efficient
3 to 5 household members		Numerous old residential & commercial structures		Retain and adapt old structures
Shortest lease – 19 years (Barangay 527)				
Longest – 39 years (Barangay 575)				
(Present) Spaces	Characteristics (Ventilation system)	Features (Description Perception)	Indication	Consideration
<i>Barangay 411 (Zone 42)</i>				
living room, dining room, kitchen, toilet and bath and bedroom, office and roof deck	inadequate	Sufficient to cramped	Owned houses large space than rented space	Multi-purpose use of spaces
			Convert and expand spaces	
<i>Barangay 472 (Zone 47)</i>				
living room, dining room, kitchen, toilet and bath, bedroom and a few have porch or verandah, carport and sari-sari store	Ample	Spacious to crowded	Larger areas for owned houses	Flexibility of spaces
<i>Barangay 527 (Zone 52)</i>				
living and dining room, kitchen, toilet and bath and bedroom	Inadequate	Sufficient to cramped	Rented spaces are smaller than owned houses	Multi-function of spaces
<i>Barangay 575 (Zone 56)</i>				
living and dining room, kitchen, study room, toilet and bath, bedroom, a porch and terrace, garage and rental spaces	Appropriate to inadequate	Sufficient to cramped	Conversion and expansion on structures	Flexibility of spaces

Table 3 The social impact that influences the UHI effect in the area

Social impacts (Heat stress)							
<i>Considered the highest response</i>							
	<i>Barangay 411</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 472</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 527</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 575</i>
Heat experience	Much worse	 	Can be manage	 	A little worse	 	tolerable
The main contribution of heat stress	Use of air conditioner	 	Increase of motor vehicles		Household cooking & heating	 	Burning of waste
	Lack of open space		Increase of resident's population		Lack of open & green spaces		Increase of resident's population
The extent of heat affecting residents	Very much affected	 	Affected a little	 	Very much affected	 	Very much affected
Ways in which residents were affected by heat	Excessive sweating Dizziness Intense thirst	 	Feel tired Headache	 	Excessive sweating headaches	 	Doing less outdoor activities High blood pressure
Transport vehicles generate heat	Yes		Yes		Half (yes)		Yes
	<i>Consideration (Strategic framework)</i>						
Reasons why transport vehicle cause heat	Street parking (double parking) Fixing auto-mechanic parts		Street parking (double parking)		Fixing auto-mechanic parts		Location of tricycle terminals Fixing auto-mechanic parts
	<i>Consideration (Strategic framework)</i>						
Prohibited ownership of the vehicle if no parking	Yes		No		Yes		Yes
	<i>Consideration (Strategic framework)</i>						
Commercial establishment cause heat			Yes		No		Yes
	<i>Consideration (Strategic framework)</i>						

Social impacts (Heat stress)							
<i>Considered the highest response</i>							
	<i>Barangay 411</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 472</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 527</i>	<i>Consideration (Strategic framework)</i>	<i>Barangay 575</i>
Ways commercial activities cause heat	Change/convert for parking Use sidewalk for commercial activities		Change/convert for parking		Remove space	green	Change/convert for parking Remove green space
	<i>Consideration (Strategic framework)</i>						
Prohibition of commercial activities by local government (sidewalk & road)	Strongly agree		Neutral		Neutral		Strongly agree
	<i>Consideration (Strategic framework)</i>						
Poor infrastructure & increase of vehicle ownership cause heat	Traffic & congestion		Increase of air pollution		Increase heat		Increase heat
	<i>Consideration (Strategic framework)</i>						
Construction of greenery (planting ornamental & vegetable plants)	Strongly agree		Strongly agree		Neutral		Strongly agree
	<i>Consideration (Strategic framework)</i>						
Promote greening concepts by local government	Strongly agree		Agree		Neutral		Strongly agree
	<i>Consideration (Strategic framework)</i>						
Residents do to lessen heat	Turn on cooling appliances Turn off lights Use hand-held fans (pamaypay)		Minimize use of electrical appliances		Turn on cooling appliances		Turn on cooling appliances Turn off lights Use hand-held fans (pamaypay)
	<i>Consideration (Strategic framework)</i>						

Legend:		
<i>Consideration</i>	Strategy 1: Understand the process of climate	
	Strategy 2: Re-examine zoning	
	Strategy 3: Community participation	

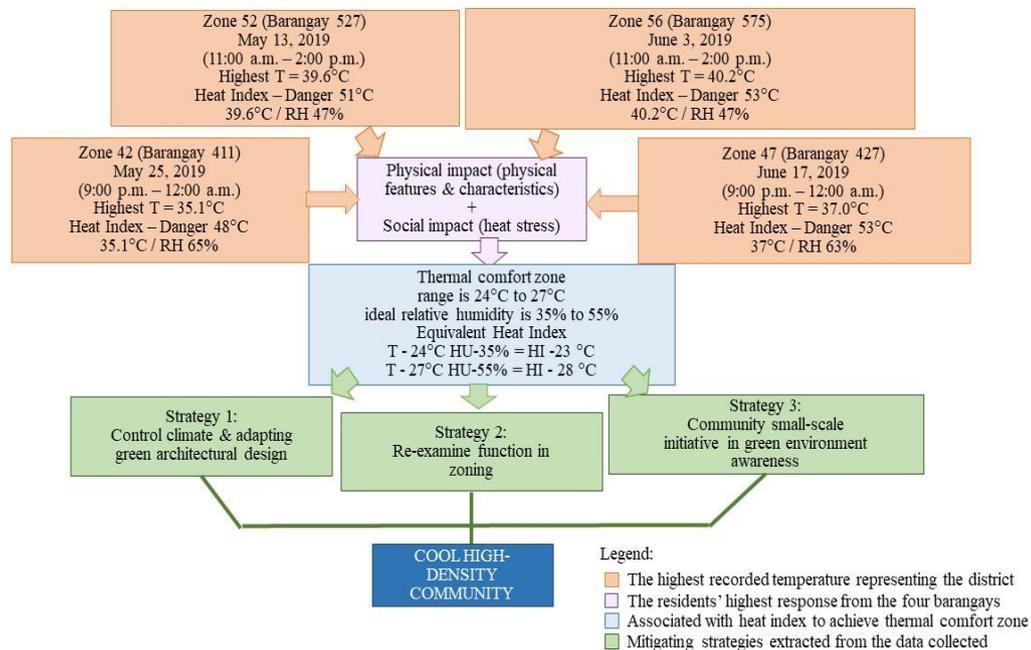


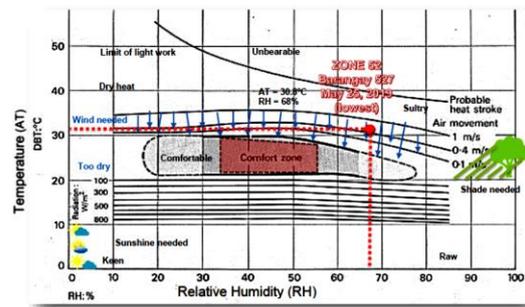
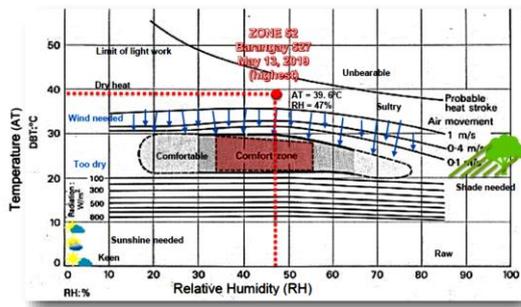
Figure 7 Heat index relationship to the thermal comfort zone

4.8 Correlation of results and the comfort zone in determining design solutions for the framework Temperature, Humidity, and Heat index in relation to Comfort Zone

From the collected data, the highest temperature with the low relative humidity during the day (11.00 a.m. to 2.00 p.m.) needed an appropriate airspeed to offset the temperature and restore the feeling of comfort. Since the area is a large body of land, the wind brings dry air (National Geographic, 2011). Passive designs such as natural and cross ventilation, solar shading, and other green concepts are useful tools that can be applied to a highly urbanized area. At night (9.00 p.m. to 12.00 a.m.), the low temperature with a high relative humidity needed a faster airspeed. An increasing humidity further reduces airspeed, making it heavy and dragged downward, thus, it needs faster air circulation to lower the relative humidity. With air movement, the rate of evaporation is increased; with the mixing of air, the temperature and humidity differences tend to even out (Dotson, 2018).

The highest air temperature on May 13, 2019, from 11.00 a.m. to 2.00 p.m. was located at Zone 52, Barangay 527 (see Figure 8a) where the plotted point falls outside the comfort zone. It means that corrective measures are needed. If the point is higher than the upper perimeter of the comfort zone, winds are needed. With a temperature of 39.6 °C and relative humidity of 47%, it needed a wind velocity of 4.0 m/s or 14.4 km/h to restore the feeling of comfort and offset the high temperature. The lowest air temperature on May 25, 2019, was also located at Zone 52, Barangay 527 (see Figure 8b) with a value of 30.8 °C and relative humidity of 68%. The plotted point also falls in the upper perimeter of the comfort zone. Thus, it needed a wind velocity of 3.56 m/s or 12.81 km/hour. Since it is near the lower perimeter of the comfort zone, shading is needed.

On June 3, 2019, the highest air temperature recorded was 40.2 °C with a relative humidity of 47% at Zone 56, Barangay 575, and at the same period as the records in May (see Figure 9a). The plotted line falls higher than the upper perimeter of the comfort zone; therefore, it needed a wind velocity of 4.0 m/s or 14.4 km/hour. Figure 9b shows that the lowest air temperature of 30.5 °C and relative humidity of 72% was recorded on June 14, 2019, at Zone 43, Barangay 421. The plotted line falls in the upper perimeter of the comfort zone, which needed a 4.0 m/s or 14.4 km/hour wind velocity. Similarly, it is near the lower perimeter of the comfort zone; therefore, shading is needed.



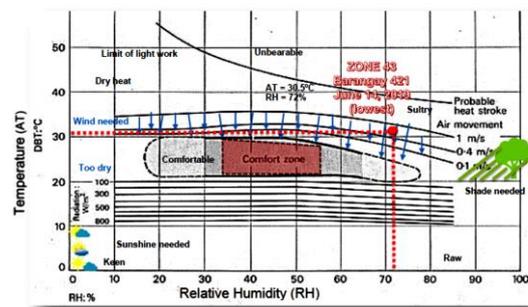
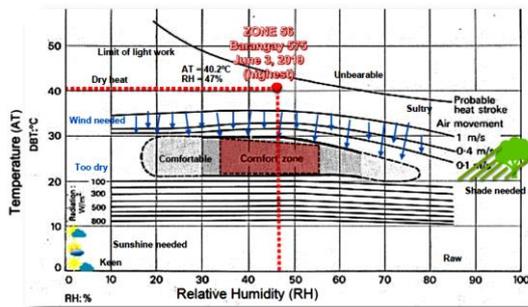
Rule of Thumb for Philippine
 Setting Air Temperature – 39.6 °C (low) RH 47%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind: speed 12km/hr or 3.33m/s
 Wind speed needed: Moderate breeze
 Direction (ESE) 112.5° 3.56m/s or 12.81 km/hr

(a)

Rule of Thumb for Philippine
 Setting Air Temperature – 30.8 °C (low) RH 68%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind: speed 12km/hr or 3.33m/s
 Wind speed needed: Moderate breeze
 Direction (ESE) 112.5° 3.56m/s or 12.81 km/hr

(b)

Figure 8 (a) The highest air temperature in May 2019 (11.00 a.m. to 2.00 p.m.) in relation to comfort zone.
 (b) The lowest air temperature in May 2019 (11.00 a.m. to 2.00 p.m.) in relation to the comfort zone.



Rule of Thumb for Philippine
 Setting Air Temperature – 40.2 °C (high) RH 47%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind: speed 10 km/hr or 2.77 m/s
 Wind speed needed: Moderate breeze
 Direction (ESE) 112.5° 4.0 m/s or 14.4 km/hr

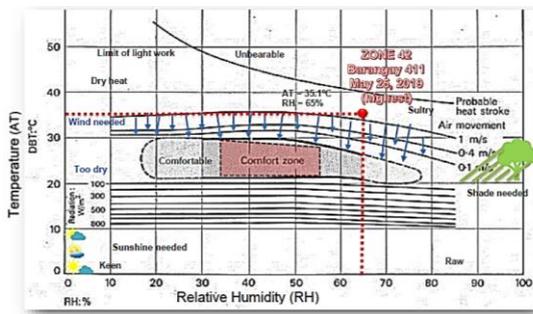
(a)

Rule of Thumb for Philippine
 Setting Air Temperature – 30.5 °C (low) RH 72%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind speed 23 km/hr
 Wind speed needed: Moderate breeze
 Direction (WSW) 247.5° 4.0 m/s or 14.4 km/hr

(b)

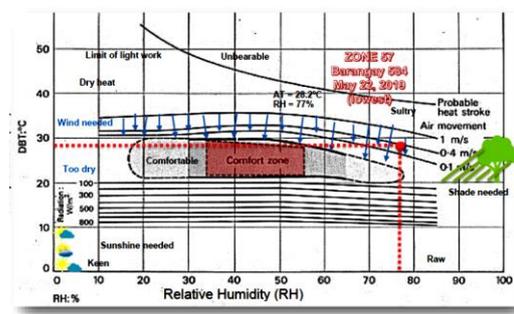
Figure 9 The highest air temperature June 2019 (11.00 a.m. to 2.00 p.m.) in relation to the comfort zone.
 (b) The lowest air temperature June 2019 (11.00 a.m. to 2.00 p.m.) in relation to the comfort zone

Figure 10a shows the highest temperature recorded at night (9.00 p.m. to 12.00 a.m.), which was at 35.1 °C with a relative humidity of 65% on May 25, 2019, at Zone 42, Barangay 411. The plotted line falls higher than the upper perimeter of the comfort zone, making it humid; therefore, it needed a 5.0 m/s or 18 km/hour wind velocity. Figure 11b shows that the lowest air temperature on May 22, 2019, was recorded at 28.2 °C with a relative humidity of 77% at Zone 57, Barangay 584. The plotted line falls on the upper perimeter of the comfort zone wherein it needed a 2.54 m/s or 9.14 km/hour wind velocity.



Rule of Thumb for Philippine
 Setting Air Temperature – 35.1 °C (high) RH 65%
 Range of thermal comfort zone of about 2 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind: speed (8 km/hr) or (2.2 m/s)
 Wind speed needed: light breeze
 Direction (SW) 225° 5.0 m/s or 18 km/hr

(a)



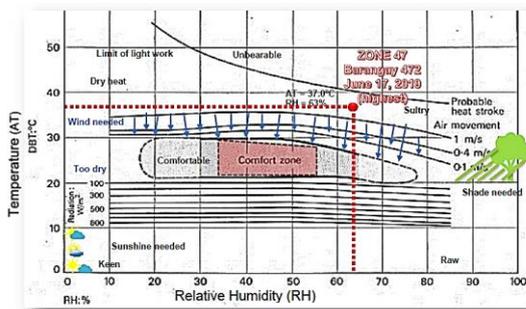
Rule of Thumb for Philippine
 Setting Air Temperature – 28.2 °C (low) RH 77%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind speed (23 km/hr)
 Wind speed needed: light breeze
 Direction (SW) 225° 2.54 m/s or 9.14 km/hr

(b)

Figure 10 The highest air temperature in May 2019 (9.00 p.m. to 12.00 a.m.) in relation to the comfort zone.

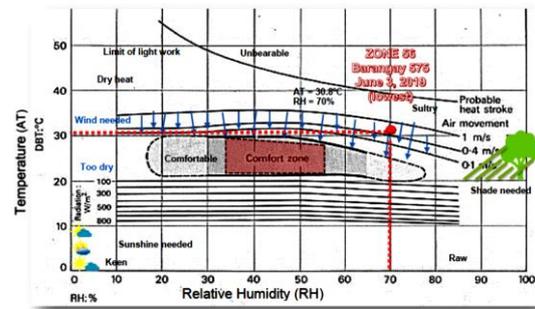
(b) The lowest air temperature in May 2019 (9.00 p.m. to 12.00 a.m.) in relation to the comfort zone.

On June 17, 2019, the highest air temperature recorded was at 37.0 °C with a relative humidity of 63% at Zone 47, Barangay 472 (see Figure 12a). The plotted line also falls higher on the upper perimeter of the comfort zone, which makes it humid and needs a 5.0 m/s or 18 km/hour wind velocity. Aside from this, the lowest air temperature recorded was on June 3, 2019, at 30.8 °C and relative humidity of 70% at Zone 56, Barangay 575 (see Figure 12b). The plotted line falls on the upper perimeter of the comfort zone where it needed a wind velocity of 2.54 m/s or 9.14 km/hour.



Rule of Thumb for Philippine
 Setting Air Temperature – 37.0 °C (high) RH 63%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind speed 23 km/hr
 Wind speed needed: light breeze
 Direction (SW) 225° 2.54 m/s or 9.14 km/hr

(a)



Rule of Thumb for Philippine
 Setting Air Temperature – 30.8 °C (low) RH 70%
 Range of thermal comfort zone of about 24 °C to 27 °C
 Ideal Relative humidity is around 35% to 55%
 Wind speed 23 km/hr
 Wind speed needed: light breeze
 Direction (SW) 225° 2.54 m/s or 9.14 km/hr

(b)

Figure 12 The highest air temperature June 2019 (9.00 p.m. to 12.00 a.m.) in relation to the comfort zone.

(b) The lowest air temperature June 2019 (9.00 p.m. to 12.00 a.m.) in relation to the comfort zone.

According to Koenigsberger (1975), the comfort zone is defined in terms of dry bulb temperature (DBT) and relative humidity (RH), but eventually, it is shown by additional lines how this comfort zone is pushed up by the presence of air movements and how it is reduced by radiation. Since the air temperature was recorded only three times a day, the rule of thumb for the Philippine setting on the range of thermal comfort zone is about 24 to 27 °C, and the ideal relative humidity is around 35 to 55%. The thermal comfort zone is the range of temperature that most people feel comfortable given a set of environmental conditions.

It helped understand the comfort zone of the area where most people feel comfortable to provide a solution in the mitigation of urban heat.

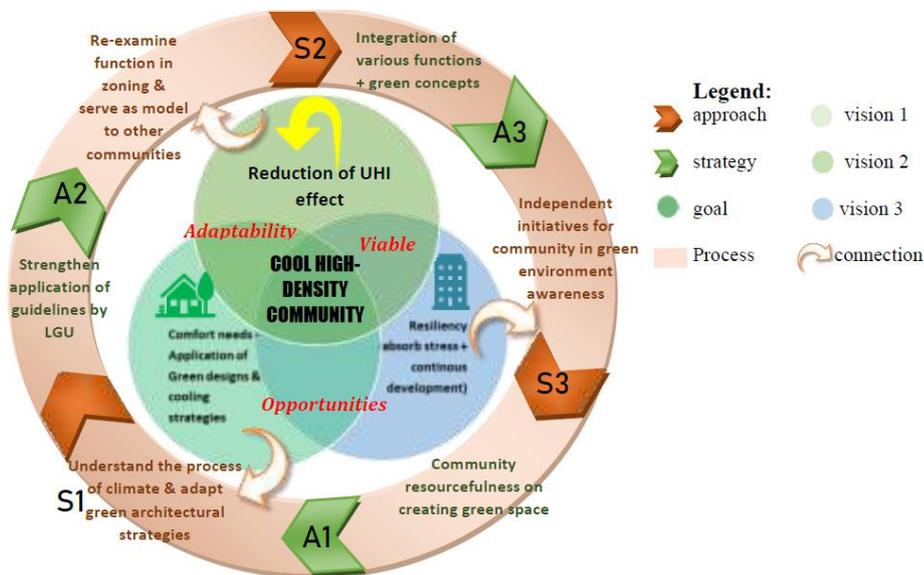


Figure 13 The strategic framework in mitigating urban heat island effect for a cooler high-density community.

4.9 The strategic framework in mitigating UHI effect for a cooler high-density community

Based on the result of the study, the framework for mitigating UHI effect that serve as a guide to achieve a cooler high-density community was formulated (see Figure 13). It created approaches and strategies where urban community must be designed (a) to understand the process of climate and adapt green architectural designs by providing directions for passive design and cooling techniques to achieve comfort needs, (b) as a scheme in re-examining zoning types and serve as a model to other urban communities, and (c) as an independent initiative for the community to be involved in green environment awareness to reduce the UHI effect.

4.10 Mitigation of UHIs in specific areas in Sampaloc District based on the framework as a design solution

As a rule of thumb for the Philippine Setting, the range of comfort zone is about 24 to 27 °C and the ideal relative humidity is around 35 to 55%. Table 5 shows the air temperature recorded at 11.00 a.m. to 2.00 p.m. while Table 6 shows the air temperature from 9.00 p.m. to 12.00 a.m. during the month of May and June. These data, in correlation to the bioclimatic chart of the barangays, were used to better understand the comfort zone and, in turn, identify the problems and provide possible design solutions. Based on the data, the highest and the lowest air temperatures during the daytime (11.00 a.m. to 2.00 p.m.) on dry and wet seasons had a slight difference, which was similar to the difference between the highest and lowest air temperatures during the nighttime (9.00 p.m. to 12.00 a.m.) on dry and wet seasons that is also negligible. Therefore, the application of the framework is particularly the same for both instances.

4.11 Applicability of the framework to Sampaloc district.

Table 7 shows how the approaches and strategies provide a direction in designing and planning for the reduction of the UHI effect in the district, which is also applicable to any urban district in Manila. They were based on the data generated, in particular, the result of the survey as well as the field visits, observations, and unstructured interviews from the residents. It should be considered that the district is physically evolving and subsisting by continuously adapting economic purposes, resulting in conversion and expansion of spaces. The heterogeneity of the district results in the different functions and should be integrated with green

designs/ideas while considering continuous development to be viable. The approaches and strategies are a continuous process where its implementation should be strengthened with the help of the local government. Therefore, the formulated framework, in providing direction by establishing guidelines in design and planning, corresponds to the prevailing condition of the district.

4.12 Graphical representation of the applicability of the framework to Sampaloc district

A conceptual elevation of the houses along Mindoro street located in Barangay 575, Zone 56, as shown in Figure 13(a) illustrates the congruency of the strategies to the current condition of the district. Each applies to every structure. Figure 13(b) shows the architectural design strategies of the framework that can be applied. The principles of passive design and recommendation of adapting green concepts consist of the first approach that helps reduce the UHI effect in the area.

Table 5 The relationship of air temperature and humidity with regards to the comfort zone (11.00-2.00 p.m.).

Air Temperature (11.00 a.m. -2.00 p.m.)	(Highest) (MAY)	(Highest) (JUNE)	(Lowest) (MAY)	(Lowest) (JUNE)
Location/	Zone 52, Barangay 527	Zone 56, Barangay 575	Zone 52, Barangay 527	Zone 43, Barangay 421
Date temperature measured	May 13, 2019	June 3, 2019	May 25, 2019	June 14, 2019
Temperature	40.2 °C	30.8 °C	30.5 °C	30.5 °C
Humidity	47%	8%	72%	72%
Heat index temperature	53 °C (Danger)	6 °C (Extreme Caution)	37 °C (Extreme Caution)	37 °C (Extreme Caution)
Criteria	Identifying problems regarding comfort zone (For the Highest AT)		Identifying problems regarding comfort zone (For the Lowest AT)	
Condition	Temperature is way above comfort zone and humidity high		Temperature is above comfort zone and humidity is moderate	
Necessary rectification	Thermal capture and thermal storage must be reduced, humidity must be reduced by facilitated air movement		Thermal capture and thermal storage must be reduced, wind ventilation is needed.	
Possible solution	Shading is needed Sun baffles, insulation, and mechanized ventilation or cooling		Shading is needed Sun baffles, insulation and buoyancy, and cross ventilation are needed.	

Table 6 The relationship of air temperature and humidity with regards to the comfort zone (9.00-12.00 p.m.).

Air Temperature (9.00 – 12.00 p.m.)	(Highest) (MAY)	(Highest) (JUNE)	(Lowest) (MAY)	(Lowest) (JUNE)
Location/	Zone 42, Barangay 411	Zone 42, Barangay 427	Zone 57, Barangay 584	Zone 56, Barangay 575
Date temperature measured	May 6, 2019	June 17, 2019	May 22, 2019	June 3, 2019
Temperature	35.1 °C	37 °C	28.2 °C	30.8 °C
Humidity	65%	63%	77%	70%
Heat index temperature	48 °C (Danger)	53 °C (Danger)	32 °C (Caution)	35 °C (Extreme Caution)
Criteria	Identifying problems regarding comfort zone (For the Highest AT)		Identifying problems regarding comfort zone (For the Lowest AT)	
Condition	Temperature is way above comfort zone and humidity high		Temperature is above comfort zone and humidity is moderate	
Necessary rectification	Thermal capture and thermal storage must be reduced, humidity must be reduced by facilitated air movement		Thermal capture and thermal storage must be reduced, wind ventilation is needed.	
Possible solution	Shading is needed Sun baffles, insulation, and mechanized ventilation or cooling		Shading is needed Sun baffles, insulation and buoyancy, and cross ventilation are needed.	

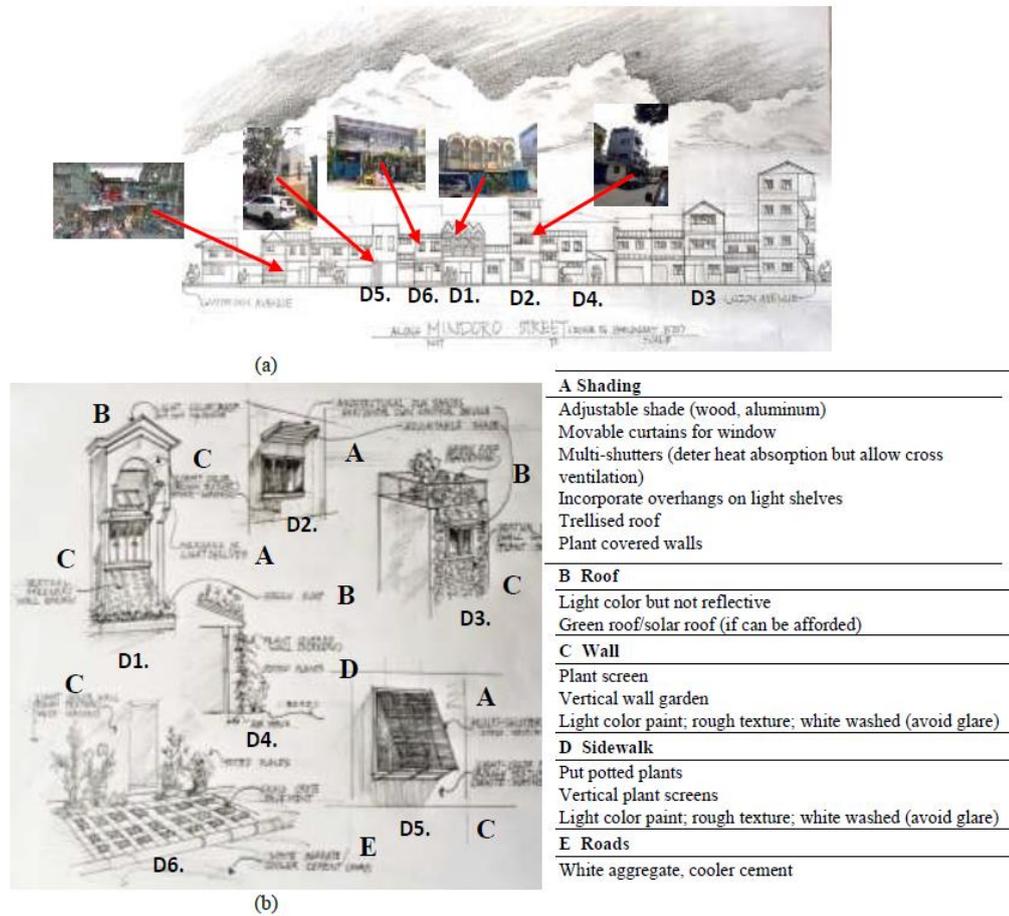


Figure 13 (a) Elevation of identified houses where strategies can be applied to the area
 (b) Architectural design strategies as the first approach of the framework.

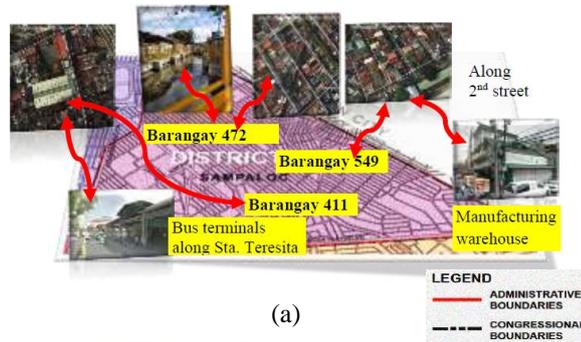
A variety of functions or mixed-use types existed in the district that resulted in inappropriate zoning types. As mentioned, integration of various functions and adapting green concepts affected by anthropogenic sources in the area while allowing continuous development is a strategy for the second approach. Figure 14 (a & b) shows the strategies that can be applied in the district.

The recommendation of adapting green concepts on the structures and landscape in the area is more effective if the whole community will participate through its resourcefulness along with the strong implementation of the LGUs. Figure (15a) shows how the framework will help in the reduction of heat in the area. For potential landscapes, small-scale edible landscaping can be used. Figure 15(b) shows that a holistic approach is needed for this goal as the key to success with the support of the local government and the participation of various stakeholders including residents of the community. The strategies should help achieve comfort needs by reducing the urban heat island effect so a cooler high-density community may be realized in the future.

**STRATEGY
 (Barangay 472)**
 - Water from (creek) emits heat at night (redesign structure features through green concepts along bodies of water)
 - Apply green designs/concepts for various functions

STRATEGY (Barangay 411)

- Function not appropriate to zoning (bus terminals within a high-residential type zone)
- Apply green designs/concepts for various functions



(a)

PUBLIC PLAZAS

1. Liwasang Bataan
3. Liwasang Noli



STRATEGY (Institutional structures)

- Adapt green designs in public areas (courts & plazas)
- Community cooperation to attain comfort needs (encourage resourcefulness)



HISTORIC SITES AND STRUCTURES INSTALLED WITH HISTORICAL MARKERS

1. Church of Sampaloc
2. Liga Filipina
3. Sta. Catalina College
4. Manila Railroad Company
5. Bulwagang Paraninfo
6. Sto. Tomas Concentration Camp
7. Philippine School of Arts and Trade
8. Paaralang Legarda
9. National University
10. University of Manila
11. University of Sto. Tomas

STRATEGY (Institutional structures)

- Retain and adapt design for old structures
- Encourage green design (residential, commercial or institutional use)
- Use schools open spaces for urban

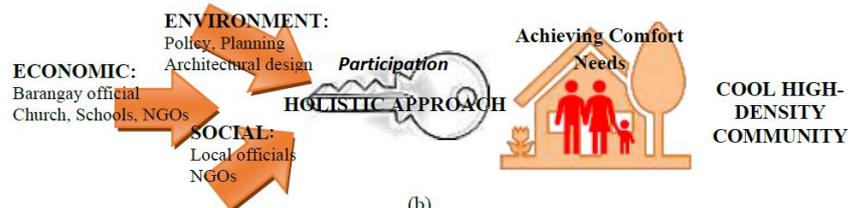


(b)

Figure 14 (a) Graphical representation to re-examine zoning in the district
(b) Integration of green concepts through a collaboration of various stakeholders.



(a)



(b)

Figure 15 (a) Recommendations of the framework on urban structures and landscape in the area
(b) A conceptual illustration of the recommendation.

Table 7 Applicability of the framework to the current condition of Sampaloc district.

Physical features/characteristics	Barangay 527	Barangay 575	Barangay 411	Barangay 472	Indication	Strategic framework applicability
Classification of buildings	Mixed-use (low to medium-rise)	Mixed-use (low to medium-rise)	Mixed-use (low to medium-rise)	Mixed-use (low to medium-rise)	Configuration of building	 
Color of structures	Light color (reflect solar radiation)	Light color (reflect solar radiation)	Light and dark colored paint	Light and dark colored paint	Absorption and reflectivity	 
Materials used	Concrete, wood, glass	Concrete, wood, glass, steel, bricks	Concrete, wood, glass, steel, bricks	Concrete, wood, glass, steel, bricks	Absorption and reflectivity	 
Age of structures	59 to 69 yrs.	4 to 59 yrs.	20 to 40 yrs.	30 to 49 yrs.	Retain and adapt old structures	 
Roofing materials	Light color paints (high reflectivity) Corrugated metal	Light color paints (high reflectivity) Corrugated metal	Light color paints (high reflectivity) & dark color paint Corrugated metal	Light color paints (high reflectivity) Corrugated metal	Absorption and reflectivity	 
Lot area (sq.m.)	30 to 40 (owned) 20 to 25 (rented)	64 to 150 (owned) 20 to 123 (rented)	80 to 100 (owned) 22 to 27 (rented)	50 to 120 (owned)	Maximization of lots	 
Roads	Wide road serve as major road others were narrow	Wide road others were narrow	Wide road serve as major road others were narrow	Wide road serve as major road others were narrow	Absorption and reflectivity	  
materials texture greenery	Concrete & asphalt Smooth Minimal green spaces potted plants	Minimal green spaces, few trees, potted plants	Minimal green spaces, few trees potted plants	Minimal green spaces, few trees, potted plants	Lack of open space and required green areas	  
Characteristics	Houses converted to commercial purposes (renting) Middle-income earners Numerous old residential & commercial structures Rented spaces are smaller to owned houses Conversion and expansion on structures Owned houses large space than rented space Convert and expand spaces Larger areas for owned houses				Density due to economic reasons result to non-conformity to building code	 

Legend:		
Consideration	Strategy 1: Understand the process of climate	
	Strategy 2: Re-examine zoning	
	Strategy 3: Community participation	

5. Conclusion

The UHIs in the Sampaloc District area vary in one location at the same time frame but on a different day which is a function of land surface temperature, air temperature, and the factors that influenced these temperatures. Its limitation was a mobile manner of recording temperatures three times a day for three consecutive weeks in only two months at a single urban location. The temperature remains constant in one space but varies because of the different factors. Since the district has varied features and is continuously subsisting and evolving, the UHI effect is likewise in a similar course. Its limitation on the physical impact was that the temperatures recorded were based on the physical features of the area excluding indoor temperature while on the social impact, the residents' interviews were limited to 10% of the total structures or houses selected. For the framework to become feasible at the initial stage of structure, the design must be (a) an approach to understanding the process of climate and adapt green architectural designs; (b) a scheme in re-examining zoning types integrating various functions in connection with green concepts; and (c) an independent initiative for the community to be involved in green environment awareness in their resourcefulness. The effectiveness of the strategies and approaches of the framework to the old and existing district is realized by understanding the weather condition and the interaction of the identified factors that affect the UHI effect. Similar research should be undertaken to other districts located in any local urban city because of no available specific data focusing on an urban community that provided a mitigating strategy for the UHI effect. Future research related to this study will further guide local government administrators, planners, designers, architects, and others who wish to undertake planning and designing urban communities using the framework obtained from the study. A more sophisticated instruments should be utilized. A measuring instrument fixed in different locations may be applied to record temperatures simultaneously instead of in a mobile manner to determine if the results will be similar or not.

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APPENDIX A

RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)

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APPENDIX B

RANGSIT JOURNAL OF SOCIAL SCIENCES AND HUMANITIES (RJSH)

NOTE FOR AUTHORS

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Author./ (Year of publication)./Title of Abstract (abstract)./Journal Title,/Volume(Issue),/Page number.

Example:

Clark, D. V., Hausen, P. H., & Mammen, M. P. (2002). Impact of dengue in Thailand at the family and population levels (abstract). *Am J Trop Med Hyg*, 67(2 Suppl), 239.

Books

Author./ (Year of publication)./Book Title:/Capital letter also for subtitle./Edition (if any)./Location,/Country :/Publisher.

Example:

Cochrane, A. (2007). *Understanding urban policy: A critical approach*. Malden, MA: Blackwell Publishing.

Palmer, G. R., & Short, S. D. (2010). *Health care and public policy: An Australian analysis* (4th ed.). South Yarra, VIC: Palgrave Macmillan.

Bulliet, R. W., Crossley, P. K., Headrick, D. R., Hirsch, S. W., Johnson, L. L., & Northrup, D. (2011). *The earth and its peoples: A global history* (5th ed.). Boston, MA: Wadsworth.

Chapter in edited book

Richards, K. C. (1997). Views on globalization. In H. L. Vivaldi (Ed.), *Australia in a global world* (pp. 29-43). North Ryde, Australia: Century.

Article or Chapter in an Edited Book

Author./ (Year of publication)./ Title of chapter./ In/ Editor/ (Ed.),/ *Book Title*/(pages of chapter)./ Location:/ Publisher.

Example:

O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: A metaphor for healing, transition, and transformation. In B. R. Wainrib (Ed.), *Gender issues across the life cycle* (pp. 107-123). New York, NY: Springer.

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Example:

Tester, J. W. (2008). The future of geothermal energy as a major global energy supplier. *Proceedings of the Sir Mark Oliphant International Frontiers of Science and Technology Australian Geothermal Energy Conference*, Canberra, Australia: Geoscience Australia. Retrieved from http://www.ga.gov.au/image_cache/GA11825.pdf

Dissertation or Thesis

Author./ (Year of publication)./ *Title of dissertation or thesis* /(Doctoral dissertation or Master's thesis)./ Awarding Institution.

Example:

Norasingha, A. (2009). *Expression and distribution of mucorinic receptors in hepatic composite of the cirrhotic rat* (Master's thesis). Rangsit University, Pathum Thani.

Editorials

Author./ (Year of publication)./ Title of Editorial (editorial)./ *Journal Title*,/ Volume(Issue),/ Page numbers.

Example:

Fisher, R. I. (2003). Immunotherapy in Non-Hodgkin's lymphoma: Treatment advances (editorial). *Semin Oncol*, 30(2Suppl 4), 1-2.

Journal Articles

Author./ (Year of publication)./ Article Title./ *Journal Title*,/ Volume(Issue),/ Page numbers.

Example:

Leelawat, S., Leelawat, K., Narong, S., & Matangkasombut, O. (2010). The dual effects of delta 9-tetrahydrocannabinol on cholangiocarcinoma cells: Anti-invasion activity at low concentration and apoptosis induction at high concentration. *Cancer Investigation*, 28(4), 357-363.

Polk, A., Amsden, B., Scarrtt, D., Gonzal, A., Oknamefe, O., & Goosen, M. (1994). Oral delivery in aquaculture. *Aquacult. Eng*, 13, 311-323.

Seals, D. R., & Tanaka, H. (2000). Manuscript peer review: A helpful checklist for students and novice referees. *Advances in Physiology Education*, 23(1), 52-58.

Srichandum, S. & Rujirayanyong, T. (2010). Production scheduling for dispatching ready mixed concrete trucks using bee colony optimization. *American J. of Engineering and Applied Sciences*, 3(1), 823-830.

Letters

Author./ (Year of publication)./Title of Letter./*Journal Title*./ Volume(Issue),/Page number.

Example:

Enzensberger, W., & Fisher, P. A. (1996). Metronome in Parkinson's disease (letter). *Lancet*, 347, 1337.

Notes

Author./ (Year of publication)./Title of Note./*Journal Title*./ Volume(Issue),/Page number.

Example:

Haier, R. J., Schroeder, D. H., Tang, C., Head, K., & Colom, R. (2010). Gray matter correlates of cognitive ability tests used for vocational guidance. *Biomed Central*, 3, 206.

Unpublished/In Press Articles

Author./ (In press Year)./Article Title./*Journal Title*./ (in press).

Example:

Veena, B. (2004). Economic pursuits and strategies of survival among Damor of Rajasthan. *J Hum Ecol.* (in press).

Internet periodicals

Author./ (Year of publication)./Article Title./*Journal Title*./Volume(issue),/ page numbers./Retrieved mm dd, year, from the full URL of the web page

Example:

Adams, P. J. (2000). Australian economic history. *Journal of Australian Economics*, 5(2), 117-132. Retrieved June 12, 2001, from <http://jae.org/articles.html>

Internet non-periodicals

Author./ (Year of publication)./Article Title./Retrieved mm dd, year, from the full URL of the web page

Example:

Lemire, D. (n.d.). *Write good papers*. Retrieved July 1, 2010, from <http://www.daniel-lemire.com/blog/rules-to-write-a-good-research-paper>

Newspaper retrieved from a database

Article – with an author

Author./ (mm dd, Year)./Article Title./*News agency*./Retrieved from the full URL of the web page

Example:

Darby, A. (August 20, 2002). Rarest tiger skin a rugged survivor. *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>

Article – without an author

Article Title./ (mm dd, Year)./ *News agency*./Retrieved from the full URL of the web page

Example:

Rarest tiger skin a rugged survivor. (August 20, 2002). *Sydney Morning Herald*. Retrieved from <http://www.smh.com.au>

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9. Further Reading

The following resources will provide valuable guidelines for the preparation of manuscripts.

Anonymous. (n.d.). How to write abstract. Retrieved January 17, 2011, from

http://www.journal.au.edu/au techno/2006/jan06/vol9num3_howto.pdf

Anonymous. (n.d.). How to write an abstract: Links and tips. Retrieved January 17, 2011, from

<http://research.berkeley.edu/ucday/abstract.html>

Koopman, P. (n.d.). How to write an abstract. Retrieved January 17, 2011, from

<http://www.ece.cmu.edu/~koopman/essays/abstract.html>

Lemire, D. (n.d.). Write good papers. Retrieved January 17, 2011, from <http://lemire.me/blog/rules-to-write-a-good-research-paper/>

Plonsky, M. (n.d.). Psychology with style: A hypertext writing guide. Retrieved January 17, 2011, from

<http://www.uwsp.edu/psych/apa4b.htm>

Seals, D. R., & Tanaka, H. (2000). Manuscript peer review: A helpful checklist for students and novice referees. *Advances in Physiology Education*, 23(1), 52-58.

Jones, A., & Pham, H. (n.d.). Basic Referencing using the APA System, Teaching and learning unit, Faculty of Economics and Commerce, The University of Melbourne. Retrieved February 15, 2011, from <http://www.scribd.com/doc/57603066/A-Pa-Style>



APPENDIX C

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The introduction should put the focus of the manuscript into a broader context. As you compose the introduction, think of readers who are not experts in this field. Include a brief review of the key literature. If there are relevant controversies or disagreements in the field, they should be mentioned so that a non-expert reader can find out about these issues further. The introduction should conclude with a brief statement of the overall aim of the experiments.

To insert a citation in the text use the author-year system, i.e., the author's last name and year of publication. Examples are as follows: "Since Johnson (2008) has shown that..." or "This is in agreement with results obtained later (Benjamin, 2010)". For 2-3 authors; all authors are to be listed, with "and" separating the last two authors, for more than three authors, list the first author followed by et al. The list of references should be arranged alphabetically by authors' names. All publications cited in the text should be presented in a list of references following the text of the manuscript. The manuscript should be carefully checked to ensure that the spelling of authors' names and dates are exactly the same in the text as in the reference list. Responsibility for the accuracy of bibliographic citations lies entirely with the author(s). Citation of a reference as "in press" implies that the item has been accepted for publication. Authors are responsible for the accuracy of the content of the references.

2. Objectives

The objectives of the study should be specified explicitly.

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Tables must be cell-based without vertical lines. They should be produced in a spreadsheet program such as Microsoft Excel or in Microsoft Word. Type all text in tables using 9-point font on 10-points line spacing. Type the caption above the table to the same width as the table.

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Table 1 Table caption

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R2			
R3			
R4			
R5			
R6			

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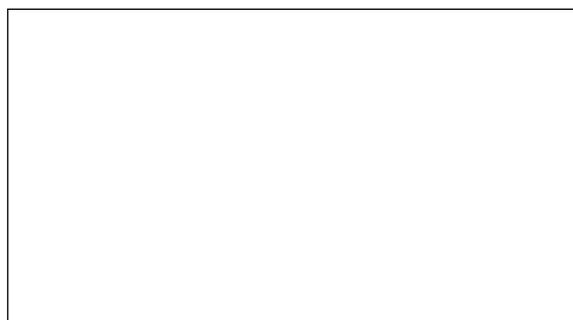
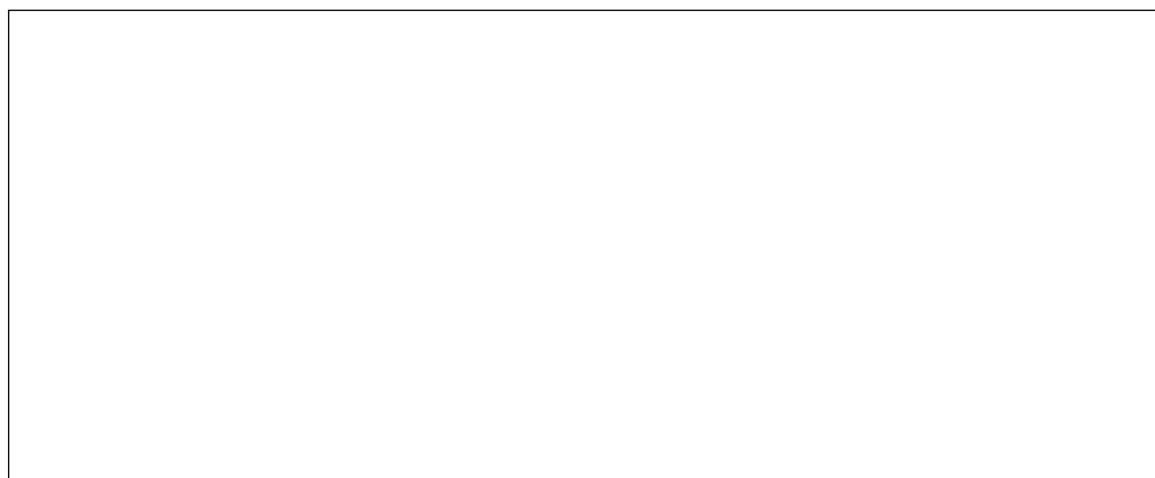


Figure 1 Figure caption

Table 2 Table caption

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R1						
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R10						

**Figure 2** Figure caption

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The discussion should spell out the major conclusions of the work along with some explanation or speculation on the significance of these conclusions. How do the conclusions affect the existing assumptions and models in the field? How can future research build on these observations? What are the key experiments that must be done? The discussion should be concise and tightly argued. Conclusions firmly established by the presented data, hypotheses supported by the presented data, and speculations suggested by the presented data should be clearly identified as such. The results and discussion may be combined into one section, if desired.

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7. Acknowledgements

People who contributed to the work but do not fit criteria for authorship should be listed in the Acknowledgments, along with their contributions. It is the authors' responsibility to ensure that anyone named in the acknowledgments agrees to being so named. The funding sources that have supported the work should be included in the acknowledgments.

8. References

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