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นิพนธ์ต้นฉบับ

การประเมินการบริการระบบนิเวศด้านวัฒนธรรม: กรณีศึกษาความเต็มใจที่จะจ่ายสำหรับพื้นที่สีเขียวในจังหวัดกรุงเทพมหานคร ประเทศไทย

อารีรัตน์ ญาณวุฒิ[1], นิสา เหล็กสูงเนิน[2*], พันธนา ตอเงิน[3] และ เออวดี เปรมัษเฐียร[4]

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บทคัดย่อ

หลักการและวัตถุประสงค์: อุทยาน 100 ปีจุฬาลงกรณ์มหาวิทยาลัย (อุทยาน 100 ปี จุฬาฯ) เป็นพื้นที่สีเขียวเพื่อให้เป็นพื้นที่มีประโยชน์สู่สังคมและส่วนรวม ด้วยแนวความคิดการรองรับการเปลี่ยนแปลงสภาพภูมิอากาศโลก และเป็นพื้นที่พักผ่อนหย่อนใจ โดยมีวัตถุประสงค์ของการศึกษาครั้งนี้เพื่อประเมินความเต็มใจที่จะจ่ายในการบำรุงรักษาอุทยาน 100 ปี จุฬาฯ โดยใช้วิธีการประเมินค่าโดยการสัมภาษณ์ประชาชนโดยตรง (Contingent Valuation Method: CVM)

วิธีการ: ใช้แบบสอบถามสัมภาษณ์กลุ่มตัวผู้ใช้บริการพื้นที่ และไม่ได้ใช้พื้นที่อุทยาน 100 ปี จุฬาฯอย่างจำนวน 403 ตัวอย่าง จากกลุ่มอายุ 15 – 60 ปี .ในเขตปทุมวัน จังหวัดกรุงเทพฯ ในช่วงเดือนมกราคม ถึงมีนาคม พ.ศ.2563 การศึกษานี้ใช้วิธีนำการวิเคราะห์ Chi-square เพื่อทดสอบความเป็นอิสระระหว่างตัวแปร และค่าความเต็มใจที่จะจ่ายโดยใช้โปรแกรม RStudio

ผลการศึกษา: กลุ่มตัวอย่างชื่นชอบกิจกรรมในสวนสาธารณะมากที่สุดคือการออกกำลังกายและการพักผ่อน และพบว่าร้อยละ 71 ของกลุ่มตัวอย่างมีความยินดีจ่ายที่ 100 บาท/คน/ปี โดยใช้ตัวแปรอายุ การศึกษา อาชีพ และรายได้มีความสัมพันธ์อย่างมีความสำคัญกับความเต็มใจที่จะจ่ายจากการทดสอบ χ^2 นอกจากนี้การเข้ามาใช้สวนสาธารณะบ่อยขึ้น โอกาสที่จะมีความเต็มใจที่จะจ่ายก็ยิ่งมากขึ้นเท่านั้น ผลการวิจัยชี้ให้เห็นว่าการตระหนักรู้ด้านสิ่งแวดล้อมและสถานะทางเศรษฐกิจและสังคมมีความสำคัญสำหรับกลุ่มตัวอย่างที่ยินดีจ่ายเงินเพื่อการบำรุงรักษาอุทยาน100 ปี จุฬาฯ

สรุป: การศึกษานี้เป็นส่วนหนึ่งที่สามารถช่วยให้นักวางผังเมืองเข้าใจการรับรู้ของประชาชนในชุมชน และช่วยให้พวกเขาสามารถเสนอสิทธิประโยชน์ด้านสวัสดิการที่เหมาะสมแก่ชุมชนได้ หน่วยงานอุทยาน100 ปี จุฬาฯสามารถนำไปจัดทำโครงการที่เกี่ยวข้องกับการศึกษาด้านสิ่งแวดล้อมเพื่อปรับปรุงความตระหนักรู้ของประชาชนในชุมชนต่อไป

คำสำคัญ: มูลค่าทางเศรษฐกิจ, ป่าไม้ในเมือง, การประเมินมูลค่าทางการเงิน, นันทนาการในสวนสาธารณะ

[1] ศูนย์ประสานงานเครือข่ายวิจัยนิเวศวิทยาป่าไม้ประเทศไทย ภาควิชาชีววิทยาป่าไม้ คณะวนศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ กรุงเทพฯ 10900

[2] ภาควิชาชีววิทยาป่าไม้ คณะวนศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ กรุงเทพฯ 10900

[3] ภาควิชาวิทยาศาสตร์สิ่งแวดล้อม คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กรุงเทพฯ 10330

[4] ภาควิชาเศรษฐศาสตร์เกษตรและทรัพยากร คณะเศรษฐศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ กรุงเทพฯ 10900

***ผู้รับผิดชอบบทความ**: Email: ffornsl@ku.ac.th

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ORIGINAL ARTICLE

Ecosystem Culture Services Evaluating: A Case Study on Willingness to Pay for Urban Green Area in Bangkok, Thailand

Arerut Yarnvudhi[1], Nisa Leksungnoen[2*], Pantana Tor-ngern[3], and Aerwadee Premashthira[4]

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ABSTRACT

Background and Objectives: Chulalongkorn University Centenary Park (CU 100 Park) has been established as urban park to serve communities as a climate change mitigator and provide recreational purposes. This study aimed to assess the willingness to pay (WTP) for maintaining the park using a contingent valuation method (CVM).

Methodology: A total of 403 respondents with the 15-60 age groups was interviewed face to face Thailand during January to March 2020. The Chi-square analysis was applied to test the independence between variables and WTP based on RStudio program.

Main Results: The most favorite activities in the park were exercising and leisure. The average WTP values was THB 100-yr^{-1} person (USD 3.03) based on 71 % of respondents who agreed to pay. The most favorite activities in the park were exercising and leisure. Demographic variables including age, education, occupation, and income were highly significantly related to WTP based on χ^2 test. In addition, the more frequent of visiting the park, the better chance to contribute to WTP. The results indicated that the environmental awareness and socio-economic status are important for people to willing to pay to conserve the park.

Conclusion: Our findings could help urban planners to understand urban residents' perceptions and enable them to offer the proper welfare benefits to communities. We recommended to an authority of the park to build a program related to environmental education in order to improve the public's awareness.

Keywords: Economic value, urban forest, assessing monetary value, park recreation

[1] Cooperating Centre of Thai Forest Ecological Research Network, Faculty of Forestry, Kasetsart University, Bangkok, 10900 Thailand

[2] Department of Forest Biology, Faculty of Forestry, Kasetsart University, Bangkok, 10900 Thailand

[3] Department of Environmental Science, Faculty of Science, Chulalongkorn University, Bangkok, 10300 Thailand

[4] Department of Agricultural and Resource Economics, Faculty of Economics, Kasetsart University, Bangkok, 10900 Thailand

***Corresponding author**: Email: ffornsl@ku.ac.th

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Introduction

The world population is projected to reach 8.5 billion in 2030 especially in developing countries such as those in Asia. Half of the world's population lives in urban areas and expected to increase to 68% by 2050 (United Nations, 2022). Urban areas are, thus, the places where environmental problems as known as pollutions, urban heat island (UHI), and stressful lifestyle directly affect citizens' daily lives (Piracha & Chaudhary, 2022). Green areas, mainly the parks provided many social, ecological and economic benefits; improving air quality such mitigating the urban heat island effect; believing to heal and provide relaxation conditions for urban residents, by enhancing human health and well-being either directly or indirectly (Konijnendijk *et al*., 2013; Nowak *et al*., 2013). The usefulness of parks is various including of aesthetic, recreational, and sporting purposes, play area for children, and as peaceful retreat for adults (López-Mosquera *et al*., 2014). However, the roles of parks in urban areas are usually under consideration, in terms of the awareness and the monetary.

Urbanization impacts on biodiversity and ecosystems on various scales and modifying existing ecosystem, thus creating unique urban environments (Cilliers *et al*., 2013; Niemelä *et al*., 2010; Williams *et al*., 2009). Local and regional energy balance are affected in terms of the hydrological cycle, gas exchange, total carbon fixational and plant production (Schneider *et al*., 2012). Indeed, urban ecosystem is unique and differ qualitatively from other ecosystems (Daily, 1997). Forests in urban areas provide various services to human (Nowak & Dwyer, 2007), as it either contributes direct or indirect services which are known collectively as ecosystem services (ES) (The Economics of Ecosystems and Biodiversity (TEEB), 2010). Urban park primarily aims at providing cultural services which enhancing amenity values and serve benefits to humans who interact with nature on physiological function and health, psychological and spiritual well-being (Fuller *et al*., 2007). Moreover, regulating services related to pollution mitigation (Kura *et al*., 2013), UHI, and carbon sequestration under microclimate change are also provided from urban green space (Nowak *et al*., 2013), and noise pollution (Morillas *et al*., 2018). Whereas provisioning services (timber and non-timber products) and supporting services (soil regeneration and nutrient cycle etc.) are less emphasized relatively to natural ecosystems.

Assigning a monetary value to cultural ecosystem services under the concept of non-market valuation is difficult especially with natural services. However, some techniques designated for measuring values of those services, for example,

revealed and stated preference techniques which are widely used to measure the utility of economic value of environmental changes (The Economics of Ecosystems and Biodiversity, 2010). One of the preferable techniques used for cultural service valuation is stated preference (Hanemann, 1994; Spash & Hanley, 1994). The choice experiments (CE) and contingent valuation method (CVM) are two common methods of stated preference approaches. The CE provides various scenarios for the respondents to choose based on the design of the choices for the future estimation which is time consuming (Seenprachawong, 2016), while the CVM uses the supposed situation for the respondents to decide to pay to prevent or to encourage that situation to happen (Pearce, 2006). However, the results from CVM can be sensitive to numerous sources of bias due to survey design and implementation (The Economics of Ecosystems and Biodiversity, 2010), therefore, the researchers should be consider and aware of this issues. With CVM people's attitudes are reveled through the questions leading toward the maximum willingness to pay (WTP) for environmental improvement (Brandli *et al*., 2014; Song *et al*., 2015; Tyrvainen, 2001; Wang *et al*., 2017). The responses will directly reflect the interaction and the benefits of urban park to urban residents. As a result, the authority of the park can improve the well-being of residents based on their acceptance. Several studies have been conducted to value environmental goods or services using the CVM on perspective on the WTP value of urban green spaces (Botes & Zanni, 2021; López-Mosquera *et al*., 2014; Lorenzo *et al*., 2000; Song *et al*., 2013).

The CU 100 Park was established in the middle of capital city, Thailand and mainly provide leisure, sports, amenities and aesthetic so called "cultural services" (Chulalongkorn University Centenary Park, 2016) for urban residents. Recently, ES in provisioning and regulating services provided by the CU 100 Park were reported by Yarnvudhi *et al*. (2021a), but no culturing services with evaluated monetary value been reported in this park. Therefore, this study has an emphasis on the CVM applied to obtain information associated with people's preferences for ES especially in culturing services provided by the CU 100 Park. The finding would support the decision of the authority to maintain and improve the quality of ES in the park.

Materials and Methods

Study areas

This study was conducted in "Chulalongkorn University Centenary Park" (CU 100 Park) with the area of 4.48 ha. This park was created with the objectives of future uncertainties climate change to serve to societies' activities,

communities' health, economic, climate change on flood defenses (Chulalongkorn University Centenary Park, 2016). It is a Chulalongkorn University (CU) property and authorized by Property Management Chulalongkorn University (PMCU) with a free access. It is located in metropolitan city of urban area in Pathumwan district Bangkok, Thailand (lat 13.73'N, long 100.52'E), where it ranges in altitude from 2 m above mean sea level near Chao Phraya River (Bangkok Metropolitan Administration (BMA), 2019) (Figure 1).

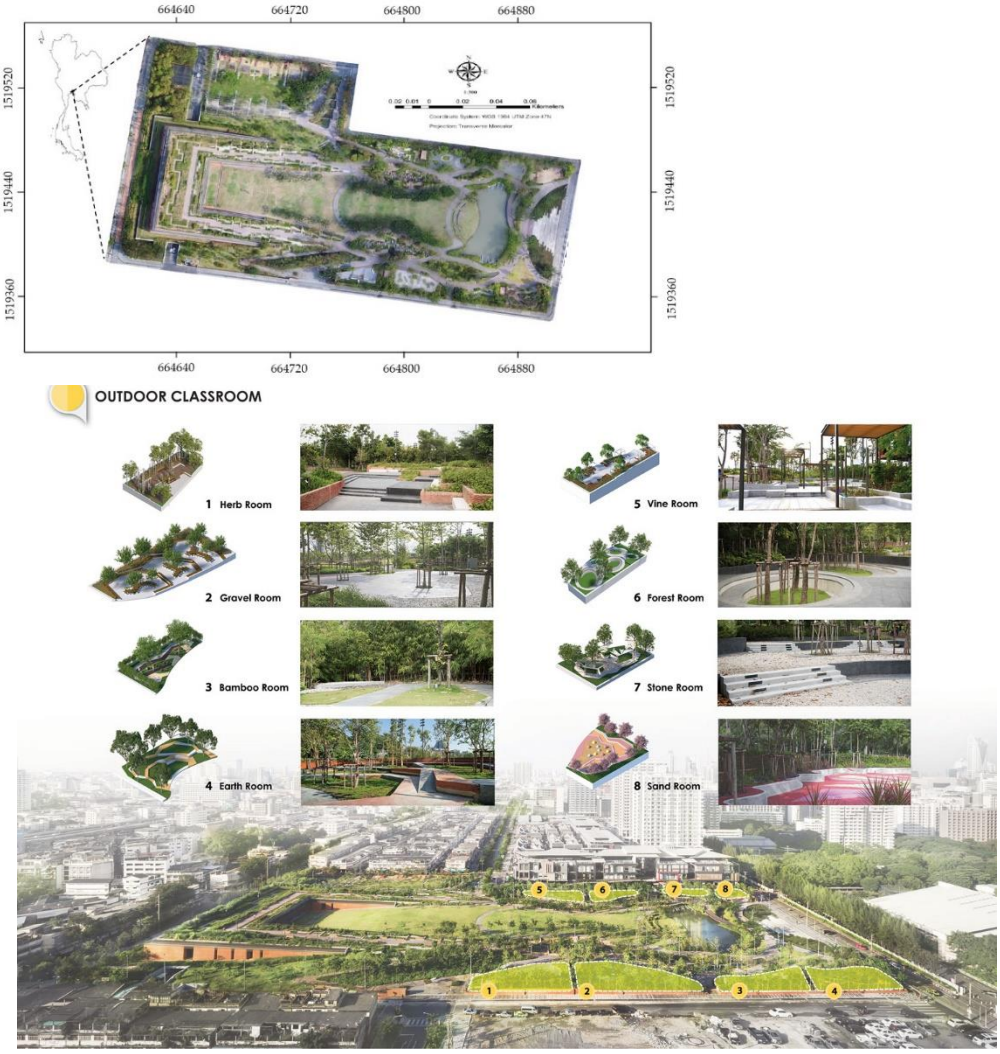

Figure 1 Location and outdoor activities of the Chulalongkorn University Centenary park (CU 100 Park) (4.48 ha) (Chulalongkorn University centenary Park, 2016).

Data collection and analysis

To investigate the preferences toward the CU 100 Park in cultural services, we conducted a contingent valuation method (CVM) to elicit the visitors and non-visitors within the Pathumwan district to earn the willingness to pay (WTP) to

maintain the CU 100 Park services. Non visitors would benefit the park as the admiration of exists the park and might be preserved for future use or future generations. The survey data were collected from face-to-face interviewing in the CU 100 Park and Pathumwan district, Bangkok, Thailand from January to March 2020. Sample sizes were calculated using Eq.1, following Krejcie & Morgan (1970).

$$S = X^2 NP(1-P) / d^2(N-1)+X^2P(1-P)……..(Eq.1)$$

where; S is required sample size, X^2 is the table value of chi-square for 1 degree of freedom at the desired confidence level (0.05 = 3.841), N is the population size, P is the population proportion (assumed to be 0.50 since this would provide the maximum sample size), d is the degree of accuracy expressed as proportion (0.05).

The total sample size of 403 was representative of visitors and non-visitors as population in Pathumwan district where the population were 46,925 (Pathumwan District Office, 2022). Respondents over the age of 15 were interviewed because it was stated that the age between 15-60 years are capable of working in labor market (Bureau of Technical Advisors department of health, 2022). The interviews were conducted in the CU 100 Park between 07.00-10.00 am. due to main activity of exercise in the park and 03.00-06.00 pm. when it is after the kindergarten, school, and office time in Thailand.

The questionnaire was based on Idris *et al*. (2022) in which the profile of the respondents can be identified, such as gender, age, education, income, and occupation. Before implementing the full-scale survey, there were two stages for complete questionnaire. The first stage was a pilot tests which were launched to improve the quality of questions (Mitchell & Carson, 1989; Whitehead, 1993). We used 50 pilot tests (Mertens, 2023), in this study and the respondents were required to express their preferences on the monetary value to maintain the CU 100 Park applying an open-ended question with 6 trained interviewees. The study was conducted in accordance with the Declaration of Helsinki (World Medical Association, 1964). The protocol was applied for the Strategic Initiative for Developing Capacity of Ethical Review (SIDCER) of Thailand which provided the certificate of the Central Research Ethics Committee (CREC). The author, Aerwadee Premashthira is certified by the CREC (Office of Research Ethics, 2014).

Second stage, the questionnaire was adjusted, and some information was inserted to promote the clear understanding of the questions by the survey respondents.

The questionnaire comprised three sections, the first section aimed to identify the

respondent's perception on culturing services which provided by the CU 100 Park (Appendix Table 1 and 2). The second section descript to maintaining the CU 100 park, the CVM research was undertaken in this section because it outlines the information about the sample and the WTP (Appendix Table 1). The third section were demographic factor; gender and age, education, income, and occupation. For the first and the third section were using a quantitative method because it focuses on the measurement of phenomena involved the collection and analysis of numerical data using descriptive statistic with percentage (Collis and Hussey, 2003). To perform the tests, the excel Microsoft11 was accumulated the data and the RStudio program was used statistical software of the Chi-square analysis to test the independence between variables and WTP (Appendix Table 2). ParticipantT were willing and able to give informed consent for participation in the study.

Results and Discussion

1. Demographic information

Questionnaires from 403 respondents who visited (88%) and non-visited (12%) to the CU 100 Park, showed that 61% of the respondents were female and 39% were male. The majority of the respondents were at the age of 21-40 (68%) (Table 1), which people in this age group were reported to be more concerned on environment problem such as pollution especially particulate matter 2.5 ($PM_{2.5}$) (Tantiwat *et al*., 2021) and health concerning (Thavorncharoensap *et al*., 2013) than other age groups. Moreover, the young generations (26-35 years old) are greatly concerned with global environmental problems (Petcharat *et al*., 2020). Most of the respondents (62%) obtained undergraduate degree while 27% of them were Master's degree or above indicating that most of the respondents had high education. The employees, government officers, undergraduate and graduate students were the most used the park. The monthly income between THB 10,001- and THB 30,000- was account for 50% of the respondents (Table 1). In summary, the respondents in this study were in the working age, educated, and having average monthly income according to the GDP per capita of Thailand THB19,760- (World Bank, 2022).

2. Awareness and activities of respondents

Among all respondents, 44% has lived in Pathumwan district and 56% came from outside of Pathumwan district (Appendix Table 1). Over 60% of respondents was either unknown that the park is managed by the Property Management Chulalongkorn University (PMCU) or the objective of the park is to mitigate climate crisis in the future. People usually visited the park 1-3 times a week

Table 1 Percentage of respondents willing to pay by demographic and socioeconomic variables for Chulalongkorn University Centenary Park (CU 100 Park).

Variable/ characteristic	Respondents (%)	Willingness to pay (WTP) in THB (%)					
		0	100	500	1,000	1,500	> 1,500
Gender							
Female	61	14.39	**37.97**	6.20	1.49	0.25	0.50
Male	39	14.64	18.86	4.47	0.50	0.25	0.50
Age category (years)							
less 20	12	2.23	8.19	0.99	0.25	0.00	0.25
21-30	37	10.92	**20.84**	4.47	0.50	0.00	0.00
31-40	31	9.93	17.12	3.23	0.50	0.25	0.25
41-50	15	2.98	9.93	1.24	0.25	0.00	0.25
51-60	3	1.24	0.50	0.50	0.25	0.25	0.00
More than 60	2	1.74	0.25	0.25	0.25	0.00	0.25
Education							
High school	11	4.71	4.96	0.50	0.74	0.00	0.50
Bachelor degree	62	18.11	**36.48**	5.21	0.74	0.25	0.50
Master degree	27	6.20	15.38	4.96	0.50	0.25	0.00
Occupation							
Government	18	3.47	11.17	2.98	0.00	0.25	0.25
Private company employee	38	11.66	**23.82**	2.23	0.00	0.25	0.00
Student	30	7.69	16.87	4.22	0.50	0.00	0.25
Retirement	1	0.74	0.00	0.25	0.50	0.00	0.00
Trader	3	1.24	1.24	0.25	0.00	0.00	0.00
Housewife	3	2.23	0.74	0.00	0.00	0.00	0.25
Others	7	1.99	2.98	0.99	0.74	0.00	0.25
Monthly income (THB)							
Less10,000	27	8.44	15.14	2.23	0.25	0.00	0.50
10,001 - 30,000	50	13.90	**31.27**	3.23	1.24	0.00	0.50
30,001 - 60,000	16	3.47	8.19	3.47	0.25	0.25	0.00
More than 60,000	6	1.24	2.23	1.74	0.25	0.25	0.00
Not mention	1	1.99	0.00	0.00	0.00	0.00	0.00

and spent time up to an hour for exercises (walk, run and yoga), leisure time such as picnic, sitting, and chatting and taking photos (Figure 2). Respondents believed that these activities are good for maintaining physical health, for satisfying psychological needs, and provide bridge between family members and neighbors and friends. While, playing game such as Pokémon game and using free wifi were the least frequently recorded in this study (Pokemon Go Thailand, 2019).

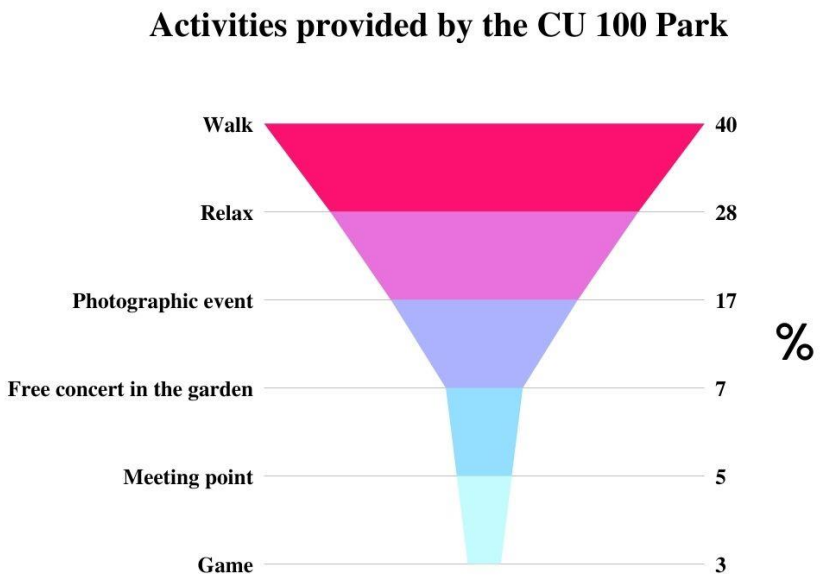

Figure 2 Activities provided by the Chulalongkorn University Centenary Park (CU 100 Park) (activities can be answer more than one answer).

The PMCU provides various facilities in the park to support the activities of urban residents. The most satisfied facilities were the greenness of the trees, trails for walking and running, while the building was the least facility that respondents used (Figure 3). The respondents would like the PMCU to add more toilets and the exercise equipment (Figure 4). Events of concerts and/or marathon are often arranged in the park but 42% of respondents indicated that it was quite difficult to access the information of the events in the park. This is because the information is only posted on Facebook page that requires to be friend before accessing to the information online. Even the events are difficult to obtain information, but all activities are free of charge. Therefore, most respondents suggested the PMCU to organize more activities on outdoor art exhibition, running event, yoga, and outdoor concerts (Figure 5).

Figure 3 Satisfaction facilities of respondents toward the CU 100 Park.

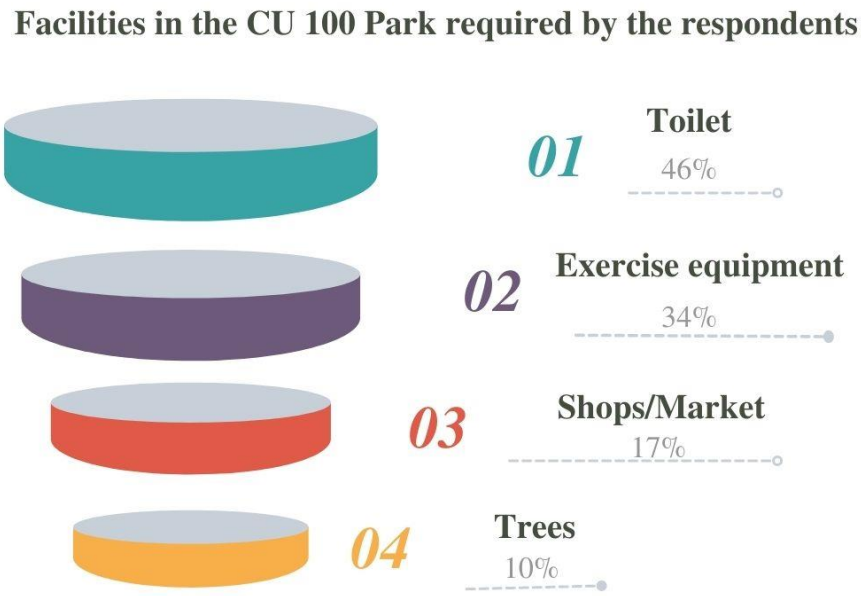

Figure 4 Facilities required by the respondents for the CU 100 Park (facilities can be answer more than one answer).

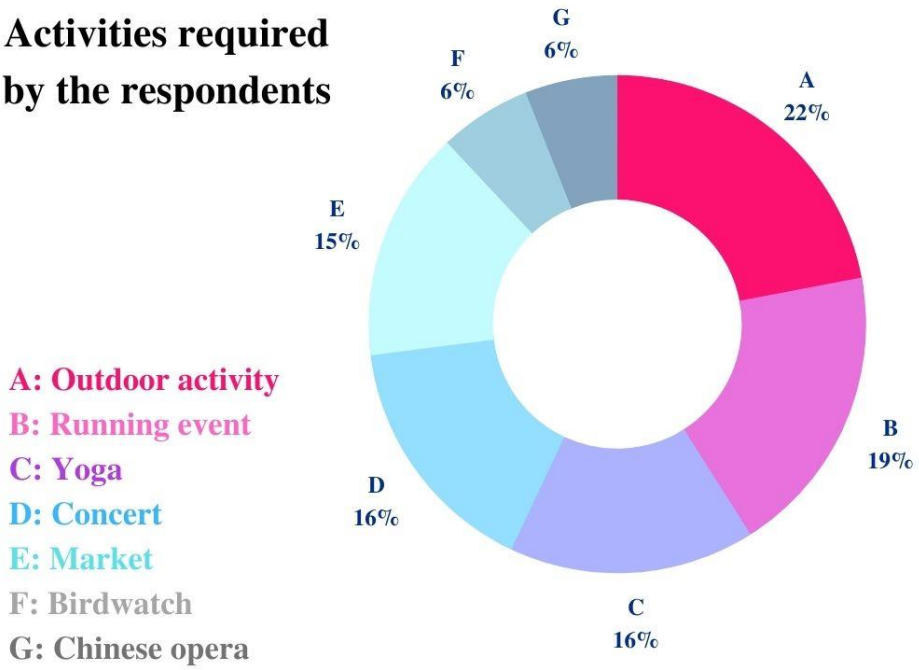

Figure 5 Activities required by the respondents (activities can be answer more than one answer).

3. Analysis of willingness to pay (WTP)

Seventy percent of the respondents would like to pay with the monthly payment. Interestingly, in the study of Bejranonda and Attanandana (2011) reported that among the WTP respondents, entrance fee and environment tax were chosen as the method payment. In this study, 30% of them refused to pay because these people realized that the park was financially supported and managed by the PMCU. Bejranonda and Attanandana (2011) studied the WTP using the CVM technique in Bangkok residents towards green space in Thailand. Respondents were asked for WTP to use green space and 36% refused to pay, which was similar to this study, with the reason that the government should provide green space area for urban residents because they already paid income tax.

Total WTP in this study was worth THB4,692,500- yr^{-1} base on the average payment from sample size of THB 100 (USD 3.03) (Table 1). The WTP in this study was lower when compared to the other studies because people unaware of payment for services and believed that CU should be responsible for the expenses. Bejranonda and Attanandana (2011) reported that people were willing to contribute an average of THB 750.48 (USD 23.45) yr^{-1} per person and they used the parks during weekend for exercise and recreational activities in Bangkok, Thailand. While Petcharat et al. (2020) reported that the respondents were WTP USD42- yr^{-1} per person for

Bang Kachao public park, Thailand as they were more amenable to paying for a better quality of ecosystem services and value the green area. In addition, the WTP was reported with higher amount of USD 32.60 yr^{-1} per person in Wuhan, China (Tian *et al*., 2020) because people were aware of the negative impacts of biophysical environments when there is no green space.

The demographic characteristics (gender, age, education, occupation, and income) and awareness factors (Pathumwan residential, park objective, park owner, PMCU activities, and frequency of visiting the park) were analyzed for the relevance to WTP. The WTP was highly significant correlated with all demographic variables ($P<0.05$) apart from gender that was marginally significant ($p=0.0563$) (Table 2). The results were consistent with the report of Tian *et al*. (2020) who indicated that perception related to WTP of people in the city of Wuhan, China were income, occupation and education level. The respondents with more monthly income would pay more than who's with less income which associate with occupation as employees and government officer in this study. While, Bejranonda and Attanandana (2011) also found that the factor affecting respondents' WTP for green space development were income, age, and gender. They also stated that male WTP values in male respondents were more than female, therefore, the more often ones used green space areas, the greater the probability that they would pay compared to others. Interestingly, the awareness factor on frequency of visiting the park was the only variable that had a significant correlation on influent of the WTP value in this study (Table 2). Song *et al*. (2015) found similar results in Jinan park, China that the WTP value was related with living standards, especially monthly income and visit frequency as high income person could better afford to visit the park more often and pay for maintenance. However, in this study even female visited the park more frequent than male and might positively influence on the probability of WTP, χ^2 indicated that no statistical difference in WTP between gender (Table 2).

The elderly was less likely to be WTP for using green space when compared to younger respondents. Petcharat *et al.* (2020) indicated that young respondents between age 26-35-years old tended to pay more to improve the green area in Bang Kachao public park in Thailand, as so it can provide various activities such as jogging, riding, bicycles, and environmental education programs for young group. As well as is can become a well-known check in location among young Facebook users. Respondent's education level of undergraduate and graduate education has positive

effect on WTP, indicating that improving education on environmental awareness is in need to be concerned. The results are similar to the study in Kampala city in South Africa by Gelo a& Turpie (2021) that the high education (bachelor's degree) increased the likelihood of accepting of WTP. In summary, educated people might have a better chance to obtain various and updated information and be able to decide wisely to believe in the reasonable information in environmental situation.

Table 2 Chi-square (χ^2) test of variables related to willingness to pay (WTP) for Chulalongkorn University Centenary Park (CU 100 Park).

Variables	χ^2	**df**	***p*-value**
Demographic variables			
Gender	10.759	5	0.0563
Age	54.183	25	0.0006**
Educational	26.868	10	0.0027**
Occupations	90.423	30	<0.0001***
Income	57.307	20	<0.0001***
Awareness variables			
Pathumwan residential	5.217	5	0.3899
Park objectives	5.059	5	0.3850
Park owner	8.599	5	0.1262
PMCU activity	8.027	5	0.1547
Frequency of visiting park	39.486	20	0.0057*

Environmental awareness is likely to be the key factor influencing WTP. In Pinggu urban green spaces in Beijing, China, the researcher concluded that enhancing ecological education can lead to the sustainable preservation for long term (Xua *et al*., 2020). Apart from the frequency of visiting the park, other awareness factors including Pathumwan residential, park objective, park owner, PMCU activities were not significantly correlated to the WTP value. This could be that these factors might not be the driving force to pay because they were unable to relate how this awareness could lead to the improvement of their life with the green space services. In summary, the important of factors affecting the WTP in this park of the surveyed respondents were income and occupation because these factors lead to a lifestyle and recreation as well as the free time to appreciate the

nature. Age and education are also as important in terms of awareness and the ability to access that environmental information. The background of the urban residents can relate to the WTP as well as the time they spend to visit the park. The frequent they visit the park, the better chance for them to connect to the nature and realize how important for them to have some relax green space.

Conclusion

This study adopted CVM to measure respondents' WTP for maintain of the CU 100 Park as the main results are that concerning of environmental issue and the benefits of green spaces in urban are what influence WTP. Assessing valuation, the park utility of aesthetic, amenity, spaces, and park environmental where the respondent can usually take benefits and escape from the urban life. The respondents' WTP for the park was measured of this value (THB100- yr^{-1} person) with an interesting result was found that respondents demanding of environmental for physical health and concerning environmental problem through their lifestyle in urban. However, the respondents believed that PMCU or government should pay for environmental maintenance of the park. The result also indicated that the respondents' awareness of the maintenance and environmental issue of the park should be improved. To improve the respondents' or people should understand of non-use value of urban park and the importance of ecological function which is necessary to strengthen ecological education in the sense of awareness or responsibilities of environmental changes need to be emphasis on knowledge and learning through schools or universities program. Thus, the combination of above can be create people responsibility and/or improvement of natural environment. In order to gain more responsibility and awareness of the park, the differences in the use of facilities which can be support physical activities (exercise equipment), recreation (bird watching, sitting by the pond or fish feeding), and social interactions (arrange some event such animal event or seasonal product market etc.) for visitors could be provided by the PMCU.

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Appendix 1 The description of variables (demographic and awareness variables) visitors and non-visitors for estimating willingness to pay (WTP) to the CU 100 Park that related to awareness.

Variable	Description
Willingness to pay (WTP)	1 if the person is willing to pay per year, otherwise: 0
Demographic variables	
Gender	1 if female, 0 if male
Age (years)	Less than 20, 21 – 30, 31 – 40, 41 – 50, 51 – 60, More than 60
Education	High school, Bachelor degree, Master degree
Occupation	Employee, Student, Government, Housewife, Trader, Retired, Others
Income	Less THB10,000, THB 10,001 - THB30,000, THB 30,001 - THB60,000, More THB60,000, Not mention
Awareness variables	
Residential	1 if Phatumwan residential, 0 if non Phatumwan residential
Park objectives	1 if know objectives of the park, otherwise: 0
Park owner	1 if know the owner of the park, otherwise: 0
Park provides activity	1 If know the park provide activities, otherwise: 0
Spending visits the park	Amount of visiting the park per week

Descriptive question related to awareness

Variables	Number	%
Residential		
Hypothesis: the one who live closer will be more aware		
Pathumwan resident	176	44
Non Pathumwan resident	227	56
Objectives of the park establishment		
Hypothesis: the one who know objective establishment of the park will be more aware		
Know the objectives	151	37
Not know the objectives	252	63
The owner of the park (Property Management Chulalongkorn University PMCU)		
Hypothesis: the one who know the Park owner will be more aware		
Know the PMCU	133	33
Not know the PMCU	270	67

Activities provided by PMCU		
Hypothesis: the one who know that the Park provide various activities will be more aware		
Know	193	48
Not know	210	52
Frequency of park visiting		
Hypothesis: the one who visit the Park more often will be more aware		
Never	47	12
1 - 2 times	303	75
3 – 5 times	37	9
More than 5 times	16	4

Appendix 2 Willingness to Pay for maintain the Chulalongkorn University Centenary Park CU 100 Park.

Willingness to pay	**Number**	**Percent of respondents**
Not Willing to pay	220	54.59
Willing to pay THB 100	137	34.00
Willing to pay THB 500	32	7.94
Willing to pay THB 1,000	8	1.99
Willing to pay THB 1,500	2	0.50
Willing to pay above THB 1,500	4	0.99
220 Respondents not WTP at first if the PMCU organized some event, the respondents would WTP for the Park		
Not Willing to pay	117	53.18
Willing to pay THB 100	92	41.82
Willing to pay THB 500	11	5.00
Willing to pay THB 1,000	0	0
Willing to pay THB 1,500	0	0
Willing to pay above THB 1,500	0	0