**YANGON UNIVERSITY OF ECONOMICS**
**DEPARTMENT OF APPLIED ECONOMICS**
**MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

# ESTIMATING THE RECREATIONAL VALUE OF ZOOLOGICAL GARDEN IN NAYPYITAW USING TRAVEL COST METHOD

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**MPA - 77 (21st BATCH)**

**JUNE, 2024**

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# ESTIMATING THE RECREATIONAL VALUE OF ZOOLOGICAL GARDEN IN NAYPYITAW USING TRAVEL COST METHOD

A thesis submitted as a partial fulfillment towards the requirement for the degree of Master of Public Administration (MPA)

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**June, 2024**

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This is to certify that this thesis entitled **"ESTIMATING THE RECREATIONAL VALUE OF ZOOLOGICAL GARDEN IN NAYPYITAW USING TRAVEL COST METHOD"**, submitted as a partial fulfillment towards the requirements for the degree of Master of Public Administration has been accepted by the Board of Examiners.

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# ABSTRACT

The study analyzes the recreational value of the Zoological Garden in Naypyitaw. This study aims to support in decision makings partly to be better-quality zoo and contribute to social welfare of Myanmar citizens. This study employs the Travel Cost Method to estimate the recreation value of Zoological Garden in Naypyitaw. The study specifically determines the annual recreation use value of the gardens and analyses the consumer surplus per tourist each visit. The study is conducted on 200 visitors of the zoological garden with structured questionnaire. The relationship between variables and the number of visits is analyzed using a log-log regression model. The significance of the independent variables, travel cost and distance, suggests a strong relationship with the number of visits. However, changes in income and age do not significantly change the number of visits as they have a weak correlation with dependent variable in the model. The findings show that the Naypyitaw zoological garden has a significant recreational value, which contributes significantly to the national economy.

# ACKNOWLEDGEMENTS

First of all, I would like to sincerely thank Professor Dr. Tin Tin Htwe, Rector of the Yangon University of Economics, for approving me permission to pursue this course of study in partial fulfilment of my Master of Public Administration degree requirements.

Secondly, I would like to express my most profound appreciation to Professor Dr. Khin Thida Nyein, Pro-Rector, Yangon University of Economics for teaching and sharing her knowledge and experience. Furthermore, sincerely thanks to Professor Dr. Su Su Myat, Head of Department, Department of Applied Economics, Yangon University of Economics and Programme Director of MPA Programme, for her extensive and constructive suggestions, her supporting excellence lectures and comments to complete this thesis.

I am heartily grateful to my supervisor, Professor Dr. Khin Thu Thu Thein, Lecturer for guidance, supervision, advice and encouragement in preparing to complete this study successfully.

In addition, I would like to extend my appreciation to all the teachers and faculty members in the Department of Applied Economics who have provided me with any administrative support and strength during my academic years.

I am deeply grateful to the instructors and staff of the Department of Applied Economics for their support, and I appreciate the time given by respondents and Naypyitaw Zoological Garden officers.

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| | |
|---|---|
| CS | Consumer Surplus |
| ITCM | Individual Travel Cost Method |
| TCM | Travel Cost Method |
| ZTCM | Zonal Travel Cost Method |

# CHAPTER I
# INTRODUCTION

## 1.1 Rationale of the Study

Ecosystem services are frequently considered public goods, meaning that everyone can enjoy them without taking away from the enjoyment of others. A creativity viewpoint, for instance, is a pure public good. No matter how much enjoyment the view receives, it remains accessible to others. For instance, anyone may be able to access a public recreation area. On the other hand, a crowded place may make people appear less happy. Public goods have an issue in that, even though their value, no one is motivated to pay to keep them maintained. Therefore, in order to create the highest beneficial quantity, collective action is necessary, according to King (2004).

Using economic valuation, we can measure the many benefits natures provides, making it clear how nature supports our daily lives and businesses. The total economic value of ecosystem services from a park or zoo includes many types of value, including recreational value. Valuing ecosystem services provides a powerful tool for rational decision-making and mitigation. Integrating ecological values into economic policies because it needs to be valued. The environment is free and offers many services without traditional 'market values' attached. According to Lele et al. (2020), knowing how valuable ecosystem services are helps us see their effect on society and human development.

Zoological gardens, one of the man-made ecosystems, commonly known as zoos, can have various impacts on a country's benefits, both tangible and intangible. Zoos play a crucial role in educating the public about wildlife, conservation and other ecosystem services. They provide a platform for people to learn about different species, their habitats, and the importance of biodiversity. This educational aspect can lead to increased awareness and support for conservation efforts, both locally and globally, Kingery et al. (2015).

Zoos serve as significant tourist attractions, benefiting local economies through ticket sales and related services. They contribute to global biodiversity efforts by participating in breeding programs and promoting wildlife conservation. Beyond recreation, zoos foster cultural connections with nature, enhancing community well-being. While some zoos engage responsibly with educational programs, concerns about animal welfare underscore the importance of ethical management practices across institutions, Kingery et al. (2015).

Properly valuing environmental assets is crucial for sustainable development. Natural resource value falls into use and non-use categories. Quantifying use values is straightforward, while measuring non-use values is challenging since they aren't traded in the market, Pirikiya et al. (2016). Some methods have been developed for valuing non-market goods and services such as recreational use and the estimation of recreational value of any conservation area like zoos, wildlife sanctuaries, national parks, etc. Around the world, Travel Cost Method (TCM) and Contingent Valuation Method (CVM) are the main ways to figure out how much forests are worth for recreation, according to Pak and Fehmi (2006). The TCM is an economic valuation method used to determine the value of particular products or services, like forest parks, ecosystems, beaches, etc., that cannot be acquired through market prices, Limaei et al. (2014). But the application of recreational valuation is not developed in Myanmar like other developing countries and much work has not been done before.

Three zoological gardens currently operate in Myanmar: Yangon Zoological Garden, Yadanarbon Zoological Garden, and Naypyitaw Zoological Garden. Naypyitaw Zoo, Southeast Asia's largest zoo, is based in Naypyidaw. When it opened on March 27, 2008, approximately 420 animals were moved from Yangon Zoo to this 612-acre (247-hectare) zoo, which is 250 miles (400 kilometers) north of the Yangon-Mandalay Highway. The Naypyitaw Zoological Garden, which the Ministry of Environment and Forestry managed until 2001, was leased to the Htoo Group of Companies (HGC) from March 2011 to February 2021. Following the 2020 Covid-19 outbreak, the Ministry granted a 3-year extension to HGC, allowing it to continue operations until now, Thant Zin Htun, (2023). Unfortunately, in recent years, according to variety of political situations in country, there will not much attention about recreation sites by poor understanding of people’s demand and ecological issues such as, the value of this Zoological Garden services and seem like degraded to that, posing a serious threat to the area's natural beauty. Adding to the destruction of its natural

beauty, the environmental harm and damage to animal protection in the region are expected to be irreversible. This is certain to cause widespread damage in the near future. Consequently, assessing the value of this area is crucial for providing economic insights that aid decision-makers in formulating effective management plans to maintain the quality of public park services, aligning with community preferences to achieve a livable city. This valuation method can also support public and private agencies in planning for multiple uses of public lands and in prioritizing budgets based on the comparative benefit value of different public facilities. Therefore, the purpose of this study is to determine the recreational value of tourism objects and the factors that influence the number of visits to the Naypyitaw Zoological Garden based on the Travel Cost Method (TCM).

## 1.2 Objectives of the Study

The objectives of the study are to determine the recreational value of the Zoological Garden in Naypyitaw and to support in decision makings partly to be better-quality zoo and contribute to social welfare of Myanmar citizens.

## 1.3 Method of Study

The study employed the Travel Cost Method to estimate the recreation value of Zoological Garden in Naypyitaw. The data will be analyzed using E views 12 (Student Version) & ordinary least square method (OLS) to estimate visitors' demand function, finally find out consumer surplus and recreational value. A structured survey was conducted with 200 randomly selected visitors at Naypyitaw Zoological Garden. The secondary data of Zoological Garden are obtained from related reports, documents, articles, papers and websites, etc.

## 1.4 Scope and Limitations of the Study

The study is mainly focused on 200 visitors of Naypyitaw Zoological Garden in Naypyitaw. The study area is conducted in Naypyitaw Zoological Garden. The survey period is from March 2024 to May 2024. This study did not cover foreign visitors, multi-site visitors. Individual travel cost method (ITCM) is used rather than zonal travel cost method (ZTCM) due to its ability to produce precise results. In this study, assume that time cost is as a proportion of the visitor's hourly wage but the time cost would be zero for retirees, homemakers, students, and the unemployed.

## 1.5 Organization of the Study

The study is divided into five chapters. Chapter one is introduction under which includes rationale of the study, objectives of the study, scope and method of the study and organization of the study. Chapter two provides a literature review which consists role of zoological garden, travel cost method and valuation, and review on previous studies. Chapter three presents the overview of zoological garden in Naypyitaw, Myanmar. Chapter four is estimated on the recreation value in Naypyitaw Zoological Garden. Finally, Chapter five concludes with findings and suggestions.

# CHAPTER II
# LITERATURE REVIEW

## 2.1 Role of Zoological Garden

A zoo is where captive animals are displayed. It's short for "zoological park" and houses a variety of Earth's native animals. Initially, wealthy individuals created private collections, known as menageries. Zoos which start from the 19th century aimed to educate, entertain, and serve science. However, financial challenges led zoos to prioritize recreation, focusing on the relaxing and enjoyable aspects of nature Karanikola et al. (2014).

Over the centuries, zoos have evolved from private menageries of the elite into public educational institutions, initially serving as the primary source of biological knowledge in the absence of formal education and media. The mid-20th century saw a rapid increase in the establishment of zoos, each operating independently. However, by the late 20th century, zoos began unifying to develop standardized practices, ethical codes, and welfare guidelines. This period also saw a growing emphasis on education, leading to the formation of professional associations. Today, zoos are transforming into modern biodiversity conservation centers, focusing on protecting endangered species and educating the public about nature and biology.

Zoos initially focused on exhibition, but evolved to prioritize conservation alongside education, entertainment, and research. Modern zoos, guided by comprehensive goals, integrate conservation biology, history, and ethics. Despite good intentions, critics argue that zoos imprison wildlife for human benefit, Scott (2012). A popularity issue arises in wild animal conservation; people prefer saving cute or cuddly species. Humans are drawn to warm-blooded animals resembling babies, like Pandas or Polar Bears. Zoos focus on conservation and education. They strive to educate every visitor about the animal kingdom, starting with informative exhibit signage. Historically, zoos lacked sufficient animal information, Scott (2012).

Zoos offer family trips, with kids often urging a yearly 1020 km visit. Visits last 1-2 hours, preferred in spring. Functions like recreation, education, and contact with

nature are adequate. Most visitors approve, but shelters for injured animals and breeding of endangered species are seen as insufficient Karanikola et al. (2014). Zoos educate habitat conservation through programs. Effective education highlights scientific, aesthetic, and ecological values. Connecting visitors to nature is vital for conservation awareness. Inspiring a sense of place encourages understanding and motivates preservation. These connections can change attitudes, fostering harmony between wildlife and humans McElroy (2015). Zoos engage local communities in conservation and education through programs like school trips, camps, and volunteering, fostering connection and responsibility towards wildlife. They collaborate with organizations, schools, and businesses to enhance their impact and ensure inclusive participation. Zoos also promote social cohesion by offering accessible spaces for diverse groups to learn about and appreciate wildlife, Smith et.al (2008).

Recreation is the ability of a zoo to give those who come an exciting and relaxing experience. Undoubtedly, as the primary goal of a modern zoo, it puts into question the value of the zoo from both a scientific and moral standpoint as well as the rights of individual animals and human dominion over the natural world. Redefining the function of recreation from "entertainment" is a possible argument given the definition of the modern zoo. Animal care and conservation efforts have historically been sacrificed in favor of the zoo's entertainment value, Gard (2023).

Economically, zoos attract millions of visitors, generating significant revenue for local economies and supporting related businesses. They provide diverse employment opportunities and engage local contractors, contributing to economic growth and development. Furthermore, zoos invest in research and conservation projects, driving scientific innovation and sustainable practices with long-term economic benefits, thus supporting both immediate financial gains and the well-being of future generations, Patrick et.al (2018).

## 2.2 Travel Cost Method and Valuation

Hotelling first proposed the Travel Cost Method (TCM) to estimate recreation site demand. Clawson revived and improved it. Many researchers have used and refined the method. Instead of a non-existent market price, TCM uses trip-related expenses to evaluate demand for a recreational facility. Enough variance in variable expenses is obtained by differentiating consumers whose origins are at varying distances from the destination site, and a site demand curve is estimated, Stoll (1983). Using consumer

behavior in related areas, TCM is one method used to determine the value of recreational areas. TCM explores the actual decisions of visitors in the market, focusing on recreation areas, to construct the demand curve for recreation. This approach, which is non-market, determines the economic value of a recreational place by considering the expenses individuals incur to visit (such as transport, admission fees, and on-site spending), as well as the visitors' willingness to pay for the area, (Cook, 2008).

There are two primary approaches to TCM: the zonal travel cost method (ZTCM) and the individual travel cost method (ITCM). The ZTCM analyses visits from various zones at varying costs in order to determine site demand. The economic advantages of recreational services are estimated. The activity costs and the behavior of individual visitors are analyzed by the ITCM to determine consumer surplus. It improves upon or expands upon the ZTCM methodology. Similar to the zonal method, the ITCM approach involves more data and sophisticated analysis but depends on survey data from individual visitors for more accurate conclusions, Esther (2019).

In ZTCM, the area surrounding the recreational site is divided into several zones and the number of visits from each zone is counted. ITCM calculates travel costs separately for each individual and requires a more detailed survey of visitors. In general, ZTCM collects information on visitor quantities from different distances. The researcher can determine the number of visitors at varying costs using these data because both the cost and travel time grow with distance. These figures are used to estimate the number of additional tourists or revenue earned from the area's recreational services, as well as to create the regional demand curve.

In ITCM, the demand curve is primarily determined by the number of annual visits made by an individual, unlike in ZTCM. ITCM determines the site value based on data from multiple visits to the same recreational spot. ZTCM does not provide the most precise statistical estimations or as much information on the specific behaviors of individual consumers as ITCM, according to Bigirwa (2021). The ITCM was used in this study to collect data from specific residents who are visitors. The basic principle of ITCM is that the place's value is determined by the price respondents are willing to pay to use it. Essentially, the ITCM compares the price (measured by travel expenses) of a certain recreation site to its demand (measured by the number of site visits), in order to assess the recreational use benefit for that particular recreation site, Pirikiya et al. (2016).

Valuation is expressing goods and services in economic terms. It measures the economic value of a good or service, essential for economic choices and resource

allocation. Economic values are based on individual preferences, assuming people are the best judges of what they want. Economic valuation is rooted in individual choices and tradeoffs made within constraints like income or time (King et al., 2004). Iamtrakul et al. (2005) highlighted the importance of a robust approach to assess public park services. They utilized the travel cost method and total expenditure to determine the benefits for users, emphasizing the primary functions of public parks from the users' viewpoint. By combining the travel cost method with overall activity spending, they assessed the indirect value of the benefits to park users through an analysis of recreation expenses and personal/group preferences. This allowed them to determine recreation benefits based on the actual behavior of park users.

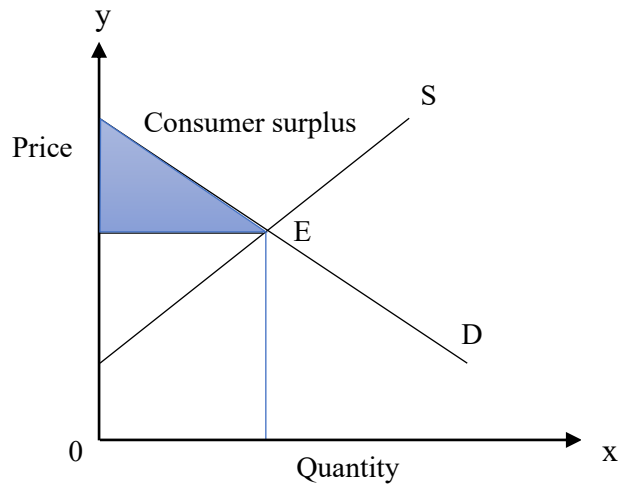
## 2.3 The Concept of Consumer Surplus

The travels cost technique is based on the concept of consumer surplus (CS). Because it truly captures how much an individual values a trip or visit to a recreational area, CS is significant in the TCM. As a result, the CS consistently indicates the importance of recreational use in relation to a recreational facility. CS is the additional value above travel expenses that people receive from visiting a recreational place on each visit within a particular period of time, such as a season or a year.

According to Alfred Marshall's theories, CS can also be defined as the difference between the price that a person actually pays for a good or service and the highest amount that person would have been ready to pay in order to avoid having to live without it. More explanation of CS is provided by Alfred Marshall, who defines it as the cost of something that a person must pay but can never reach the point at which he would rather forgo it in order to obtain the satisfaction that comes from buying it, which typically exceeds the cost that he makes in order to pay the item's price. As a result, the consumer experiences a surplus of satisfaction from the purchase.

The economic measure of this surplus satisfaction is the price that he would be willing to pay over what he actually pays, rather than avoiding the item. Based on these explanations, it makes sense to say that the visitor's total personal spending (or CS) is the difference between the maximum amount they were willing to spend on their visit or trip, and the total amount of travel costs or expenses they paid. The concept is shown in Figure (2.1) below;

**Figure (2.1) Travel Cost Demand Function and Consumer Surplus**




Source: Boycewire, empowering economics, 2024

The recreational value of the garden was calculated using the total aggregated CS. A practical measurement on visits frequency, travel expenditure, and other socio-economic factors took place in March 2024 in order to assess the economic value of the recreational services offered by the Naypyitaw Zoological Garden. 200 people were randomly chosen to participate in in-person interviews for the field data collection, which took place inside the Naypyitaw Zoological Garden or close to the entrance. Due to their limited presence at the leisure site, overseas tourists were not part of this study.

The present study interviewed 200 visitors to Naypyitaw Zoological Garden. In the study, ITCM was utilized to estimate the recreational value of the zoological garden allocated for leisure activities. The travel function is estimated using a linear regression model. The econometric model employed in this study illustrates how factors like travel costs, distance to Naypyidaw Zoological Garden, income, and age influence visitor numbers. Hence, the trip generation function was converted to a form suitable for use in a simple regression model:

$$r_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \in$$

In this context, r denotes the dependent variable indicating the number of visits by the ith individual to Naypyitaw Zoological Garden; Let $x_1$ represents travel cost (kyats/visit), covering the entire expense of an individual's journey to and from the site, and also includes the opportunity cost of travel time and stay at the park ; $x_2$ = distance (km), which denotes the total distance of an individual's residence in their round-trip ; $x_3$ =

income (kyat/month) ; $x_4$ = age (years) ; $\beta_0$ = constant; $\beta_1$, $\beta_2$ , $\beta_3$ , $\beta_4$ = Regression coefficient ; $\epsilon$ = Standard Error.

The number of visits is related to travel cost, distance, income and age in somehow. While higher travel costs and greater distance can make people less attractive to visit a location, higher income generally leads to an increase in the number of visits. Independent variables, travel cost, distance, income, and age are interconnected in various ways, influencing travel behavior and decisions. For travel cost and distance, the higher the travel cost, the further the distance. Higher travel costs and greater distances often reduce the frequency of trips, as they become more expensive and time-consuming. For higher income typically allows individuals to afford higher travel costs, enabling them to travel more frequently or to more distant and expensive destinations. For income variable, it will more interconnected with distance, so that higher income individuals are more likely to travel longer distances, as they can afford the associated higher costs.

### 2.4 Estimation of Consumer Surplus and Annual Recreational Use Value

The definition of consumer surplus (CS), as defined by Timah (2011), is "the difference between the total amount a visitor is willing to pay to visit a place of interest and the total amount of travel costs paid by the visitor." CS per tourist per trip is calculated based on studies by Balasubramanian et.al (2023) & Bigirwa et.al (2021),

**The CS per one person per trip is computed as follows;** $\mathbf{CS= -\frac{1}{\beta_{TC}}}$ **Eq. (1)**

Where $\beta_{TC}$ is the coefficient for total travel cost in the TCM model estimated via maximum likelihood, being negative, aligns with expectations in demand modeling. In economic theory, negative coefficients for travel costs indicate an inverse relationship between travel cost and demand: as travel costs increase, demand tends to decrease. This implies that the CS per tourist per trip estimate is usually a positive value.

The total CS per year which is equivalent to the annual recreational use value of Naypyitaw Zoological Garden was computed by multiplying the individual CS with the total number of visits made by visitors in 2023.

$$\textbf{Recreation Value (Total CS)} = -\frac{1}{\beta_{TC}} \times \textbf{Total number of visitors per year} \quad \textbf{Eq. (2)}$$

## 2.5 Measure Travel Cost

The cost of the trip is the sum of the expenses necessary to make the trip happen. Typical expenses for a day trip include travel expenses; entrance fee Including various costs and time costs. We assumed that the entry price of substitutes, would not be included in travel costs for this study. Instead, we assumed that people will work unless they come to Zoological Garden. Both the journey to and from a location require time. There is uncertainty in the economic literature about the best method to determine this opportunity cost. According to Aryal (2015), the hourly salary rate affects the time cost in this study. Finding the number of hours worked each month is necessary for estimating the time cost based on the hourly wage rate. The travel cost function can be obtained by applying the following method for calculating time costs: Total travel cost = (Travel cost+ Travel time * Time cost).

Estimating the trip's time cost is the most challenging problem in trip cost calculation and undoubtedly attracted the most attention from the literature. Time that could have been spent on other activities is lost during the trip to and from the location as well as staying there. The time spent on the journey is equal to the value of those missed opportunities. Time costs should be carefully considered as they frequently make up a significant amount of the overall trip cost, Bockstael (1995). In many scenarios, estimating time costs involves linking them to a person's wage, which theoretically holds as long as the individual has a flexible schedule and can often substitute leisure time with work. Theoretically, in these circumstances, a worker raises the number of hours until the pay at the margin equals the cost of a leisure hour. Multiplying the hourly wage times travel and on-site time, in this case, is a fair estimate of time cost. The tradeoff is also implausible for retired folks, homemakers, students, and unemployed persons, Parsons (2003).

## 2.6 Review on Previous Studies

Recently applied in Nepal, Mahat (2004) studied visitors of Nepal's Central Zoo, their distribution, and economic value. The research found an inverse relationship between travel cost and zoo visits. Per capita economic value is estimated at NRs. 226.286 (US $3.15). Suggestions include improving hygiene, expanding facilities, and raising entry fees for college students to enhance zoo services and economic strength. Expansion, greenery, peace, more animals, and resting places are key areas for improvement.

Karanikola (2014) investigated how visitors entering the zoo in Thessaloniki, Greece, felt about the animals and the urban green spaces there. Like other zoos across the world, the study discovered that a large number of zoo visitors were satisfied with their visit. It measured visitor satisfaction, travel distance, visit frequency, time, and duration. Visitors shared opinions on zoo operations and assessed its role in entertainment, children's interaction with animals and nature, environmental education, shelter for injured animals, and breeding of endangered species. Additionally, opinions were gathered on zoo operations, entertainment value, educational role, conservation efforts, and facility quality. Evaluations included access, parking, zoo size, landscaping, infrastructure, and visitor services for potential management improvements. Visitors generally find access and parking to be satisfactory, with 39.1% rating it very good and 55.8% good. The overall zoo area is deemed adequate by 26.7% and completely adequate by 68.8% of visitors. While some visitors perceive a low abundance of animals (55.6% low, 19.8% very low), the variety of plants is seen as large by 63.7% and very large by 24.7%. Enclosures' representation of natural environments is deemed adequate by 47.5% and inadequate by 43.7%. Visitors generally find animal living conditions minimally satisfactory (48.6%) or satisfactory (44%), as well as hygiene and safety conditions (49.6% minimally satisfactory, 41.8% satisfactory). Reliability analysis yielded a strong alpha coefficient of 0.840, indicating consistent measurement across questions, even after deletion of certain infrastructure items.

Likewise, in Myanmar, Kyaw Ye Thiha Pe (2022) examines visitor satisfaction at Yangon Zoological Garden. The study aims to identify employee conditions, assess visitor satisfaction with employee services, and analyze visitor opinions on recreation. As a result, Yangon Zoological Garden management should balance conservation, education, and visitor satisfaction for financial improvement. Another research related to zoological garden will be analyzed in this study. Unlike previous study, the study aims to estimate economic value of recreational ecosystem service in zoological garden which is located in Naypyitaw. The CS and recreational value will be analyzed by estimating the relations between the number of individual visits in a given time period, travel cost per visit and other relevant socio-economic variables under TCM**.**

Lansdell (2003) applies Travel Cost models (TCMs) to gauge the recreational worth of Maroondah and Albert Parks in Victoria, Australia. The study solely compared the recreational values of Albert Park and Maroondah Reservoir estimated by various Travel Cost models. Estimating the total economic value of a park entails considering

both use and non-use values. While this comprehensive valuation is crucial, assessing the recreational value alone serves as a baseline indicator of a park's worth. Additionally, it aids in comparing recreational values across parks and tracking trends in their recreational values. Maroondah Reservoir exhibits greater pulling power, as indicated by its less price-sensitive visitor base, reflected in its gentler demand curve.

Kassaye (2017) employed the TCM to estimate the recreation values of Hamle 19 and Future parks. The study examines data collected from 180 randomly sampled visitors to Hamle 19 and Future parks, well-known recreation spots in Addis Ababa. Descriptive statistics were used to present the data, and economic methods were used to calculate the sites' annual recreational value and the visitor surplus using TCM. In this study, the ITCM was preferred due to its statistical efficiency compared to the Zonal TCM. The recreational values for Hamle 19 and Future recreation sites were estimated to be Birr 18,239,782.05 and Birr 19,389,895.00 annually.

Amiri (2021) used methods such as individual travel costs and contingent valuation to estimate the recreational value of the Kahman forest area. Face-to-face questionnaire delivery was chosen. The findings are derived from 219 questionnaires completed by visitors to the site in 2017. As a result, the estimated recreational value in the ITCM was higher than CVM. The logit model was used to investigate variables' effects on individuals' willingness to pay in CVM but the linear regression model was applied to study variables' effects on number of trips in ITCM.

Pirikiya et al. (2016) estimated the recreational value of natural resources and environment as non-market goods, Shahid Zare Sari Forest Park, using the individual travel cost method. In the period of 2012-2013, 302 park visitors were surveyed to collect data. The park's annual recreational value, considering its 72,500 visitors per year, was determined to be 52,558 USD per hectare. Each visit generated a consumer surplus of 12.53 USD. The study also demonstrated the statistical significance of variables such as travel costs, income, and visitor distance, at significance levels of 1%, 5%, and 1%.

In Myanmar, Suu Suu Phyoe et al. (2020) evaluated the economic value of Moeyungyi Wetland Wildlife Sanctuary (MWWS) to support conservation efforts. Their approach involved face-to-face interviews and the use of the double-bounded dichotomous choice contingent valuation method to measure respondents' willingness to pay. The primary respondents consisted of 300 local visitors. Using the contingent valuation method (CVM), we estimate how much visitors are willing to pay for MWWS

conservation. The study investigated on-site users' preference and willingness to pay for MWWS, providing empirical results for policymakers and park managers. It also assessed visitors' willingness to pay and influencing factors, aiding in setting an appropriate entry fee for MWWS.

The study conducted by Aryal (2015) investigated the number of charges Chitwan National Park visitors were willing to spend to enter the park. To evaluate the recreational value, biodiversity protection, and willingness to pay (WTP) for Chitwan National Park, we conducted interviews with 80 randomly selected tourists. The study revealed significant annual benefits, including a total consumer surplus (CS) of USD from park visits. It further estimated the park's recreational value at 233 million. This study analyzed and estimated the recreational value of Park using the individual travel cost model. This analysis demonstrated that raising the standard of Chitwan National Park will attract more people and increase its income.

# CHAPTER III
# AN OVERVIEW OF ZOOLOGICAL GARDENS IN MYANMAR

## 3.1 Historical Background of Zoological Garden in Myanmar

The zoo was entirely supported by public donations when it launched in 1901. To provide space for the new facility, 61 acres of land were cleared, and the first set of animals were moved from Phayre's Museum. When the zoo first opened, it was renowned for housing an albino elephant that belonged to Burma's last monarch, Thibaw. The name was changed to Victoria Memoria Park in 1901 as a tribute to Queen Victoria. Renowned for its diverse collection of animals and plants, the 69.25-hectare zoo has expanded significantly since its establishment in 1906.

Families and animal supporters visit the Yangon Zoological Garden, which is next to Kandawgyi Garden and has been maintaining a variety of wild animals since 1882. Founded in 1901 with contributions from the public, it is one of the largest conservation centres for flora and fauna, spanning about 70 hectares. It was renamed Victoria Memorial Park in 1951 and is today an increasingly popular tourist attraction. In addition to 132 animal species, the zoo is home to an extensive collection of Southeast Asian flora and endangered species such as Asian elephants, Bengal tigers, and swamp crocodiles. In addition to seeing joyful monkeys and feeding animals like giraffes and elephants, visitors can explore the natural history museum, which features Burmese flora and the zoo's history. The amusement park has rides and games for all ages, and the aquarium—the first large one in Myanmar—has vibrant species. At 114 years old, Yangon Zoo is the oldest in Southeast Asia. It was built in 1901 as a memorial to Queen Victoria, with 240,000 rupees raised through public donations. It was known as Victoria Memorial Park and Zoological Gardens when it opened in 1906 and featured rare animals as well as King Thibaw's white elephant, which died in 1910. The zoo sustained damage during World War II, and some animals collapsed as a result of food shortages and animal theft. However, several animals were taken care of by zoo employees elsewhere and returned later. Unfortunately, in 1938, Nepal sent a rare Indian rhino, but it was murdered for its flesh, horn, and blood.

In the midst of World War II, the zoo was taken over and destroyed. After winning independence from Japan in 1948, the zoo was renamed Rangoon Zoological Gardens and Park. It was previously opened under Japanese administration. 69.25 acres is the current area of the zoo, having grown in 1962. A natural history museum opened on May 4, 1966; an amusement park opened on October 7, 1997; an aquarium opened on October 1, 1998; further attractions were added to the larger site. During World War II, the zoo was captured and destroyed. The Fisheries Department now oversees the aquarium's operations. After a renovation project costing MMK600M ($600K), zoo visits increased from 1.1 million in 2003–2004 to 1.8 million in 2004–2005, and further to 2.2 million in 2005–2006. It showcased a variety of animals including tigers, elephants, antelopes, and chimpanzees, and published wildlife books. Over time, the Natural History Museum and park were incorporated, Thant Zin Htun (2023).

**Figure (3.1) Map of Naypyitaw Zoological Garden**

Source: Naypyitaw Zoological Garden, 2024

In 2008, many animals were transferred to Naypyitaw Zoological Gardens. Later, under President U Thein Sein, the zoo was leased to Htoo Trading Co., sparking controversy. Plans to relocate the zoo outside Yangon led to protests, with animals

temporarily housed near a hospital. In 2018, the historic Carnivora House received recognition, and in 2019, the Elephant Museum was inaugurated to address poaching concerns. Myanmar currently has three zoos, with the Yangon Zoo being the second-largest at 57 acres (23 hectares). The Naypyitaw Zoological Garden underwent privatization in 2011 and came under the management of Htoo Zoo Business. This transition marked a significant shift in the operation and development of the zoo. Under Htoo Zoo Business, various enhancements and improvements were likely introduced, contributing to the overall growth in visitor numbers in the subsequent years. Privatization often brings in increased investment and a focus on efficiency, which can lead to better facilities, more attractions, and enhanced visitor experiences. These changes under Htoo Zoo Business management may have played a crucial role in the zoo's ability to attract more visitors and improve its offerings over time, Thant Zin Htun (2023).

Yadanarbon Zoological Garden, located at the foot of Mandalay Hill, spans 53.21 acres and features a waterfall, pond, playground, and mini forest. Built with a government grant of 3 million Kyats, it opened in August 1989 and is now operated by Htoo Group under a 10-year lease since April 2011. The zoo's objectives are to provide relaxation and education for visitors, support zoology and botany studies, promote wildlife conservation, and conduct research, Kyaw Ye Thiha Pe (2022).

### 3.2 Protected Areas in Myanmar

Diverse ecosystem services, such as cultural services associated with recreation, are offered by protected areas and have important beneficial effects on both the economy and the well-being of people. The zoo was destroyed and taken during the World War II. After winning independence from Japan in 1948, the zoo was renamed Rangoon Zoological Gardens and Park. It was previously opened under Japanese administration. 69.25 acres is the current area of the zoo, having grown in 1962.

There are 42 existing protected areas in total, including national parks, wetlands, botanical gardens, and wildlife sanctuaries in Myanmar (Burma). Some areas can be targeted for finding recreational value purposes. Some places are -

1. Hkhakaborazi national park (1998)
2. Indawgyi lake wildlife sanctuary (1999)
3. Chatthin wildlife sanctuary (1941)
4. Alaungdaw Kathapa national park (1984)

5. Maymyo botanical garden (1915)
6. Nat Ma Taung (Mt Victoria) national park (1994)
7. Popa mountain park (1989)
8. Inlay lake wetland sanctuary (1985)
9. Shwesettaw wildlife sanctuary (1940)
10. Sein Ye forest camp (1996)
11. Moneyungyi wetland wildlife sanctuary (1988)
12. Myaing Hay Wun elephant camp (1986)
13. Hlawga park (1982)
14. Yangon zoological garden (1901)
15. Meinmahla Kyun (island) wildlife sanctuary (1986)
16. Naypyitaw zoological garden (2008)
17. Yadanarpon zoological garden (1989)
18. Lawkananda Wildlife Sanctuary (1995)
19. Hukaung Valley Wildlife Sanctuary (2004)

Among these places, Moneyungyi wetland wildlife sanctuary and Popa mountain park are analyzed by Su Su Phyoe et al. (2015) for ministry of environment, japan and Wai Soe Zin et al. (2019), respectively. The 40 square mile (22,600 acre) Moeyungyi Sanctuary in Myanmar is situated in the Bago Region, between Waw Township and Bago Township. Rare bird species, migratory birds, and other creatures make Moeyungyi Wetland other Sanctuary home. The Forest Department has designated it as a protected habitat for threatened bird species. In 2004, Moeyungyi Sanctuary received recognition as a Ramsar Site in Myanmar. Moeyungyi Sanctuary was named an Important Bird Area (IBA) in 2011 because it is home to migratory and uncommon bird species. In 2014, saw it recognized as a Flyway Network Site by the East Asia-Australasian Flyway Partnership, according to a warden of the Forest Department's Moeyungyi Sanctuary. Moeyungyi Wetland Wildlife Sanctuary provides a rich recreational experience for such kind of visitors nature lovers, bird watchers, and those seeking a peaceful retreat in natural surroundings.

One of Myanmar's main tourist destinations is the protected Popa Mountain National Park, which has unique natural and cultural resources. It is located in Kyauk-padaung Township in Mandalay Division. It occupies an area of 49.63 square miles (129 $km^2$) and was established in 1989. It surrounds Mount Popa. Established in 1989, the area offers several hiking and walking paths that go across the hilly terrain. Along

the way, hikers can explore several breathtaking waterfalls and locations and attracts tourists for its stunning natural beauty, hiking opportunities, and the Taung Kalat monastery, which sits atop a volcanic plug offering panoramic views. Rainfall is abundant in the mountains, resulting in a multitude of herb plantations, flowering bushes, and dense woods. It is considered a major pilgrimage site and is famous for its association with Burmese nats (spirits). The mountain is often referred to as the "Abode of Spirits." The park is rich in flora and fauna, home to various species of birds, mammals, and plants. It's a haven for nature lovers and biodiversity enthusiasts. Efforts are made to preserve the unique ecosystem and cultural heritage of the area, balancing tourism with environmental and cultural conservation. Popa Mountain Park is a unique blend of natural beauty and cultural heritage, making it a popular destination for such visitors _both nature lovers and spiritual pilgrims, Wai Soe Zin et al. (2019).

### 3.3 Naypyitaw Zoological Garden

The government has transformed Naypyitaw into an international attraction for MICE (Meetings, Incentives, Green City). It is situated on the western corridor that connects Tamu and Maul Myin as a transportation route, and the business corridor that runs from Thilawa to Myitkyina is in the opposite direction. Visitors can visit the Upadathandi Pagoda, the Ethnic Village, the Naypyitaw Hot Springs Resort, the Water Park, the Gem Museum, the Military History Museum, and the Naypyitaw Zoo. Furthermore, on many acres of land in Naypyitaw, the capital city of Myanmar, the expensive Naypyitaw Zoological Park was built in the style of a modern zoo. Situated in Naypyitaw, Naypyitaw Zoological Gardens holds the title of the largest zoo in Southeast Asia.

The largest zoo in Southeast Asia, Naypyitaw's Zoological Garden, is located in Naypyitaw along the Yangon-Mandalay highway, about 250 miles north of Yangon, at milestones No. 256/2 and 257/0 of Naypyitaw's Zayarthiri Township near Yezin village. The 612-acre zoo, which opened on March 26, 2008, welcomed around 420 animals relocated from the Yangon Zoological Garden.

For rare animal species, rare white tigers that breed only one in 10,000 animals and cute wallaby kangaroos. In addition, the birds of the pin ring are also bred and displayed. The zoo covers 53.21 acres of natural habitat and features 56 exhibits with around 1,000 animals. It's home to 107 species, including 46 types of mammals, 51

types of birds, and 10 types of reptiles. Since March 1, 2011, the Htoo Zoos and Gardens Business Unit has managed the zoo.

The Naypyitaw Zoo offers an educational gallery where visitors can learn about the species-specific habits of animals, including their lifestyles and grazing areas. This gallery features scientific terms, pictures, and figurines of deceased animals, providing a comprehensive educational experience. Visitors can study these exhibits in depth, gaining insights into various animal species.

Additionally, the zoo has planned stores where visitors can purchase souvenirs and regional products from Naypyitaw. To enhance the visitor experience, the zoo offers electric buggies, cruise bikes, and mini-boats for exploring the gardens. Plans are also in place to introduce duck boats and small electric buggies, offering diverse and enjoyable ways for visitors to navigate the park and fully appreciate its beauty and attractions.

### 3.3.1 Animals of Naypyitaw Zoological Garden

The Naypyitaw Zoological Garden exhibits 46 species of mammals, 51 species of birds, and 10 species of reptiles in 27 booths, amounting to a total of 107 species and 660 animals. Among them are rare and endangered wildlife, such as penguins and white tigers. As a result, visitors can observe unusual wildlife in the garden that was previously limited to movie screens. Next to the Naypyitaw Zoological Garden is a 291.52-acre safari park. The arca was chosen because of its naturally occurring tree compositions, terrain, and stand structure, all of which are accessible to the general public and suitable for wild animals. The following Table (3.1) shows the animals of Naypyitaw Zoological Garden, Thant Zin Htun (2023).

**Table (3.1) Animals of Naypyitaw Zoological Garden**

| | Male (No.) | Female (No.) | Total (No.) | Total (species) |
|---|---|---|---|---|
| **Mammals** | 159 | 158 | 317 | 46 |
| **Birds** | 128 | 143 | 271 | 51 |
| **Reptiles** | 35 | 37 | 72 | 10 |

Source: Naypyitaw Zoological Garden, 2024

Since its opening in 2001, the aquarium has provided visitors with the opportunity to learn about a diverse range of local and foreign fish species. Initially, it housed 3000 fish, of which 26 were exotic and 18 were domestic. On the other hand, technical issues account for the aquarium's water's purity. The museum was so renovated once more and reopened on December 23, 2017. In addition to the over 1800 fish on show in the various fish chambers (S5), the Fish Spa also opened at the time of reopening. The museum's fish collection consisted of 45 species of foreign aquatic animals and 23 local aquatic species. Among the highlights were Salamanda (Tylotortriton varycosus) and Nga Phane (Cyprimus intha) from Inle Lake, Cool Water fish (Neolisspechilus strachey) from Chin State, and Na Ti (Pisodanophis boro) from Magway Region (Thant Zin Htun, 2023).

### 3.3.2 Visitors in Naypyitaw Zoological Garden

Local families are common visitors who often looking for a day out, offering educational and recreational opportunities for their children. Both domestic and international tourists are interested in wildlife and unique travel experiences, but number of international tourists visit not more than 150 persons in average per a month. On educational trips, students and teachers learn about various animal species and conservation projects. Individuals who particularly interested in zoology, wildlife photography, and conservation came for their projects or thesis. The Naypyitaw zoological garden is a garden where can attract a diverse group of people united by their interest to some extent. The data of the number of visitors in 2008 to 2011 will not describe in the following table (3.2). According to the observations, determining the exact number of visitors to the Naypyitaw zoological garden in 2008 to 2011 is challenging due to several factors. Firstly, visitor numbers were surveyed monthly

rather than annually, which leaded to difficulties in aggregating the data over a longer period. Secondly, the collected data has been lost due to lack of proper storage and technical issues that led to the irretrievable loss of records. Thus, these challenges underscored consistent data collection, management practices for accurate reporting and analysis for 2008 to 2011.

**Table (3.2) Number of Visitors in Naypyitaw Zoological Garden**

| Year | No. of visitors |
|---|---|
| 2012-2013 | 301,661 |
| 2013-2014 | 367,163 |
| 2014-2015 | 353,056 |
| 2015-2016 | 341,414 |
| 2016-2017 | 329,067 |
| 2017-2018 | 332,646 |
| 2018-2019 | 299,135 |
| 2019-2020 | 268,641 |
| 2020-2021 | 1,616 |
| 2021-2022 | 10,7000 |
| 2022-2023 | 88,372 |
| 2023-2024 | 121,264 |

Source: Naypyitaw Zoological Garden, 2024

Table (3.2) shows the annual number of visitors to the Naypyitaw Zoological Garden over a period of twelve years, from 2012 to 2023. The number of visitors fluctuated but remained relatively high during the period, with a peak of 367,163 in 2013-2014. There is a decline in visitor numbers from 299,135 to 268,641 from 2018-2019 to 2019-2020. This decline could be influenced by various factors such as economic conditions, changes in visitor preferences, or external factors affecting tourism.

After 2020, there were the fluctuation in visitor numbers over the years, influenced by factors such as economic conditions, tourism trends, management strategies, and external events like the COVID-19 pandemic. The sharp drop to 1,616 visitors in 2020-2021 reflects the global impact of the COVID-19 pandemic. Many

attractions, including zoos experienced significant reductions in visitors due to lockdowns, travel restrictions, and safety concerns.

The following year, from 2021 to 2022, there was a dramatic increase in attendance, reaching 10,700 visitors. This upward trend continued significantly from 2022 to 2023, with the number of visitors skyrocketing to 88,372. The growth persisted into 2023 to 2024, with the total number of visitors rising to 121,264, reflecting ongoing improvements and heightened interest in the zoo. In this study, data of number of visitors in 2023 is important for finding recreational value. So, the data details of number of visitors in 2022 and 2023 are compared and explained monthly below.

**Table (3.3) Number of Visitors in 2022 and 2023**

| Month | No. of Visitors in 2022 | No. of Visitors in 2023 |
|---|---|---|
| January | 5,269 | 8,815 |
| February | 3,217 | 6,872 |
| March | 3,314 | 12,183 |
| April | 11,279 | 14,860 |
| May | 8,077 | 6,898 |
| June | 3,714 | 4,058 |
| July | 8,526 | 5,487 |
| August | 3,162 | 12,638 |
| September | 3,860 | 8,043 |
| October | 16,555 | 25,393 |
| November | 9,327 | 7,845 |
| December | 12,072 | 8,172 |
| **Total visitors** | **88,372** | **121,264** |

Source: Naypyitaw Zoological Garden, 2024

In 2022, it is post-pandemic, there has been a gradual recovery in visitor numbers in 2022 although these numbers have not yet returned to pre-pandemic levels. However, the staffs and officers of the garden usually work hard for conserving the animals for the benefit of the zoological garden, ensuring a gradual increase in visitor numbers. Table (3.3) presents the monthly number of visitors to the Naypyitaw Zoological Garden for the year 2022 and 2023. It provides a detailed look at how visitor numbers fluctuated throughout the two years.

In January 2023, the number of visitors increased significantly to 8,815 compared to 5,269 visitors in January 2022. This rise may be attributed to favorable weather conditions, enhanced marketing initiatives, or the hosting of special events that drew a larger number of visitors to the site. February 2023 saw a significant increase in visitor numbers, with visitors rising to 6,872 from 3,217 in February 2022. This growth may be due to seasonal promotions, school holidays encouraging family outings, and heightened local and tourist interest in visiting the zoo during that period. March 2023 experienced a dramatic surge in visitors, increasing from 3,314 visitors in 2022 to 12,183 visitors in 2023.

Potential reasons for this spike include spring break holidays, new exhibits or attractions, and effective promotional campaigns that boosted visitor numbers significantly. April 2023 showed a moderate increase in visitors, rising from 11,279 visitors in 2022 to 14,860 visitors in 2023. This could be attributed to pleasant weather conditions, continued interest in new exhibits, and positive word-of-mouth recommendations among visitors. May 2023 saw a decrease in visitors compared to 2022, dropping from 8,077 visitors to 6,898 visitors. Factors contributing to this decline may include adverse weather conditions, competing local events, or temporary closures affecting visitor turnout.

In July 2023, it is recorded a decrease in visitors, declining from 8,526 visitors in 2022 to 5,487 visitors in 2023. Potential factors for this decrease include extreme weather conditions, changes in travel patterns, or local events diverting visitor traffic. There is a significant increase in visitors in August 2023, rising sharply from 3,162 visitors in 2022 to 12,638 visitors in 2023. This may be attributed to the peak tourist season, improved accessibility, and the introduction of new exhibits during the summer months. The following month, September, showed an increase in visitors, growing from 3,860 visitors in 2022 to 8,043 visitors in 2023. Possible reasons for this rise include favorable weather conditions, ongoing marketing efforts, and special promotions attracting more visitors.

The zoo experienced a significant increase in visitors, rising from 16,555 visitors in 2022 to 25,393 visitors in 2023. This uptick could be due to autumn holidays, festivals, and specific events drawing larger crowds to the zoo. The number of visitors dropped from 9,327 visitors in 2022 to 7,845 visitors in 2023. Factors such as colder weather, seasonal closures, or economic conditions influencing travel behavior might have contributed to this decrease. Similarly, visitor numbers fell in December 2023

compared to 2022, dropping from 12,072 visitors to 8,172 visitors. The reasons may include holiday closures, changes in visitor demographics, and adverse weather conditions affecting travel to the zoo.

The month with the most visitors in both years was October. In 2022, October recorded 16,555 visitors, whereas in 2023, it saw a substantial increase to 25,393 visitors. The increase in visitors in October 2023 could be explained by the presence of autumn holidays, local festivals, or special events that drew a larger number of people to the zoological garden. Conversely, the month with the least visitors in both years was June. In 2022, June had 3,714 visitors, and in 2023, it slightly increased to 4,058 visitors. Factors contributing to these lower visitor numbers could include the start of summer vacations, school schedules affecting group visits, or less promotional activity targeting family and children during this period.

Overall, a significant increase in total visitors can be seen in 2023 compared to 2022, totaling 121,264 visitors compared to 88,372 visitors in 2022. The number of visitors rose by approximately 37% from 2022 to 2023. This growth can be attributed to improvements in infrastructure, enhanced visitor experiences, successful promotional strategies, and positive word-of-mouth recommendations driving higher attendance throughout the year.

# CHAPTER IV
# SURVEY ANANLYSIS

## 4.1 Survey Area Profile

The survey area is Naypyitaw Zoological Garden. The Htoo Group of Companies (HGC), the parent company of Air Bagan, operates it. Started in 1990 as Htoo Trading Company, led by Chairman and Founder U Teza, the company is currently managed by the Htoo Zoos and Gardens Business Unit. This unit represents one of several businesses operated by the company. Naypyitaw Zoological Garden, managed as a distinct entity, is part of its portfolio, along with Yangon Zoological Garden, National Kandawgyi Garden, Yadanarbon Zoological Garden, Hlawga National Park, Naypyitaw Safari Park, Naypyitaw Planetarium, and National Landmark Garden (Thant Zin Htun, 2023).

## 4.2 Survey Design

To obtain the visitors' responses in the form of a structured questionnaire, the research department performed a survey. The simple random sampling technique and 200 visits to the Naypyitaw Zoological Garden were used in the study. In this study, the tourists will not be included for this survey. The questionnaire was divided into two parts: (A) socio-economic characteristics of the respondent, and (B) Travelling time and cost of respondents. The survey questionnaire had multiple choice questions and blanks for their suggestion. Descriptive statistics were utilized to tabulate the gathered data based on the study's orientation. The survey questionnaire was written in Myanmar and English for the understanding of visitors and surveyors.

## 4.3 Survey Results

The survey result presents the opinion of 200 visitors on Naypyitaw Zoological Garden. The questionnaire-based results indicated details of visitors' socio-economic characteristics and preferences.

### 4.3.1 Socio-economic Characteristics of the Respondents

Table (4.1) presents information regarding the gender, age, marital status, education level, occupational status, and monthly income of 200 respondents.

**Table (4.1) Socio-economic Characteristics of Respondents**

| Particular | No. of Respondents | Percentage (%) |
|---|---|---|
| **Gender** | | |
| (a) Male | 113 | 56.5 |
| (b) Female | 87 | 43.5 |
| **Total** | **200** | **100** |
| **Age Group (Years)** | | |
| (a) Less than 20 | 4 | 2 |
| (b) 20 – 30 | 131 | 65.5 |
| (c) 31 – 40 | 57 | 28.5 |
| (d) 41 – 50 | 8 | 4 |
| (e) Above 51 | 0 | 0 |
| **Total** | **200** | **100** |
| **Marital Status** | | |
| (a) Single | 77 | 38.5 |
| (b) Married | 123 | 61.5 |
| **Total** | **200** | **100** |
| **Level of Education** | | |
| (a) Primary School | 0 | 0 |
| (b) Middle School | 10 | 5 |
| (c) High School | 48 | 24 |
| (d) University | 39 | 19.5 |
| (e) Graduate | 93 | 46.5 |
| (f) Post Graduate | 10 | 5 |
| **Total** | **200** | **100** |
| **Occupation Status** | | |
| (a) Student | 15 | 7.5 |
| (b) Private Employee | 70 | 35 |
| (c) Government Employee | 39 | 19.5 |
| (d) Seller | 76 | 38 |
| **Total** | **200** | **100** |
| **Monthly Income (Kyat)** | | |
| (a) Less than 100,000 | 17 | 8.5 |
| (b) 100,000 – 200,000 | 46 | 23 |
| (c) 200,000 – 300,000 | 77 | 38.5 |
| (d) 300,000 – 400,000 | 43 | 21.5 |
| (e) 400,000 – 500,000 | 8 | 4 |
| (f) Above 500,000 | 9 | 4.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

According to Table (4.1), the majority of responders are male and between the ages of 20 and 30. Most respondents have graduate degrees. Among 200 respondents, students account for 15 (7.5%), private employees for 70 (35%), government employees for 39 (19.5%), and sellers for 76 (38%). Most respondents report earning between 200,000 kyat and 300,000 kyat monthly.

The majority of respondents are married males aged 20-30, suggesting they likely bring their families to the zoo for relaxation. They mainly work as private employees or sellers, and their incomes mostly fall in the middle-income range. According to the conversations, most of them work as sellers, including merchants, online shop owners, convenience store operators, and gem sellers. This demographic information provides valuable insights for understanding the socio- economic background of the respondents, which can inform targeted strategies and interventions.

### 4.3.2 Travelling Time and Cost of Respondents

This section outlines respondents' visiting patterns to the zoo, covering aspects like their travel companions, primary mode of transportation, number of visits, most recent visit period, visit frequency, preferred visiting times, duration of stay, visit expenses, reason to visit and suggestions for zoo.

**Table (4.2) Travelling Companion of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Travel Companion | | |
| (a) Alone | 0 | 0 |
| (b) Couple | 15 | 7.5 |
| (c) Family | 164 | 82 |
| (d) Friends | 21 | 10.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

According to Table (4.2), it indicates that traveling with family is the most favored option (82%) among respondents, followed by traveling with friends and as a couple, with traveling alone being the least preferred option. According to the conversations, watching animals and engaging in zoo activities is something that can

be enjoyed by families, making it a perfect family outing. Some complaints about zoo is that there are many places need to be improved such as big playgrounds, picnic areas, and interactive exhibits that cater to children and adults alike. Anyway, big park area and playground in the Naypyitaw zoo still can contribute the respondents to some extent to travel with their family.

**Table (4.3) Main Transportation of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Main Transportation | | |
| (a) Private Car | 81 | 40.5 |
| (b) Car rent | 68 | 34 |
| (c) Motorcycle | 51 | 25.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.3) indicates that private cars are the most favored mode of transportation among the respondents, followed by rented cars and motorcycles. This suggests a preference for private vehicles, whether owned or rented, over motorcycles. The reasons of using private vehicles can be that it is safer, especially for families with children. Moreover, it provides a private space, reducing exposure to large groups of people, which is particularly relevant in times of health concerns, like Covid-19.

**Table (4.4) Visits of Respondents During Last Year**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Visits during last year | | |
| (a) One | 40 | 20 |
| (b) Two | 40 | 20 |
| (c) Three or more | 120 | 60 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.4) indicates that a significant majority of respondents (60%) visited the destination three or more times in the last year, suggesting a high level of interest or

satisfaction with the destination. This could imply that the destination is a popular and well-liked location that encourages repeat visits. The fact that only 20% visited once and another 20% visited twice shows that fewer respondents are casual visitors, and most tend to return multiple times. This pattern of frequent visits could be leveraged for marketing strategies, membership programs, or special events to further engage these repeat visitors.

**Table (4.5) Preferred Time to Visit to Zoo**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Preferred Time to Visit to Zoo | | |
| (a) Weekends | 103 | 51.5 |
| (b) Public Holidays/Festival | 80 | 40 |
| (c) Weekday (Monday – Friday) | 17 | 8.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.5) indicates that weekends are the most preferred time for zoo visits, followed closely by public holidays and festivals. Weekdays are the least preferred time for visiting the zoo. This preference pattern suggests that the zoo is likely to experience higher visitor numbers on weekends and public holidays. Without the time constraints of work or school, visitors can spend as much time as they want at the zoo on weekends. This allows for a more relaxed and enjoyable visit.

**Table (4.6) Time Spends of Respondents in Zoo**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Time Spends in Zoo | | |
| (a) Less than One Hour | 0 | 0 |
| (b) Between One Hour to Three Hours | 53 | 26.5 |
| (c) More than Three Hours | 147 | 73.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.6) shows that most respondents chose to spend an extended period at the zoo, with 73.5% opting to stay more than three hours. This suggests that visitors

often view the zoo as a place for leisurely exploration and engagement rather than a quick visit. The absence of respondents spending less than one hour indicates that the zoo experience is generally perceived as a substantial outing rather than a brief stop. Visitors tend to stay longer in zoos for feeding animals, picnicking with families and zoos offer a unique opportunity to see new species up close that they may not encounter in their daily lives.

**Table (4.7) Duration of Round-trip of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Duration of round-trip | | |
| (a) Less than One Hour | 31 | 15.5 |
| (b) Between One Hour to Three Hours | 38 | 19 |
| (c) More than Three Hours | 131 | 65.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.7) highlights that a substantial majority of respondents (65.5%) have a round-trip travel duration of more than three hours, indicating that they travel a significant distance to reach the zoo. This could be due to the popularity or specific appeal of the zoo, prompting visitors to travel from farther away.

**Table (4.8) Distance of Round-trip of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Distance of round-trip (km) | | |
| (a) Less than 20 | 13 | 6.5 |
| (b) 20-50 | 29 | 14.5 |
| (c) 51-80 | 101 | 50.5 |
| (d) 81-110 | 16 | 8 |
| (e) above 110 | 41 | 20.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.8) illustrates the varying travel distances that respondents undertake for their round-trip visits. A notable finding is that a substantial number of respondents (50.5%) travel within the 51-80 km range, indicating a moderate yet significant travel distance. Additionally, 20.5% of respondents travel distances above 110 km, suggesting a considerable willingness to travel longer distances for their destination.

**Table (4.9) Preferred Season of Respondents to Visit in Zoo**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Preferred season to visit to Zoo | | |
| (a) Summer | 66 | 33 |
| (b) Rainy | 6 | 3 |
| (c) Winter | 128 | 64 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.9) indicates a strong preference among respondents for visiting the zoo during the winter season, with 64% expressing this choice. This preference may reflect a combination of favorable weather conditions, holiday periods, and seasonal attractions at the zoo. Summer also emerges as a popular season, likely due to vacation times and outdoor leisure activities. The preference for the rainy season is minimal, suggesting that fewer respondents prefer visiting the zoo during inclement weather.

**Table (4.10) Costs of Visit of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Costs of Visit (Kyat) | | |
| (a) Less than 5,000 | 0 | 0 |
| (b) Between 5,000 – 10,000 | 4 | 2 |
| (c) Between 10,000 – 20,000 | 19 | 9.5 |
| (d) More than 20,000 | 177 | 88.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.10) indicates that a large majority of respondents (88.5%) were willing to spend more than 20,000 Kyats during their visit to the zoo, suggesting that visitors are prepared to invest in their zoo experience. This could be due to factors such as the perceived value of the visit, available amenities, and the desire for a comprehensive experience.

**Table (4.11) Entry Fee Willing to Pay of Respondents**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Entry fee willing to pay for one adult | | |
| (a) 2000 | 20 | 10 |
| (b) 2500 | 171 | 85.5 |
| (c) 3000 | 10 | 5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.11) suggests that the majority of respondents prefer entry fees in the range of 2,000 to 2,500 Kyats for one adult, with 85.5% opting for the 2,500 Kyats fee. This pricing range likely balances affordability with the perceived value of the attraction or facility. While there are respondents willing to pay more (3,000 Kyats), they constitute a smaller percentage of the total.

**Table (4.12) The Reason of Respondents to Visit Again**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| The reason to visit again | | |
| (a) For picnic & relaxation | 87 | 43.5 |
| (b) Proper Entry fee | 14 | 7 |
| (c) Animal watching & feeding | 37 | 18.5 |
| (d) For education & job | 62 | 31 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.12) reveals that a significant portion of respondents (43.5%) would revisit primarily for picnic and relaxation purposes, indicating a strong interest in the

attraction as a leisure destination. Another notable reason cited by respondents (31%) is for education and potentially job-related activities, highlighting the importance of educational programs and career opportunities at the attraction. Additionally, 18.5% of respondents expressed a desire to return for animal watching and feeding, underscoring the appeal of observing and interacting with animals. A smaller but still significant group (7%) emphasized the importance of a proper entry fee, suggesting that fair pricing is crucial in attracting return visits.

**Table (4.13) Suggestions for Improvement of Zoo**

| Particular | No. of Respondents | Percentage |
|---|---|---|
| Suggestion for improvement | | |
| (a) Less animals and food for them are expensive | 40 | 20 |
| (b) should have more events for visitor's interests | 55 | 27.5 |
| (c) weak animals' conservation and facility for staffs also should be improvised | 24 | 12 |
| (d) so long distances between places | 50 | 25 |
| (e) should have a larger playground or a big park | 31 | 15.5 |
| **Total** | **200** | **100** |

Source: Survey data, 2024

Table (4.13) summarizes the feedback and suggestions from respondents regarding improvements they believe should be made to a zoo. The data reveals that a significant portion of respondents (27.5%) prioritize more events to enhance visitor engage ment, while concerns about animal welfare and staff facilities (12%) and the layout of the zoo (25%) also feature prominently. These suggestions provide valuable insights into visitor expectations and highlight areas where the zoo could focus on improving infrastructure, programming, and overall visitor experience to meet diverse needs and enhance satisfaction.

## 4.4 Results from the Regression Analysis

Travel cost, which includes both monetary expenses and opportunity costs, is significant because higher costs can deter frequent visits. Understanding its impact helps assess the economic burden on visitors and guide pricing strategies. Distance

affects convenience and accessibility, with greater distances reducing visit frequency. Analyzing distance can identify potential markets and inform transportation or promotional efforts. Income influences discretionary spending, with higher income levels correlating with more zoo visits. Studying income helps understand visitors' economic profiles and guide marketing strategies. Age affects recreational preferences, with different age groups having varying interests and constraints. For example, families with young children might visit more often. Understanding age-related patterns aids in tailoring the zoo's offerings and marketing efforts. By examining these variables, the study aims to identify key factors influencing zoo attendance, enhancing visitor experience, and increasing attendance. In this model, the dependent variable is visits, and independent variables include travel cost, distance, income, and age (Table 4.14).

**Table (4.14) Variables Description**

| Types | Variables | Definition | Measurement | Expected Sign |
|---|---|---|---|---|
| Dependent variable | N | Number of times the person visited the zoo in the past year | Visits per year | + |
| Independent variables | TC | Travel cost per person + opportunity cost | Kyat per visit | - |
| | D | Distance of the round-trip to the zoo | Km per round-trip | - |
| | I | Income per respondent | Kyat per hour | + |
| | A | Age of respondents | Years | + |

The dependent variable is "N", which is defined as the number of times a person visited the zoo within a year, measured annually. As independent variables, "TC", the travel cost per person along with the opportunity cost will be measured in Kyat per visit. The expected sign is negative (-), indicating that higher travel costs are likely to deter frequent visits to the zoo. This suggests that as travel costs increase, the number of visits is expected to decrease. Visitors were asked about the costs associated with their journey to the park, including round-trip expenses, food expenditures, vehicle charges, and other costs such as entrance fees and fuel. The opportunity cost was calculated by multiplying travel time and salary with hourly wage rate.

The distance of the round-trip to the zoo, "D" measured in kilometers per round-trip. The expecting result should be negative result that means greater distances may reduce the number of zoo visits. This implies that individuals living farther away are less likely to visit the zoo frequently due to the inconvenience and cost associated with longer travel distances. "I" represents the income per person, measured in kyat per hour. The expected sign is positive, suggesting that higher income levels are associated with an increased number of zoo visits. People with higher salaries could have more extra cash to spend on leisure activities like going to the zoo. The age of the respondents, "A" measured in years. The expected sign is positive, indicating that as the age of respondents increases, the frequency of zoo visits may also increase. This could reflect that older individual, possibly with families, are more inclined to engage in family-oriented recreational activities. Overall, this study investigates how travel cost, distance, income, and age influence the number of zoo visits, with the anticipation that travel cost and distance negatively impact the frequency of visits, while income and age positively influence it.

### 4.4.1 Model Specification

The demand function for visits of Naypyitaw Zoological Garden is constructed by relating visitors' travel costs (TC) with their number of visits to the recreation sites. The study uses the estimated coefficient of logarithm of travel cost to calculate the recreational value. To determine the recreational value for visitors, the model for recreational benefits is specified by linking the number of visits to the travel cost. The trip generating function was transformed into a function that can be used in a log-log regression model:

$$\ln (N) = \beta_0 + \beta_1 \ln (TC) + \beta_2 \ln (D) + \beta_3 \ln (I) + \beta_4 \ln (A) + \in \quad \textbf{Eq (3)}$$

Where,

| | | |
|---|---|---|
| ln (N) | = | Natural logarithm of number of times the person visited the Naypyitaw zoological garden in the past year |
| ln (TC) | = | Natural logarithm of the round-trip total cost of an individual's residence to and from the site |
| ln (D) | = | Natural logarithm of distance of the round-trip to the zoo |
| ln (I) | = | Natural logarithm of income per each respondent |
| ln (A) | = | Natural logarithm of age per each respondent |
| $\beta_0$ | = | Constant |

$\beta_1, \beta_2, \beta_3, \beta_4$ = Regression coefficients to be estimated

$\epsilon$ = Standard Error

**Table (4.15) Results from Regression Analysis of the Trip Generating Function**

| Variable | Coefficient | Estimated coefficient | P-value |
|---|---|---|---|
| Constant | $\beta_0$ | 6.563 | 0.000 |
| Travel Cost | $\beta_1$ | -0.490 | 0.000 |
| Distance | $\beta_2$ | -0.227 | 0.000 |
| Income | $\beta_3$ | 0.013 | 0.068 |
| Age | $\beta_4$ | 0.097 | 0.370 |

As it is seen from Table (4.15), it is clear that from just two variables in the log-log regression model, both travel cost and distance emerged as statistically significant variables, aligning with economic theories and influencing the number of visits to the park. Unfortunately, income and age weren't statistically significant on number of visits. After substituting in Eq (3),

$$N = 6.563 + -0.490\ TC + -0.227\ D + 0.013\ I + 0.097\ A + \epsilon$$

Based on the findings, the constant is statistically significant as its p-value is less than 0.05. This means that when all other variables are zero, the predicted value of the dependent variable is 6.563. The natural logarithm of travel cost coefficient to visit the place was 0.490. It indicates that 0.49 percent decrease in the number of visits for one percent increase in the travel cost and the sign of the coefficient was consistent with the theory. A p-value of 0.00 is less than 0.05. This means that it falls below the typical significance level of 0.05, indicating that the result is statistically significant at the 5% level. If travel becomes too expensive, they might not have enough money to afford it. People might find cheaper ways to have fun by visiting other attraction places. Thus, the increase in travel cost can make people difficult to afford the trips.

Distance has a significant effect on the number of visits and distance negatively impacts the dependent variable. Since the coefficient is negative, it suggests that as the distance increases, the number of visits decreases. Specifically, if the distance from the visitor's location to the zoo increases by one percent, the model predicts that visits will decrease by approximately 0.227 percent. Travelling longer distances usually costs more money, including expenses for transportation, accommodations and food. Thus, people are less likely to make frequent trips to distant locations compared to places that

are closer and easier to reach. In this paper, while the coefficients for income and age in log-log model suggest a positive relationship with visits to the zoo, their non-significant p-values indicate that they do not have a statistically significant impact on number of visits of the zoo.

### 4.5 Recreational Value

Recreational value refers to the economic value or benefit derived from engaging in recreational activities, such as visiting parks, hiking, fishing, or other leisure activities. It is an important concept in environmental economics and natural resource management, as it helps quantify the benefits that natural and recreational areas provide to individuals and society.

$\beta_{TC}$ , a coefficient of total travel cost variable, obtained in Table 4.4 is inserted in Eq. (1) of Chapter 2. The Consumer Surplus per one person per trip is determined by;

$$\text{Consumer Surplus, CS} = -\frac{1}{\beta_{TC}}$$

$$= -\frac{1}{-0.490} = 2.04 \text{ Ks}$$

The visitors to the park were 121,264 in 2023. Therefore, the recreational values of Naypyitaw zoological garden can be obtained by Eq. (2) of Chapter 2:

The annual recreational value of Naypyitaw zoological garden

$$= \text{Consumer Surplus} \times \text{total visitors in last year}$$

$$= 2.04 \text{ Ks} \times 121{,}264$$

$$= 247{,}379 \text{ Ks}$$

The annual recreational value for Naypyitaw zoological garden was calculated to Ks. The park covers 612 acre (248 hectare) and also this value was 997 Ks·ha$^{-1}$. That means that each hectare of land in this recreation site is valued at kyats. That value can indicate effective management and conservation of recreational resources. The low travel cost coefficient may explain the high consumer surplus. (Garrod and Willis, 1999) indicates that small changes in model assumptions or variables can lead to significant variations in the estimated consumer surplus.

# CHAPTER V
# CONCLUSION

## 5.1 Findings

The Naypyitaw Zoological Garden was established to provide recreational opportunities for residents and tourists in Naypyitaw, alongside promoting wildlife conservation and environmental education. Insights from a survey of visitors highlighted a predominantly male, middle-aged, married, and well-educated demographic. They were employed in various sectors such as private business and government, with moderate monthly incomes. Visitors commonly arrived by private vehicles, visited with family or friends, and preferred weekends for longer visits, especially during the winter season. Many allocated significant expenditures per visit and showed willingness to pay moderate entry fees. Reasons for returning included activities like picnicking, educational experiences, and observing animals, with recommendations for enhancing the visitor experience focusing on event diversity, improved conservation efforts, and upgraded facilities.

The CS per person per trip was calculated to be 2.04 Ks. This value represents the net benefit that an individual gains from visiting the zoo after accounting for their travel costs. The total number of visitors in 2023 was 121,264 visitors. By multiplying the CS per person by the total number of visitors, the annual recreational value of the Naypyidaw Zoological Garden was 247,379 Ks which is an economic benefit that the zoo provides annually to its visitors. The park covers an area of 612 acres (248 hectares). The total recreational value by the number of hectares was 997 $Ks \cdot ha^{-1}$. Each hectare of land in the zoological garden is valued at approximately 997 Ks annually in terms of the recreational benefits it provides.

The calculation demonstrates a substantial economic impact of the zoological garden, justifying its maintenance and development from an economic perspective. The garden not only provides a space for recreation but also generates significant economic value through visitor spending. Even though there was not much high value per hectare,

the recreational value per hectare stands at a respectable 997 ks per ha, highlighting its potential and positive impact. Thus, maintaining and possibly expanding the garden can yield high economic returns.

In this study, the recreational value demonstrates the significant benefits that the Naypyidaw Zoological Garden provides to its visitors and the broader community. By quantifying these benefits, it can highlight the economic importance of the garden and provide a strong case for its continued support and development. This analysis can be a valuable tool for policymakers, managers, and stakeholders in making informed decisions about the future of the zoological garden.

## 5.2 Suggestions

In this study, a high recreation value can show that Naypyitaw Zoological Because of the garden's high economic value, the nation's accountable institutions must appropriately maintain the park to ensure that these advantages continue to flow. Nevertheless, it's important to consider a holistic approach that encompasses various factors contributing to the site's attractiveness, sustainability, and overall value to visitors and communities. The results of this study, in particular, could be used by the Ministry of Natural Resources and Environmental Protection to enhance tourism related activities in the Naypyitaw Zoological Garden and throughout the nation by developing sustainable nature-based tourism strategies that respond to visitor preferences and national tourism objectives. These strategies can also be used to further improve the zoological garden's recreational value while supporting environmental education, wildlife conservation, and community engagement. As a result, the number of tourists visiting the nation will rise, enhancing the recreational value of the Naypyitaw Zoological Garden and other natural sites.

For future study, a recreation site can receive different types of visitors, such as locals and foreigner’s categorization. It may yield better estimates since tourists have varied number of socio-economic characteristics. The Toolkit for Ecosystem Service Site-based Assessment (TESSA v.1.2) can be used to determine the economic use value of recreation resources in other parks or protected areas in place of the individual travel cost method (TCM) for recreational valuation. Furthermore, the ordinary least squares regression model could be substituted by a zero-truncated Poisson regression model. Ultimately, this study finds that higher recreation values come from nature-based areas

with significant tourism investments in infrastructure, facilities, and human capital. Therefore, it recommends that the Naypyitaw zoological garden officials invest more in tourism to attract visitors, thereby increasing recreation use value and boosting the tourism industry's contribution to the economy.

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# APPENDIX

# SURVEY QUESTIONNAIRE

I am studying Master of Public Administration at Yangon University of Economics. I have designed the following questionnaire for the study on "**ESTIMATING THE RECREATIONAL VALUE OF ZOOLOGICAL GARDEN IN NAYPYITAW USING TRAVEL COST METHOD**" - which requires for my thesis work as an integral part of the study to complete the Master Program. Please be answered that your responses will be strictly confidential. I would highly appreciate if you answer the following questionnaire. It will take approximately 15 – 20 minutes. I expect your kind cooperation and thanks for your time.

## Part A - Characteristics of respondents

1) Gender (a) Male ☐ (b) Female ☐

2) Age (in years)

(a) Less than 20 ☐ (b) 20 – 30 ☐ (c) 31 – 40 ☐ (d) 41 – 50 ☐ (e) Above 51 ☐

3) Marital Status

(a) Single ☐ (b) Married ☐

4) Level of Education

(a) Primary school ☐ (b) Middle school ☐ (c) High school ☐

(d) University level ☐ (e) Graduate level ☐ (f) Post Graduate level ☐

5) Occupation Status

(a) Student ☐ (b) Private employee ☐ (c) Government employee ☐

(d) Seller ☐ (e) Others (Specify) ☐ _____

6) Monthly Income (Pocket money if respondents are student)

(a) Less than 100,000

(b) 100,000 – 200,000

(c) 200,000 – 300,000

(d) 300,000 – 400,000

(e) 400,000 – 500,000

(f) Above 500,000

7) How many hours do you work during a day?

(a) 5 hours ☐ (b) 6 hours ☐ (c) 7 hours ☐ (d) 8 hours ☐ (e) 9 hours ☐ (f) 10 hours ☐

(g) Others (Specify) ☐ _____

**Part B –Travelling time and cost of respondents**

1) Travel companion

(a) Alone ☐ (b) Couple ☐ (c) Family ☐ (d) Friends ☐

2) Main transportation

(a) Private car ☐ (b) Car rent ☐ (c) Motor cycle ☐

3) Preferred time to visit Naypyitaw Zoological Garden.

(a) Weekends ☐ (b) Public holidays/Festival ☐

(c) Weekday (Monday – Friday) ☐ (d) During vacation time ☐

4) How far you traveled to Naypyitaw Zoological Garden?

(a) Less than one hour ☐ (b) One hour ☐ (c) Less than two hours ☐ (d) Two hours ☐ (e) More than two hours ☐

5) Time spends in Naypyitaw Zoological Garden

(a) Less than one hour ☐ (b) Between one hour to three hours ☐ (c) More than three hours ☐ (d) Other (Specify) ☐_____

6) What is your major purpose of zoo visit?

(a) For children education ☐ (b) For knowledge ☐ (c) Clean environment ☐

(d) Events/Performances ☐ (e) Other (Specify) ☐_____

7) In which season do you prefer to visit?

(a) Summer ☐ (b) Rainy season ☐ (c) Winter ☐

8) How long did the trip take you to get this zoo from your initial point with your return?

(a) Less than one hour ☐ (b) One hour ☐ (c) Less than two hours ☐ (d) Two hours ☐

(e) More than two hours ☐

9) How much distance did you travel your trip to the zoo from your initial point with your return? (km)

(a) Less than 20 ☐ (b) 20-50 ☐ (c) 51-80 ☐ (d) 81-110 ☐

(e) above 110 ☐

10) How much did you spend on your trip to the zoo only for you? (For one respondent)

(a) Less than 5,000

(b) Between 5,000 – 10,000

(c) Between 10,000 – 20,000

(d) More than 20,000

11) How much would you like to pay for the entry fee for one person?

(a) 2000 □ (b) 2500 □ (c) 3000 □ (d) 3500 □

12) How many times did you visit Naypyitaw Zoological Garden during last year?

(a) One □ (b) Two □ (c) Three or more □ (d) Other (Specify) □_____ _____

13) Would you like to visit Zoo again, why?

(a) For picnic & relaxation □ (b) Proper Entry fee □ (c) Animal watching and feeding □ (d) For Education & job □ (e) Other (Specify) □_____

14) Do you have suggestion for improvement of Zoo?.....