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[기본연구] 미얀마 Nay Py Taw시 스마트 모빌리티 수요 및 현황

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Demand and Status of Smart Mobility in Myanmar's Nay Py Taw City

: Mobility on Demand Bus Service for Myanmar Capital City "Nay Pyi Taw"

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ABSTRACT

MoD NPT will adopt a user-centric approach, prioritizing the seamless and convenient transportation needs of Nay Pyi Taw residents, fostering connectivity to several key locations across the city. The integration with public transportation hubs strategically links MoD Bus Terminals with express bus stations, airports, and railway stations, ensuring complete connectivity within Nay Pyi Taw's extensive transportation network. The introduction of the user-friendly MoD Bus App adds an innovative dimension, allowing users to request routes, make payments, and check travel times with ease. Efficient routing and operation lie at the core of the MoD Bus System, with a focus on optimizing routes based on user requests and ensuring a maximum travel time of three hours for passengers. Embracing sustainability, MoD NPT envisions the incorporation of electric buses, contributing to environmental preservation and establishing the city as a pioneer in innovative MoD public transportation. This commitment to innovation sets a standard for efficiency, accessibility, and environmental sustainability, redefining the landscape of public transportation in Nay Pyi Taw.

In summary, the MoD NPT system is essential as a well-designed city bus transportation system because it prioritizes the needs of users, enhances connectivity, integrates with existing transportation infrastructure, employs user-friendly technology, optimizes routing and operations, promotes sustainability, and embraces innovation for the benefit of Nay Pyi Taw's residents and visitors.

MoD NPT는 사용자 중심 접근법을 채택하여 네피도 주민들의 원활하고 편리한 교통 수요를 최우선으로 도시 내 주요 장소들과의 연결성을 강화하기 위한 시도를 하고 있다. 이는 공공 교통 허브와의 통합을 통해 버스 터미널, 고속 버스 정류장, 공항, 그리고 기차역이 전략적으로 연결되어 네피도의 광범위한 교통망 내에서 완전한 연결성이 보장되도록 한다. 사용자 친화적인 버스 앱의 도입은 혁신적인 차원을 더하여 사용자들이 노선을 요청하고, 결제를 하며, 여행 시간을 쉽게 확인할 수 있게 한다. 효율적인 노선 설계와 운영은 버스 시스템의 핵심으로, 사용자 요구에 기반한 노선 최적화와 3시간 이내의 최대 여행 시간 보장에 중점을 둔다. 지속 가능성을 추구하기 위해 MoD는 전기 버스 도입을 구상하여 환경 보호에 기여하고 혁신적인 공공 교통 시스템의 선도 도시로 자리매김할 것이다. 이러한 혁신에 대한 의지는 효율성, 접근성, 환경 지속 가능성에 대한 새로운 기준을 제시하며, 네피도의 공공 교통 체계를 재정의할 것으로 기대할 수 있다. 결국, MoD 버스 시스템은 사용자 중심의 설계, 연결성 강화, 기존 교통 인프라와의 통합, 사용자 친화적 기술 활용, 노선 및 운영 최적화, 지속 가능성 증진, 혁신 추구 등을 통해 네피도 주민과 방문객들을 위한 우수한 도시 버스 교통 시스템이 될 것이라는 점에 의의가 있다.

1.1. Overview and Importance of City Bus Transportation

A well-functioning bus system serves as the lifeblood of urban transportation, embodying a multitude of benefits that extend far beyond merely moving people from one point to another. In cities worldwide, buses play a pivotal role in enhancing accessibility, reducing traffic congestion, and fostering economic and environmental sustainability. Offering an affordable and inclusive mode of transportation, buses contribute to social equity by ensuring that all members of the community, regardless of socio-economic status or mobility challenges, have access to essential services and opportunities. Beyond the convenience they bring to daily commuters, bus systems actively contribute to the creation of vibrant, interconnected urban environments that prioritize efficiency, safety, and environmental responsibility.

1.2. Current Transportation Services of Myanmar

Myanmar has witnessed a notable improvement in its transportation systems in recent years, offering a range of options for travelers. Buses, serving as the primary mode of transportation across the country, boast well-developed and comfortable coaches with reasonably priced tickets, typically around 15 USD or less depending on the distance. Yangon and Mandalay emerge as key transportation hubs, with private taxis prevalent in Yangon, albeit individually owned. The Grab app provides a convenient option for taxi services. Private car rentals are also available, albeit at a slightly higher cost, ranging from 10 to 30 USD. In Mandalay and Bagan, tri-motorbike taxis are popular for nighttime rides, while e-bikes are available for rent in certain hotels. Although the government has made efforts to enhance the railway system, trains are not the preferred mode of transportation due to their lack of popularity and the extreme heat in the middle of Myanmar. Train tickets, however, are notably economical. Domestic airlines have made significant strides, with airports serving most tourist destinations and cities. While flying is the most comfortable means of travel, it can be relatively expensive. Despite Myanmar's abundant rivers and waterways, boat and ship transportation is not as well-developed, with safety concerns remaining relatively low.

1.3. Project Area: Myanmar Capital City "Nay Pyi Taw"

Nay Pyi Taw, officially romanized as Nay Pyi Taw, stands as the capital and the third-largest city in Myanmar. Positioned at the heart of the Nay Pyi Taw Union Territory, it distinguishes itself from other urban centers in the country as a meticulously planned city situated outside any state or region. Initially recognized as Pyinmana District, Nay Pyi Taw officially assumed the role of Myanmar's administrative capital on 6 November 2005, succeeding Yangon (former capital city). Unveiling its official name on Armed Forces Day, 27 March 2006, the city now serves as the epicenter of

Myanmar's government. Home to the Union Parliament, Supreme Court, Presidential Palace, and official residences of the Cabinet. Nay Pyi Taw accommodates various government ministries and military headquarters. Remarkably spacious yet with a notably low population density, the city has hosted significant international events, including the ASEAN Summit, BIMSTEC Summit, East Asia Summit, Southeast Asian Games in 2013, and the AFC U-19 Championship in 2014.

[Pic.1] Famous Landmarks, Union Senate, Ministries and Government Offices in Nay Pyi Taw

The decision to relocate the capital to Nay Pyi Taw from Yangon was underpinned by several key assumptions. Notably, Nay Pyi Taw's central location in comparison to Yangon, coupled with its position as a crucial transportation hub adjacent to the Shan(north east province), Kayah(east province), and Kayin(south east province) states, was deemed strategically advantageous. Governmental and military leaders believed that a heightened military and governmental presence in these regions could potentially bring stability to historically turbulent areas. The relocation, seen as an effort to construct an impregnable citadel capable of withstanding foreign invasions or domestic uprisings, reflected the military's intent to fortify national security. The official explanation emphasized Yangon's congestion and limited space for the expansion of government offices, providing a rationale

for the shift to Nay Pyi Taw.

[Pic 2] Location of Capital City "Nay Pyi Taw"

To be conclude, Nay Pyi Taw, meaning "Royal City" in Burmese, became the capital of Myanmar in 2005, succeeding Yangon. The decision to move the capital was part of a broader plan to centralize the government and strategically locate it in the center of the country.

## 1.4. Problem Statement: Lack of Proper Public Transportation in Nay Pyi Taw

Despite being the capital city with various transportation options and connectivity to other regions, the urban landscape severely lacks comprehensive public transportation services. Residents heavily depend on private vehicles, motorcycles, and tuk-tuks for daily commuting needs. The

absence of an efficient public transit system necessitates the use of ferry buses, provided by ministries and companies, for officials and workers commuting to their workplaces. Notably, there are no current plans to introduce a metro train system in the city. Back in the years 2008 to 2012, there were attempts by private bus companies to establish proper bus services within the city. However, due to extended travel times and insufficient passenger demand at that time, these private initiatives eventually withdrew their services.

Despite the earlier challenges, the population of the capital city has experienced significant growth, increasing from 300,000 in the early 2010s to 700,000 in the early 2020s. This population surge underscores the pressing need for the development of a more robust and accessible public transportation infrastructure.

[Pic. 3] Every morning, people commute to workplaces using ferries provided by ministries and companies, as well as motorbikes and private vehicles for long distances.
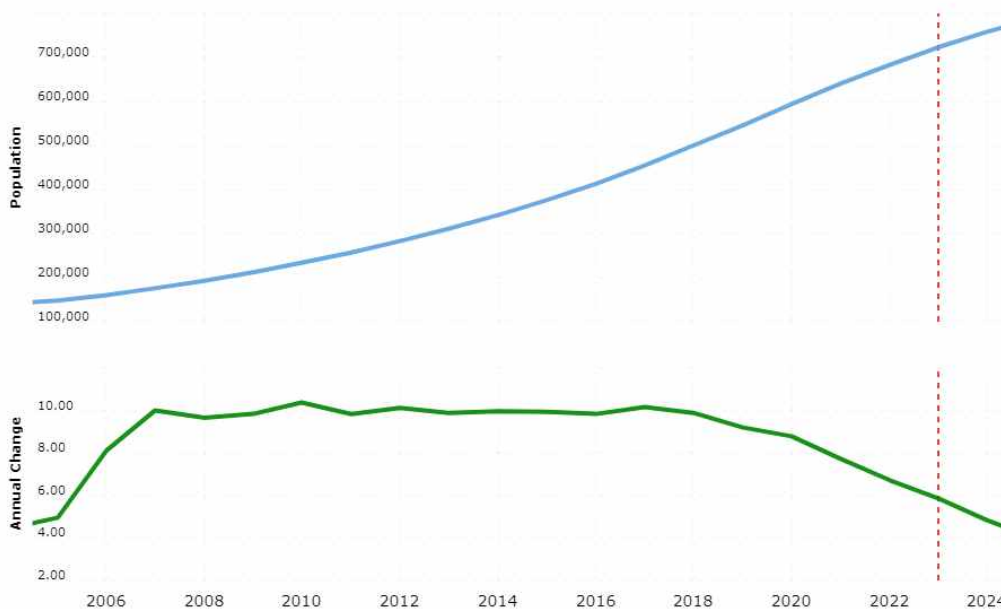
[Fig.1] Population growth of Nay Pyi Taw (2006-2023)

1.5. Objectives of the New City Bus Transportation System

The Nay Pyi Taw Union Territory spans nearly seven thousand square meters. The prevailing dependence on private vehicles and motorcycles for long-distance travel not only incurs higher costs but also consumes valuable time, hindering efficient commuting. Instead of this overreliance on private modes of transportation, there is a pressing need to introduce a more effective and convenient mobility solution. Implementing a system of mobility-on-demand bus services could offer a viable alternative, fostering efficient and cost-effective mobility for residents in Nay Pyi Taw. Such a service would not only alleviate the burden on individual commuters but also contribute to the development of a more sustainable and accessible urban transportation network.

II — Why MoD Bus System?

Nay Pyi Taw stands to gain immense benefits from the implementation of a Mobility on Demand (MOD) bus system, driven by various compelling reasons. Firstly, the MOD bus system promises efficient urban mobility by offering on-demand transportation, addressing specific travel needs and optimizing routes based on real-time demand, thereby reducing wait times for residents and visitors.

With the city experiencing significant population growth, the adaptive nature of a MOD bus system ensures that the burgeoning population has access to a responsive and convenient public transit system.

Moreover, Nay Pyi Taw's diverse demographics, including working-age individuals, students, and children, can benefit from a MOD bus system tailored to meet their varied commuting needs. The system also addresses the current overreliance on private vehicles and motorcycles, encouraging a shift toward sustainable and shared transportation. This not only mitigates fuel consumption but also reduces individual transportation costs, contributing to a more environmentally conscious and cost-effective urban transportation model.

Crucially, the MOD bus system would enhance connectivity to key destinations within Nay Pyi Taw, linking residential areas, government and diplomatic zones, educational institutions, and healthcare centers. This promotes accessibility for residents and supports the overall infrastructure of the city.

Additionally, a responsive and convenient public transportation system is pivotal for tourist accessibility, fostering a positive experience for visitors exploring Nay Pyi Taw.

Overall, the introduction of a MOD bus system holds the potential to transform Nay Pyi Taw's transportation landscape, aligning with sustainability goals and catering to the evolving needs of its diverse population.

3.1. Route Planning

i. Assessment of Population Density and Demographics

According to 2014 Myanmar Population and Housing Census, Nay Pyi Taw Union Territory exhibits a population density of 164.4 persons per square kilometer, surpassing the national average of 76 persons per square kilometer at the Union level. This density positions Nay Pyi Taw as the fifth most densely populated State/Region in Myanmar, signifying a concentration of residents that is more than double the country's overall population density. The elevated population density in Nay Pyi Taw underscores the unique demographic landscape of the Union Territory compared to other regions and states within Myanmar.
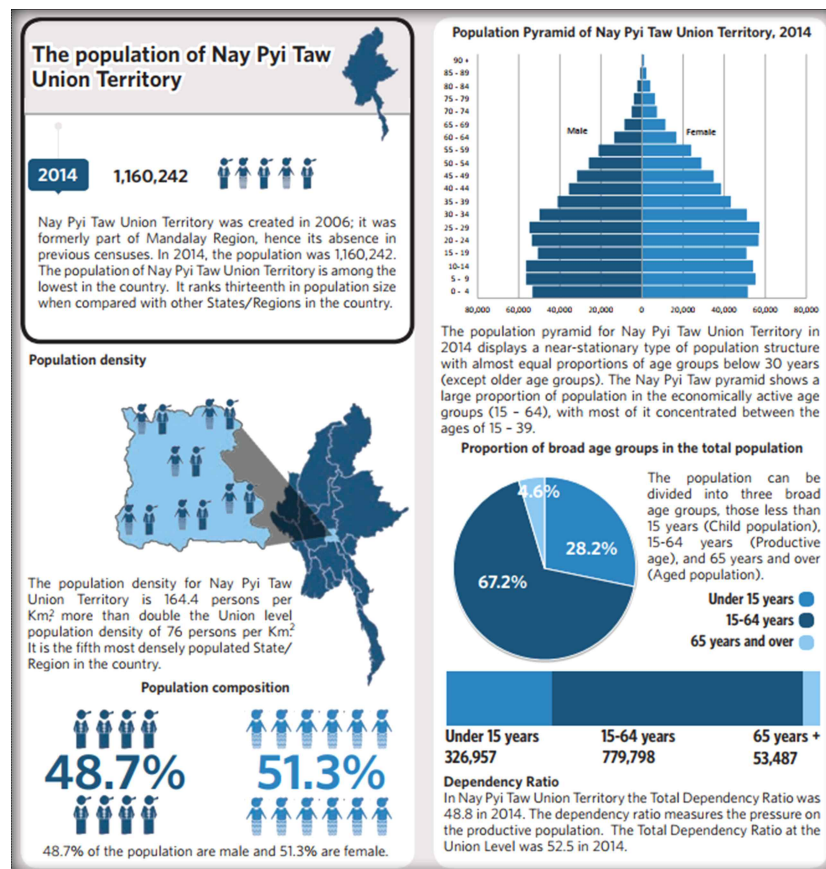

[Fig. 2] 2014 Demographic Data of Nay Pyi Taw (2014 Myanmar Population and Housing Census)

With 30% of the population under the age of 15, 65% falling within the 15–64 age group, and 5% over the age of 64, Nay Pyi Taw faces a demographic distribution that emphasizes a substantial working-age population and a significant percentage of students and children. This demographic structure underscores the critical need for enhanced and accessible public transportation options to cater to the diverse requirements of labor forces, students, and families with children.

ii. Identification of Key Destinations (Residential Areas, Commercial Hubs, Educational Institutions)

The Nay Pyi Taw Union Territory is organized into two districts, further subdivided into a total of eight townships. Pyinmana, Lewe, and Tatkone townships were formerly part of the Yamethin District in the Mandalay Region. Ottarathiri, Dekkhinathiri, Pobbathiri, Zabuthiri, and Zeyarthiri are new townships. In Ottara District, Ottarathiri Township, Pobbathiri Township, Tatkone, and Zeyarthiri Township are key administrative units. In Dekkhina District, Dekkhinathiri Township, Lewe Township, Pyinmana Township, and Zabuthiri Township form the administrative landscape of the Nay Pyi Taw Union Territory, reflecting the region's structured governance.
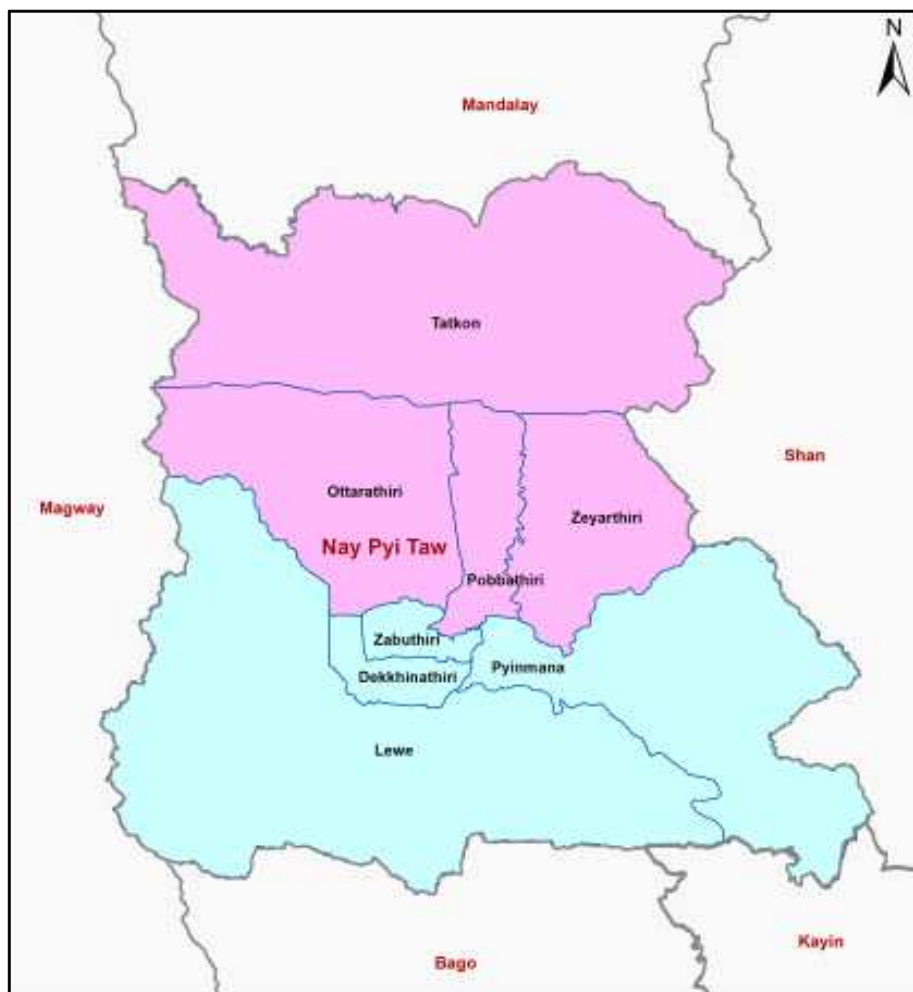
[Pic. 4] Nay Pyi Taw Union Territory

Establishing an efficient and comprehensive public transportation network in Naypyitaw Union Territory necessitates connecting a myriad of key destinations. These should include crucial residential areas, housing zones, ministry and diplomatic zones, hotel districts, commercial areas, higher education facilities, and healthcare centers. Additionally, the network should extend to vital transportation hubs such as high-way express hubs, the airport, and the central railway station. Ensuring connectivity to recreation spots and famous landmarks across Naypyitaw further contributes to the accessibility and convenience of the public transportation system. By strategically linking these key destinations, the transportation network can facilitate seamless movement for residents and visitors alike, fostering economic activities, educational pursuits, and overall mobility within the Union Territory. (Details of those areas will be explained more in "Bus Stop Placement: Strategic Locations for Accessibility")

iii. Integration with Existing Transportation Infrastructure (Air, Express Bus, Rails)

To achieve comprehensive integration, the MoD Bus system must establish seamless connectivity with key transportation hubs in Nay Pyi Taw.

A crucial part of this integration involves linking the MoD Bus system with Nay Pyi Taw International Airport to facilitate smooth transitions for air travelers. Nay Pyi Taw International Airport, also recognized as Ayelar Airport, is situated 16 km (10 mi) southeast of the city, nestled between Ayelar and Lewe. Functioning as a pivotal air transport hub, the airport is well-connected with regular flights offered by domestic airlines such as Air Bagan, Air Mandalay, Myanmar National Airlines, FMI Air, and Yangon Airways. These flights cater to various destinations across the country, including Yangon and other major cities.

[Pic. 5] Nay Pyi Taw International Airport

Additionally, establishing connections with major express bus hubs, such as Myo Ma Express Bus Station and Bawgathiri Express Bus Station, will enhance accessibility for passengers traveling by road. In terms of ground transportation, Nay Pyi Taw features prominent express bus stations. Myo Ma Express Bus Station, centrally located within the Nay Pyi Taw Territory, stands as the largest, providing essential passenger and parcel services. Bawgathiri Express Bus Station, situated in Poppathiri Township on the northeast side of Nay Pyi Taw, serves as the second major hub. While older cities like Pyinmana and Lewe have their express bus stations, they do not operate on the same scale as the aforementioned two, limiting the range of services they provide.

[Pic. 6] Famous Private Bus Company" Mandalar Min" (King of Mandalay)

Lastly, integrating the MoD Bus system with the central railway station ensures a well-rounded transportation network, allowing commuters to seamlessly transfer between bus and rail services. As for railway services, Nay Pyi Taw Central railway station, located in Poppathiri Township, serves as a crucial transportation link between Yangon Central station and Mandalay Central station. Prior to the establishment of Nay Pyi Taw railway station, the cities of Pyinmana and Lewe acted as primary railway stations. However, Pyinmana station still serves as a more accessible option for residents compared to much larger Nay Pyi Taw station, providing the efficiency and convenience of railway services in the region.

[Pic. 7] Nay Pyi Taw Railway Station

This interconnected approach ensures efficient and synchronized mobility for residents and visitors across different modes of transportation within Nay Pyi Taw.

3.2. Bus Stop Placements: Strategic Locations for Accessibility

Strategic bus stop placement in Nay Pyi Taw should be designed to cater to the diverse needs of the population, ensuring convenient access to various key locations.

In the central Nay Pyi Taw sector, where public housing, public rental housing, and government official residential housings are concentrated, bus stops should be strategically positioned to serve these communities. Notable flower-named residential areas such as ပိတောက် , ခရေ, ကံ့ကော် , and သစ်စ should have well-placed bus stops to facilitate easy commuting. Bus stops should also be strategically located in densely populated residential areas like Pyinmana town, Zayathiri township, Poppathiri township, and Ottarathiri township.

[Pic. 8] Thukha Waddy Public Rental Housing in Dekkhinathiri Township

Additionally, to address the transportation needs of students and educational institutions, bus stops near governmental state schools and the more recently established higher education facilities, including Nay Pyi Taw University of Technology, Nay Pyi Taw State Academy, University of Veterinary Science, University of Agricultural, and University of Forestry, are crucial.

For commercial hubs, such as Nay Pyi Taw Myoma Market, Thapyaygone Market, Capital Hyper Market (Ottarathiri), Junction Shopping Mall (Nay Pyi Taw), Junction Shopping Mall (Ottarathiri), and Pyimana Market, well-placed bus stops would enhance accessibility for shoppers and employees.

[Pic.9] Junction Nay Pyi Taw Shopping Mall

In the realm of healthcare, bus stops should be strategically positioned to provide easy access to public hospitals, including Nay Pyi Taw General Hospital, Nay Pyi Taw Women Hospital, Nay Pyi Taw ENT Hospital, 100-bed Nay Pyi Taw Traditional Medicine Hospital, and Nay Pyi Taw Orthopedic Hospital. Consideration should also be given to bus stops near the 300-bed Obstetric, Gynecological and Children's Hospital of Defence Services, which serves as a teaching hospital for Myanmar Defence Services Medical Academy. Finally, towns adjacent to Nay Pyi Taw, such as Lewe, Pyinmana, and Tatkone, should have well-placed bus stops near their respective hospitals to ensure comprehensive healthcare accessibility for residents.

To optimize accessibility and facilitate seamless travel to Nay Pyi Taw's famous landmarks and recreational destinations, strategically positioned bus stops are essential. These stops would provide convenient access to significant religious sites, including the Uppatasanti Pagoda, Maha Thetkya Yanthi Buddha, Thatta Thattaha Maha Bawdi Pagoda (a replica of Buddha Gaya), and the Maravijaya Buddha. For those interested in history and culture, bus stops near memorials like the Memorial to the Fallen Heroes and museums such as the National Museum and Defence Services Museum offer accessible transportation options. Moreover, bus stops near recreational spots like the Nay Pyi Taw Water Fountain Garden, Nay Pyi Taw National Zoo, Nay Pyi Taw Safari Park, National Herbal Park, and Wunna Theikdi Stadium ensure that residents and visitors alike can efficiently travel to these vibrant and culturally rich destinations.

[Pic. 10] Famous religious sites and recreation places in Nay Pyi Taw

3.4. Fleet Management

i. Determining the Number and Type of Buses

In Myanmar, the Yangon Bus Service (YBS) has achieved significant success since its inception in 2017, particularly in the country's largest city, Yangon. Despite the absence of location tracking systems and an electronic payment system, YBS has made notable strides by introducing a smart card transportation system known as the YBS Card. This innovative approach allows commuters to benefit from a more streamlined and efficient payment process. Considering the success of YBS in Yangon, there is a potential opportunity for Nay Pyi Taw to leverage those buses as the primary vehicles for a Mobility on Demand (MOD) bus service.

[Pic.12] Aircon Bus No.4 of YBS in Yangon Downtown Area

For the initial phase of this project, the deployment of 10 buses in active service, with a few others held in reserve, is deemed sufficient to meet the early demands of the Mobility on Demand (MOD) bus service in Nay Pyi Taw. This cautious approach aligns with the need for flexibility and adaptability as the service takes root. By starting with a manageable fleet size, the system can effectively gauge passenger demand and optimize routes accordingly. This allows for a gradual and controlled scaling of operations in response to real-time needs, ensuring efficient and targeted services on the requested routes. As demand patterns become clearer and the service gains momentum, adjustments and expansions can be strategically implemented for the continued success and growth of the MOD bus system in Nay Pyi Taw.

[Pic. 14]Recently arrived new buses for YBS near Shwe Dagon Pagoda (Yangon)

ii. Infrastructure

- Roads

Nay Pyi Taw, as a relatively new capital with a lower population density compared to other major cities, boasts well-designed infrastructure, featuring predominantly 8-lane roads. Remarkably, the city has not encountered significant traffic congestion issues. However, one primary challenge is the considerable distance to key locations. Despite this, the existing 8-lane road network provides a solid foundation for implementing a bus system. The well-maintained roads contribute to a favorable environment for public transportation, minimizing concerns about road conditions.

[Pic. 14] ThaPyayGone Roundabout, one of the major traffic flow points of Nay Pyi Taw

- Bus Terminals and Depots

The already established express bus stations of Myo Ma and Poppathiri are well-suited to serve as primary bus terminals for the proposed Mobility on Demand (MOD) bus service in Nay Pyi Taw. Given the initial plan for a relatively small fleet size and a focus on passenger transport services, there is no necessity for large spaces typically associated with conventional bus terminals. Instead, compact depots and offices can efficiently cater to the operational needs of the MOD bus service.

- Technology Integration

The implementation of a Mobility on Demand (MOD) Bus Service in Nay Pyi Taw will be accompanied by a user-friendly mobile application, "MOD NPT" will be designed to enhance the overall experience for commuters. The user app will serve as a comprehensive platform, allowing users to request pick-up locations, specify drop-off points, facilitate electronic payments, generate QR codes for tickets, and receive timely notifications for incoming bus pickups. This integrated approach not only ensures convenience for passengers but also streamlines the entire process of utilizing the MOD bus service.

To effectively control and manage the bus service, a sophisticated bus location monitoring system will be put in place. This system enables real-time tracking of bus locations, optimizing route planning and ensuring efficient deployment of buses based on demand. The monitoring system plays a crucial role in enhancing operational efficiency, allowing for dynamic adjustments to the service in response to changing demand patterns and traffic conditions.

4.1. Scheduling: Timely Departures and Arrivals

Given the limited demands and the expansive geographical coverage with a small fleet size, the Mobility on Demand (MOD) service in Nay Pyi Taw will adopt a strategic operational approach. Instead of providing a full-day bus service, the operations will be segmented into different time slots throughout the day to ensure efficiency and optimal resource utilization.

Early Morning Service (5 AM - 8 AM)

Late Morning Service (9 AM - 12 PM)

Afternoon Service (1PM - 4 PM)

Evening Service (5PM - 8 PM)

[Fig. 3] MoD Service Operation Times

For the early days of the bus service, the maximum travel time for passengers will be capped at 3 hours. This means that from the moment a passenger is picked up, the travel duration should not exceed this limit. To maximize passenger pick-up volume per bus, bus services will be operated during four specific time segments within a day: 5 AM to 8 AM, 9 AM to 12 PM, 1 PM to 4 PM, and 5 PM to 8 PM. This strategic scheduling allows for concentrated service provision during peak demand periods, ensuring that passengers are efficiently served while maintaining manageable travel times. As the service evolves, adjustments can be made to accommodate changing demand patterns and refine the operational schedule.

4.2. User friendly MoD Bus App (MOD NPT)

To facilitate the Mobility on Demand (MOD) bus service in Nay Pyi Taw, a user-friendly MoD Bus App (MOD NPT) will be developed. This innovative application will empower users by allowing them to create accounts seamlessly, request services, make online payments, receive estimates of approximate travel times, and receive notifications regarding pick-ups, along with any other necessary information. The MoD Bus App aims to enhance the overall user experience, providing a comprehensive and convenient platform for residents and visitors to access and enjoy the MOD bus services efficiently.

To utilize the app effectively for the MOD bus service in Nay Pyi Taw, users can follow these steps:

Account Creation → Destination Requests → Payment Process → Confirmation and Ticket Issuance

[Fig. 4] MoD Account Creation and Ticket Buying Process

i. Account Creation

Users need to create an account on the app by filling out personal information forms, including the submission of a national ID card photo and mobile phone number.

ii. Destination Requests

Once the account is created, users can request pick-up and drop-off bus stops using the app. To plan proper bus routes for the upcoming day, users are encouraged to make these stop requests at least 2 days in advance.
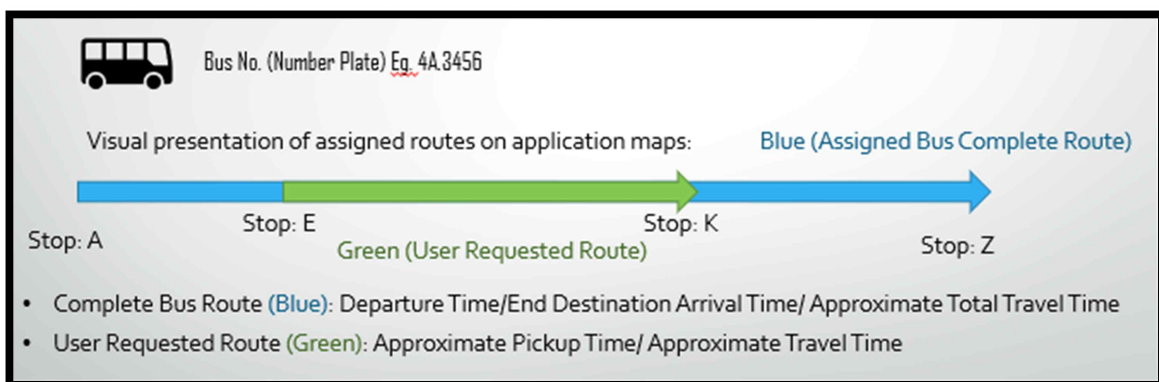
iii. Payment Process

After submitting bus stop requests, a payment window will appear. Users can proceed to pay the ticket fees through convenient options such as mobile banking or K-Pay, which is one of the most popular online payment systems in Myanmar.

### iv. Confirmation and Ticket Issuance

Upon successful payment, users will receive confirmation of their requested bus route, including details such as date and time. A completion message will be displayed, and users will be issued a QR code as their bus ticket for the specific day.

On the travel day, beginning at 00:30 AM, passengers will receive comprehensive notifications containing crucial information for a smooth journey. These notifications include the assigned Bus Number (Number plate), a visual representation of the bus route on the map in Blue color, the user's requested bus route highlighted in Green, approximate pick-up time, and estimated travel time for the specified route.

Bus No. (Number Plate) Eg. 4A.3456

Visual presentation of assigned routes on application maps: Blue (Assigned Bus Complete Route)

Stop: A   Stop: E   Green (User Requested Route)   Stop: K   Stop: Z

- Complete Bus Route (Blue): Departure Time/ End Destination Arrival Time/ Approximate Total Travel Time
- User Requested Route (Green): Approximate Pickup Time/ Approximate Travel Time

[Fig. 5] Graphic displays and notifications before the ride to inform how routes have been set up and approximate pick up time to users

Passengers will receive a subsequent notification as soon as their designated bus commences its departure from the station. They will then have access to real-time bus monitoring, both on maps and through a text-based graphical user interface (GUI). To ensure accuracy and timely updates, data and statistics will be refreshed every minute and each time the bus reaches or departs from a destination.
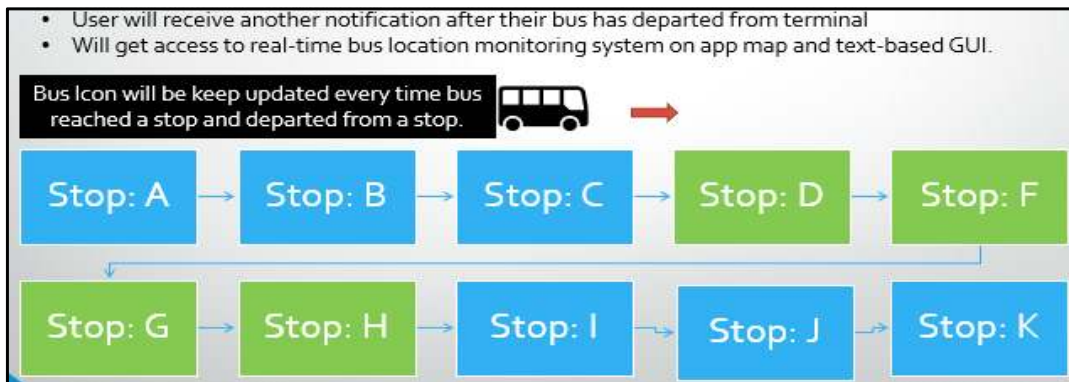
[Fig. 6] MoD Bus Location Monitoring from User's Point of View

For heightened convenience, users will be notified if their bus is approaching the last destination before their requested pick-up stops. This real-time information is crucial, preventing passengers from waiting for extended periods without clarity on the bus's proximity.
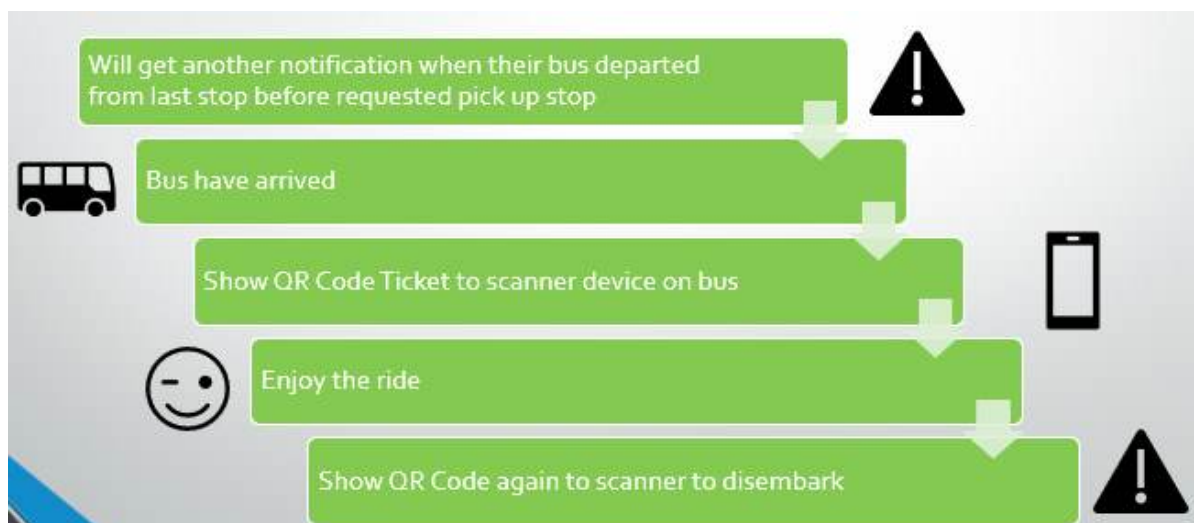

[Fig. 7] User Experiences during the ride

Upon boarding the bus, passengers must present their ticket QR code to a scanner device for confirmation. The QR code must also be shown again upon reaching the requested drop-off bus stops to prevent unauthorized riding over distance or free riding. This multifaceted notification system and QR code verification process of application aim to provide passengers with a secure, informed, and efficient experience throughout their journey with the MOD bus service in Nay Pyi Taw.

5.1. Designing for people with no technological knowledges

In preparation for the implementation, new social media pages dedicated to MoD NPT will be established. These platforms aim to disseminate information to individuals with varying technical knowledge levels, offering easy-to-understand guidance on app usage, payments, route requests, and comprehension of notified information. The social media pages will serve as an accessible resource for the public, fostering a user-friendly environment.
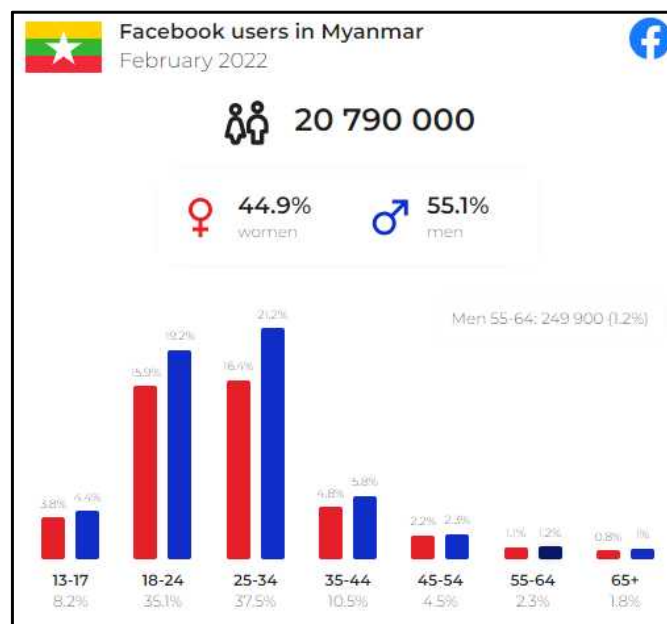
[Fig. 8] 20 million active Facebook account of 55 million population

Additionally, MoD Bus Terminals will actively support information dissemination through pamphlets and offer call center services during office hours. These resources are designed to provide users with more in-depth information, address queries, and offer assistance in navigating the MOD bus service. By employing a multi-faceted approach, MoD NPT aims to ensure that passengers have access to comprehensive support and guidance through various channels, both digital and physical.

5.2. Affordability

i. Fare Structure and Pricing

The MoD bus service system in Nay Pyi Taw distinguishes itself from conventional bus services by being highly user-oriented, operating on routes specifically requested by users. This personalized approach may result in fewer passengers compared to traditional bus systems (which is quite suitable for large city area with low population density). Consequently, pricing for the MoD bus service will be higher than usual to compensate for the tailored and demand-driven nature of the service. However, there will be a provision for price reductions, particularly for individuals traveling longer distances, who also can spare more time. This flexible pricing strategy aims to strike a balance between offering a personalized and efficient service while accommodating the diverse needs and travel preferences of passengers.

ii. Discounts for Students and Seniors

The MoD bus service in Nay Pyi Taw introduces special user categories to provide enhanced benefits to specific groups. Young students up to high school level and seniors aged 65 and above have the opportunity to register as Special Users. To avail themselves of additional discounts of up to 30%, eligible individuals must submit their student ID and age verification certificates through the application. It's important to note that Special Users need to renew their status annually by submitting updated IDs and certificates every December. This initiative is designed to support students and seniors by offering them more affordable transportation options.

VI Safety and Security

6.1. Surveillance Systems

To ensure the safety and security of passengers, each MoD Bus will be equipped with a comprehensive CCTV camera system similar to the YBS (Yangon Bus Service) system. These cameras will initiate monitoring and recording functions upon departure from the terminals. The implementation of this surveillance system is crucial for several reasons. Firstly, it enhances overall security, acting as a deterrent to antisocial behavior and contributing to a safer environment for passengers. Additionally, in the event of disputes, the recorded footage serves as an objective account of events, aiding in conflict resolution. The system also monitors passenger and driver behavior, promoting accountability and responsible conduct. Furthermore, the CCTV footage is invaluable for investigations and emergency situations, providing essential evidence for authorities. Ultimately, the surveillance system plays a pivotal role in creating a safer, more accountable, and secure public transportation environment within the MoD Bus service.

6.2. For Breakdown and Accident Compensation

In the event of a breakdown or accident involving a MoD bus during its journey within the Union Territory Area, a reserved bus will always be on standby to promptly replace the damaged one. This proactive measure ensures minimal disruption to the service and allows passengers to continue their journey with minimal delay.

To further compensate users for any inconvenience caused, an additional free ride chance will be provided. This not only serves as a gesture of goodwill but also aims to maintain user satisfaction and confidence in the reliability of the MoD bus service. The reserved bus and compensation offer collectively contribute to a robust contingency plan, ensuring a smooth and uninterrupted transportation experience for passengers in Nay Pyi Taw.

6.3. Collaboration with Emergency Response Team and Law Enforcement

MoD Bus Terminals will be equipped with a stable and reliable communication infrastructure. Especially with emergency response feedback system, to facilitate immediate communication with relevant authorities. This system is integrated with both Traffic Police and the Union Territory Police force. Regular emergency drills and training sessions will be conducted for MoD Bus Terminal staff. This ensures that personnel are well-prepared to handle various emergency scenarios and can efficiently coordinate with law enforcement.

MoD NPT will collaborate closely with local emergency services, hospitals, and other relevant entities. This collaboration will streamline the process of obtaining emergency assistance and medical support when needed. MoD NPT have to aim to ensure a swift, coordinated, and effective response to emergencies, prioritizing the safety and well-being of passengers and the overall integrity of the transportation service.

VII   Environmental Sustainability and Innovative Image of Capital City

Introducing some few electric buses into the MoD bus fleet serves not only as a commitment to environmental sustainability but also as an opportunity to enhance the innovative image of the capital city. In Myanmar, electric vehicles (EVs) are not widely accessible due to high import taxes and prices, making them primarily available to the elite class. While there are some public EV projects, such as airport EV taxis, their impact has been limited.

By incorporating electric buses into the MoD system and aligning them with user demand, the capital city of Myanmar can make a substantial impression nationwide. This initiative has the potential to change public perceptions and encourage more widespread adoption of efficient and environmentally-friendly public transportation. Not only does this showcase a dedication to a cleaner and greener future, but it also sets a precedent for sustainable urban mobility in Myanmar, fostering a positive image and inspiring other regions to consider similar eco-friendly initiatives.

VIII   Community Engagement

To ensure a successful launch and widespread adoption of the MoD NPT Bus System, comprehensive public awareness programs will be implemented:

8.1. Direct Engagement at Workplaces and Public Spaces

MoD staffs will actively engage with the public by visiting workplaces, particularly ministries with a high concentration of government employees. Targeting popular shopping malls, markets, and other public places, staff members will introduce the MoD Bus System, emphasizing the benefits it offers. To encourage interest, small giveaways like ball pens and candies will be distributed to those showing interest in the new bus service.

8.2. Creation of Social Media Pages for MoD NPT

Social media platforms will be leveraged to create dedicated pages for MoD Bus System. These pages will serve as information hubs, raising awareness about the system's efficiency and user-friendly features. Guidelines and explanations will be provided to cater to individuals with varying levels of technological knowledge, ensuring that the information is accessible to a wide audience.

8.3. Free Rides and Promotional Events

During the initial promotion period and national holiday celebrations, MoD Bus System's social media pages will play a central role in disseminating new information. As part of promotional activities, lucky draws and free rides will be offered to incentivize and promote the usage of the system. This approach aims to attract a diverse range of users and encourage them to experience the convenience and advantages of the MoD Bus System firsthand.

8.4. Feedback Mechanisms

Ensuring continuous improvement and addressing user concerns are integral components of the MoD Bus System. Users will have the opportunity to rate their experience using the MoD Bus System directly through the application. This real-time feedback system allows users to provide instant ratings, highlighting aspects of their journey that meet or exceed expectations and areas that may require attention. MoD developers will utilize the application to distribute periodic survey forms to users. These surveys will delve deeper into specific aspects of the user experience, gathering valuable insights into preferences, challenges, and suggestions. This method ensures a structured and systematic approach to collecting user feedback. To encourage active participation in surveys, users will be incentivized. Those who complete surveys will be eligible for rewards such as free rides and discounts. This approach not only acknowledges the time and effort users invest in providing feedback but also fosters a sense of community engagement and collaboration.

By incentivizing user participation, MoD NPT not only acknowledges the value of user feedback but also fosters a sense of community engagement and collaboration, setting the stage for a dynamic and user-centric public transportation system in Nay Pyi Taw.

IX   Conclusion

MoD NPT will adopt a user-centric approach, prioritizing the seamless and convenient transportation needs of Nay Pyi Taw residents, fostering connectivity to several key locations across the city. The integration with public transportation hubs strategically links MoD Bus Terminals with express bus stations, airports, and railway stations, ensuring complete connectivity within Nay Pyi Taw's extensive transportation network. The introduction of the user-friendly MoD Bus App adds an innovative dimension, allowing users to request routes, make payments, and check travel times with ease. Efficient routing and operation lie at the core of the MoD Bus System, with a focus on optimizing routes based on user requests and ensuring a maximum travel time of three hours for passengers. Embracing sustainability, MoD NPT envisions the incorporation of electric buses, contributing to environmental preservation and establishing the city as a pioneer in innovative MoD public transportation. This commitment to innovation sets a standard for efficiency, accessibility, and environmental sustainability, redefining the landscape of public transportation in Nay Pyi Taw.

In summary, the MoD NPT system is essential as a well-designed city bus transportation system because it prioritizes the needs of users, enhances connectivity, integrates with existing transportation infrastructure, employs user-friendly technology, optimizes routing and operations, promotes sustainability, and embraces innovation for the benefit of Nay Pyi Taw's residents and visitors.

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