ERIA Research Project Report FY2023 No. 24

Survey for Framework Building of 'People-Centric' Smart City Model in ASEAN Countries

Edited by

Fumitaka Machida
Keita Oikawa
Yoichiro Hatakeyama
Kazuhiko Ono
Chisa Uhira
Kumiko Horiba

Survey for Framework Building of 'People-Centric' Smart City Model in ASEAN Countries

Economic Research Institute for ASEAN and East Asia (ERIA)
Sentral Senayan II 6th Floor
Jalan Asia Afrika No. 8, Gelora Bung Karno
Senayan, Jakarta Pusat 10270
Indonesia

ERIA Research Project Report FY2023 No. 24
Published in February 2024

Table of Contents

List of Figures

List of Tables

Executive Summary

The ultimate goal of urban policies is to create an environment where citizens can develop a sense of attachment to their city and enhance their overall well-being or happiness.

In the countries of the Association of Southeast Asian Nations (ASEAN), policymakers are developing various urban policies based on the hypothesis that a convenient and efficient infrastructure contributes to the well-being or happiness of citizens. Recent advancements in information technology prompted many cities to focus on leveraging technology to create more physically convenient urban environments (referred to as Tech-driven Smart Cities) for the benefit of their citizens.

However, the survey conducted in this study revealed that the psychological and social factors that influence the well-being or happiness of citizens, which include the following:

i. Economic and job-related freedom
ii. Mental well-being derived from multicultural community connections
iii. A healthy lifestyle with hobbies and entertainment
iv. Strong relationships with family and friends

Improving well-being or happiness is directly linked to these psychological and social aspects, while infrastructure development for improving livability indirectly contributes to well-being or happiness by fostering citizens' continuous willingness to reside in the city.

We recommend that ASEAN countries align with the global trend and shift their focus towards implementing ‘People-Centric’ Smart Cities (PCSC) that realises the four psychological and social factors listed above by placing people at the centre, actively gathering their opinions, and incorporating them into urban policies, while continuing infrastructure development to improve liveability.

It is important to involve individuals in the community who are actively interested in and engaged in city improvement. Through this survey, we have identified six clusters of people:

i. Active citizen for self-development and interest’(CL1)
ii. Active citizen for community (CL2)
iii. Conscious Parents craving for better life (CL3)
iv. Financial freedom to enjoy life (CL4)
v. Basic needs for a healthy life (CL5)
vi. Fundamental Infrastructure (CL6)

Amongst them, attributes of CL1 and CL2 demonstrate a high level of citizen participation awareness, representing over 30% of the total, which is significant. This shows a foundation for promoting PCSC, stressing the importance of utilising these clusters effectively. In particular, CL2, unique to ASEAN countries and absent in Japan, plays an important role in shaping ASEAN-style PCSC.

When embarking on PCSC development, it becomes crucial to address the following major challenges:

i. Reassessing and analysing the relationship between subjective measures of well-being or happiness and objective policies and means aimed at improving them.
ii. Fostering collaboration amongst government, enterprises, and citizens. Identifying and implementing concrete projects that require cooperation is essential. The emphasis should be on introducing and promoting citizen co-creation platforms like Decidim, while also enhancing literacy in utilising such platforms.
iii. Establishing a harmonious system that effectively integrates (a) information and opinions gathered through these platforms and (b) the administrative system and decision-making processes.
iv. Addressing the funding and economic viability issues in implementation projects. This involves exploring collaboration with local conglomerates and startups, as well as establishing systems and mechanisms like Social Impact Bonds (SIB) and Tax Increment Financing (TIF).

In light of these challenges, we propose the following three recommendations as a next step:

(1) Research PCSC cases in Singapore:

Organise and analyse actual cases in Singapore, a country known for its acute awareness of working on PCSC initiatives. Identify key success factors from these cases.

(2) Execute Proof of Concept (PoC):

Conduct PoC in Thailand, Indonesia, and the Philippines, which demonstrate a high feasibility in terms of having a base, such as government recognition of the need for collaboration amongst government, enterprise, and citizens; high awareness of citizen participation; and existing examples of ideation and funding to address social challenges.

(3) Establish a Framework for Subjective Indicators:

Develop methodologies for collecting and analysing subjective indicators, taking reference from the efforts of the Smart City Institute Japan in collecting subjective indicators. This will facilitate the formation of a framework for identifying and prioritising important subjective indicators in the medium to long term.

Chapter 1

Introduction

1. Introduction

1.1. Background

There is a global shift from the conventional 'technology driven' smart city approach to a 'People-centric' model. The former focuses on making basic infrastructure smarter and urban city services more convenient by utilising daily data of people, which giant platform companies such as Google, Amazon, Facebook, and Apple (GAFA) have worked on. However, there are concerns about increasing control over people through data collection in the name of convenience. The Sidewalk Project in Toronto, Canada led by Sidewalk Lab (a subsidiary of Google) suggested that data collection by the Internet of Things could lead to unexpected inferences through the cross-referencing of data, known as sensor fusion (Tierney, 2019). For example, discriminatory practices could be inserted into decision-making algorithms by using GPS coordinates to pinpoint specific individuals from an address, even when a person living in a particular neighbourhood with a high safety risk poses no risk at all to that person's behaviour or lifestyle. These concerns have prompted the development of an alternative approach to urban planning known as 'People-centric' Smart cities (PCSCs).

Unlike the technology driven approach that focus on efficiency and convenience, PCSCs prioritise peoples' psychological life satisfaction. This approach is notable in Europe, where there is a strong emphasis on protecting personal data and privacy, liveability, and well-being. Initiatives such as the General Data Protection Regulation (GDPR) and 'People-centric' urban policies are examples of this trend towards designing cities and implementing measures that prioritise the needs and well-being of people to address the social challenges in the region. The concept of PCSCs has gained traction in Asia, as clear in the high level of interest expressed by ASEAN experts during the 'Asian Inclusive Smart Cities International Conference' (2022) organised by the Economic Research Institute for ASEAN and East Asia (ERIA, 2023).

To balance the growth of cities with the liveability and well-being of people, it is crucial to establish a framework for PCSCs in ASEAN countries, considering the expected rise in social challenges due to ongoing economic growth and urban development.

The European Union (EU) introduced Industry 5.0 in January 2021, offering valuable suggestions for creating a framework. This initiative prioritises 'Human Centric', 'Sustainable', and 'Resilient' as superordinate concepts and promotes the construction of a data linkage platform called GAIA-X. Its major feature is that it sets out data sovereignty, a data supply chain, and data sharing that

transcend industries.

Many of Europe's industries have incorporated 'low carbon' and 'circular economy' as core social values that align with the 'Human Centric', 'Sustainable', and 'Resilient' concepts. These values have clear definitions and standards, and work has been carried out in many industries, such as Skywise in the aviation industry, Catena-X in the German automobile industry, and Smart Connected Supplier Network in the Netherlands. These initiatives are in accordance with GAIA-X. In the case of Catena-X, major suppliers (in addition to automobile manufacturers), such as Bosch, Zahnradfabrik Friedrichshafen (ZF), Siemens, Systeme, Anwendungen und Produkte (SAP), and Badische Anilin- und Sodafabrik (BASF), have formed alliances and actively contribute the supply chain space.

Defining and sorting out the social values of 'liveability' and 'well-being' is necessary in the smart city sector. It is also important to assess the appropriateness of incorporating these values into urban development. Although these values align with 'low carbon' and 'circular economy' in the industrial sector, the smart city sector is still defining and organising them. Regional factors play a significant role in sorting out these social values, with European cities evaluated on a European scale and Asian cities on an Asian scale. Defining and sorting out this aspect is crucial and fundamental for creating a framework.

1.2. Objectives

Based on the aforementioned background, two objectives have been established for this survey:

(1) Assess the **applicability (readiness)** of the PCSC model in ASEAN countries.

Examine the willingness and readiness of the government and cities to implement the PCSC model, including assessing the existing framework and foundations in place.

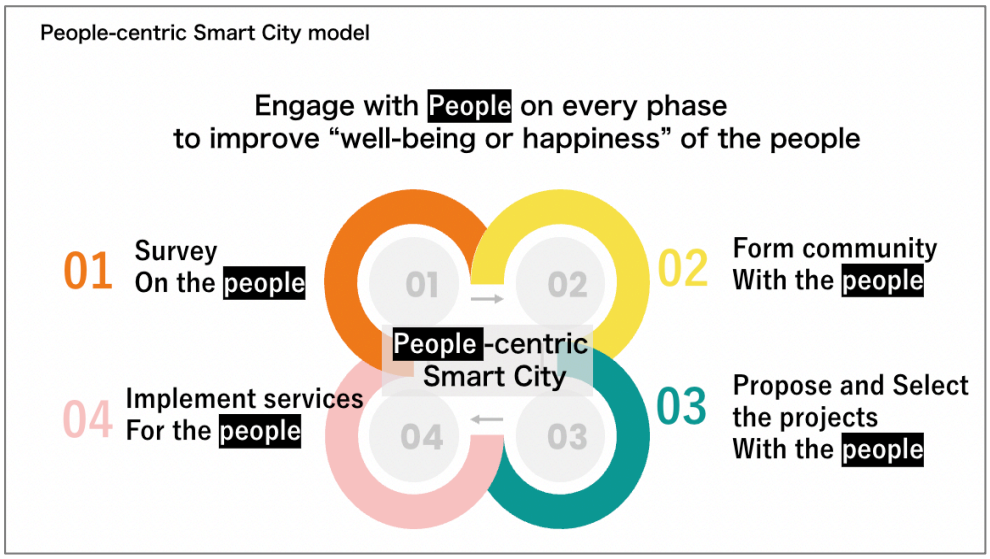
(2) Identify key success factors (KSFs) that contribute to well-being or happiness (**traceability**).

Extract the elements that comprise 'well-being or happiness' and identify KSFs that contribute to 'well-being or happiness' for ASEAN citizens. Propose a mechanism and effective method for continuous monitoring of 'well-being or happiness' and KSFs.

The definition of PCSC differs across research and cities. The UN Habitat states PCSC ensures that deployment of technology and innovation is used to ensure sustainability, inclusivity, prosperity, and human rights in cities (UN-Habitat, 2023). It supports national and local governments with their digital transition, applying a multi-level governance strategy to help build skills and capabilities to develop, procure, and use digital technologies in an ethical and inclusive way to make sure that no one is left behind. ASEAN Smart Cities Network states it 'will adopt an inclusive approach to smart city development that is respectful of human rights and fundamental freedoms as inscribed in the ASEAN Charter (ASEAN Smart Cities Network, 2020).

In this survey, we define a PCSC (Figure 1.1) as a city that engages and includes citizens at every phase of city planning to ensure inclusivity. The initiatives of a PCSC should be driven or participated in by the people, contributing to their well-being or happiness. In our project, there is an emphasis on achieving people's well-being or happiness as the ultimate goal. However, it is important to note that although a PCSC aims to improve well-being, many ASEAN citizens consider 'well-being' synonymous to 'physical health', so the phrase 'well-being or happiness' was used in this project.

Figure 1.1. Definition and Flow of the PCSC Model



Source: Authors.

1.3. Trend and Examples of People-Centric Smart Cities

Europe leads in PCSC development, implementing 'people-centric' smart solutions that actively involve citizens in city planning. The success of PCSC in Europe is attributed to the government's commitment to incorporating citizen opinions on the well- being and happiness of the population, the high level of citizen awareness in 'participating themselves' and 'making decisions together', and quality infrastructure that allows for continuous improvement of the living environment. To illustrate these points, below are three European PCSC case studies, with Barcelona being the most representative example.

Case Study 1: Barcelona, Spain

Developers implemented Sentilo, which collects and utilises data through sensors installed in various places, and City OS, which allows citizens to use the data collected there. These solutions address social challenges, such as reducing traffic congestion and environmental impact. In 2020, a digital platform called Decidim was created, facilitating active citizen participation in guiding government decisions and dynamic situations.

Case Study 2: Helsinki, Finland

As part of the '6Aika program' ('6 cities' in Finnish) that was initiated in 2014, the Helsinki Smart Region was launched to build a PCSC through digital inclusion. The Helsinki Smart Region empowers citizens to shape their cities by providing open access to the city's data. Developers in Helsinki use this data to create a GPS app to help the blind and visually impaired navigate the streets.

Case Study 3: Amsterdam, The Netherlands

Since its inception in 2009 Amsterdam Smart City has focused on public-private partnerships. It acts as a centralised marketplace for communicating and coordinating smart city ideas and projects. It also matches project initiators and potential partners, such as companies, government agencies, and private citizens. Amsterdam Smart City also enables organisational stakeholders to engage with private residents offline at places like Pakhuis de Zwijger (cultural meeting centre) and the Datalab office.

1.4. Approach

1.4.1. Approach to Objective 1: Applicability (Readiness)

Using Barcelona PCSC as an example, we have identified three important factors for assessing the applicability of our PCSC model. In this survey, we adopt an approach to verify these three factors:

(1) Willingness of citizens and public and private sectors to implement the PCSC concept (WILL)

The successful implementation of a PCSC model or initiative highly depends on the degree of willingness of the government, local administration, private sector – such as developers, and citizens to implement such a concept or city planning process.

(2) Existence of framework (SOFT)

The implementation complexity depends highly on the existing software of a city planning, such as existence of platform to collect and process people's opinions, key performance indicators (KPIs).

(3) Existence of basic infrastructure (HARD)

The degree of basic infrastructure is also crucial, since where the basic infrastructure is not yet maintained well, the budget will be allocated mainly to improving living conditions.

Figure 1.2 below presents a matrix organizing the findings, with the three layers of the identified PCSC implementation factors listed in the rows and the PCSC stakeholders in columns. 'WILL' represents the stakeholders' interests, aspirations, and awareness of implementing or developing PCSC. 'SOFT', or intangible, factors represent the presence of KPIs, platforms, and usage of people's voices by each stakeholder. 'HARD', or tangible, factors stand for the existence and satisfaction of basic infrastructure in each city.

Figure 1.2. Three Layers of Essential Factors and Stakeholders for People-Centred Smart City Implementation

			PUBLIC admin/gov/academia	PRIVATE industry/enterprises	PEOPLE citizens
WILL	1. Interests	Interests in PCSC implementation 1. Intention to implement PCSC 2. Intention to provide support –subsidies, HR, etc. *PEOPLE:WILL to reflect opinions/participate to improve city			
	2. Aspiration	Aspiration to PCSC 1. Degree of empathy 2. Intention to work on PCSC 3. Realistic themes to work on			
	3. Awareness	Awareness of co-creation with citizens 1. Current situation 2. Existing issues to solve by co-creating with people			
SOFT/ Intangible	4. KPI	Indicators to measure PCSC results 1. Availability e.g. liveability index 2. Intention to install new indicators			–
	5. Platform to collect opinions	Availability of platform to collect citizen opinions 1. Existing platforms/systems 2. Evaluation of current status			
	6. Usage of people's voices	Availability and utilization of people's voices 1. Existence of people's voices collected 2. Effective utilization cases of people's voices			
Hard/ Tangible	7. Basic infra	The level of development and availability of basic infrastructure (including City OS)			–

City OS = city operating system; KPI = key performance indicator(s); PCSC = people-centric smart city

Source: Authors.

The stakeholders are divided into three layers: PUBLIC (administration, government, and academia), PRIVATE (industry and enterprises), and PEOPLE (the citizens in each city). PUBLIC represents the central government, local government, or administration and authorities in smart city areas within the scholarly field. PRIVATE stands for the private sector engaged in smart city business.

If the WILL, SOFT, and HARD factors are sufficient, the PCSC model is applicable to that specific country or city.

1.4.2. Approach to Objective 2 (Traceability)

When managing cities by taking measures and/or running a certain model or a system, it is crucial to collect and reflect the voices of citizens as much as possible and to trace the results and effects. Since the goal of PCSC is to improve the well-being or happiness of the citizens, identifying the factors contributing to well-being or happiness in each ASEAN country and periodically tracking the level of well-being or happiness affected by the new 'PCSC' model is essential.

(1) Current framework:

This involves examining the existing framework in each ASEAN country for collecting and reflecting people's voice, as well as the methods, processes, and data used to track the results and effects of 'smart city' (SC) or PCSC.

(2) Factors of well-being or happiness:

The survey will identify the factors that contribute to the well-being or happiness, as well as citizens' satisfaction with cities and exploring their correlation in each ASEAN country. These factors will be the main objects of tracking, and the survey will explore possible ways to monitor them.

1.5. Methodology

As the survey has objectives to confirm applicability and traceability of PCSC model by confirming the elements in various layers, we adopt and combine five methodologies (Figure 1.3).

Figure 1.3. Objective and Methodology

Objective / Approach / Methodology (type of survey/analysis)		Applicability			Treceability	
		WILL	SOFT	HARD	Current framework	Elements of well-being/happiness
		Public, Private, People have will to implement PCSC model?	*Are there any system, framwork, KPIs etc. ?*	*How is the level of development of basic infrastructure?*	*How the government measure and trace the well-being/happiness?*	*What are the elements consisting of well-being/happiness?*
(1) Macro indicators analysis			✓	✓		
(2) Expert interview		✓	✓	✓	✓	
(3) Web survey on citizens	1) Key Measures	✓				
	2) Gap analysis (Importance and satisfaction) 3) Factor analysis 4) Path model					✓
	5)Cluster analysis	✓				✓
(4) Grab survey		✓				✓
(5) Diginography						✓

KPI = key performance indicator(s); PCSC = people-centric smart city

Source: Authors.

(1) Macro Indicators Analysis

- **Sub-objectives:** To obtain an overview of liveability (primarily environment, public services, and basic infrastructure) and identify social challenges related to quality of life in each country on a national level.
- **Methodology:** Compare the macro indicators of each country using the ISO37120 framework 'Indicators for the city services and quality of life' (ISO, 2018).
- **Sample size:** 45 macro indicators in 19 categories (Economy, Education, Energy, Environment, Finance, Governance, Health, Housing, Population and social conditions, Recreation, Safety, Solid waste, Sport and culture, Telecommunication, Transportation, Urban/local agriculture and food security, Wastewater, Water).

(2) Expert Interview (Academia/Authority/Enterprise)

- **Sub-objective:** To understand the central/local government policies, direction of smart cities, and the social challenges they face. Additionally, to confirm the willingness to implement the PCSC model and identify its challenges.
- **Methodology:** Online and offline interviews.
- **Interviewee:** See Table 1.1.

Table 1.1. Interview List

	Singapore	Thailand	Malaysia
Academia	Singapore Management University	Chulalongkorn University	International Islamic University Malaysia
Authority	Tampines Town Council	Digital Economy Promotion Agency (DEPA)	-
Enterprise	-	-	Malaysian Resources Corp. Berhad (MRCB)

	Indonesia	Philippines	Viet Nam
Academia	Bandung Institute of Technology	University of Manila	University of Economics Ho Chi Minh City
Authority	-	Bases Conversion and Development Authority ('BCDA')	-
Enterprise	Sinarmas Land		-

Source: Authors.

- **Key questionnaires:**
  - ✓ Who is leading the smart city project and for what purposes (convenient infrastructure etc.)?
    - Government-led (like e-Government)
    - Framework by Government, Services by Private sector (such as Mobility as a Service, MaaS)
    - Fully private sector-led (like real estate developers' town)
  - ✓ Is there an environment to promote open-style city planning that involves residents, citizens, and local communities?
  - ✓ Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?
  - ✓ Do you think the PCSC model will increase the value of the city?
  - ✓ How do you see the possibility of introducing and promoting the PCSC model considering the current smart city policies of the central and/or local government?
  - ✓ What are the biggest challenges and obstacles?
  - ✓ What are the essential KPIs to evaluate the effects and results of smart city measures?

(3) Web Survey on Citizens

- **Sub-objectives:**

  (Sub-obj.1) To understand **the will for a PCSC model**: intentions, willingness, and opinions on PCSC model

  (Sub-obj.2) To identify **the elements that contribute to 'well-being or happiness'** of citizens by asking importance and satisfaction of various aspects of their lifestyle and values.

  (Sub-obj.3) To verify the attributes of citizens and identify the attributes which might promote PCSC.

- **Analysis framework (see also Figure 1.4)**

  1) The key measures are used to understand the current status of 'well-being or happiness' and the will for a PCSC model.
  2) Gap analysis, factor analysis, and path model are used to identify the elements that consist of 'well-being or happiness' and the important factors that contribute to 'well-being or happiness' of citizens as an ultimate goal.
  3) Cluster analysis is conducted to identify the type of citizens who have a strong will to participate in smart city development and the areas that they are interested in.

Figure 1.4. Objective and Approach of Web Survey on Citizens

Methodology (type of survey/analysis) \ Objective / Approach		Applicability	Traceability
		WILL	Elements of well-being/happiness
		People have will to implement PCSC model?	*What are the elements consisting of well-being/happiness?*
(3) Web survey on citizens	1) Key Measures	✓	✓
	2) Gap analysis (Importance and satisfaction) 3) Factor analysis 4) Path model		✓
	5) Cluster analysis	✓	✓

Source: Authors.

- **Survey methodology:** Online quantitative survey using a survey panel of a web-based research company.
- **Sample size:** Approx. 500 per country, totalling 3000 in 6 markets.
- **Area: ASEAN-6 Countries**

  Singapore: Nationwide

  Thailand: Greater Bangkok

  Indonesia: Greater Jakarta

  Malaysia: Greater Kuala Lumpur City Centre (KLCC)

  Philippines: Metro Manila

  Viet Nam: Ho Chi Minh City Metropolitan Area

- **Sample criteria:**

Gender and age: Male and female, 18-59 years old.

Nationality: Nationals of the surveyed countries.

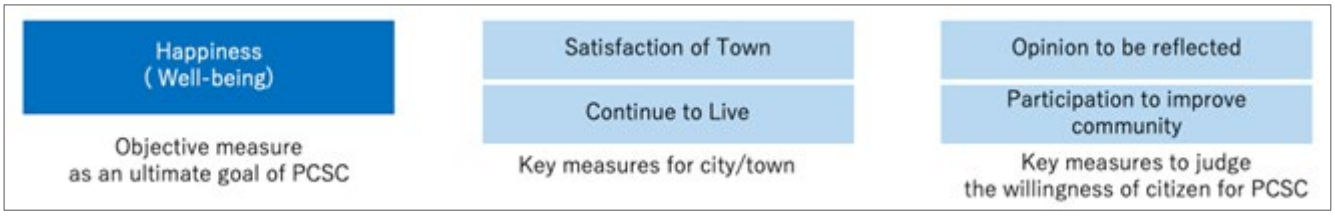
- **Detail of survey:**

(Sub-obj.1) To understand the will for the PCSC model

✓ **Key measures to understand the will for the PCSC model**: Intentions, willingness, and opinions on PCSC model and current status of well-being or happiness in ASEAN.

Key measures are required to understand the current status of each measure in each market (see Figure 1.5).

Figure 1.5. Key Measures



Source: Authors.

1) 'Happiness (Well-being)'[1]: Objective measure as an ultimate goal of PCSC and
2) 'Satisfaction of Town' and 'Continue to Live': Key measures to understand citizen's views on city or town

[1] Definition of 'well-being': The World Health Organisation (WHO) constitution states: 'Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.'

3) ‘Opinion to be reflected’ and ‘Participation to improve community’: Key measures to judge the willingness of citizen for PCSC

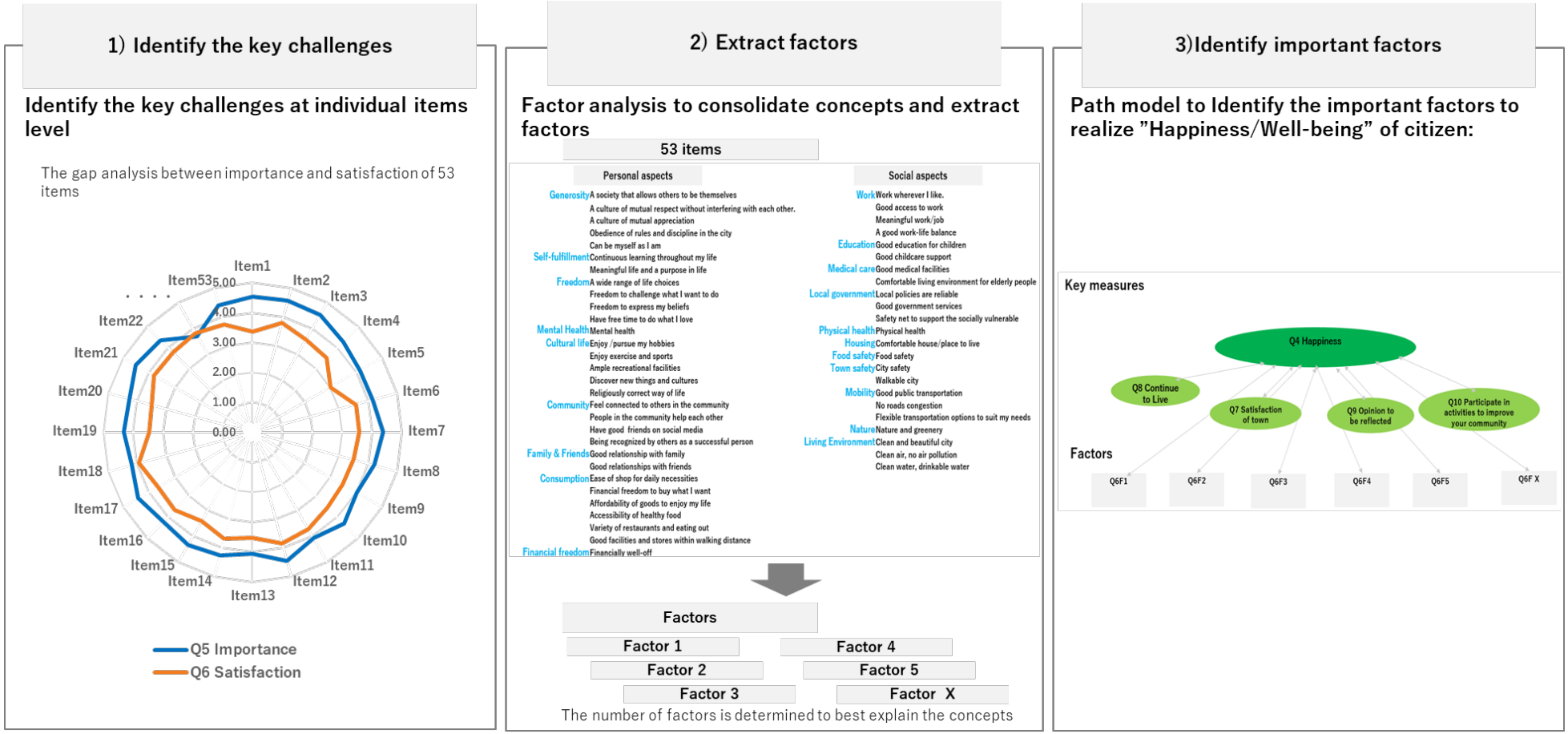
These key measures were established to examine the relationship between the subjective measure of ‘well-being or happiness’ (objective of this project), perspectives towards city, and the willingness of citizens to participate (which is validated as ‘WILL’ amongst citizens in the PCSC model). In a previous Japanese quantitative survey conducted by Hakuhodo Inc. (‘2020: Survey on smart cities that citizens want to continue to live in,’ which is an area HABIT survey of 14,000 citizens nationwide, ‘Area HABIT Survey’), subjective satisfaction, intention to continue living in the city, and citizens' willingness to participate were found to be highly associated. Based on these findings, the current research survey set the above 5 items as key measures.

(Sub-obj.2) To identify the elements that contribute to ‘well-being or happiness’

Methodology to examine the relationship between the subjective measure of ‘well-being or happiness’ and the important elements to realise ‘well-being or happiness’ are as follows (Figure 1.6):

(1) **Identify the key challenges**
(2) **Factor analysis** to consolidate concepts
(3) **Path model** to identify the important factors to realise ‘well-being or happiness’

Figure 1.6. Analysis Flow Identification of Components of Well-Being or Happiness



Source: Authors.

(1) Identify the key challenges

The respondents are asked to rate the importance and satisfaction of 53 items linked to the focus of smart city initiatives. These include environmental factors such as air and water quality, roads, public transportation, and other infrastructure, as well as surrounding amenities and the economic environment. Personal factors like human relationships and sense of values were considered. Including these personal factors is essential because, in addition to measuring subjective 'well-being or happiness' as key measure, the previous Hakuhodo 'Area HABIT Survey' mentioned above confirmed that relationships in a community and values are not only subjective happiness but also deeply associated with the intention to continue living in the city. See Figure 1.7.

Figure 1.7. Fundamental Elements in Daily Life (53 items)

Source: Authors.

(2) Factor analysis to consolidate concepts

For the 53 items surveyed, a factor analysis using principal component analysis was conducted to aggregate the items and understand citizens' satisfaction with the city and their lives. All items contributing to each factor were extracted with factor loadings of 0.4 or higher. Where two or more factors had loadings of 0.4 or higher, they were classified into the factor with the higher loading. Summary is shown in Table 1.2.

Table 1.2. Factor Analysis Summary

Extraction Method	Principal Component Analysis.
Rotation Method	Varimax with Kaiser Normalization.
Result Interpretation	The Rotated Component Matrix contains the Pearson correlations (factor loadings) between items and factors. Items are allocated to each factor based on factor loadings score so that one item belongs to one factor. Each factor is interpreted based on the meaning of the top contributing items.

Source: Authors.

(3) Path model to identify the important factors to realise 'well-being or happiness'

The path model aims to understand the relationships and correlations between key measures and factors and to identify which factors contribute to the level of happiness of citizens and their intention to continue living in the city.

Factors that contribute to well-being or happiness are evidenced by causal relationships, while factors that tend to occur simultaneously are shown by correlations. Therefore, when identifying factors that contribute to citizen happiness, the criterion is whether the causal relationship is statistically significant. Multiple regression analysis is presented with a 5% significance level, and correlations of 0.2 or greater are accepted as having a positive statistical correlation.

Table 1.3. Multiple Regression Analysis

	Model 1
Dependent variable	Q4. Happiness
Predictors (Independent variables)	Q7. Satisfied with town Q8. Continue to live Q9. Opinion to be reflected Q10. Willing to Participate in activities to improve the city Factors derived from Factor Analysis of Q6. Satisfaction (53 input items)
Significant level	5% ($\alpha = 0.05$)
Model evaluation	Model summary: Adjusted R Square ANOVA: F score Model Coefficients: Standardised Coefficients
Result interpretation	Predictors which are significant at 5% level are included in the Pathway model, theirs Standardised Coefficients are used to illustrate strength of the contribution to Dependent variables

Source: Authors.

Table 1.4. Correlation Analysis

Input variables	Q4. Happiness Q7. Satisfied with town Q8. Continue to live Q9. Opinion to be reflected Q10. Willing to participate in activities to improve the city 7 Factors derived from Factor Analysis of Q6. Satisfaction (53 input items)
Method	Pearson Correlation Significant at the 0.05 level (2-tailed)
Result interpretation	Correlations of 0.2 or greater are accepted as having a positive statistical correlation.

Source: Authors.

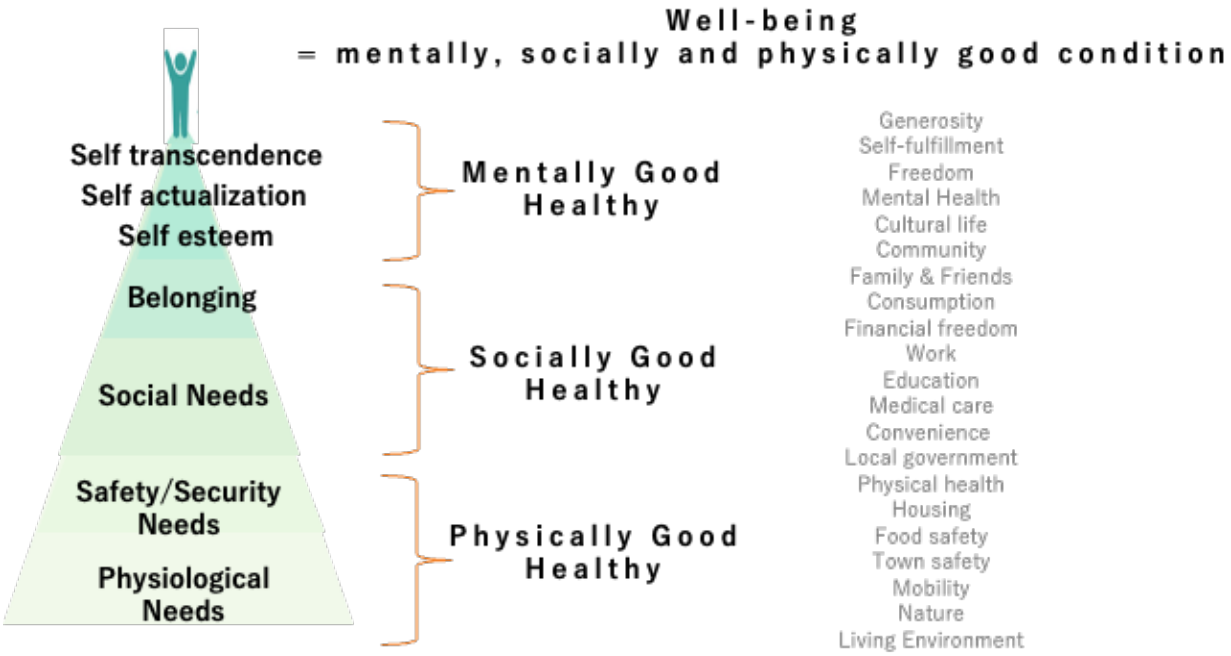
- **Unique Analytical Framework for this project:**

The survey aims to understand the essential factors contributing to the well-being or happiness of citizens. Therefore, we utilise Maslow's Hierarchy of Needs (Figure 1.8), a universally recognised framework for understanding human happiness. The liveable well-being City Indicator of the General Incorporated Association Smart City Institute also uses Maslow's Hierarchy of Needs and the World Happiness Report as frameworks when considering approaches to implementing

sustainable smart cities in a ‘People-centric’ manner.

According to Maslow’s framework, the living environment is related to physiological needs, including air and water quality; city safety; and infrastructure development, which provides for safe living. These are all categorised in the lower levels. Education, medical facilities, economic activities, working environment, local government, and local communities address social needs and are categorised at the middle levels. Factors such as cultural life, freedom, and tolerance of others, all which lead to mental health, are categorised in the higher levels.

Figure 1.8. Maslow’s Hierarchy of Needs

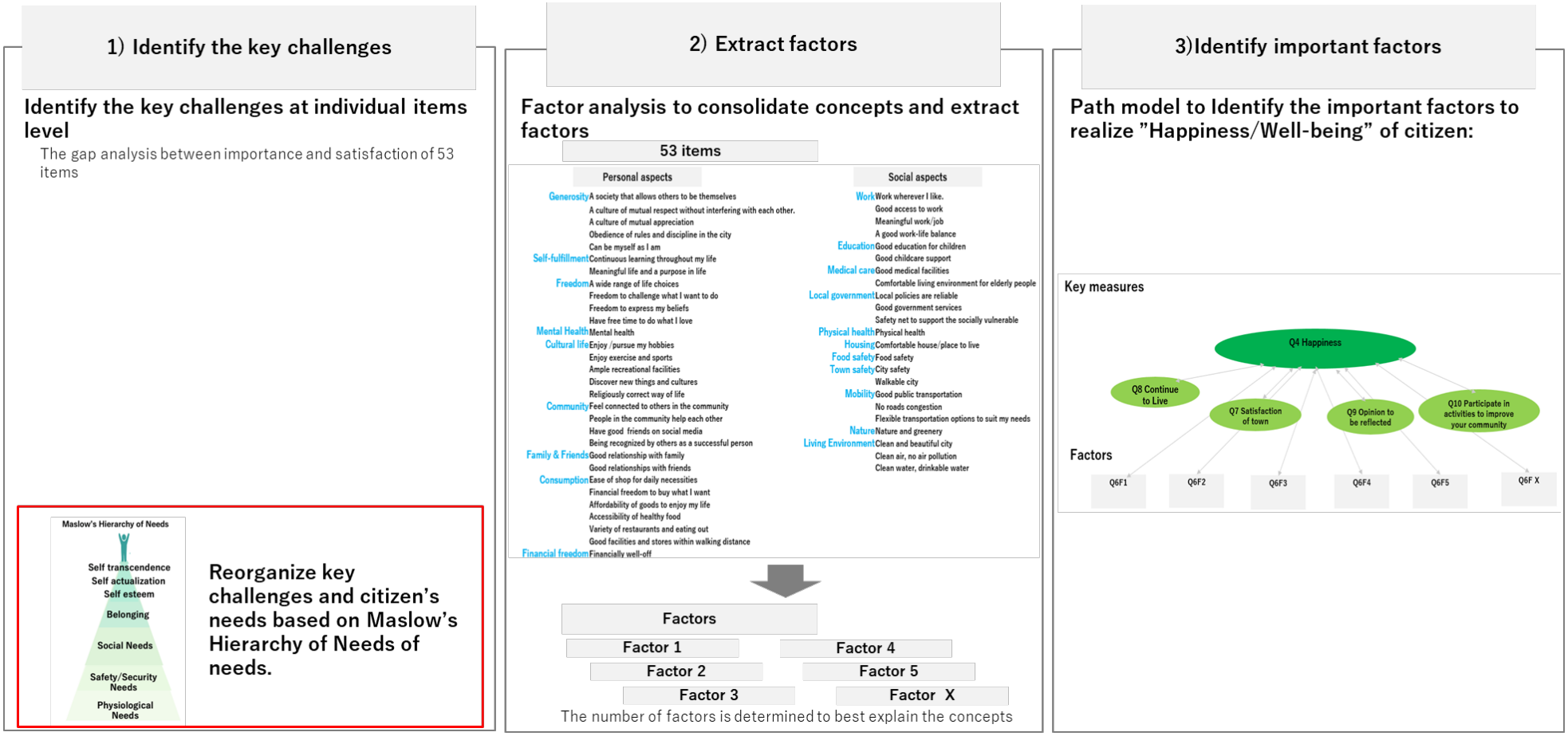


Source: Authors.

In other words, Maslow’s Hierarchy of Needs is used to reorganise key challenges. Its position in the analytical framework is as described below.

In this project, objective ISO indicators and survey-based subjective indicators are reorganised. This allows us to analyse areas of challenge for achieving citizen well-being or happiness based on this framework. See Figure 1.9.

Figure 1.9. Analysis Flow with Maslow's Hierarchy of Needs



Source: Authors.

(Sub-obj.3) To verify the attributes of citizens and identify the attributes which might be able to promote PCSC.

Cluster analysis is conducted to identify the type of citizens who have a strong will to participate in smart city development and the areas that interest them. **This is essential for a successful PCSC, as it involves citizens who have a strong will to participate** in smart city development.

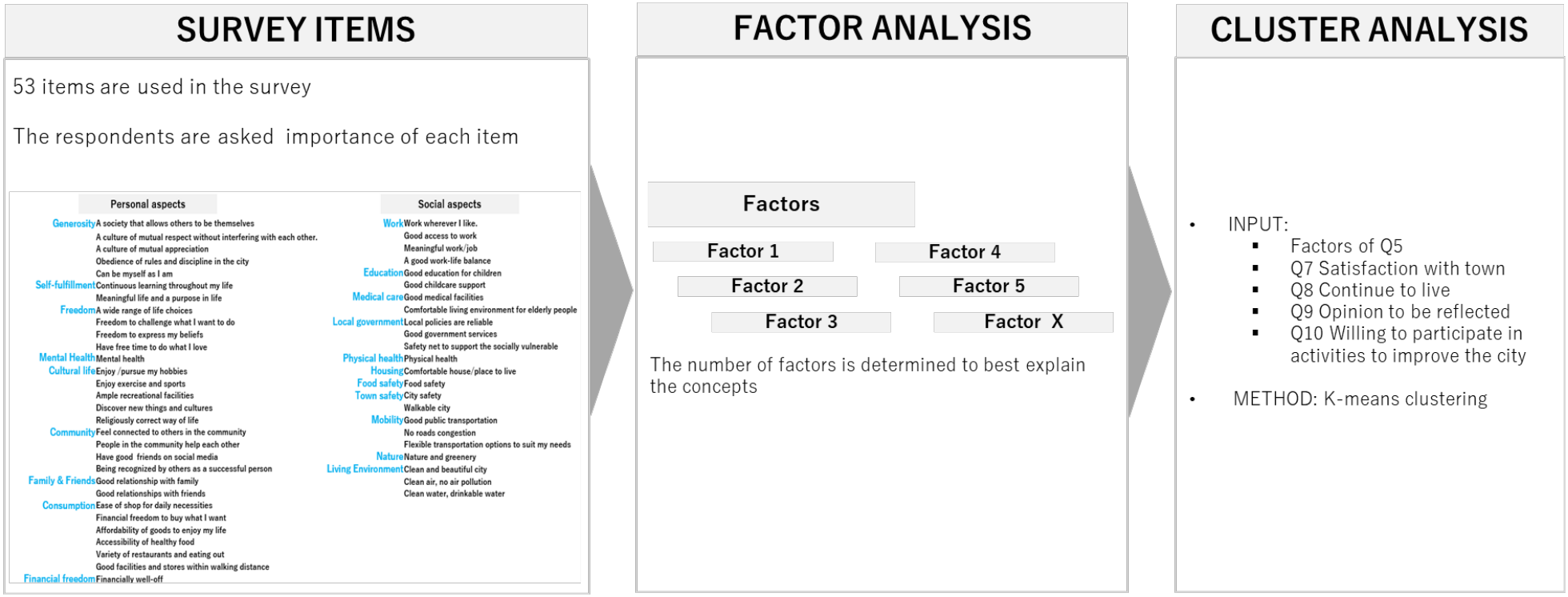
The cluster analysis is based on citizens' values, interests, and attitudes towards involvement in the city.

Methodology to generate citizen clusters is as follows:

1) **Importance of various aspects of lifestyle and attitudes to town or city** (Figure 1.10)
2) **Factor analysis to consolidate concepts** (Table 1.5)
3) **Cluster Analysis to Identify the segmentation of citizens** (Table 1.6)

We ask citizens to classify the 53 items by 'importance' rather than 'satisfaction' because they reflect the citizens' wishes and the important elements in their lives. Then, we consolidate them into factors. These factors, together with key measures, serve as input for conducting cluster analysis, which helps to classify consumers' values and attitudes towards their life and the city they live in.

Figure 1.10. Analysis Flow with Cluster analysis



Source: Authors.

Table 1.5. Factor Analysis for Cluster

Input variables for Factor Analysis	Q5. Important level (53 items)
Extraction Method:	Principal Component Analysis.
Rotation Method:	Varimax with Kaiser Normalization.
Result interpretation	The Rotated Component Matrix contains the Pearson correlations (factor loadings) between items and factors. Items are allocated to each factor based on the factor loadings score so that one item belongs to one factor. Each factor is interpreted based on the meaning of the top contributing items.

Source: Authors.

Table 1.6. Cluster Analysis Method

Input variables	Q7. Satisfied with town Q8. Continue to live Q9. Opinion to be reflected Q10. Willing to participate in activities to improve the city 7 Factors derived from Factor Analysis of Q5. Important (53 input items)
Method	K-means Clustering
Number of Clusters	6

Source: Authors.

(4) <u>Grab survey</u>

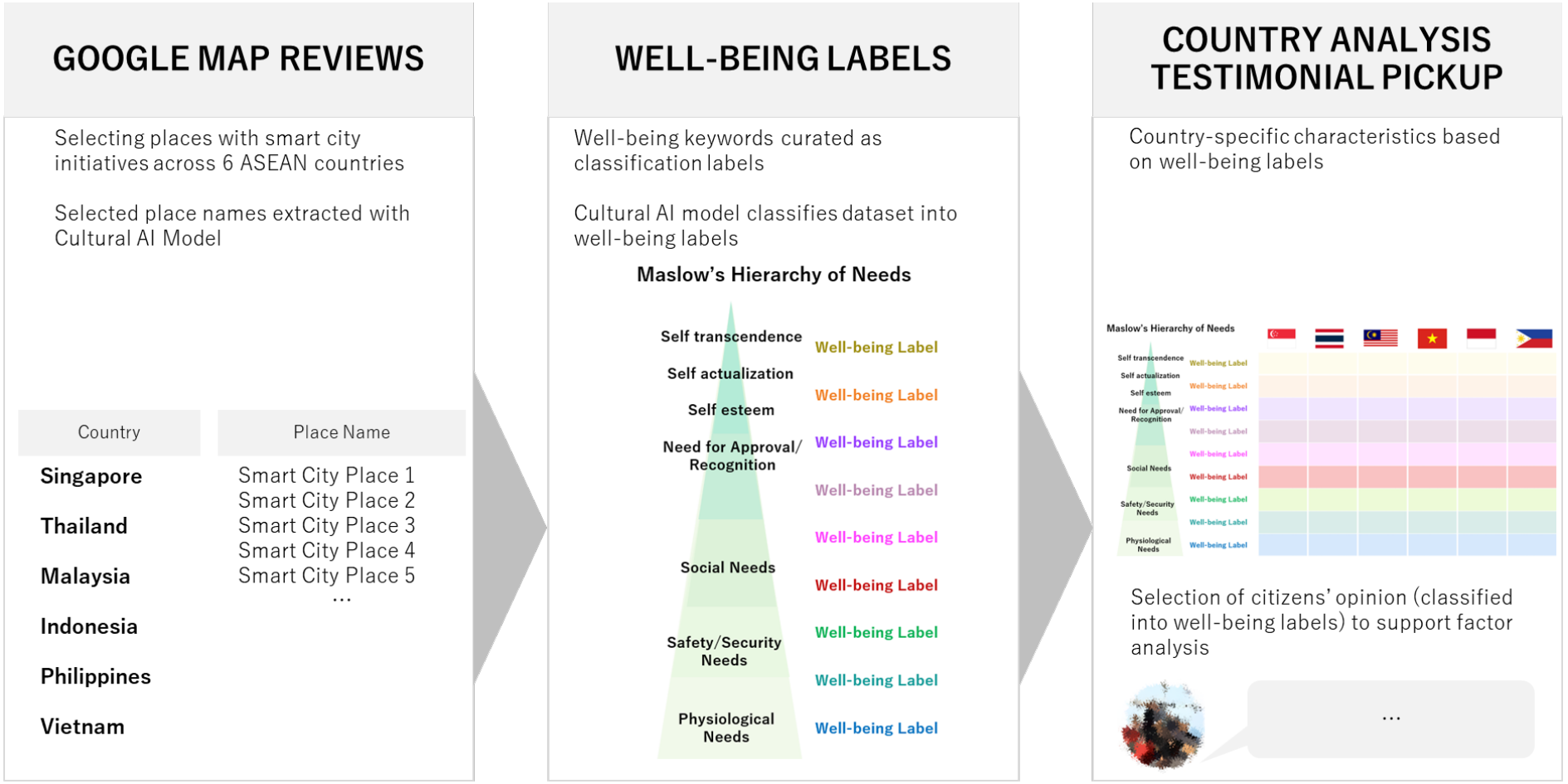
- **Sub-objectives:** Complement quantitative survey results in specific areas where smart city initiatives are underway. The objective itself is the same as the above web survey on citizens.
- **Methodology:** Online quantitative mobile survey via Grab App. The survey invitation was displayed on the Grab app for those who passed through the targeted areas by Grab taxi.
- **Survey Items:** Key survey items are selected from the quantitative web survey. In the Grab survey, respondents are asked to indicate importance and satisfaction through multiple selections rather than using a 5-scale points for each item. This approach is adopted to accommodate mobile surveys and allows respondents to answer a short questionnaire.
- **Sample size:** Approx. 500 in Indonesia and Thailand, totalling 1,000 in 2 markets.
- **Area:** Thailand – Central Bangkok, Nonthaburi, Pathum Thani, Samut Prakan;
  Indonesia – Central Jakarta, South Tangerang City, Tangerang City, Tangerang Regency.

(5) Diginography

Figure 1-11 shows the flow of Diginography.

- **Sub-objectives:** To extract the views of citizens and understand concrete opinions about the elements contributing to the 'well-being or happiness' of citizens in developed areas and new residential areas where smart city initiatives are being implemented in each country.
- **Methodology:** The digital version of ethnography that provides insights by analysing citizens' opinions through Google Map review data. The Google Map review covers a broad range of citizen views from ASEAN target countries, and they offer a neutral, cross-sectional collection of opinions on specific smart city initiatives. The Cultural AI model, through which AI decodes the meaning of information from a semiotic perspective, makes it possible to decipher the cultural meaning of citizens' opinions (QUILT.AI, 2023).
- **Data size:** 326,252 posts in 6 markets.
- **The Process and Analysis:** Places with smart city initiatives across the ASEAN-6 countries are shortlisted, and Google map reviews of these places are extracted, generating a big dataset of 326,252 data points. Next, with the seven levels in Maslow's Hierarchy of Needs as reference, keywords related to well-being are curated as classification labels. Then, through a Cultural AI model, the Google map review dataset is analysed using the well-being labels. The AI decodes the meaning of information from a semiotic perspective, making it possible to decipher the cultural meaning of citizens' opinions in Google map reviews. The Cultural AI model classifies citizens' opinions into the well-being labels, with 1 data point belonging to multiple labels if required. Through this diginography methodology, country-specific characteristics for each well-being aspect can be observed, and authentic citizens' opinions can be collected to support factor analysis.

Figure 1.11. Diginography Flow



Source: Authors.

1.6. Key Findings

The following key findings have been confirmed through this survey:

a. In ASEAN, there continues to be a high interest in 'convenient and efficient infrastructure development'. However, there is wide recognition amongst governments, enterprises, and citizens that 'citizen engagement in local policymaking is crucial and should be enhanced'. This recognition is one of the important elements when assessing the applicability of a PCSC.

b. While 'objective indicators' for liveability, mainly indicating the level of infrastructure development and service quality, have been established in five countries except Viet Nam, 'subjective indicators' and the frameworks to measure the level of well-being or happiness of the citizens have not been implemented.

c. From the perspective of stakeholders' leadership in a PCSC or SC, cities can be classified into the following typologies:
Pattern 1: Government-led
Pattern 2: Private sector-led with government support
Pattern 3: Infrastructure-led

Challenges in implementing a PCSC include

(i) exploring methods to measure and understand the level of well-being or happiness and satisfaction of the citizens;

(ii) establishing frameworks for constructive citizen voices and ideas;

(iii) incorporating opinions considering ASEAN's characteristics of multi-ethnicity and multilingualism;

(iv) selecting projects and initiatives with as much fairness as possible; and

(v) establishing frameworks for funding the implementation of a PCSC.

d. The concerns and interests of citizens can be summarised into two main points:

1. 'infrastructure development for improving living environment', which is a strong trend in all countries except Viet Nam, and

2. 'affordable consumer economic activities', which shows a strong trend in Singapore, Thailand, and Malaysia, which are all more economically developed.

e. The factors that influence citizen well-being or happiness are as follows:

(i) 'Economic and job-related freedom.'

(ii) 'Mental richness in relationships with linked multicultural communities.'

(iii) 'Healthy lifestyle with hobbies and entertainment.'

(iv) 'Relationships with family and friends.'

These four factors are directly linked to well-being or happiness in the psychological and social aspects. Surprisingly, while 'infrastructure development for improving living environment' is directly related to 'continual residential intention in the city or town,' its link to well-being or happiness of the citizens is only indirect.

f. The people in ASEAN can be categorised into 6 attributes of clusters:

(i) 'Active citizen for self-development and interest' (CL1)

(ii) 'Active citizen for community' (CL2)

(iii) 'Conscious Parents craving for better life' (CL3)

(iv) 'Financial freedom to enjoy life' (CL4)

(v) 'Basic needs for healthy life' (CL5)

(vi) 'Fundamental Infrastructure' (CL6)

Two attributes, CL2 (Active citizen for community) and CL6 (Fundamental Infrastructure) cannot be found in Japan. In particular, CL2 exhibits typical characteristics in ASEAN. It is also notable that the attributes leading to a PCSC are CL1 (Active citizen for self-development and interest) and CL2 (Active citizen for community), which represent a high proportion of over 30% collectively.

Chapter 2

Smart City Initiatives in ASEAN-6 Countries

1. Overview – ASEAN Smart City Initiatives at the National Level

The definition of 'smart city' differs amongst ASEAN countries, but the main objective remains consistent – to solve social challenges through digital technology and improve city services and management efficiency (Table 2.1). Although the improvement of citizens' happiness is not explicitly stated as an objective, improving their standard of living and making them happy is considered a fundamental requirement.

In the 2000s, smart cities in ASEAN were similar to those in other regions and focused on basic infrastructure such as water and energy, with the aim of eliminating waste and improving efficiency through technologies. For example, Iskandar, Malaysia, which is a representative smart city with a technology-driven approach, beginning its development in early 2000s. In the 2010s, the use of digital technology in daily life increased with the spread of smartphones, enabling the acquisition and use of data in a variety of fields. With this background, smart city initiatives are now being promoted with broader objectives and missions of solving national social challenges through the use of digital technology and big data. The areas of promotion have expanded to include the following:

(1) Economy

(2) Lifestyle

(3) Environment and Sustainability

(4) Health and Happiness

(5) Government

(6) Mobility

(7) Safety

Each country promotes smart city initiatives like *Smart Nation Singapore*, *Thailand 4.0: The 20-year National Strategy*, *Malaysia Smart City Framework (2019–2025)*, and Indonesia's *Movement Toward 100 Smart Cities Initiative*. Smart city frameworks, which include legal frameworks, promotion areas, and evaluation methods, are being developed in each country (Table 2.1), reflecting their recognition of social challenges (Figure 2.1). In the past, each city had its own approach. Now, cities and municipalities (in cooperation with companies) take the lead by using central government frameworks for smart city initiatives.

However, countries, cities, and municipalities commonly recognise infrastructure development in

the living environment (mobility, energy, etc.) and environmental problems caused by urbanisation as social challenges. They also promote the use of technology and digitalisation of government to address these challenges. Yet, the elements contributing to 'citizen happiness' and challenges that need to be addressed to fulfil these elements have not been explored in depth. Smart city evaluation measures, or KPIs, mainly focus on the quality of infrastructure and environment, with the exception of 'Empowerment and Inclusion' in Philippines, which includes an index of 'tolerance of society and people'.

Table 2.1. Smart City Initiatives in 6 ASEAN Countries

	Singapore	**Thailand**	**Malaysia**
Initiative	'Smart Nation Singapore' (since 2014) └'INFOCOMM MEDIA 2025' (2015) └'National AI Strategy' (2019)	Thailand 4.0 /the 20-year national strategy (2017)	Malaysia Smart City Framework (2019-2025) ('MSCF')
Definition of Smart city	*A Smart Nation is a Singapore where people will be more empowered to live meaningful and fulfilled lives, enabled seamlessly by technology, offering exciting opportunities for all. It is where businesses can be more productive and seize new opportunities in the digital economy. It is a nation which collaborates with our international partners to deliver digital solutions and benefit people and businesses across boundaries.*	*'Smart city' means a city that takes advantage of modern and intelligent technology and innovation.*	*ICT and technology and innovation advances to address urban challenges including improving the quality of life, promoting economic growth, developing sustainable and safe environment and encourage efficient urban management practices.*

	Singapore	Thailand	Malaysia
Objective	Enhance the strengths, overcome the national challenges and physical limits, and build new sources of comparative advantage through developments in digital technology	*Increase the efficiency of service and city management. Reduce the cost and resource utilisation of the target city and population. With an emphasis on good design and the participation of business and people in urban development under the concept of urban livelihood, modern cities, urban citizens have a good quality of life with sustainable happiness.*	Addressing urban challenges and challenges towards achieving three main pillars of competitive, i.e. economy, sustainable environment, and enhanced quality of life.
Target	Digital Government, Digital Economy, and Digital Society harnessing technology to effect transformation in the priority areas	Develop 100 smart cities by 2037	Aim to become a Smart Nation and realise the aspiration of 'Liveable Malaysia' by 2040 as targeted in the Fourth National Physical Plan (NPP4).
Priority areas	(i) Urban living, (ii) Transport, (iii) Health, (iv) Digital Government Services, (v) Startups and Businesses	(i) Smart Economy, (ii) Smart Living, (iii) Smart Environment, (iv) Smart People, (v) Smart Governance, (vi) Smart Mobility, (vii) Smart Energy	(i) Smart Economy, (ii) Smart Living, (iii) Smart Environment, (iv) Smart People, (v) Smart Government, (vi) Smart Mobility, (vii) Smart Digital Infrastructure
Model cities	Singapore	Phuket, Cheng Mai, Kohn ken, Chonburi, Rayong Chachoengsao, Bangkok	Kuala Lumpur, Johor Bahru, Kota Kinabalu, Kuching, and Kulim
Supervisory authorities	Smart Nation & Digital Government Group └Smart Nation & Digital Government Office	Ministry of Digital Economy and Society └Digital Economy Promotion Agency	Ministry of Housing and Local Government

	Singapore	Thailand	Malaysia
	└Government Technology Agency	('DEPA')	
Indicators	KPI Dashboard Investment KPIs: WEF GIT Ranking, e-Government Ranking, Productivity Growth Population KPIs: Online Services Usage, Net New IT Jobs, ICT Employment Rate, Total ICT Employed, ICT Skill Upgrade Rate Business KPIs: ICT Business Sentiment, New ICT Company Registration Rate, ICT Employee Productivity	(i) Economy: Raise the citizens' annual income per capita ≥ 250,000 bath (ii) Living: The liveability index ≥ 80% annually (iii) Environment: Follow the international standard of Managing the Quality of Water, Air, and Green Area. /CO2 Emission Reduction ≥ 1% annually (iv) People: Percentage of citizens gaining Digital Literacy Skills ≥ 70% annually (v) Governance: Percentage of accessibility of citizens to informative online contents ≥ 60% / Percentage of citizens involvement in the public development services ≥ 60%* (vi) Mobility: Percentage of commutes' satisfactory ≥60% / The number of casualties < 12 people/ 100,000 citizens Energy: Increase the efficiency of energy usage	80 Indicators across the 19 areas in accordance with 'MS ISO 37122(2019): Indicators for Smart City Standard'

	Singapore	Thailand	Malaysia
		and the use of clean energy ≥ 1% annually	

	Indonesia	Philippines	Viet Nam
Initiative	Movement Toward 100 Smart Cities initiative (2017)	DOST Framework for Smart Sustainable Communities and Cities	The Central government announced the policy in 2018 to implement the Sustainable Smart City Development Project for the period of 2018-2025 and to be completed in 2030, while initiatives are taken on municipal level. Smart City plans (2017-2020) Ho Chi Minh City City planning 2021-2030 vision 2050 Hanoi City
Definition of Smart city	*'Smart city' plays a role in improving effective, efficient, and quality public services to support local economic development'*	*'Ecosystem comprised of people, organizations and businesses, policies, laws and processes integrated together to create desired outcomes. The city is adaptive, responsive, relevant, and integrates technology to accelerate, facilitate, and transform this ecosystem.'*	Not defined specifically
Objective	Guide regions and cities across Indonesia in designing digital-based development that considers each region's potential and challenges.	Fully exploit the potential of the regions talent pool and maximise the benefits of an innovation-led economy with the following perspectives:	Not defined specifically

	Indonesia	Philippines	Viet Nam
		Integration of different dimensions of urban sustainability in the framework of the UN Sustainable Development Goals. Co-production – a way to extend research activities to bridge gaps between knowledge, understanding, and action.	
Target	Develop 100 smart cities out of 514 districts and cities by 2045		Focus on people, improve quality of life. Focus on developing and advanced technology applications such as AI, IoT, Big Data, Blockchain and other applications to create effective public services.
Priority areas	(i) Smart Economy, (ii) Smart Environment, (iii) Smart People, (iv) Smart Governance, (v) Smart Mobility	(i) Government Efficiency, (ii) Economic Development, (iii) Sustainability, (iv) Public Safety, (v) Health and Wellness, (vi) Quality of Life (vii) Mobility	Not defined specifically
Model cities	Bandung, Jakarta	Cebu, Davao City, New Clark City, Bonifacio Global city, Makati	Da Nang, Ho Chi Minh City, Hanoi, Nha Trang
Supervisory authorities	Ministry of Communication and Information, Ministry of Public Work and Housing, National Development Planning Board	Department of Science and Technology	People's Committee in each municipal

	Indonesia	Philippines	Viet Nam
	(Bappenas), Presidential Chief of Staff		
Indicators	80 Indicators across the 19 areas in accordance with 'SNI ISO 37122(2018): Sustainable Urban and Community Development Indicators'	80 Indicators across the 13 areas in accordance with 'PNS ISO 37122(2020): Sustainable Urban and Community Development Indicators'. It is distinctive in Philippines that 'Empowerment and Inclusion', which is a component of the PCSC, is included as one of the KPIs.	Not defined

ASEAN = Association of Southeast Asian Nations; AI = Artificial Intelligence, ASEAN = Association of South-East Asian Nations, DOST = Department of Science and Technology, GIT = Global Information Technology, ICT = Information and Communication Technology, IoT = Internet of Things, ISO = International Organization for Standardization, IT = Information Technology, KPI = Key Performance Indicator, PCSC = People Centric Smart City, WEF = World Economic Forum

Source: Authors.

Figure 2.1. Prioritised Areas of Smart City Initiatives in each ASEAN Country

Area	Key element	Singapore	Thailand	Malaysia	Indonesia	Philippine	Vietnam
Economy	High productivity, Utilisation of ICT. Innovation in all sectors of the economy Competitive economy, for investors	✓	✓	✓	✓	✓	✓
Digital Infrastructure	Comprehensive network coverage, High speed internet Cybersecurity and personal data protection	✓ Digital Society		✓			✓ Digital Society
People	Low carbon, green lifestyle, High digital skill Empowered community, Education Community w/ moral, first-class mentality		✓	✓	✓		
Living/Quality of Life	Urban safety and security、 High quality of healthcare services		✓	✓		✓	
Environment	High quality of life in housing areas、 Environmental protection Clean, Sustainable, disaster resilient		✓	✓	✓	✓	
Energy	Shifting to renewable energy, Effective energy management		✓				
Government	Gender and vulnerable group friendly Open data and information disclosure Quality e-government services	✓	✓	✓	✓	✓	✓
Mobility	Seamless and efficient connectivity Integrated, safe and reliable roads and public transportation, Data sharing,		✓	✓	✓	✓	

Source: Authors.

Chapter 3

Applicability of the People-Centric Smart City Model in ASEAN Cities

In this chapter, we first summarise the characteristics and trends for the entire ASEAN, after examining the acceptability of the PCSC in ASEAN. Then, we will explain the characteristics of each country and the driving forces and challenges in introducing a PCSC, based on interviews and survey results.

1. Overview (ASEAN)

1.1. General Trend and Findings

- **PCSC Enabling Mechanisms: ASEAN-Wide Trend**

The necessity and importance of a PCSC that reflects citizens' voices in city planning and ultimately improves their well-being or happiness is recognised to some extent at the government and academic levels in each country. However, **the framework and level of implementation vary amongst countries and cities**.

Frameworks to reflect citizens' voices can be found in many countries (and cities) at the level of urban reporting frameworks, but their usage is limited to only a few areas and cannot be considered active. The only framework actively collecting citizens' voices and contributing to proactive city planning is the SNS platform/workshop initiated by DEPA in Thailand.

- **Challenges in Implementing a PCSC: ASEAN-Wide Trends**

The slow progress of framework development and implementation, despite recognising the necessity and importance of introducing the PCSC at the government/academia level, can be observed from two perspectives: framework and citizen perspective. We have identified challenges to be addressed during the implementation of the PCSC model based on our definition of a PCSC for this project.

Flow of PCSC model

Phase (i): Identify themes of challenges in the city/town from the perspective of improving well-being or happiness, based on a survey of citizens' needs, lifestyles, etc.

Phase (ii): Form a community of people who are aware of the challenges (both online and offline) and discuss the challenges.

Phase (iii): Propose and select projects to address these challenges, involving people to share ideas and opinions.

Phase (iv): Implement selected ideas and opinions into concrete services and/or solutions.

Challenges

Phase (i)

- Interviews with ASEAN governments revealed that while they have established objective measures, there is a lack of subjective measures. It is, therefore, necessary to use well-being or happiness as a key metric for citizens' welfare. In addition, since well-being or happiness is a measure based on individual subjectivity, it is necessary to devise a way to make it objective in the survey.

Phase (ii)

- Citizens do not always participate actively and proactively.
- Citizens tend to be less constructive and more critical.
- Citizens' opinions are scattered across various channels, making it difficult to integrate them.
- ASEAN is a multi-ethnic region with diverse languages. It is necessary to accommodate a variety of languages when facilitating discussion within the community.
- Elderly people are often face challenges in using new digital applications and need support to navigate them effectively.

Phase(iii)

- Difficulty for the average person to formulate a project in solving challenges.
- In countries with high diversity, it is difficult to determine whose opinions to consider and reflected.

Phase (iv)

- With limited budgets for each region, a funding problem arises concerning who will pay for and invest in the implementation of services.
- During the service implementation stage, private companies must promote their services to be selected in a transparent process with citizens' approval and must go through an objective evaluation process.

Regarding what citizens perceive as challenges, trends that can be seen are (1) slow administrative actions, (2) lack of progress visibility in responding, and (3) time-consuming communication process.

- **PCSC: Current Framework Status to actualise Smart Cities: a broad classification within ASEAN**

  - **Thailand/Singapore**: Both have a relatively long history of research on smart cities and citizen participation ('People-centric' approach). Central government efforts to involve local governments in community building and incorporate the voices of citizens in policies have also begun in urban areas, such as those seen in the Tampines estate of Singapore and Digital Economy Promotion Agency (DEPA) initiatives. While Singapore is considered as a 'PCSC', Thailand has no established PCSC cases that can be called successful. Next step for smart city initiatives is to create a track record of success.
  - **Indonesia:** Central government is taking the lead in creating the framework. Meanwhile, local government, businesses, academia, media, and local communities are working together on smart city initiatives that respect local characteristics. In addition, smart city platform apps developed jointly by the public and private sectors are widely used as PCSC-like initiatives (mainly reporting/notifying functions).
  - **Malaysia/Philippines:** Central governments are taking the lead in creating frameworks. Local government and private companies are taking lead in smart city development and advancement. However, apart from a simple notification framework, there are no examples of a PCSC framework being introduced in cities. The development corporation in charge for both countries have positive interest in PCSC, recognises its importance, and intends to introduce it in the future.
  - **Viet Nam:** Creation of a framework by the central government is halfway through the process. Local governments are spearheading the efforts, but a PCSC initiative has not been concretely initiated. There is some interest at the corporate level.

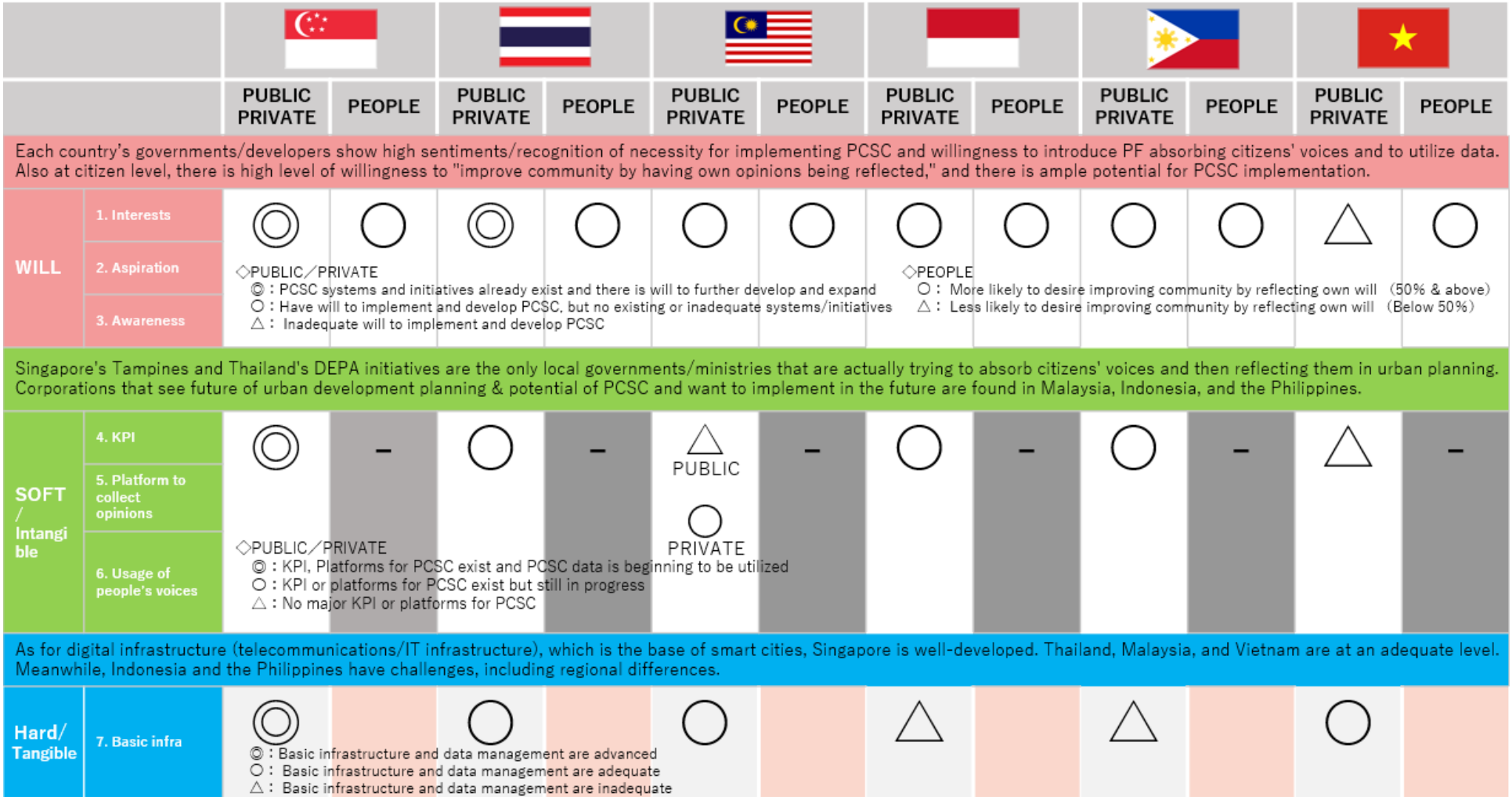
- **Frameworks and platforms that absorb the voices of citizens based on PCSC ideology**

In many countries, frameworks exist at both the national and city levels to capture citizens' voices in the urban areas. However, these frameworks are primarily gathering complaints about the town rather than constructive feedback. Consequently, each city municipality or company struggles to collect positive and proactive voices from the citizens.

As background, each urban area is diverse and attracts people of various incomes, living standards, ethnicities, religions, and nationalities. In addition, basic infrastructure is lacking, and the priority is given to addressing negative aspects such as road repairs, water, and electricity failures, etc., as these are the primary concerns citizens want to be addressed first.

Figure 3.1 shows how the WILL/SOFT/HARD factors are evaluated in each city, based on surveys and interviews at city level.

Figure 3.1. Existence of WILL/SOFT/HARD

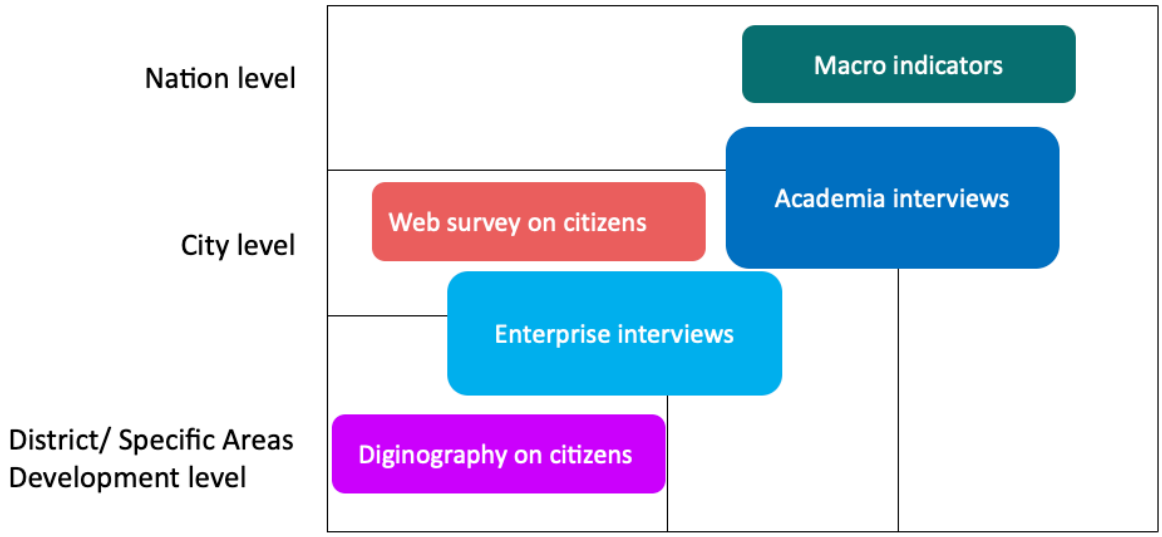


KPI = key performance indicator(s); PCSC = people-centric smart city; DEPA= Digital Economy Promotion Agency

Source: Authors.

In this chapter, we summarise the findings based on various research that was conducted to understand the current status and citizen's views in ASEAN countries at the different levels as shown in Figure 3.2.

Figure 3.2. Landscape of Survey



Source: Authors.

- **<u>Well-being or Happiness of Citizen and Intention to Continue Living in the City</u>**

▫ **Well-being or happiness of Citizens**

✓ Currently, the level of well-being or happiness of ASEAN citizens is high overall (69.9%). However, it varies slightly from country to country.

✓ Philippines has the highest level of well-being or happiness (77.8%), while Viet Nam has the lowest (57.8%).

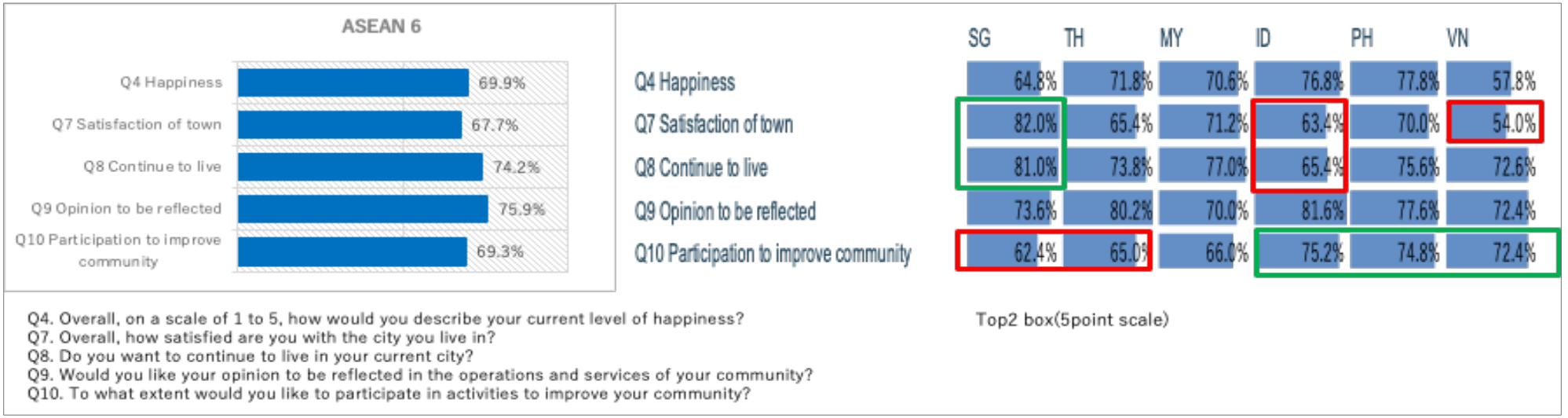
**Note: The term 'Happiness' was used in the web survey for citizens because awareness of the word 'well-being' varies from country to country.

▫ **Satisfaction with the city and intention to continue living in the city**

✓ The level of satisfaction with the city (67.7%) and the intention to continue living in the city (74.2%) were also generally high for ASEAN.

✓ Singapore had the highest level of satisfaction with the city (82.0%) and the intention to continue living there (81.0%). Viet Nam had the lowest satisfaction (54.0%). The lowest intention to continue living in the city was found in Indonesia (65.4%). See Figure 3.3.

Figure 3.3. ASEAN – Well-Being or Happiness of Citizens, Satisfaction and Intention to Continue Living in the City



Source: Authors.

1.2. ASEAN Citizens' Awareness of Challenges Concerning City and Daily Lives

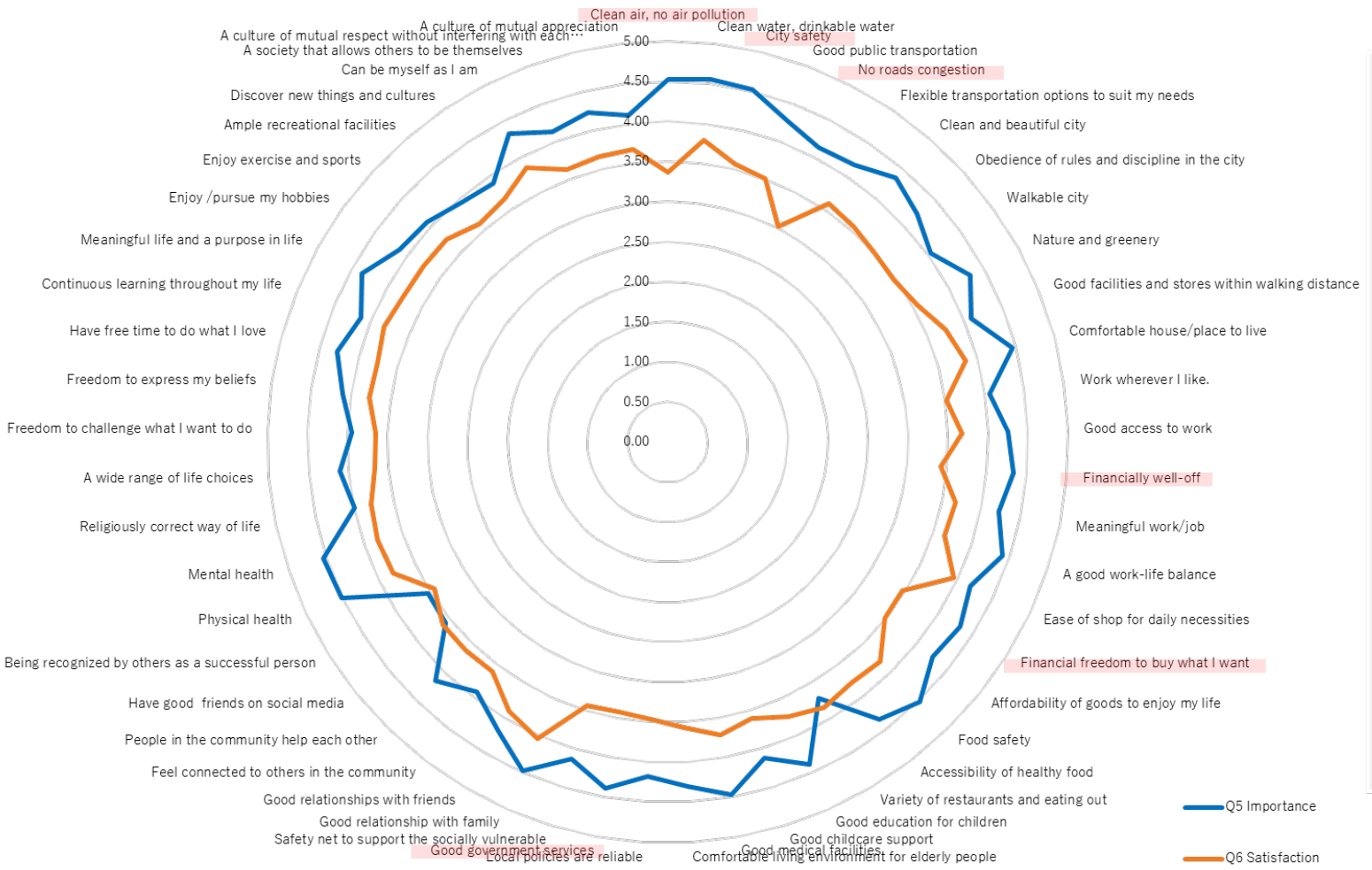
As for current survey, the respondents were asked about levels of importance and current satisfaction with various areas and values related to their living environment and lifestyles. The large gaps between levels of importance and satisfaction were considered as challenges.

In ASEAN, the gaps and challenges are particularly large in the areas of (1) infrastructure for the living environment and (2) economic activities.

Gaps and challenges in infrastructure for the living environment includes air pollution, city safety, public transportation, and traffic congestion. For economic activities, this includes affordability and the ability to enjoy life with consumption.

When the survey items are categorised according to the 'Maslow's framework', it becomes evident that the respondents from ASEAN countries, excluding Singapore, want cities that are clean, free from air pollution, and promote physical well-being. Malaysia, Indonesia, and the Philippines face mobility challenges, including issues with public transportation and traffic congestion. Conversely, in economically developed countries like Singapore, Thailand, and Malaysia, the focus shifts to having financial means to enjoy a good life and lifestyle, which corresponds to social health. See Figure 3.4 and Figure 3.5.

Figure 3.4. ASEAN – Gap Analysis of Areas (Radar Chart)



Identify important areas for improvement:

Areas with big gap lay in living environment, local government and economic activities, consumption:

Living environment:

- Clean air, no air pollution
- No roads congestion
- City safety

Economic activity, consumption

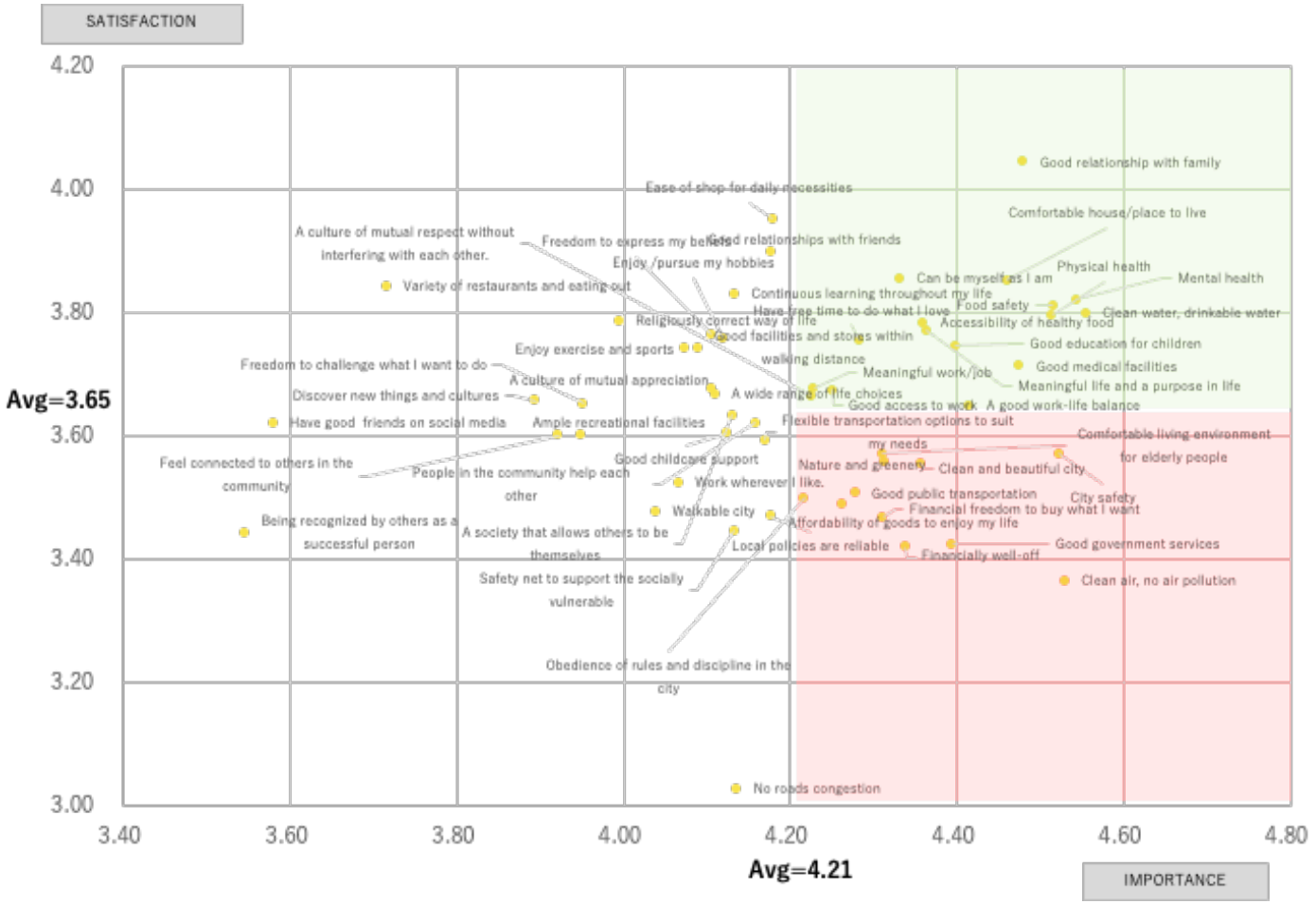
- Financially well off
- Financial freedom to buy what I want

Local Government

- Good government service

Source: Authors.

Figure 3.5. ASEAN – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)



Important areas which are relatively high in satisfaction level

- Good relationship with family
- Comfortable house
- Can be myself as I am
- Mental Health
- Food safety
- Clean water

Important areas which are relatively low in satisfaction level: around basic needs and economic condition

- Clean air, no air pollution
- Good government service
- Financial well-off
- Financial freedom
- Affordability of goods

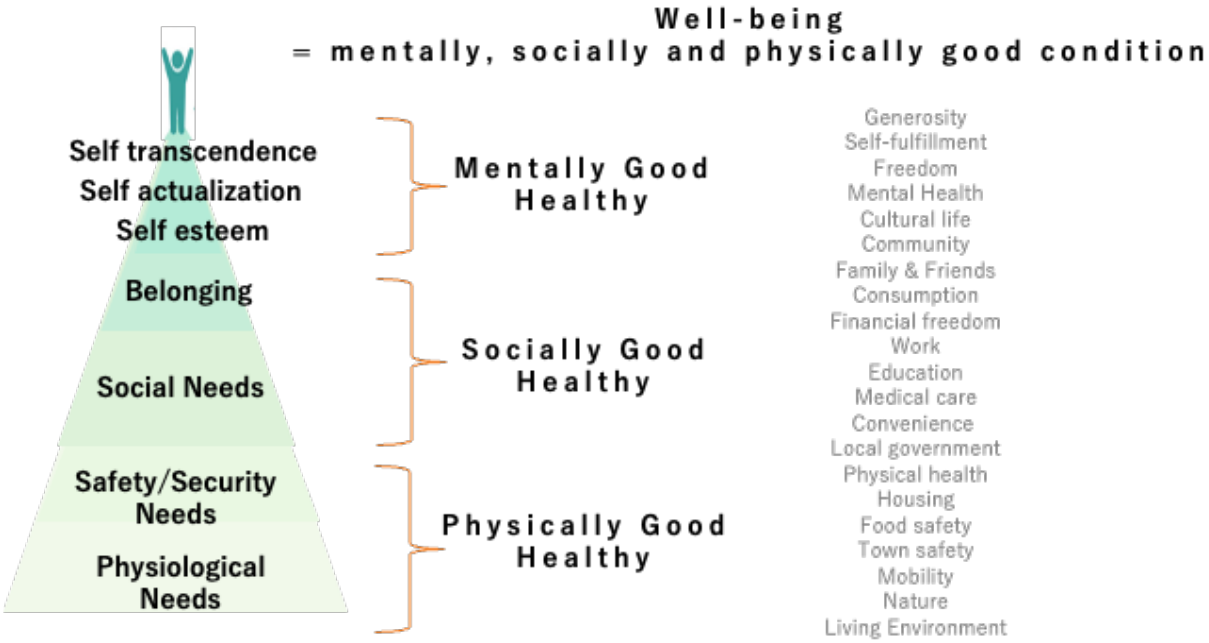
*non-exhaustive list

Source: Authors.

1.3. Current Level of Citizen's Well-Being or Happiness, City Satisfaction, and Area of Challenges

The ultimate goal of a PCSC is to improve the well-being or happiness of its citizens. Therefore, we utilise Maslow's Hierarchy of Needs (Figure 3.6), which is universally used as a framework for understanding human happiness, then reorganise key challenges and citizen's needs based on this framework.

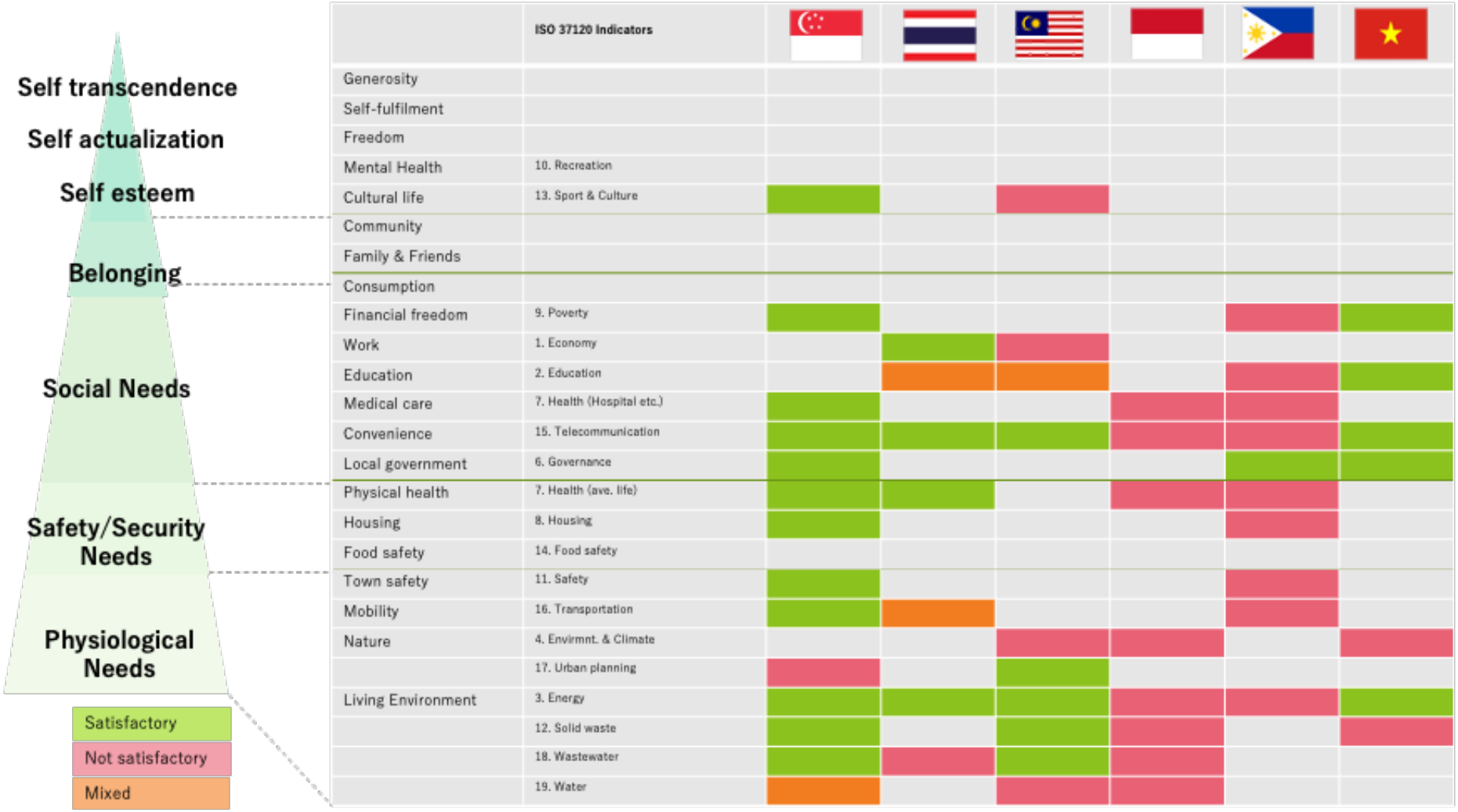
Figure 3.6. Maslow's Hierarchy of Needs Framework



Source: Authors.

We first identified each nation's areas of challenges based on objective indicators. Overall, Singapore is well-developed across macro indicators, followed by Thailand. Indonesia and Philippines show challenges in various areas from living environment (which links to physiological needs) to town/city facilities and working environment (which link to social needs). See Figure 3.7.

Figure 3.7. Consideration from Macro Indicators

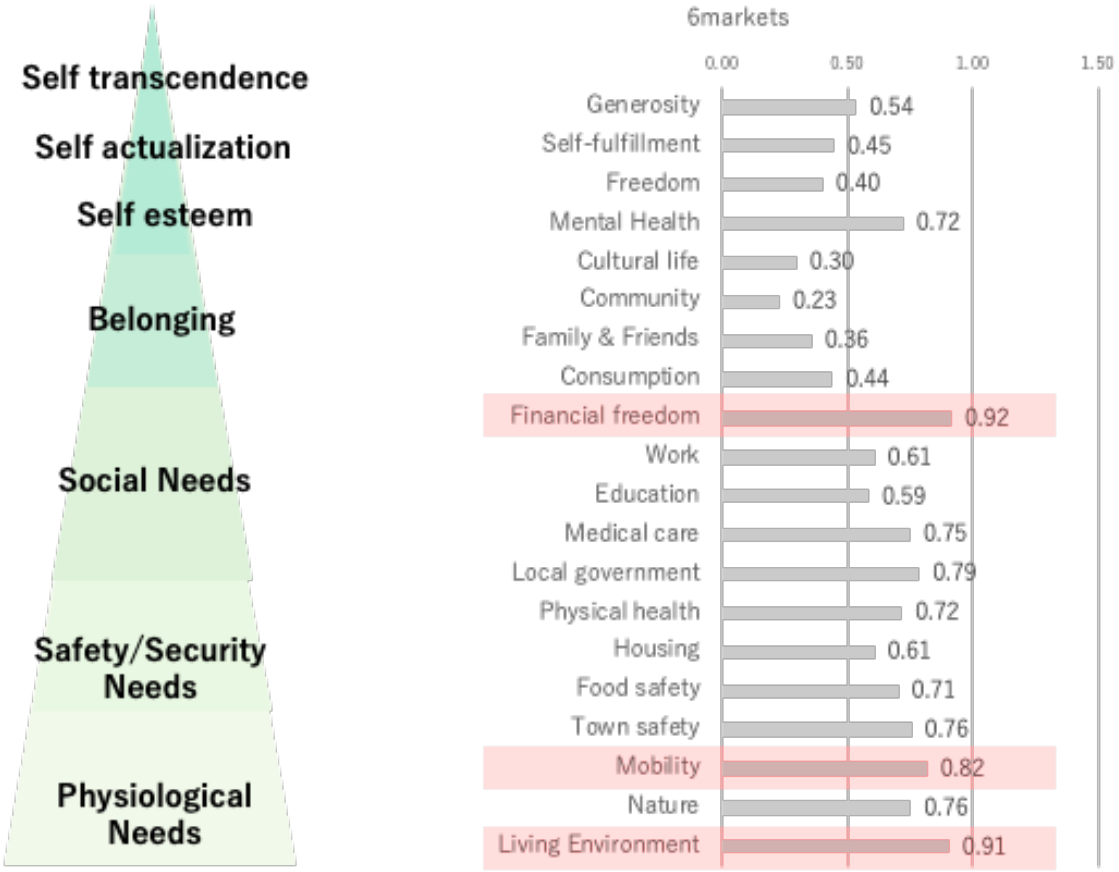


	ISO 37120 Indicators						
Generosity							
Self-fulfilment							
Freedom							
Mental Health	10. Recreation						
Cultural life	13. Sport & Culture						
Community							
Family & Friends							
Consumption							
Financial freedom	9. Poverty						
Work	1. Economy						
Education	2. Education						
Medical care	7. Health (Hospital etc.)						
Convenience	15. Telecommunication						
Local government	6. Governance						
Physical health	7. Health (ave. life)						
Housing	8. Housing						
Food safety	14. Food safety						
Town safety	11. Safety						
Mobility	16. Transportation						
Nature	4. Envirmnt. & Climate						
	17. Urban planning						
Living Environment	3. Energy						
	12. Solid waste						
	18. Wastewater						
	19. Water						

Source: Authors.

The 53 items evaluated in a quantitative web survey were classified according to Maslow's framework, based on the average of the gap between importance and satisfaction (Figure 3.8). The areas of challenges indicate that the **ASEAN-6 countries have major challenges in financial freedom, living environment, and mobility.**

Figure 3.8. ASEAN – Gap Analysis of Areas (Maslow's Framework)



Source: Authors.

1.4. Factors for Citizen's Well-Being or Happiness

This quantitative survey seeks to identify the factors that contribute to the well-being or happiness of citizens in six ASEAN countries, to identify what is important for a PCSC.

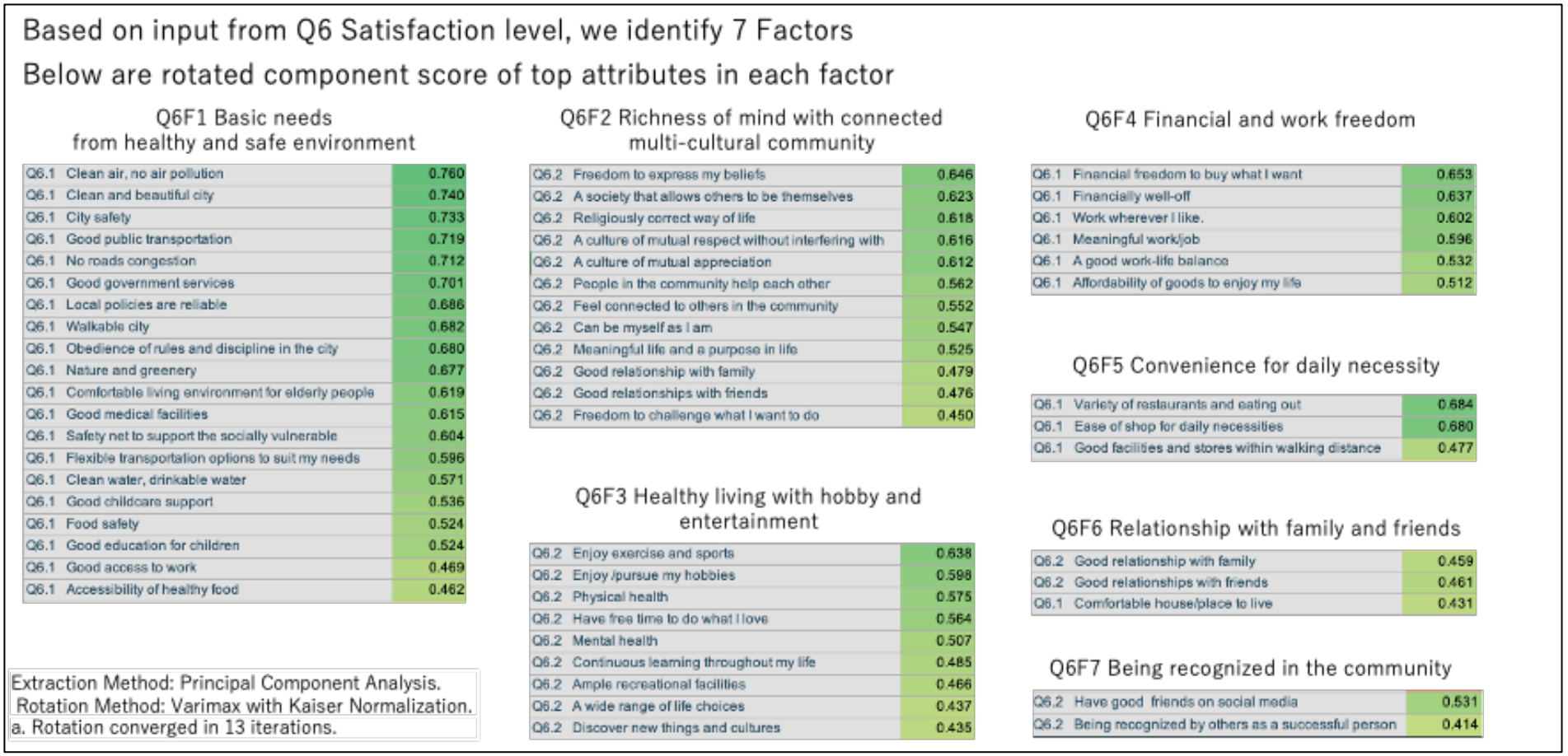
The premise suggests a connection between citizen's well-being or happiness and their satisfaction with the town. Additionally, there is a strong correlation between town satisfaction and the intention to continue living there. Therefore, we can consider that improving the city's satisfaction level would lead to an increase in the overall happiness of its citizens.

However, **this survey revealed that the factors that directly contribute to the happiness of citizens and the factors that contribute to their intention to continue living in the city are different.**

As shown in Figure 3.9, a factor analysis was conducted to consolidate the concepts, and the following seven elements (factors) of life were extracted:

- F1: Basic needs from healthy and safe environment
- F2: Richness of mind with connected multi-cultural community
- F3: Healthy living with hobby and entertainment
- F4: Financial and work freedom
- F5: Convenience for daily necessity
- F6: Relationship with family and friends
- F7: Being recognised in the community

Figure 3.9. Attributes Lists Under 7 Factors



Source: Authors.

As shown in Figure 3.10, the factors that contribute most to citizens' happiness are

(i) F4: Financial and work freedom,

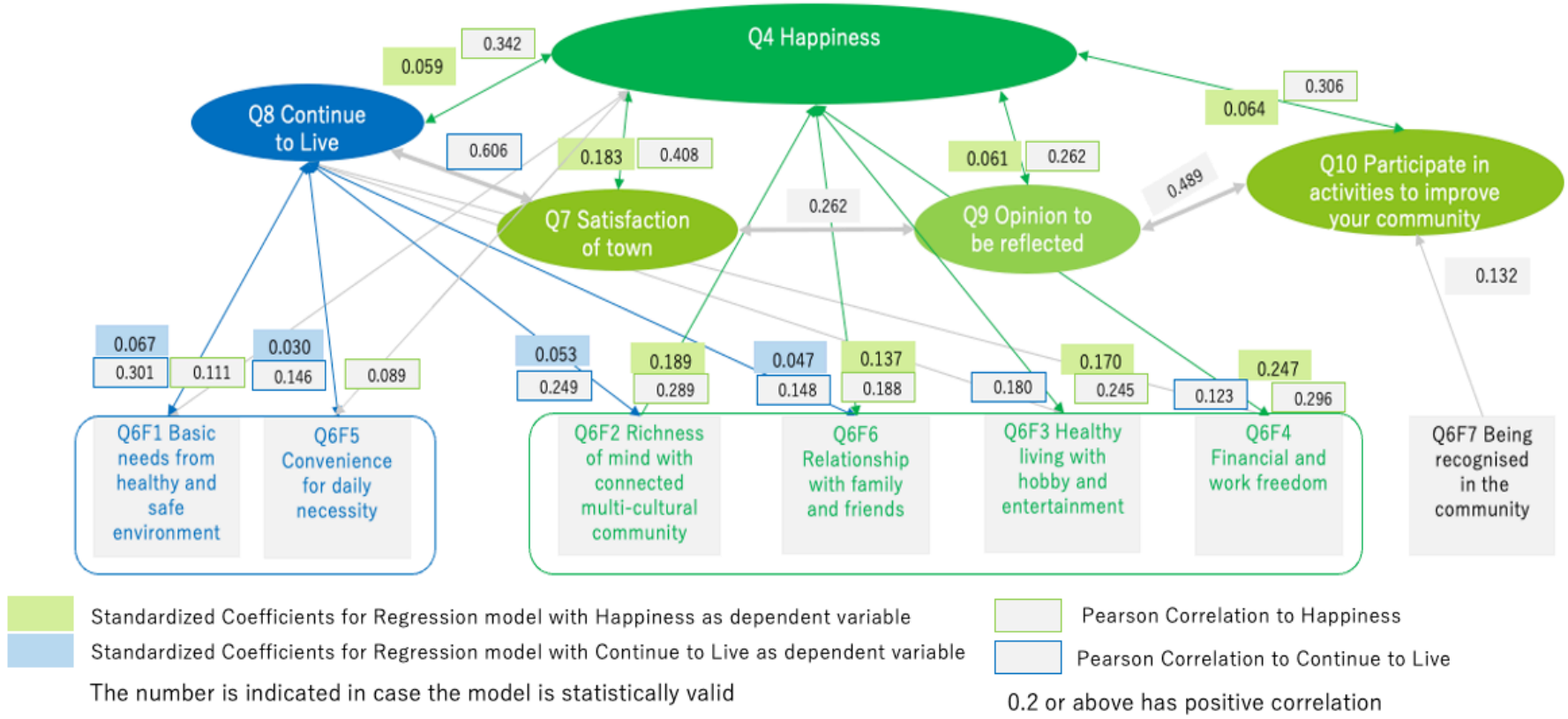
(ii) F2: Richness of mind with connected multi-cultural community

(iii) F3: Healthy living with hobby and entertainment, and

(iv) F6: Relationship with family and friends.

On the other hand, F1 and F5 were not statistically related to citizens' happiness, confirming that they contribute to their intention to continue living in the city. This means that **although the ongoing infrastructure improvements in many smart city plans may increase the city's value, they do not have a direct, statistically proven relationship to the well-being or happiness of its citizens.**

Figure 3.10. ASEAN – Path model to Identify Factors for Citizen's Well-Being or Happiness

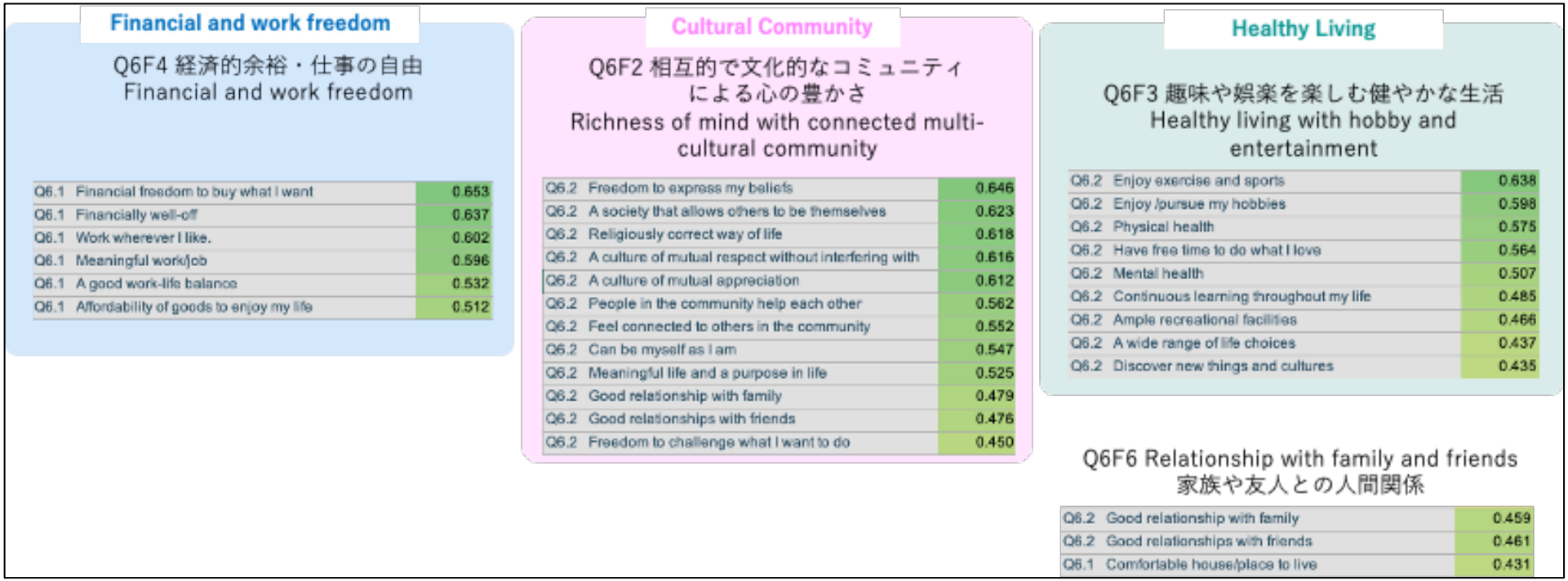


Source: Authors.

1.5. Factors to Realise a PCSC for Citizen's Well-Being or Happiness

ASEAN citizens aim to live a happy life through F4 (financial and work freedom), F2 (richness of mind with connected multi-cultural community), F3 (healthy living with hobby and entertainment), and F6 (relationship with family and friends). In other words, when the goal is the happiness and well-being of citizens, it would be effective to strengthen the following areas shown in Figure 3.11 as the focus of a PCSC.

Figure 3.11. Factors List to Contribute to Well-Being or Happiness



Source: Authors.

1.6. Country Differences in Factors that Make Citizens Happy

As shown in Figure 3.12, the factors that contribute to the well-being or happiness of ASEAN countries are common across the six countries. The factors that contribute most to citizens' well-being or happiness are F4 (financial and work freedom), F2 (richness of mind with connected multi-cultural community), and F3 (healthy living with hobby and entertainment), although the ranking of these factors differs by country.

Figure 3.12. Comparison of Key Measures 6 ASEAN Countries

(%)

		SG	TH	MY	ID	PH	VN
Key measures (Top 2 box)	Q4 Happiness	64.8%	71.8%	70.6%	76.8%	77.8%	57.8%
	Q7 Satisfaction of town	82.0%	65.4%	71.2%	63.4%	70.0%	54.0%
	Q8 Continue to live	81.0%	73.8%	77.0%	65.4%	75.6%	72.6%
	What contributes to Happiness?	1. Financial and work freedom 2. Healthy Living with hobby 3. Richness of mind with connected multicultural community 4. Relationship with family & Friends	1. Financial and work freedom 2. Richness of mind with connected multicultural community 3. Relationship with family & Friends 4. Healthy Living with hobby	1. Financial and work freedom 2. Richness of mind with connected multicultural community 3. Healthy Living with hobby 4. Relationship with family & Friends	1. Financial and work freedom 2. Healthy Living with hobby 3. Richness of mind with connected multicultural community 4. Relationship with family & Friends	1. Financial and work freedom 2. Richness of mind with connected multicultural community 3. Healthy Living with hobby 4. Relationship with family & Friends	1. Financial and work freedom 2. Relationship with family & Friends 3. Richness of mind with connected multicultural community 4. Healthy Living with hobby

Source: Authors.

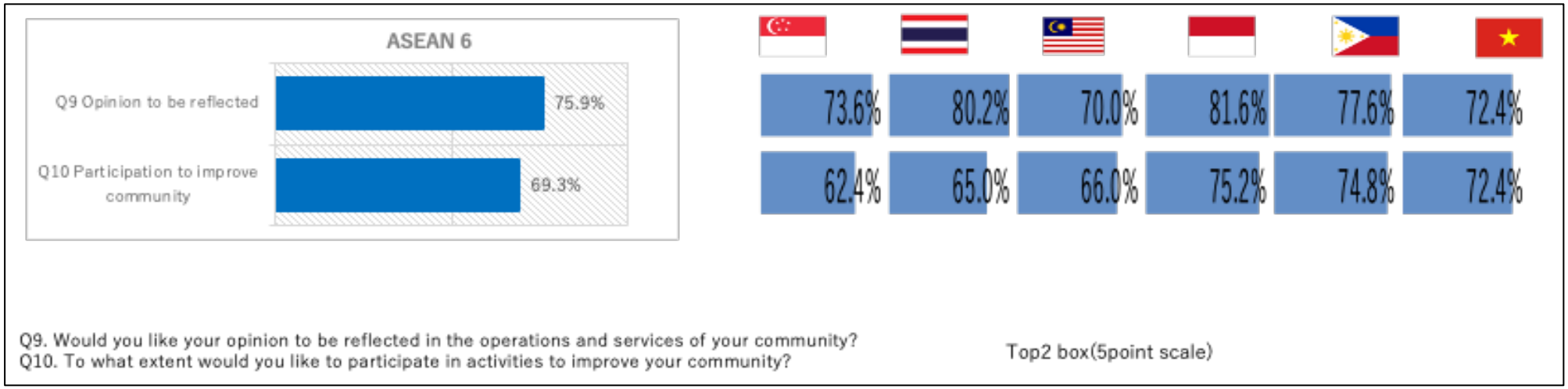
1.7. Willingness to Participate in People-Centred Smart Cities

A PCSC refers to the utilisation of citizens' voices in urban development for the purpose of citizens' well-being or happiness, and it was confirmed that the willingness of citizens in the six ASEAN countries to participate is generally high. Specifically, the willingness to reflect their opinions in local management and services was high (75.9%), as seen in Figure 3.13. The willingness of participation to improve the community was also generally high (69.3%). On the other hand, there are some differences in willingness of participation to improve community by country.

Singapore (62.4%), Thailand (65.0%), and Malaysia (66.0%), which have developed economies, tended to be low, while Indonesia (75.2%), Philippines (74.8%), and Viet Nam (72.4%) were high. Since there is no statistical relationship between the level of satisfaction of town, it can be explained by national characteristics, such as individualism or a strong sense of community.

Figure 3.13. Comparison of Key Measures to Judge the Willingness of Citizen for PCSC

(%)



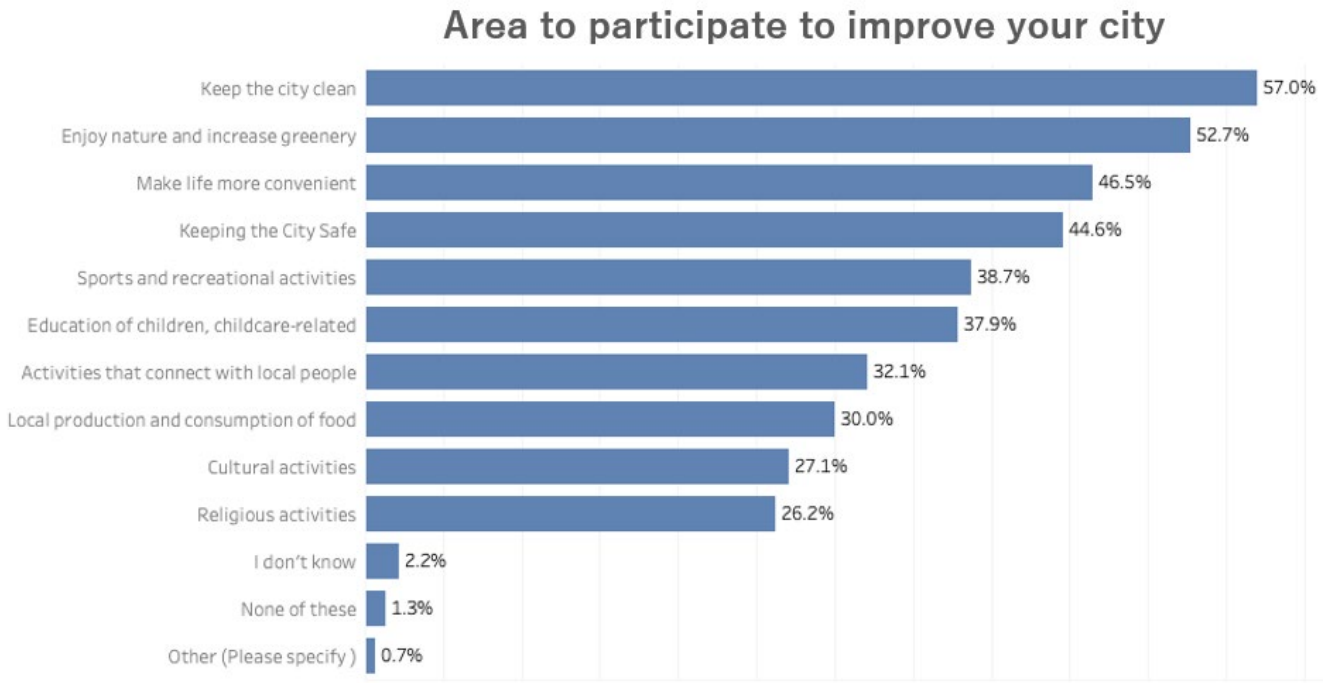
Source: Authors.

- **Activities to Participate**

'Keep the city clean' and 'Enjoy nature and increase greenery' are top areas citizens want to participate in. Convenience is also important to citizens, reflected by 'Make life more convenient', which ranked third for area of participation. Interests in participating in sports and recreational activities was at 39%, child-care related education at 38%, and activities to connect with local people at 32%, which all ranked lower in the chart in Figure 3.14.

Figure 3.14. ASEAN – Activities to Participate to Improve Community

(%)



Q11. If you were to participate in activities to improves your city, in which areas would you like to participate?

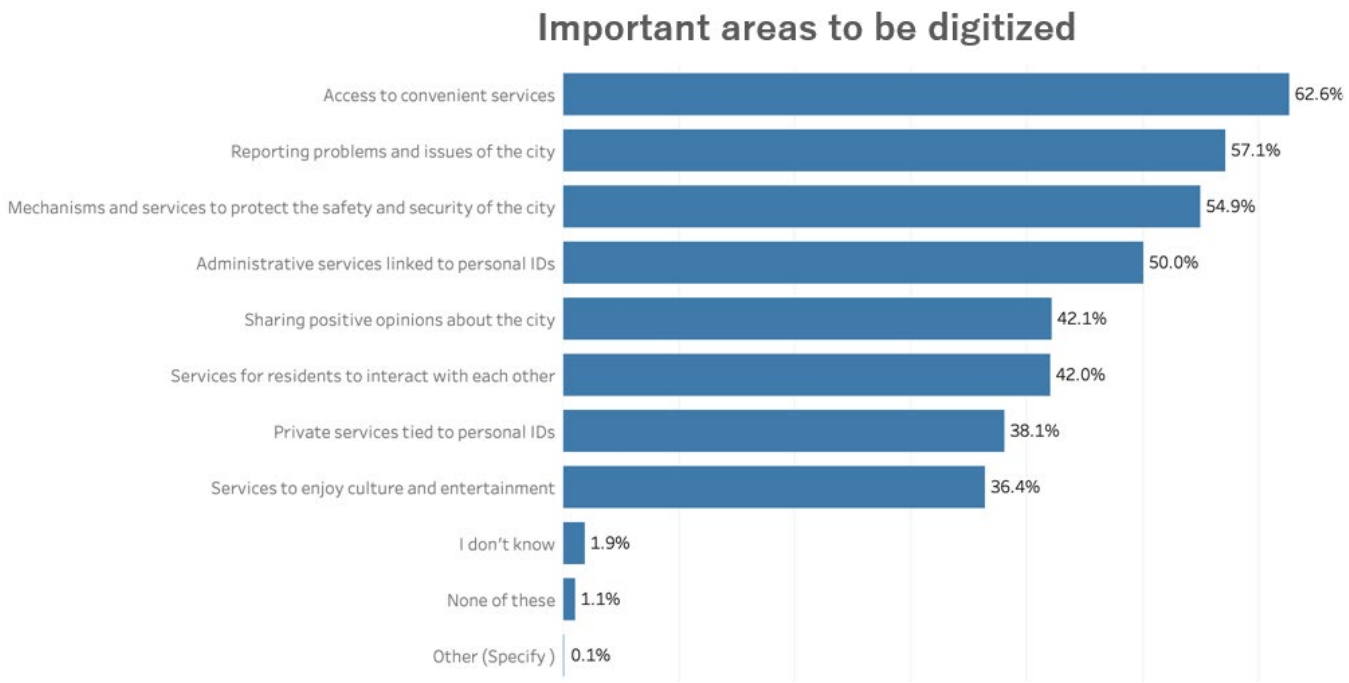
Source: Authors.

- **Important Areas for Digitalisation**

'Access to convenient services' ranked as the most important area to be digitised, as seen in Figure 3.15. Citizens expressed their desire for safety. 'Reporting problems and issues of the city' and 'Mechanisms and services to protect the safety and security of the city' are the next important areas to be digitised.

Figure 3.15. ASEAN – Important Areas for Digitalisation

(%)



Q13. Please select all of the following areas in which you think digitalisation is important when city services to be digitalised?

Source: Authors.

- **<u>Hurdles to Citizen Participation</u>**

Figure 3-16 shows that while there is a high willingness to consider citizen opinions, the obstacles perceived by citizens as reasons for the current lack of citizen participation are as follows:

- The government and those in charge move slowly (50.1%)
- Progress of response is not visible (41.4%)
- Communication with the person in charge is time-consuming and troublesome (39.8%)

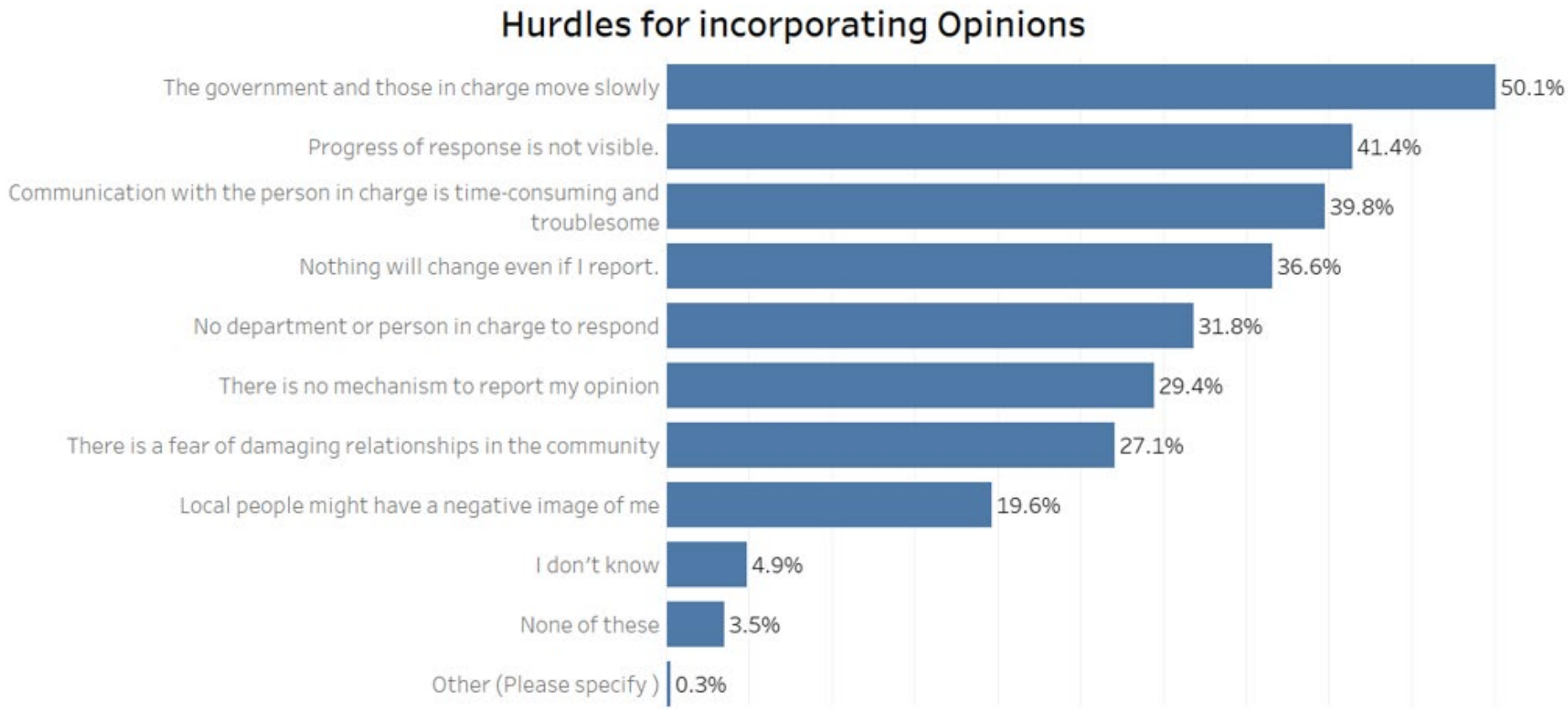
In addition to setting up a framework and structure to respond as an administration, citizens wish to visually see the response to citizens' voices and a concise framework that makes it easy for them to voice their opinions.

The top perceived problems listed below imply that citizens wish to be able to communicate easily and see progress and result in a timely manner.

- 'The government and those in charge move slowly.'
- 'Progress of response is not visible.'
- 'Communication with the person in charge is time-consuming and troublesome.'
- 'Nothing will change even if I report.'

Figure 3.16. ASEAN – Hurdles for Incorporating Opinions

(%)



Q12. What are some of the hurdles that you personally perceive to incorporating citizen's opinion into city planning?

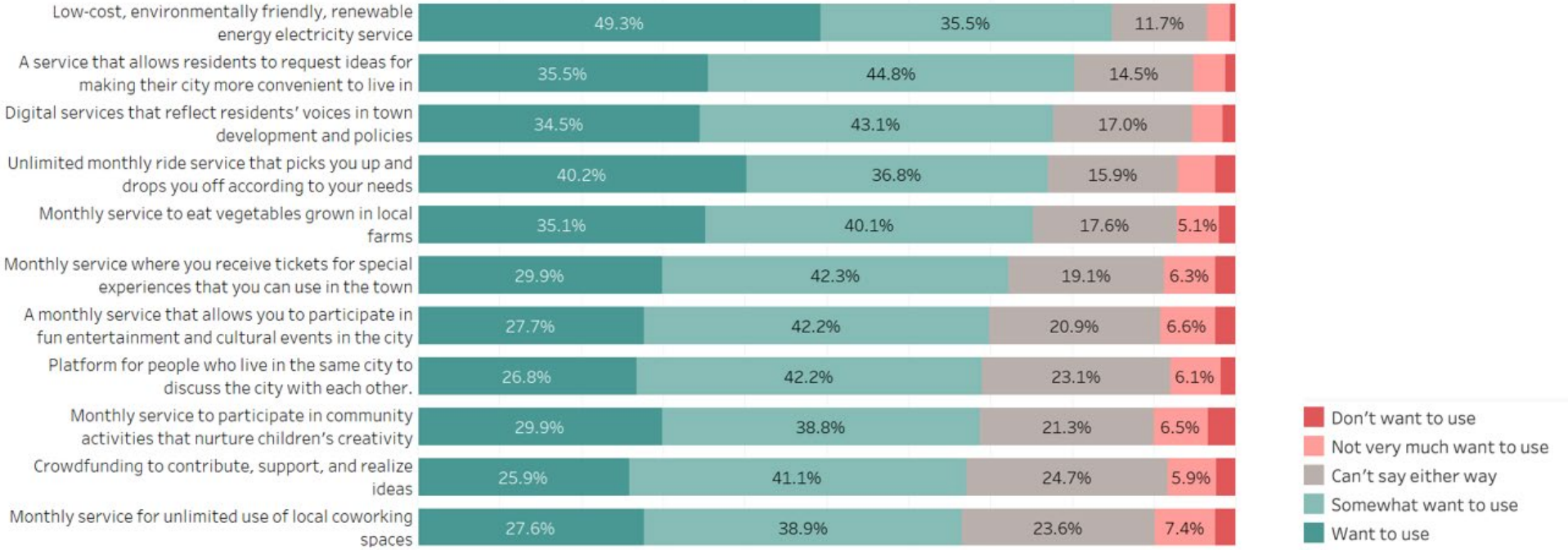
Source: Authors.

- **Willingness to Use Town Services**

Overall, citizens have a positive reaction to smart city initiatives. As shown in Figure 3.17, the most well-received service is 'Low-cost, environmentally friendly, renewable energy electricity service'. They highly value services that incorporate citizens' ideas into town development to make their city more convenient to live in.

Figure 3.17. ASEAN – Willingness to Use Town Services

(%)



Q15. If the following services were available in your town, to what extent would you be willing to use them?

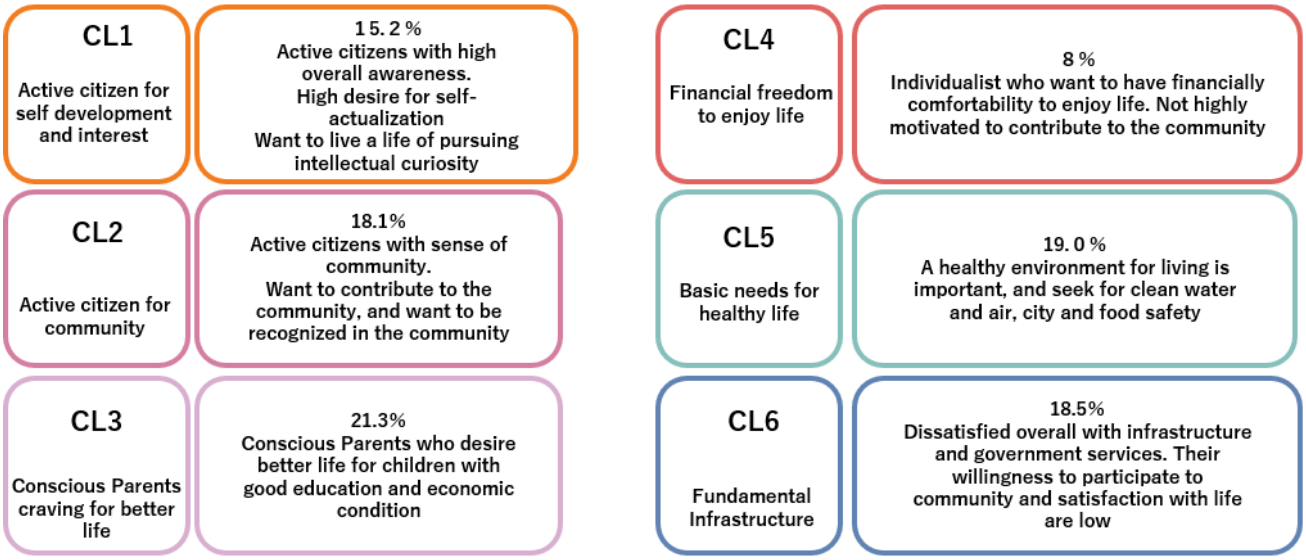
Source: Authors.

1.8. Citizen Cluster for People-Centred Smart Cities

To effectively involve citizens in smart city development, it is necessary to understand ASEAN citizens, what they wish, and what they see as important aspects in their lives. As shown in the cluster analysis based on what areas citizens value and their attitudes towards involvement in the city, ASEAN citizens can be categorised into the following six segments (Figure 3.18):

- CL1: Active citizen for self-development and interest
- CL2: Active citizen for community
- CL3: Conscious parents craving for better life
- CL4: Financial freedom to enjoy my life
- CL5: Basic needs for healthy life
- CL6: Fundamental Infrastructure

Figure 3.18. ASEAN Citizen Cluster for People-Centred Smart Cities



Source: Authors.

The characteristics of each cluster of ASEAN citizens are explained below.

CL1: Active citizen for self-development and interest (15.2%)

Active citizens who have high desire for self-actualisation and want to live a life pursuing intellectual curiosity.

CL2: Active citizen for community (18.1%)

Active citizens with a level of sense of community. They want to contribute to the community and want to be recognised in the community.

CL3: Conscious parents craving for better life (21.3%)

Conscious parents who desire the better life for the children with good education and economic condition.

CL4: Financial freedom to enjoy my life (8%)

Individualist who wants to have financial comfortability to enjoy life. They are not highly motivated to contribute to the community.

CL5: Basic needs for healthy life (19.0%)

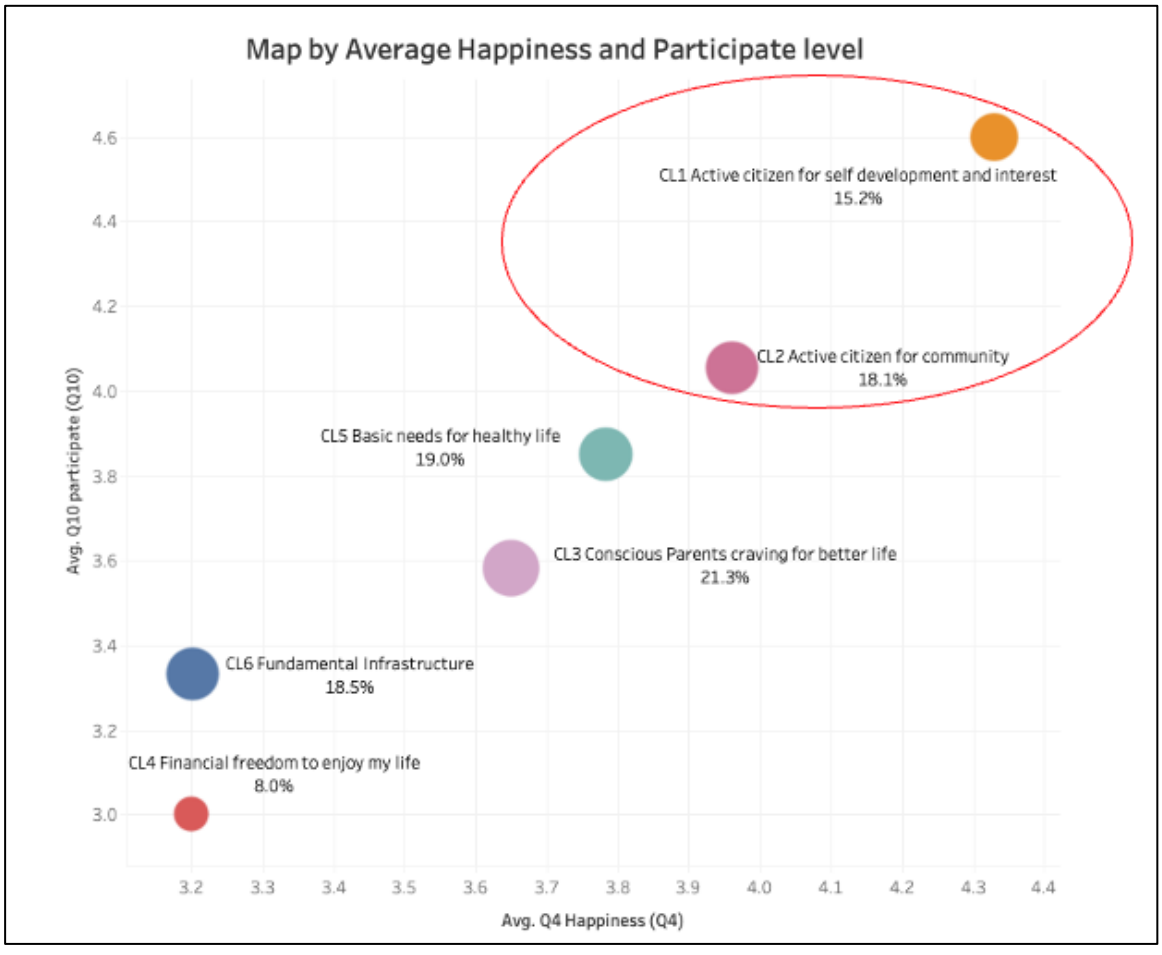
Those who seek for a healthy environment for living such as clean water and air, city and food safety.

CL6: Fundamental Infrastructure (18.5%)

Overall, those are dissatisfied with infrastructure and government services. Their willingness to participate in community and satisfaction with life are low.

As shown in Figure 3.19, CL1 and CL2 are the clusters which are the happiest and satisfied with the city and with the most active participation in activities to improve the city.

Figure 3.19. ASEAN Citizen Cluster Happiness & Participation to Improve Community



Source: Authors.

Chapter 4

Singapore

1. Summary/Conclusion

1.1. Smart City/People-Centred Smart City Promotion Framework at Central and Local Governments

Singapore has been a domestic and international pioneer in smart city implementation and smart city project development. In recent years, it has focused on Building Information Modelling (BIM), a method that manages information throughout a built asset's entire life cycle --from initial design all the way through to construction, maintenance to de-commissioning-- using digital models. The country is also leveraging Digital twins which are virtual representations of the real world, including physical objects, processes, relationships, and behaviours. Singapore is employing these strategies to differentiate itself from China's PATH [Ping An (P), Alibaba (A), Tencent (T) and Huawei (H)], which is promoting advanced initiatives in urban operating systems and other areas. In 2018, the country advocated and coordinated the ASEAN Smart Cities Network (ASCN) as the ASEAN chair country. Singapore is the core city of 'Industry and Innovation' in the ASCN rollouts. Domestically, Singapore has established designated administrative districts, such as Queenstown for its aging population and Tengah for greening and health. Singapore also appointed the Tampines Town Council (TTC) as a comprehensive designated administrative district to mobilise all initiatives.

The TTC has successfully implemented a PCSC following the guidelines established by the Government of Singapore. Local initiatives now require voting after consulting with citizens. Emphasis is placed on human touch, particularly for petitions to ministers and town meetings, while digital channels play a complementary role. However, the main challenge for a PCSC lies in objectively measuring the subjective concept of happiness and implementing initiatives to bring happiness to as many people as possible within a limited budget.

1.2. Current People-Centred Smart City Promotion Bodies and Areas that Need to be Initiated for Future Promotion and Expansion

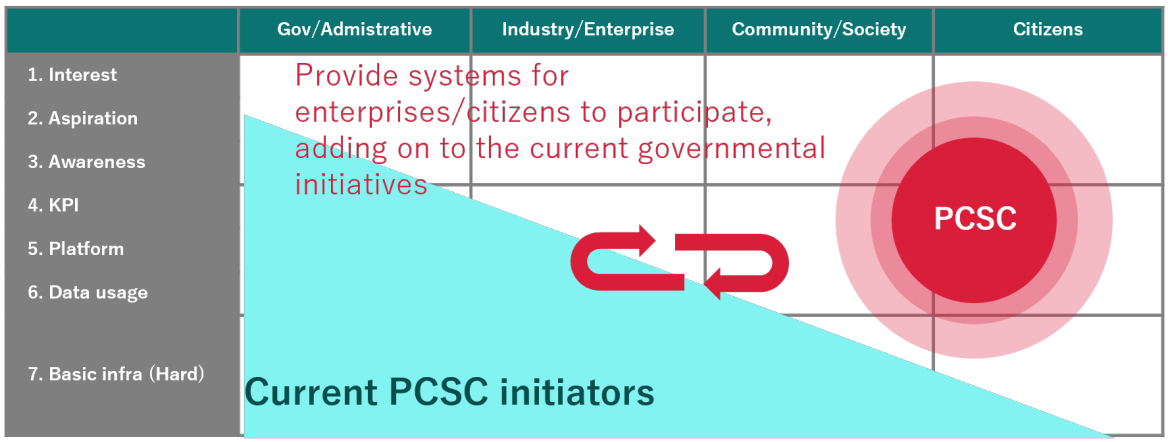
In Singapore, the current leading committee for PCSCs is the government or administration. The efforts primarily involve entities like the town council, with citizens actively participating in the process.

To engage citizens in smart city development and facilitate the adoption of government-initiated applications, various human touch support are being provided to citizens. One such initiative is the Smart Nation Builder, a 12-meter-long mobile truck that visits community centres. This truck serves

as a portable space where citizens can experience government-driven apps and digital services firsthand. Also, during the introduction of these apps, some citizens may encounter difficulties in using them. In response to this, digital ambassadors, known as 'Last Mile Connectors,' are available at community centres in each area. Their primary role is to offer guidance and consultation on how to use these apps.

However, the limited budget restricts the number of initiatives, the scope of regions, and the range of citizens who can enjoy the initiatives. Therefore, the future challenge lies in attracting more active investment from companies and involving citizens, which means falling under Pattern (1) of PCSC type (Figure 4.1).

Figure 4.1. Singapore – PCSC Pattern 1



Source: Authors.

To promote and expand the PCSC more efficiently for the town council that is already involved, a framework that attracts funds on a local government basis and matches them with services and contributions from companies could be considered. Given the established cooperative framework between the central and local governments, this approach seems feasible.

Additionally, to gather input from a diverse range of people and improve the well-being or happiness of a greater number and variety of people, enhancing digital mechanisms to capture opinions from those who cannot attend Town Meetings could be beneficial. This would allow for a more inclusive approach to decision making.

In order to measure the level of achievement in terms of well-being or happiness, it is necessary to establish an objective measure of subjective well-being or happiness and a reliable measurement method. Conducting surveys could prove effective in establishing a mechanism for more precise measuring and continuous observation of well-being or happiness in Singapore. Regular assessments would help in tracking progress over time.

1.3. Areas to Tackle for Promoting PCSC and Improving Well-being or Happiness

The following top four factors directly contribute to the improvement of well-being or happiness.

(i) Financial and work freedom

(ii) Richness of mind with connected multicultural community

(iii) Relationship with family & Friends

(iv) Healthy Living with hobby

Considering that each of the four factors above contributes to the improvement of well-being or happiness, and considering the values and characteristics of Singapore citizens derived from diginography, the areas to be prioritised for PCSC implementation and promotion, or that should encourage proactive citizen engagement, can be summarised as follows:

(i) Financial and work freedom: In Singapore, there is a strong emphasis on financial and work freedom. It has a high economic standing within amongst ASEAN nations, and its citizens aspire to a comfortable lifestyle, which includes more than just basic necessities. They seek economic power and access to new services that enhance their quality of life. In the competitive work environment, Singaporeans continuously strive to improve their skills and pursue jobs that give them a sense of spiritual fulfilment, even as they compete with foreign expats.

→ Potential areas to improve the well-being or happiness of citizens: **New services that are economically affordable and activities that improve business skills of individuals.**

(ii) Richness of mind with connected multicultural community: Singapore is a diverse society with multi-ethnic groups, each having its own unique culture, living harmoniously within the community. Singaporeans place a strong emphasis on moral values and compliance with rules in residential communities, with various expectations regarding the usability of shared spaces like aisles and parking lots in towns. Moreover, there is a perspective towards socially vulnerable groups, such as the elderly and economically disadvantaged. The community serves as a safety net, offering support and assistance to those in need.

→ Potential areas to improve the well-being or happiness of citizens: **Community activities that celebrate the culture and customs of each ethnic group; services and activities that support the disciplined operation of the township; fair and transparent frameworks that citizens can accept and feel comfortable towards initiatives.**

(iii) Relationship with family and friends: Singaporeans have strong bonds with their family and friends, often engaging in weekend activities together. Parents, who prioritise education, actively look for cultural events and educational opportunities that offer their children new experiences and different perspectives.

→ Potential areas to improve the well-being or happiness of citizens: **Activities to create facilities and programs where citizens can learn and experience new things with their children.**

(iv) Healthy living with hobby: Singaporeans have a strong desire to challenge themselves both

physically and mentally, seeking experiences and places to rejuvenate their minds and bodies. The city's policy focuses on providing well-maintained parks and sports facilities, even within urban areas, to allow people to connect with nature. Citizens highly appreciate and support such initiatives. Additionally, the education landscape has evolved from solely academic-oriented to offering a range of opportunities, including arts education. There is also a significant demand for cultural and educational events that encourage people explore their hobbies and interests.

→ Potential areas to improve the well-being or happiness of citizens: **Living environment where people that allows people to connect with nature, promoting both mental and physical health; development of parks and recreational facilities where people can experience diverse cultures through events and activities.**

1.4. Citizen Clusters in Singapore – Volume Distribution and Clusters to be Involved in PCSC Promotion

Next, a cluster analysis was conducted to identify the groups of citizens who have specific concerns. This helped to determine the individuals who should be involved in realising a PCSC, promoting proactive citizenship, and stimulating their engagement in various activities.

The clusters of Singapore are listed below in order of volume.

- CL4: Financial freedom to enjoy my life
- CL2: Active citizen for community
- CL3: Conscious parents craving for better life
- CL6: Fundamental Infrastructure
- CL5: Basic needs for healthy life
- CL1: Active citizen for self-development and interest

Active citizens are willing to participate in various activities related to urban development and should be the first to be engaged for PCSC efforts. Additionally, parents want to keep the city more convenient and cleaner with nature. Meanwhile, those who are interested in financial freedom are less interested in urban development.

2. Interview Results: People-Centred Smart City Implementation and Existing Frameworks

The government has taken the lead in establishing guidelines, while local town councils are already implementing PCSCs. Local initiatives involve consulting citizens and obtaining their votes for implementation. As for channels meant for citizens to voice their opinions, a human touch is emphasised, particularly through petitions to ministers and town meetings, with digital channels taking on complementary roles. The challenge for PCSCs is to objectively measure the subjective concept of happiness and implement initiatives to achieve happiness for as many people as possible within a limited budget. See Figure 4.2 on key findings from stakeholder interviews.

Figure 4.2. Singapore – Key Findings on PCSC from Stakeholder Interviews

		Evaluation	Government interview : Mr. Wang and Mr. Jonathan, Tampines Town Council
WILL	1. Interests 2. Aspiration 3. Awareness	◎	Singapore is already implementing people-centric smart city as a concept. Governmental bodies focus on people's feedback through ways such as meetings to get in touch with residents, and it is not just blindly chasing KPIs. In this sense, there is already awareness and aspiration of people-centric smart city. For example, during Black Solider Flies project, town council officials go from door to door to actively seek feedback from residents and implement accordingly. Interests in Japanese people-centric smart city, such as Good Pass, might have some hurdles. This links to difficulty in measuring subjective happiness in order to make everybody happy. Also, Singaporeans see the importance in human touch for faster implementation. Therefore, engaging through digital platform might have limiting factors and limited impact.
SOFT/ Intangible	4. KPI	◎	There are many objective KPIs given by government. However, there is no subjective KPIs about citizens' happiness. It is difficult to measure citizens' subjective happiness in an objective way. Even if professional KPI standard is met, citizens might not be happy. Also, there is issue of resources and limited funds. Therefore, it is difficult to make everybody happy and need to prioritize based on resources & funds. Besides limited resources and funds, another hurdle is that citizens do not understand the exact boundaries of town councils and expect things beyond these boundaries. Even though town councils try to implement initiatives & services within their limited responsibilities, citizens are still left dissatisfied as town councils cannot fully meet residents' misaligned expectations. For example: delivery of professional service (99% of lift rescues should be under 25 minutes).
	5. Platform to collect Opinions 6. Usage of people's voices	◎	**Hybrid of human touch & digitalization** Singapore government has guidelines to engage citizens for initiatives. For example, once a project is initiated, there are consultations with residents and need to get 75% of residents' votes to agree with. Then, the funds will be given for the initiatives. Several ways to engage citizens. Human-touch channels are : 1) meet-the-MP sessions, 2) town council meetings with residents, 3) physical counters at town councils & 4) door-to-door visits. Another way to engage citizens is more digital platforms like writing emails directly on the website and One Service app. While the government is moving towards digitalization, human touch is more important and impactful, and senior citizens will not express their opinions on digital platforms. They would prefer physical meetups
HARD/ Tangible	7. Basic infra	◎	Basic infrastructure has been developed including high penetration of internet among ASEAN 6 countries. As part of smart city, MRTs will be developed within 10-minute walking distance for 80% of households by 2030, and infrastructure-related data are fully utilized

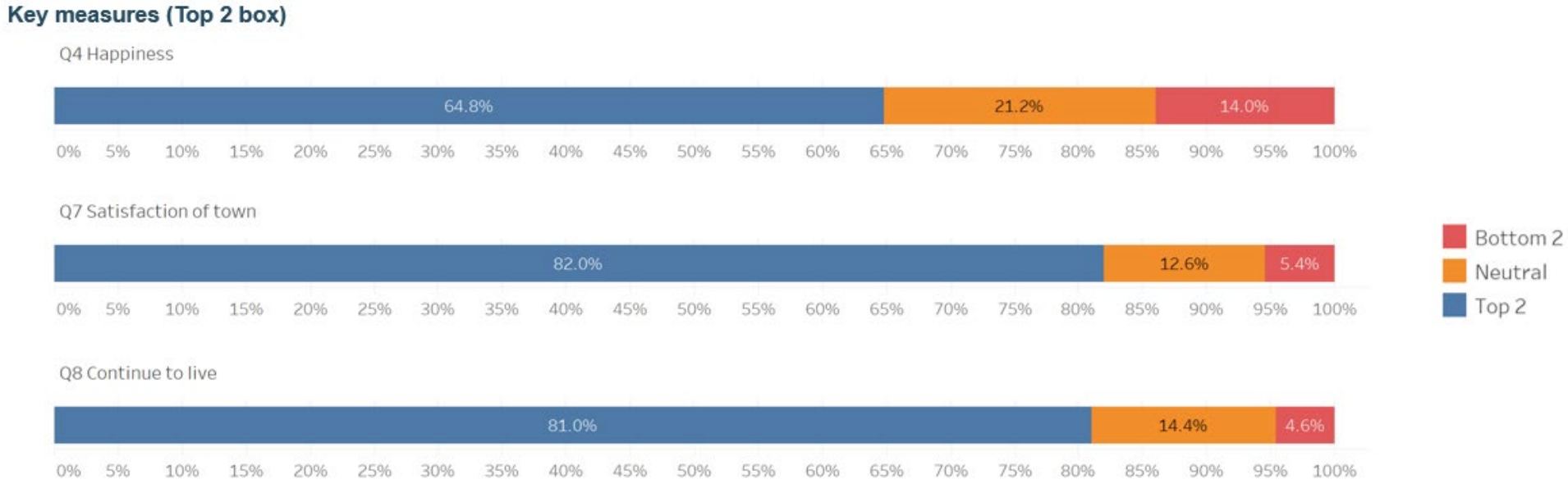
KPI= key performance indicator(s); MP = Member of Parliament

Source: Authors.

3. Well-Being or Happiness of Citizens, Intention to Continue Living in the City

- **Happiness of Citizens**
    - The level of happiness of Singaporeans is high overall (64.8%), but slightly lower compared to that of ASEAN's average (69.9%). See Figure 4.3.
- **Satisfaction with the city and intention to continue living in the city**
    - The level of satisfaction with the city (82.0%) and the intention to continue living in the city (81.0%) were also generally high.
    - Compared to the ASEAN average (Satisfaction of town: 67.7%; Continue to live: 74.2%), Singapore key measures are overall higher.

Figure 4.3. Singapore – Happiness of Citizens, Satisfaction, and Intention to Continue Living in the City



Source: Authors.

4. Singapore Citizens' Awareness of Challenges Concerning City and Daily Lives

In Singapore, the gaps and challenges are particularly large in the following areas, as shown in Figure 4.4:

(i) Financial freedom – includes being financially well-off and financial freedom to buy what one wants.

(ii) Health - includes mental and physical health.

(iii) Work-life balance.

(iv) Having free time to do what one wants.

Singapore citizens are generally satisfied with a variety of restaurants, social infrastructures such as education (good childcare support), town safety (walkable city), and their communities (having good friends on social media and being recognised by others as successful).

Referring to Figure 4.5, important areas that are relatively high in satisfaction levels are as follows:

(i) Living environment (clean drinkable water, clean air and clean beautiful city)

(ii) Safety (city and food)

(iii) Good relationship with family

(iv) Good public transport

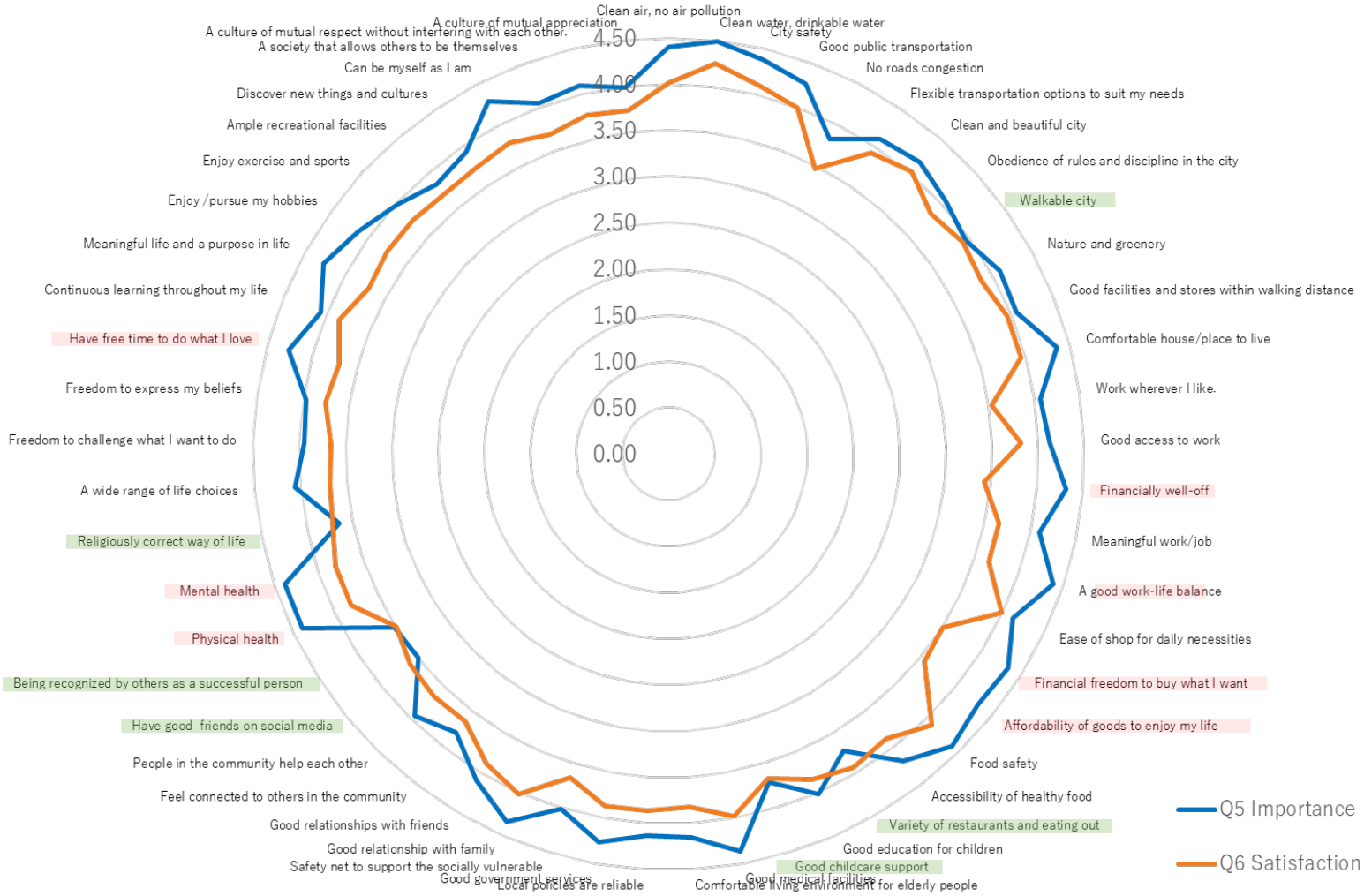
Conversely, important areas that are relatively low in satisfaction are

(i) Financial freedom and consumption,

(ii) Work life balance, and

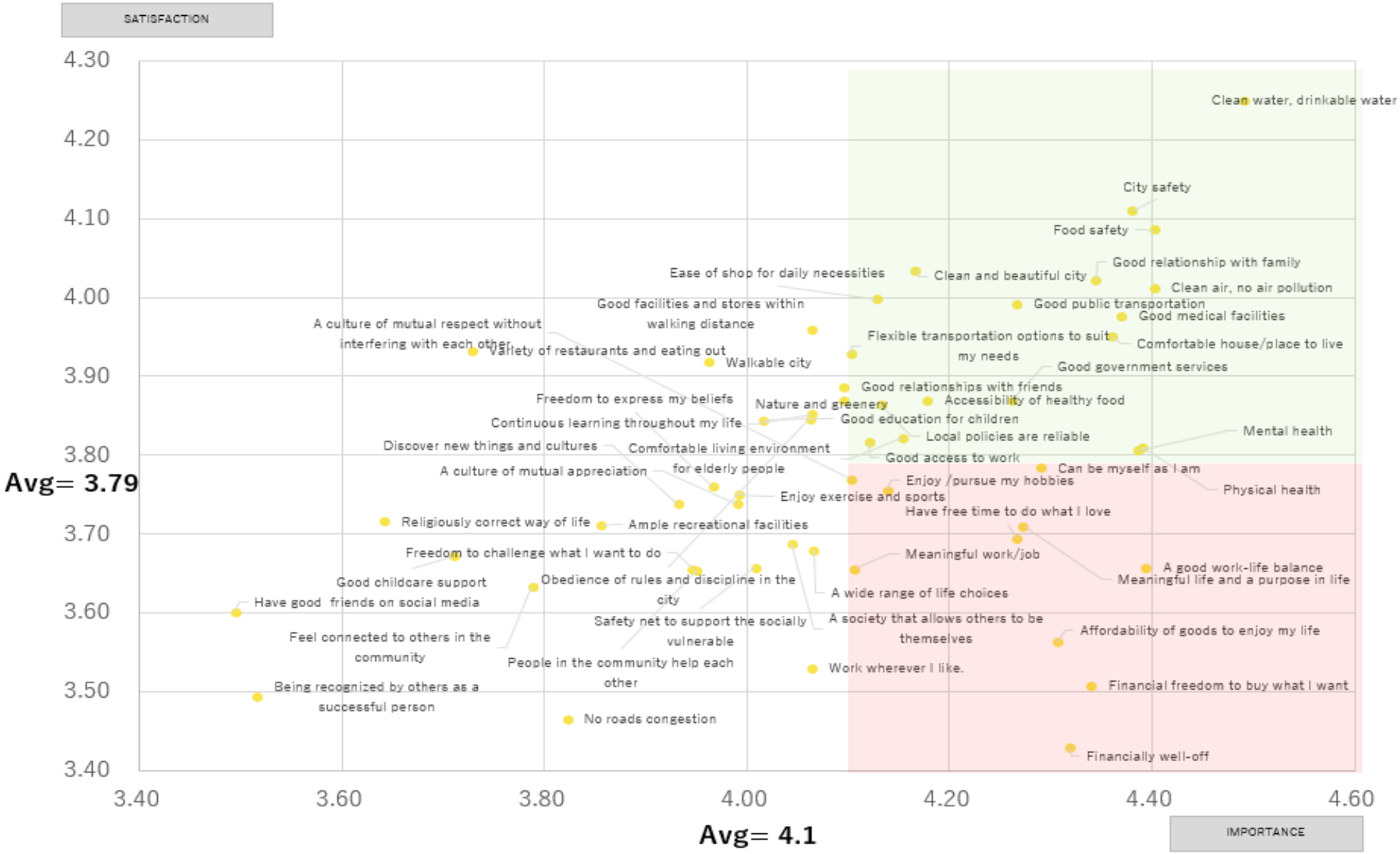
(iii) Having free time to do what one loves.

Figure 4.4. Singapore – Gap Analysis of Areas (Radar Chart)



Source: Authors.

Figure 4.5. Singapore – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)

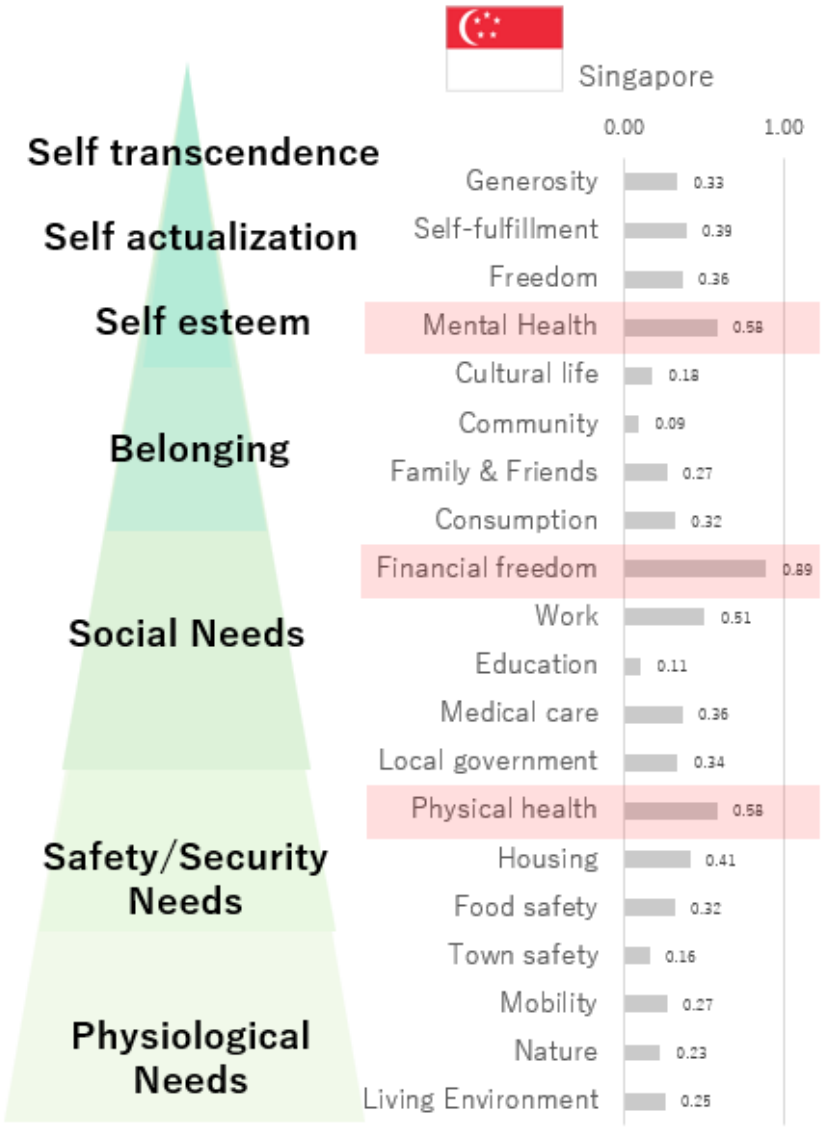


Source: Authors.

5. Current Level of Citizen Well-Being or Happiness, City Satisfaction, and Area of Challenges

As shown in Figure 4.6, the gap between importance and satisfaction of financial freedom tends to be larger in Singapore, which indicates that citizens are seeking economic affordability to enjoy a better life.

Figure 4.6. Singapore – Gap Analysis of Areas (Maslow's Framework)

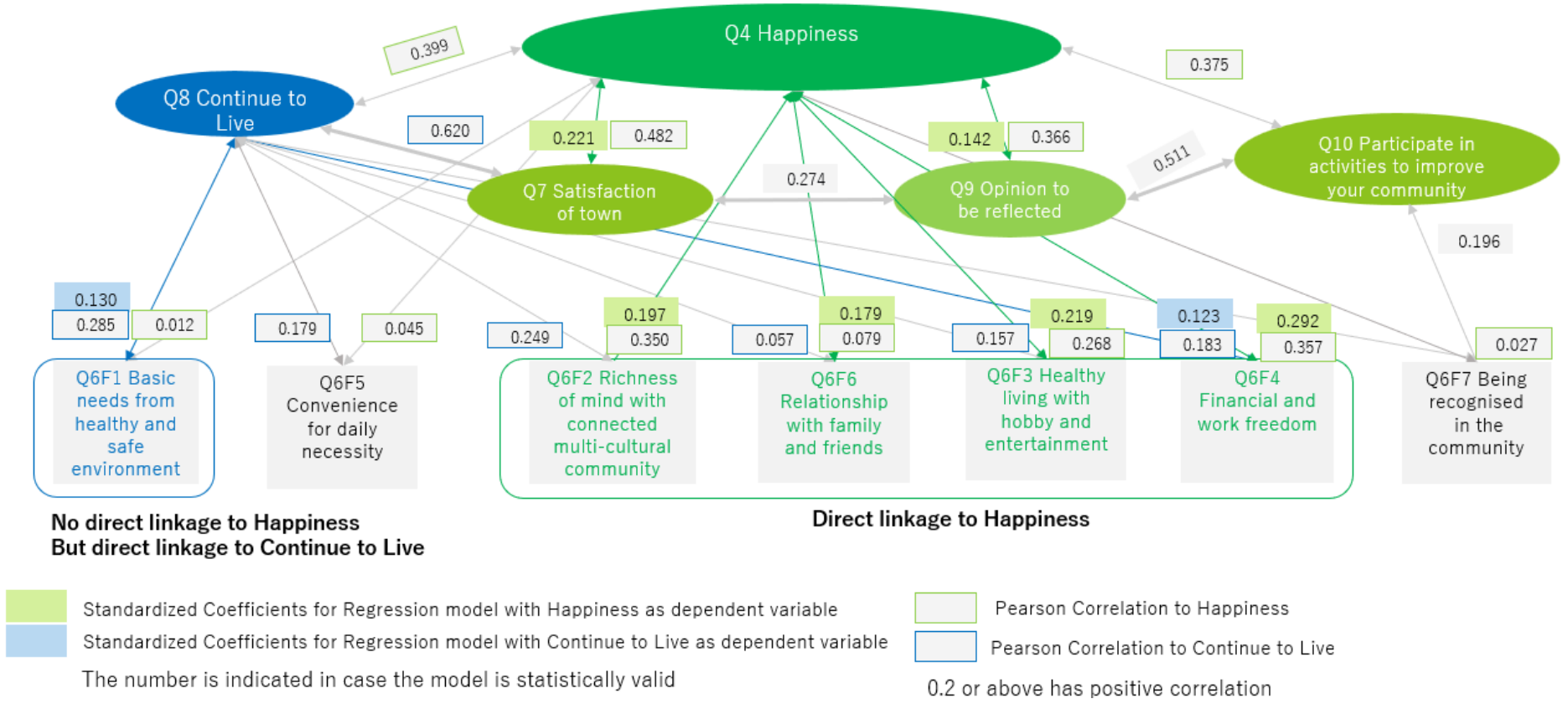


Source: Authors.

6. Factors for Citizen's Well-Being or Happiness

Financial and work freedom is very important to Singaporean as it influences both their happiness and their willingness to continue living in the city. In addition to Q6F1 ('Basic needs from healthy and safe environment'), Q6F4 ('Financial and work freedom') also contributes to Singaporeans' desire to continue living in the city (Figure 4.7).

Figure 4.7. Singapore – Path Model to Identify Factors for Citizen's Well-Being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities

- **Activities to Participate**

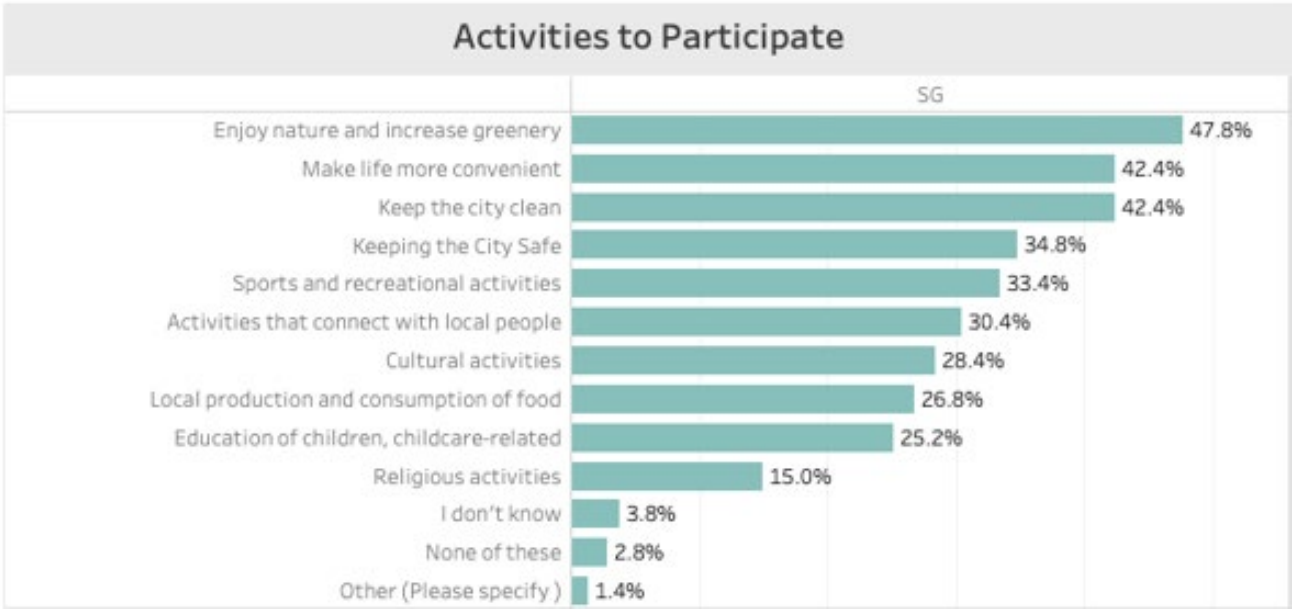
Citizens show the most willingness to participate in the following activities, as also shown in Figure 4.8:

(i) Enjoy nature and increase greenery (47.8%)

(ii) Make life more convenient (42.4%)

(iii) Keep the city clean (42.4%)'.

Figure 4.8. Singapore – Activities to Participate to Improve Community



Source: Authors.

- **Important Areas for Digitalisation**

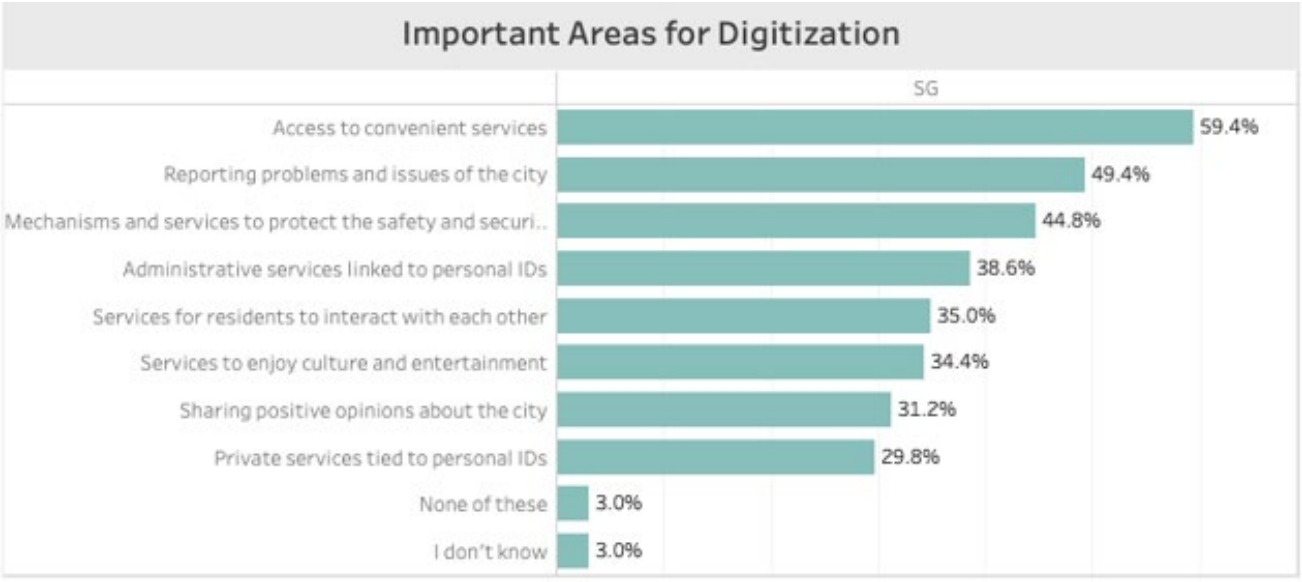
Figure 4.9 shows important areas for digitalisation, with the top three most important for citizens listed below.

(i) Access to convenient services (59.4%)

(ii) Reporting problems and issues in the city (49.4%)

(iii) Services to keep the city safe and secure (44.8%)

Figure 4.9. Singapore – Important Areas for Digitalisation



Source: Authors.

- **<u>Hurdles to Citizen Participation</u>**

While there is a high willingness to reflect citizens' opinions, the top three obstacles that citizens see as reasons for the current lack of citizen participation are as follows (Figure 4.10):

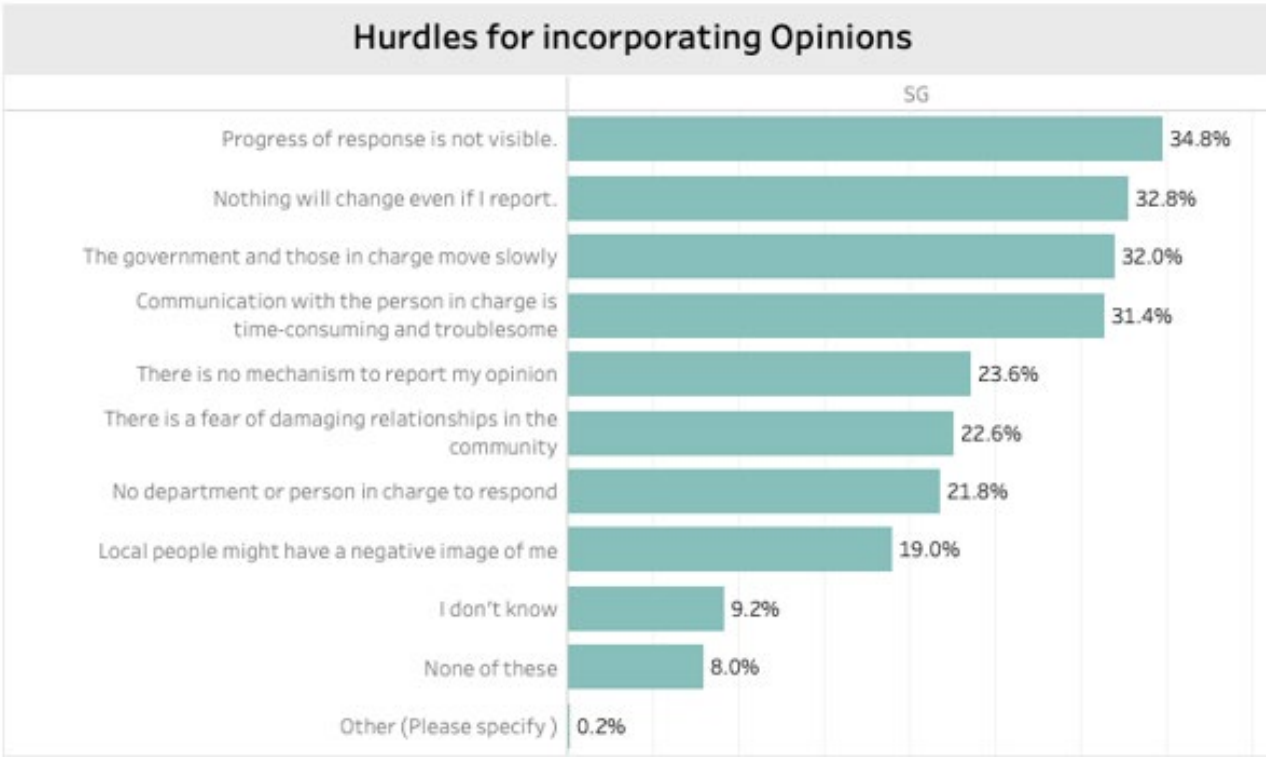
(i) Progress of response is not visible (34.8%)

(ii) Nothing will change even if I report (32.8%)

(iii) The government and those in charge move slowly (32.0%)

In addition to establishing an administrative framework and structure, citizens wish to see a clear visualisation of the response to their feedback. They value a concise and user-friendly framework that facilitates expressing their opinions more easily.

Figure 4.10. Singapore – Hurdles for Incorporating Opinions



Source: Authors.

- **<u>Willingness to use town services</u>**

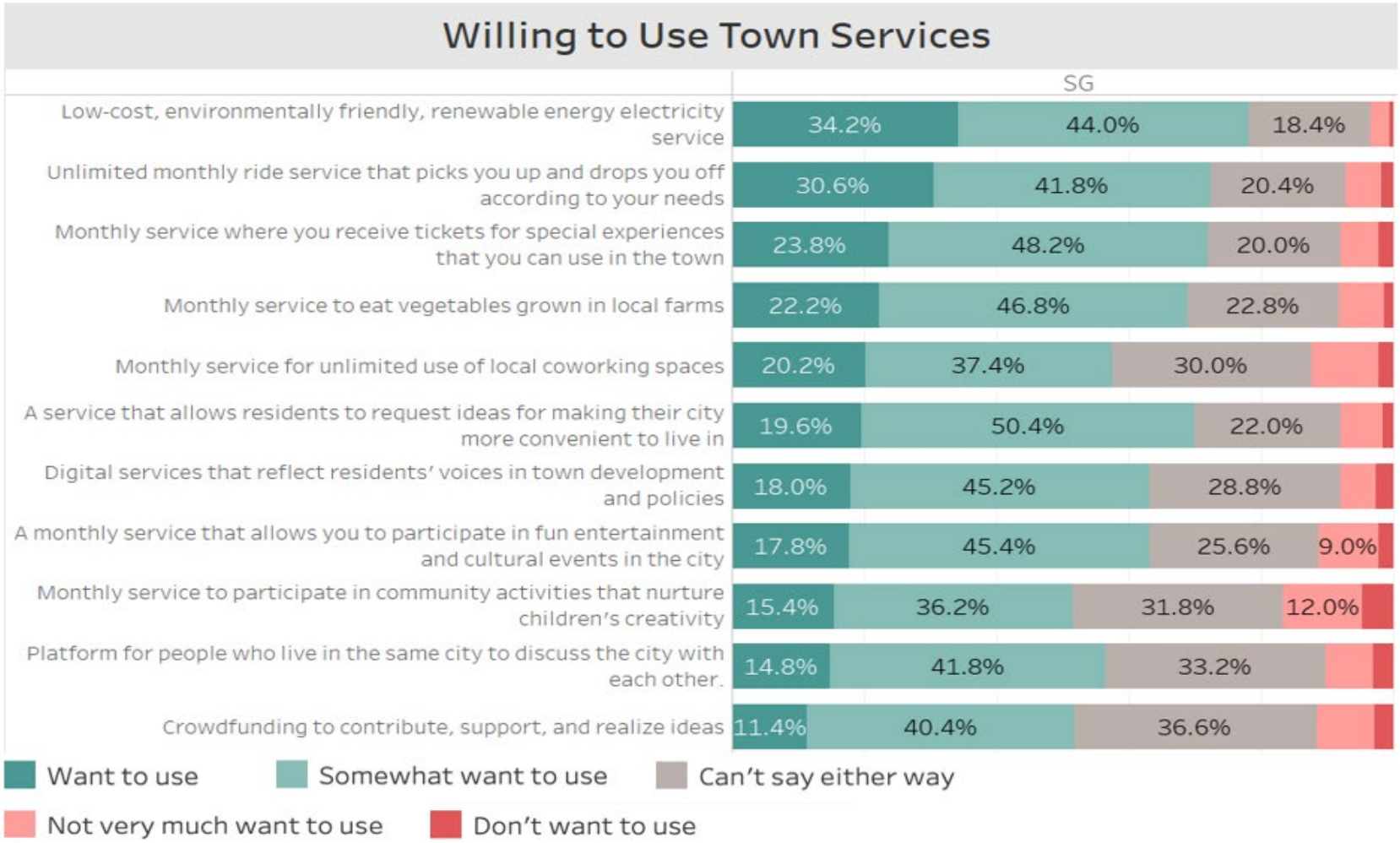
Singaporeans showed willingness to use specific areas of service (Figure 4.11), with the top three as follows:

(i) Low-cost, environmentally friendly, renewable energy electricity service (78.2%)

(ii) Unlimited monthly ride services that pick up and drop you off according to your needs (72.4%)

(iii) Monthly services where you receive tickets for special experiences (72.0%)

Figure 4.11. Singapore – Willingness to Use Town Services

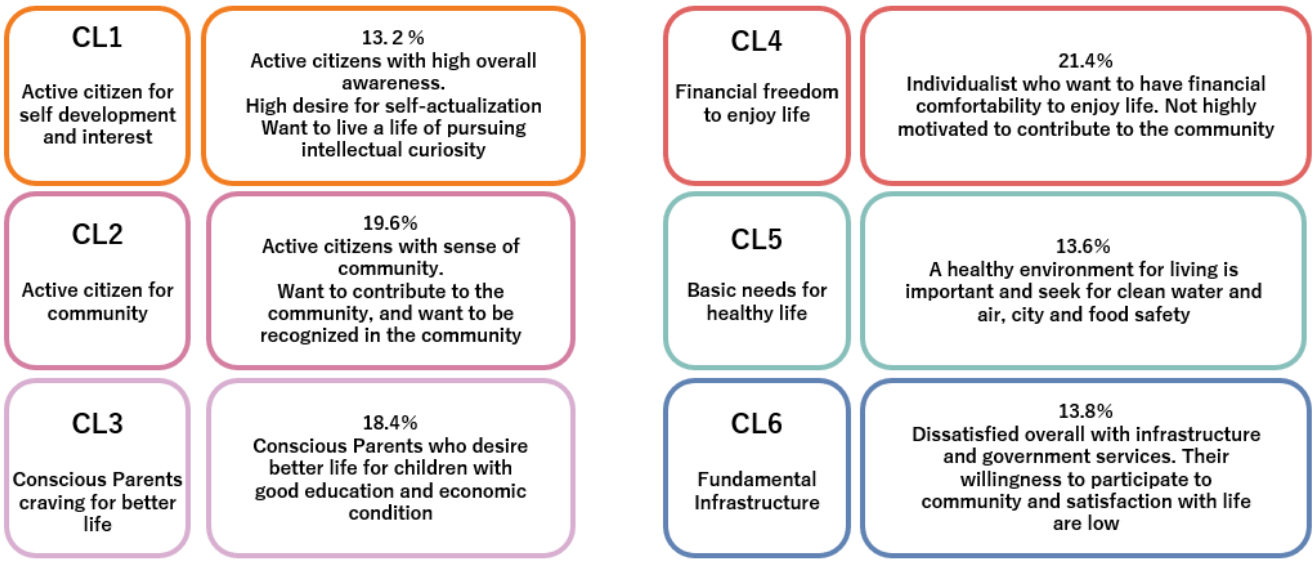


Source: Authors.

8. Citizen Cluster for PCSC

In Singapore, although the biggest cluster at 21.4% is CL4 ('financial freedom to enjoy life but are not highly motivated to participate in community activities'), active citizens (CL1 and CL2 together) account for 32.8%. See Figure 4.12.

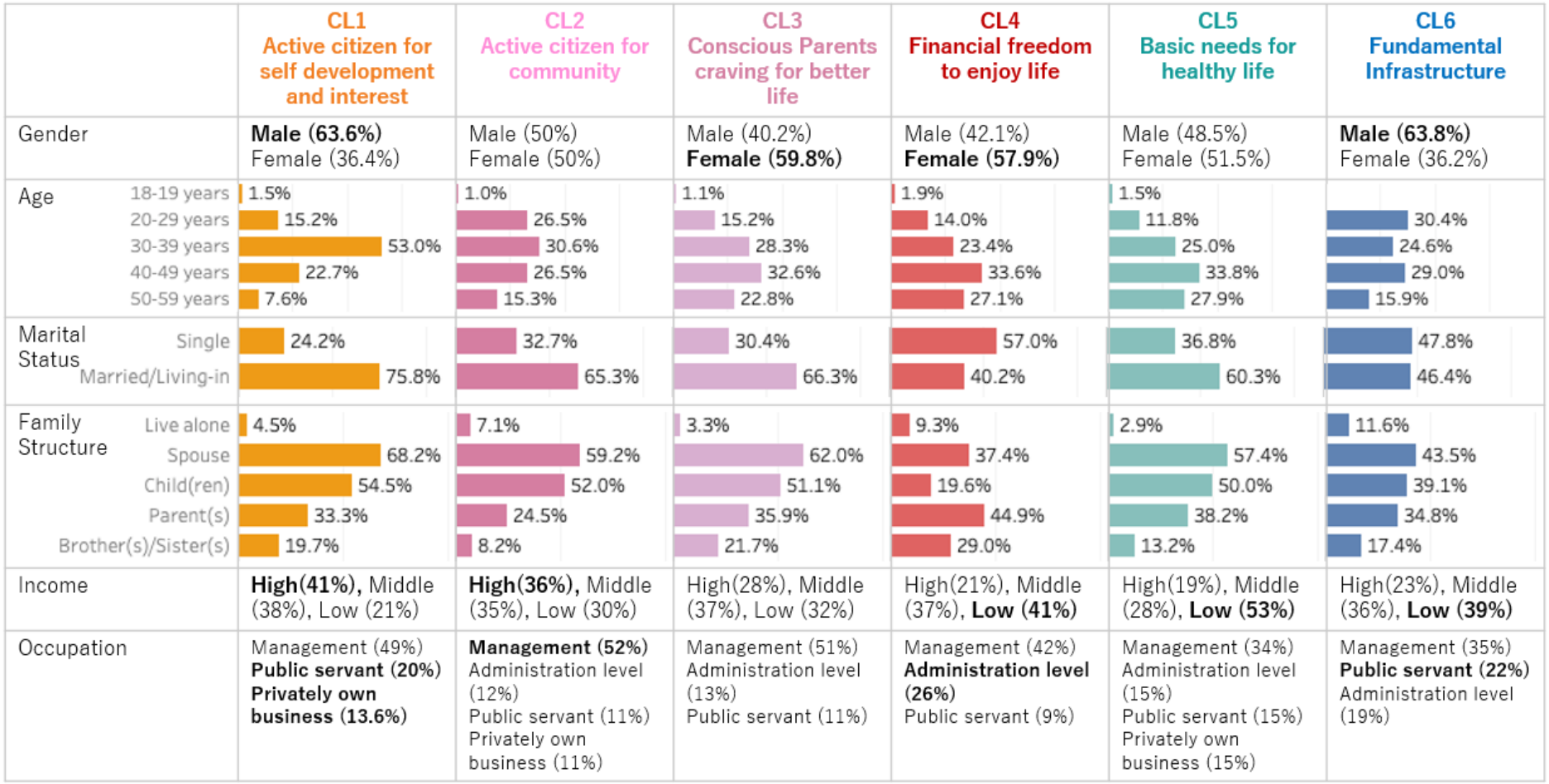
Figure 4.12. Singapore – Citizen cluster for People-Centred Smart Cities



Source: Authors.

Figure 4.13 shows 6 clusters with different demographic profiles. Overall, CL1 and CL2 are very active and open to participate in a variety of activities (Figure 4.14), ranging from living environment to personal life: sports and recreational activities (52%, 41% respectively), local production and consumption of Food (44%, 29% respectively), cultural activities (41%, 40% respectively), activities that connect with local people (38%, 39% respectively), which can be seen from Figure 4.16. Referring to Figure 4.15, those from CL1 and CL2 show high average happiness scores for activities involving nature. Also from Figure 4.16, CL3 and CL5 have their main focuses on making life convenient, nature and clean city. CL4 and CL6 are least motivated to join to improve community (Figure 4.14).

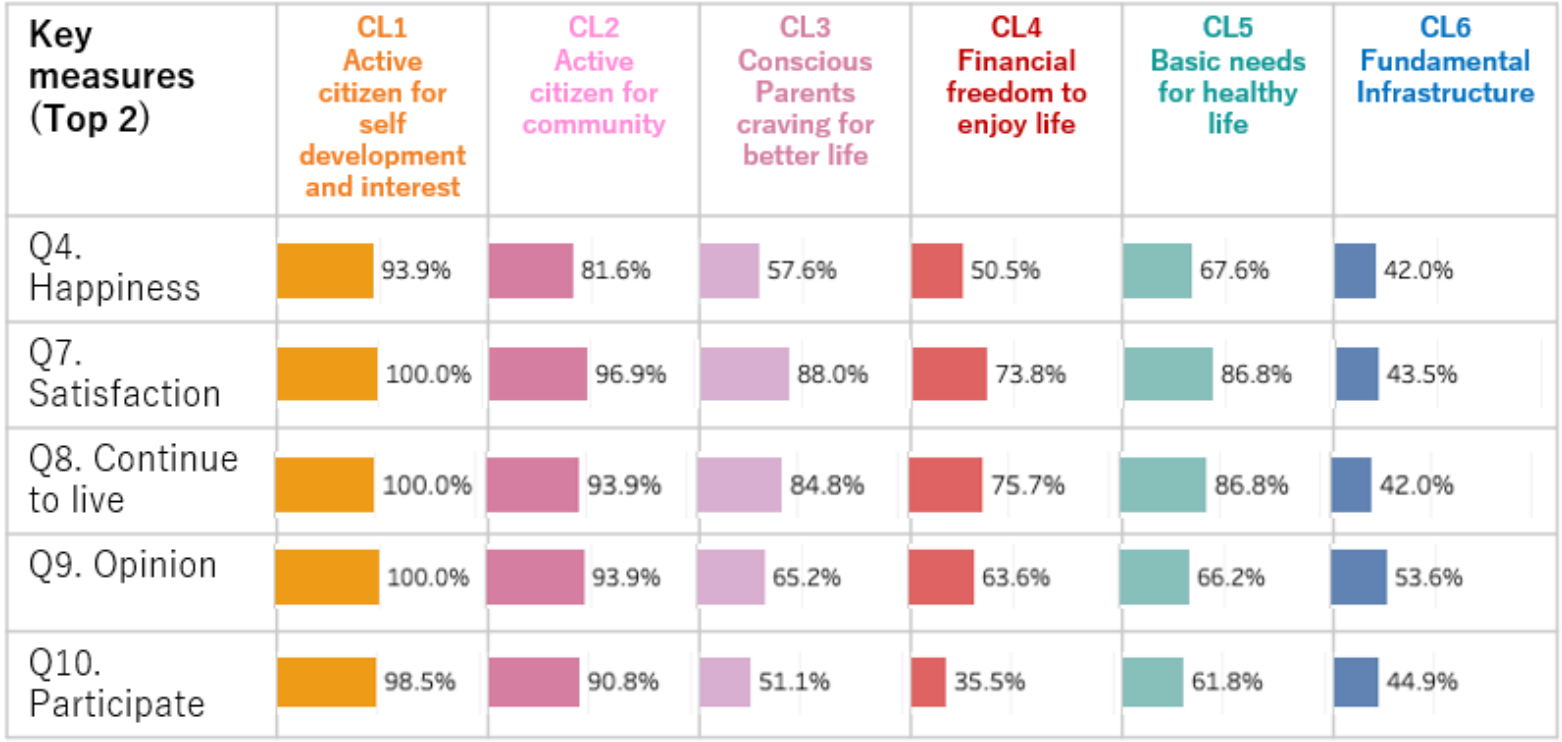
Figure 4.13. Singapore – Citizen Cluster Demographics



Source: Authors.

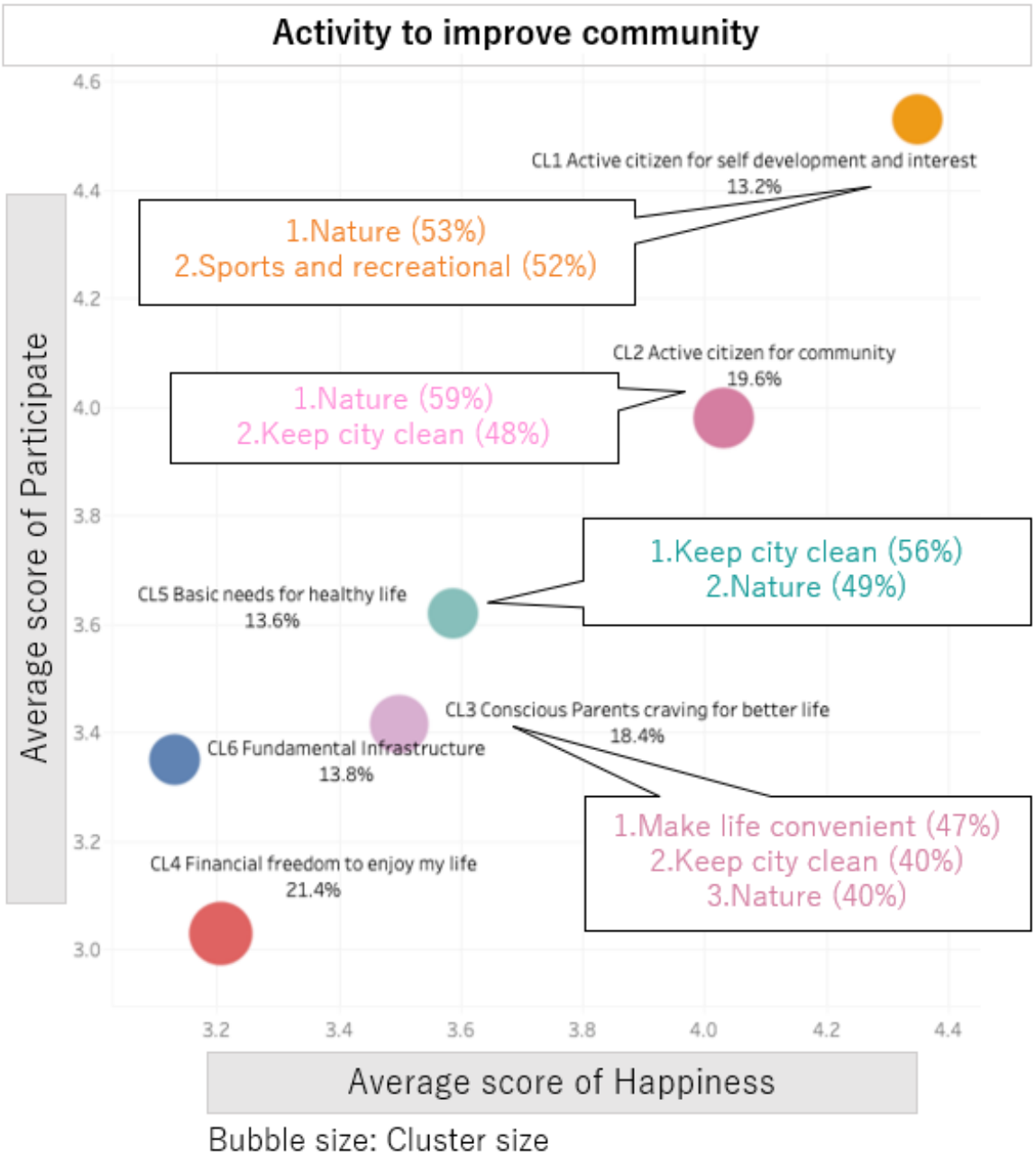
Figure 4.14. Singapore – Citizen Cluster Key Measures

(%)



Source: Authors.

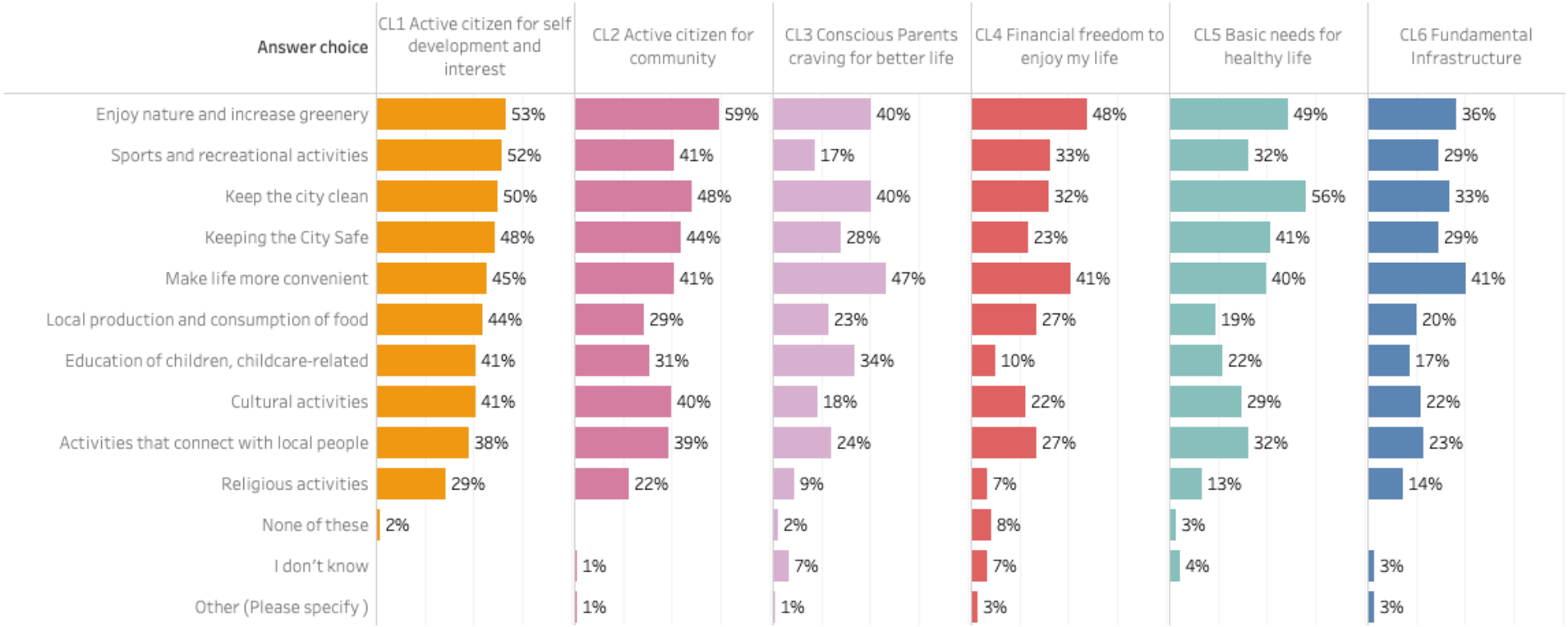
Figure 4.15. Singapore – Mapping of Citizen Cluster Top Activities Participation to Improve Community



Source: Authors.

Figure 4.16. Singapore – Citizen Cluster Activities to Improve Community

(%)

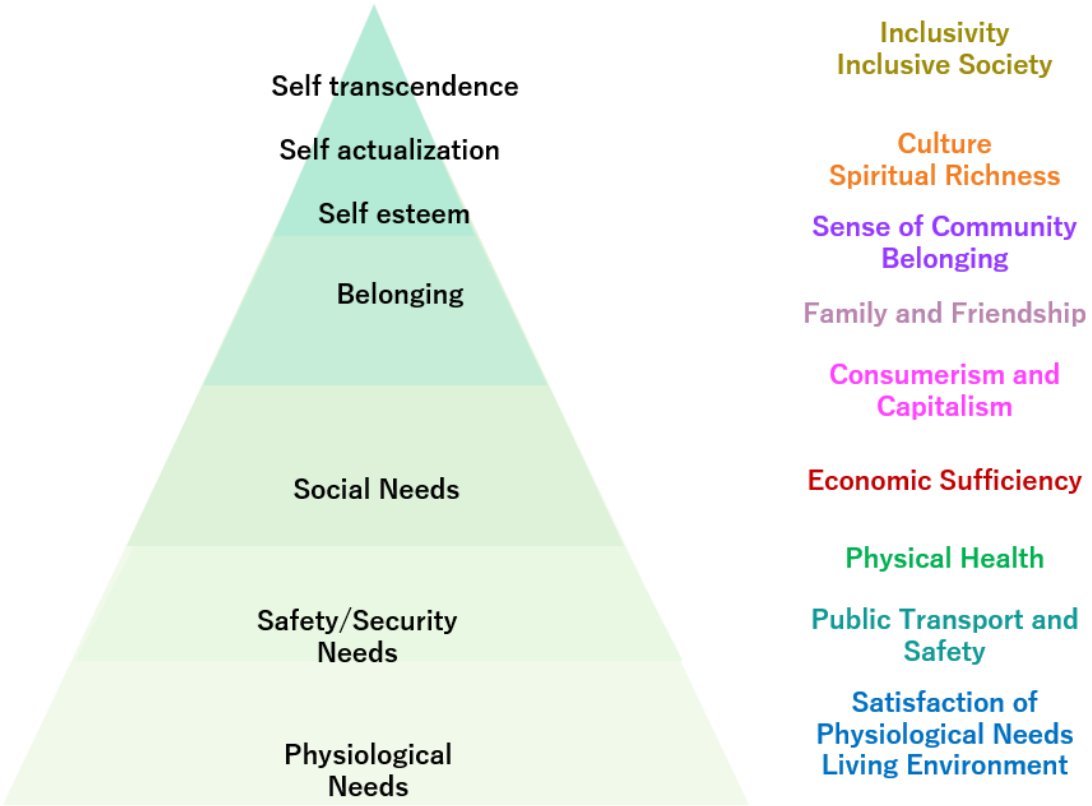


Source: Authors.

9. Citizen Testimonials About their Cities

Figure 4.17 below is a summary of Singaporean citizens' opinions from diginography, reflected in Maslow's Hierarchy of Needs framework.

Figure 4.17. Singapore – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	Singaporeans care about those who are socially vulnerable (e.g. the elderly and economically disadvantaged). They seek and actively contribute to make a society that is tolerant and cooperative towards diverse cultures and races. They seek warm hospitality in service.
Culture **Spiritual Richness**	Singapore's diverse cultures are reflected and celebrated by its diverse ethnic groups with their own unique cultures. Singapore is the most advanced country in ASEAN and is future oriented, with Singaporeans being excited about technology。
Sense of Community **Belonging**	Regular community events are held in local townhomes and community hubs, with positive comments on providing opportunities for citizens to bond with each other and deepen their

	attachment to the community
Family and Friendship	Singaporeans enjoy activities with family and friends on weekends. Parents are satisfied to have so many places to take their children to experience new things.
Consumerism and Capitalism	Many can afford to spend money on things other than daily necessities and pay attention to the range of shopping options available.
Economic Sufficiency	Singaporeans are highly economically minded and are price conscious about daily necessities such as groceries and general goods. They are also concerned about the services they can enjoy depending on the district they live in and the availability of neighbourhood facilities necessary for daily life. (e.g. Tampines citizens enjoy many services in their neighbourhood)
Physical Health	Government administration such as COVID vaccination immunisation is well managed. Singaporeans exercise in well-maintained parks and sports facilities. Mental health is also a concern, and many people take walks and do other activities to relax and calm their minds.
Public Transport and Safety	Many of the public safety implications are related to morals and specific usability. There are worries about speeding cyclists who may endanger others and concerns about availability and usability of pathways and parking spaces. There are also concerns about public cleanliness, avoiding congestion, and crowding.
Satisfaction of Physiological Needs **Living Environment**	No environmental challenges and no notable opinions. If anything, the only concerns are hydration, heat protection, and the availability of public restrooms.

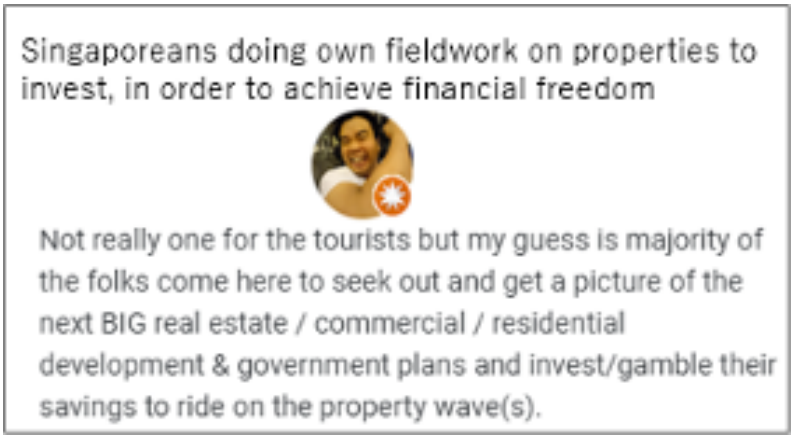
Source: Authors.

Living in competitive and materialistic Singapore, it is no surprise that the greatest happiness factor is financial freedom. Singaporeans also derive happiness from staying healthy, finding meaning in life, and being their true individual selves. Examples of citizens' testimonials are pulled from Google Map Reviews and analysed with Tableau.

- **<u>Happiness Factor #1: Financial and work freedom</u>**
    - Financially well-off
    - Financial freedom to buy what I want

In money-society Singapore, citizens actively seek financial freedom, believing it to be a key factor in their pursuit of happiness (See Figure 4.18).

Figure 4.18. Singapore: Citizen's Voice for Happiness Factor #1

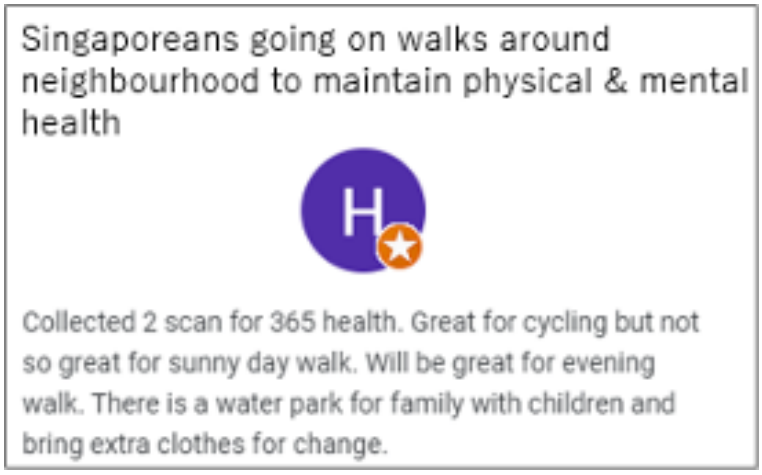


Source: Authors.

- **<u>Happiness Factor #2: Healthy living with hobby & entertainment</u>**
    - Mental health
    - Physical health

To Singaporeans, good mental and physical health lead to happiness, through amenities around Housing Development Board (HDB) estates (See Figure 4.19).

Figure 4.19. Singapore – Citizen's Voice for Happiness Factor #2



Source: Authors.

- **<u>Happiness Factor #3: Richness of mind with connected multicultural community</u>**
    - Meaningful life and a purpose in life
    - Can be myself as I am

Having goals in life and being able to be one's true self is also happiness to Singaporeans (See Figure 4.20).

Figure 4.20. Singapore – Citizen's Voice for Happiness Factor #3

Source: Authors.

Chapter 5

Thailand

1. Summary/Conclusion

1.1. Smart City/People-Centred Smart Cities promotion framework at central and local government level

In 2017, the National Smart City Committee was established with the Prime Minister as its chairperson. The Ministry of Transportation, the Ministry of Energy, and the Ministry of Digital Economy and Society (MEDS) jointly serve as secretariats. To promote the development of smart cities, the Software Industry Promotion Agency (SIPA) under MEDS was reorganised into the Digital Economy Promotion Agency (DEPA). The Smart City Plan of the country selected Bangkok, Phuket, and Chonburi – the three ASEAN Smart Cities Network (ASCN) target cities – and the four provinces of Khon Kaen, Chiang Mai, Rayong, and Chachoengsao as smart city emerging regions. In addition, the Eastern Economic Corridor (EEC), a focal point of the Government of Thailand, led by the EEC Secretariat under the Board of Investment of Thailand, has designated various investment promotion zones such as the Innovation Zone (EECi), Digital Park (EECd), Aviation City (EECa), Medical Hub (EECmd), amongst other industrial areas, to promote smart city implementation.

Thailand has a comprehensive smart city research and promotion framework, as revealed in an interview with DEPA. Key performance indicators (KPIs) are quantitatively measured based on seven domains:

(i) Economy

(ii) People

(iii) Living/Quality of Life

(iv) Environment

(v) Energy

(vi) Government

(vii) Mobility

The popular messaging app called LINE is used to gather opinions, and real workshops with citizens are held to activate PCSC initiatives.

In Bangkok, the governor's emphasis on transparency, accountability, and participation has led to the development of the Traffy Fondue application, which supports citizens' lives. Through this app, citizens can directly report issues and complaints to the governor. The governor then directs the

relevant departments/districts to find solutions and address problems, fostering citizen participation in decision-making.

1.2. Current People-Centred Smart Cities promotion bodies and areas that need to be initiated for future promotion and expansion

Smart city development in Thailand is divided into two types. The first type is led by the central government and local conglomerates, focusing on energy efficiency and reducing environmental impact through projects like One Bangkok and the Bang Sue Central Station area development, which utilise district cooling and renewable energy. The send type, under the leadership of the Digital Economy Promotion Agency (DEPA), involves collaboration between local governments and businesses to digitise and utilise the resulting digital data as big data. This data-driven approach aims to enhance city management and services and promote tourism and other industries.

For the current survey, Pattern (2) is the target as it aligns more closely with PCSC principles. Interviews with DEPA and stakeholders in Bangkok's initiatives were conducted as part of the study.

In Bangkok, a framework has been established to promote a PCSC and engage companies in the initiative. Workshops are held to involve communities and citizens, and feedback is collected through platforms like LINE and Traffy Fondue for improvements to public infrastructure and services. While the number of Thai citizens voicing their opinions is higher than in other countries, it mostly remains at the reporting level, leading to categorisation under Pattern 1 (Figure 5.1).

Figure 5.1. Thailand – People-Centred Smart Cities Pattern 1

KPI = key performance indicator; PCSC = people-centric smart city

Source – Authors.

In the future, for a PCSC to be effective, it should go beyond merely reporting infrastructure problems. Citizens should be able to raise their opinions on a broader range of challenges and actively engage in finding solutions. It is also important to raise awareness of what a PCSC entails and create successful cases, even on a smaller scale. To this end, it would be beneficial to flexibly

use the budget of the current central government promotion bodies, such as DEPA, for local government, business, and citizen-led initiatives. In addition, although Smart People is part of the KPI set as part of the seven domains, it currently only includes digital literacy as a measure, lacking specific indicators for well-being or happiness. Therefore, conducting a survey to develop a more precise measure and establish a framework for continuous and regular observation of well-being or happiness would be highly effective.

1.3. Areas to tackle for promoting People-Centred Smart Cities and improving well-being or happiness

The following four factors directly contribute to the improvement of well-being or happiness:

(i) Financial and work freedom

(ii) Richness of mind with connected multicultural community

(iii) Relationship with family & Friends

(iv) Living with hobby

While all four factors contribute to improvement of well-being or happiness, it is essential to consider the values and characteristics of Bangkok citizens derived from the Diginography data. Based on this, specific areas that should be prioritised in PCSC implementation and promotion, and that can trigger proactive activities by citizens, are identified as follows:

(i) Financial and work freedom: The people of Bangkok openly showcase their economic affluence, making shopping centres in central Bangkok their preferred places for daily enjoyment and high-end brand shopping on a global level. In integrated areas of Central Bangkok, living residences like condominiums are downsized, and some living functions (working space, kitchen space, etc.) are shifted to the common areas/facilities.

→ (Potential areas) **Shopping space for daily entertainment, convenient coworking space, etc.**

(ii) Richness of mind with connected multicultural community: Partly due to the influence of Buddhism, Thai people generally tend to regard tolerance and inclusion of others as virtues. On the other hand, Thailand's focus on tourism, especially in central Bangkok, has attracted diverse foreign cultures and contributed to the rise of new creative facilities, art spaces, and events. However, despite the diverse cultural influences, the people of Bangkok currently feel that there is a lack of activities and places where they can fully enjoy cultural life. Their voices have underscored a high demand for more cultural facilities and opportunities.

→ (Potential areas) **Cultural facilities and events that offer diverse cultural and artistic experiences and activities/places that showcase the Thai culture to attract tourists.**

(iii) Relationship with family & Friends: Because of the importance placed on the circle of family and friends, a variety of events are held, including family-friendly events, trendy spots for

young people to go with their friends, and events that are popular with the locals.

→ (Potential areas) **Places and programs to enjoy with family and friends, trendy activities to enjoy with friends, etc.**

(iv) Healthy living with hobby: Bangkok's 'Walkable City' policy has led to the development of roads that are safe to walk on and infrastructure that addresses air pollution. From the citizens' perspectives, there is a growing need for facilities and places to exercise in the city centre to maintain good health as urban lifestyle advances.

→ (Potential areas) **Facilities, services, activities, etc. that promote physical and mental health**

1.4. Citizen clusters in Thailand – volume distribution and clusters to be involved in People-Centred Smart Cities promotion

Next, a cluster analysis was conducted based on matter of concerns to identify the groups of citizens that should be involved to realise PCSC and subsequently create proactive citizens and trigger their activities.

The clusters of Thailand are listed below in order of volume:

- CL2: Active citizen for community
- CL6: Fundamental Infrastructure
- CL5: Basic needs for healthy life
- CL3: Conscious parents craving for better life
- CL1: Active citizen for self-development and interest
- CL4: Financial freedom to enjoy my life

Thai citizens that should be involved in PCSC efforts are active citizens who are considering participating in urban development. They are open to various activities such as sports, cultural and other activities connecting local people.

2. Interview Results: People-Centred Smart Cities implementation and existing frameworks

Qualitative insights from interview are compiled in Figure 5.2 below. Smart City research and promotion frameworks are well established. The Digital Economy Promotion Agency (DEPA) is taking the lead in launching various initiatives under the 'Smart City Thailand' campaign to realise a PCSC. Key performance indicators (KPIs) are quantitatively measured across the seven domains, and citizens' opinions are collected through channels like LINE. Government policy emphasising transparency, accountability, and 'participation led to the development of the Traffy Fondue application, which supports citizens' lives. Through Traffy Fondue, citizens can directly report issues and complaints directly to the government. The government will then instruct each relevant department/district on how to resolve them.

Figure 5.2. Thailand – Key findings on People-Centred Smart Cities from Stakeholder Interviews

		Evaluation	Academia interview : DEPA Mr.Non /Chulalongkorn Univ. Veerasak
WILL	1. Interests 2. Aspiration 3. Awareness	◎	**As part of the Smart City Thailand, DEPA has been collecting people's voices and reflecting them onto measures.** DEPA held citizen-centric workshops, use tools such as design thinking to gather demand/their pain point, and trying to get them to come up with capital resource that are unique to them, once we are able to combine resources of each cities has with the national plan, ingredients to source out what is vision of the city.
SOFT/ Intangible	4. KPI	○	1. **DEPA measures quantitative scores for the 7 domains for "Smart City Thailand"** (i) Smart Economy, (ii) Smart Living, (iii) Smart Environment, (iv) Smart People, (v) Smart Governance, (vi) Smart Mobility, (vii) Smart Energy 2. **DEPA measures happiness, satisfaction via unfocused group interviews.** For the 7 domain, most of it quantitative, income to 250k, smart living has to be qualitative, liveability index, domain like ability to access to hospital, cramp rate, air quality, pm2.5 density, measurement of people perception of liveability. We look at this together with quantitative to form liveable index.
	5. Platform to collect Opinions 6. Usage of people's voices	○	1. **Software, similar to an application for city of Vienna in Austria - Wienbot**, it has been quite successful, making people to be the eyes and voice of the city. People can type their questions and problems and post pictures, and their problems will be solved based on demands and needs of the people from people themselves. 2. **LINE official platform, built in to connect with citizen**. After a while you can get this heatmap to understand what people needed, citizen can determine what is biggest concern of citizen, big data of random comments of citizen. All problems are solved in a timely manner through this data. Once Data is compiled, the city can manage the fleet to fix problem with the demand based on intensity of the heat map . 3. **Traffy fondue** is single function application, can do one thing very well, receive complaints from citizens,
HARD/ Tangible	7. Basic infra	○	Basic infrastructure has been developed including high penetration of internet among ASEAN 6 countries, however stressless mobility and walkable cities are not yet to realize. Also, air pollution, Solid waste, quality of water are still big issues

KPI = key performance indicator(s); DEPA = Digital Economy Promotion Agency

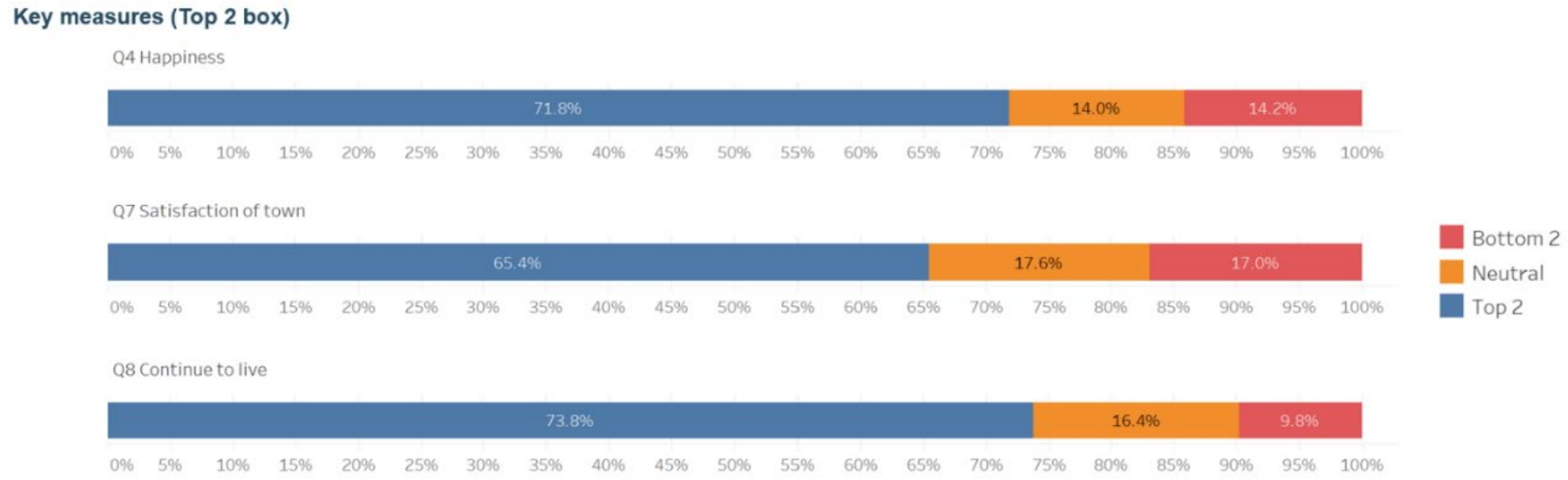
Source: Authors.

3. Well-being or Happiness of Citizen, Intention to Continue Living in the City

- **Happiness of Citizens**
  - The level of happiness of Thailand citizens is high (71.8%), exceeding the average of the 6 ASEAN cities (69.9%).
- **Satisfaction with the city and intention to continue living in the city**
  - The level of satisfaction with the city (65.4%) and the intention to continue living in the city (73.8%) are somewhat high.
  - However, compared to ASEAN average (Satisfaction of town: 67.7%; Continue to live: 74.2%), Thailand's satisfaction with the city and intention to continue living in the city is slightly lower (Satisfaction of town: 65.4%; Continue to live: 73.8%). See Figure 5.3.

Figure 5.3. Thailand – Happiness of Citizens, Satisfaction and Intention to Continue Living in the City

(%)



Source: Authors.

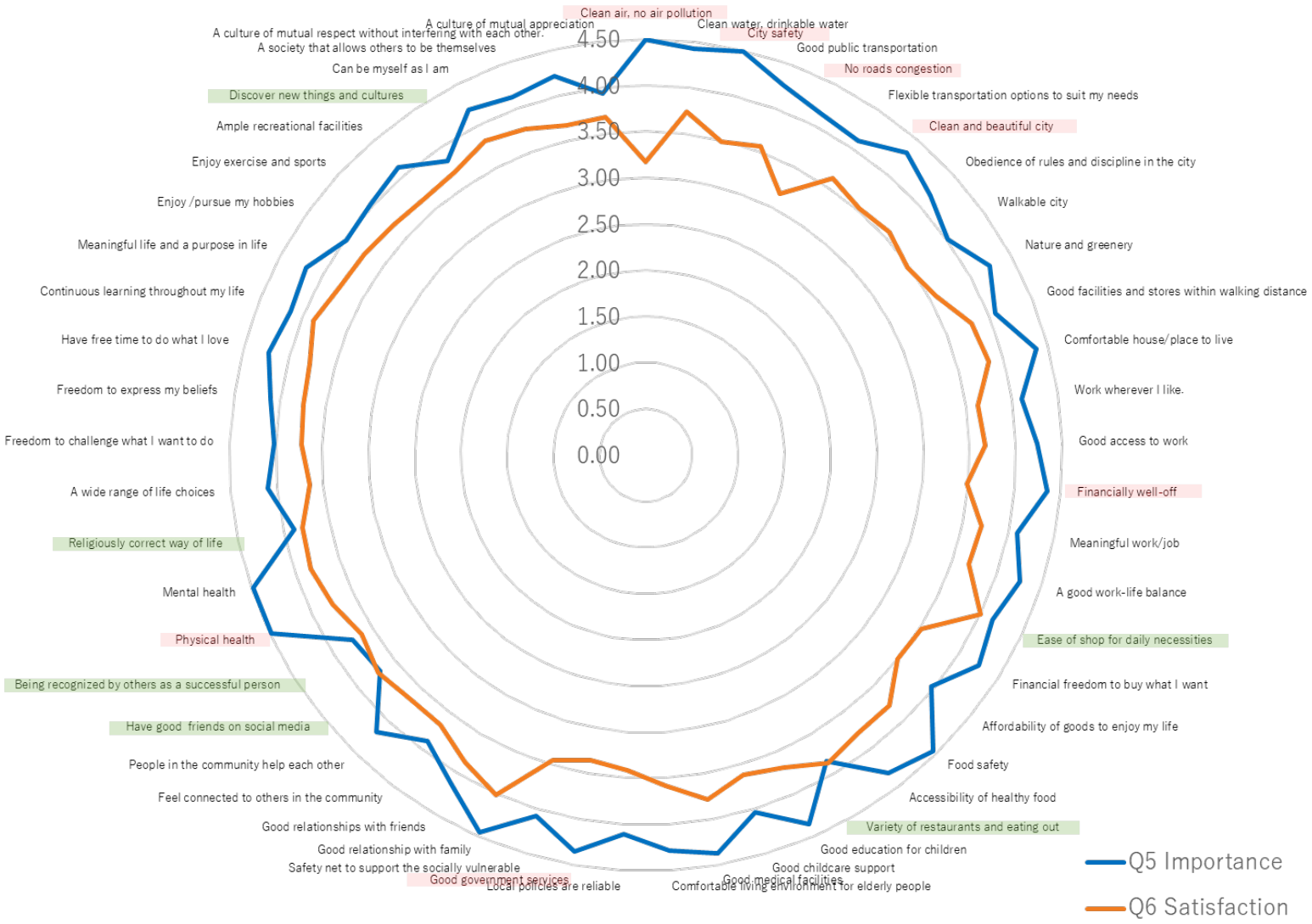
4. Thailand Citizens' Awareness of Challenges Concerning City and Daily Lives

In Thailand, the gaps and challenges are particularly large in the areas of (1) living environment, (2) good government services, (3) city safety, (4) no road congestion, (5) economically well-off, and (6) physical health, as seen in Figure 5.4 below.

'Living environment' includes clean air and clean beautiful city. Meanwhile, Thailand citizens are generally satisfied with a variety of restaurants, good friends on social media, religiously correct way of life, being recognised by others as successful, ease of shop for daily necessities, and discovering new things and culture.

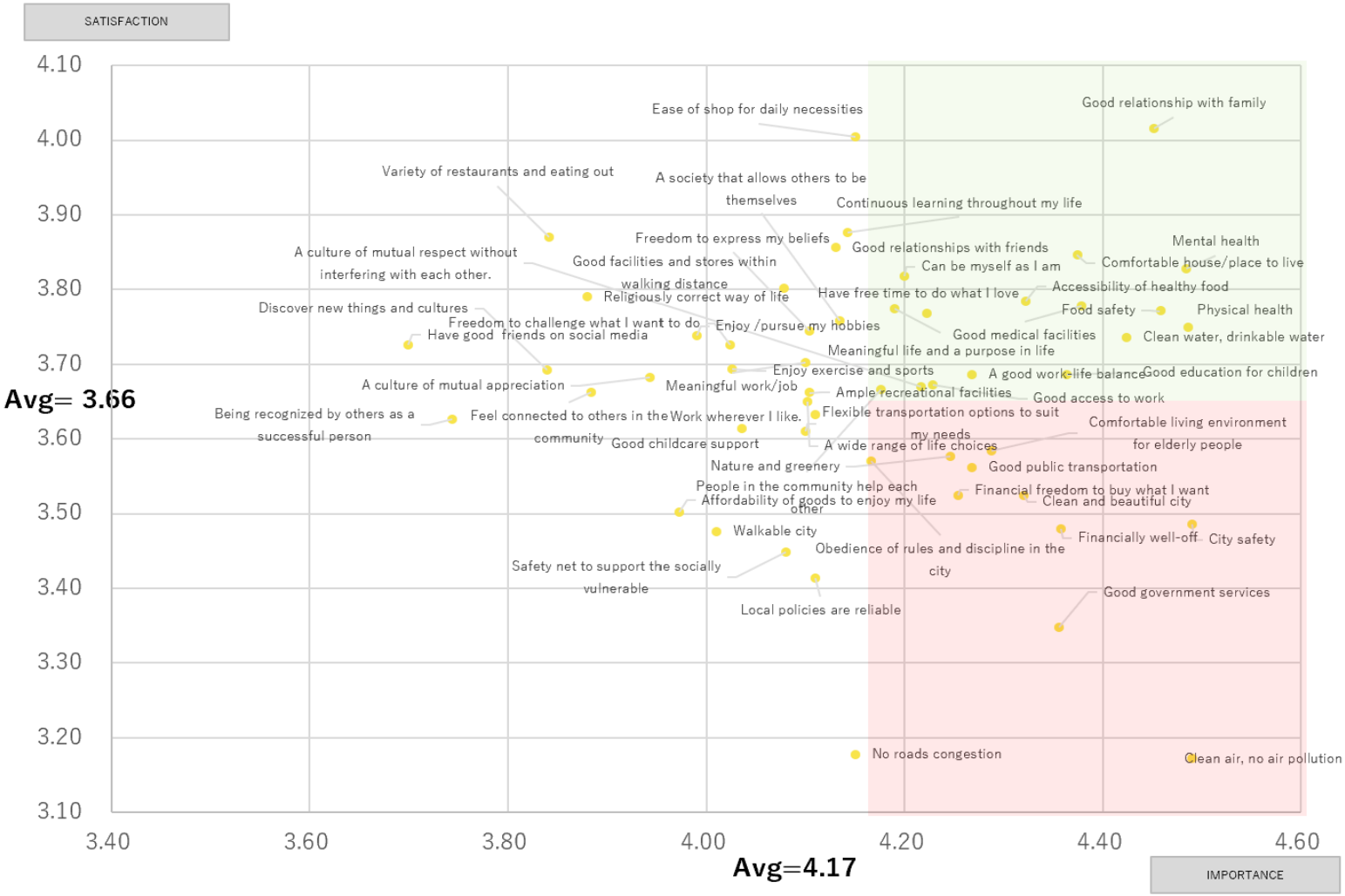
Important areas that are relatively high in satisfaction levels are (1) good relationships with family, (2) can be myself as I am, (3) comfortable house/place to live, and (4) mental health. On the other hand, important areas that are relatively low in satisfaction are (1) good government services, (2) financially well-off, and (3) city safety. See Figure 5.5.

Figure 5.4. Thailand – Gap Analysis of Areas (Radar Chart)



Source: Authors.

Figure 5.5. Thailand – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)

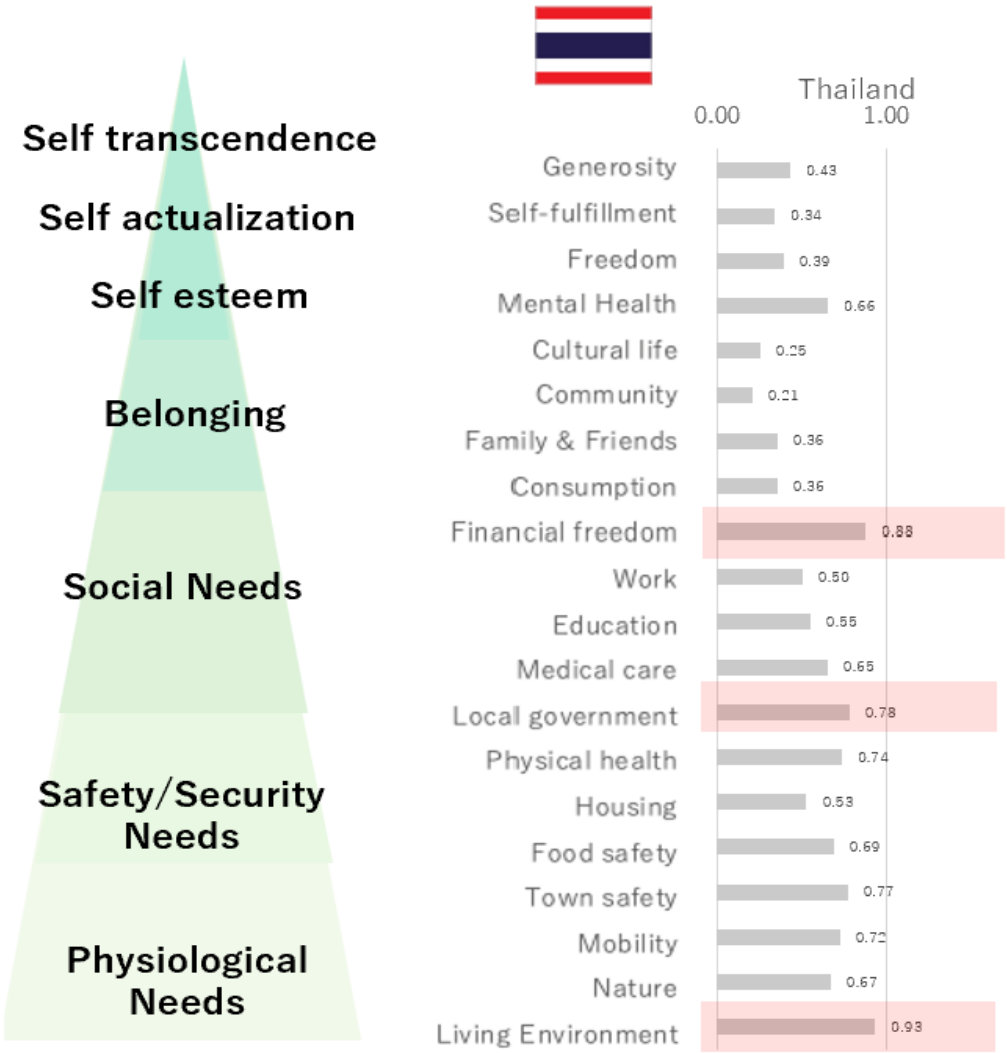


Source: Authors.

5. Current Level of Citizen's Well-Being or Happiness, City Satisfaction, and Area of Challenges

As shown in Figure 5.6, when it comes to financial freedom in Thailand, there is a notable difference between its importance and citizens' satisfaction. This indicates that citizens are seeking greater economic affordability to lead a good life. There is also a significant gap between the importance and satisfaction in the living environment, particularly in having a clean city with no air pollution. Thailand faces challenges in ensuring reliable services from the local government.

Figure 5.6. Thailand – Gap Analysis of Areas (Maslow's framework)

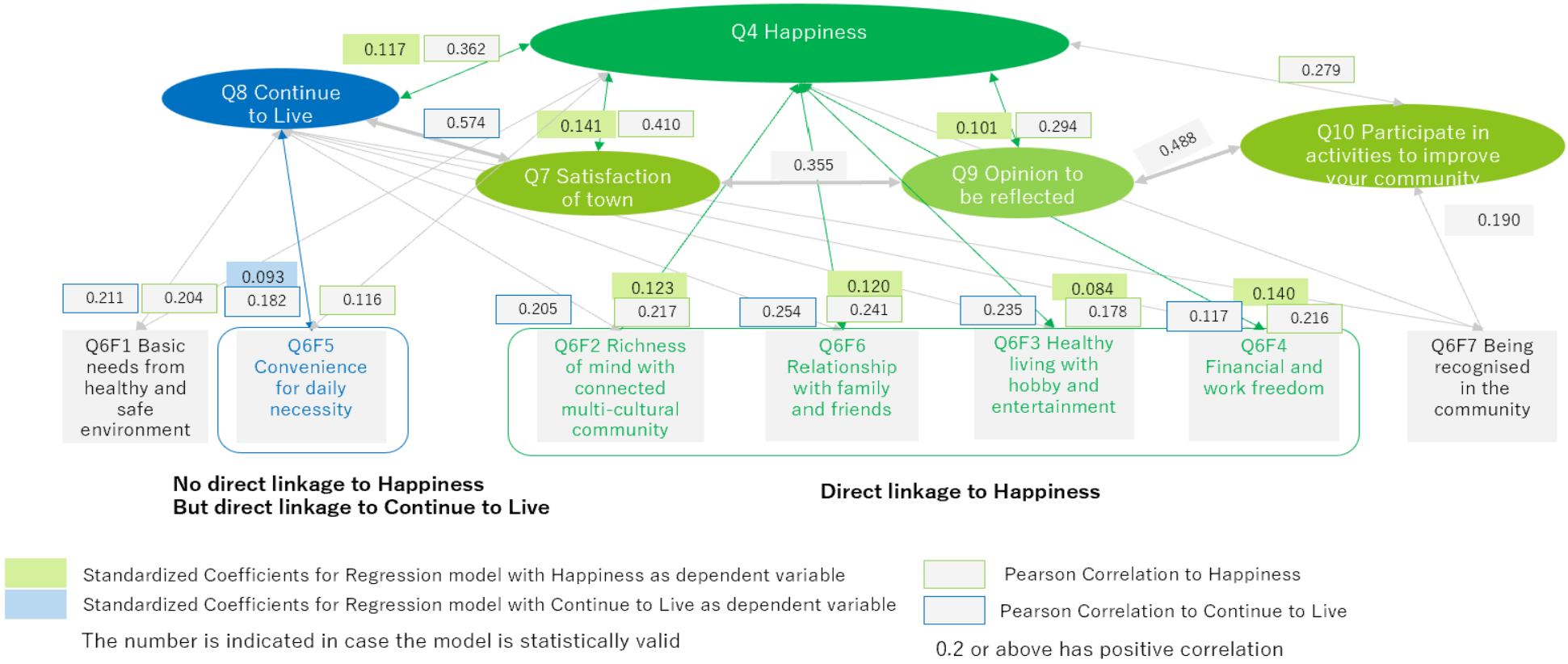


Source: Authors.

6. Factors for Citizen's Well-Being or Happiness

As demonstrated in Figure 5.7, although convenience for daily necessities may not directly link to happiness, it significantly influences Thai people's desire to continue living in the city.

Figure 5.7. Thailand – Path Model to Identify Factors for Citizen's Well-Being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities Activities to Participate

As for activities to improve the city, the willingness to participate is high for the following activities:

- Keep the city clean (53.2%)
- Keeping the city safe (49.0%)
- Enjoy nature and increase greenery (49.0%)

Figure 5.8. Thailand – Activities to Participate to Improve Community

(%)

Source: Authors.

- **<u>Important Areas for Digitalisation</u>**

  Figure 5.9 shows the top three areas that we consider important for the digitalisation of the city:

  - Access to convenient services. (57.8%)
  - Administrative services linked to personal IDs (51.4%)
  - Services to keep the city safe and secure (50.4%)

Figure 5.9. Thailand – Important Areas for Digitalisation

(%)

Source: Authors.

- **<u>Hurdles to Citizen Participation</u>**

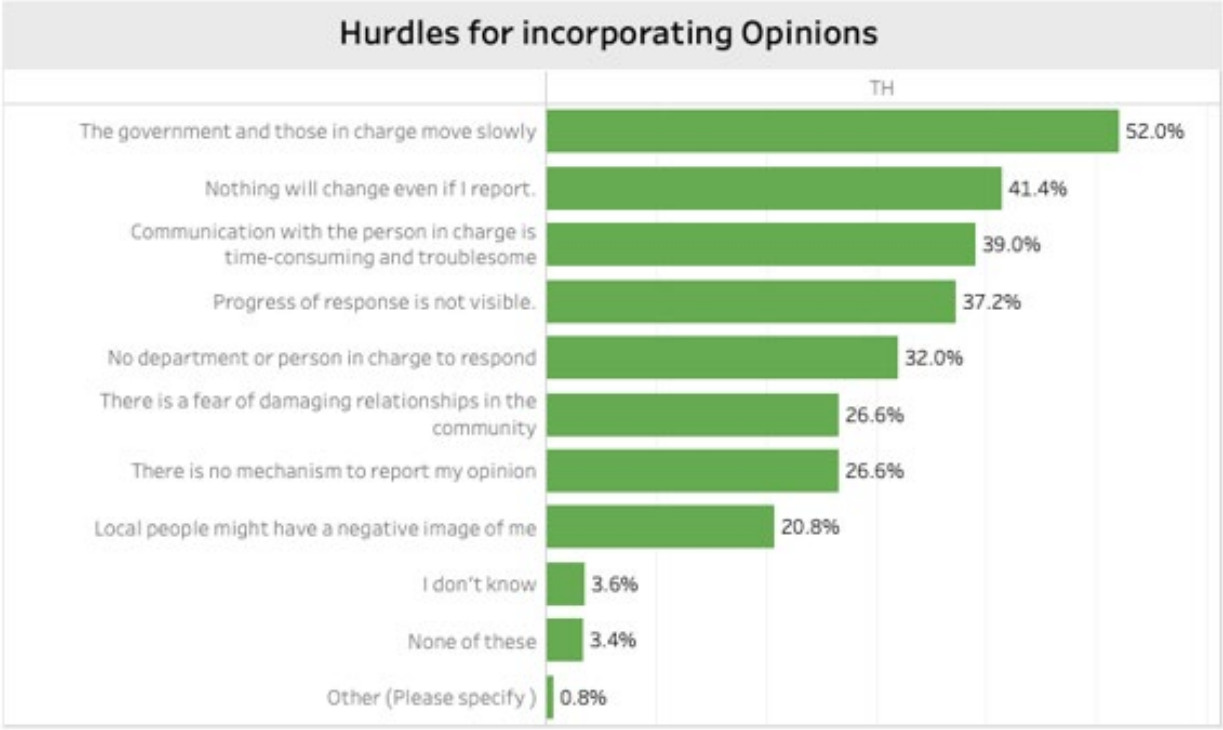
Although there is a strong willingness to reflect citizens' opinions, some obstacles are hindering citizen participation (Figure 5.10). Th main reasons identified by citizens are as follows:

- The government and those in charge move slowly (52.0%)
- Nothing will change even if I report (41.4%)
- Communication with personal in charge is time consuming (39.0%).

In addition to setting up a framework and administrative structure to respond effectively, citizens also express a desire to visually see the response to their voices. They value a concise framework that makes it easy for them to voice their opinions.

Figure 5.10. Thailand – Hurdles for Incorporating Opinions

(%)



Source: Authors.

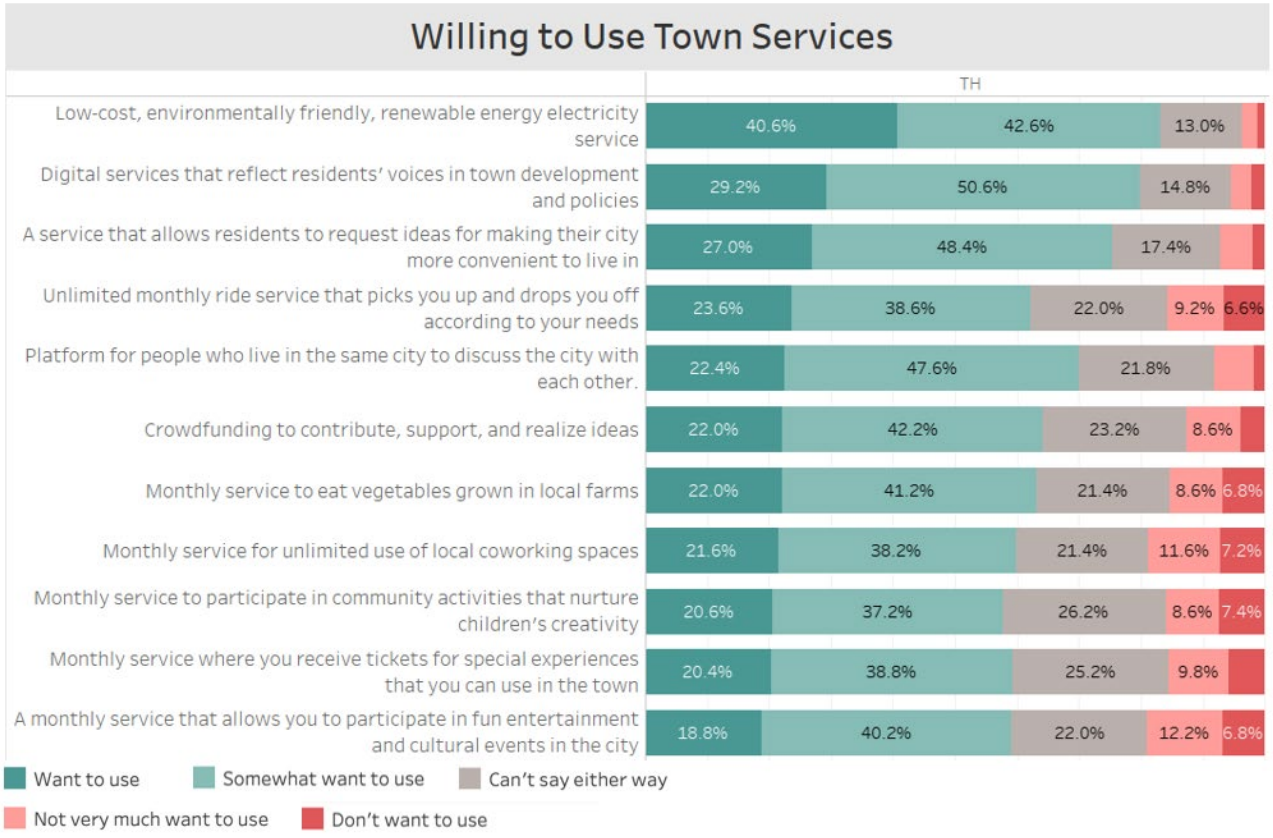
- **<u>Willingness to use Town services</u>**

As reflected in Figure 5.11, Thai people showed the willingness to use specific areas of service such as

- Low-cost, environmentally friendly, renewable energy electricity service' (83.2%);
- digital services that reflect residents' voices in town development and policies (79.8%); and
- residents' ability to request ideas to make their city more convenient to live in (75.4%)'.

Figure 5.11. Thailand – Willingness to Use Town Services

(%)

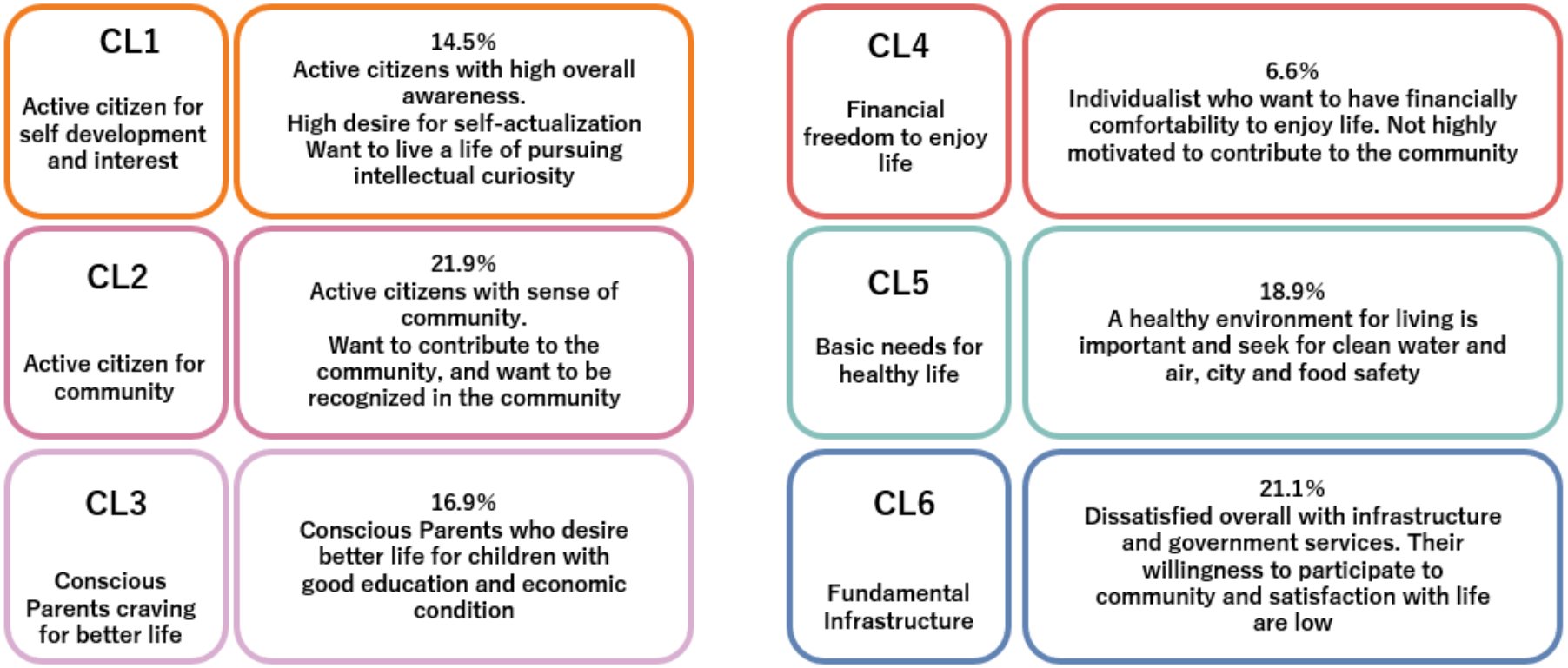


Source: Authors.

8. Citizen Cluster for People-Centred Smart Cities

The cluster of active citizens (CL1 and CL2 together) account for 36.4% in Thailand, as shown in Figure 5.12. Those who focus on basic needs (CL5) and fundamental infrastructure (CL6) together account for 40% of respondents. Figure 5-13 shows demographic profiles of the six clusters.

Figure 5.12. Thailand – Citizen cluster for People-Centred Smart Cities



Source: Authors.

Figure 5.13. Thailand – Citizen Cluster Demographics

	CL1 Active citizen for self development and interest	CL2 Active citizen for community	CL3 Conscious Parents craving for better life	CL4 Financial freedom to enjoy life	CL5 Basic needs for healthy life	CL6 Fundamental Infrastructure
Gender	Male (50%) Female (50%)	Male (49.5%) Female (50.5%)	Male (52.4%) Female (47.6%)	Male (42.4%) **Female (57.6%)**	Male (53.2%) Female (46.8%)	Male (46.7%) Female (53.3%)
Age	18-19 years 20-29 years 19.4% 30-39 years 41.7% 40-49 years 22.2% 50-59 years 16.7%	3.7% 20.2% 30.3% 30.3% 15.6%	2.4% 11.9% 29.8% 32.1% 23.8%	3.0% 30.3% 30.3% 18.2% 18.2%	2.1% 9.6% 23.4% 38.3% 26.6%	5.7% 18.1% 28.6% 29.5% 18.1%
Marital Status	Single 31.9% Married/Living-in 65.3%	45.0% 52.3%	45.2% 47.6%	75.8% 18.2%	46.8% 44.7%	57.1% 32.4%
Family Structure	Live alone 12.5% Spouse 59.7% Child(ren) 50.0% Parent(s) 36.1% Brother(s)/Sister(s) 22.2% Grandchild(ren) 2.8%	3.7% 47.7% 41.3% 56.9% 20.2% 9.2%	13.1% 42.9% 36.9% 34.5% 28.6% 11.9%	12.1% 15.2% 6.1% 54.5% 39.4% 12.1%	10.6% 45.7% 37.2% 39.4% 27.7% 8.5%	17.1% 27.6% 29.5% 39.0% 23.8% 5.7%
Income	High(22%), **Middle (56%)**, Low (22%)	**High(31%),** Middle (46%), Low (22%)	High(29%), **Middle (46%),** Low (23%)	High(21%), Middle (30%), **Low (42%)**	High(28%), Middle (40%), Low (32%)	High(14%), Middle (40%), **Low (42%)**
Occupation	Administration level (47%) Freelance (17%) Privately own business (14%) **Management (13%)**	Administration level (49%) Freelance (18%) **Management (11%)**	Administration level (43%) Freelance (25%) Unemployed/retired (8%)	Administration level (42%) **Freelance (30%)** Privately own business (12%)	Administration level (46%) Freelance (20%) Privately own business (14%)	Administration level (34%) Freelance (23%) Unemployed/retired (10.5%)

Source: Authors.

Overall, CL1 and CL2 are very active and open to participate in a variety of activities (Figure 5.14), ranging from living environment to personal life:

- Sports and recreational activities (CL1 at 53%; CL2, 48%)
- Local production and consumption of Food (CL1, 47%; CL2, 51%)
- Cultural activities (CL1, 42%; CL2, 39%)
- Activities that connect with local people (CL1, 49%; CL2, 38%), which can be seen from Figure 5.16.

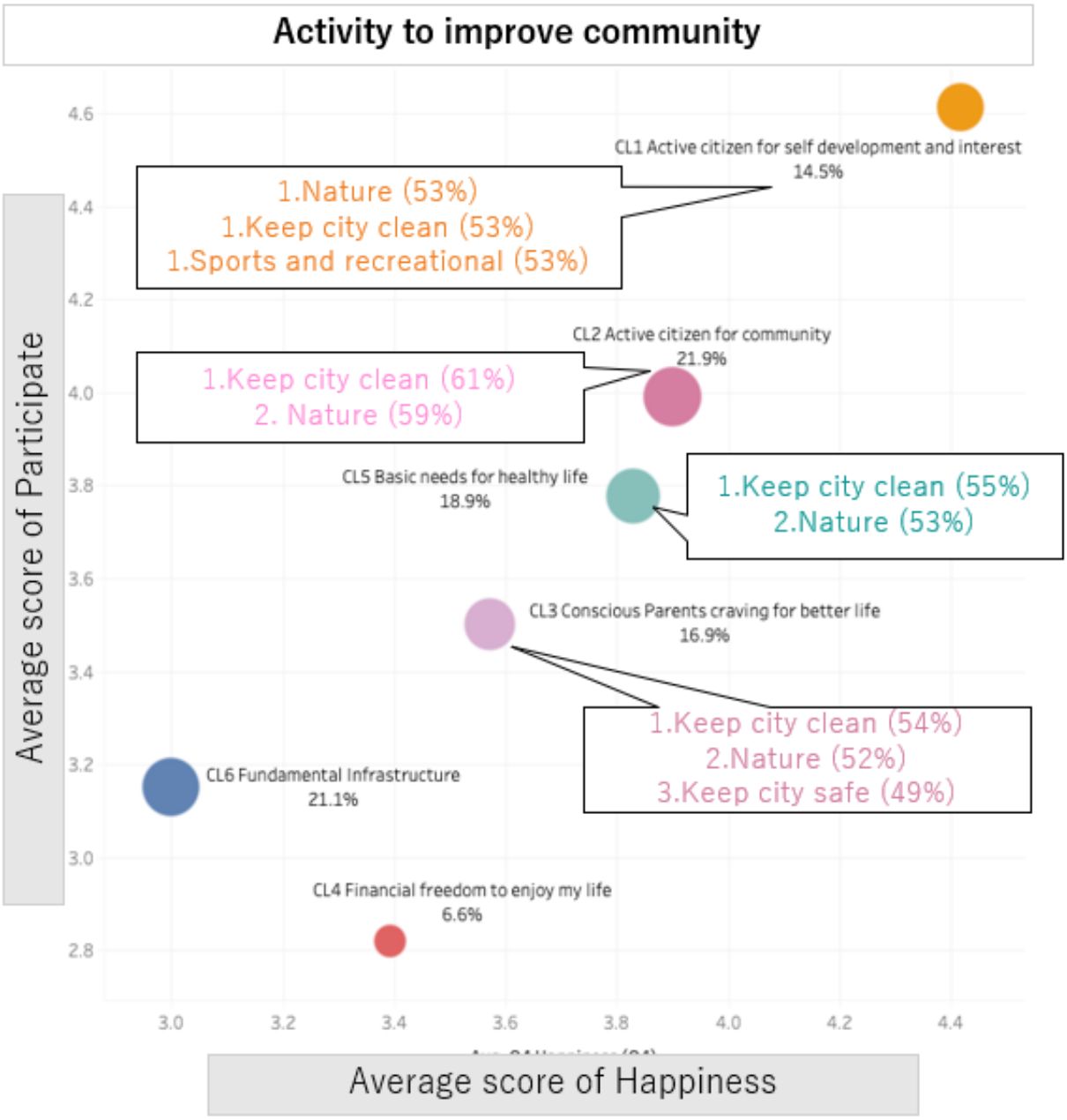
Figure 5.17 shows that CL3 and CL5 have their main focuses on nature and keeping cities clean and safe. Figure 5.15 indicates that CL4 and CL6 are the least motivated to join to improve community.

Figure 5.14. Thailand – Citizen Cluster Key Measures

Key measures (Top 2)	CL1 Active citizen for self development and interest	CL2 Active citizen for community	CL3 Conscious Parents craving for better life	CL4 Financial freedom to enjoy life	CL5 Basic needs for healthy life	CL6 Fundamental Infrastructure
Q4. Happiness	97.2%	84.4%	69.0%	60.6%	84.0%	37.1%
Q7. Satisfaction	95.8%	89.9%	59.5%	54.5%	71.3%	22.9%
Q8. Continue to live	100.0%	94.5%	73.8%	66.7%	84.0%	27.6%
Q9. Opinion	98.6%	96.3%	81.0%	63.6%	83.0%	52.4%
Q10. Participate	100.0%	83.5%	54.8%	15.2%	71.3%	39.0%

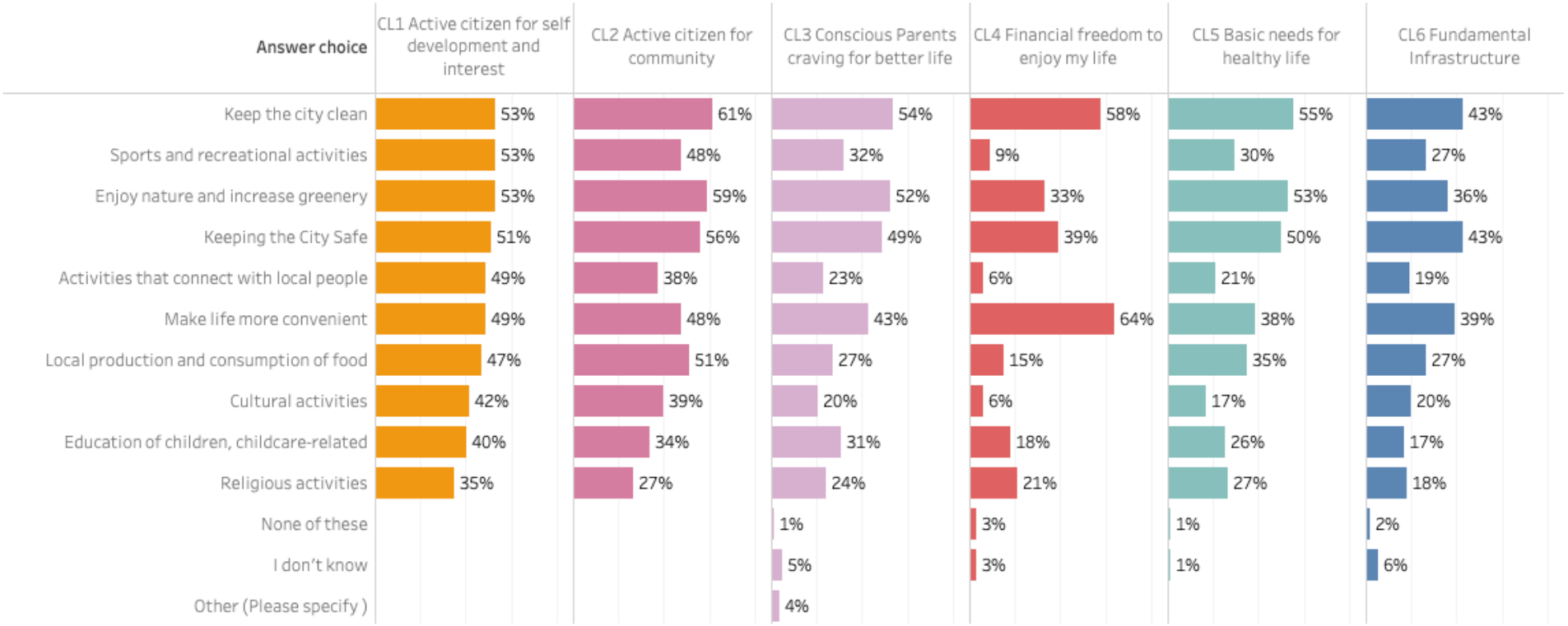
Source: Authors.

Figure 5.15. Thailand – Mapping of Citizen Cluster Top Activities Participation to Improve Community



Source: Authors.

Figure 5.16. Thailand – Citizen Cluster Activities to Improve Community

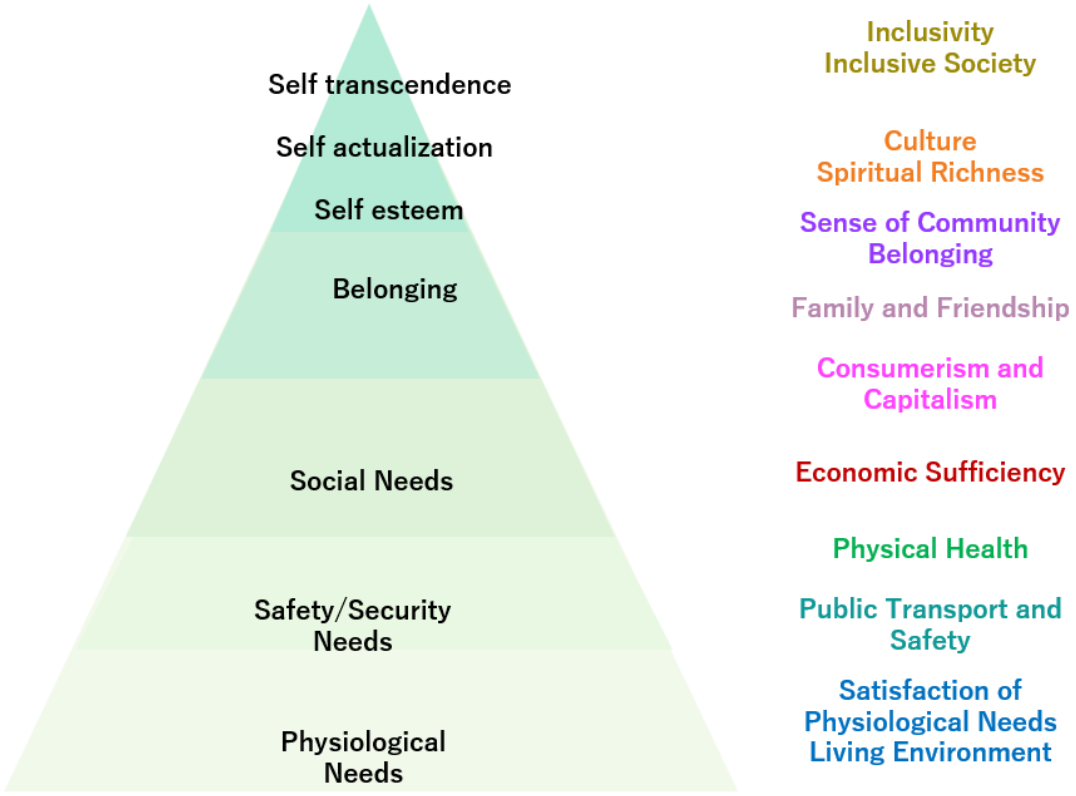


Source: Authors.

9. Citizen Testimonials about their Cities

Figure 5.17 below is a summary of Thai citizens' opinions from diginography, reflected in Maslow's Hierarchy of Needs framework.

Figure 5.17. Thailand – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	Due to Buddhism, Thais generally see tolerance for others & inclusiveness as virtues. Also, it is important that the service be friendly and accommodating to all Thai. Openness to new and innovative ideas is another factor that demonstrates the inclusiveness of Bangkokians.
Culture **Spiritual Richness**	Tourism is important in Bangkok and being proud of Thailand's unique culture and huge markets and creative art spaces. Also, Bangkok is in great demand as a shopping destination with international brands.
Sense of Community **Belonging**	As a concept for a new smart city hub like Samyan smart city, there is expectation of providing an environmentally friendly place where all people can gather.

Family and Friendship	Events for families to enjoy, trendy spots for young people to go with their friends, and events that are familiar to locals.
Consumerism and Capitalism	For Bangkokians, who have a strong yearning for easily recognisable brand-name goods, they want their shopping to be accessible to the masses and at the same time be offered a high-end shopping experience that is luxurious
Economic Sufficiency	New commercial facilities are expected to play major roles, offering the convenience of varied business services and access to what citizens need. Expectations for technology, such as cashless shopping, are also high.
Physical Health	Gratitude for facilities and places to exercise in the city centre to stay healthy. Also conscious of healthy eating and enjoying leisure activities.
Public Transport and Safety	High demand for urban living at city condominiums. Expectations for new ways of living and working are seen with state-of-the-art facilities, new concepts, well-developed parking lots and co-working spaces.
Satisfaction of Physiological Needs **Living Environment**	Bangkok is in the heart of the city, especially in topics related to smart city initiatives. Much of the contents are related to food. The city seeks to incorporate trendy food and all the necessary items at once.

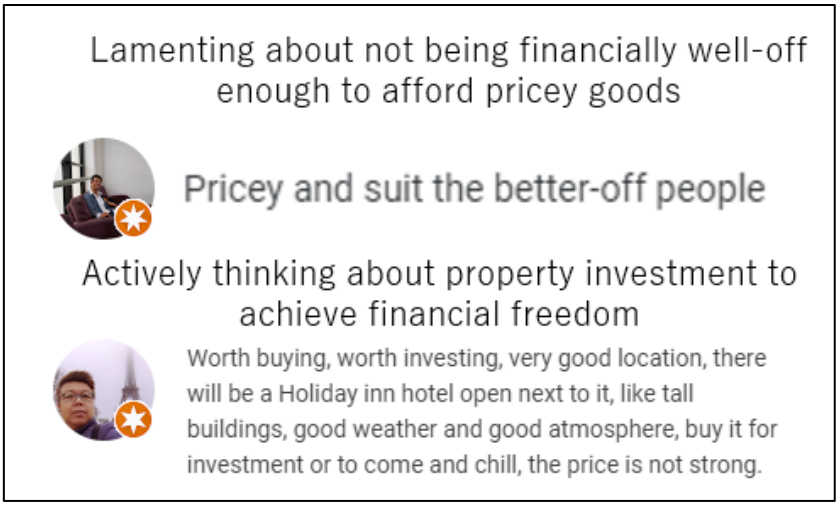
Source: Authors.

The cost of living in Thailand is increasing, especially Bangkok, as it embraces modernisation. Consequently, many Thais associate financial prosperity with happiness. Buddhist-influenced Thais also derive happiness from helping others, as per Buddhist virtues. Additionally, like most ASEAN countries, Thais consider housing and strong family bonds crucial to well-being or happiness.

- **Happiness Factor #1: Financial and Work Freedom**
  - Financially well-off
  - Financial freedom to buy what I want

Prices are becoming expensive in Thailand. Thais believe that freedom to buy whatever they want (even luxurious goods) is happiness.

Figure 5.18. Thailand – Citizen's voice for happiness factor #1



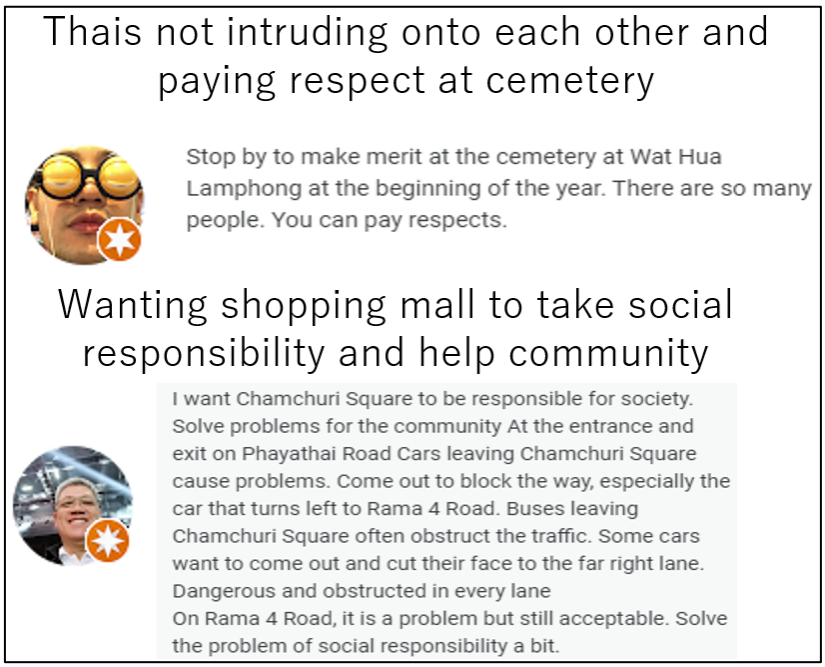
Source: Authors.

- **<u>Happiness Factor #2: Richness of Mind with Connected Multicultural Community</u>**

  - A culture of mutual respect without interfering with each other
  - People in the community help each other

Influenced by Buddhism virtues, Thais are happy when they live in a society where people show respect towards and help each other (See Figure 5.19).

Figure 5.19. Thailand – Citizen's Voice for Happiness Factor #2



Source: Authors.

- **<u>Happiness Factor #3: Relationship with Family and Friends</u>**
  - Comfortable house/place to live
  - Good relationship with family

  Having a comfortable living area and good relationship with family brings Thais happiness. (See Figure 5.20).

Figure 5.20. Thailand – Citizen's Voice for Happiness Factor #3

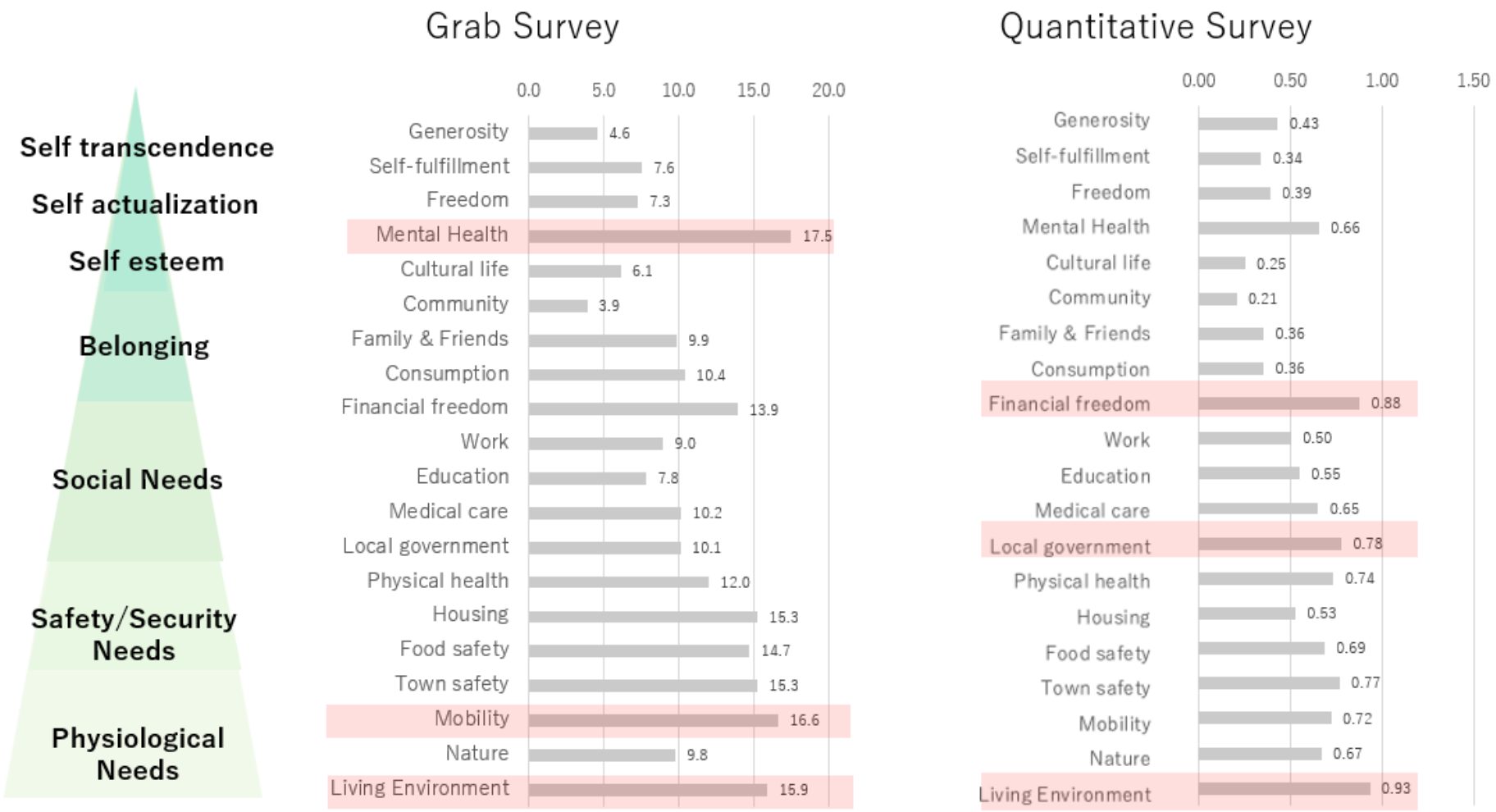
Source: Authors.

10. Areas of Differences Seen from Grab Survey

We utilised Grab survey to complement quantitative survey results in areas where smart city initiatives are underway. The areas for this survey are Central Bangkok, Nonthaburi, Pathum Thani, and Samut Prakan.

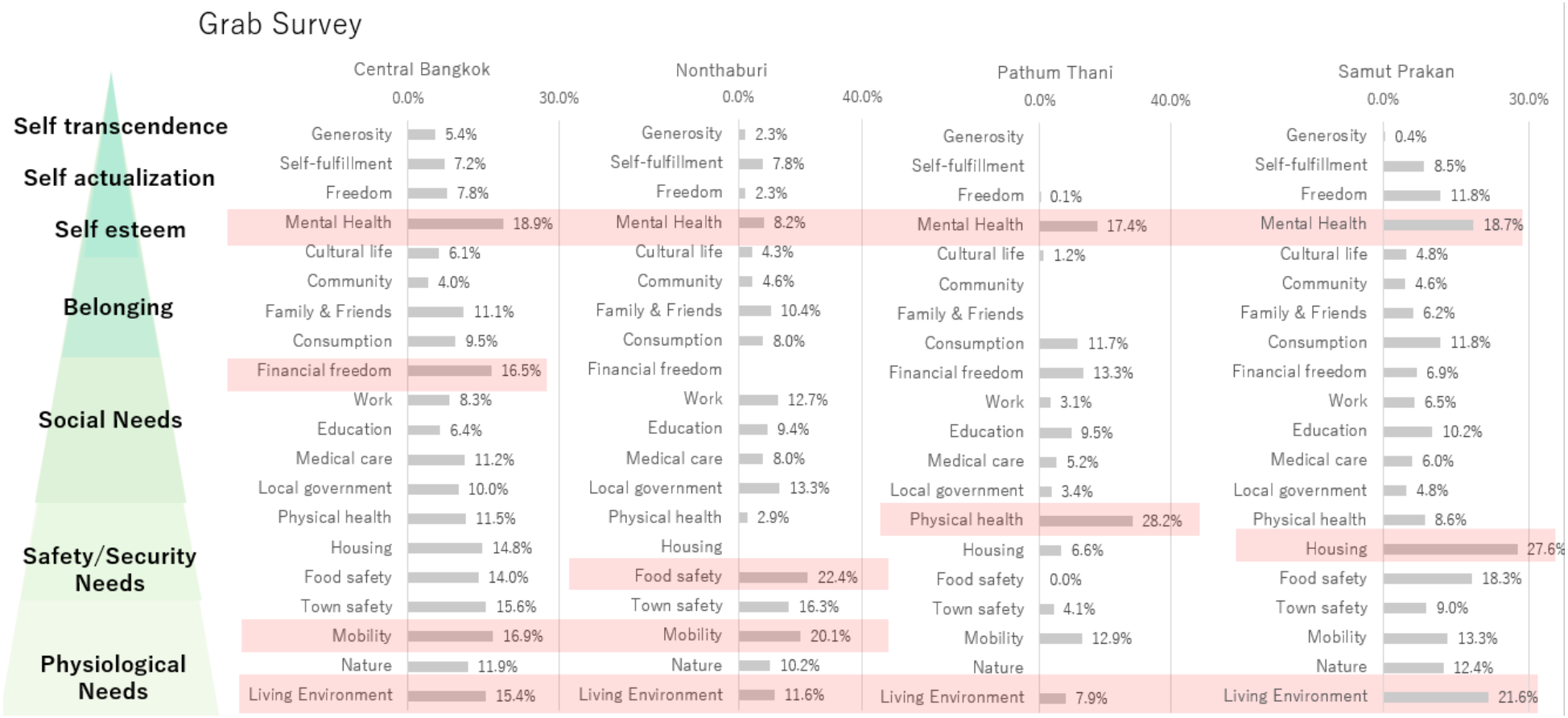
Although the way of asking questions differed slightly between Grab survey (multiple selection) and quantitative survey (5-point scale), the results are comparable in a relative sense (Figure 5.21). Both surveys highlighted that the living environment is a key challenge. On the other hand, Grab survey identified additional key challenges, such as mental health and mobility. This indicates that there are varying challenges across different districts within each city (Figure 5.22).

Figure 5.21. Thailand – Gap Analysis of Areas, Comparison between Grab Survey and Quantitative Survey



Source: Authors.

Figure 5.22. Thailand – Gap Analysis of Areas, Comparison of Different Areas, Districts via Grab Survey



Source: Authors.

Chapter 6

Malaysia

1. Summary/Conclusion

1.1. Smart City/People-Centred Smart Cities Promotion Framework at Central and Local Government

The Smart City concept in Malaysia originated as a strategy to realise one of the main goals of the '11th Malaysia Plan (2016–2020)': to 'strengthen infrastructure to support economic expansion' for 'infrastructure strengthening of smart cities.' The country recognised the need to address social challenges associated with increasing urbanisation of the capital and state capitals, such as traffic congestion, overcrowding, lack of affordable housing, environmental degradation, waste management, health issues, and disaster management.

To tackle these challenges, Malaysia designated four cities as focal points for becoming competitive cities and advancing as smart cities: Johor Bahru, Kuala Lumpur, Kuching, and Kota Kinabalu. These four cities are also the targets of the ASEAN Smart Cities Network (ASCN) in Malaysia.

The smart city policies in Malaysia include various initiatives, such as developing public transportation frameworks such as the Mass Rapid Transit (MRT), promoting modal shifts, adopting renewable energy, increasing recycling rates, and encouraging green buildings. Additionally, Chinese companies have played a significant role in the development of technology-driven smart cities in Malaysia. Projects like Malaysia City Brain and Forest City use AI and big data analysis of Alibaba Cloud to reduce traffic congestion in the city. These projects have been the primary focus of development, aiming to address social challenges associated with urbanisation.

Despite these efforts, citizen awareness of urban development and the concept of smart cities is relatively low. In the 'Smart City Handbook: Malaysia, June 2021', prepared and published by Ministry of Housing and Local Government (Government of Malaysia) with the technical cooperation of the Government of Great Britain, 'civil & academia' are designated as key players in the Smart City Ecosystem. The handbook introduces the idea of 'citizen-driven' smart cities and emphasises 'better decision making' and social platforms that promote 'citizen co-creation'.

According to an interview conducted with International Islamic University Malaysia (IIUM), it is evident that the government recognises the importance of PCSCs in line with its commitment to 'strengthening the infrastructure for smart cities.' The Ministry of Finance has launched e-Participation, and the Ministry of Domestic Trade and Cost of Living has launched a digital platform called VOICE YOUR OPINION, which aligns with the concept of 'capturing citizens' opinions'.

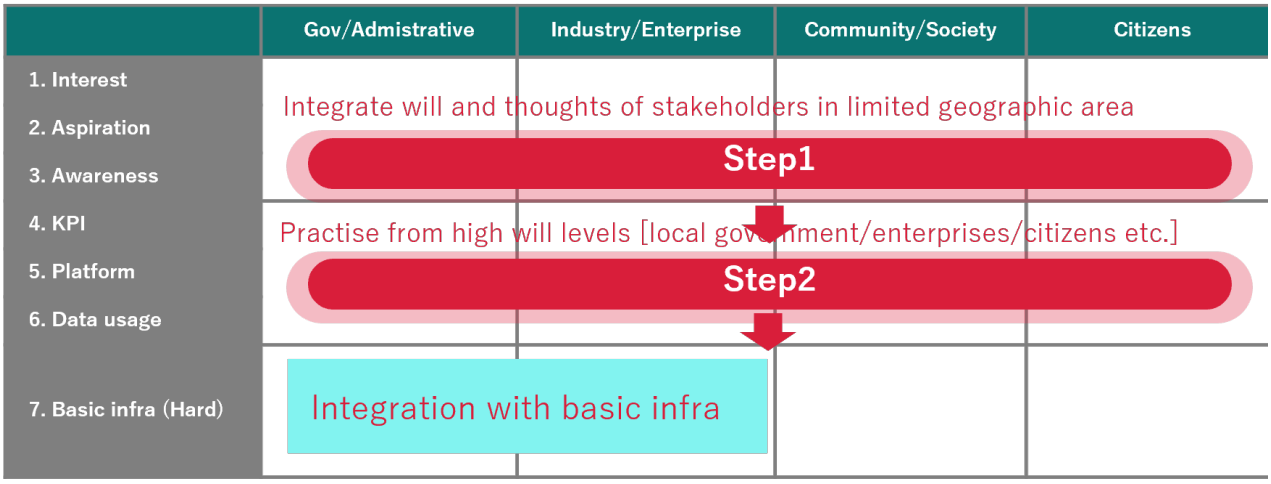
However, it is not widely used.

On the corporate level, as per the interview with Malaysian Resources Corporation Berhad (MRCB), there is a recognition of the future need and potential opportunities for PCSCs. However, they have not yet introduced the PCSC concept and are still utilising data from their basic infrastructure.

1.2. Current People-Centred Smart Cities Promotion Bodies and Areas that Need to be Initiated for Future Promotion and Expansion

In Malaysia, there is currently no policy or KPI to introduce PCSCs, despite a general direction to promote smart cities at the government level. However, there is growing interest amongst developing companies in this area. While there are reporting frameworks promoted by central and local governments, none of them are widely used as citizen participation frameworks. The investments to date have mainly focused on infrastructure development, and, currently, there is no comprehensive set of policies and KPIs for PCSCs. As a result, it is classified as type pattern 3 (See Figure 6.1).

Figure 6.1. Malaysia – People-Centred Smart Cities, Pattern 3



KPI = key performance indicator(s)

Source: Authors.

Based on interviews conducted with IIMU, there are challenges in absorbing and reflecting the opinions of people from diverse races and religions. At the corporate level, a lack of visibility into profit structures leads to some second-guessing. The market is dominated by players with a bias towards infrastructure investment, and there are few start-ups and other players willing to take on new challenges to address social issues. If PCSC initiatives succeed in certain ASEAN countries, it would be beneficial to horizontally spread the successful case studies to other ASEAN countries for further development.

1.3. Areas to Tackle for Promoting People-Centred Smart Cities and Improving Well-Being or Happiness

The following top four Factors directly contribute to the improvement of well-being or happiness.

(i) Financial and work freedom

(ii) Richness of mind with connected multicultural community

(iii) Healthy Living with hobby

(iv) Relationship with family and friends

While each of the four factors contributes to the improvement of well-being or happiness, when considering the values and characteristics of Kuala Lumpur citizens derived from the Diginography, certain areas emerge as key targets for initiating PCSC implementation and promoting proactive citizen activities. These areas are interpreted as follows:

(i) Financial and work freedom: Kuala Lumpur City Centre (KLCC) is a symbol of Malaysia's economic development, and more Malaysian citizens are experiencing economic affluence and living a modern lifestyle that meets global standards. On the other hand, the city centre is expensive. There are citizens who complain about the high cost of groceries and parking spaces that are essential for daily life, while others complain about the limited shopping options due to high expectations.

→ (Potential areas) **Convenient and affordable services that financially support your daily life.**

(ii) Richness of mind with connected multicultural community: Malaysia is a cosmopolitan society with a diverse ethnic population and people of different religious beliefs. Kuala Lumpur citizens are exposed to numerous foreign cultures, and there is a sense of pride in Malaysian-ness and openness to foreigners. The city is also decorated with events celebrating diverse religious and ethnic festivals, fostering a spirit of cultural celebration. Thos residing in newer residential areas take pride in being part of a well-educated community with good facilities. Therefore, they are likely to have gratitude towards an inclusive community that respects each other's culture and benefits social minorities.

→ (Potential areas) **Creating activities and events that allow people to enjoy the unique culture of Malaysia and an inclusive community and a framework that reflects diverse voices.**

(iii) Healthy Living with hobby: For Kuala Lumpur citizens facing challenges in terms of a safe living environment, public transportation, and infrastructure, there is a high need for places and facilities that enable them to lead safe and healthy lifestyles, even within urban areas. They aspire to have access to amenities that allow them to engage in activities like walking and jogging, connect with nature, and lead active lives while living in urban areas.

→ (Potential areas) **Providing places and activities for connecting with nature, as well as facilities, services, and events for healthy and active lifestyles.**

(iv) Relationship with family and friends: Prefer places where they can get in touch with nature and have access to activities that they can enjoy with their children, even if they are in the city centre.

→ (Potential areas) **Activities to enjoy nature with family and friends.**

1.4. Citizen clusters in Malaysia: Volume Distribution and Clusters to be Involved in People-Centred Smart Cities Promotion

Next, a cluster analysis was conducted based on matters of concern to identify groups of citizens who should be involved in realising a PCSC. Subsequently, we aim to create proactive citizens who will lead activities.

In Malaysia, the order of clusters by volume is as follows:

- CL3: Conscious parents craving for better life
- CL2: Active citizen for community
- CL6: Fundamental Infrastructure
- CL1: Active citizen for self-development and interest
- CL5: Basic needs for healthy life
- CL4: Financial freedom to enjoy my life

(i) Similar to other countries, main groups that should be involved in PCSC are active citizens who want to take part in keeping city clean and safe and making life convenient.

2. Interview Results: People-Centred Smart Cities Implementation and Existing Frameworks

Based on interview results (Figure 6.2), the Government of Malaysia is aware of the need for PCSCs, as it is committed to 'strengthening infrastructure for smart cities'. However, it has not yet developed PCSC-specific measures nor platforms for absorbing citizens' opinions. At the corporate level (MRCB), there is sense of necessity and opportunities for the future, but the PCSC concept has not yet been introduced and the current level is merely utilising data from basic infrastructures.

Figure 6.2. Malaysia – Key findings on People-Centred Smart Cities, Stakeholder Interviews

		Evaluation	Academia interview :Khairuddin Rashid（IIMU）	Evaluation	PRIVATE:MRCB
WILL	1. Interests 2. Aspiration 3. Awareness	○	**The concept of "People-centric Smart City" is well understood by the government, but no exact KPIs or platforms reflect this thought.** Malaysian ministry of housing and local governments are the prime movers. It is a combination of government and private sector. Local authorities prepare and plan for the development of the area of jurisdiction including promotion of smart cities. They publish their ideas of development by way of promoting it to people and opening it up for people to come back with views and ideas. They will give a timeframe prior to rolling out the plan and people can comment, criticize. the govt also organizes townhall meetings in residences with areas affected, the residences also come up with own groups to form a community to address the issues and voice their dissatisfaction to the authorities.	○	When establishing TODs, implement mainly from developers' perspective without actively seeking feedback from communities. **Would like to explore if there is an opportunity but** need to gauge the returns on helping to develop and help people*Always work with government/local authorities on developing transportation hubs.
SOFT/ Intangible	4. KPI	△	80 macro-Indicators across the 19 areas in accordance with "MS ISO 37122(2019): Indicators for Smart City Standard", which covers broadly fundamental elements consisting of people's life, but does not include the subjective elements about happiness/Wellbeing of the people.	○	Major and simple criteria as KPIs when designing TOD, TOD has to be sustainable, comply to guidelines, green building requirements towards establishing smart cities, livability, connectivity, accessibility
	5. Platform to collect Opinions 6. Usage of people's voices		Although e-Participation (Ministry of Finance) , VOICE YOUR OPNION (Ministry of Domestic Trade and Cost of Living) and other similar digital platform were developed, they are not widely used.		Have not developed any app, might explore in future. Challenges: how do we control and get good feedback? ＊Company policy: Have a channel/phone number/email address for people to call in and give feedback/complaint
HARD/ Tangible	7. Basic infra	○	Basic infrastructure has been developed including high penetration of internet and smart phone among ASEAN 6 countries, thought there are issues in low solid waste collection and high emission of CO2, which should be improved.	○	○KL facilities deal commuters and collect data. It is not like they commission surveys to collect data •Electricity consumption for KL Sentral •Usage efficiency data of electricity & water

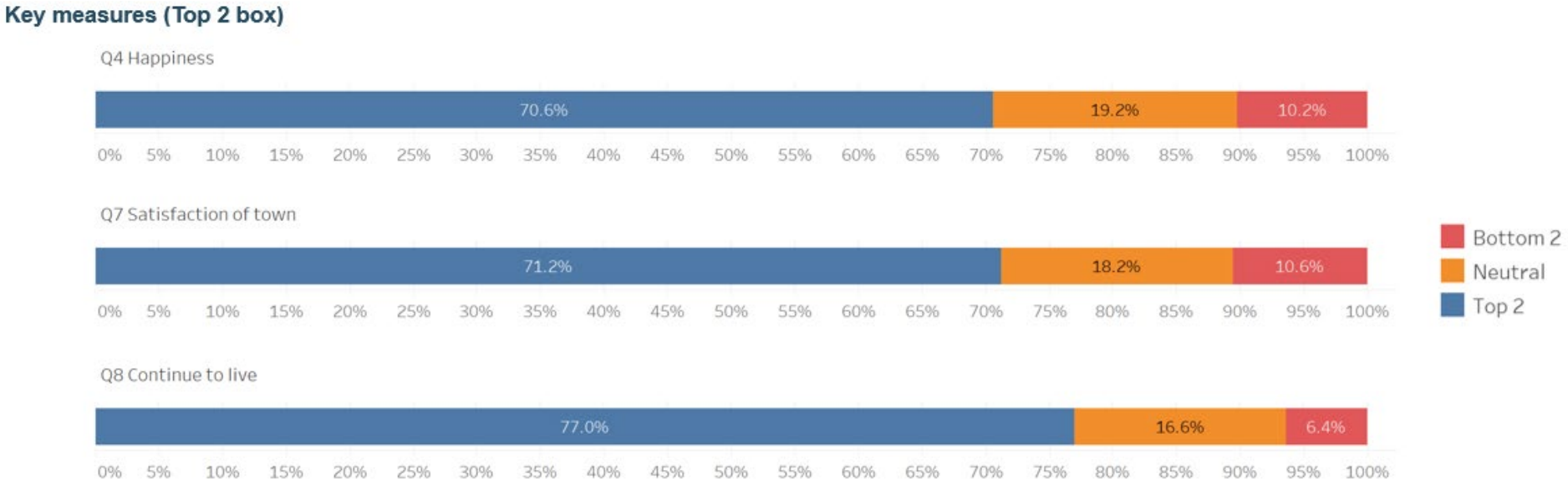
ISO = International Organisation for Standardisation; KL = Kuala Lumpur; KPI = key performance indicator(s); MRCB = Malaysian Resources Corporation Berhad; MS = Malaysian Standard; TOD = Transit oriented development

Source: Authors.

3. Well-being or Happiness of Citizen, Intention to Continue Living in the City

- **Happiness of citizens**
  - The level of happiness of Malaysians is high (70.6%), exceeding the average of the ASEAN-6 countries (69.9%).
- **Satisfaction with the city and intention to continue living in the city**
  - Compared to the ASEAN average (Satisfaction of town, 67.7%; Continue to live in the city, 74.2%), Malaysians' satisfaction with the city (71.2%) and intention to continue living in the city (77.0%) are relatively higher. See Figure 6.3.

Figure 6.3. Malaysia – Happiness of Citizens, Satisfaction, and Intention to Continue Living in the City



Source: Authors.

4. Citizen Awareness of Challenges Concerning the City and Daily Lives

In Malaysia, the gaps and challenges are particularly large in the following areas:

(i) Mobility (good public transport and no road congestion)

(ii) Financial freedom

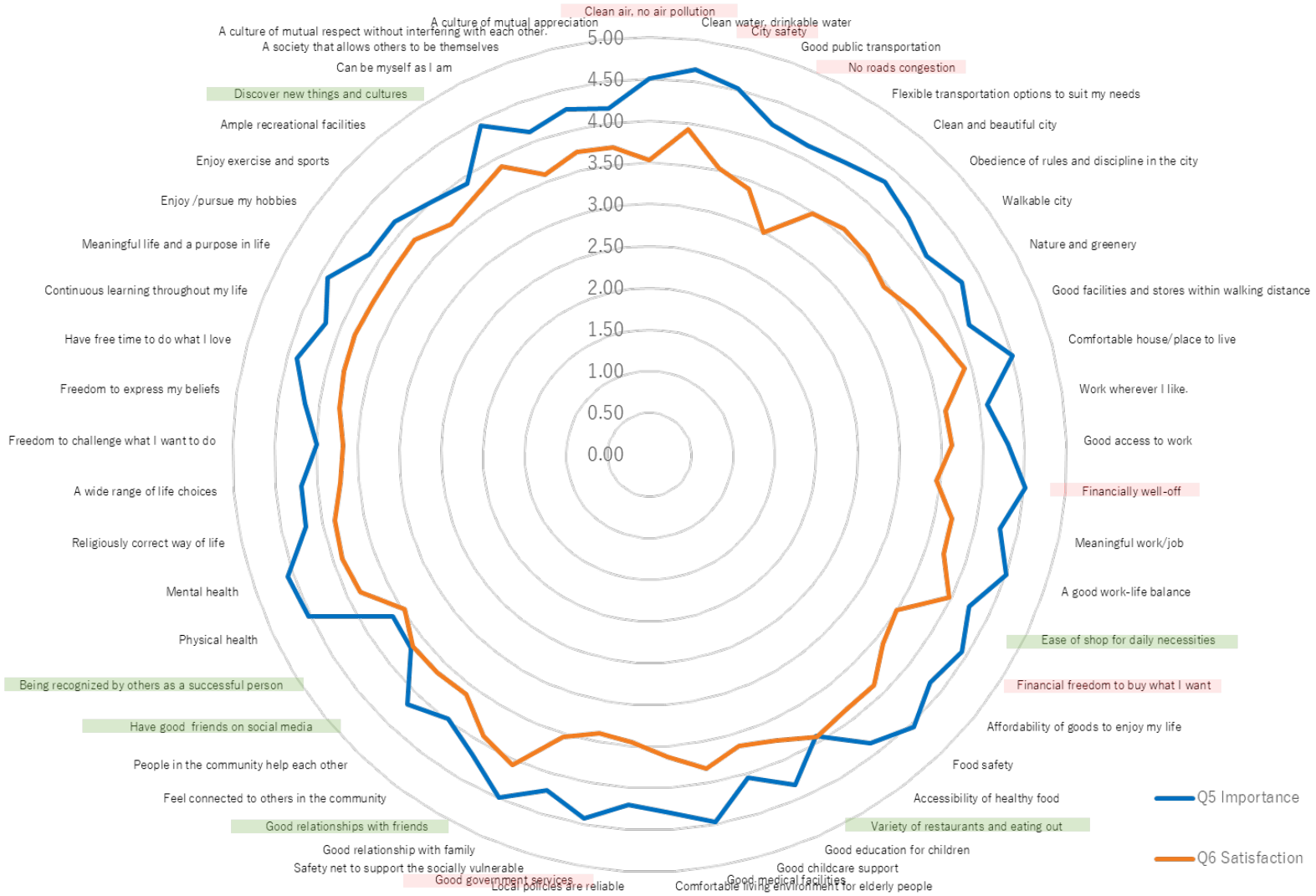
(iii) Good government services

(iv) Clean air

(v) City safety

Meanwhile, Malaysian citizens, in general, are satisfied with various aspects of their lives, including the wide variety of restaurants available, strong social communities with good friends on social media, being recognised by others as successful, fostering good relationships with friends, and their enthusiasm for discovering new things and culture.

Figure 6.4. Malaysia – Gap Analysis of Areas (Radar Chart)



Source: Authors.

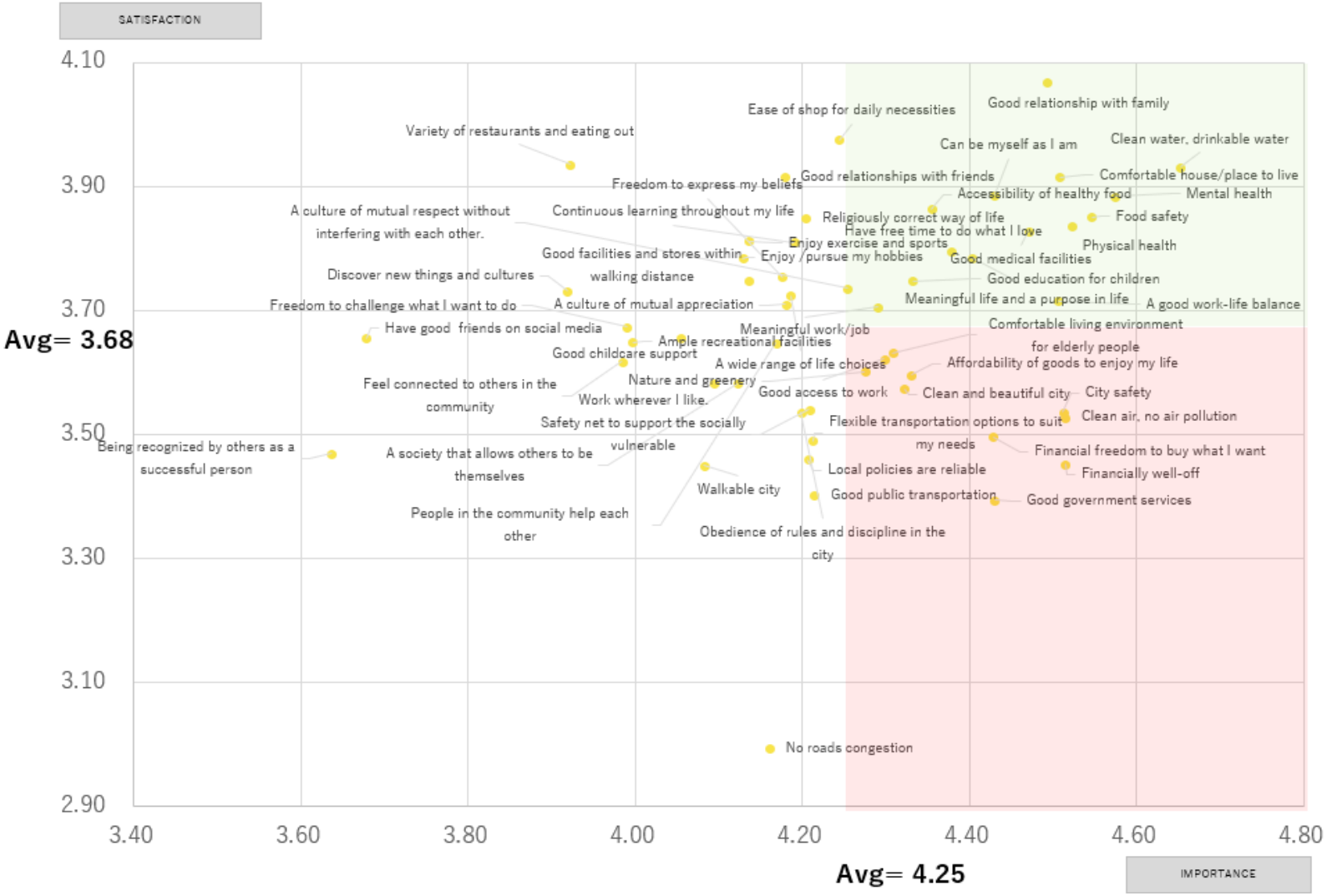
Important areas that are relatively high in satisfaction levels are

(i) clean drinkable water,
(ii) food safety,
(iii) mental health,
(iv) can be myself as I am,
(v) good relationship with family, and
(vi) comfortable house.

On the other hand, important areas that are relatively low in satisfaction are

(i) being financially well off and having financial freedom,
(ii) clean air,
(iii) city safety, and
(iv) good government services.

Figure 6.5. Malaysia – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)

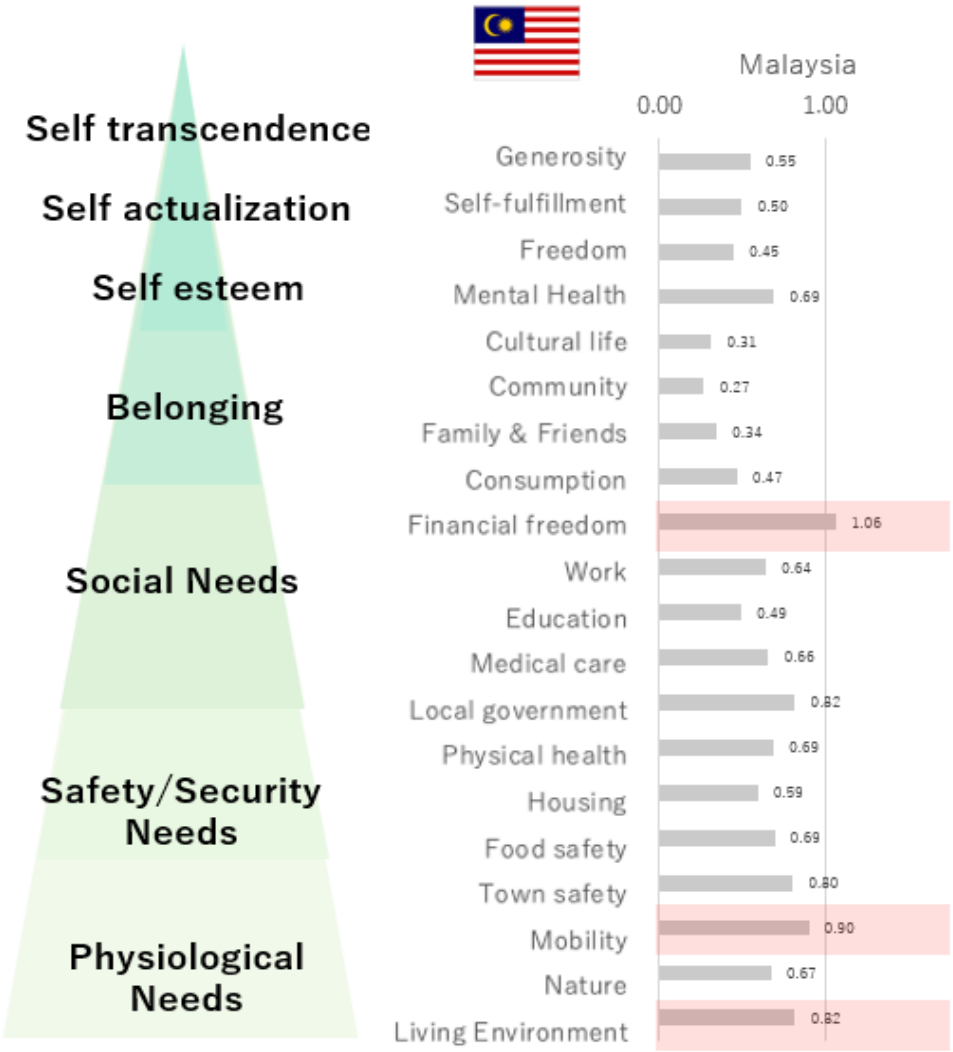


Source: Authors.

5. Current Level of Citizen's Well-Being or Happiness and City Satisfaction and Area of Challenges

As for financial freedom, the gap between importance and satisfaction tends to be larger in Malaysia, which indicates that citizens are seeking economic affordability to enjoy a good life. There are also large gaps in living environment, such as desiring to have a clean city with no air pollution and mobility challenges (transportation and traffic congestion), as shown in Figure 6.6.

Figure 6.6. Malaysia – Gap Analysis of Areas (Maslow's Framework)

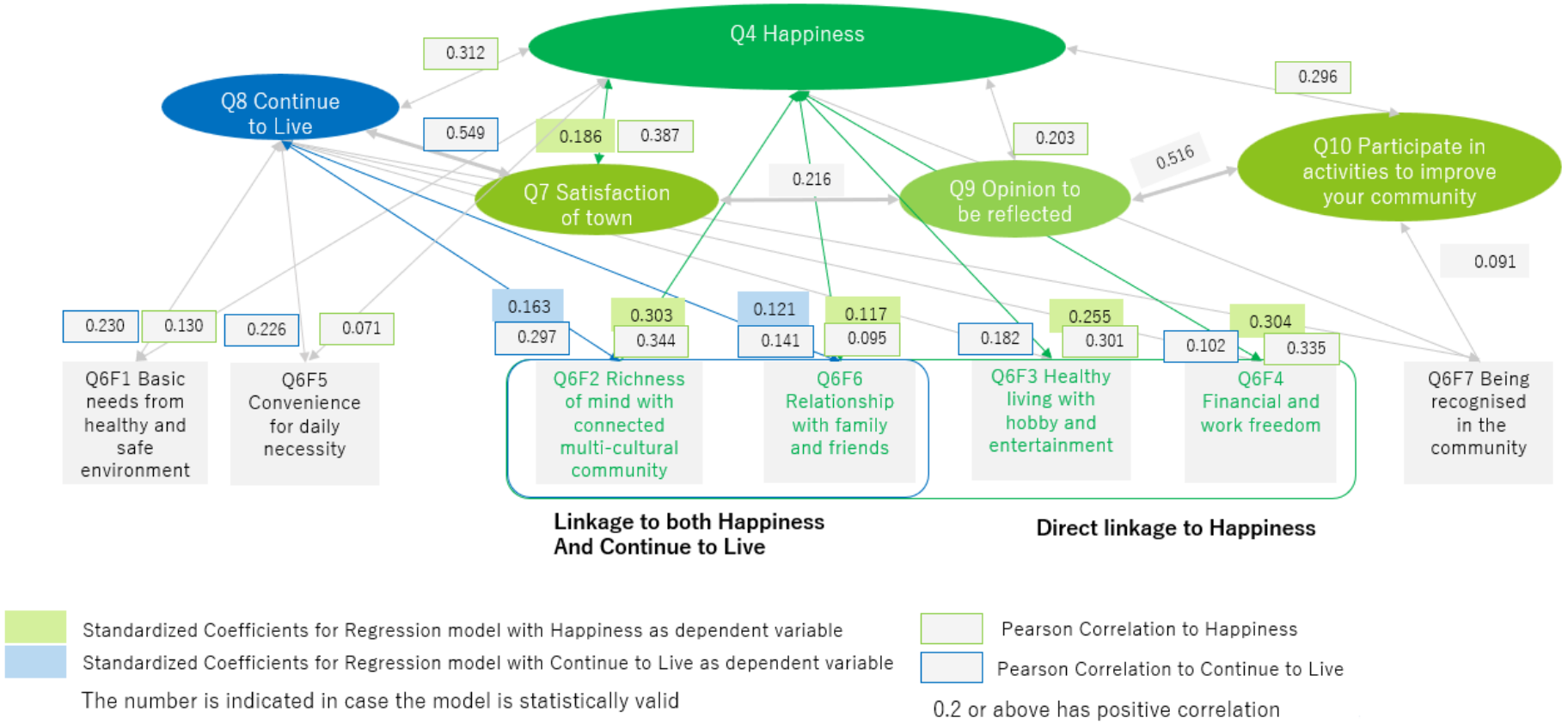


Source: Authors.

6. Factors for Citizen's Well-Being or Happiness

In Malaysia, Q6F2 ('Richness of mind with connected multi-cultural community') and Q6F6 ('Relationship with family and friends') are directly linked to Q4 ('Happiness') and Q8 'Continue to Live'), as shown in Figure 6.7. This implies the importance of human relationship and connection in Malaysian society.

Figure 6.7. Malaysia – Path Model to Identify Factors for Citizen's Well-Being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities

- **Activities to Participate**

As for activities to improve the city (Figure 6.8), the willingness to participate is high for:

(i) Keep the city clean (60.0%),

(ii) Enjoy nature and increase greenery (54.0%), and

(iii) Make life more convenient' (52.4%).

Figure 6.8. Malaysia – Activities to Participate to Improve Community

Source: Authors.

- **Important Areas for Digitalisation**

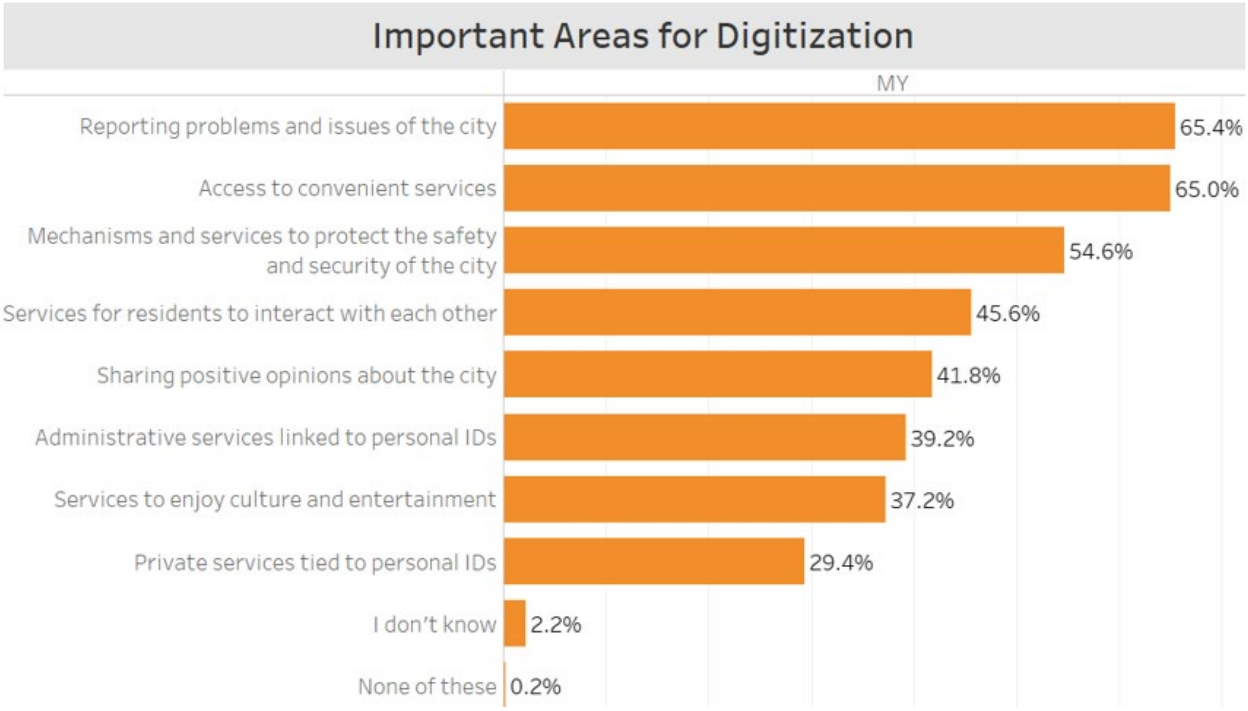
Areas considered important for city digitalisation (Figure 6.9) are as follows:

(i) Reporting problems and issues of the city (65.4%)

(ii) Access to convenient services (65.0%), and

(iii) Services to keep the city safe and secure (54.6%).

Figure 6.9. Malaysia – Important Areas for Digitalisation



Source: Authors.

- **<u>Hurdles to Citizen Participation</u>**

There is a high willingness for citizens' opinions to be reflected, as seen in Figure 6.10. However, the following are the obstacles that citizens see as reasons for the current lack of citizen participation:

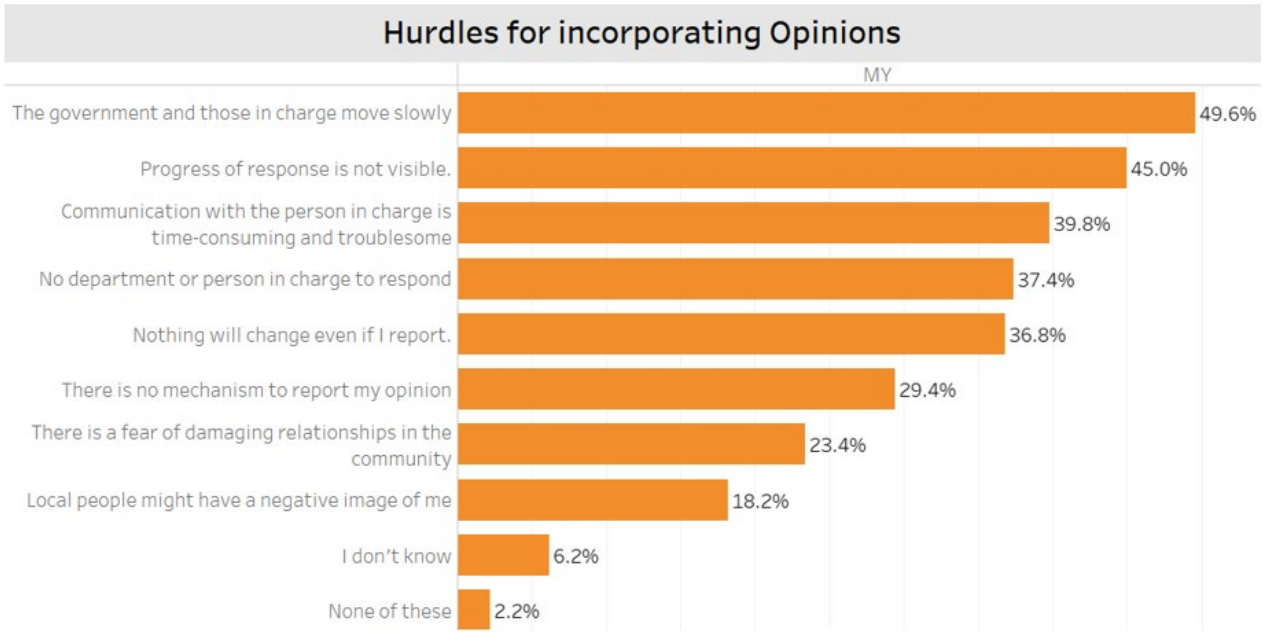
(i) The government and those in charge move slowly' (49.6%)

(ii) Progress of response is not visible' (45.0%)

(iii) Communication with personal in charge is time consuming' (39.8%)

Apart from establishing a framework and structure for administrative responses, citizens desire a clear and explicit acknowledgment of their voices. They would appreciate a concise framework that makes it easy for them to voice their opinions.

Figure 6.10. Malaysia – Hurdles for Incorporating Opinions



Source: Authors.

- **<u>Willingness to Use Town services</u>**

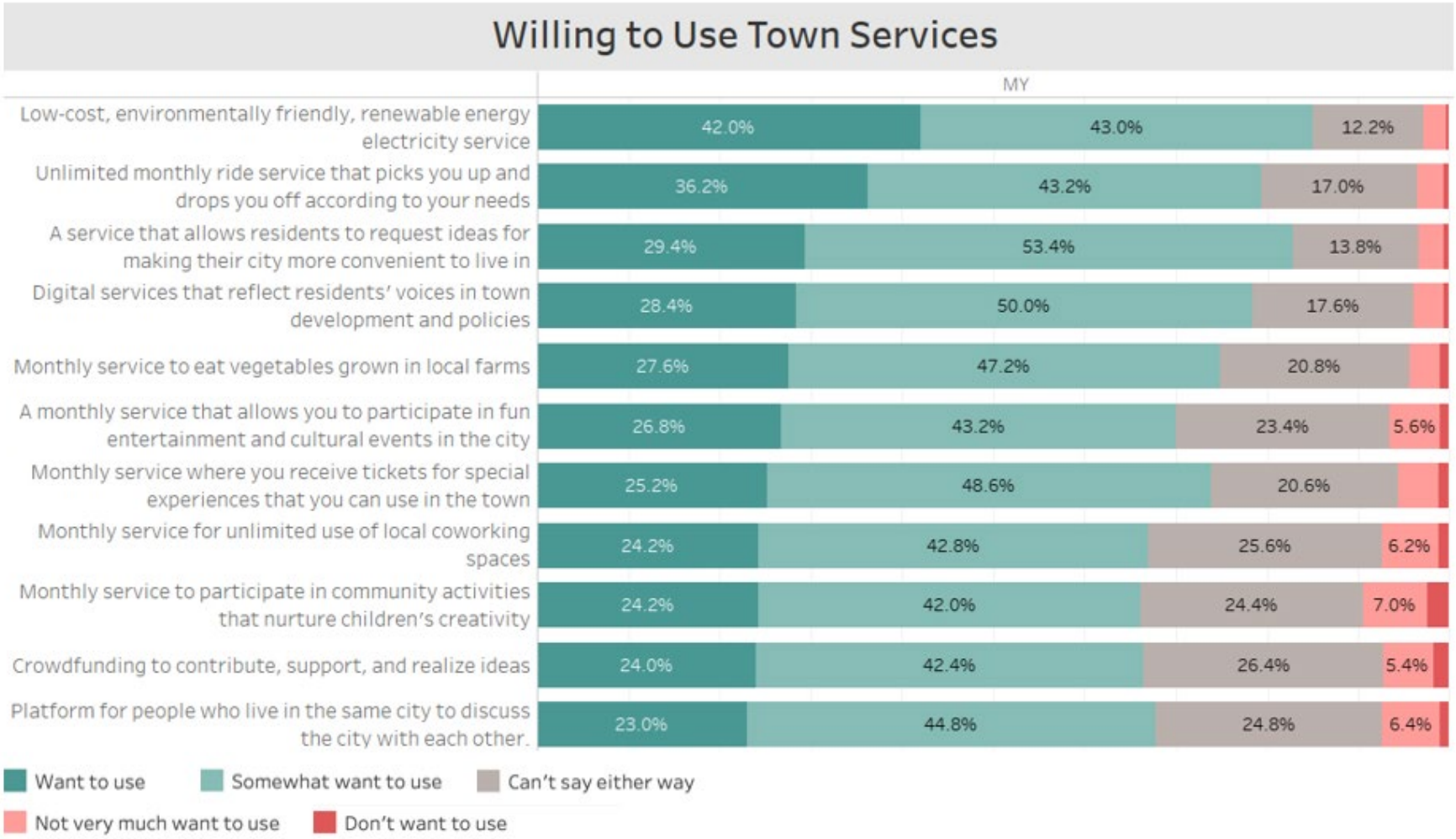
Malaysians show willingness to use specific areas of service such as the following:

(i) Low-cost, environmentally friendly, renewable energy electricity service (85.0%)

(ii) Ability for citizens to request ideas to make their city more convenient to live in (82.8%)

(iii) Unlimited monthly ride services that will pick you up and drop you off according to your needs (79.4%)

Figure 6.11. Malaysia – Willingness to Use Town Services



Source: Authors.

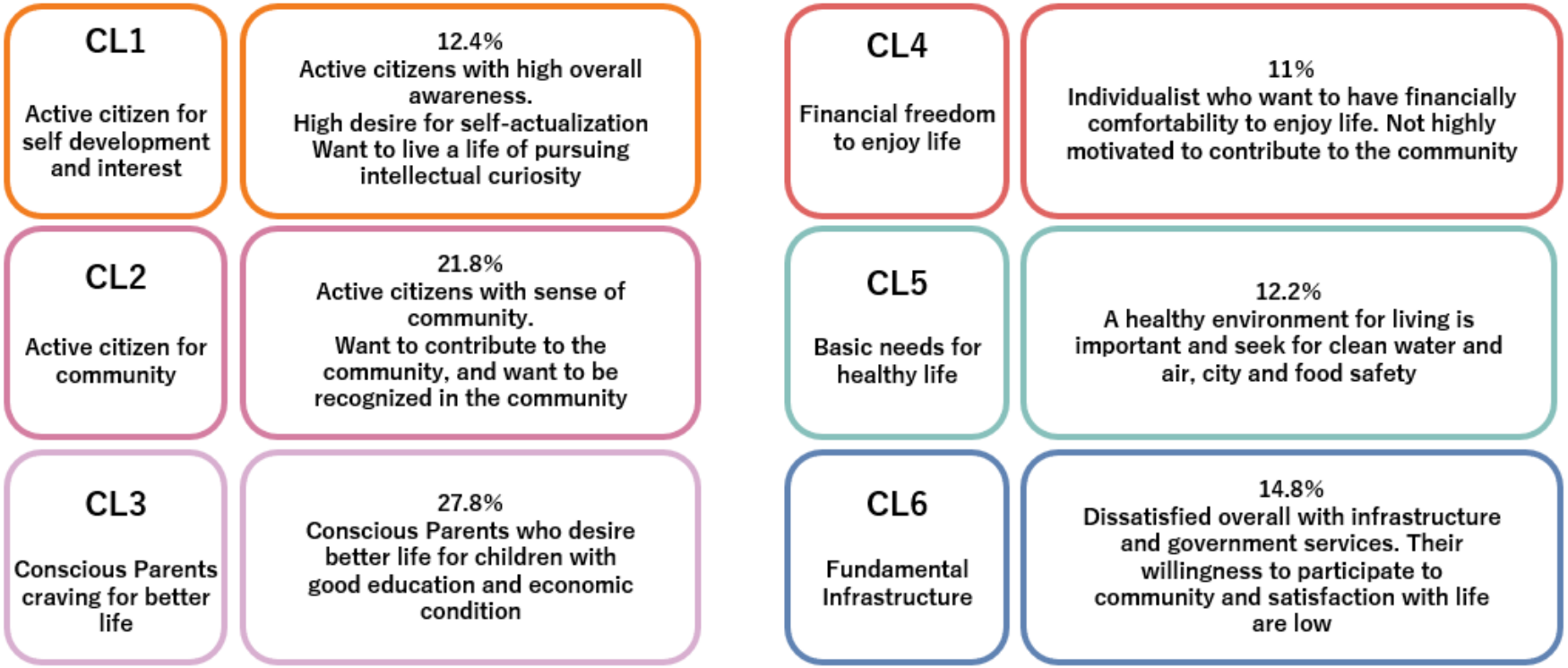
8. Citizen Cluster for People-Centred Smart Cities

Figure 6.12 shows that CL 3 ('Conscious Parents craving for better life') is the biggest cluster. It accounts for 27.8% of respondents in Malaysia. Active citizens (CL1 and CL2 together) account for 34.2%. Figure 6.13 shows 6 clusters with different demographic profiles. Figure 6.13 shows citizen cluster demographics.

As seen in Figure 6-14, CL1 and CL2 are the most active and willing to participate in the community, followed by CL5 and CL3. On the other hand, CL4 and CL6 are the least motivated to join to engage in community improvement initiatives. Figure 6-15 indicates that Malaysians are more inclined to participate in activities that enhance the living environment, such as keeping the city clean, enjoying nature, and making life more convenient.

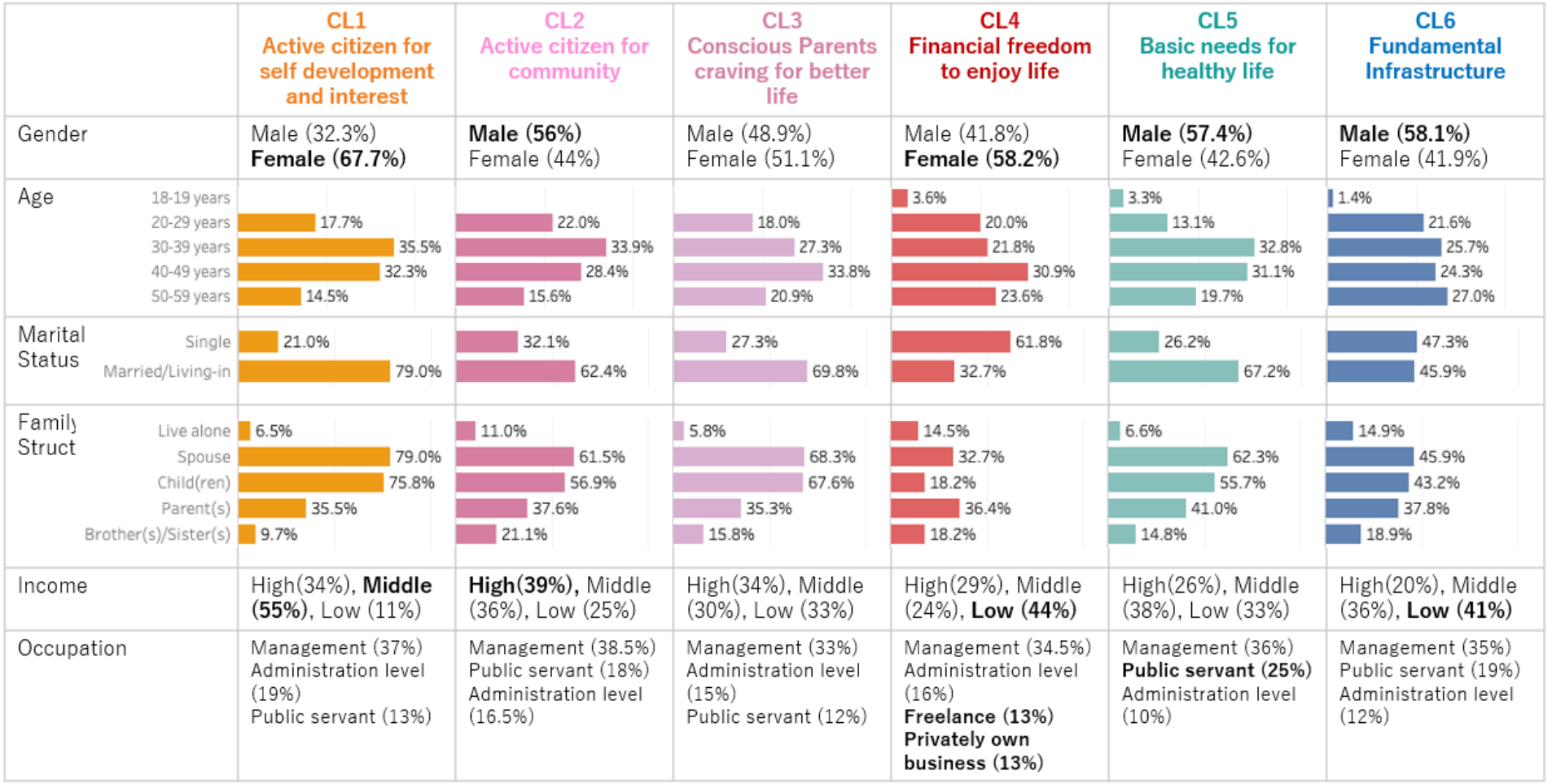
Figure 6-16 shows that sports and recreational activity are more well-received by CL1 (53%) and CL5 (51%). Meanwhile, activities focused on connecting with local people are more popular amongst CL2 (48%). The education of children garners the most attention from CL3 (46%), while CL1 shows a relatively higher percentage of interest in cultural activities (39%).

Figure 6.12. Malaysia – Citizen Cluster for People-Centred Smart Cities



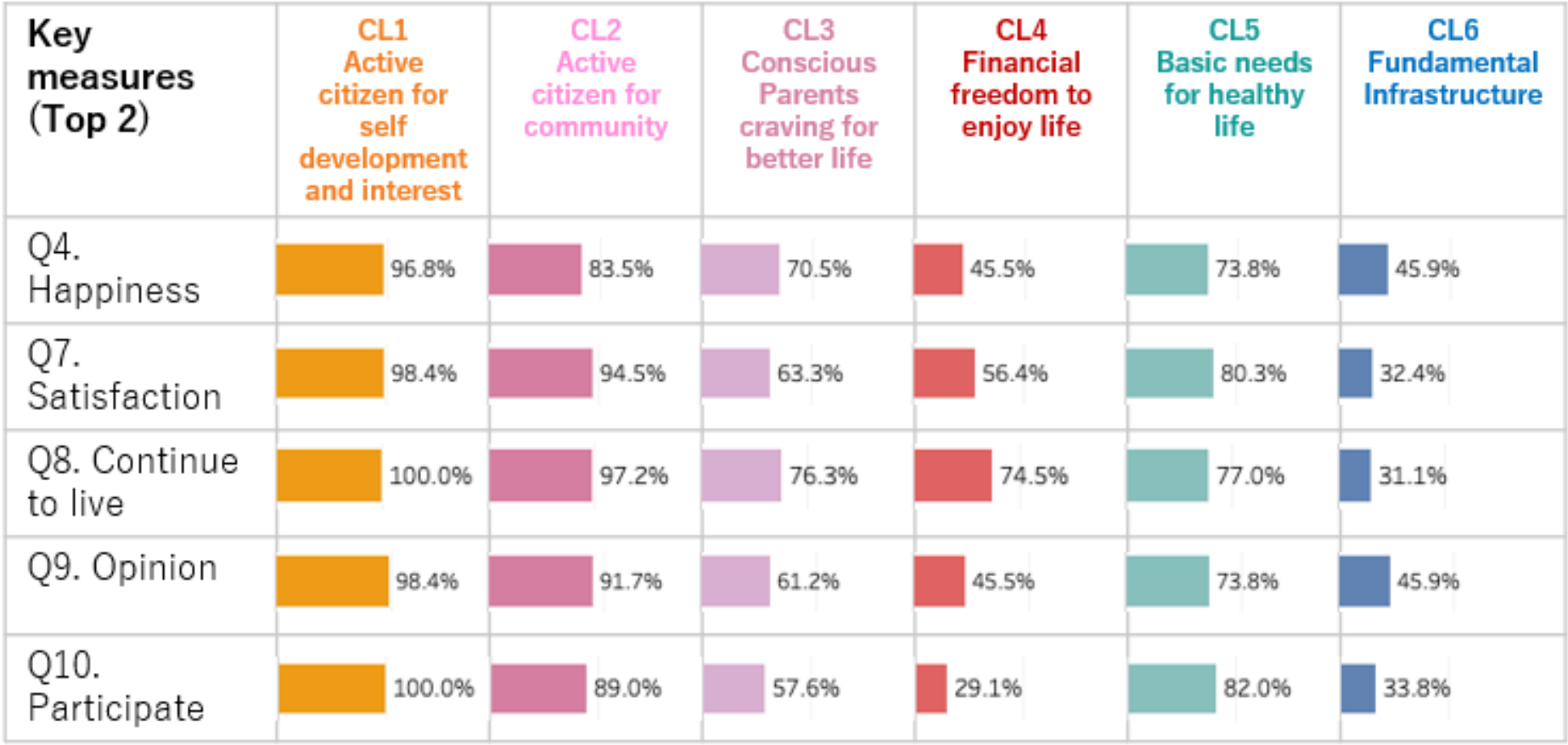
Source: Authors.

Figure 6.13. Malaysia – Citizen Cluster Demographics



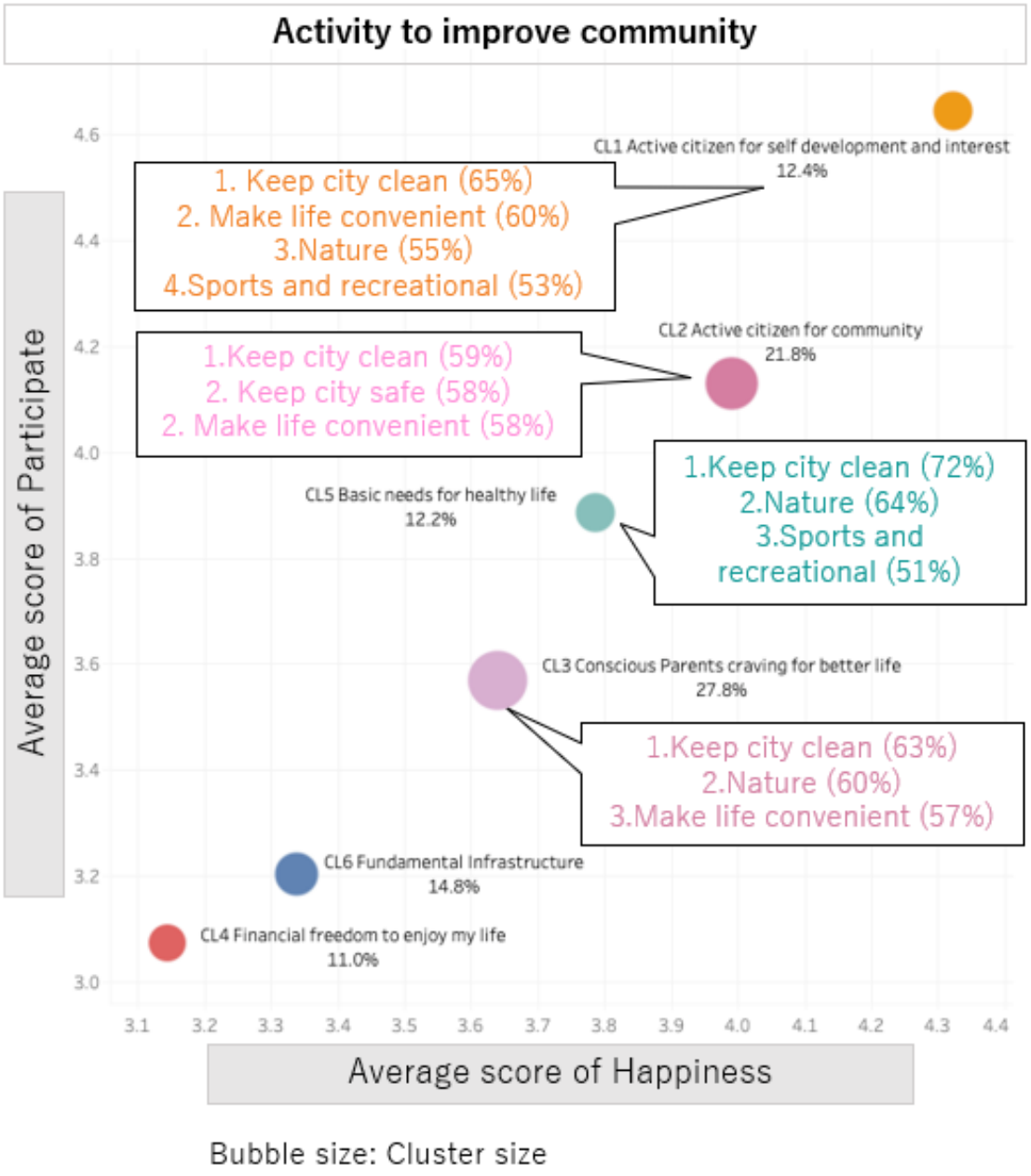
Source: Authors.

Figure 6.14. Malaysia – Citizen Cluster Key Measures



Source: Authors.

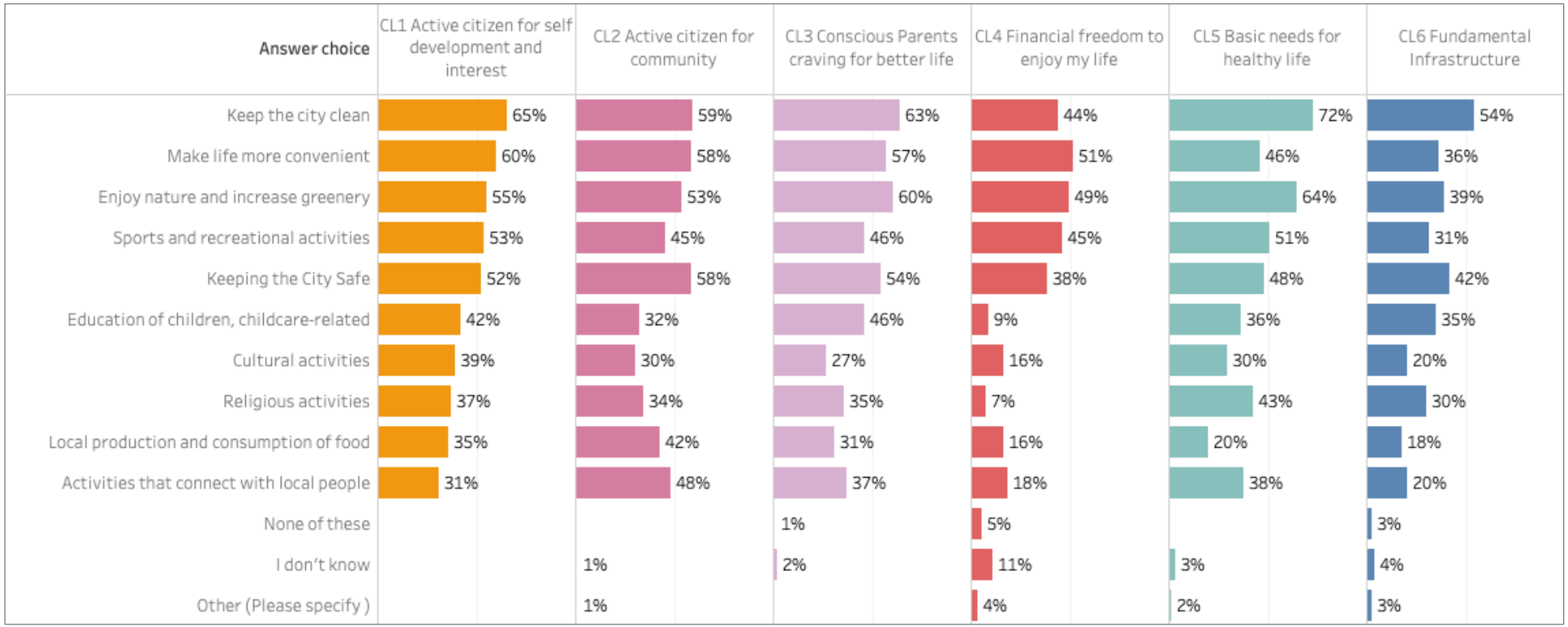
Figure 6.15. Malaysia – Mapping of Citizen Cluster Top Activities Participation to Improve Community



Source: Authors.

Figure 6.16. Malaysia – Citizen Cluster Activities to Improve Community

(%)

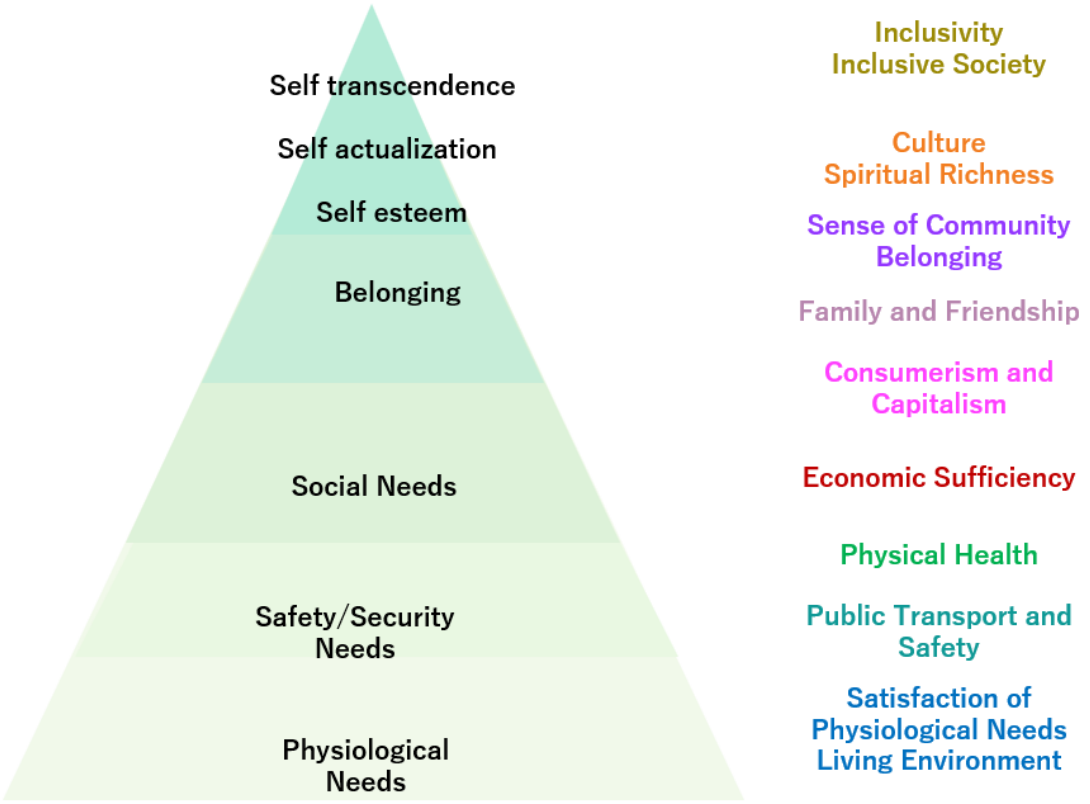


Source: Authors.

9. Citizen Testimonials about their Cities

Figure 6.17 below is a summary of Thai citizens' opinions from diginography, reflected in Maslow's Hierarchy of Needs framework.

Figure 6.17. Malaysia – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	A sense of respect for an inclusive society that brings together people of **all nationalities, religions, and other backgrounds**, and benefits social minorities.
Culture **Spiritual Richness**	Events celebrating **diverse religious** and ethnic festivals color the city. The city welcomes foreigners to **be proud of their Malaysian-ness** and to immerse themselves **in cultural activities and hobbies**.
Sense of Community **Belonging**	**Kuala Lumpur City Centre (KLCC) is a proud symbol of Malaysia's economic development**. Citizens look forward to living in the new community with its newly constructed condominiums and homes, which are well equipped, and a sense **of togetherness with the local community**.

Family and Friendship	Prefer places where citizens can get in touch with nature and where activities are available to enjoy with their **children**, even in the city centre. Spending time with family and friends deepens bonds.
Consumerism and Capitalism	While some shopping malls have global and well-known brands, some complain of **limited choices** and **convenience**, such as weak Wi-Fi access. They also have high demands for customer service and a convenient food court.
Economic Sufficiency	Complaints about the high cost of living in downtown KLCC, groceries, and parking for daily necessities. There are also those who yearn for luxury items above their own economic level.
Physical Health	Some commend the front runners in COVID's vaccine immunisation efforts, while others' opinions were about **the lack of clarity of the rules** and how rules differ from place to place. Even though they live in urban areas, they prefer **a healthy lifestyle**, such as taking walks and jogging.
Public Transport and Safety	There is dissatisfaction with the inconvenience of **public transportation access.** Even those who travel by car are dissatisfied with congested road conditions, sanitation, and a lack of affordable and available parking.
Satisfaction of Physiological Needs **Living Environment**	For people in developed areas such as KLCC, physiological needs are met to some extent. emphasis is on protecting one's own health by being conscious of hydration and sun protection.

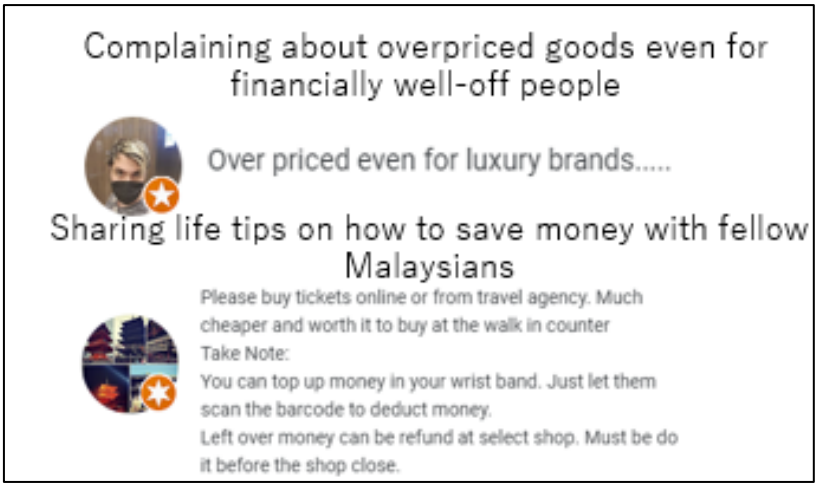
Source: Authors.

Malaysians are conscious of social classes and aspire for social mobility by having good financial status. As Malaysia is a multicultural society, even minorities feel safe to be themselves. Malaysians also believe that good mental and physical conditions bring them well-being or happiness.

- **<u>Happiness Factor #1: Financial and Work Freedom</u>**
  - Financially well-off
  - Financial freedom to buy what I want

Malaysians believe that they will be happier when they are financially well-off to buy anything they want. See Figure 6.18.

Figure 6.18. Malaysia – Citizen's Voice for Happiness Factor #1



Source: Authors.

- **<u>Happiness Factor #2: Richness of Mind with Connected Multicultural Community</u>**
  - Meaningful life and a purpose in life
  - Can be myself as I am

Malaysians feel happiness and pride as 'one-Malaysia', despite being a society of diverse races. See Figure 6.19.

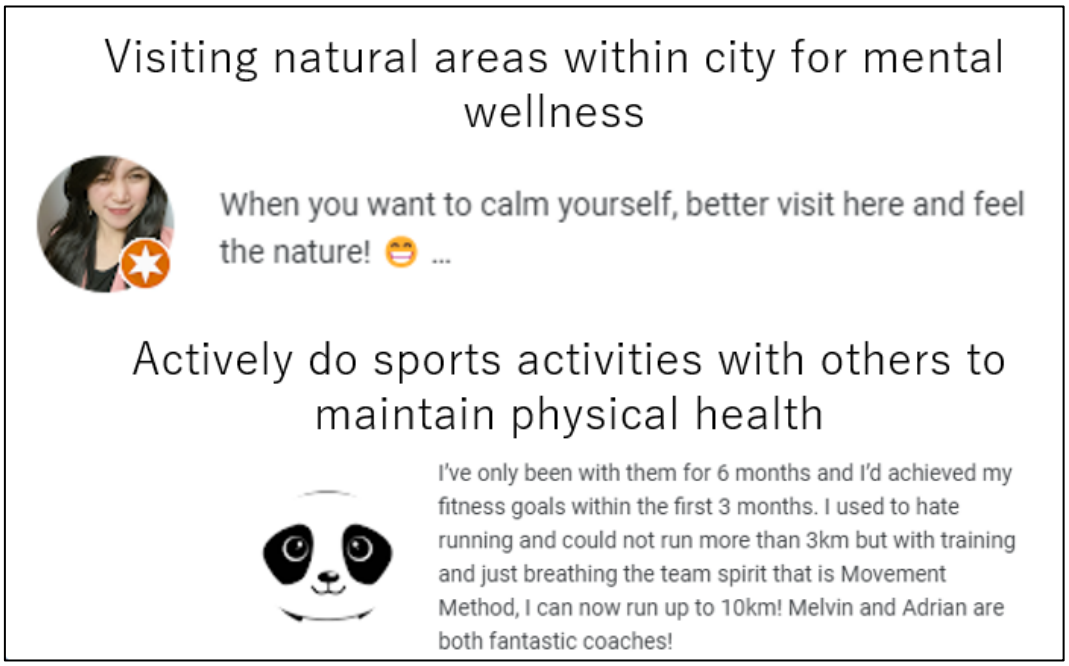
Figure 6.19. Malaysia – Citizen's Voice for Happiness Factor #2

Source: Authors.

- **Happiness Factor #3: Healthy Living with Hobby and Entertainment**
    - Mental health
    - Physical health

Good mental health and physical health invigorate Malaysians and bring well-being or happiness. See Figure 6.20.

Figure 6.20. Malaysia – Citizen's Voice for Happiness Factor #3



Source: Authors.

Chapter 7

Indonesia

1. Summary/Conclusion

1.1. SC/People-Centred Smart Cities Promotion Framework at Central and Local Government Level

In Indonesia, Bandung City was a pioneer in smart city initiatives, starting the effort back in 2013, ahead of other cities. They established a collaborative model to create a creative hub, where five major stakeholders – government, local companies, academia, media, and the community – work together and where startups and small businesses gather.

Following Bandung's lead, seven government ministries, including the Ministry of Internal Affairs, Ministry of Communication and Information, Ministry of Finance, and the National Development Planning Agency, collaborated in 2017 to formulate the '100 Smart City' plan. This initiative aimed to promote smart cities, addressing urban disparities and empowering local citizens. Out of 564 cities and districts in the country, 100 were selected for the plan. Jakarta Special Capital Region, Banjarmasin City, and Makassar City are the three Indonesian cities that are part of the ASEAN Smart City Network (ASCN).

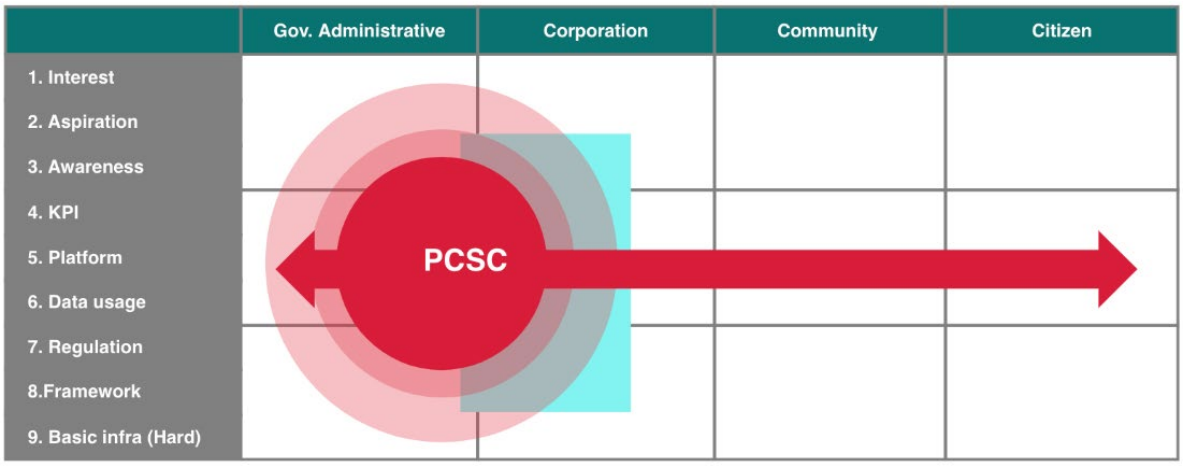
Apart from government leadership under the '100 Smart City' plan, the government and local authorities also encourage and support private companies, particularly local conglomerates, to lead smart city initiatives. In Jakarta Special Capital Region, where problems such as traffic congestion, subsidence, and air pollution are prevalent, they are promoting comprehensive development in Jabodetabek (Jakarta metropolitan area), through collaboration with neighbouring areas, such as Bogor Regency City to the east and Tangerang City and South Tangerang city to the west. They also aim to disperse functions within Jakarta Special Capital Region, such as the development of North Jakarta city. To achieve this, they encourage advanced townships led by local conglomerates like Alam Sutera Realty in Tangerang City, Jababeka Infrastruktur in Bogor Regency, and Agung Sedayu Group in North Jakarta City.

Similar to Bandung City, various smart city initiatives are being promoted in Jakarta Special Capital Region through collaborations with startup companies such as Gojek and Grab ride-hailing apps, Bukapapak, Tokopedia, Shopee, e-commerce sites, Qlue, Nodeflux, Informasi Pangan Jakarta, Botika for electronic payments, and DuitHape for government services. Also, Also, Bumi Serpong Damai (BSD) City, a significant development area covering approximately 6,000 hectares located in South Tangerang City, Jakarta suburb, under the umbrella of Sinarmas Land, a major conglomerate in the country, has established Grab's research and development centre.

1.2. Current Situation of People-Centred Smart Cities Promotion Structure and Necessary Areas for Future Promotion and Expansion

As mentioned, one of the prominent features of Indonesia is the collaboration between state governments/cities, private companies/startups to develop smart cities and strengthen digital solutions for citizens. Bandung established a cooperative framework involving various stakeholders, including communities and citizens. However, similar efforts have not progressed adequately in other cities, presenting a future challenge that aligns with pattern 2 as a PCSC typology.

Figure 7.1. Indonesia – People-Centred Smart Cities Pattern 2



Source: Authors.

To enhance the attachment of communities and citizens to their local areas and promote their well-being or happiness, it is important to not only enjoy the convenience of digitalisation but also actively engage in activities that improve the local community. Providing platforms and frameworks for citizens to voice their opinions becomes essential.

In gauge the achievement of well-being or happiness, it is necessary to establish objective measures of subjective well-being or happiness, along with suitable measurement methods. Conducting surveys to develop more sophisticated measures and mechanisms for continuous and regular observation also prove effective in this regard.

1.3. Areas to Tackle for Promoting People-Centred Smart Cities and Improving Well-being or Happiness

The factors which contribute directly to well-being or happiness are as follows:

(i) Financial and work freedom
(ii) Healthy Living with hobby
(iii) Richness of mind with connected multicultural community
(iv) Relationship with family & Friends

Although each of the four factors contributes to the improvement of well-being or happiness, it is essential to consider the values and characteristics of Indonesian citizens derived from Diginography. Based on this, we identified the specific areas that need attention and determine the factors that should encourage citizens to proactively participate in promoting and implementing PCSC initiatives:

(i) Financial and work freedom: Like other ASEAN countries with growing economies, the citizens of Jakarta are looking for opportunities to achieve economic prosperity and secure jobs that can increase their income. In particular, Jakarta citizens are eager for income-generating business opportunities, and this has led to the emergence of numerous business models and services that have developed independently in Indonesia.

Shopping malls play a vital role in this pursuit, serving as not only as convenient places where people can access a variety of products and services in one-stop shops but also as places where people can come across new products and services, often in the form of innovative business models.

→ (Potential areas) **New business and job opportunities that support economic wealth.**

(ii) Healthy Living with hobby: For Jakarta citizens who feel strong sense of challenges in their living environment, such as city safety and traffic congestion, newly developed suburban residential areas are becoming increasingly popular because they offer a better environment and healthier lifestyle than urban centres. Citizens living in such new residential areas (BSD areas) have mentioned exercise, diet, and activities to maintain a healthy body, and are seeking a sacred place with fresh air and nature to relieve their fatigue.

→ (Potential areas) **Activities that support physical and mental health in terms of diet and exercise.**

(iii) Richness of mind with connected multicultural community: In newly developed areas, public spaces and facilities must meet high standards of security and be well-equipped. In Indonesia, where human connections and a strong sense of community are valued, parks and shopping centres hold significant importance as places for people to interact with one other. In these spaces, people seek services that are inclusive, friendly to everyone, and provide a comfortable environment. In addition, being a multi-ethnic country with a deep sense of religious awareness, Indonesians are very proud of their unique cultures, such as Islamic and Balinese culture. On the other hand, they also look forward to experiencing foreign.

→ (Potential areas) **Activities to connect with people in the community and improve the community; places and activities where people can experience Indonesia's unique culture and foreign cultures.**

(iv) Relationship with family & friends: Recreational facilities, such as local parks and playgrounds, are cherished as places where children can play, pets can be brought, and friends and family

can relax. They provide an opportunity to connect with nature and are warmly welcomed by people. These places are cozy and enriching, offering a chance to enjoy quality time with loved ones without having to spend a fortune.

→ (Potential areas) **Places and activities to enjoy with family and friends.**

1.4. Citizen Clusters in Indonesia – Volume Distribution and Citizen Clusters to Involve in People-Centred Smart Cities Promotion

In Indonesia, the order of clusters by volume is as follows:

- CL5: Basic needs for healthy life (24.6%)
- CL6: Fundamental Infrastructure (23.2%)
- CL3: Conscious parents craving for better life (23.2%)
- CL2: Active citizen for community (14%)
- CL1: Active citizen for self-development and interest (13%)
- CL4: Financial freedom to enjoy my life (2%)

Similar to other countries, those that engage in PCSC promotion are active citizens. However, the volume of active citizens is slightly lower than the average of 6 ASEAN countries. These active citizens are open to various activities, ranging from improving the living environment to personal pursuits.

2. Interview Results: People-Centred Smart Cities Implementation and Existing Frameworks

Based on interview results (Figure 7.2), the advanced smart city initiatives are being implemented through collaboration between the government, local conglomerates, and startups, all under the framework of the '100 Smart Cities' concept. Academia also embraces the PCSC philosophy, and a reporting framework is already in place. However, there is currently no platform or KPIs established to adequately capture the needs of citizens for the city. At the corporate level, BSD City shows keen interest in the PCSC and has initiated efforts to gather input from citizens.

Figure 7.2. Indonesia – Key findings on People-Centred Smart Cities from Stakeholder Interviews

		Evaluation	Academia interview: Institut Teknologi Bandung (ITB), Ibnu Syabri	Evaluation	PRIVATE : BSD City
WILL	1. Interests 2. Aspiration 3. Awareness	○	**Collaboration among Local government, private sector and local community is strongly focused on.** In accordance with the central government initiative "100 Smart City", which use Bandung as a role model, the environment of collaboration among local government, private sector and local community has been created. The projects for improvement of air pollution, traffic jam, ground sinking have been promoted under the collaboration. Although the industrial development is more focused on, the people-centric concept/model, which prioritizes happiness/Wellbeing of the people is considered as an essential factor.	○	Interested in studying to adopt People-centric concept/model in BSD city, since it already has 200,000 residents and they know the high level of engagement of the residents shall be the value of the city.
SOFT/ Intangible	4. KPI	△	880 Indicators across the 19 areas in accordance with "SNI ISO 37122(2018): Sustainable Urban and Community Development Indicators", which covers broadly fundamental elements consisting of people's life, but does not include the subjective elements about happiness/Wellbeing of the people.	△	BSD city sets up and uses KPIs for the purpose of efficient and effective management of the city, whilst they do not have KPI's to measure the happiness, satisfaction level of the people.
	5. Platform to collect Opinions 6. Usage of people's voices		Reporting App or system such as QLUE, 711 are adopted as smart city platform by the local governments, real estate developers and widely used by the people considered as smart city platform, whilst there are not any platform to collect the voices the needs/expectation toward the city/town.		BSD city has a digital platform called "OneSmile App". It has a function to collect people opinions/voices, however most of them are complaints and claim, and they do not think it worthwhile to fully work on them to solve the issues, unless they change to be more constructive opinions/voices.
HARD/ Tangible	7. Basic infra	△	Public transportation, digital infrastructure (low penetration of smart phone and internet), quality of water, ground sinking in Jakarta, environmental etc. are issues.	○	Basic infrastructure is well developed and maintained.

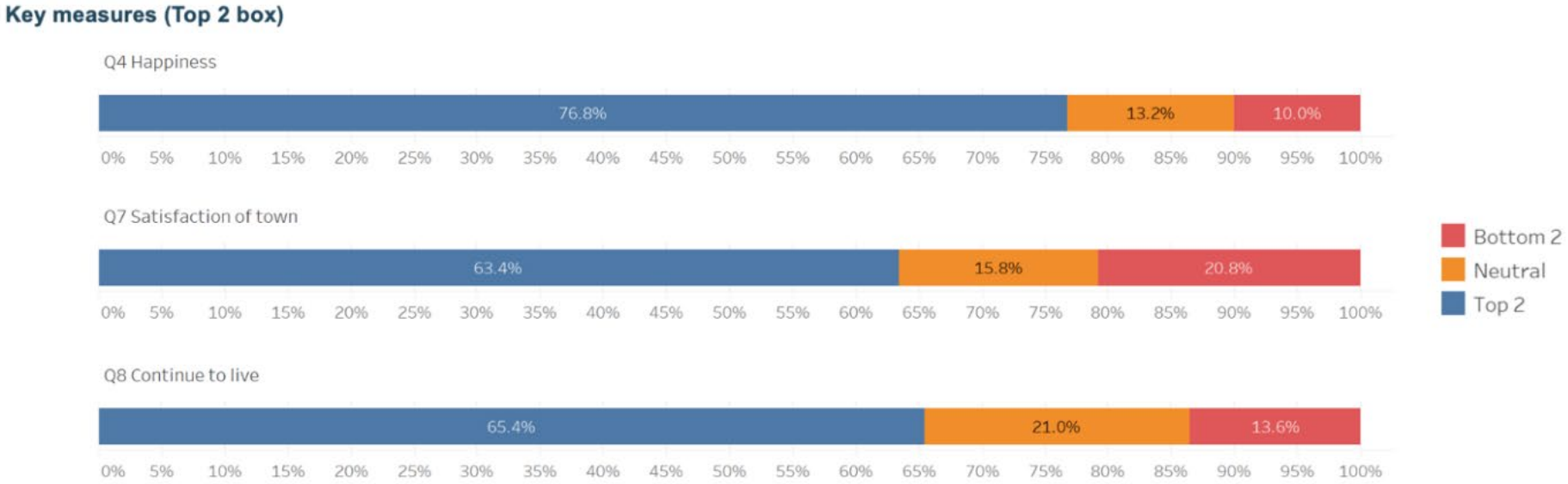
BSD = Bumi Serpong Damai; SNI = Standar Nasional Indonesia; ISO = International Organisation for Standardisation

Source: Authors.

3. Well-Being or Happiness of Citizen, Intention to Continue Living in the City

- **Happiness of Citizens**
  - Figure 7.3 shows the level of happiness of Indonesia citizens is high (76.8%), exceeding the average of the ASEAN-6 countries (69.9%).
- **Satisfaction with the city and intention to continue living in the city**
  - The level of satisfaction with the city (63.4%) and the intention to continue living in the city (65.4%) were somewhat high.
  - However, compared to ASEAN average (Satisfaction of town, 67.7%; Continue to live, 74.2%), Indonesia satisfaction with the city and intention to continue living in the city are slightly lower.

Figure 7.3. Indonesia – Happiness of Citizens, Satisfaction, and Intention to Continue Living in the City



Source: Authors.

4. Indonesian Citizens' Awareness of Challenges Concerning City and Daily Lives

In Indonesia, the gaps and challenges are particularly large in the areas of

(i) no road congestion,

(ii) living environment,

(iii) city safety,

(iv) good government services, and

(v) obedience of rules in city.

The living environment includes clean air, drinkable water, and beautiful, clean city. Indonesian citizens typically find satisfaction with a variety of restaurants, good friends on social media, acknowledgment of success by others, freedom to challenge what they want to do, and the discovery of new cultures and experiences. See Figure 7.4.

As shown in Figure 7.5, important areas that are relatively high in satisfaction levels are

(i) good relationships with family,

(ii) ease of shop for daily necessities,

(iii) can be myself as I am, and

(iv) physical health.

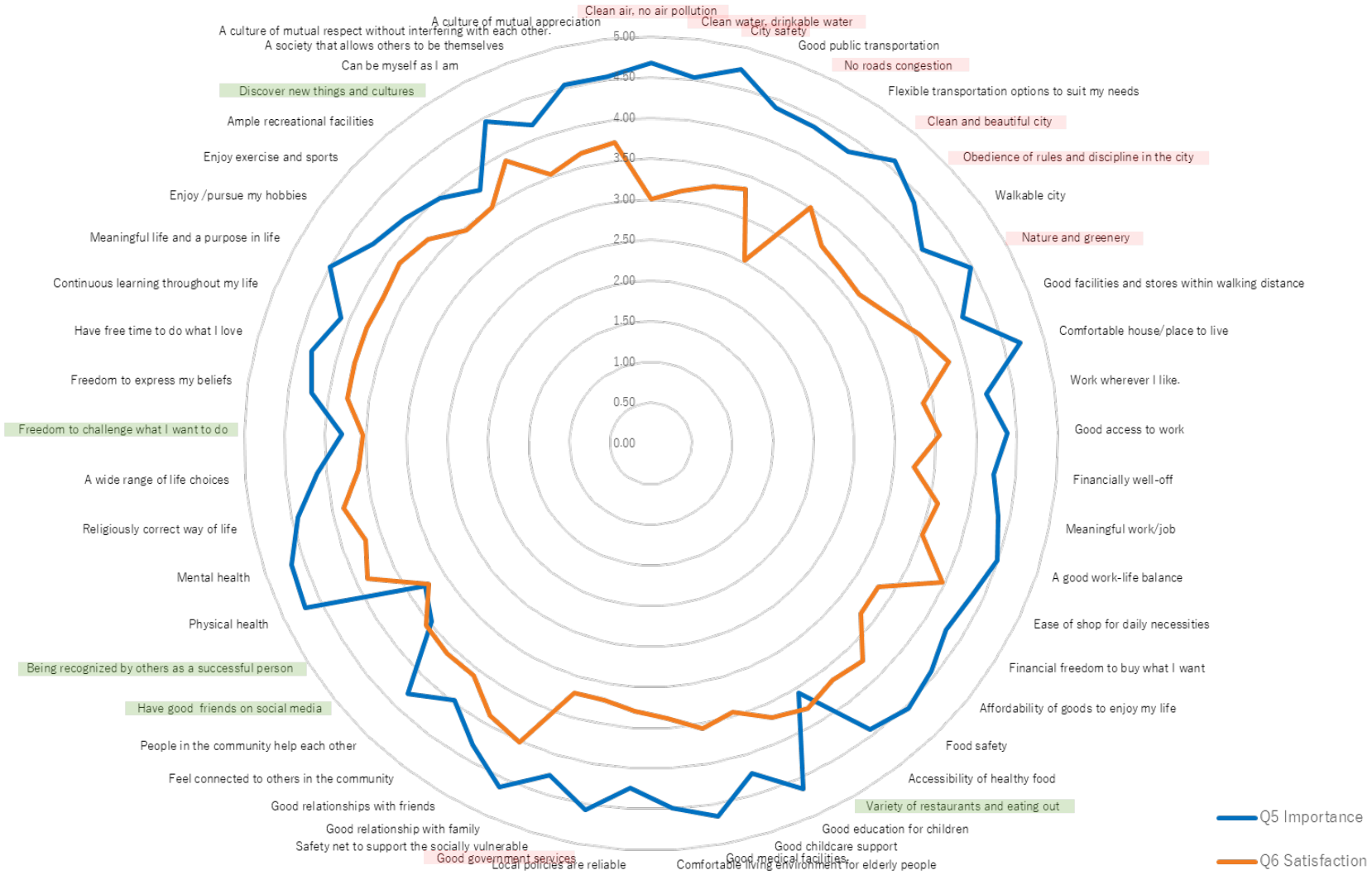
On the other hand, important areas that are relatively low in satisfaction are

(i) no road congestion,

(ii) clean air, no air pollution, and

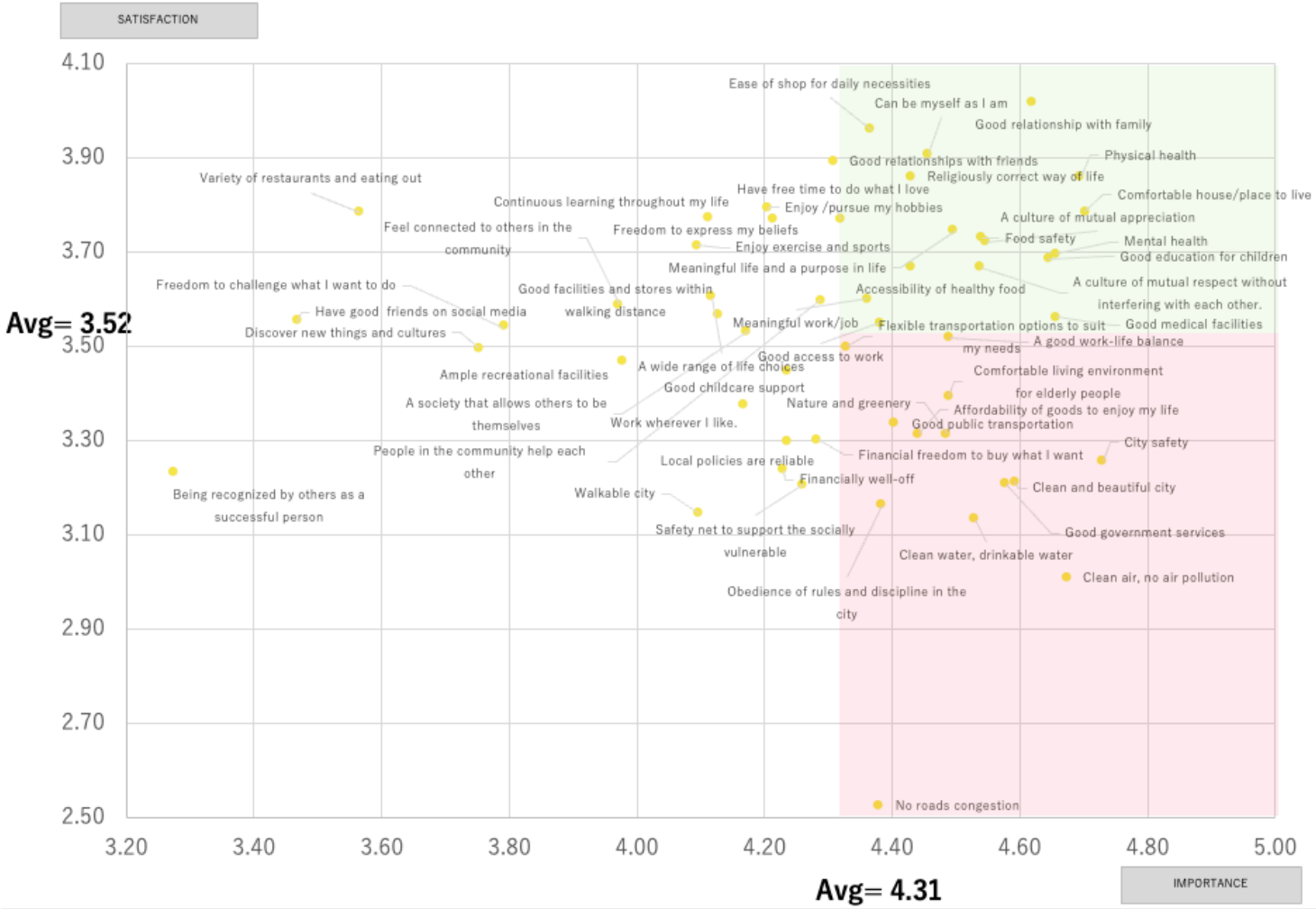
(iii) clean drinkable water.

Figure 7.4. Indonesia – Gap Analysis of Areas (Radar Chart)



Source: Authors.

Figure 7.5. Indonesia – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)

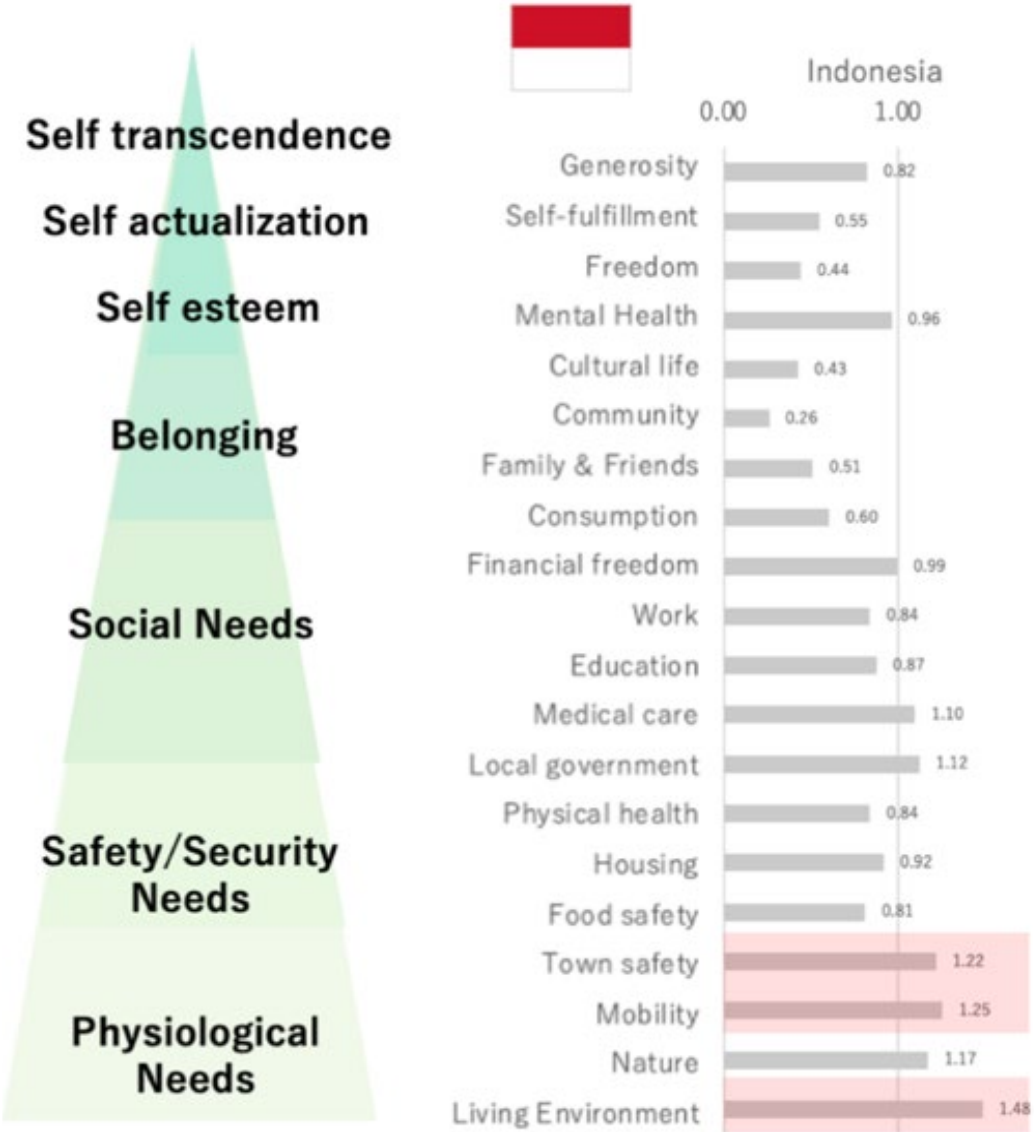


Source: Authors.

5. Current Level of Citizen's Well-being or Happiness and City Satisfaction and Area of Challenges

In Indonesia, there is a large gap in living environment, such as a clean city with no air pollution, and mobility challenges, such as public transportation and traffic congestion. Indonesia also has challenges in city safety. See Figure 7.6.

Figure 7.6. Indonesia – Gap Analysis of Areas (Maslow's Framework)

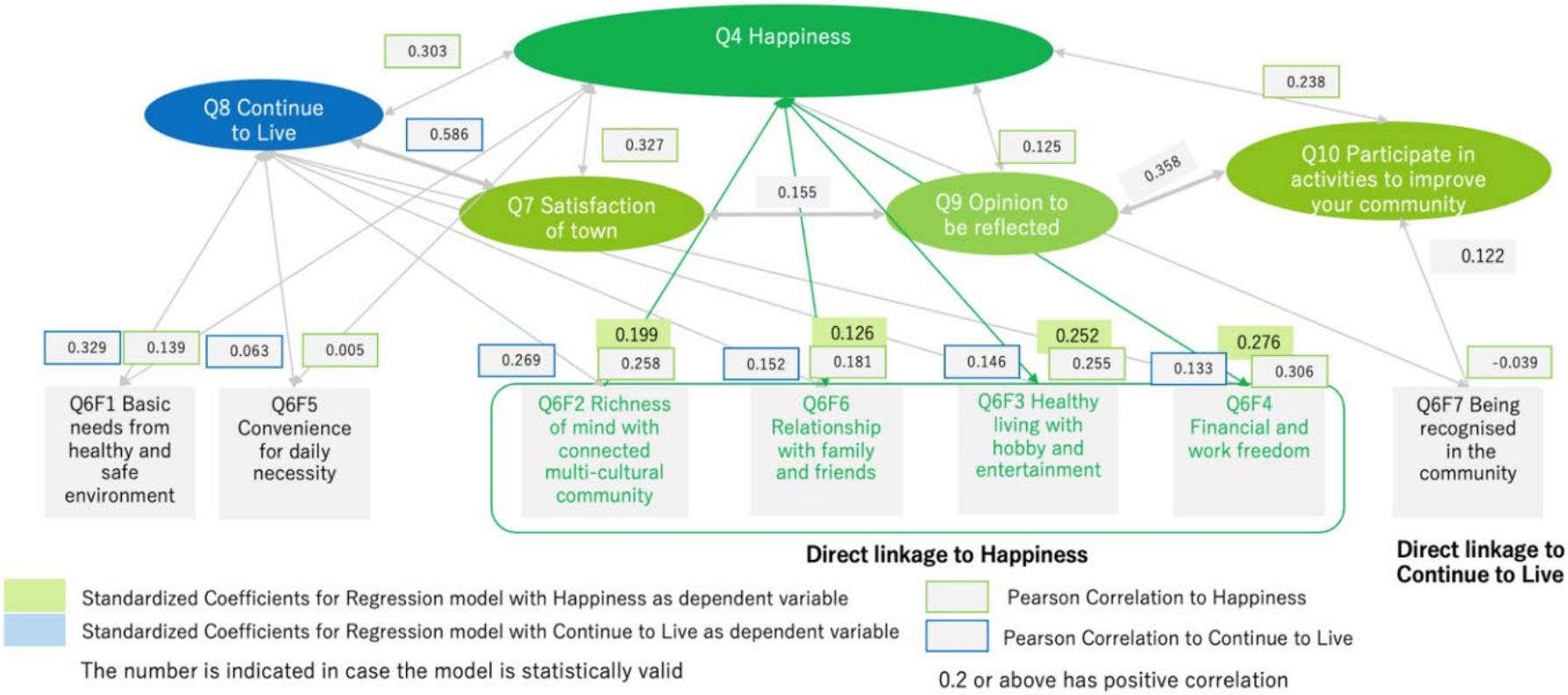


Source: Authors.

6. Factors for Citizen's Well-being or Happiness

In Indonesia, 'Basic needs from healthy and safe environment' has a high correlation to Q8 ('Continue to Live'), as shown in Figure 7.7.

Figure 7.7. Indonesia – Path Model to Identify Factors for Citizen's Well-Being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities

- **Activities to Participate**

As for activities to improve the city (Figure 7.8), the willingness to participate is high for the following:

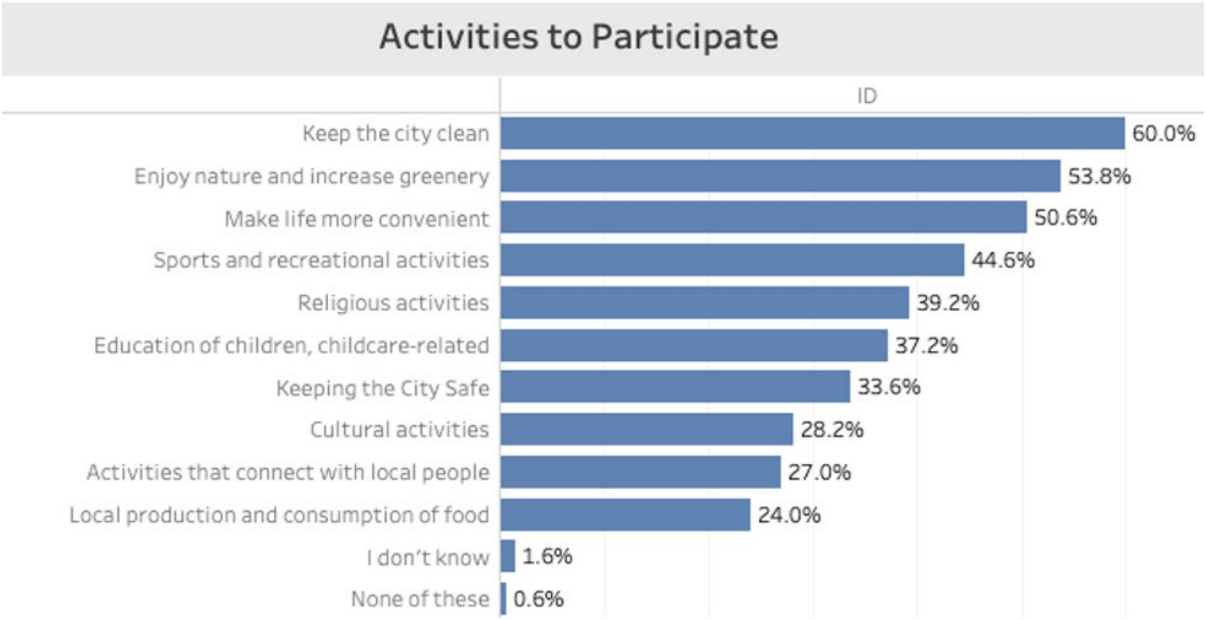
(i) Keep the city clean (60.0%)

(ii) Enjoy nature and increase greenery (53.8%)

(iii) Make life more convenient' (50.6%)

Figure 7.8. Indonesia – Activities to Participate to Improve Community

(%)



Source: Authors.

- **Important Areas for Digitalisation**

Figure 7.9 shows that the areas that are considered important for city digitalisation are as follows:

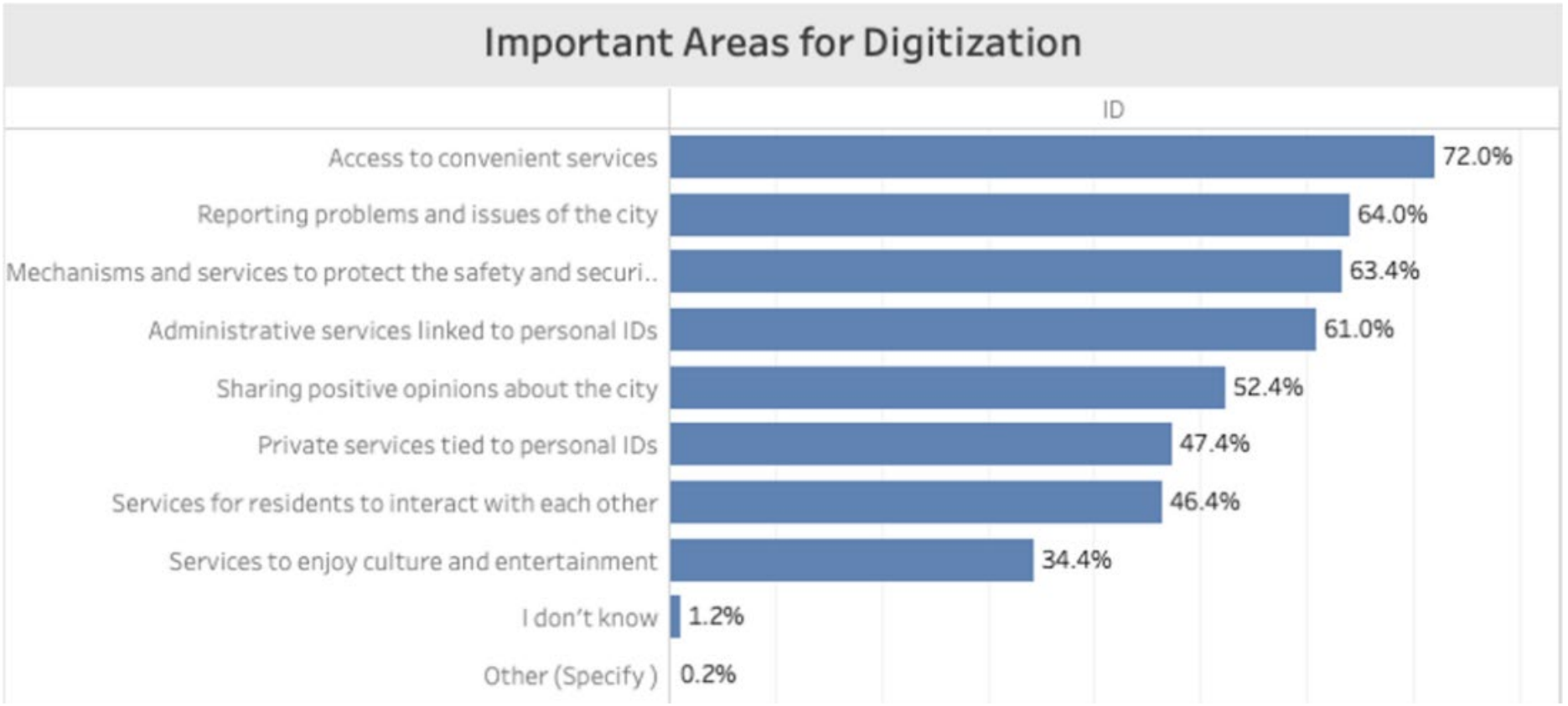
(i) Access to convenient services (72.0%)

(ii) Reporting problems and issues of the city (64.0%)

(iii) Services to keep the city safe and secure' (63.4%)

Figure 7.9. Indonesia – Important Areas for Digitalisation

(%)



Source: Authors.

- **Hurdles to Citizen Participation**

Citizens display a strong willingness to have their opinions heard, but they identify several obstacles that hinder current citizen participation, as show in Figure 7-10. The following items highlight the reasons perceived by citizens for this lack of involvement:

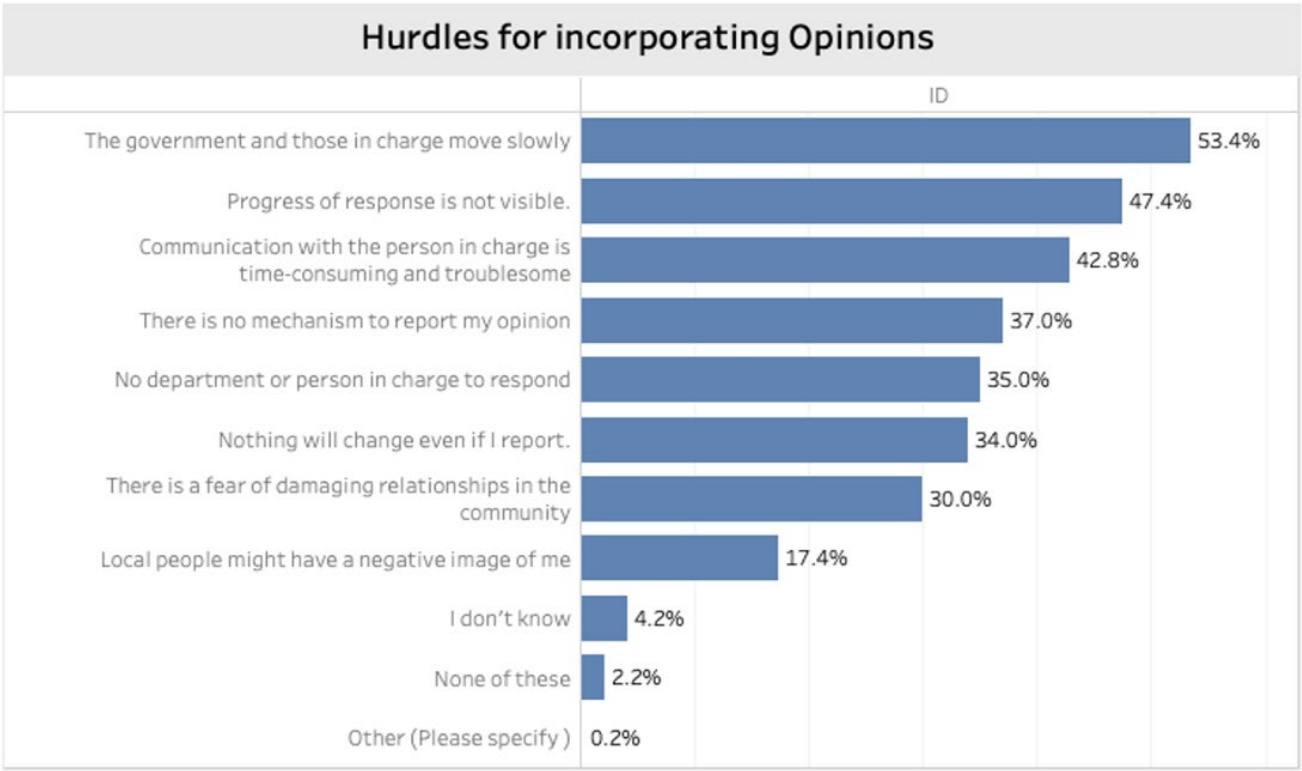
(i) The government and those in charge move slowly (53.4%)

(ii) Progress of response is not visible' (47.4%)

(iii) Communication with person in charge is time consuming (42.8%).

In addition to setting up a framework and structure to respond as an administration, citizens also desire a visual representation of the response to their voices. Additionally, they seek a concise mechanism that simplifies the process of voicing their opinions.

Figure 7.10. Indonesia – Hurdles for Incorporating Opinions



Source: Authors.

- **Willingness to Use Town Services**

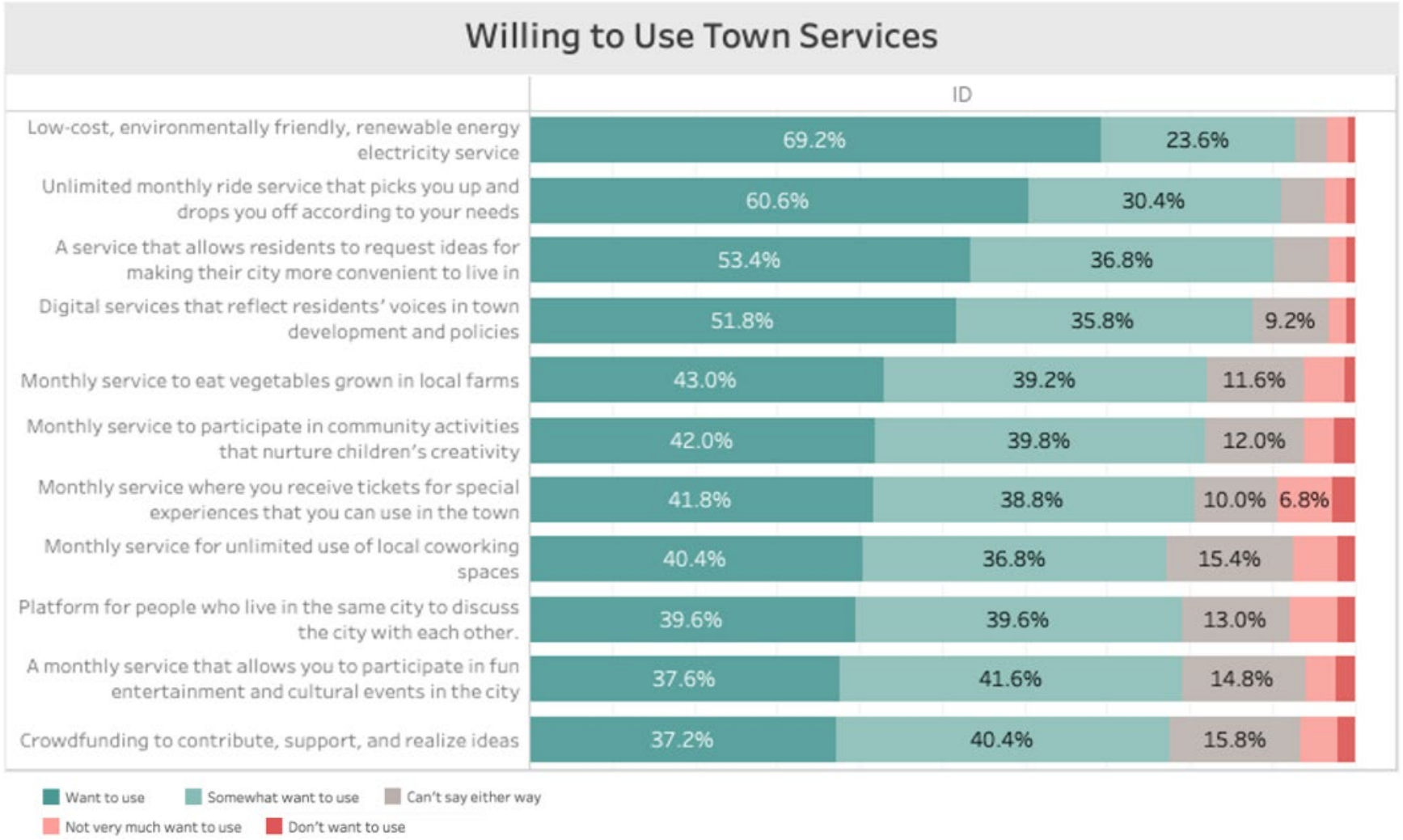
Figure 7.11 shows that Indonesians showed the willingness to use specific areas of service:

(i) Low-cost, environmentally friendly, renewable energy electricity service 92.8%）

(ii) Unlimited monthly ride services that pick up and drop you off according to your needs (91.0%)

(iii) Ability for citizens to request ideas for making their city more convenient to live in (90.2%).

Figure 7.11. Indonesia – Willingness to Use Town Services

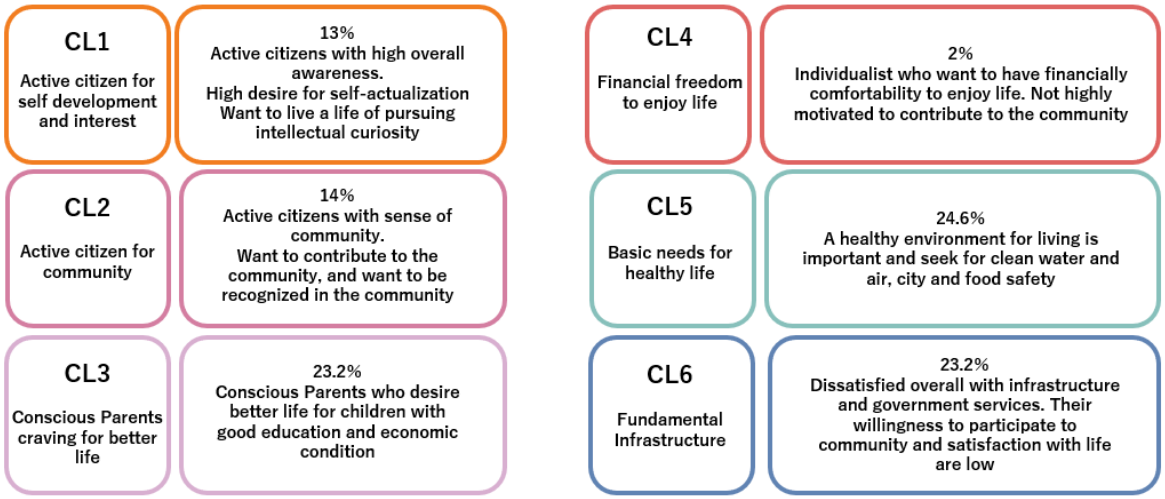


Source: Authors.

8. Citizen Cluster for People-Centred Smart Cities

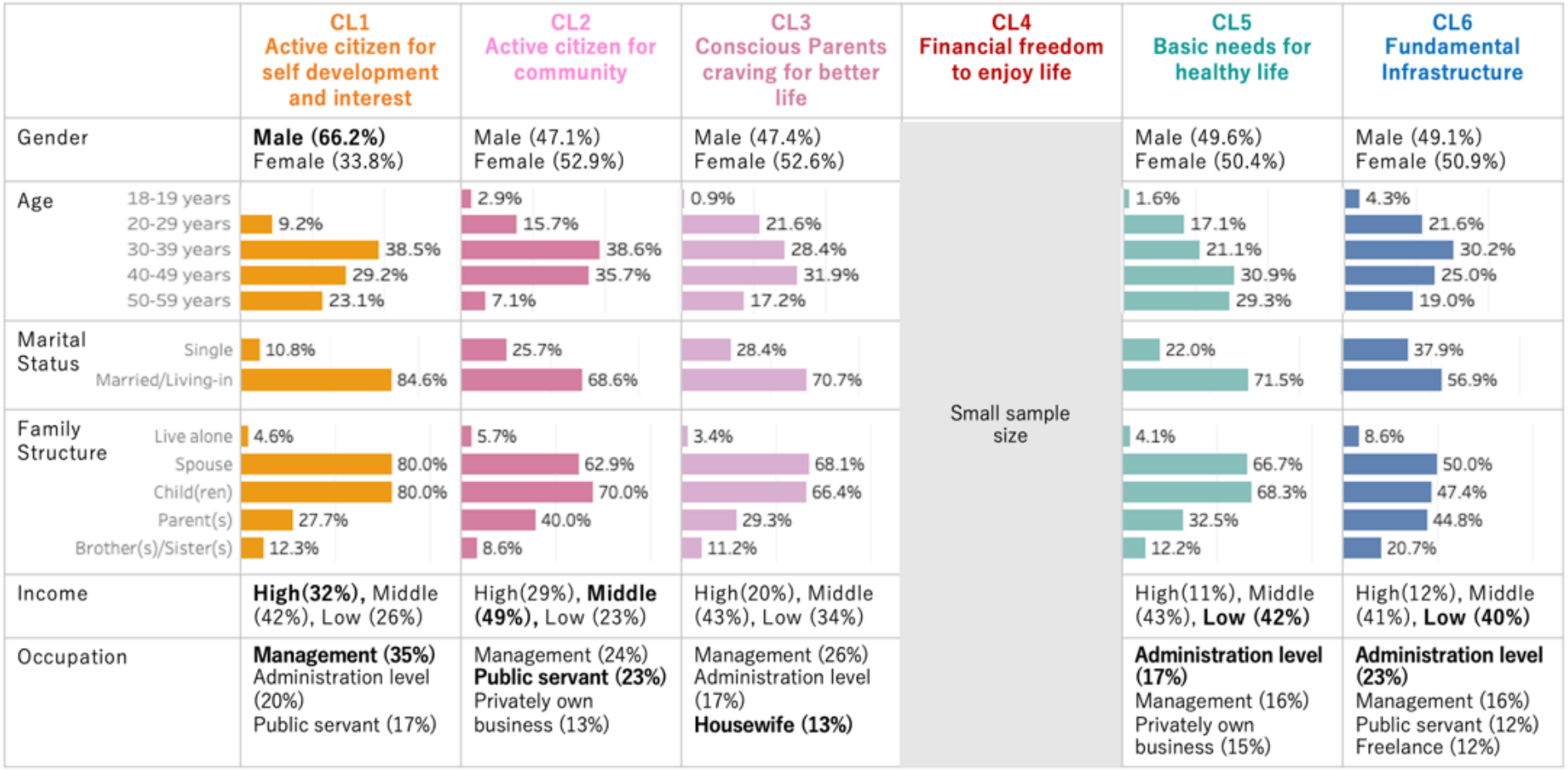
As shown in Figure 7.12, nearly half of Indonesia's population (47.8%) comprises those who prioritise basic needs (CL5) and fundamental infrastructure (CL6). ON the other hand, active citizens (CL1 and CL2 together) account for 27%. Figure 7.13 shows demographic profiles of the six clusters.

Figure 7.12. Indonesia – Citizen cluster for People-Centred Smart Cities



Source: Authors.

Figure 7.13. Indonesia – Citizen Cluster Demographics

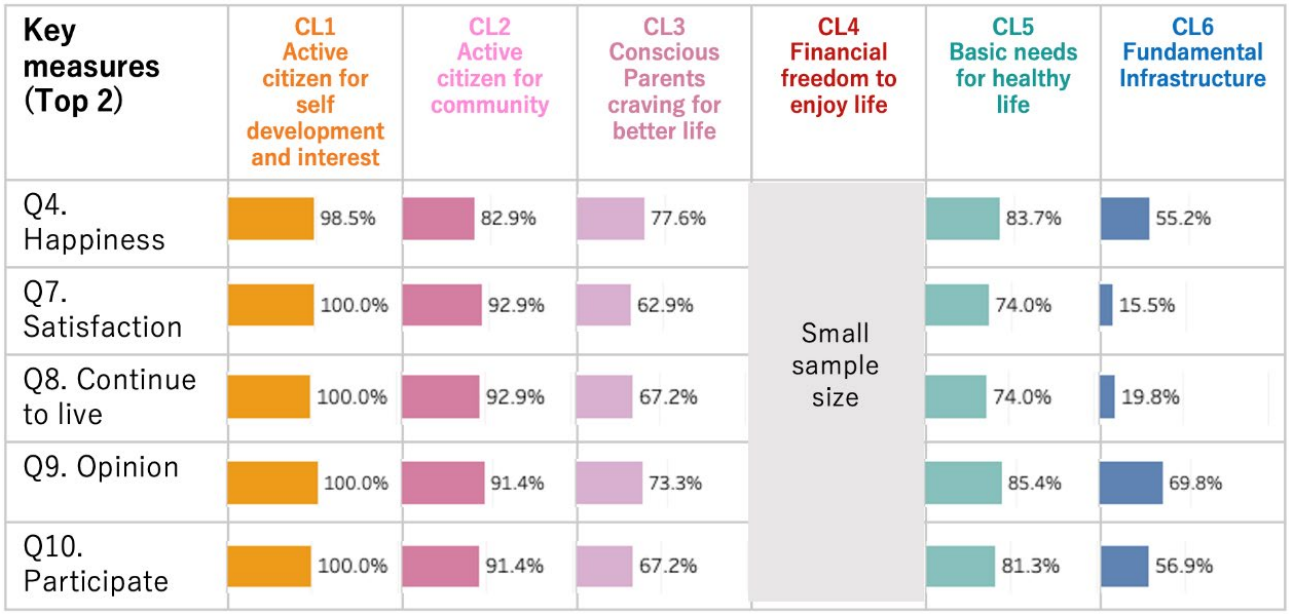


Source: Authors.

Overall, Figure 7.14 shows that CL1 and CL2 are highly active and open to participate in a variety of activities, ranging from living environment to personal life: Sports and recreational activities (54%, 50% respectively), Religious activities (54%, 44% respectively), Cultural activities (45%, 39% respectively), which can be seen from Figure 7-16. CL3 and CL5 have their main focuses on keeping the city clean, enjoying nature and making life convenient (Figure 7.15), while CL3 and CL6 are the least motivated to join activities to improve community.

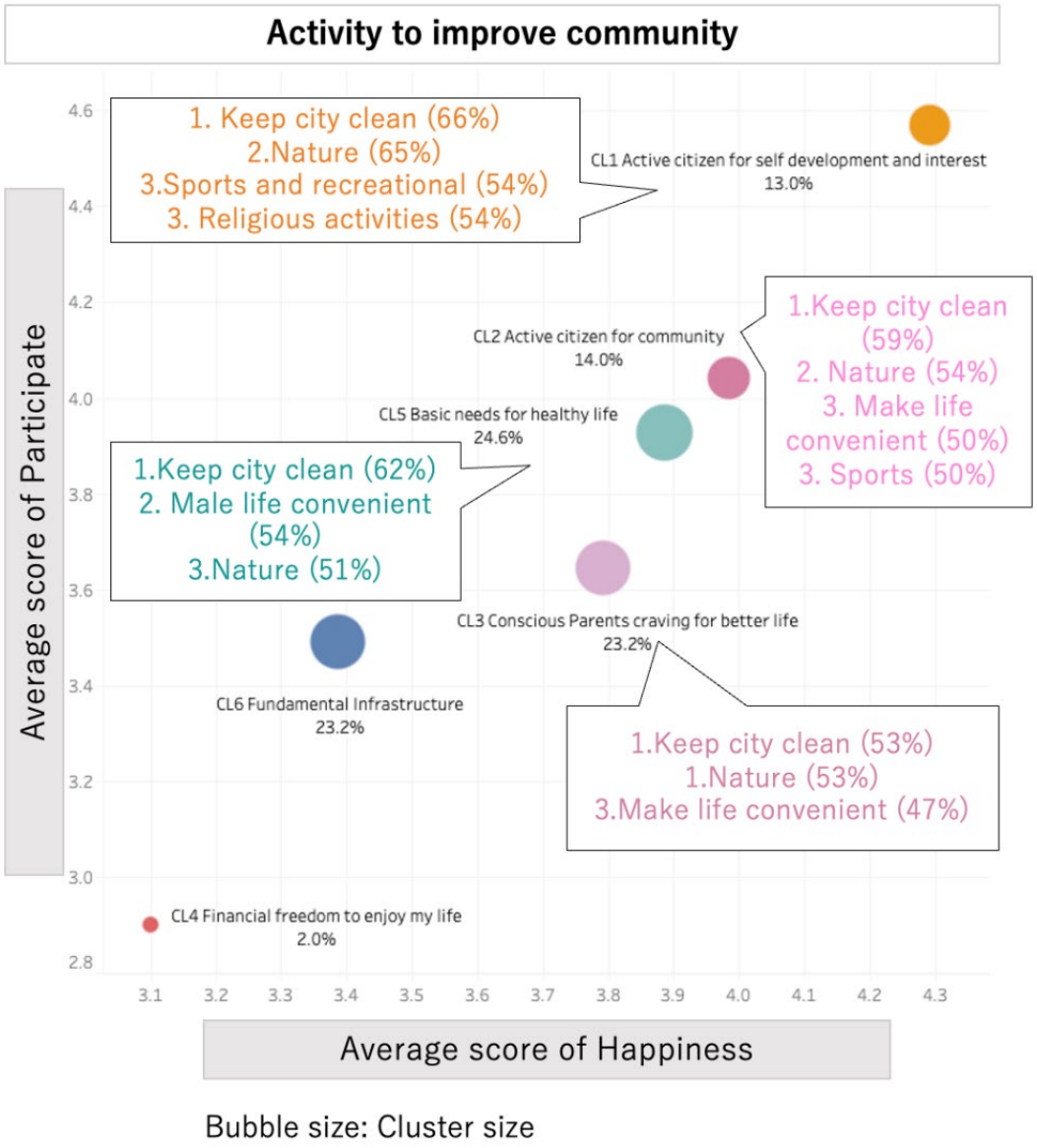
Figure 7.14. Indonesia – Citizen Cluster Key Measures

(%)



Source: Authors.

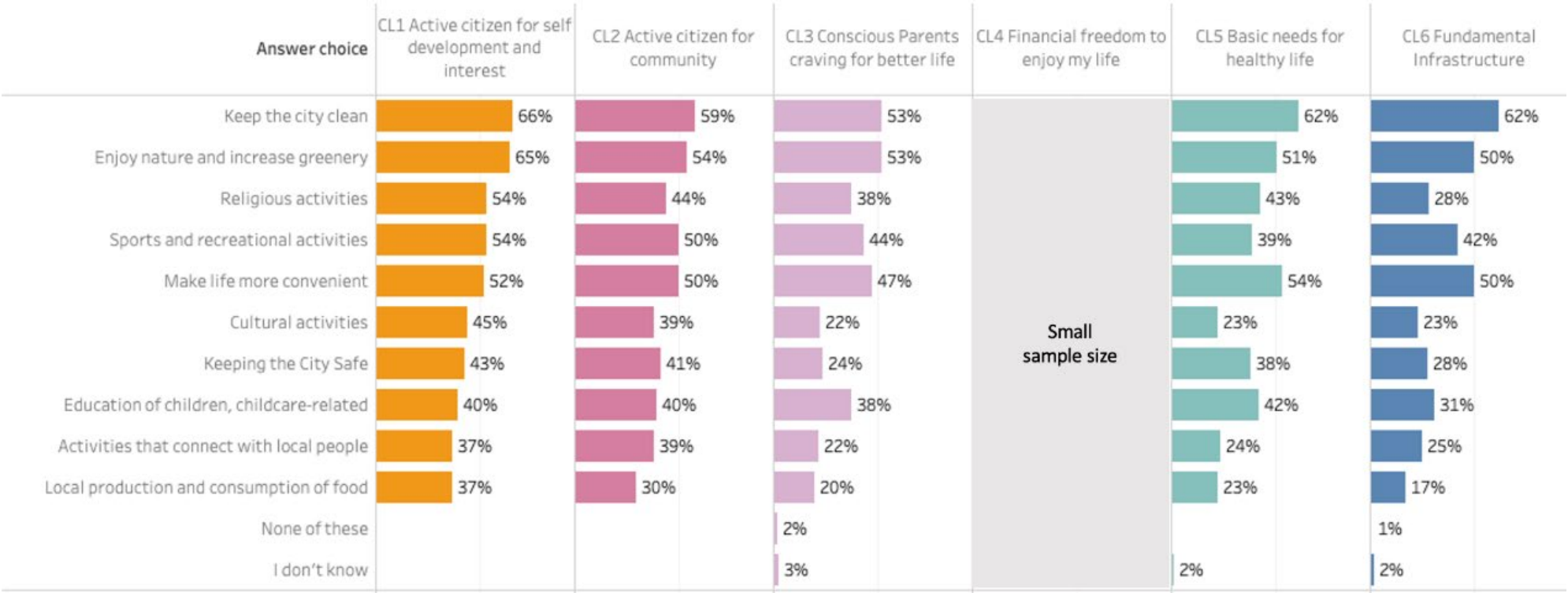
Figure 7.15. Indonesia – Mapping of Citizen Cluster Top Activities Participation to Improve Community



Source: Authors.

Figure 7.16. Indonesia – Citizen Cluster Activities to Improve Community

(%)

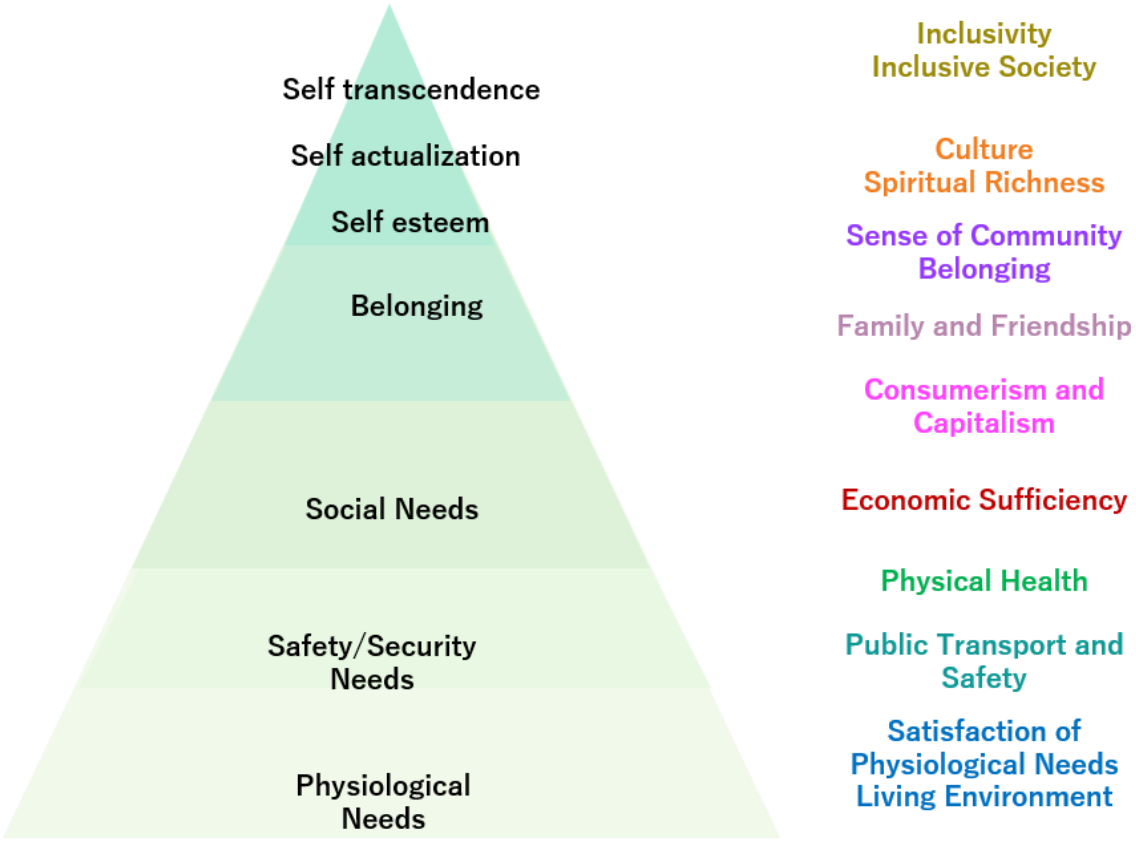


Source: Authors.

9. Citizen Testimonials about Their Cities

Figure 7.17 below is a summary of Indonesian citizens' opinions from diginography, reflected in Maslow's Hierarchy of Needs framework.

Figure 7.17. Indonesia – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	Citizens want services that are people-friendly and pleasant for everyone.
Culture **Spiritual Richness**	Citizens like to feel the unique atmosphere of Indonesia, such as Islamic culture and Bali, and at the same time also enjoy experiencing trendy places and foreign cultures.
Sense of Community **Belonging**	Recreational facilities such as playgrounds in local parks for children to play, and citizens welcome outdoor places where they can feel nature and bring their pets and relax with friends and family.

Family and Friendship	Even if citizens don't spend a lot of money on socialising with family and friends, they believe that spending time together in a comfortable place with a good atmosphere enriches the soul.
Consumerism and Capitalism	Shopping malls are unique concepts and places to experience diverse cultures. Due to the pro-Japanese nature of the population, mentions of Japanese food are also seen. Some conscious citizens have also raised questions on consuming a lot of plastic containers for food services.
Economic Sufficiency	Shopping malls provide one-stop access to a variety of products and services. They are valued for their convenient location and affordability.
Physical Health	New residential areas welcome vibrant sports areas for jogging and enjoying the outdoors. A sanctuary of fresh air and nature to relieve fatigue is sought after.
Public Transport and Safety	Public facilities where people can gather are important and must be well equipped and have adequate security. Access to public transportation and parking is a challenge.
Satisfaction of Physiological Needs Living Environment	For those living in the newer residential areas of Jakarta, physiological needs are being met to some extent, with mentions of exercise, diet, and activities to maintain a healthy body.

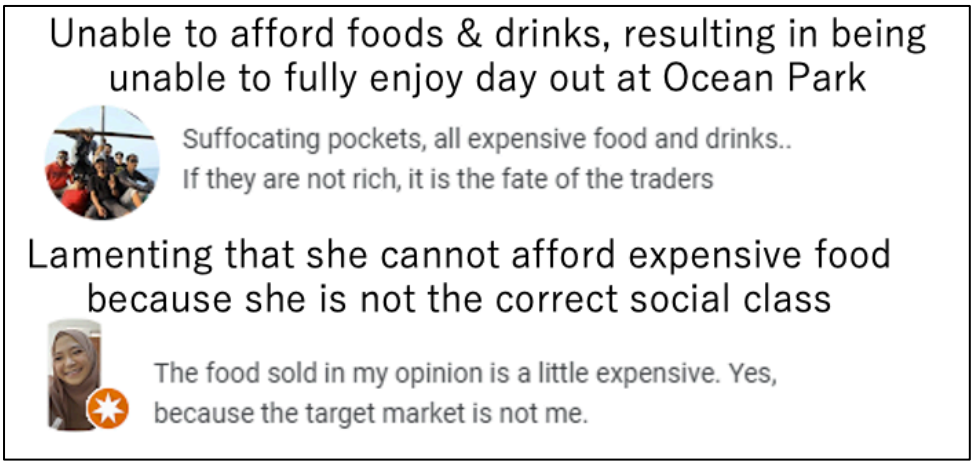
Source: Authors.

Indonesians seek to lead fulfilling lives to find happiness, but they need financial stability to fully enjoy life. Similar to most ASEAN countries, their well-being and happiness are influenced by their mental and physical well-being. Given Indonesia's diverse society, which includes Muslim Indonesians, Christian Indo-Chinese, and others, maintaining racial and religious harmony is another source of happiness.

- **Happiness Factor #1: Financial and Work Freedom**
  - Affordability of goods to enjoy my life
  - Financially well-off

Indonesians are always seeking ways to enjoy life. Having the financial means to do so brings them happiness. See Figure 7.18.

Figure 7.18. Indonesia – Citizen's Voice for Happiness Factor #1

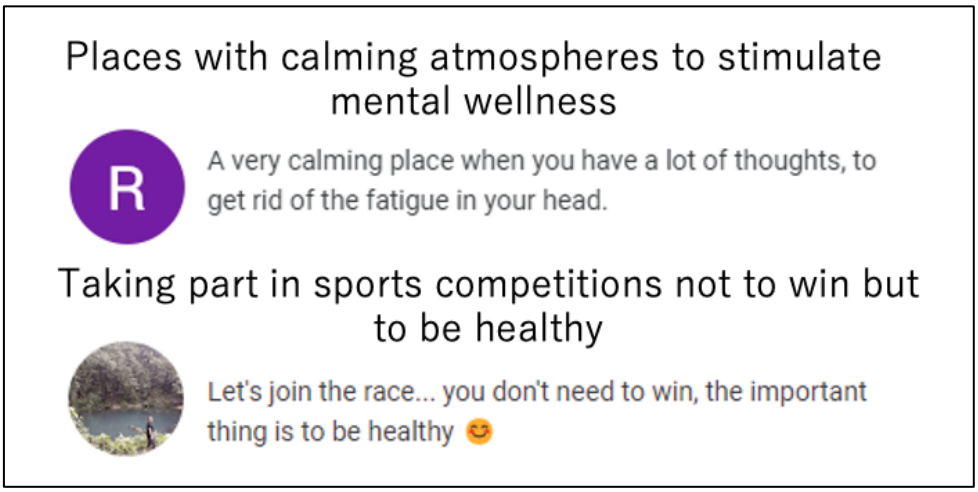


Source: Authors.

- **Happiness Factor #2: Healthy Living with Hobby and Entertainment**
  - Mental health
  - Physical health

Good mental health and physical health bring happiness and assurance to Indonesians. See Figure 7.19.

Figure 7.19. Indonesia – Citizen's Voice for Happiness Factor #2



Source: Authors.

- **Happiness Factor #3: Richness of Mind with Connected Multicultural Community**
  - A culture of mutual respect without interfering with each other
  - A culture of mutual appreciation

Indonesians appreciate different cultures, such as Muslims and Chinese Indonesians, existing in harmony. They also appreciate international cultures as it gives them a sense of experiencing the world beyond their own country. See Figure 7.20.

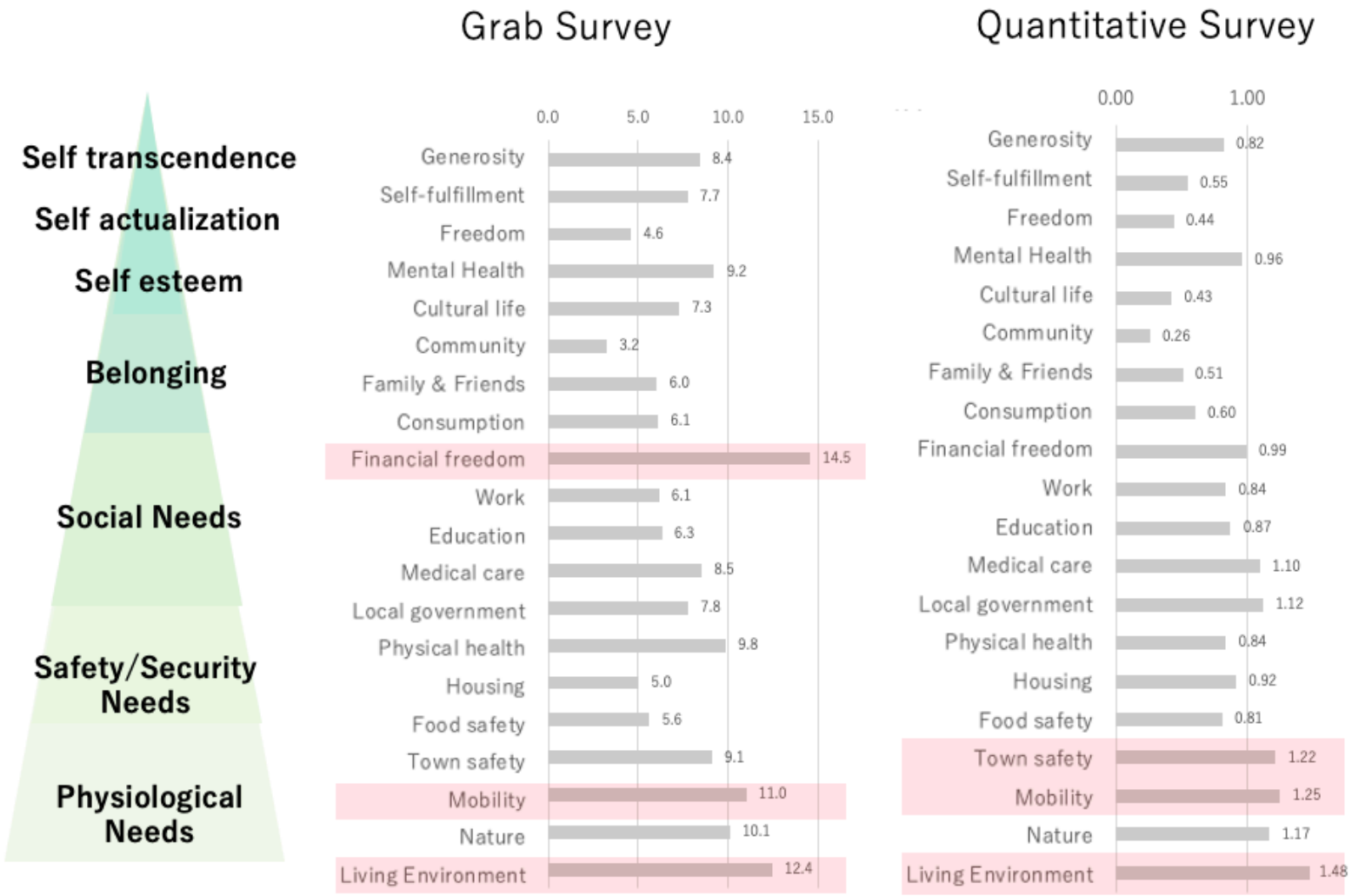
Figure 7.20. Indonesia – Citizen's Voice for Happiness Factor #3

Source: Authors.

10. Area Differences Seen from Grab Survey

Similar to Thailand, we utilised the grab survey in Indonesia to complement quantitative survey results in specific areas where smart city initiatives are underway (Figure 7.21). The areas covered in Indonesia are Central Jakarta, South Tangerang City, Tangerang City, and Tangerang Regency. As mentioned earlier, while the way of asking differs slightly between the Grab survey (multiple selection) and the quantitative survey (5-point scale), the results are comparable in a relative sense.

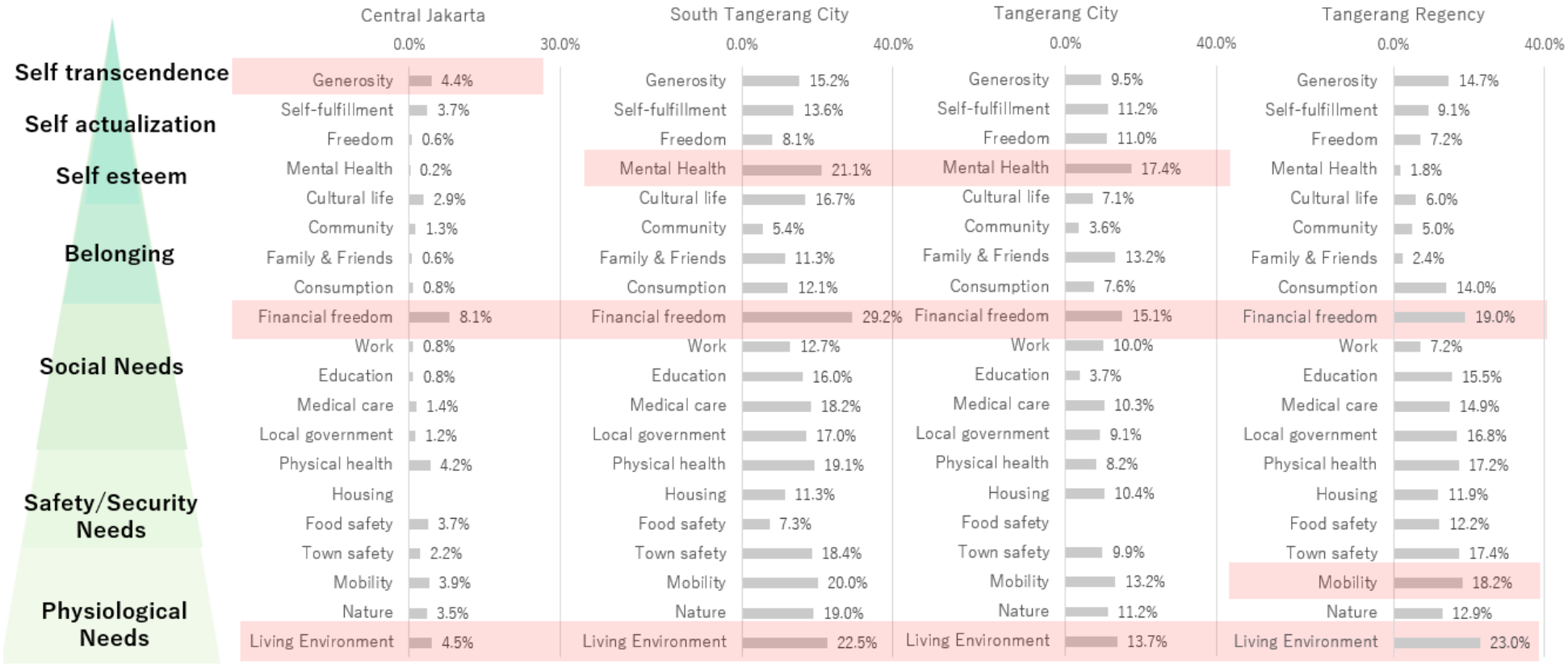
Figure 7.21. Indonesia – Gap Analysis, Grab Survey vs Quantitative Survey



Source: Authors.

The result in Figure 7.22 reveals that both surveys identify the living environment and mobility as key challenges. However, the Grab survey highlights additional areas, such as financial freedom. We observed that the Grab survey tends to show gaps at upper parts of the pyramid, which indicates that citizens' needs in these smart city initiatives are inclined towards modernisation, and they hold higher levels of needs for their lives beyond the basics. This tendency is more obvious when we analyse the gap by different areas and districts, revealing different challenges across different parts of the cities.

Figure 7.22. Indonesia – Gap Analysis, Comparison Between Areas and Districts, Grab Survey



Source: Authors.

Chapter 8

Philippines

1. Summary/Conclusion

1.1. SC/People-Centred Smart Cities Promotion Framework at Central and Local Government Level

In addition to the comprehensive development plan, known as the 'Philippine Development Plan' (PDP) by the National Economic and Development Authority (NEDA), which includes infrastructure development, macroeconomic policies, and financial system policies, the Department of Science and Technology (DOST) has established a framework for smart cities in 2021. Local governments carry out the promotion of smart cities.

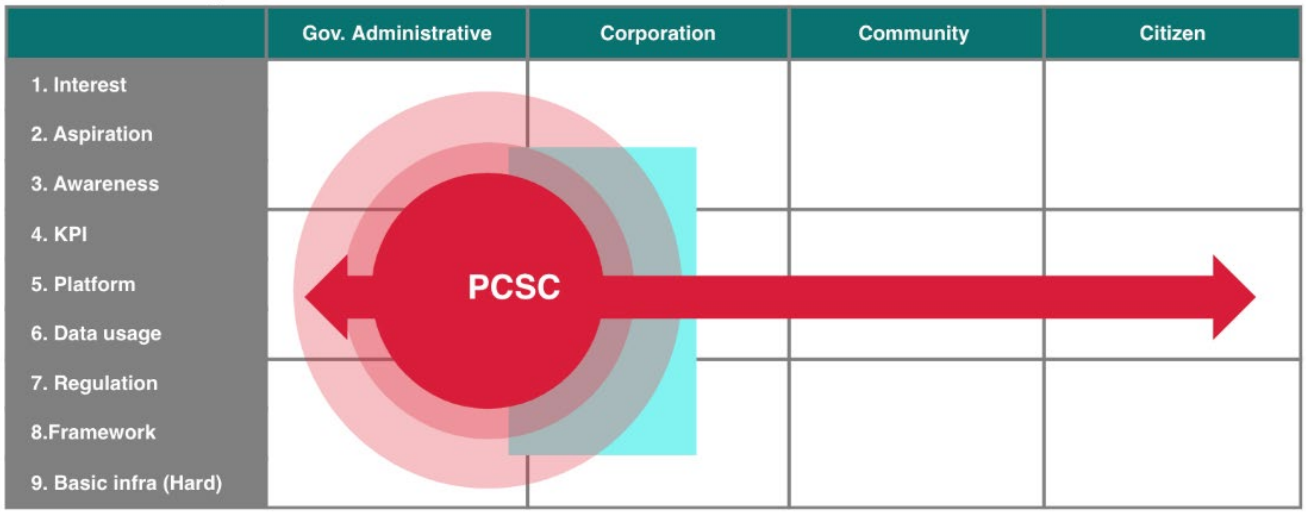
Amongst the major projects, the New Clark City (NCC) development project stands out, being developed by Bases Conversion Development Authority (BCDA) as a smart city on the former Clark Air Force Base site, spanning about 9,450 hectares. Th primary aim of this project is to alleviate the concentration of the Manila metropolitan area and traffic congestion. Additionally, it intends to relocate some government agencies from Manila and create housing for 1.2 million people and employment for 600,000 people.

Another major project is Makati City in the Manila metropolitan area, which has been promoted since 2016 with a public-private partnership initiative for smart cities. The city and telecommunication company Globe Telecom, amongst others, are cooperating to introduce an ID card for citizens with electronic payment functions and an app with functions such as crime prevention reporting. However, in the 'IMD Smart City Index,' which ranks the world's major 102 cities, Manila ranks 94th and is the lowest amongst the eight major ASEAN cities. The low evaluation is due to traffic congestion, air pollution, underdeveloped public transportation, and corruption. This evaluation is for Manila City alone, not for the entire Manila metropolitan area, including Makati City.

1.2. Current Situation of People-Centred Smart Cities Promotion Structure and Necessary Areas for Future Promotion and Expansion

In Philippines, government-affiliated development corporations are working with private companies (developers) to develop smart cities. Although they understand the importance of engaging the people and have interests in working with it, they have focused mainly on infrastructure development up to now and have not involved communities or citizens. Therefore, it corresponds to pattern 2 as a PCSC type, as shown in Figure 8.1.

Figure 8.1. Philippines – People-Centred Smart Cities, Pattern 2



KPI = key performance indicator(s); PCSC = people-centric smart city

Source: Authors

On the other hand, Filipinos tend to openly express their opinions and are committed to their communities. Local governments also show a willingness to engage with citizens. Therefore, there is potential for a PCSC in the Philippines, and it is worthwhile to explore the creation of a framework that involves communities and citizens.

1.3. Areas to Tackle for Promoting People-Centred Smart Cities and improving Well-being or Happiness

The factors which contribute directly to well-being or happiness are following:

(i) Financial and work freedom

(ii) Richness of mind with connected multicultural community

(iii) Healthy Living with hobby

(iv) Relationships with family and friends

When considering the values and characteristics of Filipinos derived from Diginography, it becomes evident that each of the four factors contributes to the improvement of well-being or happiness, Based on this analysis, we can interpret the areas to be addressed and the factors that should encourage citizens to be proactive in promoting and implementing PCSC:

(i) Financial and work freedom: The economic development of the Philippines is keeping pace with other ASEAN countries, especially in the Metropolitan Manila area, which includes Makati and The New Clark City, where smart city development is in progress, and modern urban development is adhering to global standards. In addition, Filipinos, owing to their historical background, are comfortable with English, leading to a high exposure to foreign cultures and global brands. In these emerging areas, Filipinos desire access to a variety of global-standard

brands and products in shopping malls. However, they also seek reasonable choices in department stores and supermarkets to reflect current economic standards, since shopping in inner-city housing and upscale shopping malls is expensive.

→ (Potential areas) **Enhanced commercial facilities of global standards and daily choices that meet citizens' standard of living**

(ii) Richness of mind with connected multicultural community: In Filipino society, Western cultures such as Spain and the US, along with the Catholic culture, have significant influence, making events that celebrate Christianity (the religion of the majority) is very important. moreover, Filipinos are known for their creativity, and citizen contributions show that many people actively participate in festivals and events that value creativity and the arts, enriching cultural life. Hospitality is a core value amongst Filipinos, and they seek comfort and pleasant experiences with the staff at various places they visit.

→ (Potential areas) **Community activities and events to enjoy rich culture**

(iii) Healthy Living with hobby: Manila citizens have a strong desire for lush green places that offer fresh air, away free from the hustle and bustle of the city centre and work-related stress. They are also interested in parks for exercising and jogging to lead healthy lives, both physically and mentally. Additionally, playgrounds for children's recreation are much needed in the Philippines, which has a large population of small children. Furthermore, amongst young people who are interested in new, flexible, and modern lifestyles, seek communal living spaces. In both cases, safety and security are important elements of a PCSC in the Philippines, necessitating a high level of security.

→ (Potential areas) **Places and facilities that allow people to connect with nature; support healthy physical and mental well-being; provide a safe and secure environment for families, including children's play areas.**

(iv) Relationship with family & Friends: Filipinos, who have a strong sense of family and value celebrating birthdays and religious events together, find local establishments and new mega shopping malls as places where everyone has a place and feels at home.

→ (Potential areas) **Places and activities to enjoy with family and friends.**

1.4. Citizen Clusters in Philippines: Volume Distribution and Citizen Clusters to Involve in People-Centred Smart Cities Promotion

Next, a cluster analysis was conducted based on matters of concern to identify the groups of citizens that should be involved in realising a PCSC. This approach helps us create proactive citizens and encourage their participation in the activities.

In Philippines, the order of clusters by volume is as follows:

- CL1: Active citizen for self-development and interest

- CL5: Basic needs for healthy life
- CL3: Conscious parents craving for better life
- CL2: Active citizen for community
- CL6: Fundamental Infrastructure
- CL4: Financial freedom to enjoy my life

Volume of active citizens is the highest amongst ASEAN-6 countries. These citizens are open to a variety of activities, ranging from living environment to personal life. Examples are activities related to children-related and sports and recreational activities.

2. Interview Results: People-Centred Smart Cities implementation and Existing Frameworks

Based on interview results (Figure 8.2), While there is a comprehensive development plan by NEDA in the 'Philippines Development Plan' (PDP), there is no national development plan for a smart city. Master plans are prepared on project basis. The significance of a PCSC is well acknowledged, and there is a possibility that it could be implemented at the city level, particularly in urban areas where local government officials show a high awareness of its importance. However, at the development corporation level, the PCSC framework is not yet in place. Nevertheless, there is a desire to implement it in the near future.

Figure 8.2. Philippines – Key findings on People-Centred Smart Cities from Stakeholder Interviews

		Evaluation	Academia interview : Dr. Antonette, Ateneo de Manila University	Evaluation	PUBLIC/PRIVATE: BCDA IT/ICT Dep. For New Clark City
WILL	1. Interests 2. Aspiration 3. Awareness	○	**NEDA PDP 2023-2028 states to establish livable communities by upgrading and planning human settlements with an integrated use of space will bring people closer to work, recreation, and transit options.** Central government has a sense of people-centric and consider the Empowerment and inclusion as one of the important elements of the city. Some local gov. such as MetroManila, Makati has tried launching SC measures. Although the importance of People-centric concept/model is understandable from the academia's perspective, its feasibility relys on the level of awareness and moral of the local government.	○	NCC is still a toddler with no residents yet, **when the residents settle in there will be need to implement services and facilities people want.**
SOFT/ Intangible	4. KPI	△	80 Indicators across the 13 areas in accordance with "PNS ISO 37122(2020): Sustainable Urban and Community Development Indicators". **Philippine is the only country that included "Empowerment and Inclusion" in the indicators and consider the importance of community/human internal aspect officially.**	N/A	Not yet stated but sustainability, livable city, walkable city would be the key elements
	5. Platform to collect Opinions		Although e-Participation and other similar digital platform were developed, they are not widely used effectively.	N/A	Planning to launch an e-gov platform where residents get services without going out/business get easier. **In the PF will be a system to collect people needs**
	6. Usage of people's voices				**Conducted a survey on people's needs.** Will develop facilities and services when people move in.
HARD/ Tangible	7. Basic infra	△	Among many social challenges in air, quality of water, housing, transportation, the Digital/IT Infrastructure is a bottleneck, when we think about the feasibility of smart city initiatives.	N/A	basic infra will be organized for a variety of classes of people

BCDA = Bases Conversion and Development Authority; NEDA PDP = National Economic and Development Authority Philippine Development Plan; SC = smart city; NCC = New Clark City; PF = platform

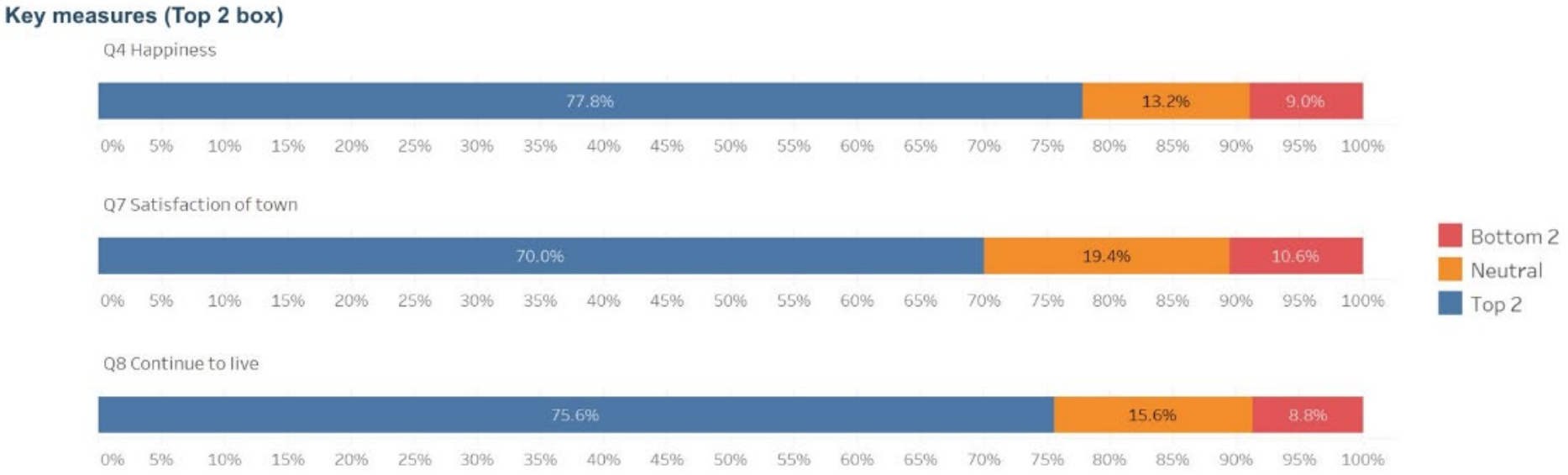
Source: Authors.

3. Well-being or Happiness of Citizens, Intention to Continue Living in the City

- **Happiness of Citizens**
  - The level of happiness of Philippines citizens is high (77.8%), exceeding the average of the ASEAN-6 countries (69.9%).
- **Satisfaction with the City and Intention to Continue Living in the City**
  - Figure 8.3 shows the level of satisfaction with the city (70.0%) and the intention to continue living in the city (75.6%) were higher than the ASEAN-6 average for 'Satisfaction of town' (67.7%) and 'Continue to live [in the city]' (74.2%).

Figure 8.3. Philippines – Happiness of Citizen, Satisfaction, and Intention to Continue Living in the City

(%)



Source: Authors.

4. Philippines Citizens' Awareness of Challenges Concerning City and Daily Lives

In Philippines, the gaps and challenges are particularly large in the following areas:

(i) Living environment, which includes clean air with no air pollution; no road congestion; city safety; good public transport; and nature and greenery.

(ii) Good government service

(iii) Good medical facilities

(iv) Financially well-off

Meanwhile, Filipino citizens express overall satisfaction with a wide selection of restaurants, having good friends on social media, being recognised as successful by others, and the conveniences such as the ease of shopping for daily necessities. See Figure 8.4.

As shown in Figure 8.5, important areas that are relatively high in satisfaction levels are as follows:

(i) Good Relationship with family

(ii) Clean, drinkable water

(iii) Continuous learning throughout life

(iv) Can be myself as I am

(v) Food safety

(vi) Mental Health.

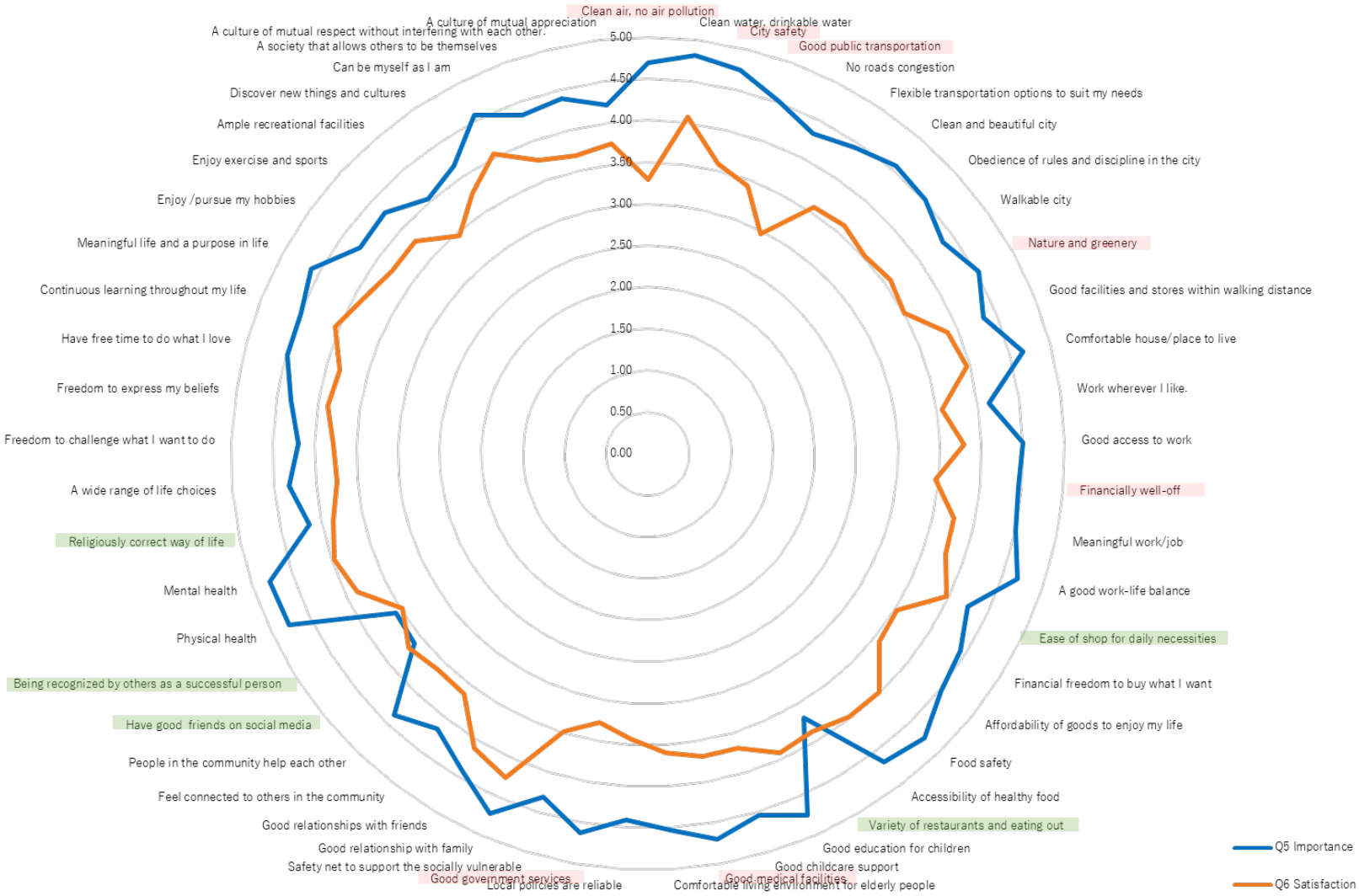
On the other hand, below are important areas that are relatively low in satisfaction:

(i) Good government service

(ii) Living environment

(iii) Financially well-off

Figure 8.4. Philippines – Gap Analysis of areas (Radar Chart)



Source: Authors.

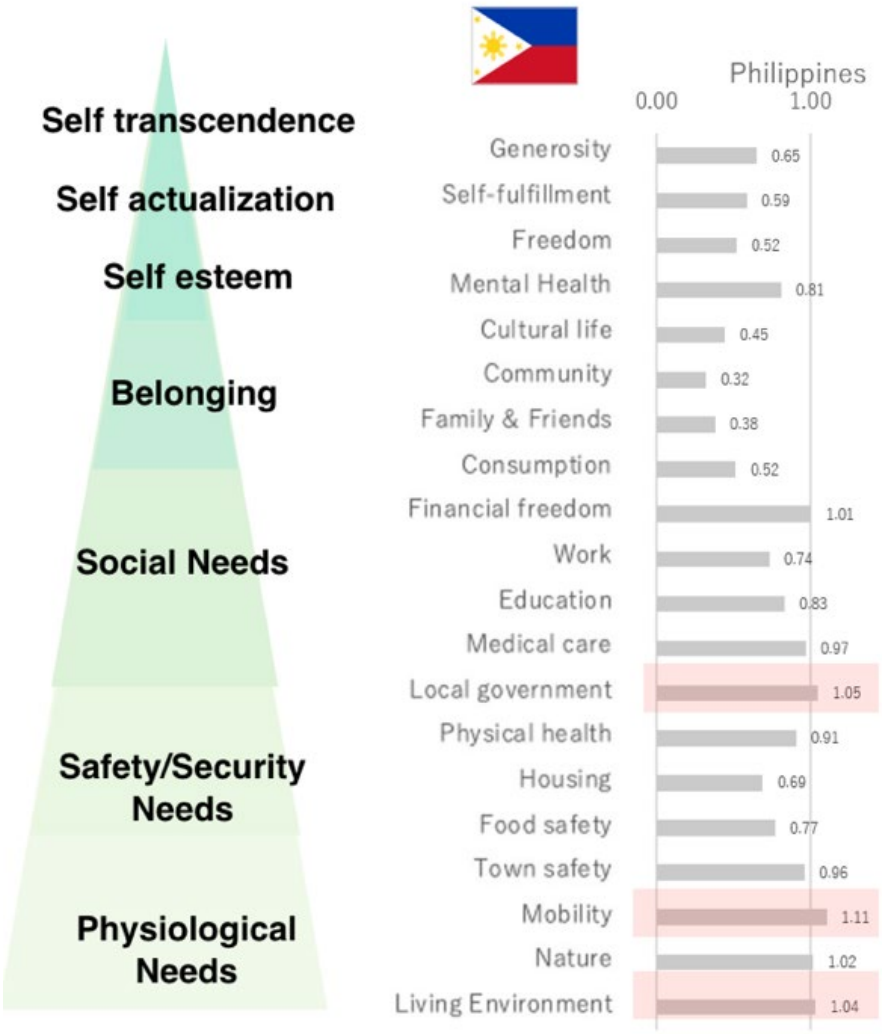
Figure 8.5. Philippines – Level of Importance and Satisfaction by Area

Source: Authors.

5. Current Level of Citizen's Well-Being or Happiness, City Satisfaction, and Challenges

In Philippines, there is a large gap in living environment, characterized by issues like air pollution and a lack of cleanliness, as well as challenges related to mobility, including problems with public transportation and traffic congestion. Philippines also faces obstacles concerning the reliability and quality of services provided by local government. See Figure 8.6.

Figure 8.6. Philippines – Gap Analysis of Areas (Maslow's Framework)

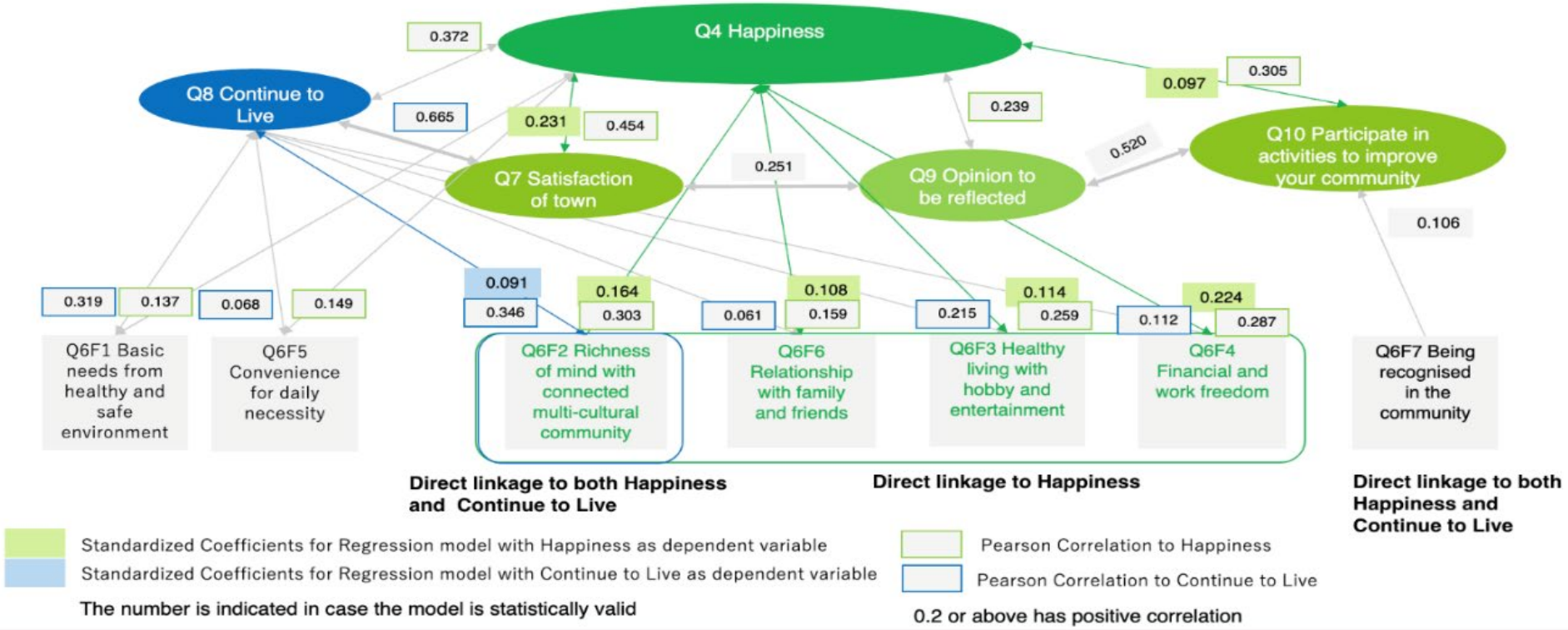


Source: Authors.

6. Factors for Citizen's Well-Being or Happiness

As shown in Figure 8.7, Q6F2 ('Richness of mind with connected multi-cultural community') contributes to both happiness and a desire to continue living in the city. On the other hand, Q6F7 ('Being recognised in the community') has no influence on both happiness and desire to continue living in the city.

Figure 8.7. Philippines – Path Model to Identify Factors for Citizen's Well-being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities Activities to Participate

- **Activities to Participate**

Figure 8.8 shows the percentage of people willing to participate in certain activities to improve the community. The willingness to participate is high for the following:

(i) Keep the city clean (68.6%)

(ii) Enjoy nature and increase greenery (60.2%)

(iii) Education of children, childcare-related (56.2%)

Figure 8.8. Philippines – Activities to Participate to Improve Community

Source: Authors.

- **Important Areas for Digitalisation**

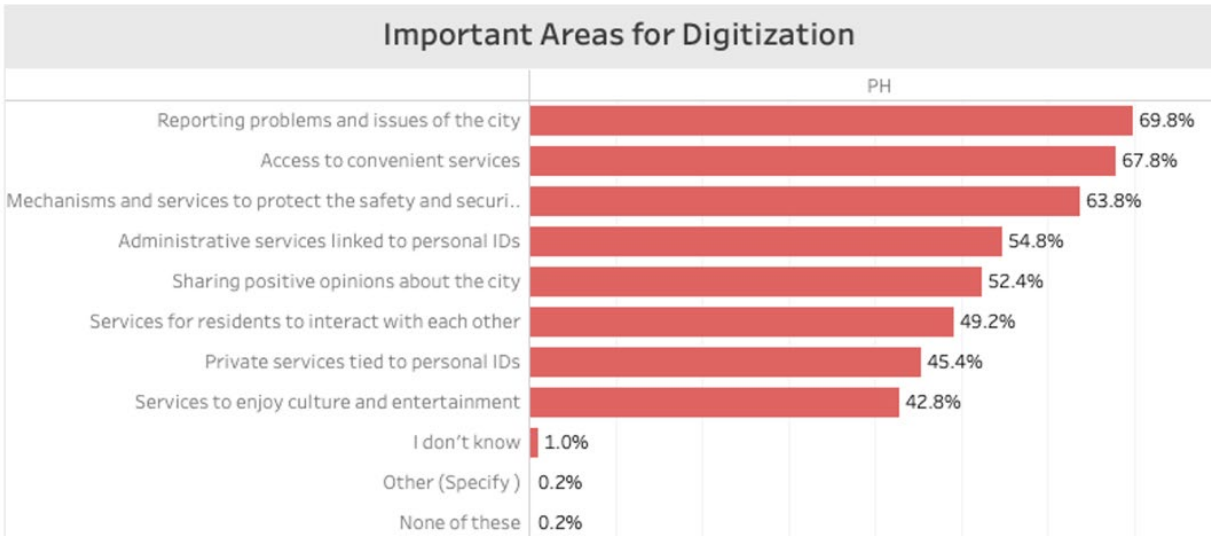
According to Figure 8.9, the following are areas that are considered important for city digitalisation:

(i) Reporting problems and issues of the city (69.8%),

(ii) Access to convenient services (67.8%)

(iii) Services to keep the city safe and secure (63.8%)

Figure 8.9. Philippines – Important Areas for Digitalisation



Source: Authors.

- **<u>Hurdles to Citizen Participation</u>**

  Despite a high willingness to reflect citizens' opinions, several obstacles hinder citizen participation (Figure 8.10). the main reasons identified by citizens are as follows:

  (i) The government and those in charge move slowly (63.4%)

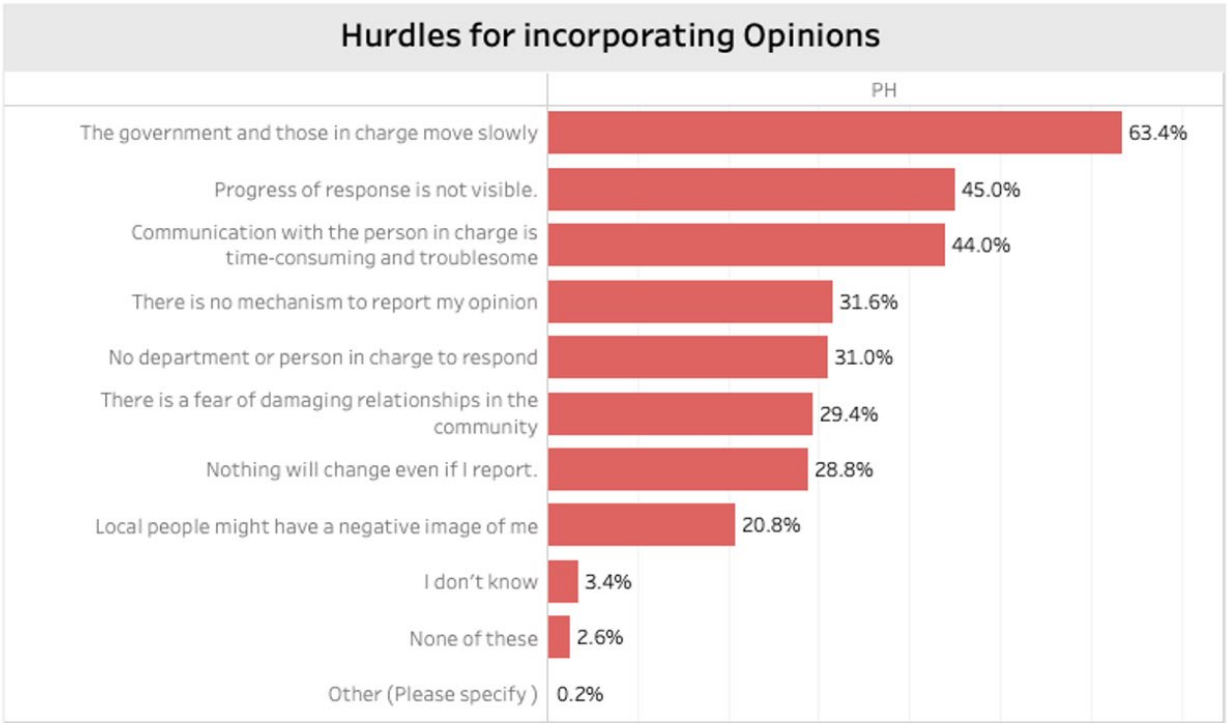
  (ii) Progress of response is not visible (5.0%)

  (iii) Communication with personnel in charge is time consuming (44.0%)

  In addition to establishing a framework and administrative structure for responding as an administration, citizens also desire a more visible response to their voices. They seek a concise mechanism that simplifies the process of expressing their opinions.

Figure 8.10. Philippines – Hurdles for Incorporating Opinions

(%)



Source: Authors.

- **<u>Willingness to Use Town services</u>**

Filipinos showed willingness to use specific areas of service (Figure 8-11). The top three services are as follows:

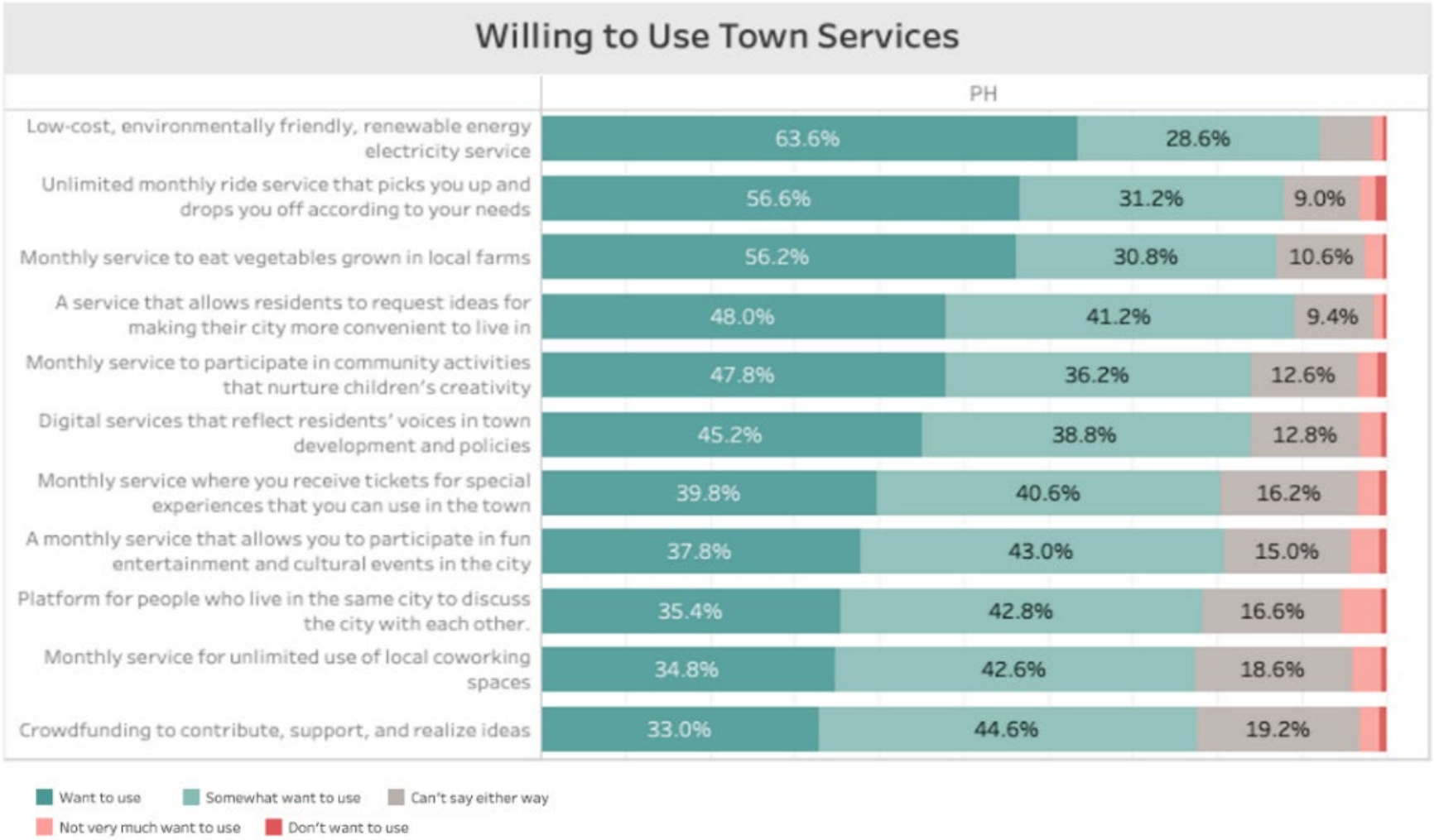
(i) Low-cost, environmentally friendly, renewable energy electricity service (92.2%)

(ii) Citizens to request ideas for making their city more convenient to live in (89.2%)

(iii) Unlimited monthly ride services that offer pick-up and drop-off according to your needs (87.8%).

Figure 8.11. Philippines – Willingness to Use Town Services

(%)



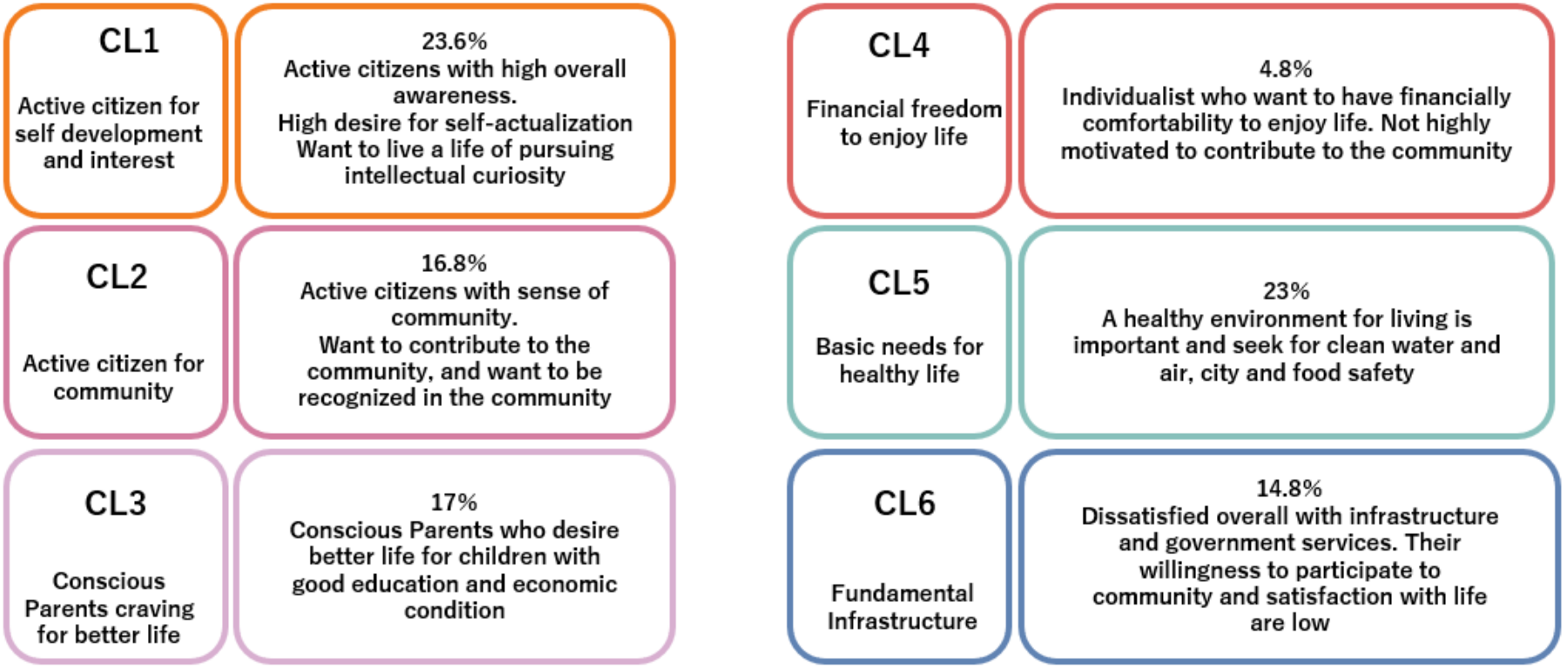
Source: Authors.

8. Citizen Cluster for People-Centred Smart Cities

As shown in Figure 8.12, the biggest cluster in the Philippines is CL1 ('Active citizen for self-development and interest') at 23.6%. Together with CL2 ('Active citizen for community') there are 40.4% active citizens in the Philippines. Figure 8.13 shows demographic profiles of the six clusters.

Overall, CL1 and CL2 are highly active and open to participation in a variety of activities (Figure 8.14), ranging from the living environment to personal life. 'Education of children, childcare related' is a key area, which attracts many participants. This ranks 2nd for activities for CL1 (69%), CL2 (63%), and CL3 (58%) (Figure 8.16). On the other hand, activities that connect with local people are well-received by 57% for CL1, 46% for CL3 and CL5; Sports and recreational activities are supported by 50% of CL1 and 45% of CL2. Meanwhile, CL4 and CL6 are the least motivated to join activities to improve community (Figure 8.14).

Figure 8.12. Philippines – Citizen Cluster for People-Centred Smart Cities



Source: Authors.

Figure 8.13. Philippines – Citizen Cluster Demographics

	CL1 Active citizen for self development and interest	CL2 Active citizen for community	CL3 Conscious Parents craving for better life	CL4 Financial freedom to enjoy life	CL5 Basic needs for healthy life	CL6 Fundamental Infrastructure
Gender	Male (49.2%) Female (50.8%)	Male (51.2%) Female (48.8%)	Male (44.7%) Female (55.3%)	**Male (58.3%)** Female (41.7%)	**Male (56.5%)** Female (43.5%)	Male (43.2%) **Female (56.8%)**
Age						
18-19 years	2.5%	3.6%			5.2%	2.7%
20-29 years	14.4%	21.4%	9.4%	25.0%	16.5%	24.3%
30-39 years	32.2%	33.3%	35.3%	25.0%	27.8%	21.6%
40-49 years	28.8%	26.2%	34.1%	33.3%	31.3%	28.4%
50-59 years	22.0%	15.5%	21.2%	16.7%	19.1%	23.0%
Marital Status						
Single	33.1%	44.0%	37.6%	83.3%	47.0%	43.2%
Married/Living-in	64.4%	52.4%	57.6%	12.5%	49.6%	45.9%
Family Structure						
Live alone		2.4%	7.1%	4.2%	5.2%	6.8%
Spouse	58.5%	44.0%	55.3%	4.2%	40.0%	43.2%
Child(ren)	66.9%	64.3%	62.4%	29.2%	53.9%	51.4%
Parent(s)	36.4%	50.0%	30.6%	54.2%	43.5%	41.9%
Brother(s)/Sister(s)	28.0%	39.3%	27.1%	62.5%	28.7%	16.2%
Girl/boyfriend	3.4%	7.1%	4.7%	12.5%	4.3%	9.5%
Other relative(s)	9.3%	9.5%	12.9%	12.5%	10.4%	8.1%
Income	High (27%), Middle (35%), Low (36%)	High (23%), Middle (38%), Low (37%)	High (26%), Middle (38%), Low (33%)	**High (38%)**, Middle (38%), Low (25%)	High (14%), Middle (36%), **Low (47%)**	High (22%), Middle (30%), **Low (41%)**
Occupation	Administration level (22%) Privately own business (19%) Management (17%)	**Public servant (21%)** Administration level (19%) Privately own business (18%)	Management (28%) Administration level (21%) **Freelance (16.5%)**	**Administration level (33%)** **Student (17%)**	Administration level (17%) **Freelance (16.5%)** Privately own business (16%)	Public servant (15%) Privately own business (15%) Administration level (13.5%)

Source: Authors.

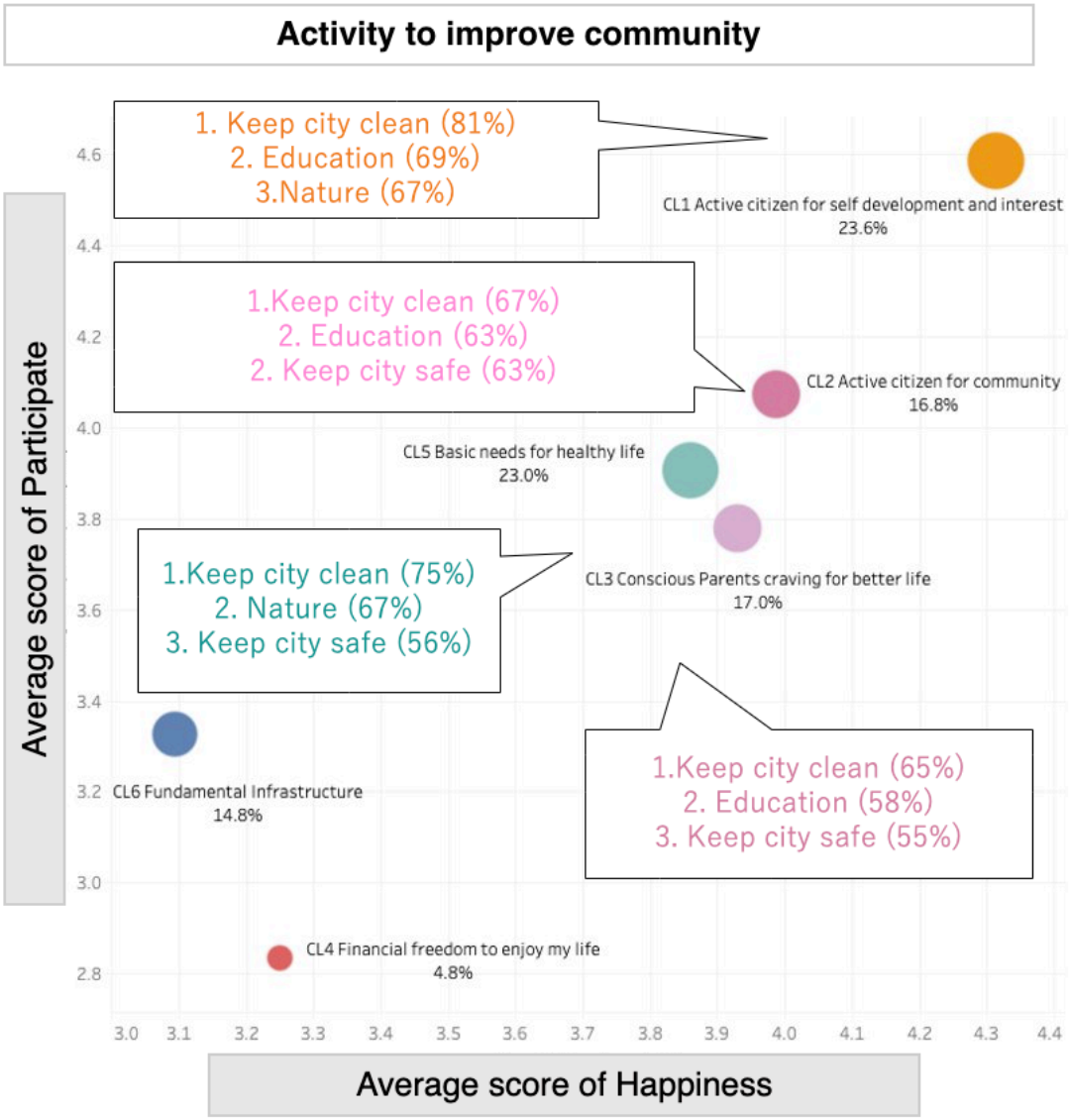
Figure 8.14. Philippines – Citizen Cluster Key Measures

(%)

Key measures (Top 2)	CL1 Active citizen for self development and interest	CL2 Active citizen for community	CL3 Conscious Parents craving for better life	CL4 Financial freedom to enjoy life	CL5 Basic needs for healthy life	CL6 Fundamental Infrastructure
Q4. Happiness	94.9%	84.5%	81.2%	45.8%	81.7%	43.2%
Q7. Satisfaction	95.8%	85.7%	71.8%	29.2%	73.9%	16.2%
Q8. Continue to live	99.2%	89.3%	74.1%	41.7%	81.7%	25.7%
Q9. Opinion	100.0%	90.5%	72.9%	62.5%	73.0%	44.6%
Q10. Participate	98.3%	85.7%	69.4%	25.0%	75.7%	45.9%

Source: Authors.

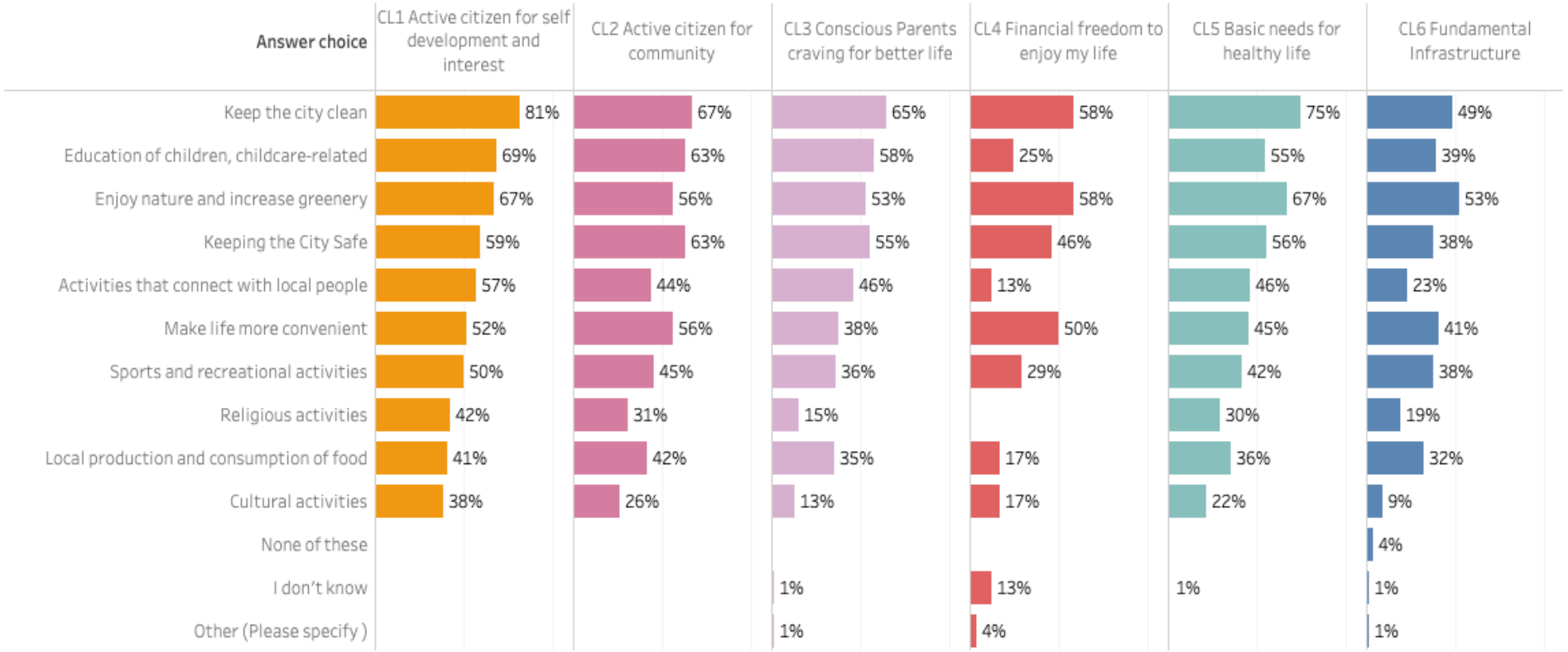
Figure 8.15. Philippines – Mapping of Citizen Cluster Top Activities Participation to Improve Community



Source: Authors.

Figure 8.16. Philippines – Citizen Cluster Activities to Improve Community

(%)

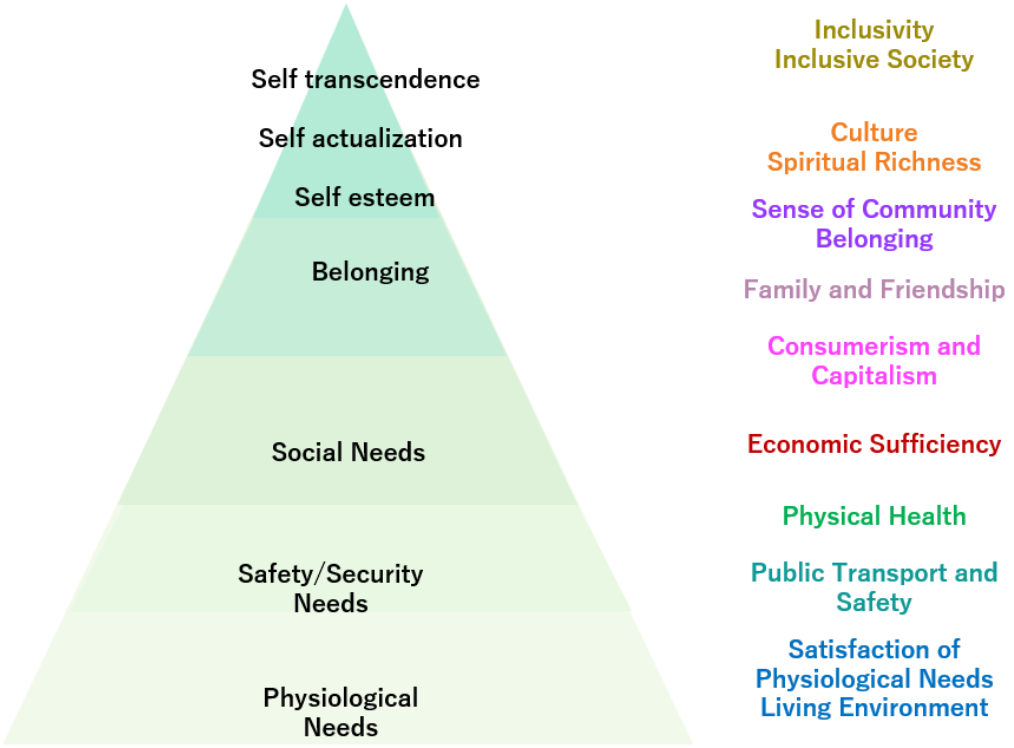


Source: Authors.

9. Citizen Testimonials About their Cities

Figure 8.17 summarises citizen testimonials.

Figure 8.17. Philippines – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	Citizens seek comfortable and pleasant hospitality from staff in a variety of places. Communal co-living spaces are mentioned by young people.
Culture **Spiritual Richness**	Diverse cultures exist, including Western cultures such as Spanish, American, and Catholic cultures. Citizens are creative people, with festivals and events that appreciate creativity/arts and attract large crowds.
Sense of Community **Belonging**	Local institutions and new huge shopping malls are places where everyone has a place and feels at home. Newly developed urban centres, are cosmopolitan and make people feel proud as they feel that they have achieved something together. In the Philippines (where there are many Christians), religious events are also important, such as celebrating Christmas together.
Family and Friendship	Bonding with friends and family is important both in everyday life and on weekend trips.

Consumerism and Capitalism	Shopping malls are important for their wide selection of brands and products, and for being a place where people can have memorable bonding experiences, such as dining out with family and friends.
Economic Sufficiency	Due to urban housing and high-end shopping malls being expensive, budget-conscious buyers (who are ordinary citizens) seek more reasonable options such as department stores and supermarkets.
Physical Health	A lush green place for exercise and relaxation is a nice respite from the hustle and bustle of Manila and the stress of work, with a breath of fresh air. Ample playgrounds for children are welcomed in the Philippines, with its large population of small children.
Public Transport and Safety	Being safe and secure is an important part of being a smart city, and security is required. Opinions regarding city accessibility, public/private transportation, and parking can be seen.
Satisfaction of Physiological Needs Living Environment	In central Manila, where the environment is relatively well-developed, people are more interested in having healthy living environments as compared to basic needs: exercise, jogging, and playgrounds for children's recreations.

Source: Authors.

Improved quality of life and greater financial power is what makes Filipinos happiest. Being a society that has a strong sense of community, Filipinos obtain happiness from helping each other and working collectively towards a better future. Filipinos also exercise to destress from work and to obtain well-being or happiness.

- **Happiness Factor #1: Financial and Work freedom**
  - Financially well-off
  - Affordability of goods to enjoy my life

For Filipinos, having the financial means to achieve better lives is happiness. See Figure 8.18.

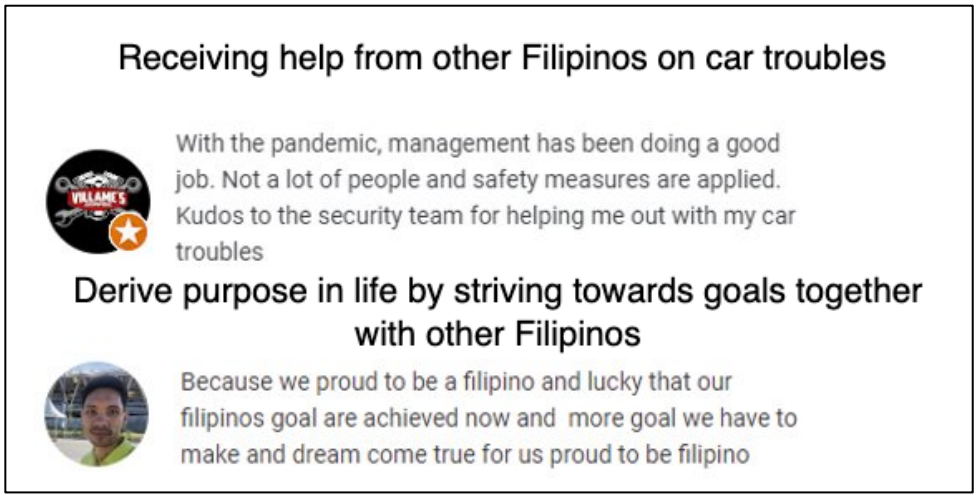
Figure 8.18. Philippines – Citizens' Voice for Happiness, Factor #1

Source: Authors.

- **<u>Happiness Factor #2: Richness of Mind with Connected Multicultural Community</u>**
  - People in the community help each other
  - Meaningful life and a purpose in life

Filipinos derive happiness from helping fellow Filipinos and achieving goals together. See Figure 8.19.

Figure 8.19. Philippines – Citizens' Voice for Happiness, Factor #2

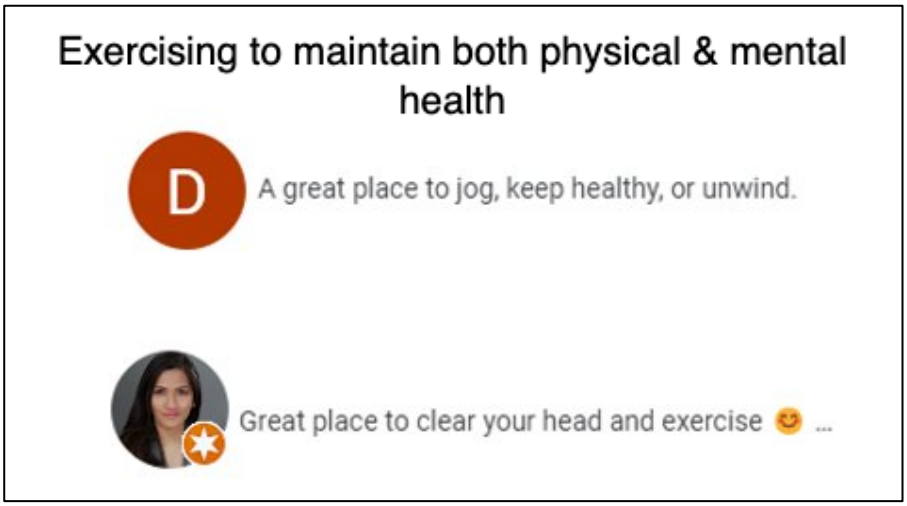


Source: Authors.

- **<u>Happiness Factor #3: Healthy Living with Hobby and Entertainment</u>**
  - Physical health
  - Mental health

Filipinos feel happy when they have good physical and mental health. See Figure 8-20.

Figure 8.20. Philippines – Citizens' Voice for Happiness, Factor #3



Source: Authors.

Chapter 9

Viet Nam

1. Summary/Conclusion

1.1. Smart City/People-Centred Smart Cities Promotion Framework at Central and Local Governments

Viet Nam's national development plans, such as the '10-Year Strategy for Socio-Economic Development, 2011–2020,' include the promotion of smart cities. The country is actively working on policies, guidelines, and laws to support smart city development. The goal is to establish smart cities nationwide by 2030, with the 3 ASCN target cities as Hanoi, Da Nang, and Ho Chi Minh City. The responsibility for promoting smart cities lies with the People's Committee of each province and city, and each city has formulated its own master plan for smart city construction.

In Ho Chi Minh City, the Ho Chi Minh City People's Committee has formulated the 'Ho Chi Minh City Smart City Construction Plan 2025 for 2017-2020,' which lists the following priority areas for smart city construction: improving public services, utilising practical application for policy making, ensuring administrative transparency, improving information access, protecting the environment, and improving transportation infrastructure. Major players in Ho Chi Minh City include foreign companies such as Lotte Group and Keppel. There is also increasing involvement of local companies such as Vingroup, the three telecommunication companies (VNPT, Viettel, Mobiphone) and FPT (the largest IT company).

Although the Government of Viet Nam shows eagerness to reflect people's opinions, there is currently no integrated framework to collect people's opinions. The obstacle to a PCSC is the low level of understanding of the smart city concepts and 'people centredness' amongst the citizens, making it difficult to gather people's voices. In addition, limited participation of citizens, limited infrastructure, data privacy and security, limited funding, limited capacity and expertise, and resistance to change have been pointed out.

1.2. Current People-Centred Smart Cities Promotion Bodies and Areas that Need to be Initiated for Future Promotion and Expansion

In Viet Nam, the government and leading companies are taking the lead in infrastructure development and other hardware initiatives, but there is currently no established framework or KPIs to promote PCSC. In addition, local communities and citizens lack a high awareness of PCSC. For PCSC to gain traction in Viet Nam, it will be crucial to unify the wills and aspirations of

stakeholders in specific geographic areas. The first steps should be taken by those with the strongest willingness, such as local government, companies, and its citizens. This aligns with Pattern 3 of PCSC types, as shown in Figure 9.1.

Figure 9.1. Viet Nam – People-Centred Smart Cities, Pattern 3

KPI = key performance indicator(s)

Source: Authors.

1.3. Areas to Tackle for Promoting People-Centred Smart Cities and Improving Well-being or Happiness

There are four factors which contribute directly to well-being or happiness:

(i) Financial and work freedom

(ii) Relationship with family & Friends

(iii) Richness of mind with connected multicultural community

(iv) Healthy Living with hobby

Taking into account the four factors that contribute to the improvement of well-being or happiness and considering the values and characteristics of Vietnamese citizens from Diginography, the following areas should be focused on for the implementation and promotion of a PCSC and to encourage proactive activities by citizens:

(i) Financial and work freedom: Viet Nam is a developing country with many citizens that have strong ambitions to achieve financial prosperity and improve their families' lives. They are eager to explore opportunities for skill development and employment that allow them to demonstrate their abilities and earn higher incomes. Citizens mentioned that the new residential areas targeted for smart city development are not designed for low-income individuals, as they are well-equipped but costly. Therefore, there is a high interest in services that lighten the economic burden.

→ (Potential areas) **Opportunities for active economic activity and skill development, including services to support economic burdens.**

(ii) Relationship with Family & Friends: Viet Nam has a relatively young population amongst the ASEAN countries, with many households raising children. In addition, many citizens in Ho Chi Minh City mentioned that fresh air and exercise are essential for a basic living environment, especially due to the challenge of air pollution. Another concern is food safety. Therefore, they are seeking comfortable eating spaces where children can play safely and comfortably.

→ (Potential areas) **Creating a safe and healthy environment for children, facilities, services, and safe food services.**

(iii) Richness of mind with connected multicultural community: Newly developed residential areas with clean air and good children's facilities are considered the ideal environment for Vietnamese citizens. Some citizens mentioned that those living in such areas are well-educated and well-mannered, making it comfortable to live. This sense of satisfaction with their living environment contributes to their happiness and motivates them to continue to live there. Since a PCSC in Viet Nam can realistically be achieved starting from a limited area, it would be effective to focus on new residential areas where citizens are highly aware and establish activities in which they can actively participate, fostering a sense of belonging to the community.

→ (Potential areas) **Activities and community activities in which citizens can participate in new residential areas.**

(iv) Healthy Living with hobby: Vietnamese love nature, but they face the challenge of air pollution. As a result, they are seeking clean air and places to exercise to lead a healthy lifestyle. Also, there is a noticeable request for security to ensure safety in the residential environment. Due to the crowded and congested city, they are looking for convenient transportation and good parking facilities. Vietnamese take pride in the buildings that symbolise their country's economic development, and they also have a strong desire to experience foreign cultures. This is reflected in their appreciation for variety of dining options, which become a familiar cross-cultural experience.

→ (Potential areas) **Develop safe, clean parks and recreational facilities where people can experience new cultures.**

1.4. Citizen Clusters in Viet Nam: Volume Distribution and Clusters to be Involved in People-Centred Smart Cities Promotion

Next, a cluster analysis was conducted based on areas of concern to identify the groups of citizens that should be involved realising a PCSC. This approach aims to proactive citizens and trigger their activities in support of the smart city initiatives. The clusters of Viet Nam are listed below in order of volume.

- CL3: Conscious parents craving for better life
- CL6: Fundamental Infrastructure
- CL5: Basic needs for healthy life
- CL1: Active citizen for self-development and interest
- CL2: Active citizen for community
- CL4: Financial freedom to enjoy my life

The highest volume cluster of Viet Nam is CL3 (‘Conscious parents craving for a better life’). They want to become economically prosperous and provide a better education for their children. The service areas in which they want to participate are as follows:

(i) Keep city clean (63%)

(ii) Nature (53%)

(iii) Education (46%)

2. Interview Results: People-Centred Smart Cities Implementation and Existing Frameworks

Interview results (Figure 9.2) suggest the promotion of smart cities is included in policies, guidelines, and laws and regulations that are integrated into national development plans, such as the ‘10-Year Strategy for Socio-Economic Development, 2011–2020’. The Prime Minister's decision in 2018 aims to expand smart cities nationwide by 2030. However, specific KPIs have not been set at the national level, and smart city promotion is currently happening at the municipal level in cities like Ho Chi Minh City and Hanoi. Smart city applications are also being implemented at the local government level.

Figure 9.2. Viet Nam – Key Findings on People-Centred Smart Cities, Stakeholder Interviews

		Evaluation	Academia interview : University of Economics HCMC Mr. Nam Le/Dr. Anh
WILL	1. Interests 2. Aspiration 3. Awareness	△	Decision 950/QĐ-TTg by the VN gov. proposed policies and conditions to **push strongly about the development of smart city focused on people, improve quality of life of citizens.** **The central gov. is willing to reflect people's opinions but no integrated system to collect people's opinions.** The obstacles are limited participation by the people, limited infrastructure, data privacy and security, limited funding, limited capacity and expertise, resistance to change. People are not aware of the concept of smart city or people-centric, making it difficult to collect people's voices.
SOFT/ Intangible	4. KPI	△	The framework is under development with the support from Singaporean government.
	5. Platform to collect Opinions		In Ho Chi Min and Hanoi there are local Smart City Apps, such as Ha Noi Smart City, TTGT TP Ho Chi Minh There are digital systems/apps to enable people to post opinions or claims to improve their cities, but not a place to discuss, It is more similar to 911.
	6. Usage of people's voices		
HARD/ Tangible	7. Basic infra	○	Digital infrastructure became drastically improved. Air pollution, solid waste, wastewater, water pollution are still issues.

HCMC = Ho Chi Minh city; TTGT TP = Thông tin giao thông Thành phố

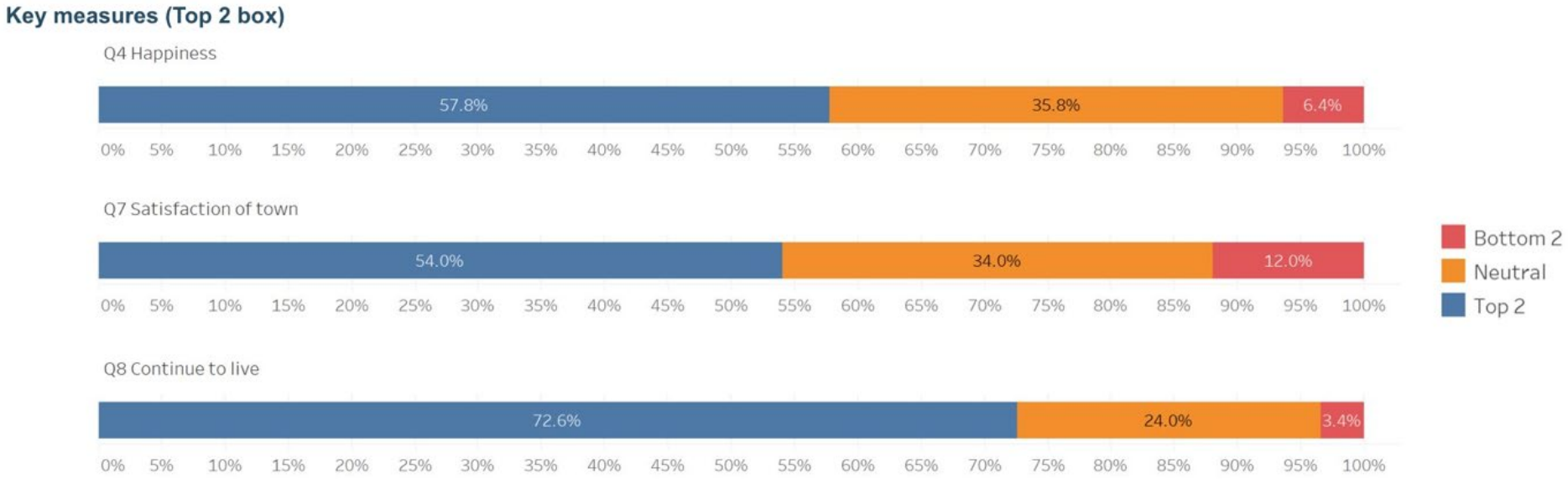
Source: Authors.

3. Well-Being or Happiness of Citizen, Intention to Continue Living in the City

- **Happiness of Citizens**
  - The level of happiness of Viet Nam citizens (57.8%) is lower compared to the average of the ASEAN-6 countries, as shown in Figure 9.3.
- **Satisfaction with the city and intention to continue living in the city**
  - The level of satisfaction with the city (54.0%) and the intention to continue living in the city (72.6%) were comparatively lower than the ASEAN average (Satisfaction of town, 67.7%; Continue to live, 74.2%). Thailand's satisfaction with the city and intention to continue living in the city is slightly lower.

Figure 9.3. Viet Nam – Happiness of Citizens, Satisfaction, and Intention to Continue Living in the City

(%)



Source: Authors.

4. Viet Nam Citizens' Awareness of Challenges Concerning the City and Daily Lives

In Viet Nam, the gaps and challenges are particularly large in the following areas, as seen in Figure 9.4:

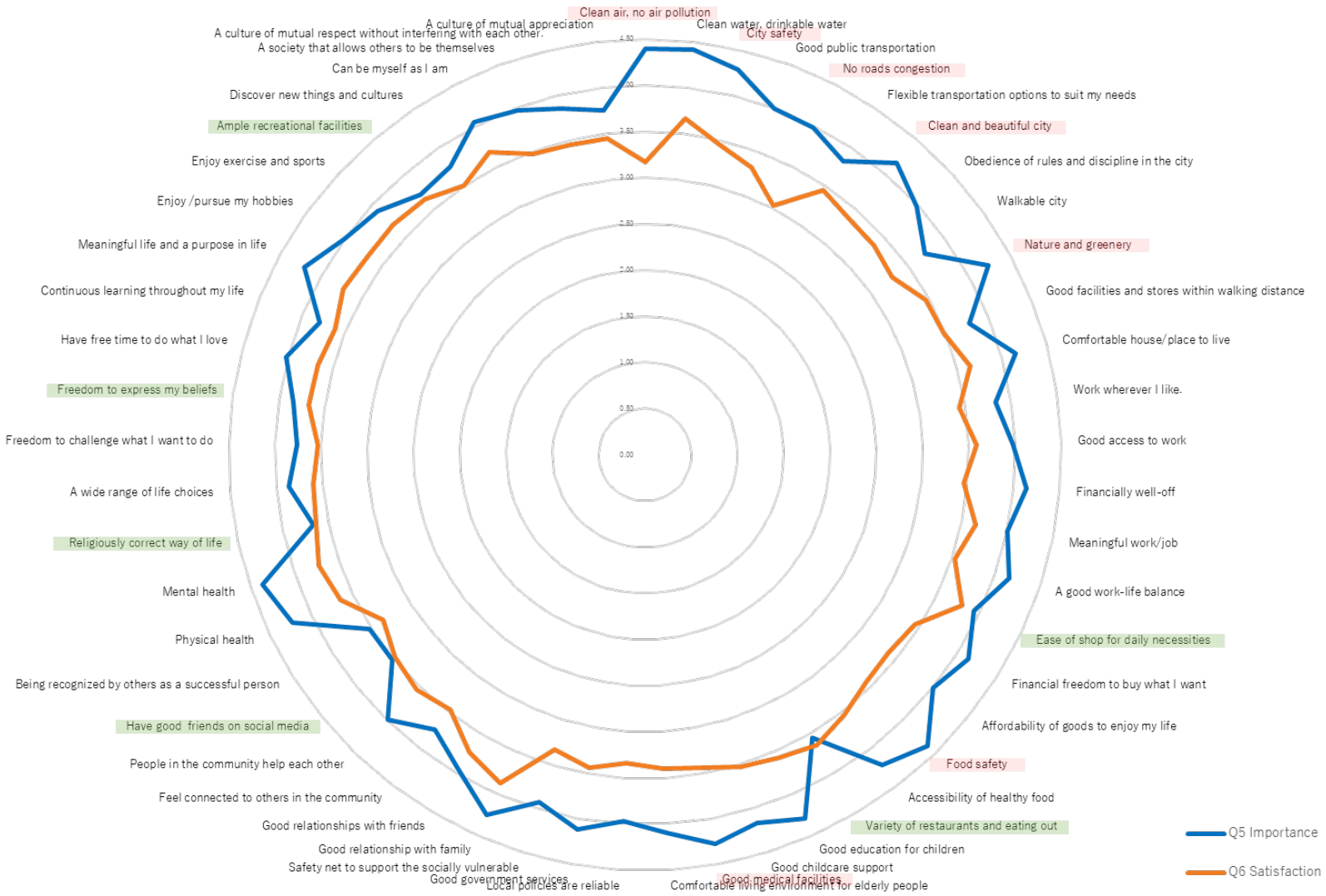
(i) Living environment, which includes clean air, no air pollution, no roads congestion, city safety, clean and beautiful city, nature and greenery.

(ii) Food safety

(iii) Medical facilities

Meanwhile, Vietnamese citizens are generally satisfied with various aspects of their personal life, including a variety of restaurants, opportunities for a religiously correct way of life, having good friends on social media, access to ample recreational facilities, ease of shop for daily necessities, and freedom to express their beliefs.

Figure 9.4. Viet Nam – Gap Analysis of Areas (Radar Chart)



Source: Authors.

Figure 9.5 shows that important areas that are relatively high in satisfaction levels are those of social aspects:

(i) Good relationship with family

(ii) Meaningful life and a purpose in life

(iii) Mental health

(iv) Can be myself as I am

(v) Clean, drinkable water

(vi) Physical health

On the other hand, there are also important areas that are relatively low in satisfaction:

(i) Clean air, no air pollution

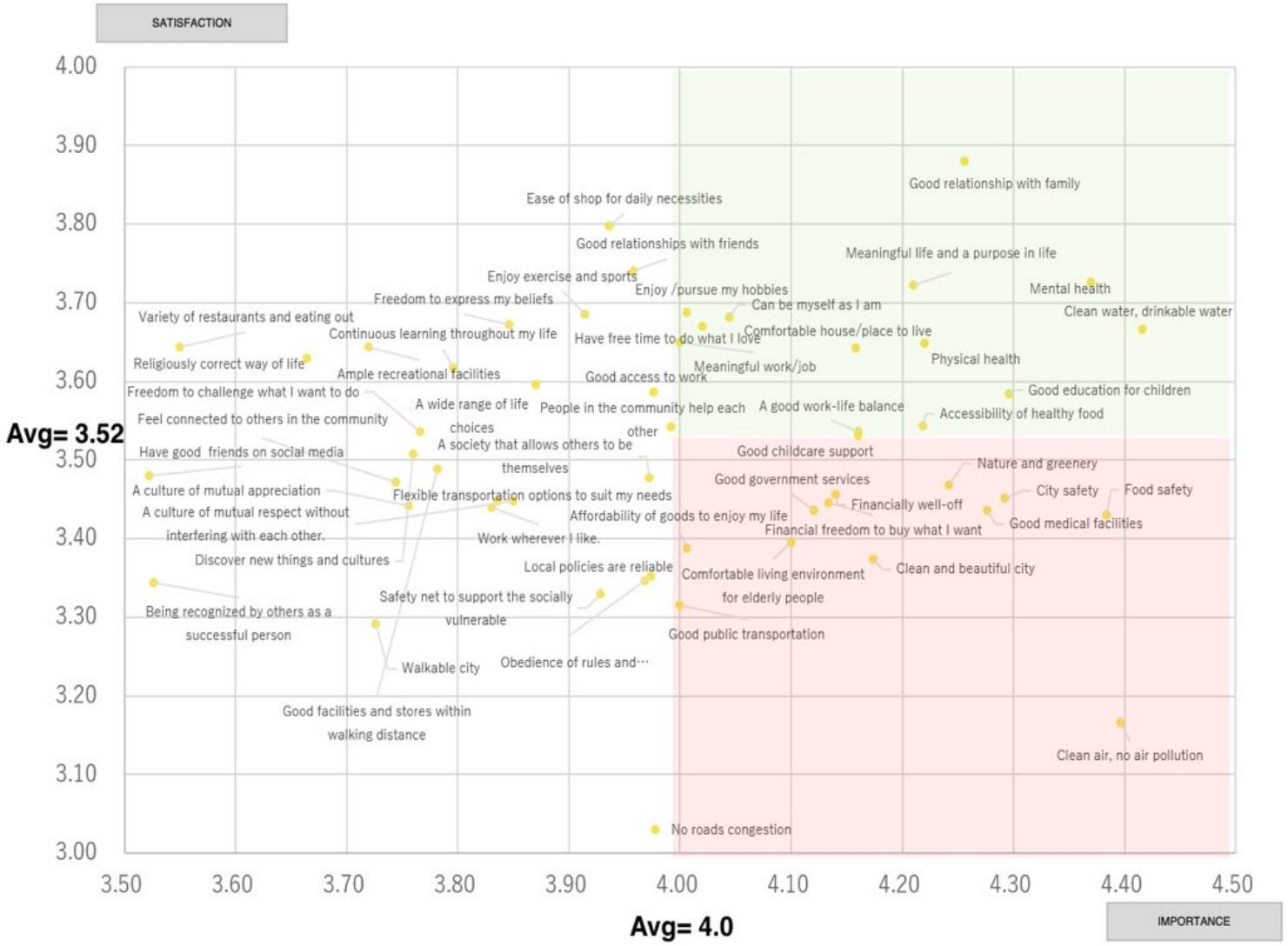
(ii) Clean and beautiful city

(iii) Comfortable living environment for elderly people

(iv) Food safety

(v) Good medical facilities

Figure 9.5. Viet Nam – Current Level of Citizen Satisfaction and Importance by Area (Scatter Plot)

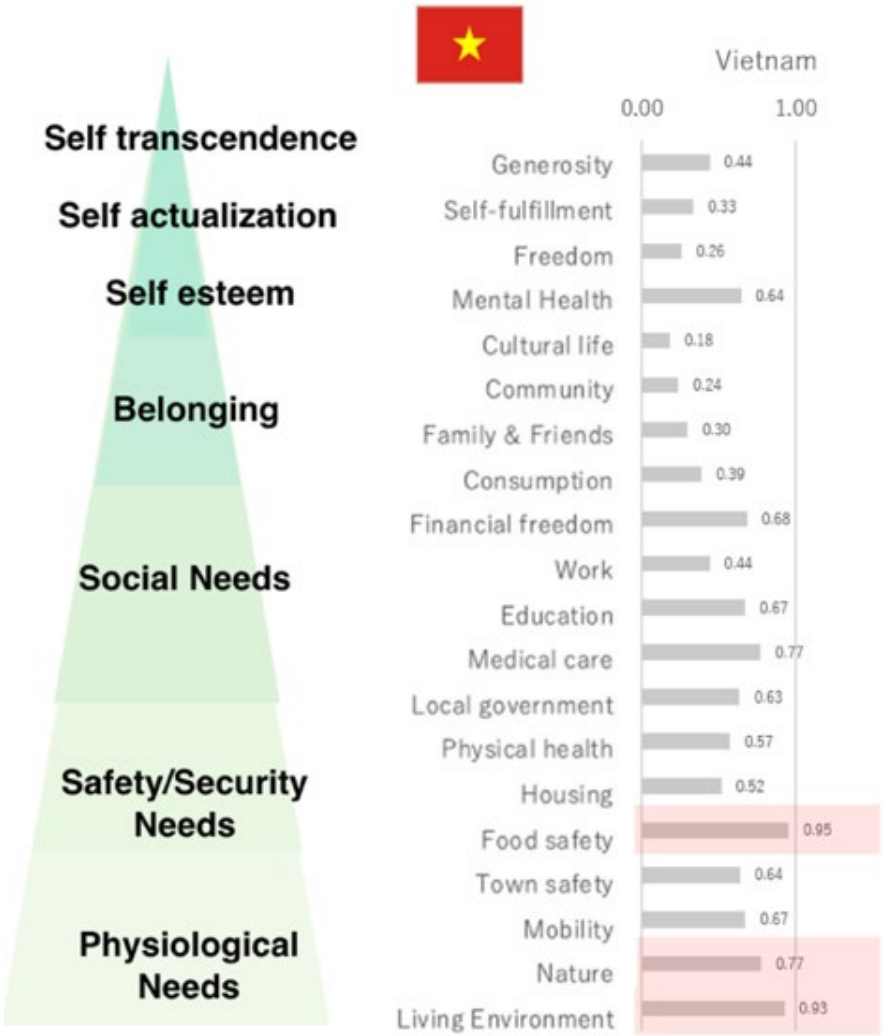


Source: Authors.

5. Current Level of Citizen's Well-Being or Happiness, City Satisfaction, and Area of Challenges

In Viet Nam, there is a large gap in living environment such as a clean city with no air pollution. However, food safety remains the biggest challenge. These can be seen in Figure 9.6.

Figure 9.6. Viet Nam – Gap Analysis of Areas (Maslow's Framework)

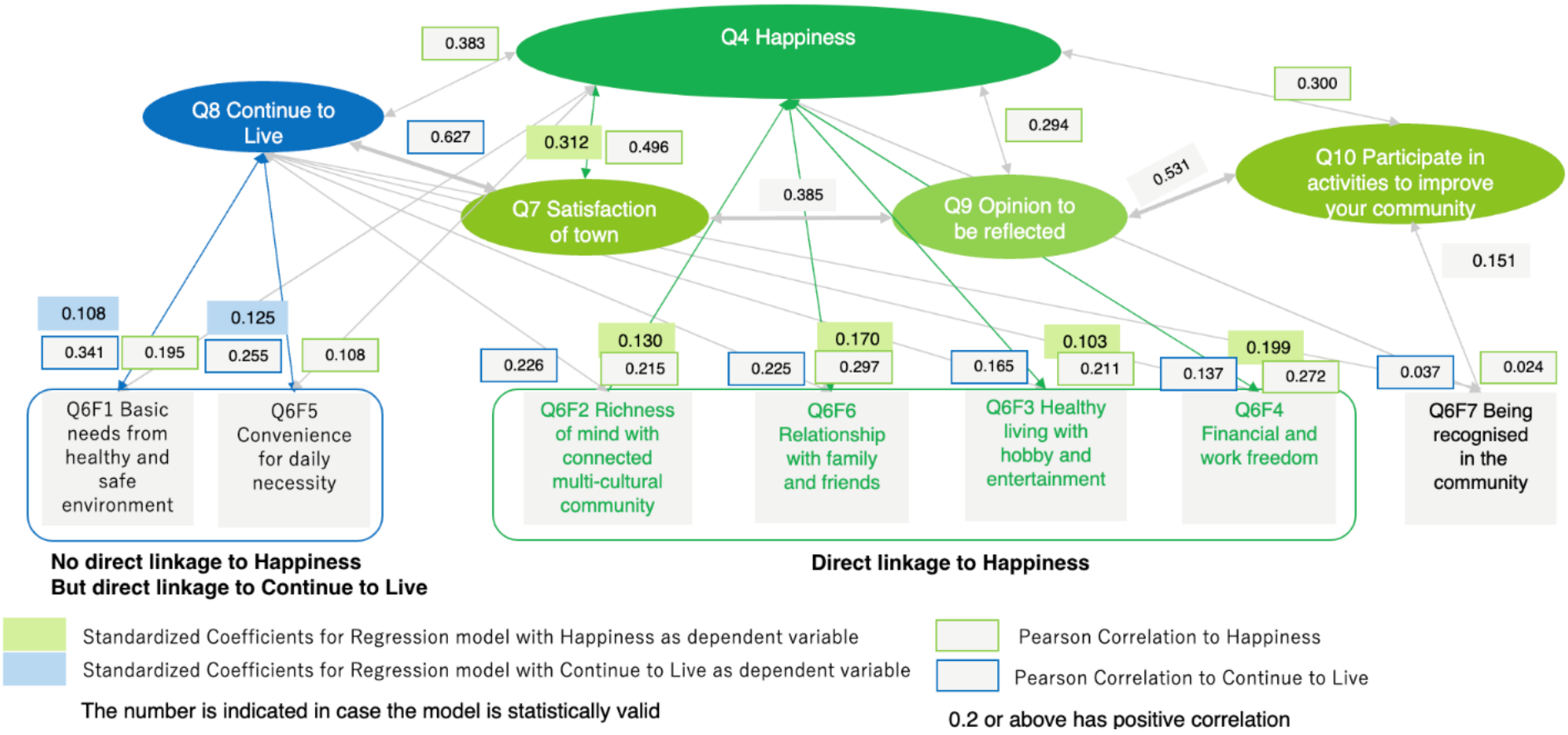


Source: Authors.

6. Factors for Citizen's Well-Being or Happiness

Figure 9.7 show that for Vietnamese, while basic infrastructures, such as Q6F1 ('Basic needs from healthy and safe environment') and Q6F5 ('Convenience for daily necessity') are important to continue living in the city, they do not link directly to happiness.

Figure 9.7. Viet Nam – Path Model to Identify Factors for Citizen's Well-Being or Happiness



Source: Authors.

7. Willingness to Participate in People-Centred Smart Cities Activities

As an activity to improve the city, citizens are willing to participate in these top three activities (Figure 9.8):

(i) Keep the city clean (57.6%)

(ii) Enjoy nature and increase greenery (51.6%)

(iii) Keeping the city clean (45.4%)

Figure 9.8. Viet Nam – Activities to Participate to Improve Community

(%)

Source: Authors.

- **Important Areas for Digitalisation**

Figure 9.9 show that the following areas are considered important for city digitalisation:

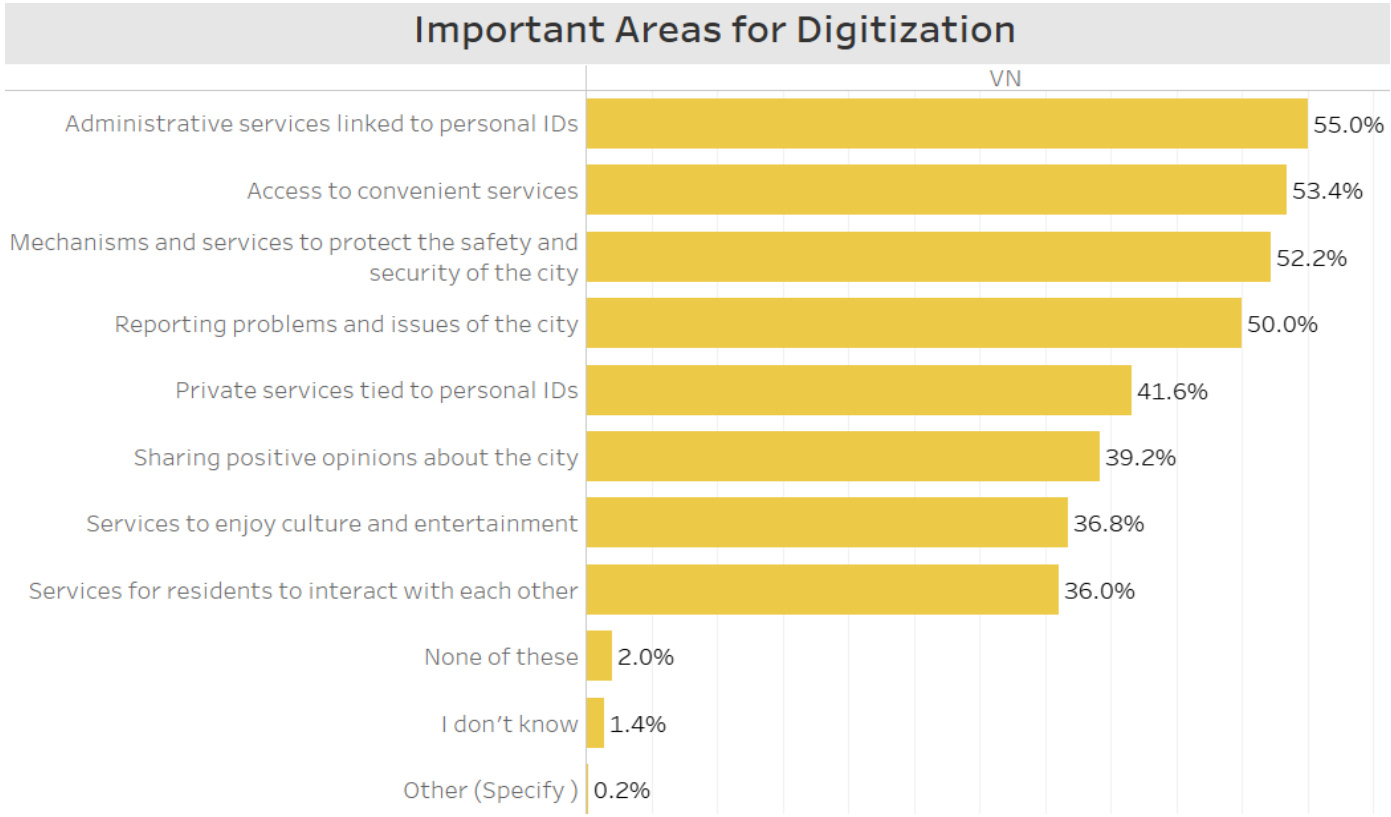
(i) Administrative services linked to personal IDs (55.0%)

(ii) Access to convenient services (53.4%)

(iii) Services to keep the city safe and secure (52.2%)

Figure 9.9. Viet Nam – Important Areas for Digitalisation

(%)



Source: Authors.

- **Hurdles to Citizen Participation**

Figure 9.10 show that while there is a strong willingness to reflect the opinions of citizens, the main obstacles that citizens perceive for the lack of participation are as follows:

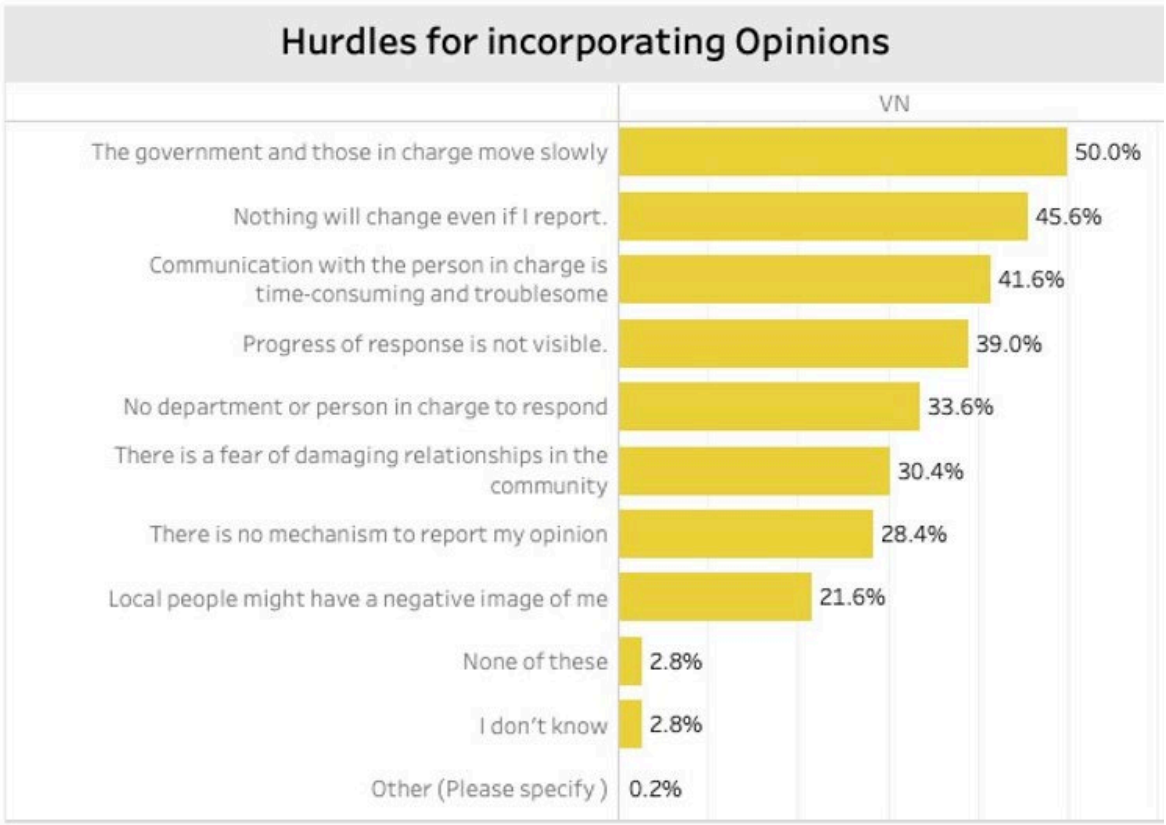
(i) The government and those in charge move slowly (50.0%)

(ii) Nothing will change even if I report (45.6%)

(iii) Communication with personnel in charge is time consuming (41.6%)

In addition to establishing a framework and administrative structure for responding as an administration, citizens also desire a more visible response to their voices. They seek a concise mechanism that simplifies the process of expressing their opinions.

Figure 9.10. Viet Nam – Hurdles for Incorporating Opinions



Source: Authors.

- **Willingness to use Town Services**

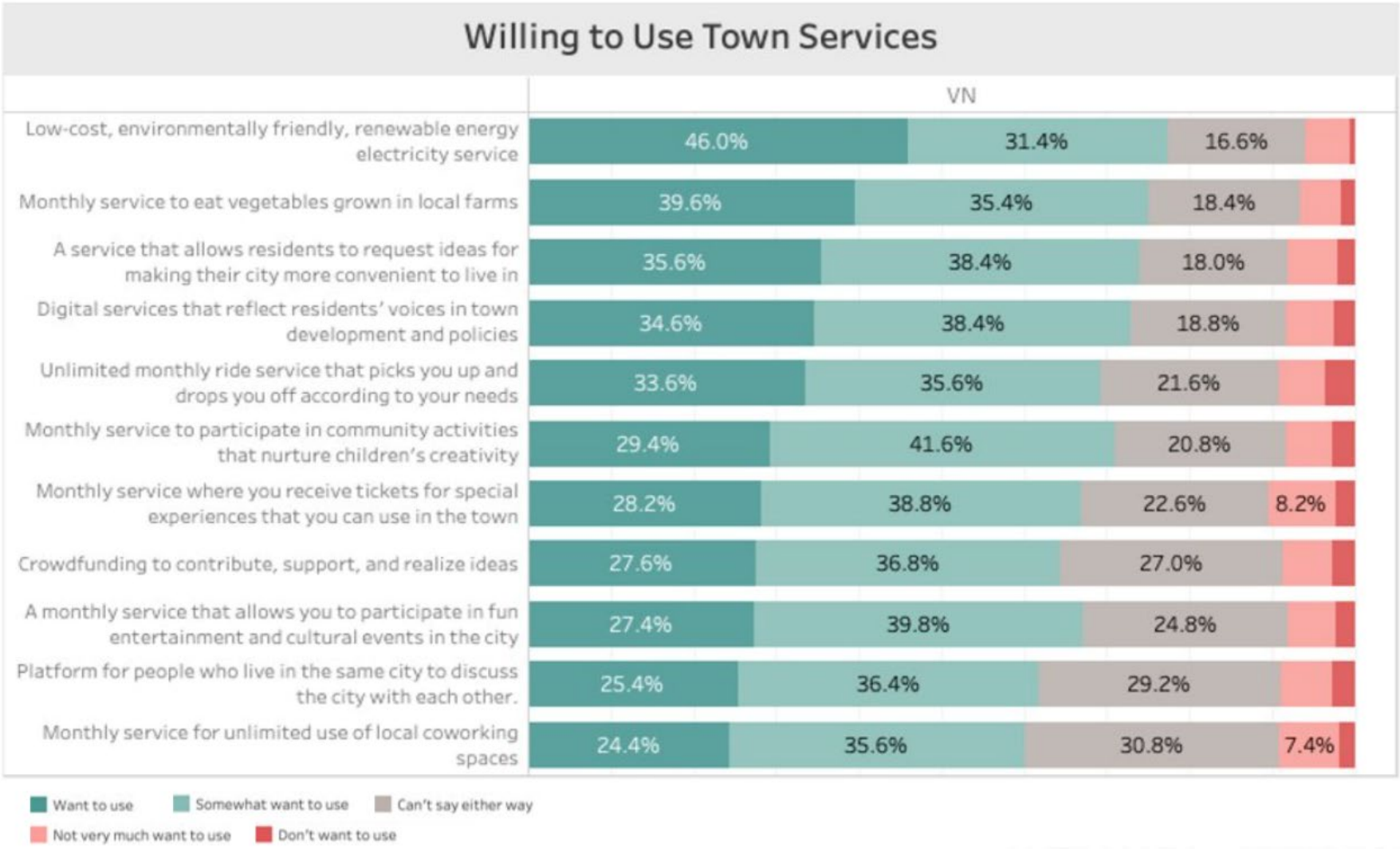
Figure 9.11 shows that Vietnamese people showed willingness to use specific areas of service:

(i) Low-cost, environmentally friendly, renewable energy electricity service (77.4%)

(ii) Monthly service to eat vegetables grown in a local farm (75.0%)

(iii) Ability for citizens to request ideas to make their city more convenient to live in (74.0%).

Figure 9.11. Viet Nam – Willingness to Use Town Services

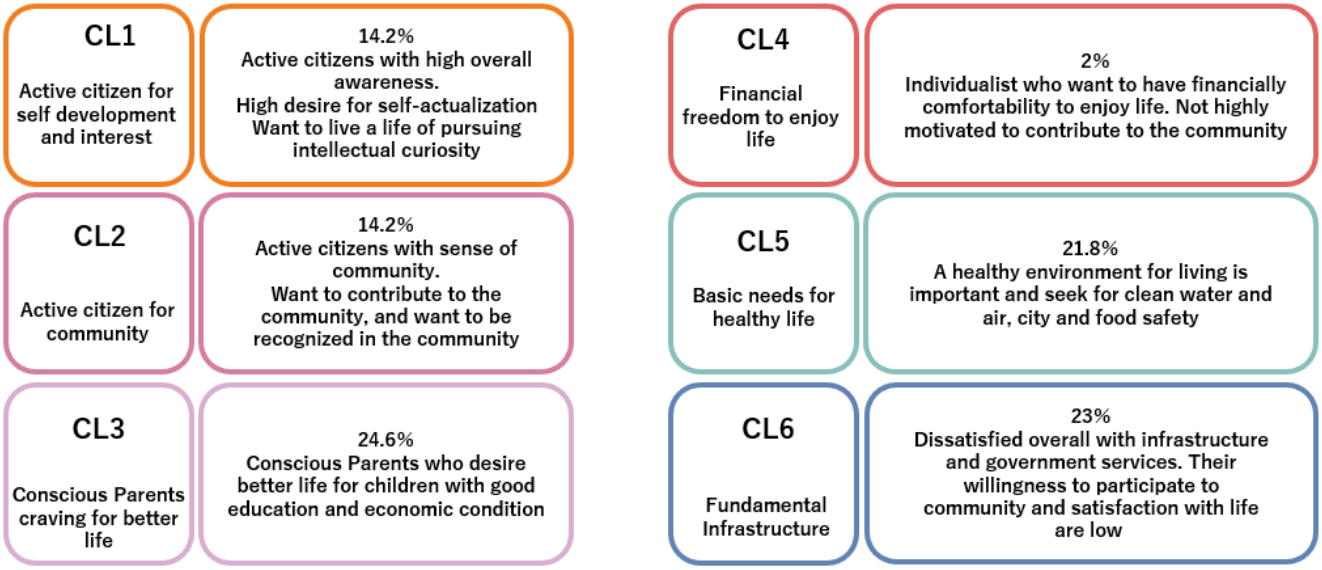


Source: Authors.

8. Citizen Cluster for People-Centred Smart Cities

According to Figure 9.12, the biggest cluster is CL3 ('Conscious parents craving for better life') and accounts for 24.6% of the population in Viet Nam. Those who focus on basic needs (CL5) and fundamental infrastructure (CL6) together account for 44.8%. Figure 9.13 shows demographics of the six clusters.

Figure 9.12. Viet Nam – Citizen Cluster for People-Centred Smart Cities



Source: Authors.

Figure 9.13. Viet Nam – Citizen Cluster Demographics

	CL1 Active citizen for self development and interest	CL2 Active citizen for community	CL3 Conscious Parents craving for better life	CL4 Financial freedom to enjoy life	CL5 Basic needs for healthy life	CL6 Fundamental Infrastructure
Gender	Male (42.3%) **Female (57.7%)**	Male (53.5%) Female (46.5%)	Male (40.7%) **Female (59.3%)**	Small sample size	**Male (60.6%)** Female (39.4%)	Male (53.0%) Female (47.0%)
Age	18-19 years 2.8% 20-29 years 14.1% 30-39 years 28.2% 40-49 years 29.6% 50-59 years 25.4%	1.4% 16.9% 19.7% 36.6% 25.4%	1.6% 24.4% 30.1% 29.3% 14.6%		0.9% 19.3% 30.3% 32.1% 17.4%	0.9% 13.9% 36.5% 26.1% 22.6%
Marital Status	Single 22.5% Married/Living-in 76.1%	22.5% 77.5%	39.8% 56.1%		33.9% 63.3%	34.8% 61.7%
Family Structure	Live alone 2.8% Spouse 73.2% Child(ren) 76.1% Parent(s) 38.0% Brother(s)/Sister(s) 18.3% Grandchild(ren) Grandparent(s) 1.4%	7.0% 70.4% 71.8% 52.1% 7.0% 1.4% 12.7%	8.1% 53.7% 50.4% 55.3% 30.9% 1.6% 7.3%		4.6% 61.5% 60.6% 45.0% 22.0% 1.8% 3.7%	2.6% 58.3% 54.8% 48.7% 20.0% 1.7% 3.5%
Income	**High (45%)**, Middle (37%), Low (18%)	High (32%), Middle (39%), Low (28%)	High (29%), Middle (42%), Low (28%)		High (28%), Middle (41%), Low (30%)	High (23%), Middle (39%), **Low (38%)**
Occupation	Public servant (25%) **Management (22.5%)** Administration level (21%)	Public servant (28%) Administration level (25%) **Management (22.5%)**	**Administration level (32.5%)** Public servant (27%) Management (11.4%)		Public servant (30%) Administration level (19%) **Privately own business (16%)**	Public servant (30%) Administration level (18%) **Freelance (17%)**

Source: Authors.

Overall, CL1 and CL2 are highly active and open to participation in a variety of activities (Figure 9.14), ranging from living environment to personal life (Figure 9.16):

(i) Education of children, childcare related (CL1 at 54%; CL2, 52%)

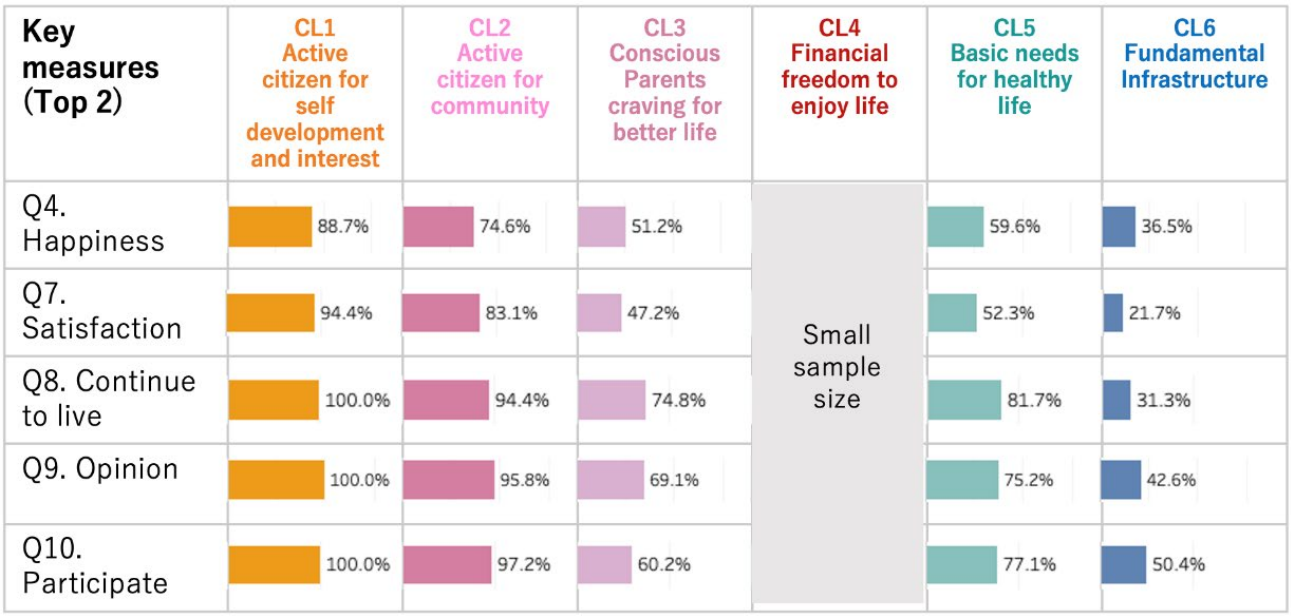
(ii) Cultural activities (CL1, 49%; CL2, 42%)

(iii) Activities that connect with local people (CL1, 45%; CL2, 46%)

(iv) Local production and consumption of Food (CL1, 41%; CL2 42%).

As shown in Figure 9.15, CL3 and CL5 have their main focus on keeping the city clean, enjoying nature and keeping city safe (Figure 9.15). However, CL4 and CL6 are less motivated to join activities to improve community (Figure 9.14).

Figure 9.14. Viet Nam – Citizen Cluster Key Measures

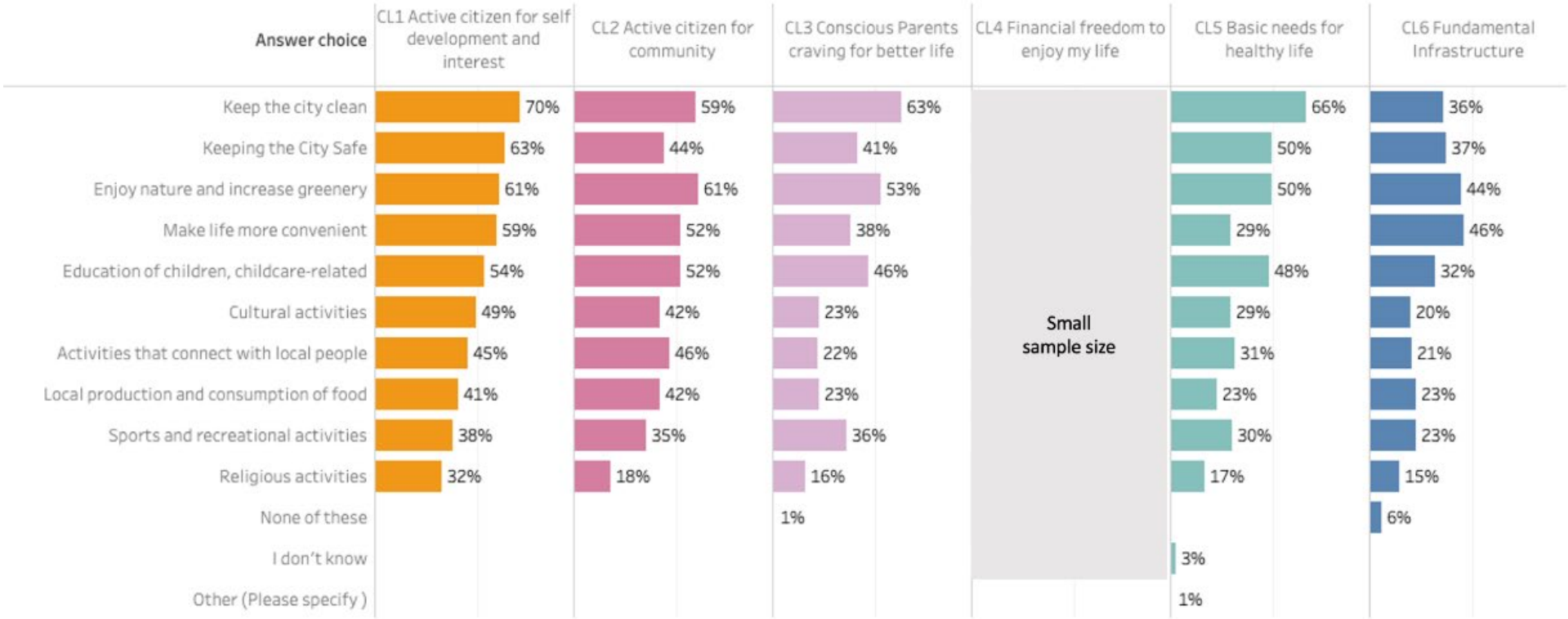


Source: Authors.

Figure 9.15. Viet Nam – Mapping of Citizen Cluster 'Top Activities Participation to Improve Community'

Source: Authors.

Figure 9.16. Viet Nam – Citizen Cluster 'Activities to Improve Community'

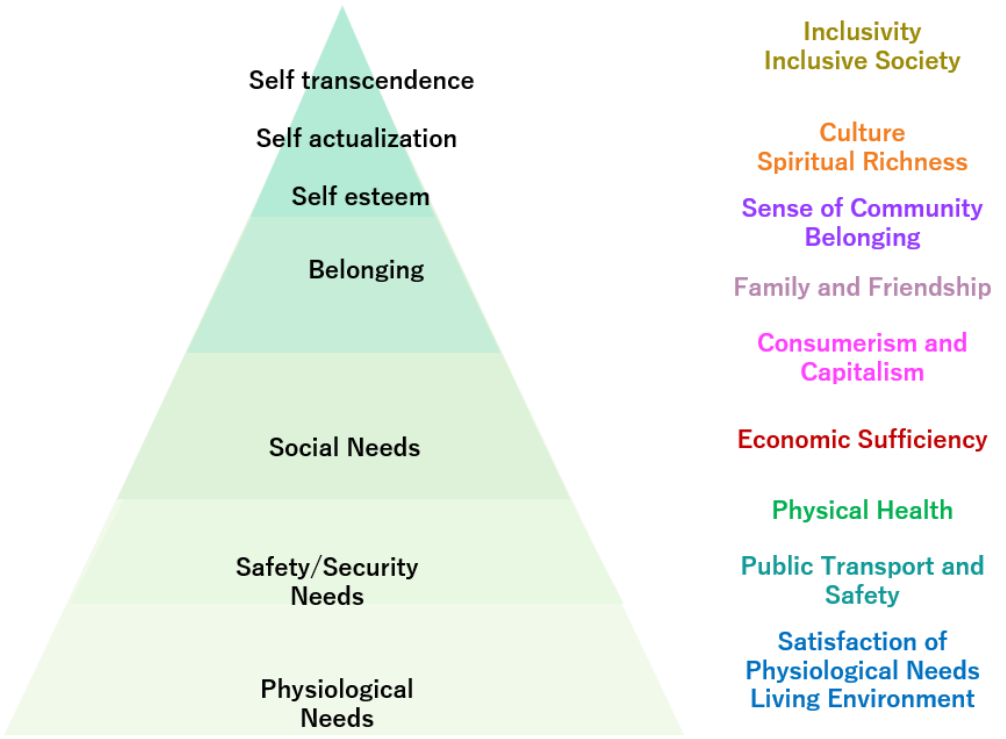


Source: Authors.

9. Citizen Testimonials about their cities

Figure 9.17 below is a summary of Vietnamese citizens' opinions from diginography, reflected in Maslow's Hierarchy of Needs framework.

Figure 9.17. Viet Nam – Citizen Opinion from Diginography



Inclusivity **Inclusive Society**	Tolerance towards others and inclusivity can be seen from participation by everyone regardless of age. Friendly and enthusiastic services that make people feel accepted and welcome.
Culture **Spiritual Richness**	While Vietnamese are proud of their buildings (which are symbols of their country's economic development), they also want to experience foreign cultures. Diverse dining options are familiar cross-cultural experiences.
Sense of Community **Belonging**	Newly developed residential areas are ideal for Vietnamese people, with clean air and good facilities for children. Citizens of such living environments are well-educated, well-mannered, and comfortable, which also contributes to their sense of belonging to the community where they live in.
Family and Friendship	New parks are great places to get in touch with nature and spend a weekend with family and friends. The emphasis will be on family fun

	with children in a variety of places, including modern shopping facilities.
Consumerism and Capitalism	Modern shopping malls offer entertainment such as trendy products from well-known brands, dining, and the latest technological experiences. There are complaints about the lack of entertainment facilities and being a place for only shopping.
Economic Sufficiency	Smart city areas are not for low-income citizens, with well-equipped amenities. There is concern that these are costly. Citizens have upward mobility and want to be able to raise their income and enjoy quality lifestyles.
Physical Health	In parks, they want clean air and places to exercise. In Viet Nam, where there are many people belonging to the generation of raising children, people are very conscious about their children and want safe places for children to play and comfortable eating spaces.
Public Transport and Safety	In residential environments, there are notable mentions regarding security and ensuring safety. The city is crowded and congested, and good transportation and parking facilities are required.
Satisfaction of Physiological Needs **Living Environment**	Many mentions of fresh air and exercise in Ho Chi Minh City, where air pollution is a challenge as a basic living environment. As for food, Vietnamese expect to be able to eat comfortably.

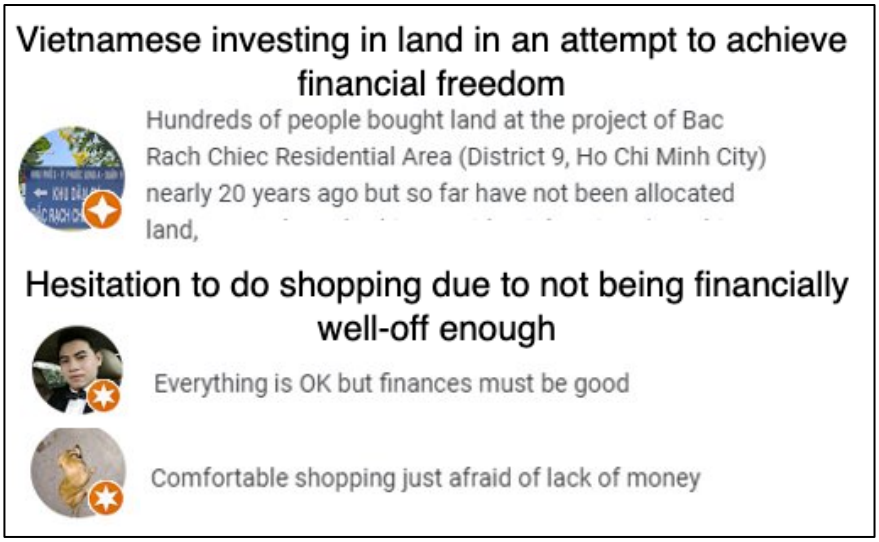
Source: Authors.

Along with Viet Nam's economic miracle, Vietnamese people equate greater economic power with happiness. Additionally, their culture emphasise strong family ties and a comfortable home, which contribute to their happiness. They also find happiness in a society that embraces diversity and fosters patriotism.

- **Happiness Factor #1: Financial and Work Freedom**
  - Financial freedom to buy what I want
  - Financially well-off

Higher financial means equates to Vietnamese happiness. Some are actively investing to achieve this. See Figure 9.18.

Figure 9.18. Viet Nam – Citizen's Voice for Happiness Factor #1

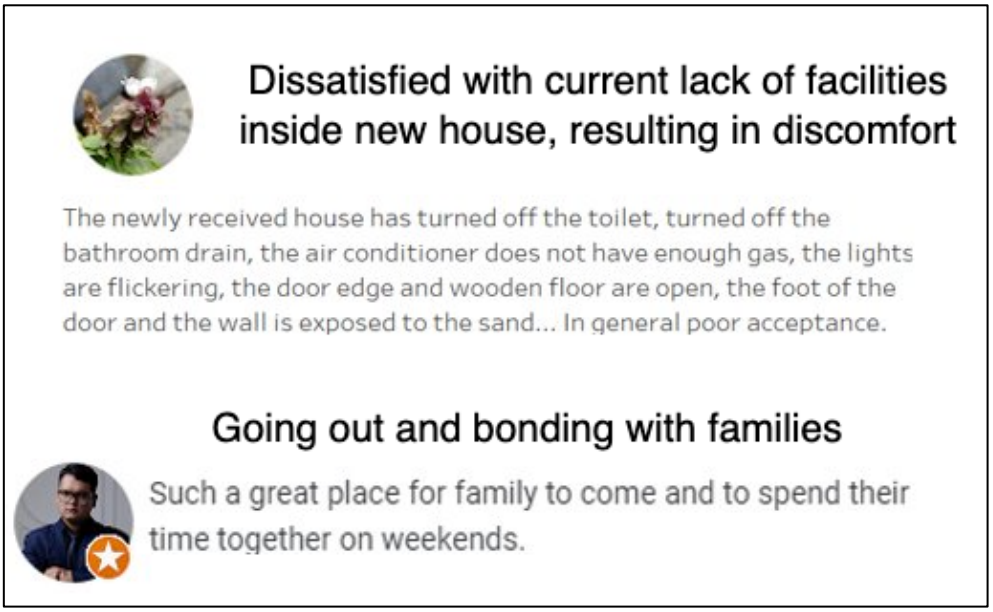


Source: Authors.

- **Happiness Factor #2: Relationship with Family and Friends**
  - Comfortable house/place to live in
  - Good relationship with family

Comfortable house and good family ties are important to Vietnamese well-being or happiness. See Figure 9.19.

Figure 9.19. Viet Nam – Citizen's Voice for Happiness Factor #2



Source: Authors.

- **Happiness Factor #3: Richness of Mind with Connected Multicultural Community**
  - A society that allows others to be themselves
  - Meaningful life and a purpose in life

Different age groups feel safe to be themselves while having a greater sense of purpose as one Viet Nam. See Figure 9.20.

Figure 9.20. Viet Nam – Citizen's Voice for Happiness Factor #3

Source: Authors.

Chapter 10

Conclusion and Next Step

1. Conclusion

1.1. Applicability of People-Centred Smart Cities in ASEAN

A PCSC is a city that aims to incorporate the voices of its citizens into urban development, with the 'well-being of its citizens as the ultimate goal. Through the interviews and quantity survey conducted in the research, **we confirm the WILL for applicability of PCSCs in ASEAN through the following findings (Figure 10.1)**:

- PUBLIC (government, administrative, and academia) and PRIVATE sectors (industry and enterprise): There is an awareness that the governments and enterprises of each country should hear and utilise the opinions of citizens in urban development. Singapore and Thailand show a strong will to engage citizens in the process of smart city development.
- PEOPLE: The high willingness of citizens to participate was confirmed. Specifically, citizens' desire for 'reflecting their opinions in local management and services' is relatively high in ASEAN, along with their willingness to 'participate in local activities to improve the community.'

To realise PCSCs, we also validated the existence of a framework (SOFT) and basic infrastructure (HARD). Currently, major KPIs to measure the performance of smart cities have been established in ASEAN countries except Viet Nam, but **most of the measures are objective macro measures** based on 'ISO 37120 Indicators for city services and quality of life' There has been no confirmed case of collecting and utilising citizens' opinions in large scale based on subjective measures. Singapore's Tampines and Thailand's DEPA initiatives are the only local governments/ministries that are trying to absorb citizens' voices and incorporating them into urban planning with the support of a platform. On the other hand, in Malaysia, Indonesia, and the Philippines, corporations that see potential of PCSCs want to implement them in the future.

Figure 10.1. WILL Components Summary

Category		Factor						
SOFT/ Intangible	PUBLIC PRIVATE	Interests	3	3	2	2	2	1
		Aspiration						
		Awareness						
	PEOPLE	Interests	2	2	2	2	2	2
		Aspiration						
		Awareness						

Notes:

PUBLIC/PRIVATE

1. Inadequate will to implement and develop PCSC

2. Have will to implement and develop PCSC, but no existing or inadequate systems/initiatives

3. PCSC systems and initiatives already exist and there is a will to further develop and expand

PEOPLE

1. Less likely to desire improving community by reflecting own will (Below 50%)

2. More likely to desire improving community by reflecting own will (50% & above)

Source: Authors.

Figure 10.2. Soft/Hard Components Summary

Category		Factor						
SOFT/ Intangible	PUBLIC	KPI	3	2	1	2	2	1
		Platform to collect opinion						
		Usage of people's voices						
	PRIVATE	KPI			2			
		Platform to collect opinion						
		Usage of people's voices						
HARD/ Tangible	PUBLIC	Basic infra/ Data management	3	2	2	1	1	2
	PRIVATE	Basic infra/ Data management						

KPI = key performance indicator(s)

Notes:

SOFT /Intangible

1. No major KPI or platforms for PCSC.

2. KPI or platforms for PCSC exist but still in progress.

3. KPI, Platforms for PCSC exist and PCSC data is beginning to be utilised.

HARD/Tangible

1. Basic infrastructure and data management are inadequate.

2. Basic infrastructure and data management are adequate.

3. Basic infrastructure and data management are advanced.

Source: Authors.

1.2. Traceability

To achieve the PCSC objective to improve well-being or happiness, **it is important to continuously measure and trace the level of citizens' well-being or happiness and the factors that contribute to it**. To do this effectively, a systematic framework for gathering and measuring subjective data/indicators systematically with a certain level of objectivity should be introduced. Additionally, it is valuable to compare both subjective and objective measures to understand the correlation between government policies and services and the well-being or happiness of citizens.

Some local governments and universities conducted surveys to obtain the opinions of citizens on individual policies, but these efforts do not fully with the PCSC perspective. Authorities, governments, academia in ASEAN countries feel the need to keep track of subjective measures from an objective perspective as well, but do not know how to conduct such a difficult survey.

1.3. Current status of People-Centred Smart Cities Implementation Pattern

The current state of PCSC implementation is categorised into three patterns presented in Figure 10.3, 10.4, and 10.5.

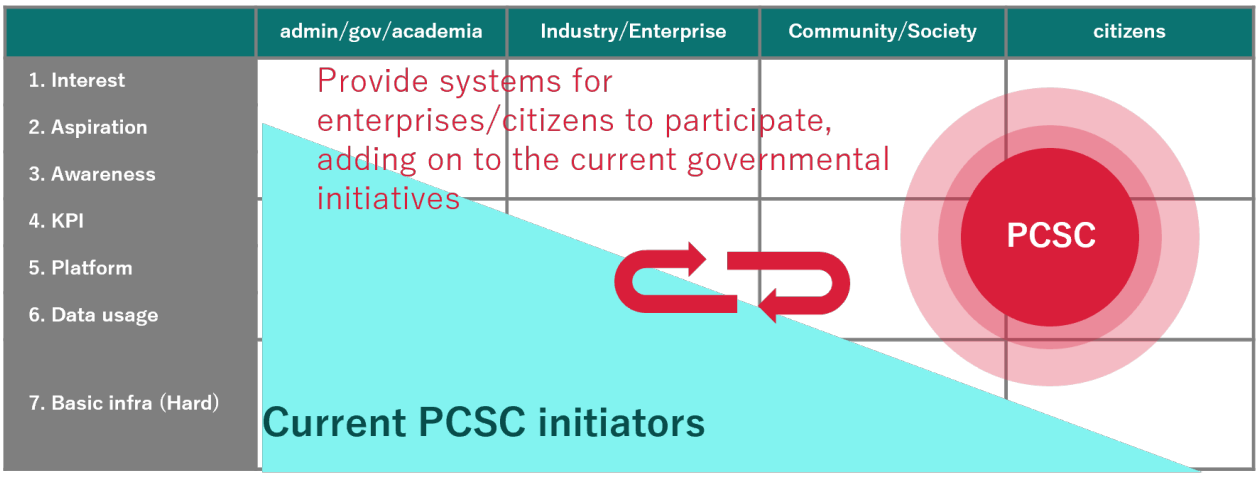
Pattern 1: The status of PCSC implementation cities where government PCSC efforts are in progress, but participation by enterprises and citizens have not yet been fully achieved.

While governmental and administrative systems for introducing PCSC are highly precise and practical, actual participation of companies and citizens remain low.

We've observed that Singapore and Thailand are classified under this pattern.

【PCSC implementation plan】 Provide a framework that facilitates the ease of participation of enterprises and citizens in urban development.

Figure 10.3. Current Status of People-Centred Smart Cities Implementation Pattern 1



Source: Authors.

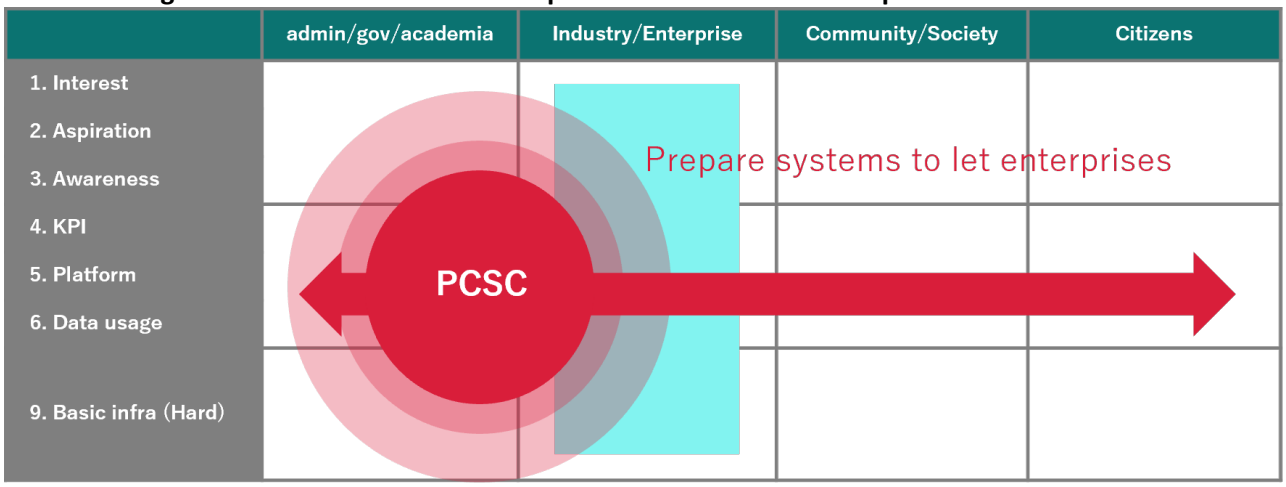
Pattern 2: Industry-led PCSC implementation is ongoing, while degree of governmental PCSC implementation is limited

Enterprises are highly motivated and have started implementing PCSC systems. However, at the governmental level, cities have not achieved positive activities or produced successful examples as directed.

We've observed that Indonesia, Philippines, and Malaysia are classified under this pattern.

【PCSC implementation plan】 Prepare systems to let enterprises create successful cases involving government and citizens.

Figure 10.4. Current Status of People-Centred Smart Cities Implementation Pattern 2



KPI = key performance indicator(s); PCSC = people-centric smart city.

Source: Authors.

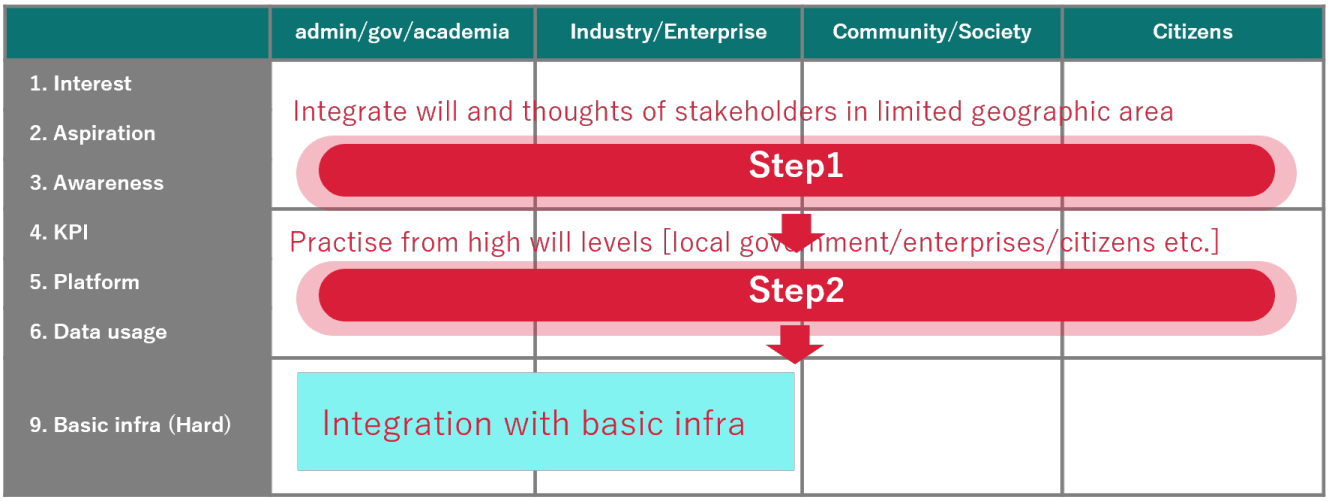
Pattern 3: Cities where investment is biased towards tangible 'hard' aspects and immature on 'soft' intangible aspects

Infrastructure development and implementation are taking precedence. Systems and KPIs for PCSC promotions are not yet in place.

We've identified that Viet Nam is classified under this pattern.

【PCSC implementation plan】 Start with areas where it is easy to implement a PCSC, such as at the level of local government, enterprises, and citizens, and gradually expand the scope.

Figure 10.5. Current Status of People-Centred Smart Cities Implementation Pattern 3



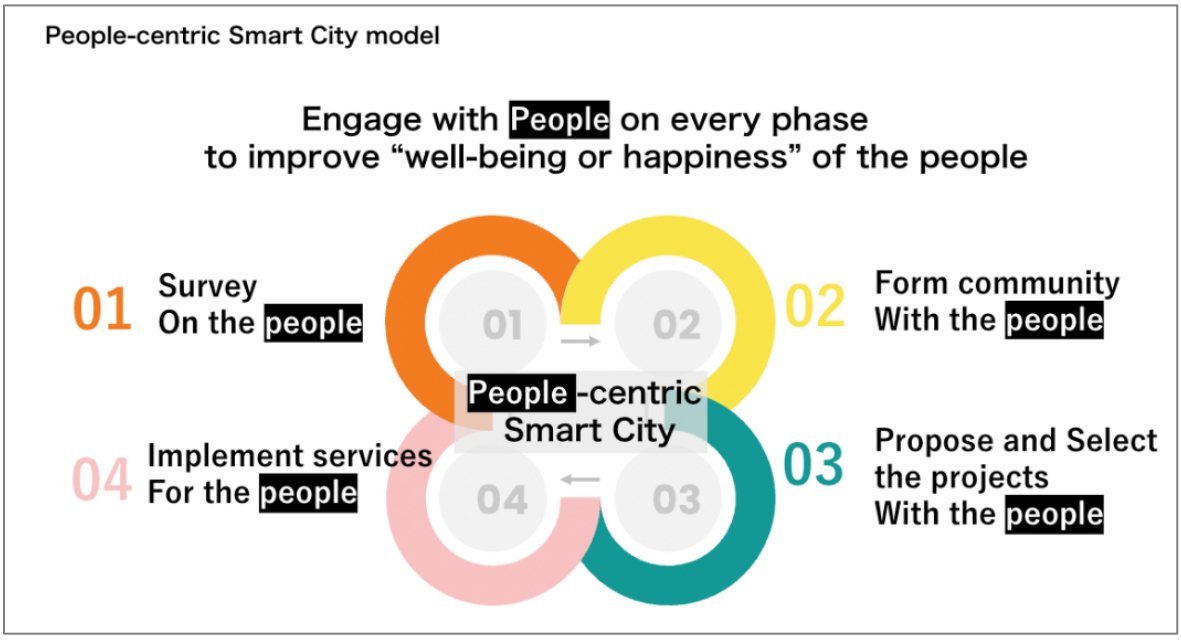
Source: Authors.

1.4. Challenges in Implementing People-Centred Smart Cities

In each country, there is an awareness of the importance of implementing PCSCs that reflect the voices of citizens in city/town/community development and policies. However, the framework and level of implementation differ from country to country.

We have extracted challenges to be addressed in the implementation of PCSCs along the flow (Figure 10.6) based on our definition of PCSCs for this project.

Figure 10.6. Flow of People-Centred Smart Cities Model



Source: Authors.

Challenges

Phase I: Extract themes of challenges in the city/town from the perspective of improving well-being or happiness, based on a survey of citizens' needs, lifestyles, etc.

- The national and regional governments in all 6 ASEAN countries were interviewed for this study have established objective measures but not subjective measures. Therefore, it is crucial to agree on well-being or happiness as a key measure to realise the well-being or happiness of citizens. In addition, since well-being or happiness itself is a measure based on individual subjectivity, it is necessary to devise a way to make it objective in the survey.

Phase II: Form a community of people who are aware of the challenges (both online and offline) and discuss the challenges.

- Citizens do not always participate actively and proactively.
- Citizens tend to be less constructive, but rather, more critical.
- Citizens' opinions are scattered across various channels, making it difficult to integrate them.
- In the case of involving citizens and stimulating discussion, it should be noted that ASEAN is a multi-ethnic country with a variety of languages, and it is necessary to accommodate a variety of languages when facilitating discussion within the community.
- Elderly people are often unable to use new digital applications and need to be supported in usage.

Phase III: Propose and select projects to solve challenges by having people share ideas and opinions.

- Difficulty for the average person to formulate a project in solving challenges.
- In countries with high diversity, it is difficult to know whose opinions to take in and reflect.

Phase IV: Implement selected ideas and opinions into concrete services and/or solutions.

- With limited budgets for each region, there is a funding problem as to who will pay for and invest in the implementation of services.

At the stage of implementing services, it is necessary for private companies that promote the services to be selected in a transparent process with the citizens' approval and be evaluated from an objective perspective.

The sense of challenge in Phases II through IV is significant amongst PUBLIC (administration, government, and academia), PRIVATE (industry and enterprises), and PEOPLE (the citizens in each city).

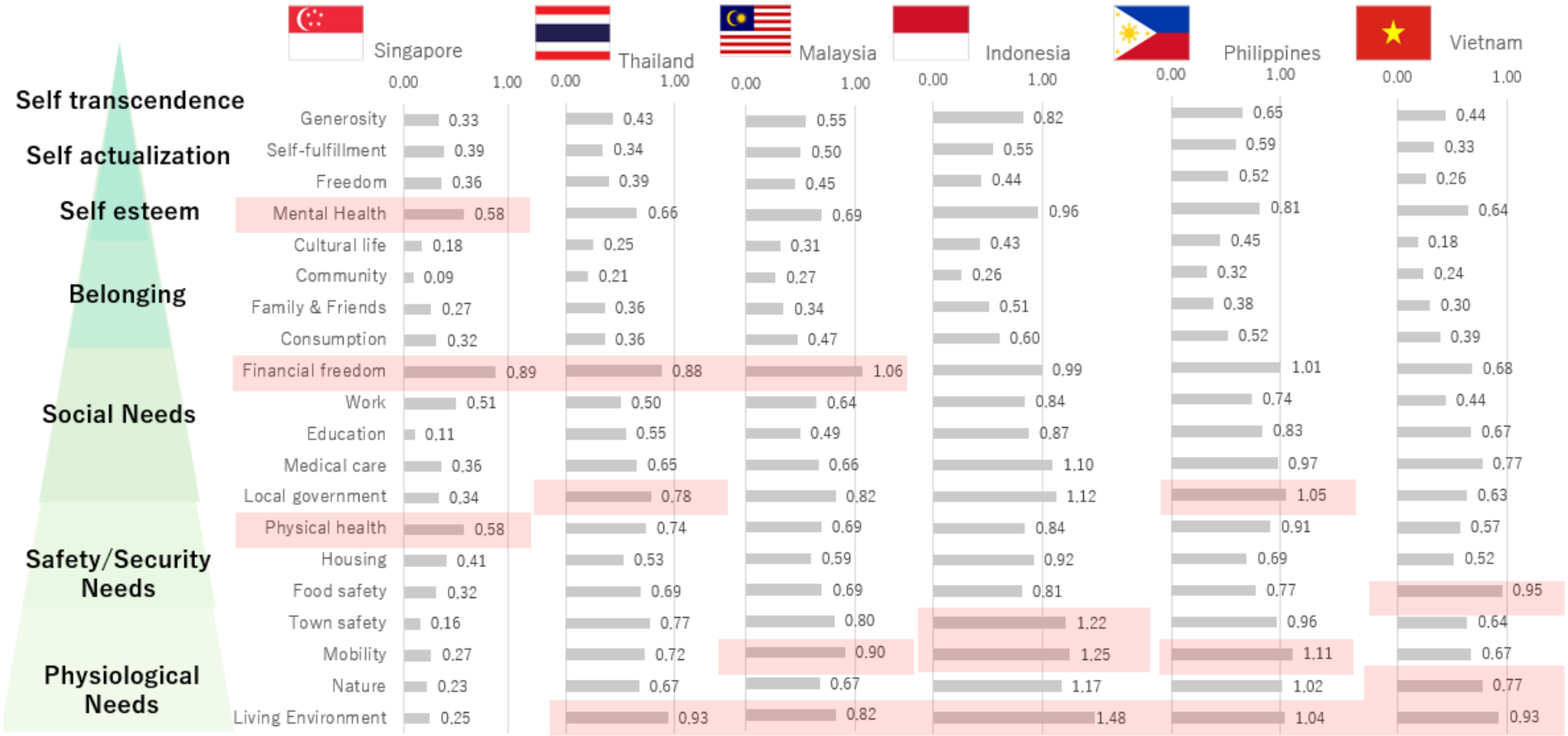
1.5. ASEAN Citizens' Awareness of Challenges Concerning their Cities and Daily Lives

We surveyed respondents about levels of importance and current satisfaction of 53 items in various areas and values related to their living environment and lifestyles. The survey revealed that there are large gaps between the levels of importance and satisfaction, indicating areas of challenge.

In ASEAN countries, the largest gaps in two areas: **(i) infrastructure for the living environment,** which includes air pollution, city safety, public transportation, and traffic congestion and **(ii) economic activities**, which includes affordability and the ability to enjoy life with consumption. When the survey items are categorised according to the Maslow's Needs Framework, it was evident that most ASEAN countries prioritise physiological and safety needs (lower end of needs), such as the need for clean, air-pollution-free cities to ensure physical health in ASEAN countries. However, Singapore stands out as an exception, as it focuses on higher-order social needs.

In contrast, citizens in economically developed countries like Singapore, Thailand, and Malaysia seek financial means to enjoy a good life and lifestyle, indicating a shift towards social needs. On the other hand, Malaysia, Indonesia, and the Philippines are still striving to meet basic infrastructure needs, related to mobility, such as public transportation and traffic congestion.

Figure 10.7. Gap Analysis of ASEAN Countries



Source: Authors.

1.6. People-Centred Smart Cities Focus Areas for the 'Well-Being or Happiness of Citizens'

This survey reveals that there are factors contributing directly to the well-being or happiness of citizens and other different factors contributing to intentions to continue living in cities. **Factors that contribute most to well-being or happiness of citizens are as follows:**

(i) Financial and work freedom

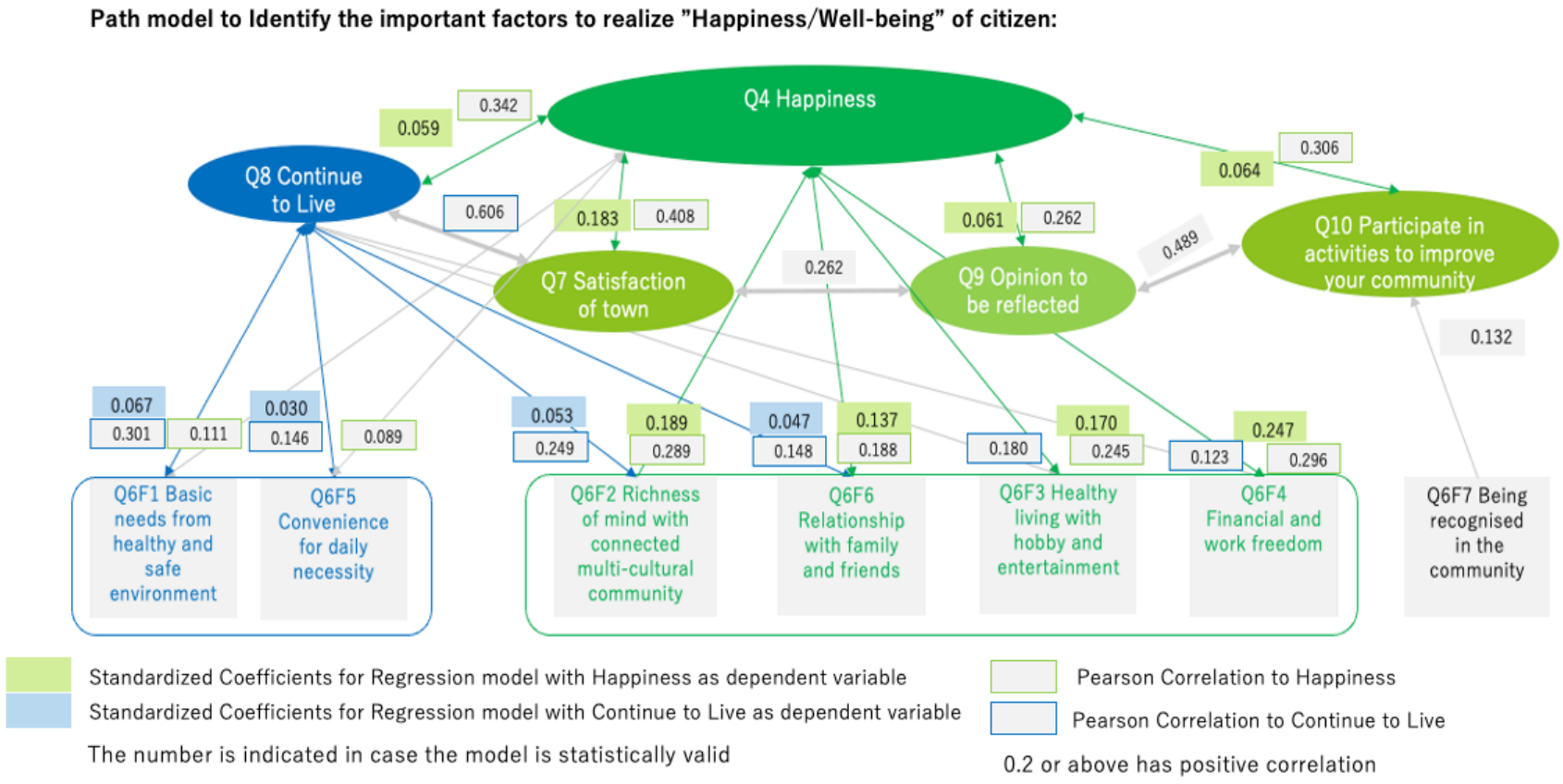
(ii) Richness of mind with connected multicultural community

(iii) Healthy living with hobby and entertainment

(iv) Relationships with family and friends

On the other hand, it is confirmed that the healthy and safe living infrastructure environment and daily conveniences are not statistically related to the well-being or happiness of citizens but contribute to their intention to continue living in the city. In other words, **for the purpose of citizens' well-being or happiness, it would be effective to strengthen the four factors as the focus areas of PCSCs**. Government services, private businesses, and community activities that focus on these areas should be considered and prepared.

Figure 10.8. Path Model of ASEAN Countries

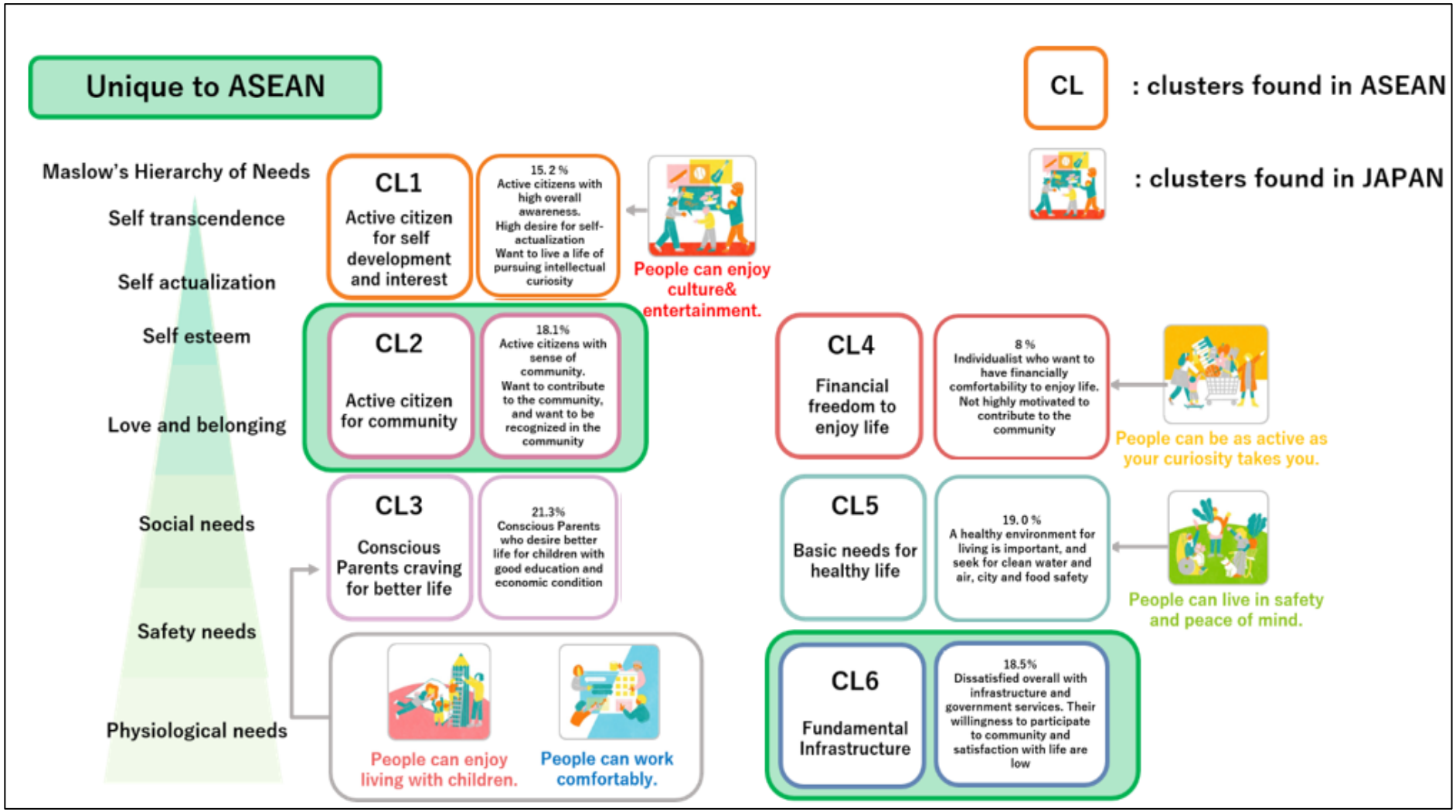


Source: Authors.

1.7. ASEAN People Cluster

This survey conducted a cluster analysis based on citizens' attitudes towards their involvement in the city and what areas they value. It showed that ASEAN citizens can be categorised into six clusters. As shown in Figure 10-9, there are six clusters found in ASEAN citizens. The graphics show the five clusters found in Shibuya citizens' survey in Japan. When compared, CL1, 3, 4, and 5 have similar clusters in Japan, while CL2 '(Active citizen for community') and CL6 ('Fundamental infrastructure') are unique to ASEAN citizens.

Figure 10.9. ASEAN Clusters Compared to Japan



Source: Authors.

In terms of realisation of PCSC, it is particularly important to involve the cluster of active citizens who have a high desire for self-actualisation and want to live a life of pursuing intellectual curiosity, which is present in **Cluster 1** (15.2 % across ASEAN-6) and **Cluster 2** (18.1% of active citizens with a high sense of recognition and desire to contribute within the community).

1.8. Services that work on factors to improve well-being or happiness in each country

As previously mentioned, the factors that contribute to improving well-being or happiness in each country are common in 6 ASEAN countries, which are 'Financial and work freedom' (Table 10.1), 'Richness of mind with connected multi-cultural community' (Table 10.2), 'Healthy living with hobby and entertainment' (Table 10.3), and 'Relationship with family and friends' (Table 10.4).

Based on citizens' voices and regional characteristics identified through Diginography, the following service areas are envisioned as those that can contribute to solving social challenges and improving well-being or happiness in each country and region.

Table 10.1. 'Financial and Work Freedom' Across ASEAN-6 Countries

Singapore	New services that are economically affordable and activities that improve business skills of individuals
Thailand	Shopping space for daily entertainment, convenient coworking space, etc.
Malaysia	Convenient and affordable services that financially support citizen's daily life
Indonesia	New business and job opportunities that support economic wealth
Philippines	Enhanced commercial facilities of global standards and daily choices that meet citizens' standard of living
Viet Nam	Opportunities for active economic activity and skill development, services to support economic burdens, etc.

Source: Authors.

Table 10.2. 'Richness of Mind with Connected Multi-Cultural Community' Across ASEAN-6 Countries

Singapore	Community activities that celebrate the culture and customs of each ethnic group; services and activities that support the disciplined operation of the township; fair and transparent systems that citizens can accept and feel comfortable towards initiatives.
Thailand	Cultural facilities and events that offer diverse cultural and artistic experiences, and activities/places that communicate forefront Thai culture to attract tourists.

Malaysia	Creating activities and events that allow people to enjoy the unique culture of Malaysia, and creating an inclusive community and a system that reflects diverse voices.
Indonesia	Activities to connect with people in the community and improve the community, and places and activities where people can experience Indonesia's unique culture and foreign cultures.
Philippines	Community activities and events to enjoy rich culture.
Viet Nam	Creating a safe and healthy environment for children, facilities, services, and safe food services.

Source: Authors.

Table 10.3. 'Healthy Living with Hobby and Entertainment' across 6 ASEAN Countries

Singapore	Living environment where people can connect with nature for healthy life both mentally and physically, development of parks, and facilities and events where people can experience diverse cultures
Thailand	Facilities, services, activities, etc. that promote physical and mental health
Malaysia	Providing places and activities to get in touch with nature, and facilities, services, and events for healthy and active lifestyles, etc.
Indonesia	Activities that support physical and mental health in terms of diet and exercise
Philippines	Providing places and facilities where people can feel nature, can support a healthy lifestyle both physically and mentally, and families (children) can play safely and securely.
Viet Nam	Develop safe, clean parks and recreational facilities where people can experience new cultures.

Source: Authors.

Table 10.4. 'Relationship with Family and Friends' Across 6 ASEAN Countries

Singapore	Activities to create facilities and programs where citizens can learn and experience new things with their children
Thailand	Places and programs to enjoy with family and friends, trendy activities to enjoy with friends, etc.
Malaysia	Activities to enjoy nature with family and friends
Indonesia	Providing places and activities to enjoy with family and friends
Philippines	Places and activities to enjoy with family and friends

Viet Nam	Activities and community activities in which citizens can participate in new residential areas

Source: Authors.

2. Next Step

Implication from the survey

Through this survey, we identified the challenges in implementing PCSCs in ASEAN countries and **suggest studying practical measures to overcome them.** We can refer to the services that contribute to solving social challenges extracted through Diginography and enhance the well-being or happiness of citizens.

2.1. Direction for Resolving Major Challenges.

Several directions for resolving the major challenges were suggested and implied in the interviews.

(1) Setting of subjective measures

- To establish subjective measures as a goal of PCSCs, it is essential to understand and agree on how they align with the existing objective measures in the region. Additionally, we need to identify the elements that can be improved to elevate the subjective measures.

(2) Framework and innovations to encourage citizen's proactive participation

- It is necessary to select projects that are of high interest to citizens and require fair public discussion. It is also important to utilise platforms such as Decidim that facilitate active citizen discussion.
- A leading example of this is seen in the case of Superblocks in Barcelona, Spain. The city successfully engaged local citizens and stores in discussions through Decidim, with a high public theme of greening the city, enabling the city to realise the initiative.
- In the case of Singapore, a variety of human touch support is also being provided to citizens to enable penetration of Singapore government-initiated applications. For example, the Smart Nation Builder, a 12-meter-long truck, travels around each community centre to provide a place for citizens to experience government-driven apps and digital services that serve as a portable space where they can experience them. Also, during penetration of apps, there are citizens who do not know how to use these apps. In response to this, digital ambassadors called 'Last Mile Connectors' are available at community centres in each area to provide advice and consultation on how to use the apps.

(3) Response to diverse opinions

- As a prerequisite for dealing with diverse opinions, it is important for the PCSC process to have a framework for impartially hearing the opinions from various citizens and to have a voting framework in deciding on initiatives.
- The Decidim has a voting framework, allowing citizens to vote proposed initiatives. Additionally, Singapore has a rule that requires 75% of citizen approval for an initiative to be implemented by the town council, and this rule has been enforced successfully. By showcasing these implemented initiatives (use cases) based on the opinions of citizens, people can better understand the PCSC concept and reap its benefits.

(4) Funding Problems

- If the social challenges requiring a PCSC model are relatively short-term and directly linked to economic benefits, like infrastructure development and improved comfort in daily life, a model such as that proposed by Sinarmas Land's executives could be considered. In this model, 'startups and other companies with awareness of the challenges and creativity can come up with solutions [should] take the lead, with venture capitalists contributing funds.'
- On the other hand, social challenges may not always lead to short-term and direct economic benefits can be expected. In such cases, a model that involves companies mentioned earlier that provides solutions while using highly public financial resources like Social Impact Bonds and TIF/Tax Increment Financing, may be effective.
- Since the social challenges to be solved differ from country to country and region to region, it would be useful to demonstrate the extent to which the above models work.

2.2. Items and Perspectives to be Investigated and Analysed for Future Implementation (Feasibility)

To successfully implement and promote PCSCs in the future, **it will be necessary to conduct more specific research and analysis on how it can be implemented by overcoming the distinctive challenges and issues in each region with concrete measures.** Besides, it is important to **select countries/areas with applicability and with higher feasibility for implementation.**

It was confirmed through this survey that Singapore, Thailand, Indonesia, and Philippines are countries where initiatives or intentions to implement PCSCs were identified in both the PUBLC and PRIVATE layers. Amongst them, Thailand (DEPA), Indonesia (BSD), and the Philippines (BCDA) are more feasible for implementing PCSCs, but they lack a complete PCSC framework and need the ideation and support from the private sector and investors.

In addition to selecting appropriate countries/areas – since the penetration and promotion of PCSC will be a medium to long term effort – it is necessary to establish a continuous measurement framework for well-being or happiness levels and the factors contributing to them (subjective data). It

is also crucial to clarify the meaning of 'why we should work on PCSC' over time, together with the progress in front of the citizens. From this perspective, organising and defining the necessary data (objective and subjective) and establishing survey methods (including survey subjects) are challenges to be addressed in the future. In the case of Japan, the general incorporated association Smart City Institute Japan has obtained objective survey data for all of Japan and published them on the Internet.

Based on the above, the following three points should be investigated and analysed in the future.

(1) Survey of initiatives in Singapore, where PCSC initiatives based on the integration of human touch and digitalisation, which is typical of ASEAN and are already in progress.

(Objective of survey)

3. Extraction of challenges that arise when implementing PCSC initiatives in ASEAN, research on framework to lead to success, and organisation of success factors.

(2) Demonstration and verification of a model that is considered more practical and highly feasible, considering the directions for addressing the challenges described in 10.2.A, (2)-(4).

(Objective of survey)

4. Indicating models and formulating strategies for specific PCSC implementation in areas with higher feasibility.

(3) Formulate subjective measures described in 10.2.A (1) above.

(Objective of survey)

5. Develop a framework for gathering subjective data to complement the objective measure, like ISO 37120, in areas where PCSCs are implemented. Determine the types of content and use them as measures to gain insights into the citizens' perspectives and experiences.

References

Asian Inclusive Smart Cities (2022), *Deliberative Platforms for an Inclusive Smart City: Theoretical Perspective*. https://aisc-asia.org/research/deliberative-platforms-for-an-inclusive-smart-city-theoretical-perspective/

Association of Southeast Asian Nations (2020), *ASEAN Smart Cities Network: The Goal and Focus of the ASCN*. https://asean.org/our-communities/asean-smart-cities-network/

Economic Research Institute for ASEAN and East Asia (2022), *Urban Development*. https://www.eria.org/research/topic/urban-development, ISO (2018), *ISO 37120:2018(en) Sustainable Cities and Communities – Indicators for city services and quality of life*. https://www.iso.org/obp/ui/#iso:std:iso:37120:ed-2:v1:en, Tierney, T. F. (2019), *Toronto's Smart City: Everyday Life or Google Life?* UCL Press. https://doi.org/10.14324/111.444.amps.2019v15i1.001

QUILT.AI (2023), *QUILT.AI*. https://www.quilt.ai/ UN-Habitat (2023). *The Flagship Programme 'People-centred Smart Cities'*. https://unhabitat.org/programme/people-centred-smart-cities

Annex. Interview Summary

1. Singapore Management University

Q1. Is PCSC in Singapore relevant?

A1. Yes, it has been shifting to a PCSC. Smart nation started in 2014, and the smart project was quite top down until 2018, when the government came up with initiatives for what they think is good for the people. SCOPE is a new SG initiative, which is a concept that the government cocreates with people everywhere by inviting people more at the design stage and enabling people to come in and try prototypes. There is a group called tech Kakis, which is a volunteer-based initiative for people who want to develop technologies for good, to improve certain services, and to give feedback. It started top down, and it now moved on to collecting Singapore citizens' voices.

Q2. Why did they shift away from top down?

A2. The academic literature of smart city started criticising the process as being very autocratic, even for people who know smart city. They realised that it is not sustainable to do top down and for smart city to be successful, it is essential that people get to use it and the people have some affinity and ownership in this technology. This is the move to get people involved.

Q3. Who implements smart city?

A3. SMDGO (Smart National and Digital Government Office), which is under [the] Prime Minister Office (PMO), leads the direction of smart city and then implements a lot of these policies. GovTech takes charge of the government applications, and they work together to do the smart city plan.

Q4. Is it escalated to town level? (Role and Responsibility)

A4. My understanding is no because Singapore is so small. For example, National Steps Challenge is a health initiative that the government gives people free fitness trackers, incentivises people to be more physically active, and makes sure people age well. This health tracker is synced with mobile, clocks points on walk, gets financial rewards, gives credit on transport or groceries, [and has a] gamification model. It was launched in 2015 and has been going on for a while. A lot of people have heard of or taken part in it. It was initiated by Health Promotion Board (HPB), and then Smart Nation Office started to absorb this. The logistics of giving out the watches requires the need to work with town councils and making roadshows in community centres. Also, there is a lot of interagency collaboration in Singapore.

Q5. Is there any room for private companies to enter?

A5. The style is that the government directs, and then works with [a] private company, but it is always very government headed in Singapore. For example, in the National Step Challenge, the

watches were provided by private companies, but the government has changed the watch vendor a few times.

Q6. How does the government promote the usage of the apps?

A6. There is a moving exhibition in the form of 12m-long trucks, stationed in different community centres. There are interactive panels, to get to know different government apps, and how it can help you. It was designed by GovTech, which works with smart nation, while the running of the truck is outsourced to 3rd party company. They can get feedback from people on what the government is developing.

Q7. Ways to collect opinion.

A7. I also struggle with this as there is no integrated channel to collect feedback by everyone, because the smart nation initiative is very dispersed. There are channels like websites, email, national step challenge etc., which have functions of giving feedback.

ONE SERVICE app is also a feedback channel. I am trying to figure out how they converge all the channels into 'one' centralised channel, so that we know how they act.

Q8. Human touch is more effective than digital in feedback system, what do you think?

A8. Yes, I believe human touch is important. One effective channel is having individuals who serve as digital ambassadors out in the community, particularly at Community Centres (CCs). These ambassadors act as last-mile connectors for people who struggle with using technology, including apps like WhatsApp. Their primary focus is usually on assisting elderly individuals who bring their own phones but face difficulties in utilising them.

One challenge we face is the language barrier, as most mobile apps are primarily available in English. Many elderly individuals do not use English as their main language. That's why digital ambassadors are often multilingual, able to assist people in their native language. People also visit to express complaints and seek comfort, which creates a different experience compared to just exchanging emails.

During my time working in the truck, people would approach and inquire about its purpose, but they often couldn't communicate effectively in English. The employees present then took on the role of mediators. One challenge arose when the truck was crowded, leaving limited time to explain things on the screen. This resulted in simplified yes-no questions, as the primary objective was to assist people, even if the process wasn't always smooth.

Q9. Who are these ambassadors?

A9. Digital ambassadors are typically part-time jobs that attract retired seniors seeking meaningful engagement. It's safe to assume that these seniors are proficient in the local dialect and can effectively assist others, particularly when they belong to the same age group. This peer-to-peer assistance proves to be especially valuable.

On the other hand, Smart Nation ambassadors engage in volunteer work. They often consist of working adults with an interest in technology and a desire to understand the government's initiatives. Students also have the opportunity to volunteer their time and commitment.

Q10. Challenges of PCSC – Scattered Data and Language barrier.

A10. The issue of data integration is intriguing. The government has recently started implementing systems within their own backends to streamline processes and make them more seamless. The establishment of the Smart Nation Office is a relatively recent development. However, there is still a need for individuals to compile data in Excel spreadsheets to facilitate collaboration amongst different government agencies and reduce manual work.

Language barrier poses a significant challenge. The Smart Driver initiative is a commendable effort to gather feedback from the public. However, it's disheartening to hear people share their life stories, expressing the difficulties they face and their struggles in learning. Many individuals working in the truck witnesses these situations.

One observation is the lack of sufficient channels for Smart Nation ambassadors to provide feedback on pain points to the Smart Nation Office. There is a possibility to offer the truck services in different languages. The initiative has been running for a year now and will undergo revamping by the end of this year.

Q11. How to get Positive feedback instead of just negative ones?

A11. The Health Promotion Board (HPB) often receives complaints regarding issues such as device syncing problems. However, they recognise that these complaints can indicate systemic issues that need to be addressed and improved upon.

One challenge arises when asking people for feedback in real-life situations, as they tend to struggle with providing on-the-spot responses. Therefore, it becomes crucial to have ongoing conversations with the public, incorporating more citizen juries to gather insights. For example, the National University of Singapore (NUS) has successfully conducted juries to collect data in the medical field. They organise three-day citizen jury events, providing participants with relevant information in advance to facilitate preparedness. Such directed engagement strategies yield better outcomes.

Q12. Well-being measure is subjective; KPI is objective, not Subjective; people never say they are happy.

A12. Measuring people's happiness and well-being is indeed challenging due to its subjective nature and broad scope. The primary methods available are feedback and surveys, but it's essential to complement them with qualitative interviews to assess individuals' satisfaction levels. This allows for a deeper understanding of their experiences and perspectives. It's worth noting that feedback might vary for different initiatives within the smart city framework, rather than being uniform across the entire concept. Therefore, it is crucial to focus on understanding what aspects of the smart city

initiative are working effectively and what areas need improvement, rather than solely emphasising the importance of smart city as a whole.

Q13. KPI of government for people engagement

A13. One example of a key performance indicator (KPI) for the Smart Driver truck is to have 100 trucks operational on weekends, rather than weekdays. However, whether this is a suitable KPI is debatable and open to question. Additionally, it is essential to consider the truck's placement in a strategic location for exhibitions, allowing people to try out these initiatives. There have been instances where the truck was positioned at the back of a community centre, resulting in low footfall and limited attendance.

Q14. KPI Coming from?

A14. Singapore's National AI strategy includes an AI office under the Prime Minister's office, which collaborates with the Smart Nation initiative. It encompasses various aspects of industrial transformation, such as implementing facial recognition ID systems and digitising education through digital marking for mathematics. The Ministry of Trade is responsible for driving industrial transformation efforts, which are aligned with the broader vision of the smart nation. The Smart Nation Office outlines the overarching concept, while different government agencies execute specific initiatives related to digital transformation.

Q15. Other Challenges

A15. Another challenge lies in maintaining different infrastructure components. For instance, in the case of the National Step Challenge, ensuring the longevity of the tracker watches is essential. This involves not only the hardware's functionality but also the software's performance over time. To address this, a support ecosystem has been established. Users can email in if the QR code is not working, and there are physical touchpoints where individuals can report issues with their watches.

One specific issue is the reliability of the watch straps, which have been known to break. People often resort to using rubber bands as a makeshift solution. To enhance practicality, it would be beneficial for the government to provide more robust and durable watch straps. The goal is to ensure that these devices continue to function effectively in the long run.

Q16. Working with real estate developer – [opportunity] chance

A16. There is an ongoing project to transform Punggol into a digital district, and it involves collaboration with private real estate developers. However, the primary driving force behind the development is still the government.

Q17. Export smart city strategy to other countries?

A17. Normally government tend to export [the] Singapore model, to other countries, but not so much in [the] case of a smart city.

Q18. Definition of PCSC

A18. Different terms such as ‘human centric’ and ‘inclusive society’ may be used, but they essentially convey the same meaning of promoting greater engagement of people and moving away from a technocratic style of governance.

Q19. European smart city contrast

A19. In Europe, there is a different approach in the realm of digital science, where people utilise their mobile gadgets to check air quality and challenge official data, asserting that they have firsthand knowledge of the air quality they experience.

Helsinki adopts a more bottom-up approach, emphasising the importance of involving people in decision-making processes. This contrasts with Singapore's top-down approach, which is reflective of its political system and historical context.

It is essential to place people at the centre, as seen in Barcelona where this approach has proven effective. Singapore also recognises the importance of incorporating people's opinions, but the process can be challenging and complex. The government is actively working towards building the necessary frameworks to facilitate greater public engagement.

2. Chulalongkorn University

Q1. Who is leading the smart city project and for what purposes?

A1. The Thailand smart city policy is governed by the government agency called DEPA (Digital Economy Promotion Agency), which is responsible for disseminating this policy nationwide.

We have a project called ‘Smart City Thailand’, which is a big project driven by the government office of the Prime Minister of Thailand, and many ministers are involved, such as Ministry of digital economy and society, transport, and energy. Private entities in the ICT sector also play a significant role.

Currently, the parliament has been dissolved, and new elections are forthcoming. The government has developed master strategies for the digital economy and aims to propel the country into the digital era, boost the economy, and drive communities towards becoming digital societies. Infrastructure development is another important aspect. In Thailand, there are seven dimensions of smart city development: smart living, environment, mobility, governance, people, economy, and energy. Participation of businesses and people is crucial in defining smart cities, which can be found in both urban and rural areas. Numerous smart city projects are being implemented across Thailand, including area-level smart cities in various provinces. For example, there is a smart city project called ‘Samyan City’ near our campus. A colleague from the Department of Civil Engineering, who previously served as a university vice president, describes smart cities as livable cities where technology is merely a tool. Ultimately, it is the collaboration and connection of people's knowledge that will shape the future. This aligns with the human centric approach we aim to adopt.

Q2. In Thailand, the government leads smart cities framework. Is there any involvement of enterprises or businesspeople?

A2. Basically, the initiation of smart city projects comes from the government, but it also involves a business model as smart cities are viewed as a potential market. There are multiple stakeholders involved, and it should be noted that urban-focused companies may not necessarily have the same interest in rural areas. Many technology suppliers approach local authorities in these areas and offer their products and services as tools for creating smart cities. In Thailand, there are around 7,000 small units or villages where these initiatives are being pursued. Many international companies are actively reaching out to these authorities with the aim of selling their tools and positioning themselves as providers for smart cities. There is a strong incentive to tap into government funding and label these areas as smart cities. This situation presents an opportunity for various entities to seek financial benefits from the smart city trend.

Q3. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A3. Initially, I didn't think of anyone specific, but upon further reflection, I remembered Mr. Chadchart Sittipunt. He is currently the Governor of Bangkok, and he is also my colleague here. He teaches civil engineering, and many years ago, he held the position of Minister of Transportation. He eventually resigned from that role and ran for the position of Governor, where he won by a landslide, receiving 1.3-1.4 million votes, which was more than the combined votes of all other candidates. We often refer to him as the 'strongest person in the universe.'

When it comes to creating a livable city, Mr. Chadchart Sittipunt's policies cover various aspects. His website outlines the importance of safety, a healthy environment, creativity, good management, quality education, robust infrastructure, a thriving economy, and efficient transportation and commuting systems.

To engage with the public and address issues in the city, Mr. Chadchart Sittipunt and his team of engineers developed a platform called 'Traffy Fondue.' This platform is integrated with LINE, a popular messaging application, and allows people to report real-life problems directly to the governor. Since its implementation, the platform has processed over 6,000 cases, with 180,000 cases already resolved out of the total 248,000 problems reported. Users can provide detailed reports, specify the area where the problem exists, and identify the responsible parties. The platform even includes statistical data, using different colors to represent different types of issues such as safety concerns, floods, and road conditions. It covers a wide range of topics, including street dogs, homelessness, PM 2.5 pollution levels, and the behavior of government officials.

Q4. Do you think the PCSC model will increase the value of the city?

A4. In Thailand, we have a diverse population consisting of local residents, migrants from Myanmar, and a significant number of expatriates. For example, in areas like Sukhumvit, there is a prominent Japanese community. My question is, when it comes to 'People-centric' Smart Cities, should we

consider the needs of everyone? Local residents may have different preferences compared to tourists. For instance, in Siam Square, on Fridays, Saturdays, and Sundays, the streets are closed to allow young people and children to play and enjoy music. Many young individuals frequent this area, but as an older person, I find it too noisy. This is an example of compromises that older individuals make, and it highlights the potential differences in what different groups want.

We also need to consider tangible and intangible aspects. Cultural traditions and values are important to me, but young people may not prioritise them. The question arises: Does prioritising these aspects increase the value of the city, and for whom? Locals or tourists? During the COVID-19 pandemic, street vendors selling food were not allowed, which locals may appreciate as it keeps the streets cleaner. However, with the reopening for tourists, their presence is now welcomed. These complexities demonstrate the need to consider multiple dimensions and diverse perspectives.

Rural areas, where local residents form the majority, should not be overlooked. When I walk in Siam Square on weekends, I don't often encounter people of my age group, suggesting that the area may not cater to our preferences. Machida-san mentioned that we should also take care of minority groups who may not benefit from smart city solutions. Therefore, solutions should be inclusive and avoid causing disruptions. Good infrastructure should address the needs of the majority, while communities must address any gaps or issues that may arise.

As another interesting aspect, smart cities often focus on the younger generation and technological advancements. However, in a few years, people from my generation will be the majority. Like in Japan, we will have an aging society with individuals who may not appreciate modern technology. Personally, I enjoy living in Kyoto, which offers a quieter and more culturally rich environment. Therefore, we must not neglect the needs of older people and ensure that their requirements are also taken care of in the future.

Collecting feedback from different generations is crucial, as the nature of cities evolves over time. We should consider the opinions and voices of both the younger and older generations. While the younger generation may have new service requirements, we must not forget the needs of the older generation. When optimising city designs, we need to find a balance and address the concerns of the majority, while also considering the needs of minority groups who may have significant voices and unique problems.

Sometimes, the individuals who possess valuable insights remain silent. We need to find ways to extract information from them. Along with digital approaches like the '*good pass*', face-to-face meetings are essential for identifying real community solutions. Our government system is democratic, and we must coordinate with policymakers to ensure effective implementation.

Q5. What are the challenges?

A5. One of the challenges we face is the involvement of politicians who have significant financial

interests in smart city projects, both at the national and local levels. Funding becomes a critical issue. To overcome this, we consider options such as public-private partnerships (PPP) and crowd funding to support smart city initiatives.

Furthermore, we need to address the issue of sustainability in smart cities. Currently, our focus is mainly on the development phase, and we often neglect the importance of long-term maintenance. This is where concepts like the circular economy come into play. We should prioritise not only the initial development but also the sustainable maintenance and operation of smart city infrastructure.

In Thailand, the motivation for pursuing smart city projects is often stated as improving liveability. However, it is crucial to define the specific goals for each city and prioritise accordingly. Another consideration is whether the decision-making power lies with the central government or the local government. In Thailand, the decision-making process is centralised, giving the central government more control over smart city initiatives.

It is essential to ensure that smart cities address the needs of the local population. Understanding the knowledge and perspectives of the local people is crucial. In Thailand, although people receive education, it may not be easy for them to grasp the complexities of these issues. For instance, in the case of a photo where people suggested building steps to stop waves, the central government implemented the idea, but it ended up ruining the tourist destination. This highlights the importance of involving and considering the opinions and insights of the local community in smart city decision-making processes.

Q6. Is there an environment to promote open style city planning that includes everyone? Local people and local government, environment between government and people?

A6. To develop smart cities that benefit everyone, the focus has been on transforming a certain number of cities each year. In the past two years, the focus was on 30 cities, but now the goal is to transform more than 100 cities. However, to achieve this, there is a need for significant funding and investment. Relying solely on government funding is not feasible, as the government has limited financial resources. With over 7,000 cities in the country, it is challenging for the government to provide funding for all of them.

When developing smart cities, it is essential to consider the entire lifecycle of the city, including maintenance. For example, sensors may break after a few years, and without proper lifecycle management, the sustainability of the smart city infrastructure can be compromised. Private sector involvement becomes crucial for effective management and maintenance. Public-private partnerships (PPP) can play a significant role in securing the necessary funding and expertise for smart city projects. I have even engaged PPP projects in Indonesia through my collaboration with ERIA (Economic Research Institute for ASEAN and East Asia).

Securing funding requires the submission of well-crafted proposals that outline the plans, objectives, and expected outcomes of the smart city projects. Additionally, managing city data is crucial for effective smart city implementation and ensuring long-term sustainability. Many provinces in

Thailand, including the Eastern Economic Corridor (EEC) project, are actively promoting smart city initiatives to enhance liveability and attract investment. The EEC project, in particular, has attracted investors from China and Japan who are interested in building factories and smart cities in the region, especially near Bangkok and the east coast.

While there is an intention to promote smart cities and gather input through surveys, the exact level of public participation and engagement in these projects is not always clear. However, it is recognised that involving people in the decision-making process and understanding their needs and preferences is crucial for the successful development of inclusive and sustainable smart cities.

Q7. What do you think is the most important factor to improve well-being in your country?

A7. Being born in Bangkok, I understand that it may not always be perceived as beautiful or clean, considering the high population density and the influx of tourists. When I seek a clean city, I often travel to Japan, particularly Tokyo or Kyoto, as they offer a different level of cleanliness and aesthetics. However, even in Bangkok, there are certain aspects that I value, such as access to clean air and efficient public transportation, although the issue of congestion remains a challenge due to the sheer number of people. One aspect where Bangkok excels is in terms of food availability and convenience. Unlike Japan, where finding certain types of food may be more challenging, Bangkok offers a wide range of options that are easily accessible. Nonetheless, food safety can sometimes be a concern, as some foreigners may experience illness after consuming certain foods.

Education is another important factor for me, as I desire quality education for my children. Fortunately, being a faculty member, I have the privilege of providing my children with a good education within my own school. Access to quality healthcare is also crucial. Ultimately, people's preferences and priorities vary, and what they seek in a city may differ based on their individual needs and expectations.

Q8. What do you think about cultural life, solidarity, heritage, traditions, spiritual? Is it important?

A8. These issues indeed depend on factors such as one's profession, age, and available time. For instance, as someone who works seven days a week, I may not have the luxury of time to fully appreciate cultural shows like dancing, which Professor Kobayashi thoroughly enjoys. Perhaps, as I grow older and have more free time, I will come to appreciate such cultural experiences. It is also possible that tourists visiting Bangkok may have a keen interest in witnessing these cultural shows.

3. International Islamic University Malaysia

Q1. Who is leading the smart city project and for what purposes?

A1. In Malaysia, there is a formal framework known as the Malaysian Smart City Framework that was prepared and published in 2018. This framework is a government document that outlines key issues, objectives, intentions, challenges, and strategies towards developing smart cities in Malaysia. It was developed in collaboration with various stakeholders and members of the public. Therefore, the government is considered the primary driving force behind the smart city initiative in Malaysia. The agency primarily responsible for leading this effort is the Malaysian Ministry of Housing and Local Government, specifically through the Department of Town and Country Planning. While the government drives the initiative by providing the framework, the actual provision of services and implementation is often carried out by the private sector.

Q2. Are there guidelines from the central or local government regarding smart city? Are there any indicators like those for assessing smart city?

A2. In the context of town and country planning in Malaysia, local authorities are responsible for preparing and planning the development of their respective areas of jurisdiction, including the promotion of smart cities. They actively engage with the public by publishing their development ideas, seeking feedback, and opening up opportunities for people to share their views and ideas. The authorities provide a timeframe for public input and encourage comments, criticism, and objections.

The government also organises town hall meetings in residential areas that will be affected by the proposed developments. In addition, residents often form their own community groups to address specific issues and voice their dissatisfaction to the authorities. The level of people's involvement in these meetings and discussions varies, as it can go both ways. With the availability of social media, people can quickly become aware of ongoing developments and engage in the dialogue. If the government does not proactively inform the public, people may initiate their own community-driven initiatives to raise their concerns and opinions. The government typically formalises its engagement efforts by announcing its intention to hold townhall meetings or public consultations.

Q3. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A3. I am not aware of a specific mechanism or platform for collecting public input in Kuala Lumpur (KL). However, there might be such mechanisms in places that I am not familiar with. I live about 25 kilometers west of KL, so I am not directly involved in the administrative processes of the city. In my city, the city council has a portal and website where people can ask questions and provide criticism. KL is a large and congested city, so there may be different approaches to collecting public feedback.

Q4. Do you think the PCSC model will increase the value of the city?

A4. Yes, I believe it will. In a democracy, people increasingly want to be involved in decision-making

processes. When people are actively engaged in the planning and development of the city and its infrastructure, more individuals are inclined to participate. This increased involvement and sense of ownership can lead to an increase in the value of the city as it better reflects the needs and aspirations of its residents.

Q5. How can PCSC model be considering the diversity of the Malaysian community? How can a policy be generic enough to be applicable to all communities?

A5. Let me provide an example to illustrate my point. Malaysia is actively working on improving public transportation through projects like the MRT system. While people from different races and religions can generally participate and voice their support or disagreement, there may be specific localised issues that certain groups raise. For instance, if an MRT line is constructed in someone's backyard and causes noise issues, it becomes a personal concern for that specific community. Therefore, when implementing a smart city model, it is important to consider and address the localised requirements and concerns of Malaysian communities, rather than having a one-size-fits-all approach.

Q6. What are the challenges?

A6. First and foremost, we are Malaysians, and in that sense, we are not fundamentally different. However, it's important to recognise the diversity of our racial backgrounds and faiths. Understanding this context is crucial in developing policies that can effectively satisfy the needs of our people. While non-racial issues may be participated in by everyone, certain matters can be contentious within specific communities. For example, within a community, one group may prefer establishing a racial school rather than a national school, which can lead to dissent and opposition. The involvement of people has always been present, and we have a concept called 'muhibbah' where people work together to resolve problems. If any introduced initiatives are addressed within the spirit of 'Muhibbah', it becomes more feasible. PCSC challenges primarily revolve around issues of funding and infrastructure required to realise these ideas.

Q7. KPIs that are essential to evaluate PCSC?

A7. When examining various authorities, there is a significant emphasis on funding and financial considerations, such as the development of integrated transportation systems and the implementation of solar energy. Many of the key performance indicators (KPIs) are oriented towards government objectives and the creation of new infrastructure.

E-governance is a prominent topic, with notable achievements in streamlining processes that previously required visits to government offices. KL, in particular, has made strides in deploying 5G technology, albeit perhaps not as quickly as some other countries. The issue of flats, especially during the monsoon season, is being addressed through collaborative efforts between authorities to develop smart indicators. The government regularly informs citizens about rainfall and the potential for waterlogging, and the police provide updates on crime rates. The KPIs in this domain are dynamic and subject to change. Iskandar Malaysia is considered a pioneer in the smart city

model in Malaysia, while cities like KL, Putrajaya, Johor Bahru, and Subang Jaya are amongst the frontrunners in implementing smart city initiatives in the country.

Q8. What do you think is the most important factor to improve well-being in your county?

A8. If we were to rank the issues in order of importance, especially considering the current impact of COVID-19, the top priority would be the economy and the cost of living. Many people have faced job difficulties or unemployment since the middle of last year, and the cost of living has been increasing. Although Malaysia's inflation is not as severe as in some other countries, it has become a growing concern. Employment, job security, and salary-related issues are at the forefront. Health issues closely follow, particularly the high cost of seeking medical treatment, especially in the private healthcare system. Malaysia has a dual health system, with government and private healthcare options, but many individuals cannot afford private healthcare and rely on the government system. The healthcare system has also faced challenges such as long waiting times for medical attention.

The third important issue is education, as Malaysia has both government-funded and private universities. Private universities can be expensive, leading many individuals to opt for government universities. This is currently a significant concern. Housing has consistently been a pressing issue, and affordable housing remains a priority. Over the past 15-20 years, affordable housing has been a topic of discussion, and the proposal of utilising Islamic philanthropy to facilitate access to affordable housing has been suggested.

Moving on, the cost of living in terms of consumption, such as the price of food and groceries, is another important consideration that varies depending on the area. As someone in a relatively better position due to their work and position, their focus may shift towards issues like government participation and the desire for increased public engagement. Health issues and housing may not be as pressing for them compared to the majority of the Malaysian population. They may also be more interested in self-fulfillment and cultural initiatives.

Regarding generosity, affordable housing is considered the most important for overall well-being. Conversely, generosity in terms of monetary gifting or donations becomes least important when individuals are struggling to meet their own basic needs. However, non-material forms of generosity, such as community engagement and mutual respect, can still hold significance.

Q9. If basic needs are fulfilled, e.g. people have affordable housing and good jobs, then what will be the important factor to improve their well-being? Focusing on families, connection with neighbourhood, religious communities, cultural activities?

A9. Assuming that people are satisfied with the economic background and housing is not an issue, it is important to note that these examples may not necessarily represent the situation for all of Malaysia. Each region and community within the country has its own unique diversity and differences. However, when people start reflecting on what is important to them, community issues and security tend to become more prominent. This is especially true when the cost of living is high, job opportunities are limited, and crime rates increase. Entertainment, particularly for younger

individuals, may involve cultural activities and sports. Education remains a longstanding issue, but priorities vary based on individuals' economic backgrounds, their location within the community, and their personal interests.

Using myself as an example, as a retiree who retired in 2019, I am now involved in community service by teaching at a university and engaging with young people. Although I receive a stipend, my primary concern is not about salary. Many individuals are currently engaging in community services within local mosques, churches, or through volunteer work.

Another significant issue is public transportation, especially in cities other than Kuala Lumpur. While Kuala Lumpur may have better connectivity, mobility remains a challenge in other cities

Q10. Communities have strong influence on smart cities policies. Is there any example in Malaysia?

A10. From my perspective, I believe that the ideas and feedback received by the government reflect the diverse composition of Malaysia. Unlike Japan, Malaysia is unique with various backgrounds coexisting. With different people, religious beliefs, and racial backgrounds, everyone holds different opinions. Islamic views are not dominant, and there is a cacophony of voices across communities. For example, if something related to Islam is proposed or questioned, the Muslim community will be more active, but if there is an establishment of non-Muslim prayer, other groups will become excited. I often travel to Japan and have witnessed its development since the early 2000s. Initially, I faced difficulties communicating on the streets, English menus were uncommon. However, as Japan progressed, it became more open. During my last visit in 2018, people could speak English, and I could ask for an English menu. I could even pray at a Muslim centre in Kyoto. In Malaysia, each group has its own interests and needs. If issues are not handled properly, they may lead to dissent. Reporters tend to enjoy picking up issues and targeting communities, such as Muslims, to provoke reactions. For example, in Kuala Lumpur, when setting up a new train track, they want everyone to get involved and voice their opinions, which leads to people raising their views.

When looking at the general model of smart cities around the world, a key element is technology. However, if technology is implemented, affordability becomes an issue. Half of the Malaysian population cannot afford decent housing, let alone high-tech dwellings. In smart cities, all communities should be able to live together, without leaving a certain segment of society behind due to affordability constraints. Additionally, Islamic philanthropy, similar to Islamic banking and finance, is not exclusive to Muslims; it is for everyone. The implementation of models like the '*Shibuya good pass'* needs to be reorganised to fulfill the requirements of a PCSC.

4. Bandung Institute of Technology

Q1. Who is leading the smart city project and for what purposes?

A1. The smart city project is led by both the government and private entities. Around 20 years ago, the government took the initiative to develop the concept of a smart city. Private companies have played a significant role in developing technologies like the Internet of Things (IoT) that have transformed city life, enabling services such as food delivery through platforms like Gojek. These technological advancements, driven by the private sector, have made it possible for people to access various services anytime and anywhere. Certain aspects of the smart city project, such as water and sanitation, are primarily driven by the government. These areas may not attract as much interest from the private sector. However, approximately 70% of the services provided in a smart city come from private companies, with the government providing support. The government also plays a crucial role in ensuring the safety and security of the city. They operate systems like emergency hotlines (e.g. 911) and implement technologies such as artificial intelligence (AI) and chatbots to enhance service delivery and public safety.

Q2. Are there guidelines from the central or local government regarding smart city? Are there any indicators like those for assessing smart city?

A2. I am not aware of them. People often express their concerns about various issues, such as the environment and the quality of roads. The integration of IoT technologies plays a significant role in identifying these issues and addressing them effectively.

The collection and analysis of big data related to people's conversations and activities are crucial in understanding potential problems and developing appropriate solutions. Social media platforms like WhatsApp, Twitter, and TikTok, as well as AI-driven data analysis, can provide valuable insights into the needs and preferences of the population.

To assess the smart city progress, smart market intelligence is utilised. This involves examining demographic factors such as income levels, social disparities, and other relevant indicators. By gathering and analysing data, policymakers can make informed decisions and tailor smart city initiatives to the specific needs and characteristics of each city or area.

Q3. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A3. There are various mechanisms and platforms in place for collecting the voice of the people, and these inputs are taken into consideration when formulating administrative policies. Some of these mechanisms include the following:

1) Government systems and helplines: The government has established systems such as 211 and 911, where people can report issues or provide feedback directly to the authorities.
2) University-led platforms: Universities often create platforms or initiatives to engage with the government and propose ideas or suggestions based on their research or expertise.

3) Public-private partnerships in transportation: Public transportation systems, such as Mobility as a Service (MAAS), involve collaboration between private companies like Gojek and Grab, as well as government entities. These platforms allow users to provide feedback and voice their opinions on the quality and accessibility of transportation services.

By leveraging these mechanisms and platforms, the government aims to actively involve the public in decision-making processes and ensure that their voices are heard and considered when shaping administrative policies.

Q4. Do you think the PCSC model will increase the value of the city?

A4. The essence of a smart city lies in understanding what makes it 'smart.' One of the challenges lies in how people are connected and how to enhance the value of that connectivity. Currently, there is a lack of positive platforms that effectively utilise this connectivity. It is important to find ways to gather consensus from citizens and determine who can contribute to creating a better quality of life, not necessarily limited to the government. Discussions involving government, communities, and businesses should take place face-to-face to facilitate collaboration.

Additionally, it is crucial to consider what kind of smartness a city should possess and what data should be accessible. The understanding of people's perspectives and the utilisation of relevant data are also essential. However, the available information may be limited. Building trust and defining well-being are crucial to effectively address the impact of challenges such as natural disasters like earthquakes and tsunamis.

Q5. Do you have an impression of what fields, purposes, and situations PCSC model can be used in and applied, if introduced?

A5. The importance of different areas in the PCSC model depends on priorities and quantitative factors.

Clean water is of utmost importance, and efficient public transportation is crucial, especially in areas with a high number of private cars. Economic activities drive people from suburban areas to city centres in search of opportunities. Education is also a significant concern, as equal opportunities for education need to be provided. In terms of healthcare, currently, reliance is placed on small clinics. Family support plays a vital role in providing care and assistance. Community engagement and hygiene are important aspects as well. While physical health may not be the top priority, cultural and recreational activities hold significant value. Arts and unique experiences contribute to the city's uniqueness. Cities seek to offer a distinct lifestyle. Please note that this response is a summary of the provided information and may not cover all possible aspects of the PCSC model.

Q6. What are the challenges?

A6. The challenges include financial constraints and slow progress in administrative initiatives. While AI and social media data are being utilised, there is limited trust in relying solely on government data. It is crucial to filter and carefully consider the voices of citizens. This responsibility often falls

under the purview of universities and research institutions.

5. University of Manila

Q1. Who is leading the smart city project and for what purposes?

A1. There is a distinction between national and local government in leading the smart city projects. Some local governments have achieved success in implementing smart city initiatives. For example, I live in a well-managed metro city called Metro Manila, and smaller cities like Makati have made significant progress in this area. However, national government initiatives may face challenges and inconsistencies. I am not an expert, but if you would like to hear about successful cases, there are some local governments that have implemented effective smart city initiatives.

Q2. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A2. There is a mechanism in place, which is our elections, but unfortunately, they can be problematic. Currently, there is pressure and influence from social media, which can be both positive and negative. It has been used to manipulate elections, but it can also lead to pushback from certain groups and potentially impact administrative policies. For example, in Denmark, there is a strong emphasis on gathering public input and data to inform decision-making, but the Philippines may not have reached that level of maturity in its democratic processes.

Q3. Do you think the PCSC model will increase the value of the city?

A3. The implementation of a PCSC model can indeed increase the value of the city and even the value of real estate, as we have witnessed in my part of the city. Through its people centric interventions, PCSCs have brought about significant improvements. Interestingly, the World Bank has recognised the Philippines as having pockets of good governance, which aligns with the PCSC approach. While the central government acknowledges the importance of smart cities, it is primarily the local government that takes charge of executing the initiatives. The success and prospects of PCSC will ultimately depend on the promising future it can offer.

Q4. What are the challenges?

A5. The main challenge lies in the fact that the private sector should ideally drive the development of smart cities, but a significant portion of the city's population may not actively support such initiatives. The key challenge is to educate and encourage citizens to elect leaders who are supportive of smart city concepts, emphasising the long-term benefits for the future. While there are examples of actively engaged citizens in smaller cities, the challenge intensifies as cities grow larger and people may become less connected and concerned about each other's well-being.

Q5. Is there an environment to promote open style city planning that includes everyone? Local people and local govt, environment between govt and people?

A5. We have a longstanding history of people's organisations engaging in continuous dialogue. As a member of my generation, we have experienced challenges in electing a president who truly represents our interests. It becomes difficult to implement open-style city planning when leaders are not elected through a rational process, as they may not adequately address the needs and desires of the citizens. However, there are successful examples within local government units (LGUs) where leaders have demonstrated exceptional skills. These leaders actively listen to the voices of the people and prioritise the development of their cities as smart cities.

Q6. What do you think is the most important factor to improve well-being in your county?

A6. Japan is known for its economic prosperity and financial stability. However, when it comes to healthcare, we do not have universal healthcare coverage in the country. Instead, we rely on a fragmented healthcare system composed of various small-scale healthcare providers. If we were able to achieve universal healthcare and improve our healthcare system within the next 10 years, it would bring great happiness to the people.

Q7. If basic needs are met, what are additional elements which could build well-being for Filipinos?

A7. If we consider different socio-economic classes, the answers will indeed vary. In my specific class, I would prioritise having access to a playground, meaningful employment, a good work-life balance, and opportunities for cultural and recreational activities. Fortunately, in my city, there are facilities that resemble those found in Japan. However, if we truly want to understand the temperament of the entire country, these ideals may not hold true universally.

From a broader perspective, the ideal scenario would include a well-developed public transportation system, a pleasant living environment with minimal road congestion, food safety, and comfortable living conditions for the elderly. Currently, there are limited measures in place to cater to the needs of the elderly population. The lack of a good transportation system also hampers work-life balance. Additionally, food safety is a concern as it is often affected by hoarders, distributors, and occasional price hikes.

Despite these challenges, the Philippines is generally regarded as a great family-oriented nation. Culturally, it would be ideal to have ample time and platforms for recreational activities.

Q10. What are the essential KPIs to evaluate smart city measures?

A10. When it comes to Key Performance Indicators (KPIs), it's a different category and I'm unsure how to provide an answer. However, in our context, the satisfaction of people can be determined by the availability of basic services such as decent living spaces and access to healthcare. The impact can be driven by small enterprises that cater to these fundamental needs. Currently, this level of smart city development focusing on basic necessities is what we require.

6. University of Economics Ho Chi Minh City

Q1. Who is leading the smart city project and for what purposes?

A1. In Viet Nam, the government is currently focusing on e-government initiatives, while in the private sector, there is a trend towards green city development. Some notable examples include Vingroup, GamudaLand, and Eco Park Smart City, which are large-scale projects in both the northern and southern regions of the country. These cities have a different concept and design compared to other cities, resembling Western countries rather than the typical Vietnamese urban areas. Unlike exclusive zones for the wealthy, these green cities in Viet Nam encourage integration and interaction between local residents and visitors. This model serves as a good example for other real estate developers to follow, and the Vietnamese government is actively promoting such green city developments, urging the private sector to invest in this sector. It is a positive movement towards the development of smart cities in Viet Nam.

Q2. Are there guidelines from the central or local government regarding smart city? Are there any indicators like those for assessing smart city?

A2. Last year, our group conducted a survey on indicators and initiative guidelines in the government. We found that the level of guidelines in Viet Nam is at a very high level, but when compared to Thailand, there is a significant disparity. There is a lack of middle or lower-level guidance to direct the private sector towards aligning with these guidelines.

In the field of urban design, there is a growing integration of ideas, particularly through Vietnamese professionals who have studied abroad and bring back innovative concepts that are then implemented locally. Renowned architects visit and design green buildings, which have become popular in the market.

I also spent 8 months collaborating with a Singaporean institution, although I cannot disclose its name due to confidentiality. Our focus was not solely on students but mainly on the middle-income group (60%), with 10% coming from the rich and the remainder from low to middle-income brackets. We specifically studied different locations in Ho Chi Minh City to understand how the local government assists them, both before and after the pandemic. We examined aspects such as mobility, transportation, hygiene, and sanitation—factors that significantly impact people's lives.

We are nearing the end of our research, and the Singaporean team will continue with further correlation analyses. However, our study primarily focused on conducting and performing descriptive statistics and has not yet delved into correlation analysis.

Q3. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A3. Both at the city level and national level, there are mechanisms in place to gather public input. For example, when planning major projects such as the construction of the Shinkansen system or developing strategies for green development like the PNIH, they open up opportunities for ordinary

citizens to provide their comments and feedback. These consultations often take place through web-based platforms. While researchers and experts are typically invited to participate, ordinary citizens can also take part.

For normal citizens, their involvement depends on the specific purpose of the engagement. Web-based platforms and super apps like LINE and SALO are commonly used for conducting surveys. These surveys are designed to be simple, with questions requiring a 'yes' or 'no' response. The aim is to gather instant feedback from normal citizens, as they prefer quick responses rather than spending 20 minutes answering a single question.

Q4. What are the principal challenges?

A4. The main challenge in Viet Nam is transportation, as the predominant mode of transportation is still motorcycles. With the increasing number of cars, traffic jams have become a common occurrence. Providing more transportation services to the residents is a major concern that can be observed.

Regarding how the government collects opinions from citizens, I have a friend who works with city statistics, and he shared some insights with me. They utilise various platforms, not just ZALO. Anything expressed on Facebook is monitored and known by the government. There is a group responsible for monitoring online activities, including citizens selling things online, and they can detect such activities. If the revenue generated is significant, they may take action for tax purposes.

In the government's perspective, policy changes may occur slowly. They closely observe potential threats and often take actions behind the scenes. If the matter is not politically sensitive, they are more likely to make changes.

Q5. Viet Nam policy for smart city, people committee in each local city implement city measure, is it up to local people committee to collect people's opinions?

A5. I understand that the information may be biased depending on the community being discussed. Different communities have varying levels of understanding about smart cities, and it may not be feasible for them to collect information to support such development.

There are indeed several projects related to smart cities, and we are currently assisting provinces like Khanh Hoa and Vinh Long in conducting workshops and providing lessons about smart cities to government officials. Our hope is that these officials can take action based on the knowledge they acquire, and we are able to collaborate with them on specific projects. However, it is important to note that the data collection process is not directly conducted by the people's committee but rather in collaboration with them.

Q6. What kind of field/area would be appropriate? Mobility, transport, or telecommunication?

A6. Telecommunication is already being utilised in the context of transportation to raise awareness amongst the public. At the same time, the government is implementing various projects in this area. Another significant challenge is addressing the issue of land use and the high cost of land, which is

a major concern for local residents.

In terms of transportation, the concept of Mobility as a Service (MAAS) needs to be developed further. When compared to other countries like the Philippines or India, public transportation in Viet Nam is more developed. However, local residents may not be fully aware of the available services. For example, in Hanoi and Ho Chi Minh City, there are bus stops with apps that allow users to track the arrival and departure times of buses. Efforts are being made to further improve these services for the benefit of the public.

It should be noted that not all citizens may be aware of or utilise these services. Some individuals have specific work schedules that may not align with public transportation timings. However, overall, the transportation system in Hanoi is considered better than that of the Philippines or India.

Q7. What are the biggest challenges when implementing PCSC model?

A7. In Viet Nam, it is not that citizens do not participate, but rather the local committees may not have the necessary knowledge or skills to effectively engage citizens and gather their opinions in a 'People-centric' manner. The Government of Viet Nam employs various methods to collect citizen opinions, including the use of artificial intelligence and monitoring platforms like Facebook, where people often express their views.

However, unlike in a smart nation like Singapore where there are dedicated platforms that allow instant expression of opinions and direct actions through a dashboard, Viet Nam does not yet have such an advanced system in place for collecting opinions in a similar manner.

The point is that while citizen opinions are expressed in Viet Nam, there may be limitations in how effectively the local committees engage with and gather those opinions in a 'People-centric' way.

Q8. How do you see level of perception, awareness of PCSC in Viet Nam? Compare to PH/India?

A8. Citizen perception is often driven by real-life examples rather than extensive reading or information consumption. For instance, during my recent visit to Viet Nam, I had the opportunity to talk to local residents who expressed pride in their communities. Over the past 20 years, they have witnessed rapid development and the emergence of smart cities right on their doorstep. In Thanh Xuan district of Hanoi, for example, there is a new urban town called Smart Vin, developed by VinGroup, which even features a Japanese town within it. Although my friends don't live there, they are just a few meters away and still benefit from the tremendous development and the establishment of green and smart city principles. This has resulted in better awareness amongst local people compared to countries like India and the Philippines.

Unfortunately, some cities in India, such as New Delhi, have implemented urban planning projects with Japanese and Korean influences but lacked proper guidance, resulting in disasters in terms of urban planning. It is crucial to have good examples that can serve as guidance for developers and change mindsets. For instance, in Switzerland, people can access forests within 15 minutes, reflecting a different perspective on what makes a city 'smart.' Additionally, Tokyo has faced

population decline, leading to the destruction of certain parts of the city to create green spaces. These examples demonstrate that the understanding of smart cities varies across different countries.

Singapore, on the other hand, stands as a good example for ASEAN countries to follow. Through the utilisation of specific technologies, Singapore has managed to create a sustainable and livable environment in a small area, making it a role model for other countries in the region.

In summary, citizen perception is shaped by tangible examples and experiences, and different countries have their own unique approaches and interpretations of what constitutes a smart city.

7. Tampines Town Council

Q1. Thoughts on our premises that Singaporeans want to participate in improving community.

A1.

- Participation rate initiative: 50% yes, 50% no.
- It depends on the project and target audience. If the initiative is on sustainability, there are interest groups that are willing to participate. For technology, others might not be so keen on it.
- Very difficult to get different demographics to join one initiative. Usually, only interest groups will join, like the recycling initiative (want to understand residents' habits on recycling). Only those who are actively recycling would participate while others would not do so.
- Mr. Wang is interested in Singapore's happiness relative to other ASEAN markets (Singapore is second lowest amongst all ASEAN countries).
- Mr. Wang is also interested in how 'local government' fits into Maslow's hierarchy of needs in facilities management (town council). They do not actively measure well-being and happiness. People generally call them for services when powers are down or when they are unhappy with neighbors keeping pets. Perimeters for town council are fixed and only respond when there is a lapse in what the residents want.
- Other countries are more independent and do not talk about municipals/local authorities. [Mr. Wang] finds it interesting that other countries feel apathetic about local governments and politics, unlike Singapore.
- The Happiness Index is very challenging from Town Council point of view.
- Residents do not think that they are happy, similar to people in Japan.

Q2. Healthy Living in factor analysis

A2.

- Asked about where transportation is in for factor category. Residents care about less traffic jam, availability of MRT stations. Location of polyclinics and healthcare facilities.

- Although not under town council, residents are happy when more MRT stations are built because transportation costs would go down.
- Senior citizens would be happy with more medical facilities.
- Many residents mix a lot of things (lapse of service + happiness) together; residents are not happy when using municipal services.

Q3. Discussion based on DEPA in Thailand and many citizens complaining.

A3.

- The Happiness Index definition should be broader than what the Town Council thinks. Being professionals, they have KPIs and detach happiness index. When they engage, they have evaluations based on happiness of service (task oriented). Town Council's definition of happiness is much narrower. Our definition is broader (more lifestyle oriented).
- Professional delivery of service (town council's obligation), even when people say they are okay, it does not necessarily mean they are happy with service. However, if they say they are not okay, they are definitely unhappy.
- Starts with expectations. Some residents have expectations that are beyond the boundaries of town councils. Residents do not understand town council's boundaries. For complaints beyond boundaries, they send to other government bodies, which may not be solved in the end. In any case, town council gets all the blame from residents.
- The town council office is in a convenient location. Residents will just drop by casually and talk. Expectations can be too wide for the town council to handle.
- Essential service (when lift is stuck): professional KPI that engineer maintenance providers must save people inside within 25 minutes. Even if you meet professional KPI, residents will not be happy. This is why the town counsel cannot measure happiness index, they can only measure professional standards.
- The town council thinks that if residents travel to other countries and realise that professional KPIs are not strictly adhered to overseas, they will start to appreciate Singapore more
- Fuji Tech has many lifts in Singapore, because of investment. Service guarantee to HDB residents is that lifts are safe. Many dollars are spent on sensors, balance systems etc. Professional standards like these are not published. Mr. Wang used to be in HQ analysing data on lift KPIs.
- Even if professional standards are met, residents might not be happy. These professional KPIs are the best that the town council can do.

Q4. Mr. Jonathan's vertical farming projects and measuring satisfaction level.

A4.

- Do not do survey. Do door-to-door visits to get support for the initiative first. Give back vegetables to residents. Build up vertical farms, engage with residents on sharing concepts and vegetables. Get more projects (e.g. Black Soldier Flies, related to food waste), use food waste for vertical farming and creating ecosystem. Residents become interested in this concept.
- While initiating projects, actively seek residents' feedback and build near bin centres to collect rubbish waste so that residents will not further complain that the place is smelly. Even now, we still take in constructive feedback from SNS etc. so that projects can be upscaled.

Q5. Town council engagement with residents

- Residents also tend to forget that town councils have limited budgets. Funding is available under MND (Ministry of National Development) and if there are no budgets, town councils will not build projects.
- Residents also forget that town councils have to be built on others' land, requiring many clearance levels.
- Need at least 1-2 years to respond at times to feedback.
- No covered linkway at roundabout. Residents gave feedback and managed to get funding successfully to fix these 3 years ago.
- Platforms for residents to give feedback: MPs house visits/Meet the MPs (as capacity of grassroot leaders), residents write in directly on website, town council (major channel, 2/3 of participants are residents), One Service app (but residents will appeal to MPs directly to be more explicit and faster).

Q6. Digital government

- No strict regulation but moving towards digitalisation. Certain daily operations will also be digitalised to be smoother. Still, certain things are limited due to funding and exposure.
- Digitalisation over the last three years may not be obvious to residents, but a lot of investments in laptops, Zoom, facilities so that they can engage community over Internet. Few town councils that give a laptop to every staff for work from home.
- Opening websites for more services, more channels with grassroot leaders for digital meetings. When dealing with residents, you still need to investigate and meet them. Wherever town councils can digitalise, they have done it. They also need to balance digitalisation vs human touch.

- The town council thinks they must keep a counter there despite digitalisation due to human touch unless the government asks them to shift.

Q7. Is Singapore applying human centric Smart City?

A7.

- From Town Council's point of view, they think they are human centric. Bound by Town Council Act to provide compulsory services. Already in touch and do not just chase for KPIs unless the KPIs are linked to services of residents.
- Town Council Act: things they do will in the end benefit residents while working within the Town Council framework.
- Despite all these, it is still hard for them to hit the Happiness Index of residents.
- Concerned about using limited resources to make residents happy.
- Asked about HCAP survey on just asking happiness without mentioning governmental body resources (fundings etc.).

Q8. Which type of PCSC implementation model does SG fit?

A8.

- Government has strong control. Therefore, it is likely to be Type 1.
- Before starting initiative/improvement projects, they need to have consultation process. Need >75% vote from residents before getting Though residents don't have to pay to take part, they still do not want to vote.
- SG implementation model can be considered 'People-centric' and people engagement.
- Viet Nam used to see Japan as role model for development, now it has changed to Singapore (because of geographical proximity).

Q9. Thoughts on final summary slide on applicability towards PCSC implementation

A9.

- 1965: SG started thinking on how to engage Singaporean citizens, resulting in current SG survey findings being different from other ASEAN markets.

Q10. Concluding thoughts

A10.

- How to define service delivery such that residents would be happy? Town councils want to have a magic formula on this.
- When people are happy, they are more appreciative even for their own services. However, Singaporeans are quiet even when services are good.

- Another challenge is in communication on how to actively engage residents.

8. Digital Economy Promotion Agency (DEPA)

Q1. Who is leading the smart city project and for what purpose?

A1.

We obtained this insight from our colleagues at the Eden Strategy Institute in Singapore. They argue that many smart city projects worldwide fail because they do not prioritise citizen centricity, aligning with the same idea you presented. The concept is to place people at the centre and consider their needs and demands when it comes to development. Initially, we were contemplating whether technology or people should take the lead, or perhaps a combination of both. However, after delving into the project more profoundly, we realised that sustainable leadership necessitates a focus on PCSC.

Q2. Are there guidelines from the central or local government regarding smart city?

A2. We have established guidelines and formed committees for each of the seven smart domains. These committees consist of experts from various fields, including carbon credit specialists and representatives from the Ministry of Transport. They work with us on an ad hoc basis to evaluate proposals and provide valuable feedback on how to create effective indicators.

Q3. Are there any indicators like those for assessing smart city?

A3. In our evaluation, we prioritise the outcomes rather than the technology itself. For example, if the number of accidents decreases even with just one CCTV in place, we consider it a smart solution. We focus on ensuring that technology is employed to benefit citizens. We have seven domains, and most of them are quantitative in nature, such as income levels up to 250k. However, the domain of smart living encompasses qualitative aspects like the liveability index, which includes factors such as access to hospitals, crime rates, air quality, and the measurement of people's perception of liveability. We combine both quantitative and qualitative factors to form the liveability index.

Q4. Is there a mechanism or a platform for collecting the voice from the people, and is it assumed to be reflected in administrative policies?

A4. There are a couple of ways we approach citizen engagement. Firstly, we organise citizen centric workshops, although these were delayed during the COVID-19 pandemic. Before and after the pandemic, we used tools like design thinking to gather demands and pain points from citizens. We encouraged them to come up with unique resources specific to their cities. By combining the resources available in each city with the national plan, we were able to shape the vision of the city.

Another approach we adopt is using software, similar to the Wienbot application used in the city of Vienna, Austria. This software has been quite successful in making people the eyes and voice of the city. Citizens can use the application to type their questions, post pictures, and report problems.

This allows us to understand the demands and needs of the people directly from the people themselves. During my visit to Vienna, I asked people if they would use such an app to ask questions, but not many were aware of it. However, this kind of application is helpful in helping people understand and address their problems. In our context, we have an official platform on the LINE app, which is a popular messaging app that serves as a connection point with citizens. This enables us to have access to their concerns and needs. Over time, we can generate a heatmap that shows the intensity and frequency of these concerns. By compiling and analysing this data, we can manage our resources more effectively and address the problems based on their priority.

We also use social media networks (SNS) for citizen engagement. However, in Thailand, it can be challenging to apply natural language processing (NLP) due to the complexities of the Thai language. Thai sentences are more difficult to extract semantic value from compared to English. Therefore, it is not easy to gain a comprehensive understanding of what people are expressing through SNS.

(1) How to choose citizens/participants for workshop?

We include city leaders, counselors, representatives from the elderly community, relevant government ministries related to the project area, as they play a regulatory and funding role in national-scale projects. Local municipalities also hold significant importance.

However, it is important to acknowledge that not all cities have equal capabilities and resources. The aim is to ensure that the market dynamics work in favor of the project. Participants may also include decision-makers from relevant government agencies, city leaders, academia such as local universities serving as think tanks, and the private sector, which can provide expertise in advanced technologies. Sometimes, a subscription model from the private sector is employed, and monitoring is done using citizen well-being as key performance indicators (KPIs) rather than just focusing on the number of devices. External partners such as yourself and established smart city networks, as well as large corporations like Mastercard, which specialise in financial technology, may also be involved. The selection process considers who has the power to make decisions or contribute valuable ideas to the workshop.

(2) How about other apps in Bangkok?

Another notable application in Bangkok is ‘Traffy Fondu,’ which serves a specific function of receiving complaints from citizens regarding traffic-related issues. However, there is now a shift towards a more comprehensive platform. The latest version, v5.0, offers multiple functions, allowing citizens to lodge complaints, send comments, make appointments with medical doctors, access CCTV footage, learn about regulations, register pets for vaccination, and even participate in an online marketplace. The idea is to provide one app that encompasses various services rather than separate ones. Many cities have transitioned from using just the Traffy Fondu app to this integrated platform. By utilising big data effectively, the platform also delivers news and information to citizens and allows for targeted advertisements. For example, if there is a demand for a new hospital, advertisements promoting it can be pushed to the relevant audience. Additionally, citizen

participation is incentivised, and tokens may be rewarded. Currently, approximately 50% of residents use this app daily. The Department of Digital Economy and Society (DEPA) may not directly develop such apps but can recommend app developers to the city and provide the necessary framework. Their platform, called 'Siam InnoCity,' can be accessed at https://siaminnocity.durable.co/. Efforts are also made to recruit students who can assist in educating the elderly population on digital tools, ensuring that smart city initiatives are inclusive, and no one is left behind.

Q5. Do you think the PCSC model will increase the value of the city?

A5. Yes, although it is not easy to propagate the idea because people don't understand. It's like asking fish about water—they don't know they're already living in it. Similarly, when people live in a city, they automatically assume it is 'People-centric'. I believe in finding a balance between the interests of individuals and the city as a whole, making everyone happy. However, explaining this concept can be challenging due to clashes of personal interests and the chaotic nature of the discussion.

The concept of a 'People-centric' city may not immediately resonate with investors, as it may not sound as appealing. However, it's essential to recognise that a city is more than just a financial economy, technology, and talent hub. It's a living, thriving machine that can benefit from a holistic approach. By promoting a 'People-centric' city, we can foster economic growth and position it as the engine that drives progress. It's crucial to communicate this idea in an attractive manner to attract investment, as people are more likely to invest when they see the potential for a prosperous and thriving city.

Q6. Do you have an impression of what fields, purposes, and situations PCSC model can be used in and applied, if introduced?

A6. Due to my architectural background, I have acquired valuable knowledge that helps me explain the benefits of a well-designed city and understand the physical aspects involved. When considering what makes a city good, the most important domain is a smart environment. By effectively utilising resources and addressing pain points, we can integrate additional domains such as economy and mobility. The city's economy serves as the engine that drives its growth and development. Smart mobility is another crucial aspect, going beyond just addressing the first and last mile transportation issues. It involves optimising urban structures to ensure efficient commuting, reducing travel time from residential areas to main roadways, and improving accessibility.

Additionally, smart governance plays a significant role in helping people understand the city's functioning. For example, the city of Nakhon utilises backend data to measure its performance. In the past, promotions might have been influenced by personal relationships, but now decisions are based on statistical analysis, efficiency, and proactivity. This data-driven approach ensures transparency, eliminates bias, and boosts staff morale.

Culture and entertainment are also vital aspects to consider, particularly in cities aspiring to be cultural capitals. Thailand, being one of the most visited countries, possesses a rich spiritual heritage with Buddhism, Hinduism, Christianity, and various pilgrimage sites. To enhance the city experience, innovative approaches like the XR bus can be implemented. Instead of regular bus windows, LED screens can display clear projections that transform into mirrors or TV screens. This allows passengers to learn about the city's history and visualise how it appeared centuries ago. Moreover, media plays a crucial role in involving people in smart city projects. By employing productive media channels, we can increase awareness and encourage active participation in shaping the future of the city.

Q7. What are the challenges?

A7. There is often a mismatch between policy and practice, with limited collaboration between the two. For policies to be effective, they must be implemented and put into action. City leaders play a crucial role in this process, but it's important to recognise that not all leaders are equal. Some are more progressive and forward-thinking than others. As someone who frequently travels and meets with many mayors, I have encountered different responses. Some mayors take time to understand and embrace new ideas, while others simply ask to be contacted again or fail to grasp the concepts entirely. This can lead to situations where resources are invested in projects that ultimately go unused or fail to meet the needs of the people. Therefore, it is essential to focus on optimising outcomes rather than solely relying on technology. We need solutions that truly work for the benefit of the city and its residents.

Q8. What industry do you feel has the most chances/opportunities where you implement PCSC? E.g., healthcare, environment, mobility etc.

A8. In Thailand, we believe that the smart environment is the most crucial domain. If the air is polluted or dusty, clean water is scarce, and there is trash everywhere, the city becomes uninhabitable. Alongside the smart environment, we also emphasise additional domains such as smart mobility and smart economy. Given the availability of various platforms today, smart mobility, especially addressing the first and last mile transportation challenges, has become increasingly important. We are also keen on promoting smart governance, which facilitates effective communication between people and the city, leading to faster problem-solving.

9. Malaysian Resources Corp. Berhad (MRCB)

Q1. What are the management policies and focus areas and purposes when developing your area and communities? What are the background and social challenges of the policies in your developing/developed area and communities?

A1.

- When establishing Transit Oriented Development (TOD), mainly from developers' perspective without actively seeking feedback from communities.

- Always work with government/local authorities on developing transportation hubs. Infrastructure and transportation hubs by local governments. Aligned with government on where they want to bring vibrancy to certain areas, connecting with public transportation. Vibrancy [will result if you] bring more crowds here to stay and work in offices.
- 1) Bring in public transportation as a hub to make things more convenient for people living in TOD areas, 2) more people = more demand = higher property values.

Q2. Are there any platforms (Urban OS) developed by your company that promote or support your town/community? If yes, what purpose?

A2.

- Component by component. e.g. KL tower. Always consider connectivity. Build bridges between buildings or from station to office towers/retail malls.
- Received good feedback from users who said it is more convenient (no need to go down to road level)
- For all bridges built, have a team to take care of maintenance and cleaning of connection bridges and surrounding areas.
- We have not developed any application, [but we] might explore this in the future.
- Challenges: How do we control and get good feedback? When you open a platform, certain % of feedbacks will solely be complaints without grounds. This is a challenge that they need to think about to filter good feedback from bad ones.

Q3. Are there any indicators being used by local government or by your company to measure engagement level of people, such as the liveability Index? Setting up of KPIs?

A3.

- Major and simple criteria as KPIs (bigger picture): when designing TOD, TOD has to be sustainable, comply with guidelines, green building requirements towards establishing smart cities, liveability, connectivity, accessibility.
- Will not zoom into all 90 detailed indices.
- MCRB to share list of criteria after this meeting of what they are usually looking for when developing a TOD.

Q4. What kind of data platform do you have, what kind of data are you getting, and what are you using it for?

A4.

- KL facilities that deal [with] commuters and collect data. It is not like they commission surveys to collect data.

- Electricity consumption for KL Sentral: can estimate from 1 of service providers (MRCB will check through and get back).
- Usage efficiency data of electricity and water: data from retail malls, office towers etc. They will not impose requirements on what usage should be, but energy efficiency is left to individual components to have their own control and management.

Q5. Is there a system to absorb people's opinions and to stimulate interaction, do you feel the need to implement such a system? Are there any obstacles? What challenges will arise if we propose such an initiative?

A5.

- Do not have a system yet due to the massive number of negative complaints without grounds.
- Company policy: Have a channel/phone number/email address for people to call in and give feedback/complaint.

Q6. Are you interested in introducing such a system or platform? On what kind of field are would it be easy for your enterprise to introduce this system? For example, mobility, sports, farming, or culture.

A6.

- Would like to explore if there is an opportunity but need to gauge the returns on helping them to develop and help people.

Q7. In Shibuya, one of the solutions was green environment, and a platform was developed for residents to grow plants in common areas. This led to community creation and satisfaction was higher than before. When you hear such community events, do you think the people in your area would be interested?

A7.

- In KL, most communities like this are run by non-government organisations.
- As developers, they are not active in implementing such initiatives yet.
- Hakuhodo-Shibuya ward collaboration is a good initiative according to MRCB.

Q8. Any subsidies by local governments to help this initiative?

A8.

- Can work together with city councils (local government). They are quite open to developers proposing any initiative and can work together to create more good things for the people.
- Not aware of any platform targeting specific smart city communities for communication.

Q9. In Shibuya, there are offline workshops for residents to discuss the city. Which would be the best way to hear people's opinions? Online or offline?

A9.

- If it is online and there is a portal, it should be easier to share opinions. You do not need to fix a time/place to meet.

Q10. Hearing people's opinions is important. From developers' perspective, collecting opinions has cost. If we do not react to opinions, we will be complained against. Therefore, there is a need to take action, which comes with costs. Need to have certain level of returns to justify the costs. We are assuming that the return shall be the increased satisfaction level of the people. It would contribute to the increase of value of the city. In the mid-long term, the people's satisfaction level will increase, and land value shall increase. If we can create this cycle, it is worth hearing the people's opinions. What do you think about this idea?

A10.

- By comparing two TODs (one is for community to get actively involved, the other does not have this), with this platform, it would help property value to increase faster or expectation that people would buy this development thanks to platform. This would be the kind of returns from developers' perspective.
- [It will take a] Longer time to prove what can be achieved with expectations and objectives.
- Hard to find development projects identical to each other. There is difficult to compare property values. Generally, if you look at surroundings for areas with or without platform, can get some rough indication numbers.

Q11. City safety & security is the biggest concern of citizens. Any services in your community tackling this? How do you manage multi-cultural communities (which led to harmonised community + happiness according to academic professors)?

A11.

- KL Sentral established its own security team to manage the whole KL Sentral, even perimeters surrounding KL Sentral developments.
- Private service, initiative by developers such as MRCB
- All developments will have security features, such as access points and security guards to safeguard perimeters.
- Private initiative to implement the kind of control.

<Closing remark>

As developers, they will not strive to directly meet the targets set by residents. However, they will also consider criteria such as fully connected transport and accessibility during the development. It is moving towards what people want to make people happy enough to buy properties in the area. Indirectly, they are moving towards being human centric, but it is so abstract that they cannot list down all detailed human centric smart city measures.

10. Sinarmas Land

Q1. What are the management policies and focus areas & purposes when developing your area and communities? What are the background and social challenges of the policies in your developing/developed area and communities?

A1.

- Convenience and security for residents in everyday life.
- Assume a part of public work, construction of police station, highway connection, railway station etc. to move forward the city development more quickly.

Q2. Are there any platforms (Urban OS) developed by your company that promote or support your town/community? If yes, what purpose?

A2.

- There is an app, called One App, which integrates the daily life services for the residents and provides information about shops and events for both residents and non-residents.
- The residents have IDs to use this app and its services, such as obtaining public documents, making reservation of the meeting rooms.

Q3. Are there any indicators being used by local government or by your company to measure engagement level of people, such as liveability Index? Setting up of KPIs?

A3.

- No.

Q4. Is there a system to absorb people's opinions and to stimulate interaction, do you feel the need to implement such a system? Are there any obstacles? What challenges will arise if we propose such an initiative?

A4.

- One App has a function that the users can [use to] post their opinions.
- However, most of the opinions are complaints or negative ones, and SML does not take any action to improve in principle, because it requires costs.

Q5. Are you interested in introducing such a system or platform? On what kind of field are would it be easy for your enterprise to introduce this system? E.g., mobility, sports, farming, culture, etc.

A5.

- In principle, yes.
- To make this platform work sustainably, it is important to facilitate the people to give constructive comments or opinions.
- Also, the service developers and funding to materialise the comments and ideas, which come from the residents as services should be considered. As made in some other cities, it is interesting to build up a framework which utilises start-up companies to develop services using IT, data, and Venture capital for the funding to the selected services.

11. Bases Conversion and Development Authority ('BCDA')

Q1. What are the management policies and focus areas and purposes when developing your area and communities?

A1. New Clark City (NCC) is a greenfield development, and our implementation is based on a comprehensive masterplan that goes beyond technical aspects. Our focus is on attracting more locators and investments to NCC, creating added value for future investors and residents. As we are still in the early stages of development, the city is akin to a toddler.

One of our key areas of focus is streamlining the investment process to encourage more investors. Despite facing challenges, such as limited funding, we are investing in infrastructure and ICT development. We strive to do more with less, including optimising the components of the buildings. Currently, NCC has zero residents, creating a 'chicken and egg' situation where we need users before implementing additional facilities.

Our target demographic is diverse, aiming for an inclusive city that welcomes people from various backgrounds, including the working class, middle class, and affluent communities. In contrast to areas like BGC (Bonifacio Global City) in central Manila, which caters to a higher-end market, NCC seeks to be affordable and accessible to all. We prioritise open spaces and affordability, ensuring that NCC benefits the entire working-class population.

With a projected population of 1.2 million residents, NCC will offer a mix of uses, including the Civic Centre where the national government is located, industrial areas for manufacturing and logistics, mixed-use developments, and a small financial centre. The city will be well-connected through a reliable transportation system and located less than one hour away from Metro Manila. Its proximity to an international airport allows NCC to cater to global businesses as well.

Q2. What kind of data platform do you have, what kind of data are you getting, and what are you using it for?

A2. Our vision for the platform is to create a system that benefits not only our business locators but also the residents living within New Clark City. We aim to enable residents to conveniently transact with the government and local businesses, accessing various services without the need to leave their homes. Our goal is to make daily transactions easier for everyone involved. On the business end, our goal is to develop a platform that simplifies the process of establishing businesses and attracts more investors. We want to provide a virtual look into the city's development, allowing investors to explore opportunities without the need for physical presence. This platform will act as an enabler for development and streamline various aspects of doing business.

To efficiently manage the city, we aim to establish an integrated management centre. This centre will enable us to oversee and manage the city's operations without the need for extensive on-site deployment of personnel. It will serve as a central hub for integrated operations.

As part of our broader objectives, we have devised a diagram outlining the platform we intend to implement. We can share this diagram with you to provide a clearer understanding of our plans.

Data plays a crucial role in the city's development, and we plan to establish a data platform utilising the E-Digital government platform we are currently working on. The data we aim to collect and utilise pertains to the needs of business locators, future residents, and potential investors. By leveraging this data, we can make informed decisions and cater to the specific requirements of various stakeholders.

In addition to local developments, we are also gathering information on smart city developments in the ASEAN region and other continents. This broader perspective helps us gain insights and best practices from other smart city initiatives around the world.

Q3. Any indicators?

A3. We understand that the result of the development update of the masterplan is an important consideration. While we don't have concrete details at the moment, we have identified key measurements to assess the progress of our development. These measurements will help us evaluate how well we are doing in achieving our development goals.

In line with our sustainability efforts, we are focusing on creating a liveable city where people can easily navigate on foot and utilise public transportation. We aim to promote sustainable practices by providing open spaces for people to enjoy and encouraging reduced reliance on vehicles. These efforts contribute to the overall goal of creating a more sustainable and environmentally friendly city.

Q4. Is there a system to absorb people's opinions and to stimulate interaction, do you feel the need to implement such a system? Are there any obstacles?

A4. Currently, as we don't have residents in New Clark City, we have yet to establish a system.

However, we plan to implement such a system within our e-government platform. In the initial stages, we conducted surveys and roadshows to gather input from the public regarding their expectations and desires for the development of a smart city. The purpose was to gauge what people want and identify areas for improvement based on their experiences with developments like BGC in Metro Manila. By learning from the lessons of past developments, we aim to avoid similar challenges and ensure a more successful development process for New Clark City.

Q5. Are you interested in introducing such a system or platform? On what kind of field are would it be easy for your enterprise to introduce this system? E.g., mobility, sports, farm, culture, etc. *Which city of BCDA would be it be applicable?

A5. Certainly, one of our primary objectives is to ensure that people can easily access various places such as schools, offices, and recreational areas. Therefore, mobility and sports play a crucial role in our initial masterplan. Additionally, we are incorporating urban farming into our plans and allocating open spaces that utilise IoT for environmental management. This includes monitoring the river system and tracking the growth of trees. Our approach to implementing a full smart city framework will be done in phases, ensuring that all the components are applicable and integrated seamlessly.

Q6. What challenges will arise if we propose such an initiative?

A6. Filipinos are generally more open to expressing their opinions and participating in surveys compared to some other countries, including Japan. Data privacy is not yet a major concern for us, and we are more willing to share our input and opinions. We find it relatively easier to engage with the community in this regard. However, we anticipate encountering difficulties along the way. To encourage participation and gather more opinions, we can provide incentives as a way to motivate individuals to share their thoughts.

Q7. Is there any mechanism or subsidy that the local or central government can help you with this kind of initiative?

A7. Local governments, being close to the people, have systems in place to organise forums and gather opinions from residents within their jurisdictions. These activities serve the purpose of information dissemination and community engagement. Local government units operate at the city level.

The result of 23.6% expressing interest in participating in the development process is surprising and encouraging. It is important to consider the specific city or demographic group represented by this percentage, as it indicates a high level of interest. It is reassuring to know that there is a collective desire for a healthier life and pursuit of financial stability. However, to obtain a more comprehensive understanding, it would be beneficial to increase the number of respondents, considering the geographical diversity of our country with its numerous islands. Additionally, there may be a need to place greater emphasis on addressing the aspirations of individuals seeking financial stability. Furthermore, the desire for a better life, particularly amongst conscious parents, suggests a need for prioritising their goals and aspirations accordingly.