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ORIGINAL ARTICLE

International Perception and Local Pride in Smart City Development: The Case of Hong Kong

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Abstract

Local citizens' perceptions of their own cities are often neglected when assessing cities' performance. Using the perceived international image and collective pride in Hong Kong as the entry point, this article aims to discover the relationship between citizens' trust in public authorities and urban technologies. Four angles of investigation are developed: the impact of cities' promotion of their international image on local pride; the attitudinal and demographic characteristics of proud citizens; the linkage of local pride with public trust, and digital trust. This article uses data from a Hong Kong-based territory-wide survey in 2021 to conduct the analysis. The result suggests that public trust is an elemental factor having a positive relationship with collective pride and digital trust in Hong Kong. This article also identifies the group of citizens with the least pride. Regaining the citizen's trust is the best remedy for facilitating smart city development.

Keywords: digital trust; local perception; national pride; pride in Hong Kong; public trust; smart city development

1. Introduction

A smart city race is ongoing between cities. Smart city assessment tools have become increasingly widespread, and cities are using these rankings to improve their position in competition with other cities (Patrão *et al.* 2020: 1121). Currently, most city assessments are conducted by analysing the cities' actual performance using real-time data, while the local citizens' perceptions of their own cities in terms of international comparison, as well as their subsequent influence and effects, are rather overlooked. This article draws upon a territory-wide survey, conducted by the Hong Kong Public Opinion Research Institute (HKPORI) from March to April 2021, on the topic of trust and the smart city. The survey aimed to understand the local citizens' current levels of trust in urban technologies and smart city providers, as well as in public authorities in general (HKPORI 2021). The dual question that forms the main basis of this article concerns how Hong Kong is perceived from the perspectives of local citizens, in particular relating to the international image of, and local pride in the city.

The discussion centres around a puzzle related to the international image of Hong Kong. In the realm of the smart city race, Hong Kong is often compared to Singapore, the prominent nation in Southeast Asia. These two cities compete to claim the title of the smartest city in Asia due to their sharing similarities in culture, economy, and being two of the four "Asian tigers" (Ang-Tan and Ang 2021: 231). Both cities are frequently ranked in high positions in the existing smart city indices (Hartley 2023: 2; Lai and Cole 2022). While Singapore is successful in maintaining its leading position, Hong Kong, seemingly facing challenges especially in the domains of smart economy and smart environment, has experienced a relative decline in its smart city development (Berrone and Ricart 2020; Govada *et al.* 2016). In addition, our survey demonstrated that Hong Kong was rather negatively perceived by local citizens, when compared with other Asian cities including Taipei, Tokyo, and Seoul. Indeed, in aggregate terms, it was even viewed as being below that of neighbouring Shenzhen regarding its smart city

Table 1. City rankings (*Q11: Which of the following cities do you think are doing the best in the development of smart city? ["Don't know" and "Refuse to answer" as missing data])

	Smart City Survey	
City	Q11 result* (%)	Rank
Hong Kong	6%	**5**
Singapore	28%	**1**
Taipei	5%	**6**
Tokyo	13%	**3**
Seoul	7%	**4**
Shenzhen	23%	**2**

development (shown in Table 1). This finding not only reveals a deviation from the similar research conducted in 2018, which identified smart city attributes as the strongest characteristic of Hong Kong as perceived by local citizens (Chan 2018: 20), but it also challenges the ostensibly objective evaluations of the existing smart city indices in which show that Shenzhen has lagged Hong Kong, based on actual city data (Berrone and Ricart 2020). The subjective image of Hong Kong among local citizens appears to have declined compared to the period preceding the social movement of 2019, leading to a misalignment between subject image and objective assessment as demonstrated by existing smart city indices. Hence, we investigate if the underlying factors causing the distance between perception and real-time analysis of smart cities raise issues that extend beyond Hong Kong and are observable in other Southeast Asian cities. Therefore, this article attempts to understand the reason for this apparent disparity, to discover why Hong Kong has such a bad subjective image among its own local citizens, and how this relates to the influence of and on collective pride. Exploring these aspects can provide valuable insights into the causes and potential implications of this phenomenon, offering a more comprehensive understanding of the dynamics of smart city development in the region.

2. Understanding the Significance of Local Pride in the City Context

Pride is a fundamental human emotion involving complex evaluation processes (Tracy and Robins 2007: 147). It can be understood at several levels based on the sources of pride (for example, as a concept of self, or a group identity) (Morrison 2016: 104–105). At an individual level, pride is a self-conscious emotion related to self-evaluation, self-esteem and ego, arising from achievements or appraisals that can be attributed to someone's abilities or efforts for a socially valued outcome (Mascolo and Fischer 1995; Morrison 2016: 105; Tracy and Robins 2004: 194; Tracy and Robins 2007: 148; Williams and DeSteno 2008: 1007). As the reward of such socially valued acts, pride might effectively promote social status and acceptance (Tracy and Robins 2007: 150). At an aggregate level, pride is an emotion that has profound economic consequences for all areas of human activity (Boulding 1987: 15–16). Urban pride is the term used by scholars to study how collective pride has been invoked in support of urban development and promotion of urban policy (Morrison 2016: 105–106). While people might confuse urban pride with national pride, Morrison (2016: 105) points out their difference over the role of choice: people might have freedom to choose their city of residence, but it is almost impossible for people to have freedom to choose their nationality. Therefore, urban pride logically is of a different nature than national pride because the investment of people in a city is discretionary. As urban pride can be deemed as the collective pride in local context, we now pursue further the distinction between national and local pride.

National pride is the common term to describe the emotional attachment to one's own country (Ha and Jang 2015: 473). As an emotion, national pride is a specifically positive form of the identification people feel towards their nation, which is further connected to, and an important component of the national identity of the citizens (Evans and Kelley 2002: 305; Gustavsson and Stendahl 2020: 450; Meitinger 2018: 429; Smith and Kim 2006: 127; Vlachová 2019: 1003). National pride not only associates

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positively with citizens' happiness, but also with the levels of political trust, and is even positively related to social trust in countries like the Netherlands and Czech Republic (Gustavsson and Stendahl 2020: 459; Ha and Jang 2015: 477; Vlachová 2019: 1008). It is worth noting that political trust in this context means trust in the core institutions of the state, the same as the term "public trust" (Gustavsson and Stendahl 2020: 453; Kim 2010). National pride, serving as a reference of how much citizens trust their governments, is one predictor of institutional confidence in the literature (Kim 2010: 802; Klingemann 1999; Shen and Guo 2012: 136). Surveys and studies carried out in Japan, South Korea, and the Czech Republic, identify age, education level, family, income, economic situation, and political development as the major determinants of national pride (Chung and Choe 2008: 109; Kim 2010: 802; Vlachová 2019: 1009). For example, Chung and Choe (2008: 107) observe that South Koreans who are older and less educated tend to have higher national pride, and similar findings for the Czech Republic were presented by Vlachová (2019: 1009).

Local pride is an individual and collective response to living in a given city, representing the feelings of local inhabitants towards their cities of residence (Collins 2016: 177; Morrison 2016: 104; Wood 2006: 168–169). While cities usually involve a smaller spatial and population scale than countries (hence national pride), local pride is equally worth examining as national pride because it reflects the key-value and aspiration of local government (Collins 2016: 176). Both urban pride and civic pride are occasionally used as interchangeable terms to describe local pride, the collective pride in a city. Morrison (2016: 106) observes a distinction between these two terms: civic pride represents the perspective from the "top" – city leaders, and urban pride expresses the perspective from "below" – residents. Morrison (2016:107) further describes the four forms of stake which generate urban pride – emotional, financial, cultural, and civic, and defines emotional stake (look and feel of your city) as the central concept of urban pride, concluding from a survey in New Zealand. In a practical way, Collins (2016: 178) suggests that civic pride can be used as a soft tool by local governments to persuade local citizens into supporting urban regeneration and urban policy, and at the same time to steer attention away from other social issues. However, civic pride can also cause conflict if citizens have different expectations of what their city's civic pride should represent, or when the promoted policy through civic pride serves the interests of some citizens more than others (Collins 2016: 177). Yu (2019: 169) has explained the formation of the superior feelings over Mainland China regarding economy and social welfare in Hong Kong citizens since their youngest age. She concludes school and family are the influential agents for nurturing Hong Kong students' local pride. In this case, it suggests that collective identity is a cultural stake to generate local pride, and thus promote local identity (Collins 2016: 176; Morrison 2016: 106; Yu 2019: 169).

Hong Kong is a special administrative region of China having its own government. Due to its colonial history, Hong Kong is akin to a city-state like Singapore. The collective pride of Hong Kong has some features of the national pride depicted by Morrison (2016: 105), in the sense of sharing in Hong Kong achievements and the perceived affinity with other citizens due to the commonly accepted norms. However, we use the term "local pride" in this article to describe the collective pride of Hong Kong citizens, as it is primarily centred on (the city-state of) Hong Kong.

Local pride has been proven as being positively related to public trust in China, which, according to Shen and Guo (2012: 137–138), is induced by the exploitation of mass media and propaganda. However, the influence of citizens' public trust on local pride is unknown in Hong Kong, as this study is lacking in this research field. This article hence aims to identify the attributes of Hong Kong citizens who always have high levels of local pride, and assess the association of local pride and trust in the government (public trust), comparing with the findings of other countries.

3. Methods

The findings presented here are drawn from a survey on trust in the smart city, mainly centred on Hong Kong. A territory-wide survey formed a key part of the primary data collection (and analysis) of the research project upon which the article is based (HKPORI 2021). The survey was conducted between 24 March to 16 April 2021 in Hong Kong via random telephone interviews by real interviewers. The target population was Cantonese-speaking Hong Kong citizens of age 18 or above. Phone numbers were randomly generated by the computer system, and hence the selection method of the survey was a simple

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Table 2. Six questions for analysis

No.	Question	Measure	Valid number	Missing number
4	How important or unimportant do you think it is to use innovative technology to cope with the epidemic, such as launching "LeaveHomeSafe", health codes, etc.?	Scale	798	10
5	How much do you support or oppose developing Hong Kong into a smart city?	Scale	798	10
7	How much do you trust or distrust the following organizations or modes in providing smart city-related services? [Hong Kong Government] (Q7a)	Scale	794	14
	[Legislative Council] (Q7b)		776	32
	[District Council] (Q7c)		784	24
9	Smart lampposts can collect various types of real-time city data such as meteorological data, air quality data and traffic flow. How much do you support or oppose the installation of smart lampposts?	Scale	791	17
11	Which of the following cities do you think are doing the best in the development of smart city? [Hong Kong, Singapore, Taipei, Tokyo, Seoul, Shenzhen]	Nominal	664	144
12	I would be proud if Hong Kong is recognized as one of the top smart cities in the world	Scale	796	12

random sampling; each member of the population has an equal chance of being selected. Although the survey aimed to be inclusive, it might be possible that certain groups of citizens (e.g. immigrants, persons with disabilities) were not well-represented due to language barriers or inaccessibility. Eventually, the number of successful cases was 808, including 400 landline and 408 mobile samples. The effective response rate was 48.5%, and the standard error was less than 1.8% (i.e. at 95% confidence level, sampling error not more than +/-3.5%). RIM (Random Iterative Method) weighting was used to weight the data, using the figures from the Census and Statistics Department, a provider of major social and economic official statistics in Hong Kong. The gender-age distribution of the Hong Kong population came from Mid-year population for 2020, while the educational attainment distribution and economic activity status distribution came from Women and Men in Hong Kong – Key Statistics 2020 Edition (Census and Statistic Department 2020). There were thirteen questions in this survey, covering the citizens' attitudes to the six dimensions (economy, environment, government, living, mobility, people) of the Hong Kong Smart City Blueprint, an official smart city development plan of Hong Kong (Innovation and Technology Bureau 2020), as well as citizens' perceived features of smart city development, citizens' acceptance of technologies such as pandemic tracking apps and smart lampposts, and the citizens' trust in public and private institutions. Table 2 presents the six questions involved in this article, including the two main questions (Q11 ["international ranking"] and Q12 ["pride in the city"]), two questions concerning attitudes towards the smart city (Q5 ["support for Hong Kong as a smart city"] and Q7 ["trust in smart city stakeholders"] and two questions (Q4 ["COVID-19 apps"] and Q9 ["smart lampposts"]) relating to urban technologies. Question 11 focused on the perception of Hong Kong as a city in international comparisons, while question 12 investigated whether respondents felt a sense of pride in Hong Kong as a smart city. Questions 5 and 7 were designed to explain the main factors underpinning pride in Hong Kong. These two questions are especially related to citizen supportiveness and trust in the public authorities in the field of the smart city. Questions 4 and 9 concerned the acceptance of urban technologies, specifically the "LeaveHomeSafe" app – an epidemic-related technology – and smart lampposts.

City managers aim to instil urban pride as part of the broader efforts of city promotion, or as a strategic tool to increase cities' competitiveness (Anttiroiko 2014: 236; Morrison 2016: 106). These instrumental efforts of city promotion involving place branding and policy boosterism are important in their own right and the object of a specific literature (e.g. Anttiroiko 2014; McCann 2013: 22). Hence,

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it is reasonable to include the perception of a city as being the outcome of city promotion when analysing local pride. However, is the perception substantially related to pride as manifested in survey findings? This forms our first research question: what is the relationship between the perception of Hong Kong in international comparison and the sense of pride in Hong Kong? Second, what are the (demographic and attitudinal) characteristics of those who feel the most proud in Hong Kong as a city? In China, national pride is positively associated with political trust (Shen and Guo 2012: 145). Similar research has been undertaken for countries such as Japan and South Korea (Kim 2010), but there is no such research for Hong Kong. Thus, the third research question is: how is local pride linked to public trust in Hong Kong? And fourth, what is the linkage, if any, between local pride (and public trust) and the acceptance of urban technologies: does pride in the city spill over into a more general pride in the state of technological advances?

There are, thus, four angles of investigation:

a) International perception versus pride axis

Questions 11 ["international ranking"] and 12 ["pride in the city"] are the main questions of this article concerning the relationship between the international image of Hong Kong and local pride in the city. Since both Morrison (2016: 106) and Anttiroiko (2014: 236) address city branding as a strategic tool to reinforce local identification of the citizens with their city by achieving competitive advantage, we make a similar assumption in this article: the image of global competitiveness will filter through into high levels of local pride. To examine if this statement is accurate in the case of Hong Kong, we first analyse questions 11 ["international ranking"] and 12 ["pride in the city"] together to discover if there is any existing association.

Hypothesis 1: Local Pride as a consequence of public trust/international ranking

If the Hong Kong citizen perceives Hong Kong as the best smart city out of the six provided Asian cities, then the citizen is proud of Hong Kong being one of the top smart cities.

b) Demographic and attitudinal characteristics of pride

The main section discusses questions centred on the international ranking of cities (Q11) and collective pride in Hong Kong as a smart city (Q12), which are analysed by four key demographic data (age, education level, occupation, region of birth) and one proxy for political inclination. Associations are mapped between these variables. The results assist in building a profile of Hong Kong citizens who are proud of Hong Kong's smart city development. The results can be further used to compare with the determinants of national pride in other countries, and thereby support if the conditions elsewhere (e.g. older and less educated citizens tend to have higher national pride) are applicable in Hong Kong. The survey also allows the identification of segmentation in the Hong Kong population.

Hypothesis 2a: Age is a determinant of local pride in Hong Kong

The older Hong Kong citizens are prouder of Hong Kong than the younger citizens.

Hypothesis 2b: Education level is a determinant of local pride in Hong Kong

The less educated Hong Kong citizens are prouder of Hong Kong than the more educated citizens.

Hypothesis 2c: Occupation is a determinant of local pride in Hong Kong

If the Hong Kong citizen is a homemaker, then the citizen is proud of Hong Kong; if the Hong Kong citizen is unemployed, then the citizen is not proud of Hong Kong.

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Hypothesis 2d: Region of birth is a determinant of local pride in Hong Kong

If the ethnic group of the Hong Kong citizen is well-represented, then the citizen is proud of Hong Kong.

Hypothesis 2e: Political inclination is a determinant of local pride in Hong Kong

If the inclined political party of the Hong Kong citizen is well-represented, then the citizen is proud of Hong Kong.

c) The trust and pride of smart city dimension

Questions 5 ["support for Hong Kong as a smart city"] and 7 ["trust in smart city stakeholders"] are included not only because they concern local supportiveness and public trust of Hong Kong citizens – the two key elements of the research project upon which the survey is based – but also because Gustavsson (2020: 461), Vlachová (2019: 1008) and other scholars affirm the positive linkage between collective pride and public trust (Kim 2010: 805; Klingemann 1999; Shen and Guo 2012: 145). Therefore, questions 11 and 12 are analysed with questions 5 and 7 to discover how public supportiveness and trust influence the levels of local pride in Hong Kong. The results of citizens' trust in the Hong Kong government, the legislative council and the district council from the survey are presented to summarise the trust situation in Hong Kong.

Hypothesis 3a: Supportiveness induces local pride in Hong Kong

If the Hong Kong citizen is supportive of Hong Kong developing into a smart city, then the citizen is proud of Hong Kong

Hypothesis 3b: Pride as the outcome of public trust in Hong Kong

If the Hong Kong citizen has trust in the Hong Kong government, legislative council, or the district council, then the citizen is proud of Hong Kong

d) The technology trust dimension

Although questions 4 ["COVID-19 apps"] and 9 ["smart lampposts"] seem unrelated to the central questions, these two urban technologies spark off discussions of privacy and raise trust issues relating to smart city policies in Hong Kong (Ioanes 2019; Li 2021). If these two technologies display a strong correlation with factors of pride and public trust, it might be surmised that they influence the implementation of the smart city. Therefore, question 12 ["pride in the city"] is analysed with these two technology questions to see how levels of local pride might influence the acceptance of urban technologies. The findings serve as the basis to build up an effective smart city promotion strategy for the Hong Kong government.

Hypothesis 4: Technology trust as a consequence of deeper positions in relation to the local pride of Hong Kong

If the Hong Kong citizen is proud of Hong Kong, then the citizen trusts the employed urban technologies.

The analysis and applied statistical techniques are briefly presented in Table 3.

Based on the angles of investigation, a theoretical model is used to demonstrate the connections and hypotheses between each question (see Figure 1). Hypotheses as explained above are derived from this model for analysis in section 4. If these hypotheses are proved to be true, the results support the validity of the theoretical model itself. It should be noted that the associations are correlational and not suggesting any causal direction.

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Table 3. Analyses and applied statistical techniques

Dependent variable	Level of measurement	Independent variable	Statistical technique
Q5	Scale	Q11	One-way ANOVA
Q11	Nominal	Age	Multinomial logistic regression
		Education attainment	Multinomial logistic regression
		Occupation	Crosstabs
		Region of birth	Crosstabs
		Political inclination	Crosstabs
		Q7	Multinomial logistic regression
Q12	Scale	Age	Bivariate correlation
		Education attainment	Bivariate correlation
		Occupation	One-way ANOVA
		Region of birth	One-way ANOVA
		Political inclination	One-way ANOVA
		Q4	Bivariate correlation
		Q5	Bivariate correlation
		Q7	Bivariate correlation
		Q9	Bivariate correlation
		Q11	One-way ANOVA

4. Results

4.1. International Perception versus Pride Axis: Hypothesis 1

Using question 12 ["pride in the city"] as the dependent variable, the analysis by One-way ANOVA shows the significant differences of means between groups of question 11 ["international ranking"] responses ($F_{6,\ 785}$=19.626, $p < 0.001$). The visualised result in Figure 2 shows that interviewees choosing Hong

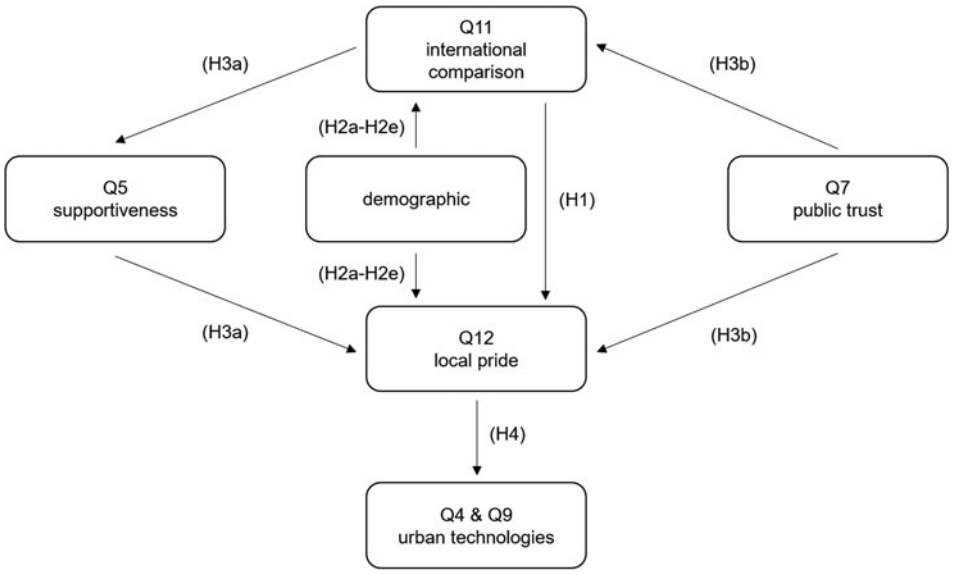

Figure 1. Presenting the theoretical model

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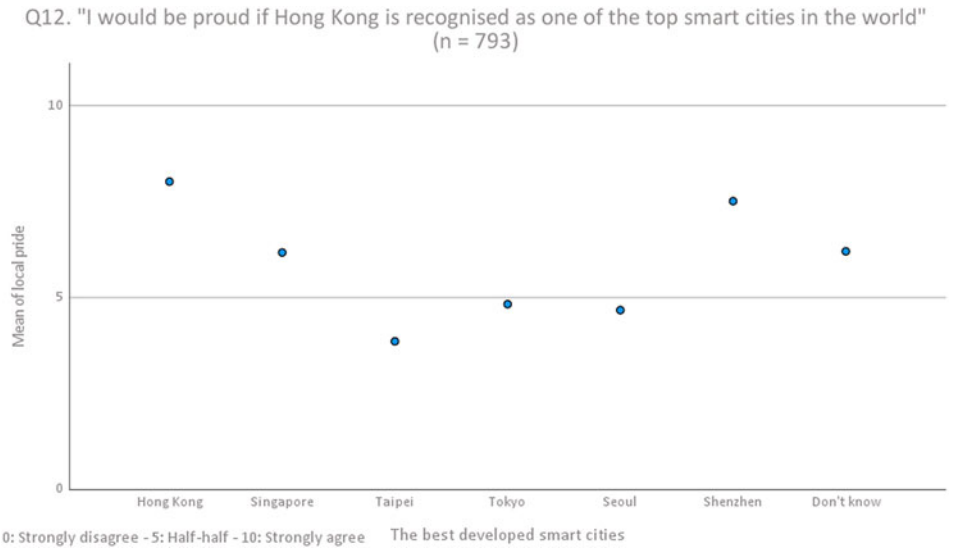

Figure 2. Pride in the city and international ranking

Kong or Shenzhen as the best developed smart city had the greatest tendency to agree with the statement, as these two groups had the highest means. Interviewees choosing Hong Kong or Shenzhen in question 11 tend to be proud of Hong Kong being recognised as one of the top smart cities. On the other hand, interviewees choosing Taipei, Tokyo or Seoul held a contrasting position. The relatively low means of these three groups indicate that the interviewees choosing these three cities tended to disagree with the statement. The overall tendency is visualised in Figure 3.

The result provides significant evidence in support of hypothesis 1: the perception of Hong Kong in international comparisons can influence the levels of local pride. If a Hong Kong citizen perceives Hong Kong as the best smart city, the citizen will tend to be proud of Hong Kong. In the other words, if the Hong Kong government implements city promotion strategies to improve the international image of Hong Kong as a smart city, this kind of marketing exercise ought logically to boost the levels of local pride of the Hong Kong citizens, other things equal. In a more general sense, the levels of local pride of a city could be deemed as one indicator to evaluate the perception of that city.

4.2. Demographic and Attitudinal Characteristics of Pride: Hypothesis 2a to 2e

4.2.1. Five Demographic Determinants

Age is one of the major determinants of national pride. Many sources in the literature identify older citizens as being more likely to be proud of the nation than the younger citizens, such as in Britain, South Africa, South Korea and the Czech Republic (Bornman 2021: 297; Chung and Choe 2008: 118; Ray 2017: 269; Tilley and Heath 2007: 666–667; Vlachová 2019: 1009; Wang and Weng 2018: 270; Wimmer 2017). Dalton (2005: 144–145), Kim (2010: 805), Christensen and Lægreid (2005) also further substantiate the argument that older citizens have more trust in government institutions than younger citizens, using the United States, Japan and Norway as case studies.

The level of education is another important determinant of national pride. Several writers contend that the less educated citizens are more likely to be proud of the nation than the more educated, for instance in Philippines, Seoul Korea and the Czech Republic (Castillo *et al.* 2016: 20; Chung and Choe 2008: 108; Ray 2017: 269; Vlachová 2019: 1009; Wimmer 2017: 607). Dalton (2005: 147) and Kavetsos (2012: 181) further suggest that more educated citizens might be aware of the cultural and historical legacy of other nations, and thus hold a more critical opinion in relation to their own nation that put them in conflict with their government, resulting in lower levels of national pride and public trust.

Although not many scholars have raised the occupation/ status of a citizen as the determinant of national pride, Kavetsos (2012: 179–180) argues that unemployed citizens have generally lower levels

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Figure 3. Pride in smart cities in Hong Kong and Asia

of national pride. On the contrary, based on his research on European countries, he identifies homemakers as being significantly prouder of their nations than any other employment status (Kavetsos 2012: 181).

The relationship between the ethnic background (region of birth) of citizens and the levels of pride has not yet been broadly studied, except for minority groups with an immigrant background, which, as observed by Cebotari (2015: 280–281), generally have lower levels of national pride. While Ha and Jang (2015) argue that there is no significant association of ethnic background with national pride and happiness, Bornman (2021: 296) states that societal divisions were emphasised by the significant group differences of national pride. Wimmer (2017: 615) argues that demographic size was not a determining factor, but that social status, reflected by the extent to which an ethnic group is represented in national-level government, was an important variable. He contends that groups with declining social status see the nation in more negative terms than those whose status remained stable. Both Cebotari (2015: 283) and Wimmer (2017: 634) conclude that national pride is a matter of power and status, and Ray (2017: 271) further asserts that the political inequality of excluded groups has a significant effect in reducing national pride. In the case of Hong Kong, the two major ethnic groups are local Hongkongers and mainland Chinese. Following this logic, the perception of dominant ethnic representatives in the legislative council or district council would be the major determinant of the Hong Kong citizens being proud of Hong Kong. For instance, if the legislative council is dominated by the representatives of local Hongkongers, local Hongkongers are then proud of Hong Kong.

The levels of national pride are different regarding citizens' political ideology (Lim and Prakash 2021: 628). Based on our studies, we observe two ways to anticipate political inclination in the context of national pride. The first way is to associate pride with the development of democracy. Research in the Czech Republic and Ukraine justifies the association that the higher levels of citizens' satisfaction with the development of democracy contribute to the higher levels of national pride (Tamilina 2021; Vlachová 2019: 1006). Another way is to associate pride with the existence of representatives in the national-level government (Vlachová 2019: 1005; Wimmer 2017: 606). In the case of Hong Kong, we follow the latter and interpret this statement as signifying representatives in the legislative council. The members of certain political parties that are not well-represented in the legislative council are less proud of Hong Kong than those that dominate the legislative council.

4.2.2. Hypothesis Testing

From the multinomial logistic regression in Table 4, it is significant that the older the age of the interviewees, the more of them chose Hong Kong as the best developed smart city. On the other hand, Taipei, Tokyo, and Seoul were significantly selected by the younger interviewees. Although both Singapore and

Table 4. Age, educational attainment and international comparisons of the smart city: a multinomial logistic regression (*p < 0.05)

	The best city in the development of smart city (Q11)					
Demographic data	Hong Kong	Singapore	Taipei	Tokyo	Seoul	Shenzhen
Age	0.118*	-0.047	-0.246*	-0.215*	-0.346*	-0.05
Education attainment	-0.440*	0.021	0.276	0.2	0.474*	0.037

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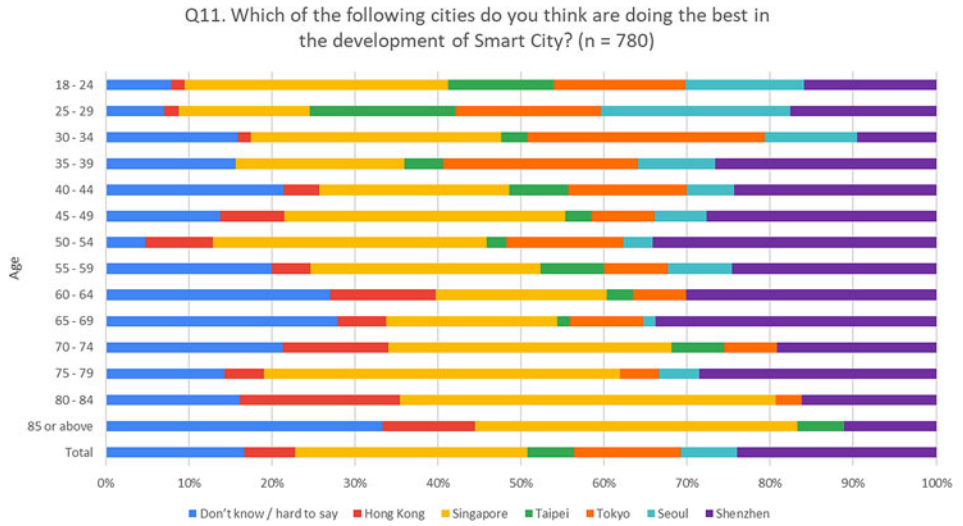

Figure 4. Age and the development of smart cities in Asia

Shenzhen were the most selected options, Figure 4 shows that Singapore was more popular in the older age group, while Shenzhen was more popular in the middle age group. From the correlation coefficient of question 12 ["pride in the city"] and age, the positive value (0.195, $p < 0.01$) indicates the older age of the interviewees, the more agreement they had with the statement (be proud of Hong Kong). Therefore, hypothesis 2a is supported, which is also in line with the findings from most of the literature: older citizens are prouder of their nation than younger citizens.

The multinomial logistic regression in Table 4 shows two significant associations: the lower the education attainment, the more interviewees chose Hong Kong; the higher the educational attainment, interviewees were more likely to choose Seoul. Figure 5 shows the percentage of selections among the education attainment group. While the percentage choosing Singapore was quite consistent, Shenzhen was especially more popular in the lower secondary group. The correlation coefficient of question 12 and education attainment is a negative value (-0.114, $p < 0.01$), indicating a negative association between these two variables, which supports hypothesis 2b and is coherent with the literature: the less educated citizens are prouder of their nation than the more educated citizens.

Figure 6 shows retired persons had the highest percentage of choosing Hong Kong as the best developed smart city, while students and management had the lowest percentage, and no unemployed interviewees picked Hong Kong. Students had the highest percentage of selecting Tokyo, and the lowest percentage of choosing Shenzhen. The results from question 11 ["international ranking"] seem to be coherent with the research by Kavetsos (2012: 179–181), and thus supports hypothesis 2c: unemployed citizens are the least proud of their nation, while the homemakers are prouder of their nation than the other groups except for retired citizens.

Figure 7 shows that the percentage of interviewees from mainland China who chose Hong Kong as the best developed smart city was higher than interviewees locally from Hong Kong. Indeed, interviewees from Hong Kong tended to choose other cities. They have the highest percentages of choosing Tokyo and Seoul. From the One-way ANOVA analysis of question 12 and region of birth, it shows the group means are significantly different ($F_{3,\ 770}=16.372$, $p < 0.001$). Interviewees from mainland China had significantly more agreement with the statement (be proud of Hong Kong) than the local Hong Kong interviewees.

This phenomenon represents an observation that the local Hongkongers have lower levels of local pride than the citizens from mainland China, even though both groups are the major ethnic groups in Hong Kong. Following the insight of Wimmer (2017), the plausible reason is that the legislative council and district councils are dominated by forces sympathetic to the mainland Chinese. The results show hypothesis 2d is true.

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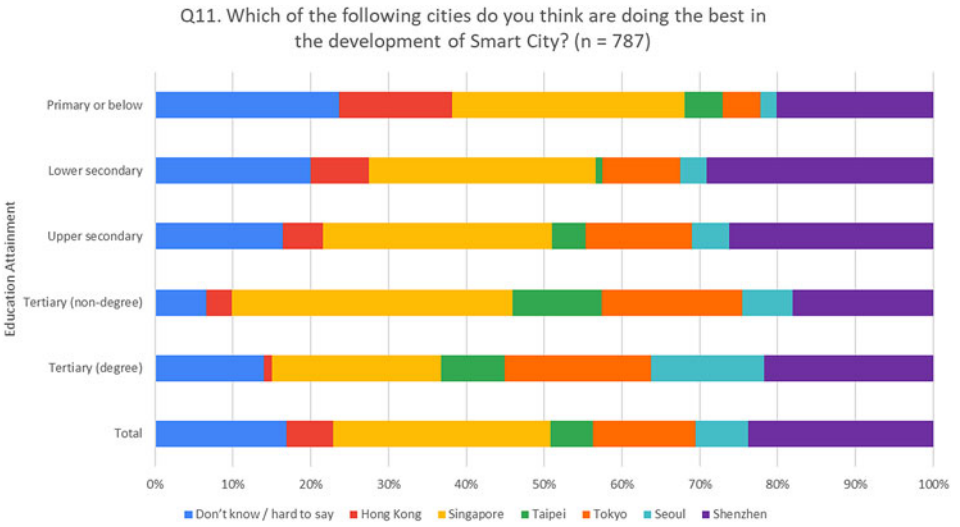

Figure 5. Educational attainment and the development of smart cities in Asia

Figure 8 shows the political inclination of interviewees. The five types of political inclinations are sorted along the political spectrum from pro-democracy to pro-China, which are localist (the extremity of pro-democracy), pro-democracy camp, politically neutral, centrist, and pro-establishment camp (the extremity of pro-China). Although the percentage of those choosing Hong Kong was consistent in each group, more than half of the interviewees from the pro-establishment camp chose Shenzhen as the best developed smart city, and none of them chose Taipei. In addition, interviewees who were localists tended to choose Tokyo and Seoul over the other groups. Several tendencies can also be observed, which are visualised in Figure 9.

Since the five types of political inclinations identified above represent the political spectrum in Hong Kong (from pro-democracy to pro-China), Figure 9 represents the observed tendencies from the crosstab results: if Hong Kong citizens tend to be pro-China, they have a high possibility of identifying Shenzhen as the best developed smart city. In contrast with the pro-China faction, if the Hong Kong citizens tend to

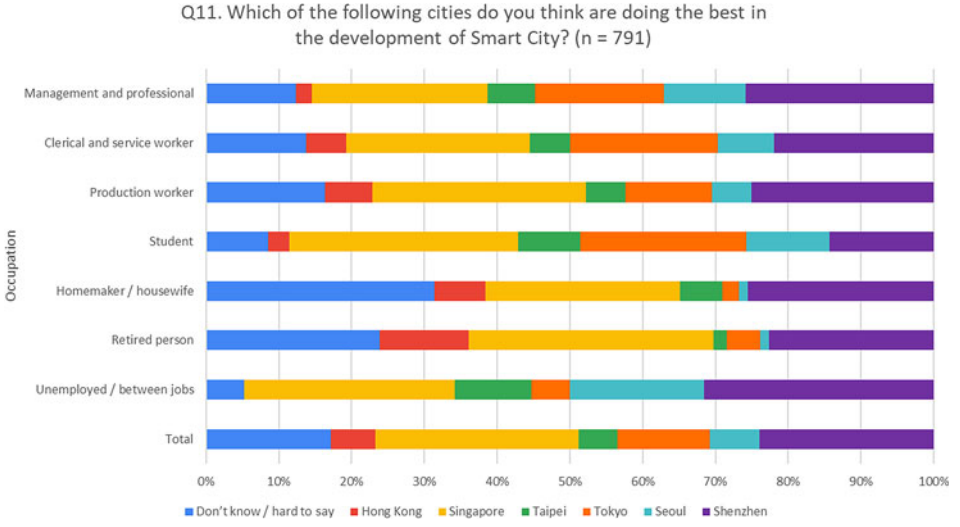

Figure 6. Occupation and the development of smart cities in Asia

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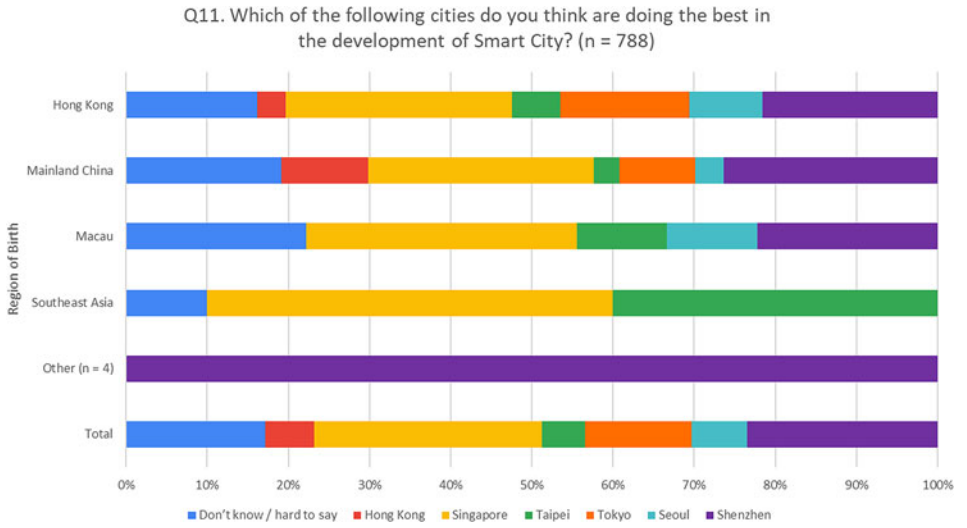

Figure 7. Region of birth and the development of smart cities in Asia

be pro-democracy, they then are more likely to identify Tokyo, followed by Seoul and Taipei. From the results in question 11, Hong Kong and Singapore did not demonstrate significant variations by political inclination, compared with the other four Asian cities.

However, significant differences can be observed from the analysis of question 12 and political inclination by One-way ANOVA ($F_{5,\ 749}$=23.243, $p < 0.001$). The pro-establishment camp had a significantly higher mean than all the other groups except for the "Don't know" group, indicating that the interviewees from the pro-establishment camp had the most agreement with the statement (be proud of Hong Kong). On the other hand, the pro-democracy camp and localists had significantly lower means than the pro-establishment camp, centrist, and no political inclination group, so much so that the localists even had a lower mean than the "Don't know" group, indicating that the interviewees from pro-democracy camp and localists had strong disagreements with the statement. In the other words, interviewees from these two groups were not as proud of Hong Kong as the other groups (in Figure 10). As we

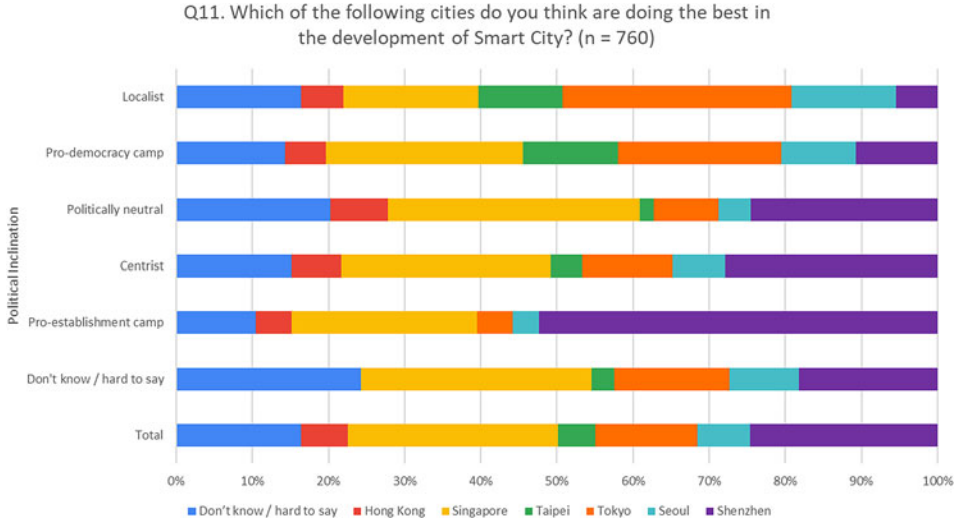

Figure 8. Political inclination and the development of smart cities in Asia

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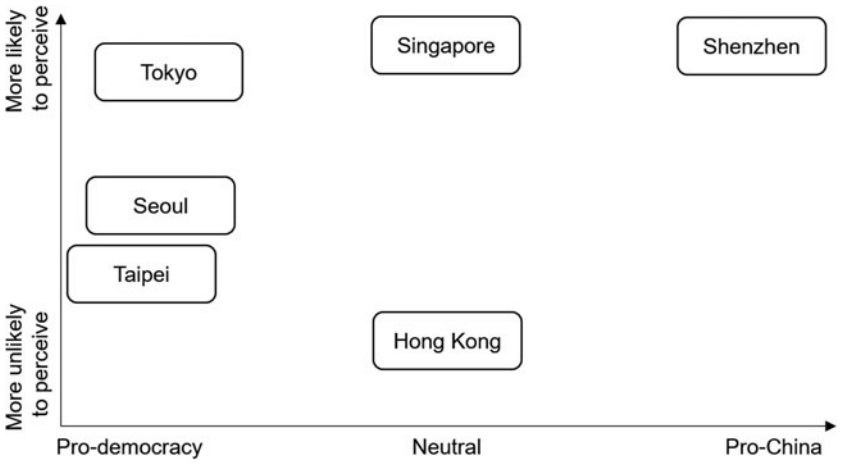

Figure 9. Political orientations and city preferences

can reasonably assume the pro-establishment camp is currently well-represented in the legislative council, due to the Chinese Communist Party's attempt to assimilate Hong Kong through mainlandisation (Chan *et al.* 2020: 3), hypothesis 2e is partly true (insignificant in question 11; significant in question 12).

Interpreting the results of question 12 implies that the pro-democracy camp and localists are under-represented in the legislative council, leading to the lower levels of local pride in these two groups. It is hard to judge the status of democracy development in Hong Kong with the current data, but it is logical to expect that the democracy development status will be downgraded in the future due to the low representativeness of the pro-democracy camp and localists, and hence the even lower levels of local pride in these two groups, according to Tamilina (2021) and Vlachová (2019: 1005).

4.3. The Trust and Pride of Smart City Dimension: Hypothesis 3a and 3b

If we treat question 5 ["support for Hong Kong as a smart city"] as the dependent variable, the analysis with question 11 ["international ranking"] by One-way ANOVA shows the significant differences of means between responses in the survey ($F_{6,788}$=27.924, $p < 0.001$). Interviewees choosing Hong Kong or Shenzhen as the best developed smart city tended to be more supportive of Hong Kong. While interviewees choosing Tokyo or Seoul were the least supportive, interviewees choosing Taipei also tended to oppose the smart city development of Hong Kong, as shown in Figure 11. In addition, the correlation coefficient of questions 5 and 12 ["pride in the city"] is a positive value (0.6, $p < 0.01$). It suggests a strong and significantly positive correlation between these two variables and thus supports hypothesis 3a: the more supportive of Hong Kong's smart city development, the higher levels of local pride of the citizen.

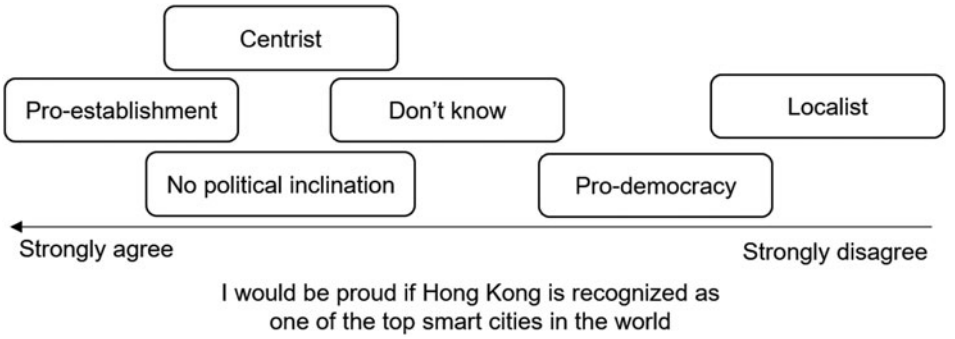

Figure 10. Political orientations and pride in Hong Kong

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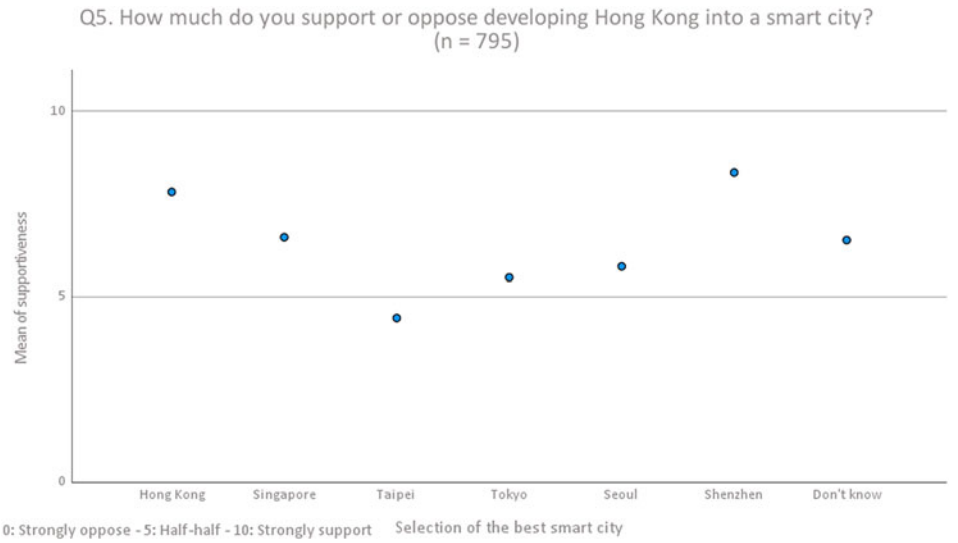

Figure 11. Support for developing Hong Kong as a smart city according to the selection of the best smart city

Table 5 shows the coefficients as the analysis result of questions 7 and 11 by multinomial logistic regression, in which the values marked with an asterisk are significant. The positive value indicates the higher trust in that public authority, the more likely to perceive that specific city as the best developed smart city. From our result, if the interviewees had higher trust in the Hong Kong government or legislative council, they would tend to choose Hong Kong or Shenzhen as the best developed smart city. In contrast with these two cities, Taipei, Tokyo and Seoul would be more likely to be chosen if the interviewees had lower trust in the Hong Kong government or legislative council. Trust in the district council had only a significant influence on Hong Kong. In summary, the higher trust in the Hong Kong government, legislative council and district council leads to the higher possibility of perceiving Hong Kong as the best developed smart city. Therefore, boosting the levels of public trust in these three public authorities might improve the international perception of Hong Kong from the view of local citizens.

The coefficients of correlation in Table 6 show the positive relationships between the trust in those three public authorities and the pride of interviewees. The trust in the Hong Kong government and legislative council had an equally strong positive influence on the levels of interviewees' pride in Hong Kong. While the trust in the district council had a weaker influence than the other two public authorities, the higher trust in the district council could still increase the levels of interviewees' pride. Combining the analysis results of question 7 with questions 11 and 12, hypothesis 3b is true.

In fact, question 7 included five more organisations (locally funded company, Chinese-funded companies, foreign-funded companies, non-governmental organisations [NGOs], public-private partnerships) in the survey, in addition to the three public authorities as the providers of smart-city related services. To compare the differences of trust levels among the organisations, the descriptive statistic of question 7 with all eight organisations is presented in Table 7, where "10" stands for "Trust very much" and "0" stands for "Distrust very much". The direct interpretation of the survey data shows a below mean negative tendency from the interviewees not only for all three public authorities (Hong Kong government, legislative council, district council), but also for the Chinese-funded companies and the public-private partnership. The relatively high values of standard deviation of these five organisations show the diversity of the responses. Since the public-private partnership involves public authorities as one cooperator, the survey result indicated that the levels of public trust of the local citizens in the public authorities were quite low, implying the low levels of local pride.

Unlike Chinese-funded companies which had low levels of trust, locally funded companies and NGOs both had relatively high levels of trust with low values of standard deviation, indicating that local citizens tend to trust these two organisations as the providers of smart city-related services more than the public authorities. Nevertheless, since the discussed urban technologies in this article are limited to the

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Table 5. Trust in Hong Kong public authorities according to perceptions of the best smart city: a multinomial logistic regression (*p < 0.05)

	The best city in the development of smart city (Q11)					
Trust (Q7)	Hong Kong	Singapore	Taipei	Tokyo	Seoul	Shenzhen
Hong Kong government (Q7a)	0.269*	0.027	-0.335*	-0.196*	-0.158*	0.260*
Legislative council (Q7b)	0.233*	0.059	-0.326*	-0.181*	-0.140*	0.245*
District council (Q7c)	0.257*	0.06	-0.039	-0.07	0.091	0

"LeaveHomeSafe" app and smart lampposts, which are both managed by public authorities, we cannot further substantiate the correlation between the levels of trust in private companies or NGOs and the levels of trust in urban technologies.

4.4. The Technology Trust Dimension: Hypothesis 4

To discover the influence of local pride on the acceptance of urban technologies, which is one goal of our analysis, question 12 ["pride in the city"] is analysed with questions 4 and 9 to predict the relationship, as questions 4 and 9 represent the acceptance of "LeaveHomeSafe" app and smart lamppost respectively. Table 8 shows the positive coefficients of correlation, indicating the positive relationships between the local pride of interviewees and the acceptance of these two urban technologies. This supports hypothesis 4: when a Hong Kong citizen is proud of Hong Kong being a top smart city, the citizen also trusts and accepts the urban technologies, which represents, in this case, the usage of the "LeaveHomeSafe" app and implementation of the smart lampposts.

In a short summary, the nine hypotheses under the four angles of investigation are all supported by the survey results, except hypothesis 2e which is only partly true: the Hong Kong citizen is prouder of Hong Kong or Shenzhen if his or her inclined political party is well-represented. One distinct observation from the results of hypothesis 1 and hypothesis 2e is that interviewees choosing Shenzhen as the best-developed smart city tended also to be proud of Hong Kong. This phenomenon could be ostensibly explained by the ongoing integration of Hong Kong and Shenzhen into the Greater Bay Area, creating the impression that the two cities are intertwined with the Guangdong province (Yu 2019: 498).

4.5. Identified Attributes contributing to Local Pride

Considering the groups of interviewees who chose Hong Kong as the best smart city (Q11) and were proud of Hong Kong being the top smart city (Q12), Table 9 concludes the identified common attributes.

The above results indicate that if the Hong Kong citizens possess the five attributes developed above - older age, less educated, retired, from mainland China, pro-establishment camp, - they form a group of citizens that is likely always proud of Hong Kong, and tends to be satisfied with Hong Kong's smart city development in the international comparison.

5. Discussion

From the above analysis involving the two main questions about Hong Kong's international perception and local pride (questions 11 and 12), the theoretical model (see Figure 1) used in section 3 is

Table 6. Correlations between trust in public authorities and pride in Hong Kong (**p < 0.01)

Trust (Q7)	Being proud of Hong Kong (Q12)
Hong Kong government (Q7a)	0.598**
Legislative council (Q7b)	0.543**
District council (Q7c)	0.192**

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Table 7. Trust in the providers of smart city services

Trust (Q7)	Valid number	Missing number	Mean	Standard deviation
Hong Kong Government (Q7a)	794	14	4.6	3.2
Legislative council (Q7b)	776	32	4.1	3.1
District council (Q7c)	784	24	4.5	2.7
Locally funded companies (Q7d)	739	69	5.3	2.4
Chinese-funded companies (Q7e)	763	45	4.2	3.1
Foreign-funded companies (Q7f)	758	50	5.0	2.3
Community organizations and NGOs (Q7g)	772	36	5.4	2.2
Public-private partnerships (Q7h)	782	26	4.7	2.7

substantiated. Since the results of hypotheses 2a to 2e are already interpreted as the attributes contributing to local pride in section 4.5, the model is simplified (see Figure 12).

While the perception of Hong Kong in the international comparison is one of the features associated with local pride in Hong Kong (H1), the levels of supportiveness (H3a) and public trust (H3b) of Hong Kong citizens are also the factors directly influencing local pride, as well as being critical factors affecting the acceptance of urban technologies (H4). In fact, public trust can also be deemed as the underlying factor in improving the international perception of Hong Kong from the view of local citizens (H3b), and thus the levels of supportiveness (H3a). In other words, the enhancement of citizens' trust in the public authorities would be an effective and powerful measure to raise local support for developing Hong Kong into a smart city. Building trust would also favourably influence the acceptance of Hong Kong's development as a smart city and the promotion of the urban technologies that are part of this process. These findings are consistent with the observation in China (Shen and Guo 2012: 136) that national pride and political trust are positively connected.

Regarding the levels of local pride in Hong Kong, a group of Hong Kong citizens with specific attributes is identified, which is always proud of Hong Kong and has high levels of trust in the Hong Kong public authorities. The five attributes are older age, less educated, retired, originally from mainland China, and inclined to the pro-establishment camp (in Table 9). In contrast with those five attributes, it can be surmised that Hong Kong citizens with attributes such as being more educated, students, young, and inclined to the pro-democracy camp are the group with the least pride and have low levels of trust in the Hong Kong public authorities. The analysis raises a phenomenon: interviewees who expressed high levels of local pride, supportiveness and public trust tended to perceive Hong Kong or Shenzhen as the best smart city; interviewees who expressed low levels of local pride, supportiveness and public trust tended to perceive Taipei, Tokyo or Seoul as the best smart city. This finding supports the fact that the Hong Kong government should focus on this opposite group with reverse attributes and identify strategies to regain their trust, such as building meaningful policy narratives and thus effective communications with citizens to ensure the citizen-centric orientation of smart city projects (Cole *et al.* 2023: 102; Hartley 2023: 19).

Comparing this article's findings of Hong Kong with other countries, the situation in Hong Kong is consistent with the general phenomenon: citizens who are older and less educated tend to have higher

Table 8. Correlations between the acceptance of urban technologies and pride in Hong Kong (**$p < 0.01$)

Technologies	Being proud of Hong Kong (Q12)
LeaveHomeSafe (Q4)	0.565**
Smart lamppost (Q9)	0.572**

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Table 9. Demographic markers indicating pride in Hong Kong

Demographic data	Attribute from Q11 (interviewees choosing Hong Kong)	Attribute from Q12 (interviewees being proud of Hong Kong)	Identified attribute
Age (H2a)	Older age	Older age	Older age
Education attainment (H2b)	Less educated	Less educated	Less educated
Occupation (H2c)	Retired	n/a	Retired
Region of birth (H2d)	Mainland China	Mainland China	Mainland China
Political inclination (H2e)	n/a	Pro-establishment camp	Pro-establishment camp

levels of local pride (Chung and Choe 2008: 107; Vlachová 2019: 1009; Wimmer 2017: 624). We attempt to explain this phenomenon in view of the previous literature review. Scholars define pride as a positive, self-conscious emotion promoted by the occurrence of positive events, no matter whether this is an authentic or a hubristic type of pride (Tangney 1999: 559; Tracy and Robins 2007: 148–149; Williams and DeSteno 2008: 1008). In other words, citizens will be proud of their nation if they can attribute their nation's achievements to their abilities or efforts (Tracy and Robins 2004: 194; Williams and DeSteno 2008: 1014). There are two possible explanations for this distance experienced by younger citizens from Hong Kong society. One is situation-specific; younger citizens surveyed in 2021 were less convinced of their nation's achievements than older citizens (on account of the social movement of 2019). However, some scholars suggest there has been a more general generational shift, whereby younger citizens develop complex and nuanced identities, which undermine the prominent identity of a nation and result in a generational decline in national pride. Older citizens also have benefited most from public welfare services, and thus maintained strong attachments to the society throughout their adulthood (Christensen and Lægreid 2005; Tilley and Heath 2007: 674).

6. Conclusion

This article first presents the association of international perception and thus local pride in Hong Kong with local supportiveness and public trust, based on the territory-wide survey regarding Hong Kong

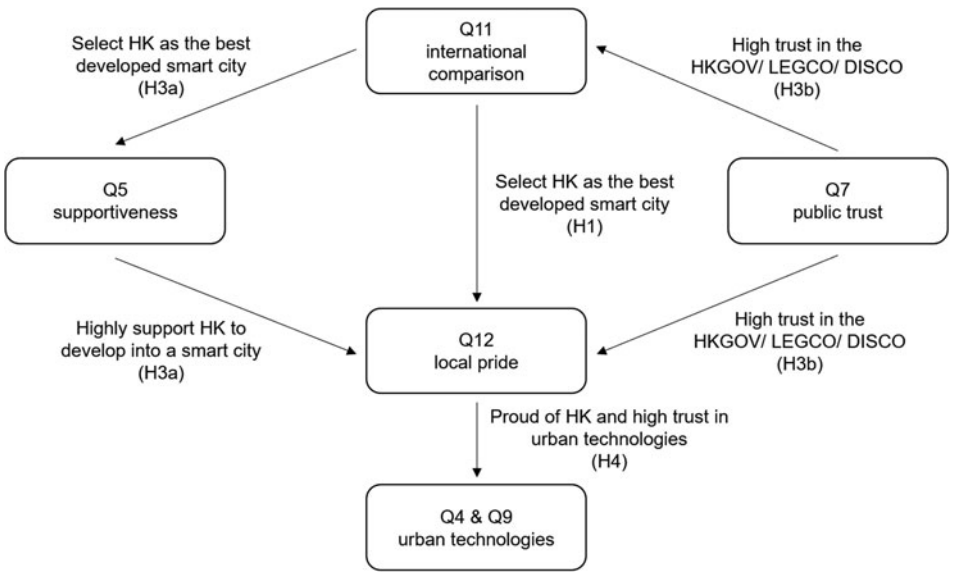

Figure 12. Substantiating the theoretical model

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smart city development in 2021. This article secondly identifies a group of Hong Kong citizens who assuredly supports and trusts the public authorities in Hong Kong, and therefore are always proud of the Hong Kong smart city development and confident in urban technologies. Both results are coherent with the phenomenon in China, Japan and South Korea (Kim 2010: 805; Shen and Guo 2012: 145), and support the underlying interpretation in this article: the higher levels of trust in the public authorities, the higher levels of trust and acceptance of the urban technologies for Hong Kong smart city development, which is correlated with local pride.

This interpretation implies two theoretical assumptions that go beyond the boundary of this case study. Firstly, trust in urban technologies ought logically to be positively correlated with trust in service providers. In this case study, the discussed technologies ("LeaveHomeSafe" app, smart lampposts) are both managed by the government, and it is probable that the low levels of trust in the public authorities explain in part the low acceptance of the urban technologies. Future studies could be focused on the urban technologies provided by private companies and NGOs, and thus investigate the relationship with the levels of trust in the corresponding service providers. Since our survey suggested the levels of trust in locally funded companies and NGOs were relatively higher than that in public authorities, it is probable that the urban technologies provided by these two types of organisations would have higher acceptance by Hong Kong citizens.

Secondly, the positive correlation between public trust, local pride, and hence trust in urban technologies proposed in this article could also assumably be expected in the Asian context. Indeed, this article confirms the importance of contextual analysis. Kim and Kim (2021: 261) expand on their research on national pride and cultural nativism in Southeast Asia and contend that spatial diffusion, the so-called "spill over" effects, could be observed in the Asia region. That is, the foreign culture and characteristic influences from the surrounding context could potentially shape individuals' thinking. Nevertheless, the common phenomenon of Hong Kong, China, Japan and South Korea described in this article cannot substantiate a causal inference. Further studies are required to elucidate the implications.

Smart city development is the current trend of urban transition. Contactless services, e-payment, remote working, mobile applications and e-health systems are prospering thanks to the global health crisis (Das and Zhang 2020: 408; Gade and Aithal 2021; Hassankhani *et al.* 2021). Focusing on the content of Hong Kong, the "LeaveHomeSafe"[1] app is one of the latest urban technologies implemented in Hong Kong to tackle the COVID-19 pandemic. Meanwhile, the survey in this article shows that the acceptance of this technology was polarised correlating to the attributes of the Hong Kong citizens. As this technology claimed to only control the spread of the virus by monitoring the mobility of citizens and was already broadly applied to other places such as San Francisco, Singapore, South Korea, and Milan, we argue the nature of this technology should be less debatable, and yet this technology was still not highly accepted in Hong Kong (Das and Zhang 2020: 194; Hassankhani *et al.* 2021; Kang 2020, 595). Although the current dataset in this article is not enough to judge whether the nature of the technology itself could influence the levels of trust in (acceptance of) that technology, this article attempts to explain this phenomenon (the polarisation of acceptance) by the low levels of (public) trust in the service providers, which are, the Hong Kong government and other public authorities (see Table 7). We presume the trust in the nature of technologies and in the service providers are intertwined. To maintain Hong Kong's performance in this smart city battle, the Hong Kong government, being the main service provider in most urban technologies, should focus on the local citizens, especially with low levels of pride in Hong Kong, to regain their public trust and improve their perception of Hong Kong, efficiently by ensuring the transparency, quality, and security of the implemented urban technologies (Hassankhani *et al.* 2021; Żywiołek and Schiavone 2021).

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Declaration of Interest Statement. The authors report there are no competing interests to declare.

[1]https://www.leavehomesafe.gov.hk/en/

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