Smarter Digital City

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Introduction

- Background and Objective
- Executive Summary & Recommendations

Background and Objective

Competitive Smart City Rankings: A Hong Kong Perspective

TOKYO	77%
SINGAPORE	65%
HONG KONG	59%
SEOUL	48%
SHANGHAI	35%
TAIPEI	16%

Base: n=977, those who are familiar with Smart City,
sourced from n=1000 Hong Kong smartphone users representative

Hong Kong, circa 2017

Hong Kong is one of the most unique cities in the world and an international financial center and global commercial hub nestled between East and West. Hong Kong features the most dramatic skyscraper profile of any city around the world [1] and is ranked first in life expectancy of all world populations [2]. With 7.3 million people and a GDP per capita of over US$ 43,500 per year (ranked 16th in the world [3]), one would expect Hong Kong to be at the forefront of the digital revolution and a quickly evolving digitally-integrated smart city.

This data is important for Hong Kong because digital transformation is a significant driver of growth and a key enabler for Hong Kong's transition to a more innovative economy. The more digitally engaged users are, the more satisfied they will be. The more digitally engaged a business is, the more it will experience higher revenue growth than those that are slower to embrace digitization. The more digitally engaged a city may be, the more productive and smarter that city is.

What is Digital Transformation?

Hong Kong ranked fourth in Asia in digital transformation

When compared to other digital cities around the world, Hong Kong is still in the early stages of digital transformation. With 81% of its population connected to the internet [4], Hong Kong should rank amongst the highest in digital integration. However, a 2016 report by the Economist Intelligence Unit [5] ranked Hong Kong 4th among 11 Asian markets in digital transformation and 3rd among *regional* peers in smart city attributes.

What exactly is digital transformation? When applied to a city-wide transformation, the term describes a process in which old paradigms are transformed through digital technology into a rejuvenated, convenient and efficient "culture" that ubiquitously enhances quality of life and promotes better and smarter living for all its inhabitants.

FOOTNOTE

1 Emporis Ranking of Skyline Impact: https://www.emporis.com/statistics/skyline-ranking
2 United Nations Department of Economic and Social Affairs (29 July 2015)
3 International Monetary Fund, World Economic Outlook Database, April 2017
4 2017 Google/TNS Consumer Barometer Study
5 The Economist: http://connectedfuture.economist.com/article/connecting-capabilities/

What does it take to facilitate an ambitious city-wide digital transformation?

Research themes for transformation: identifying and understanding stakeholders

The key to success in any smart city digital transformation is to understand the needs of its inhabitants. From the business executive to the production line worker, the millennial to the elderly, each individual's needs must be considered if transformation is to become effectively integrated into people's lives.

Digital Integration measures success

"Digital integration" is the standard by which to measure the transformation's usage, effectiveness and pervasiveness, and ultimately, success.

Understanding culture and stakeholders

To accelerate Hong Kong's digital transformation requires an in-depth analysis: its culture, trends, likes and dislikes, expectations, and readiness for integration of the evolving digitally enhanced culture. Individuals, corporations and policymakers are all partners, and each stakeholder has expectations of the other. Ultimately, Hong Kong inhabitants, both individually and collectively, must embrace change and integrate the new digital culture to improve quality of life and mutual success for all stakeholders.

Primary research across 4 key Hong Kong industries representing nearly 50% of GDP

This publication, "Smarter Digital City Whitepaper", identifies some of the most pressing questions and answers surrounding Hong Kong's digital transformation. Together, Nielsen and Google have conducted primary research into Hong Kong's digital usage with deep dive analysis into four key sectors (retail, travel, finance and living) which collectively contribute approximately half of Hong Kong's GDP. The study identifies barriers and pain points and offers both strategic and tactical recommendations for transforming Hong Kong into a "smarter digital city."

Smarter Retail   Smarter Travel   Smarter Finance   Smarter Living

Objectives of the study

While improving quality of living is an important objective, the goal of Hong Kong's smart city digitization and integration process goes well beyond improving life for its citizens. The key short and long-term transformational objectives center on positioning Hong Kong as a global digital leader in order to enhance the city's economic and social growth. This whitepaper is designed to inform and inspire how we can accomplish it together.

Executive Summary and Recommendation

Hong Kong is an increasingly smart digital city, making it more important than ever for talent and businesses to succeed online. Yet, despite Hong Kong's standing as an international business and financial hub, when it comes to online presence and technology adoption, businesses in Hong Kong lag behind their counterparts in Asia. As the digital economy drives opportunity for millions, the strategic question is, "how can we unlock the city's digital potential together?"

The Resident "Consumer"

Hong Kong consumers are not as digitally savvy as they think

Digital transformation for the consumer has largely focused on lower levels of digital savviness such as communication, free entertainment, and information searches. Higher levels include digital activities such as online collaboration, mobile banking, e-business, even VR and AR immersive experiences. In Hong Kong, a huge gap was found between "perceived" and "actual" digital savviness. Consumers perceived themselves to be much more savvy than they actually are.

Trust & security are genuine barriers that must be addressed to support digitization

One of the key challenges in increasing digital savviness is trust. Trust is built upon security, critical in every type of online activity, from converting online purchases, booking travel on smartphones, online personal finance or using smartphones to make payments. Strengthening user trust will be critical to Hong Kong's digital transformation.

High expectations for the digital future

Generally, consumers optimistically expect speedy technological development over the coming 24 months, particularly for those who are already more digitally engaged. As digital integration accelerates, Hong Kong residents will be introduced to new engagement opportunities across many facets of their lives, including voice recognition, wearables, cashless finance, and even digital healthcare services. To participate, consumers expect digital activities to be fun, safe, efficient, and productive.

The "Corporate" Driver

Success is tied to responding in "time of need", yet only 20% consumers are "highly satisfied" with the digital experience

Most companies realize that satisfying the consumer during their "time of need" is the key to success. However, our research found that with respect to their digital experience, only 20% of Hong Kong consumers are currently "highly satisfied." At the same time, we found that "highly digitally engaged consumers" are 3x more likely to be satisfied with digital solutions offered by companies. This suggests that 80% of consumers who with high expectations for change in the next 24 months are highly suitable for companies to target with products and services.

Ignoring the global business environment may leave Hong Kong companies behind

60% of corporates consider "consumer demand" as the primary motivation to drive digitization, while only 26% regard "global business environment" as its main driver.If Hong Kong companies don't quickly improve their capabilities, they may be left behind as more sophisticated players in the region or around the globe gobble up market share.

Commitment to transformation

Most companies are currently spending on digital marketing, website and content development, e-commerce, and CRM. But these investments represent just the digital basics. For the companies who understand that digital is critical to their future, most are already considering to invest in forward-looking technologies to satisfy consumer needs.

Recommendations to Corporate

Reshape the traditional mindset and preempt competition

Hong Kong corporates must emulate the leaders driving the trend of global business development, in technology transformation, business modelling, etc., and change their inherent mindsets to catch up with the times. Resting on their current structures without effectively responding to competition will leave the Hong Kong corporates behind. Instead, companies must leverage newly honed practices as part of a differentiation strategy designed to develop and own the market.

Commitment to transformation

Leadership and company culture must be unwaveringly fixed on successful digital transformation. A key aspect of leadership is in its recognition of immediate challenges and barriers to progress, and responding quickly. To overcome obstacles, leaders and organizations will need to utilize both internal skills and external expertise.

Understand the consumer journey

In the digital consumer universe, it's all about the "consumer journey", that begins with online searching, while building a relationship that leads to interactivity and communication, and ultimately purchasing. Businesses must be able to capture the precious moments when consumers are in need with the capability to understand consumer intent.

Invest in key technologies to boost corporate digital capability

Investments in machine learning and big data analysis, as well as improvements in user trust and UI, are essential for businesses to boost their digital capabilities.

The Government

Digital transformation starts with government, but is for the inhabitants

A smarter digital city is ultimately geared towards both the inhabitants who live, work, and socialize, as well as businesses that provide employment and professional opportunities for the city's inhabitants. To drive towards this goal, government should set policy for change, encourage innovative culture, provide relevant education, and attract business and talent to drive digitization, while providing an open and secure digital environment to engender trust for all stakeholders.

Low awareness of government activities

Today, Hong Kong citizens have a "moderate" level of digital engagement and a relatively low understanding of what the government is doing to promote and build Hong Kong into a smarter digital city.

Recommendations to Policymakers

Stimulate jobs, attract companies and talent, deliver training

To build a smart city, policymakers need to collaborate with industries to develop policies and guidelines that embrace innovation and facilitate digital transformation. At the same time, these policies should strengthen training and education for both professionals and students.

Maintain free and open Internet, support incubators, leverage corporate sector technology

Policymakers also have a role to play in maintaining an open and free internet. Moreover, collaboration is critical to build a smarter city. Policymakers should continue, or even expand their support in incubation and entrepreneurs, that help boost innovation in the city. Meanwhile, corporates and startups often have readily available technology and solutions that government can leverage in cultivating Hong Kong into a smarter digital city.

As we look ahead to build a bright future as a smarter digital city:

? What are the factors that turn Hong Kong into a smarter digital city?

? What opportunities will emerge from a smarter digital city?

? How can businesses and government embrace and adopt new technology?

Hong Kong people, businesses leaders, and policymakers all have a role to play. Together, we can realize the city's potential and opportunities.
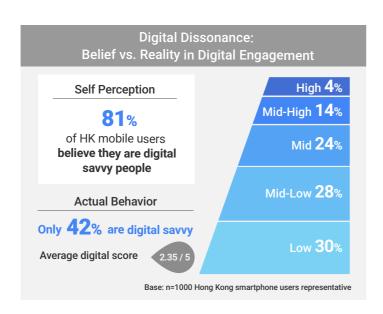
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Consumer Digital Behavior

- Perception vs. Reality of Digitization Level
- Barriers to Overcome
- Smart Industry Analysis & Takeaways

Perception vs. Reality of Digitization Level

**Hong Kong consumer:
all about "trust"**

The city of Hong Kong, a hub of financial power, exists in a high-profile and compact real-estate market with some of the world's most expensive properties, and displays a culture in which trust and conservatism define behavioral norms. Often, in such a conservative culture, dynamic change and transformation might be met with skepticism, caution and a "wait and see" attitude. In fact, Hong Kong's reliance on the financial and real estate industries positions the city as a data and transactions center rather than a creative innovation hub. Yet, despite slow adoption in professional settings, the digital revolution has begun to take root at the personal and social strata with digital communication apps, free mobile entertainment, and products/services improving quality of life.

Many mobile smartphone users meet their basic needs simply for the purposes of staying in touch with social circles. The majority use their smartphones for online research and mapping / navigation. Some use their phones for financial activities such as mobile banking and contactless payments. Many in Hong Kong believe they are truly digital savvy, though in truth, transformation is still in its early stages. These Hong Kong citizens are actually much less "engaged" than they believe themselves to be.

Digital Dissonance: Belief vs. Reality in Digital Engagement

Self Perception

81%
of HK mobile users **believe they are digital savvy people**

High **4%**

Mid-High **14%**

Mid **24%**

Actual Behavior

Only **42%** are digital savvy

Mid-Low **28%**

Average digital score **2.35 / 5**

Low **30%**

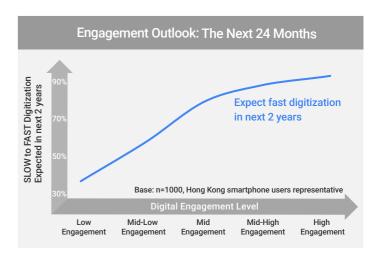Base: n=1000 Hong Kong smartphone users representative

Wide ranges of
mobile applications used by
highly engaged users

For those more highly integrated, advanced smartphone users purchase goods and services, book travel, and utilize translation tools, while younger and more affluent users have integrated products and services on their smartphones, including mobile banking, voice command, online collaboration apps, and food ordering. The more highly engaged users have begun integrating mobile/sharing apps, cashless money transfers, smart wearables, and even fitness gadgets.

Mobile computing for communication and entertainment is just the start, and with higher degrees of integration the benefits can be truly transformative. Hong Kong consumers are generally excited, and those more highly engaged are particularly more optimistic for "fast/very fast" digital transformation.

Engagement Outlook: The Next 24 Months

SLOW to FAST Digitization
Expected in next 2 years

90%

70%

Expect fast digitization
in next 2 years

50%

30%

Base: n=1000, Hong Kong smartphone users representative

Digital Engagement Level

| Low Engagement | Mid-Low Engagement | Mid Engagement | Mid-High Engagement | High Engagement |

20% of consumers are highly satisfied with current digital experiences / expectation for change and innovation are high

The data indicates that currently just 20% of all consumers are "highly satisfied" with their digital experience. Whereas, highly engaged consumers (18%) are three times more likely to be "highly satisfied" with digital transformation than those who are less engaged. Companies that best understand local behavior and intent, particularly for products and services provided locally can win consumer hearts with relevant personalisation and incentives.

Behavioral dynamics: workplace v.s. home

It is critical for marketers to have a strong appreciation of local consumer behaviors, motives, and overall culture. This entails the understanding that individuals at work exhibit a more conservative attitude, however, once the workplace is left behind, the social and home environments are more fun and less conservative. For both behavioral environments, appropriately targeted marketing strategies should be based on building trust. Digital activities in the workplace should center on safety and security, while adaptation of digital conveniences in the non-work environment should be easier and marketers should stimulate trial by emphasizing the convenient and fun aspects of digital utilization. Understanding this dichotomy in attitude will help marketers succeed in building up engagement levels.

Barriers to Overcome

Security, education, and inefficient processes

In a conservative culture, trust and age-related barriers are main issues holding back digital integration. Security concerns and trust go hand in hand, negatively influencing utilization of online banking and contactless payments across all age groups. In particular, for mobile smartphone users aged 55-64, the concern over security with online mobile purchasing is even greater. For companies and brands eager to improve trust with their users, education on security features can help ease fears and allow key demographic groups to quickly recognize the great conveniences of digital integration. Companies should also remove obstacles from the digitization process to improve utilization. For example, digital verifications are sometimes more secure than creating and storing physical paper copies of personal information. Eliminating wasteful activities streamlines the process and helps consumers increase usage and trust.

UI/UX considerations: more meaningful engagement

As retailers focus on enhancing the mobile experience, they will find more meaningful engagement that extends well beyond research and shopping. By engaging shoppers with a dynamic UI, users will take the time to enjoy their purchasing journey, interact with brands, and effectively become a marketer's real-time focus group that efficiently helps determine the best offers and promotions for other shoppers. The personalised mobile experience will turn the exception into the norm, transforming life with greater efficiency and productivity while simultaneously expanding choice and selection.

For marketers, user lifestyles and their need for real-time digital engagement must be considered when attempting to deliver a meaningful experience. Smaller screen and font sizes may prevent users from experiencing the richness of the online retail journey. Marketers should pay close attention to how consumers behave on smaller screens by desiging device-specific content formats, shortening the purchase journey and targeting users based on what they like and dislike, how to shorten the purchase journey, and overall, how to optimise based on device-specific design strategies.

Hong Kong's levels of engagement by consumer age group

Digital Engagement Snapshot

Base: n=1000, Hong Kong smartphone users representative

Millennials are the most digitized, while consumers aged 55-64 are the least. Though millennials are the most highly integrated, most Hong Kong consumers concentrated around mid-level digital engagement, lots of work yet to be done in making Hong Kong a smarter digital city

Industry Analysis & Takeaways

Smarter Retail: Personalization & Customization

Global paradigm of online shopping

Globally, the paradigm for online purchasing is undergoing change, and mobile shoppers are driving the retail economy through digital integration that enhances in-store shopping, rather than replacing it. Mobile research both online and in-store are both necessary steps in e-commerce conversion, and as long as retailers sell products, whether online or at their brick and mortar, digital utilization is critical.

Though preference for brick and mortar, some successes

In general though, Hong Kong lags in e-commerce but local brands are starting to catch up with success stories in home delivery coming from services such as Deliveroo, Foodpanda, Nespresso and others. There is a basic supply-demand equation in Hong Kong that has governed the preference for brick and mortar retail over e-commerce. But it's time to ignore demand and retailers should move more aggressively to supply. As retailers gather more intelligence from their data they will entice shoppers through individualization and deliver to shoppers full control over their purchases.

Today, consumers are conducting more research than ever before and successful retailers are empowering their consumers with relevant information. Consumers use their smartphones (72%) more than their computers (60%) to search and compare products. They have no shyness about conducting research on their phones even while in-store.

Research Behavior within Retail

Prior to Purchase

89% of consumers will research online prior to their purchase

📱 **72%** will research on their smartphones

🖥️ **60%** will research on their computers

In-store

75% of consumers reseach on their smartphones in-store

Base:
n=902, those who made purchase in past 6 months, sourced from n=1000 Hong Kong smartphone users representative

Base:
n=872, those who made in-store purchase in past 6 months, sourced from n=1000 Hong Kong smartphone users representative

What we know from other more mature markets in which digital utilization and integration is high, is that mobile research and product/price comparisons are often precursors to deeper integration concurrent with the transition towards mobile shopping.

Consumers adopt new technologies and move faster than many CEOs. Digitization is part of modernization, powered by new technology, communications etc. Consumers' online demand is too huge to fulfill by the providers.

Ricky Wong
Chairman, HKTV and HKTVmall

In this digital age in which buyers have so many choices and have become fickle, retailers who deliver great mobile experiences build trust, stickiness, and ultimately their bottom line. Meanwhile, mobile shoppers expect the digital store to be more than just a sales outlet, they want personalized experiences and customized shopping capabilities. As consumer individualization grows, retailers must crunch the numbers to provide their marketers with the most relevant information from which to devise loyalty strategies.

Consumers own and influence our brands more than ever. We own the products and services so we must be there to help the consumer grow and nurture our brand, not just sell them a "thing". We need to provide an experience whether it is a lifestyle or idea and be there to support the consumer and to think about what the consumer needs or wants before they do. It is more important than ever to have a relationship with the consumer by having conversations with them not just a single campaign where we talk to them. This is where digital is crucial.

Kevin Bush
General Manager, Danone Hong Kong

Key Takeaways for Smarter Retail

Search dominates: building the elements for conversion

Consumers search in every environment, online, offline, in-store, from all their devices. It's the function upon which all online retail activities are built. The key to converting shoppers into buyers goes beyond just selling, necessitating a better understanding of what it takes to build trust and build relationships beyond a simple transaction.

Delivering value to consumers at their critical "time of need"

Leveraging emerging technology to gather, analyze, and distill knowledge of consumer behaviors, marketers can drill through personal behaviors and intentions to develop the personalized incentives to respond to consumers in their time of need, when decisions are made and purchasing is likely to happen. Individualizing the digital experience is how online retailers will remain top-of-mind and relevant.

Beyond selling: building trust and relationships

Matching the digital experience to the shopper's level of integration is essential. Understanding their patterns, intentions, and behaviors guides personalized offers, and with a better understanding of how to respond to consumers, retailers will build trust and extend client relationships beyond selling. Building trust translates to loyalty which is perhaps the most important currency in the digital age filled with countless options and a bombardment of information.

Innovation model for the future: proactive boldness over reacting to demand

Be bold! Be daring! While everyone else reacts to consumer demand, successful retailers create demand. Whether through new selling paradigms, smarter incentives, more personalizations, or a UI that engages in new and more exciting ways, think big and let your creativity drive innovation.

Smarter Travel:
Reality improved through mobile computing

A fully disrupted industry

The travel industry has been disrupted and revolutionized by digital integration. Travel agents are no longer main factors in the purchase process, and consequently, prices have dropped yielding reduced margins. In response, hotels and airlines are embracing new technologies to differentiate themselves from aggregators who bundle air, hotel, cars, and other services.

Travelers have full control of choice, planning and purchasing

Mobile Smart Travel gives travelers full control over every facet of their travel experience. Today, nearly every traveler utilizes online research to save time, cost, and hassle. Online research also places the power and control of choice, planning and purchasing into the hands of the consumer. From booking to checking status, changing plans, even exploring local spots and directions, seventy percent (70%) travelers use their smartphones for travel-related activities during their trip.

Most Common Mobile Travel Activities

98%
of travelers rely on obtaining travel information online **BEFORE trip**
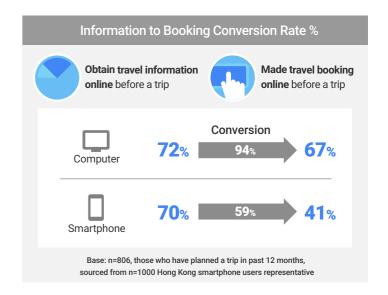
72%
Computer

70%
Smartphone

Key activities on smartphone **BEFORE trip**

43%
Checked in to flight

41%
Made travel booking

41%
Managed and used loyalty card / membership program

Key activities on smartphone **DURING trip**

75%
Navigation

70%
Obtain additional information

Base: n=806, those who have planned a trip in past 12 months, sourced from n=1000 Hong Kong smartphone users representative

Higher levels of digital engagement translates into proactive travel support. When a traveler arrives at their destination, pop-up recommendations for destinations of interest will drive further interest and action. When selected, the traveler is provided navigation assistance by the most efficient route. If a traveler arrives at a restaurant, food reviews are delivered to help tired travelers order quickly. Ultimately, Smarter Travel is like an intimate personal assistant, assisting travelers in making the smartest decisions while saving important information for future convenience.

Interestingly, we see different behavior and results from computer versus smartphone users which is mainly due to user interface friendliness. Our research shows that there is much higher conversion rate (94%) when consumers are booking via computers, as compared to smartphone (59%). However, that is contradictory to the high usage and time spent on smartphone. Businesses in travel sector must capture the missed opportunities on mobile on which people spent the most time and attention. It is critical for businesses to create easy-to-use UI, and enjoyable mobile experiences, that will translate into better researching-purchasing conversion rates.

Information to Booking Conversion Rate %

Obtain travel information online before a trip

Made travel booking online before a trip

Computer **72%** → Conversion **94%** → **67%**

Smartphone **70%** → **59%** → **41%**

Base: n=806, those who have planned a trip in past 12 months, sourced from n=1000 Hong Kong smartphone users representative

With the plethora of travel sites, airlines, destinations and advisors, marketers must turn to new approaches to attract customers. Leveraging the easy access and vast selection available to travelers, marketers are devising digital strategies to deliver personalized recommendations, and often highly attractive prices. From seat selection to individualized loyalty programs, travel companies investing in individualization can develop unique and highly specific offers. For example, for the Hong Kong traveler headed on an international shopping spree, airlines might offer destination-specific promotions with standard outbound bag checking service but incentivize travelers with a luggage allowance for their gift-filled bags on their return flight.

> *Digital really helps to put travel information in the hands of travelers, which gives them a wider spectrum of choices and equips them to make more informed choices. Digital is therefore very empowering for the traveler. Digital also increases access to travel and removes a lot of complexity in the booking process. Travelers are intelligent individuals, let's give them the information to enable their empowerment and personalization.*

Andrew Cowen
Group CEO and Director, Hong Kong Express

Government support is crucial in advancing smarter travel - whether it is open data friendliness or advocacy work.

"Smarter travel" is all about personalization and empowerment. Consumers will continue to expect this kind of empowerment allowing them the convenience of totally personalized solutions from flights to local activities. To keep up with the surge in Smarter Travel, policymakers should encourage open data, for example, in public transportation, traffic, flight information, mapping information while promoting industry innovation.

Key Takeaways for Smarter Travel

The power of mobile

The travel industry is inherently personalized. With the expectation that every traveler will use mobile to search travel information, Hong Kong travel companies will need to focus on UI/UX (device specific) to convert researchers to buyers through personalized experiences that meet needs "in the moment" and that add value to the travel experience. As mobile users see improvements in UI, conversion from searching to buying will increase, with mobile ultimately growing into an integral component of the entire "smarter travel journey".

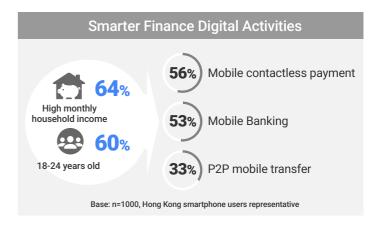**Companies must understand the consumer's "Travel Journey"**

Companies must fully understand traveler needs from the first search through every facet of the travel experience in order to deliver meaningful personalized recommendations, offers, and incentives. Through machine learning and big data analytics,companies can isolate the individual elements that enhance both the travel and the digital experiences.Understanding individual patterns of behavior allows new options to be delivered to travelers in the moment of need thereby improving on the expectations of their physical travel experience without overwhelming them with irrelevant information or options.

Empowering smart decision making

The goal of Smarter Travel goes beyond any individual function and is all about empowering travelers by delivering relevant information for informed, efficient, and smart decisions. An empowering travel site that becomes a one-stop-shop for everything travel-related builds trust and loyalty. Evolving into a smart travel assistant is what differentiates the travel "partner" from the travel "seller".

Smarter Finance:
Trust, Security, and Personal Management

When online banking emerged in the 80's, customers were given live access to their funds and it revolutionized how people thought about and used money. As the financial capital of Asia, Hong Kong should be leading in finance-related digital integration, however, the slow adoption rates of mobile banking is holding up the degree of digital transformation to significantly improve quality of life. Hong Kong's population hold banks and banking in high regard (and most have bank accounts). There is plenty of opportunity ahead as currently half of Hong Kong mobile subscribers use mobile banking. To improve utilization, banks can better educate and promote the conveniences and security of the mobile banking experience.

For marketers, opportunity is good news and research has shown that consumers who try mobile payments become comfortable and will likely continue to use it.

Smarter Finance Digital Activities

64% High monthly household income

60% 18-24 years old

56% Mobile contactless payment

53% Mobile Banking

33% P2P mobile transfer

Base: n=1000, Hong Kong smartphone users representative

> *Trust is the strength of Hong Kong. Taking fintech as an example, we have a high reputation in infrastructure and as an international financial hub. With trust from businesses worldwide, innovation in finance and investment is expected to flourish. Same applies to service industries like tourism and trading.*

Dr. David Chung Wai-keung
Under Secretary for Innovation and Technology, HKSAR Government

Contactless payment is gaining popularity

Hong Kong is a strongly customer-driven market and one of the early movers, Octopus, has been well-received and is widely used by Hong Kong inhabitants. Today, 91% of Hong Kong mobile consumers use a blend of their services (65% - card, 34% - phone) for contactless payments. While gaining in popularity, other forms of mobile payments still lag behind Octopus.

What is P2P payment? 30% of Hong Kong consumers have no idea

P2P (peer-to-peer) mobile transfers have only attracted 33% of mobile users. Clearly, education and mobile friendly UIs are necessary to build trust. Today, 30% of the population say they don't know what P2P is.

Security, education and personalization

Companies in Hong Kong need to move quickly to build trust and showcase the benefits to incentivize and stimulate adoption. The focus should be on security education, transparency, and simplicity. Similar to the other vertical industries, personalization and focus on UI and UX in the financial sector is vital. Instead of being fragmented, digitization should be embedded in the customer journey from end-to-end in order to truly understand and enhance the overall customer experience.

Data analysis helps push smarter finance forward

Additionally, with managing data being crucial to all industries, we find this to be even more relevant in Smarter Finance in which all the key institutions are digitally connected, machine language and big data analysis combined with Iot applications can be easily deployed. With the correct technology, companies have opportunities to individualize and personalize the banking experience for its customers.

> *Customers today have unique needs and more options to choose their preferred touch points (phone, in person, website, social, apps etc). Often they switch from one touch point to another for the same transaction. They demand something that is "for me" instead of a general product or service. So, getting detailed customer insights and predict their preferences by leveraging big data is critical to simplify and personalize your solutions.*

Mukesh Pilania
Asia Region Head-Transversal Customer Experience, AXA

With connectivity amongst all key institutions, machine language and data analysis allows for personalization

Beyond the mobile payment platforms, the Insurance industry will also see vast improvements in service, trust, policy purchases, and renewals by giving clients digital access and utilizing mobile tech to enhance service. From immediate claims and payments on car accidents backed by on-site smartphone pictures with embedded geolocation, to loans against life insurance policies, consumers will see the insurance industry in a positive light, breathing new life into an industry that until now has had little integration into daily life.

Smarter Finance and the Hong Kong Insurance industry

Over the coming years, payment and insurance providers will work hard to debunk fears over security through better education and incentivizing mobile users with a variety of offers and promotions. Proven world-class technologies such as 2-step verifications will simplify and streamline many current inefficient processes that leave consumers frustrated.

Key Takeaways for Smarter Finance

Understanding the customer journey, build trust

Managing personal finances can be tricky and scary. Companies must fully appreciate the full scope of the customer journey beginning with need, stalling with fears and concerns, and the crucial elements that help potential customers to overcome their fears and give their trust (and money). Trust can be built with a well-executed, simple and straightforward UI focused on delivering a safe and secure user experience, bolstered with education and transparency of personal information usage. A holistic end-to-end view of the process should replace the urge to focus narrowly on just the selling portion.

When it comes to money, people will feel more comfortable in trusting when they don't feel like just a numbered client in a cold and impersonal digital world. Individualized digital marketing delivered through big data analysis will allow "Smarter Finance" companies to capture insights about their clients and help deliver relevant information necessary for customers to utilize digital financial services.

Unfortunately, Hong Kong companies are severely underestimating the importance of cybersecurity as the cornerstone of any trust-building strategy. Companies will spend only 7-9% of their IT budgets on cybersecurity.These are important investments to protect and build trust with existing customers, as well as to improve conversion of prospective customers. With personalization and management of highly sensitive data, investments in cybersecurity will help companies strengthen their customer relationships, build trust, and balance the benefits of personalization with the concerns of personal intrusion.

Smarter Living:
Quality of Life, A Digital Revolution

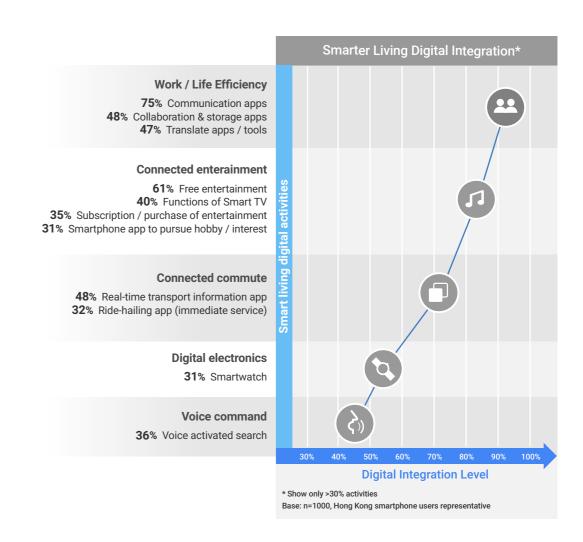**Digital transformation is everywhere**

The age of mass personalization is upon us and the ability to control our environments from mobile devices has arrived. From digital TV to voice activated appliances, integration supports relationships, keeps us safe, entertains us with content from all over the world, and helps us collaborate in ways we are still devising.

Digital living in Hong Kong

Currently, many Hong Kong citizens have already embraced the benefits of digital engagement. Though this has primarily been at lower levels of digital engagement, we foresee that demand and interest in digital living will increase, especially as people realize the benefits in important personal areas including health and time management, finances, and overall quality of life.

New levels of engagement over the next 24 months

The next few years will usher in even higher levels of engagement for the average Hong Kong citizen with digital healthcare, service sharing, and auto-centric voice command. The day has arrived and digital convenience is a necessity. Collaboration apps, voice command, smart gadgets for sport, health, and fitness, VR/ AR technology, and even smart TV are all examples of the revolutions through smart living.

Smarter Living Digital Integration*

Work / Life Efficiency
75% Communication apps
48% Collaboration & storage apps
47% Translate apps / tools

Connected enterainment
61% Free entertainment
40% Functions of Smart TV
35% Subscription / purchase of entertainment
31% Smartphone app to pursue hobby / interest

Connected commute
48% Real-time transport information app
32% Ride-hailing app (immediate service)

Digital electronics
31% Smartwatch

Voice command
36% Voice activated search

Smart living digital activities

30% 40% 50% 60% 70% 80% 90% 100%

Digital Integration Level

* Show only >30% activities
Base: n=1000, Hong Kong smartphone users representative

Integrate Digital living & Consumer journey

Hong Kong is a well developed and connected city filled with easily accessible stores. With the broad range of businesses operating in a dense geography, marketers are faced with the challenge of building awareness and attracting customers in the crowded spaces, both online and offline. Companies delivering smart lifestyle products and services are looking to better understand the "journey" of customer intent and preference so that they can improve their offerings for Hong Kong inhabitants in their moment of need. The importance of data analytics is crucial for the Smarter Living industry to navigate through the complexity of the customer journey.

Education and trust leads to trial and usage

Trust is always a core fundamental in any business transaction. In the Smarter Living space, Hong Kong dwellers particularly care about authenticity and security of personal data, which means businesses should pay more attention to education on their products and services. From a basis of trust, companies more effectively incentivize strategies to convert "trial" into ongoing usage.

Loyalty & stickiness emerging from understanding consumer experience

As consumers recognize the benefits of digital living, the challenge for industry leaders and digital pioneers will be to continually focus on customer experience and personalization, while reassuring consumers about personal data security. Delivering value, fun, and efficiency through products and services that enhance life and improve on the individual's sense of self-fulfillment will differentiate the next great thing from the average.

" *For consumers it's almost like the best experience becomes the new baseline, becomes the new standard. There is almost this quest for mass personalization, so everybody is a customer segment of one. You don't just have residential customers and small, medium and large business, but an individual person. Their expectation levels are rising and as a result, companies that are seamless to deal with will increase in customer satisfaction and in profitability, market share and so on.* "

Leader of an energy company

Key Takeaways for Smarter Living

Understanding the Smarter Living journey

Hong Kong inhabitant expectation for digital transformation is high. From products to services, demand will grow and companies must clearly understand the "Smarter City Inhabitant Journey" that extends across a multitude of activities from housing to shopping and all aspects that make living in a smart city a benefit. The mindset should be not only hinge on satisfying current demand but also seizing unmet needs. The journey may begin with a new resident, or it might be a lifelong journey. Smarter living is personal!

Building trust in the smart city

For the pipeline of newly emerging products and services in the Smart Living industry, companies must build trust through personalized digital interactions that can scale to the millions. This can only be effectively delivered with "smart" investments in machine learning and big data analytics. Particular care should be taken to protect the privacy of individuals in relation to their personal data throughout the entire data lifecycle, from collection and use, to eventual destruction.

Educating on features and benefits

Products and services must offer clearly articulated benefits, and the efficiencies must be real. As only 20% of consumers feel that companies are delivering on high transformative initiatives, companies must create and execute realistic digital marketing campaigns highlighting the benefits of Smart Living and the myriad products and services that are already available to improve quality of life.

3

The Role of Hong Kong Corporate

- Current State of Digitization
- Reasons for Digitization
- Success Factors & Roadblocks

Current State of Digitization

Hong Kong companies today are faced with a dilemma. On the one hand, they almost completely agree that digital is critical to success, yet, just over half are, at best, gradually embracing technology. The corporate dissonance between recognition and execution must be corrected immediately if digital transformation is to be successful.

State of Hong Kong Corporate Digitization Transformation

95% Companies see digital as critical to their business success

52% Companies at best, gradually embrace the latest digital technology

Base: n=101, all interviewed corporates

Businesses must develop and execute effective digital plans, otherwise risk failure. 79% of companies are managing digital projects with 51% of them also planning additional projects. Only 28% are "significantly" planning to spend on digitization over the next two years.

An interesting outcome of our research suggests that investments made by the 79% of companies who are managing digital projects are primarily focused on "obvious" digital activities such as marketing and digital content development, e-commerce, and customer relationship management. Conversely, fewer companies are making investments in newer and more relevant technologies including big data/analytics, machine learning, and other digital initiatives that are crucial to personalizing consumer relationships and driving digital utilization.

Current Digital Engagement Level

Base: n=101, all interviewed corporates

Unfortunately, over a fifth of companies in HK are **not** actively engaged in digital transformation.

- No digital plan **2%**
- Some conversations about digital plan only **5%**
- Have planned digital projects but not started **14%**

Managing digital projects and planning new digital initiatives **51%**

Managing digital projects but not planning new **28%**

Key Digital Initiatives Pursued*

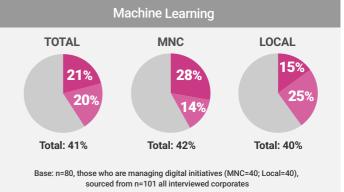|	
86% Digital marketing activities	**56%** Big data / data analytics
79% Corporate Website development	**55%** App development
74% Digital content creation	**44%** Cashless payment technology
73% E-commerce	**44%** Cloud computing
65% Consumer relationship management	**41%** Cybersecurity
60% Systems automation	**21%** Machine learning

*Show only >20% activities
Base: n=80, those who are managing digital initiatives, sourced from n=101 all interviewed corporates

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Companies in Hong Kong are catching up to MNCs in big data spending

Differentiating between Hong Kong's larger MNCs and smaller local businesses focused on investing in "big data" (56% of all businesses): 68% multinational businesses (MNCs) while only 45% local companies are investing now. However, this disparity is set to change as local companies are catching up, with an additional 33% of those local companies planning to invest more in the future.

Big Data and Machine Learning
How MNCs and Local companies are investing now and future

■ Current ■ Future

Big data

TOTAL	MNC	LOCAL
24% / 56%	14% / 68%	33% / 45%
Total: 80%	**Total: 82%**	**Total: 78%**

Base: n=80, those who are managing digital initiatives (MNC=40; Local=40), sourced from n=101 all interviewed corporates

Machine Learning

TOTAL	MNC	LOCAL
21% / 20%	28% / 14%	15% / 25%
Total: 41%	**Total: 42%**	**Total: 40%**

Base: n=80, those who are managing digital initiatives (MNC=40; Local=40), sourced from n=101 all interviewed corporates

Machine learning helps businesses make the most of their work, and explore new frontiers

Local companies seem to have a strong desire to invest in machine learning, with 25% of the companies planning for the future. Embracing and adopting technology helps advance their businesses and explore new frontiers in their respective industries. We have seen some proof points of how machine learning helps companies and organizations make the most of their work with, for example, the use of natural language APIs, image recognition, and cloud technology to boost business capabilities.

Quality and relevant information lead to concrete actions

The signals and intents derived from comprehensive data analysis will help inform businesses how to best optimize customer engagement and make better predictions and projections. With the potential for millions of signals expressed in just a few minutes, businesses should focus on retaining skillful talents and partners. Companies should nurture data analysts, marketers, engineers, designers, and others who can make sense of data and translate them into actionable insights. Management should support the entrepreneurial mindset to conduct sandbox experiments and formulate strategies for concrete actions backed by data and business acumen.

The more we have automation, the more time we can spend on analyzing data that comes out of it, and transform that from Information to Insights to Implication and Activation. So I come back to: it's about building relationships with the consumer, through relevant conversations based on listening and understanding what they are saying and doing.

Kevin Bush
General Manager, Danone Hong Kong

Companies use digital tools to improve process, build trust around their brand

We see companies in Retail, Travel, Finance and Living verticals that understand the importance of digital transformation. Data and digital tools have improved the way they communicate with and motivate their customers. These companies provide their customers with relevant and useful information and products at the time of need, facilitating meaningful search results and offering advice, while building love and trust around their brand.

"It's a fine line that we balance between ensuring consumers are not overwhelmed by a large amount of information, but at the same time providing them with personalized choices without invading their privacy. That's challenging,
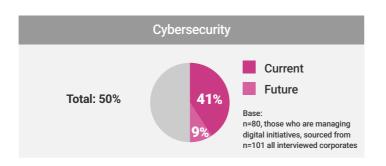
Andrew Cowen
Group CEO and Director, Hong Kong Express

To address issues of privacy, cybersecurity provides a cornerstone of trust to support digital transformation

It is not surprising that people care about their personal data and privacy. Our research reflects consumers' focus on this issue. To build user trust for their brands, and digitization overall, businesses must ensure that data collection is compliant with international laws and policies.

Furthermore, businesses should examine their cybersecurity investments. Currently, only four out of ten companies say they are actively investing in this area, with an incremental increase of 9% in the next 2 years. With most of the activities and transactions occurring on mobile and the internet, businesses need to prioritize cybersecurity in their digital investment agendas.
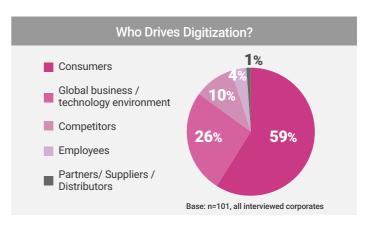
Today vs. Future: % of Companies Investing Resources in Cybersecurity

Cybersecurity

Total: 50%

- **Current**
- **Future**

41%

9%

Base:
n=80, those who are managing digital initiatives, sourced from n=101 all interviewed corporates

Reasons for Digitization

Satisfying consumers motivates companies to digitize

Almost 60% of Hong Kong companies recognize that Consumer demand drives digitization, more so than the pressures of the global business environment (26%). Hong Kong companies understand that consumers matter most and that no other factor comes close.

Who Drives Digitization?

- Consumers
- Global business / technology environment
- Competitors
- Employees
- Partners/ Suppliers / Distributors

1%
4%
10%
26%
59%

Base: n=101, all interviewed corporates

Most consumers are not "highly" satisfied

To transform a customer's experience beyond the selling paradigm requires an emotional engagement, especially during the customer's time of need. This was a key finding consistent amongst all companies and particularly apparent for those that are digitally proactive (vs. reactive or playing catch-up with competitors).

However, despite the importance of consumer demand, companies are failing at digital execution on the supply side. Companies are aware of the fact that only one in five consumers say that they are highly satisfied with their digital experience. Since "highly" digitally engaged customers are three times more likely to be satisfied with digital solutions, it is vital for companies to improve their digital offerings. So what can companies do to improve their digital offerings and engage their consumers?

Digital Engagement - A Measure of Satisfaction

✓ Consumers with high digital engagement, are **3X** more likely to be satisfied with digital solutions offered by corporates

✗ Only **1/5** consumers are highly satisfied with their digital experience

Base: n=101, all interviewed corporates

"
The other thing about the experience is to just to make it easy to interact with companies, make it easy to find the information, make it easy to find the products, make it easy to get the answers. I think in general, people are quite capable now to help themselves, so we need to help them to help themselves.
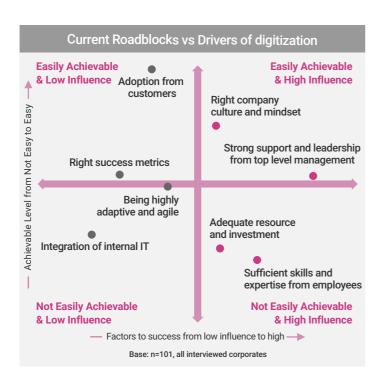"

Leader from an energy company

Companies who move quickly to deliver an enjoyable digital journey will capture the market from those who are slow adopters

The second most important rationale for digitization behind consumer demand, is global business environment" (26%). Against the backdrop of the fast-changing business environment mainly driven by technology advancement and increasing digital consumer activities, companies who are ignoring digital transformation or slow in adopting technology will inevitably lose out to more sophisticated competitors vying for the Hong Kong consumer, especially those from China.

To offset this threat, smart and agile-aspiring Hong Kong companies must quickly catch up to experienced global competitors in developing technological sophistication while leveraging competitive advantages in demonstrating deep insights and knowledge of the Hong Kong market and its consumers. Hong Kong companies can then win the hearts and minds of Hong Kong inhabitants by delivering the best and most relevant digital experiences informed by consumer insights and data. By investing in data analysis along with digital marketing, companies can dramatically and quickly increase corporate capability to scale up operations and expand reach.

Success Factors & Roadblocks

When considering the most important elements in digital integration, the greater predictor of success is strong, committed digital leadership. Corporate leaders must continually stay committed to change. Company culture flows from leadership and is also a critical factor. Having the right talent and experience is also crucial, followed a company's ability to deploy adequate resources towards digitization.

Current Roadblocks vs Drivers of digitization

Easily Achievable & Low Influence
Adoption from customers

Easily Achievable & High Influence
Right company culture and mindset

Strong support and leadership from top level management

Right success metrics

Being highly adaptive and agile

Integration of internal IT

Adequate resource and investment

Sufficient skills and expertise from employees

Not Easily Achievable & Low Influence

Not Easily Achievable & High Influence

Achievable Level from Not Easy to Easy

Factors to success from low influence to high

Base: n=101, all interviewed corporates

Several key influential factors are the company's talents, skill set, knowledge, infrastructure, and support from shareholders and management team. There should also be a clear objective and developmental roadmap.

Rita Li
Sales and Marketing Director, Octopus

Corporate leaders need to stay committed

Today, around 80% of corporations have digitization leadership, and 88% of them are C-suite roles. Among those companies with highly influential digital leaders, 83% are continuously seeking new digital initiatives comparedto 37% for those with less influential digital leadership.

Innovative culture need to be planted down to the root

57% of Hong Kong companies feel their industry is being "highly" driven by "high" digital innovation. Yet more than half of the companies only gradually embrace the latest technologies. For companies to excel as digitization progresses from lower to higher levels, companies must build, sustain, and exhibit a culture that drives innovation with constant focus towards ever higher degrees of integration.

Talent development plan and training program are crucial

Both a success factor and a barrier, attracting talent and skills development can make or break a company. Corporate should promote and encourage learning culture, and have incentives and training programs to grow their digital talents. In the long run, this will benefit businesses in their digital transformation journey. Whether through aggressive hiring practices to attract outside talent or internal training programs and education to retain employees, companies should invest in better packages and incentives. Employees undergoing or supporting digital transformation expect to be treated as the precious asset they are and effective investments in this area are shown to have profitable and organizationally beneficial long-term benefits.
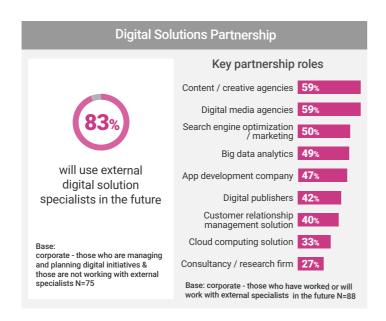
Companies must reinforce new digital skill training so that employees don't feel left behind

However, internal barriers also exist wherein employee fears of being left behind and becoming irrelevant are very real. In turn, this can have a devastating impact on how companies transform. Many companies understand that transformation at the top must be accompanied with managing change that includes the entire workforce. With digital marketing, content creation, and CRM representing key activities of the digital company, even at lower level of digital integration (for example big data, machine learning and virtual reality at higher levels), training and development is essential.

While we attract new talent for specific new skills, we also heavily focus on up-skilling existing employees with the latest trends and technology. People are core to our business and we make dedicated investment to develop our employees with a mix of classroom and online training programs.

Mukesh Pilania
Asia Region Head-Transversal Customer Experience, AXA

Internal talents plus strategic partnership accelerate corporate digital transformation

Corporate decision-makers also recognize that extending organizational success past great talent entails collaboration with organizations at the forefront of innovation. With the pace of digital change and the intensity of competition, companies must look for internal and external expertise, for example, companies may want to train-up digital marketers while partnering with external data analysts and machine learning engineers to maximise efficiency and impact. Strategic partnerships and alliances can help companies move faster through their transformational journey. This strategy enables companies to be agile and highly responsive to a fast-changing landscape.

Select external digital specialists who appreciate your company's culture

Companies must strike a balance in growing internal capabilities and seeking external digital expertise. When partnering with external digital specialists, internal talent should be trained with new digital skills to facilitate integration. This will help build the digital and innovative mindset as part of the company's DNA.

Digital Solutions Partnership

83%

will use external digital solution specialists in the future

Base:
corporate - those who are managing and planning digital initiatives & those are not working with external specialists N=75

Key partnership roles

Role	%
Content / creative agencies	59%
Digital media agencies	59%
Search engine optimization / marketing	50%
Big data analytics	49%
App development company	47%
Digital publishers	42%
Customer relationship management solution	40%
Cloud computing solution	33%
Consultancy / research firm	27%

Base: corporate - those who have worked or will work with external specialists in the future N=88
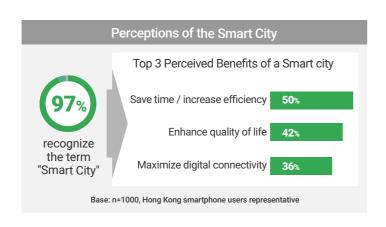
> *Technology changes so fast these days. If you try to create a future-proof solution for your digital information in 2 years' time, it is redundant. So that's the big challenge for anybody who is trying to plan ahead.*

Brett Free
Deputy Director, Information Services Department, HKSAR Government

4

Public Perception about "Smart" Hong Kong
- The Role of Policymakers in Driving a Smarter Hong Kong

Low current perception
of Hong Kong as
a "smart city"

A smart city can be reflected by its constituents' strong engagement with digital activities (efficiency, quality of life and connectivity). In 2017, just one in five Hong Kong city dwellers ranked Hong Kong as 1st in smart city among Asian Markets. Hong Kong is, on the whole, very convenient from a digital infrastructure standpoint, so the gap exists within the inhabitant's online experience and their understanding of the city's efforts to develop a smarter Hong Kong.

Perceptions of the Smart City

97% recognize the term "Smart City"

Top 3 Perceived Benefits of a Smart city

Save time / increase efficiency **50%**

Enhance quality of life **42%**

Maximize digital connectivity **36%**

Base: n=1000, Hong Kong smartphone users representative

Education and
communication help improve
perception of government
support for a smart city

As we examine the roles of consumers and corporations in building Hong Kong into a smarter digital city, government plays a critical role with respect to its underlying policies, initiatives, and vision that prioritizes and fosters innovation and digitization. Currently, just one in five Hong Kongers say that the Hong Kong Government offers a significant amount of support in making Hong Kong a smarter city. Government can begin closing this gap through education and communication.

> *Government involvement should be significant if one wants Hong Kong to become a smart city. The government needs to take the lead to educate the public. The public is lacking awareness of the benefits of adopting digital solutions. We have no confidence in these new solutions because we are lacking knowledge.*

Consumer, Aged 35-54

> *First of all, the government has to take the lead on digital transformation and to develop the market for both local SME and larger scale companies. It involves a lot of deregulation in so many aspects, and you can't procrastinate. There isn't that much funding that is needed from the government. But even when there is funding from government, usually it lacks flexibility.*

Charles Mok
Legislative Councillor, I.T. Functional Constituency

The Role of Policymakers
in Driving a Smarter Hong Kong

Building Hong Kong's future

Policymakers are enablers and stakeholders in Hong Kong's smarter digital city future. Reflecting on the gap between where the city is and where it is trying to go. Below are some recommendations for policymakers to consider:

1 Develop digital talent and attract digital corporations

2 Maintain a free and open Internet

3 Promote proven best practices on security

4 Invest in incubators and entrepreneurs

5 Leverage corporate sector technologies

" *At present, Hong Kong is already very convenient from an infrastructure standpoint, so the issue is more to do with current digital initiatives not really delivering a much more convenient consumption experience than existing offline services.* "

Charles Mok
Legislative Councillor, I.T. Functional Constituency

Smarter digital city transformation requires training and education

Policymakers should evolve Hong Kong's education system to develop home-grown digital talent. This involves supporting skills development from early education to ongoing skills training in the workforce. For education in high school and university, incentives could be offered to students to focus on coding, engineering, data analysis, design, and many other key functional and computational thinking skillsets that are in high demand in the growing smarter digital city. Emphasis on interdisciplinary learning could help practitioners think creatively in solving modern complex problems.

Attract talents and digitally-focused companies

Developing a digital talent ecosystem also requires attracting digitally-focused MNCs and supporting digital-first SMEs. MNCs bring with them international best practices and technologies that serve as skill transfer mechanisms for local talent, many of whom build on what they've learned and launch local start-ups. Digitally-focused SMEs will also be trailblazers in this new environment and train staff who may become future entrepreneurs.

" *[Government should] create good jobs in the market to drive, support, and sustain digitization. The first [strategy] is attracting MNCs to Hong Kong. MNCs can help train the talents we need, so that these talents can stay and further develop the digital initiatives here.* "

Charles Mok
Legislative Councillor, I.T. Functional Constituency

Maintain a free and open Internet

Online and offline, a key strength of Hong Kong is its free flow of information. Maintaining a policy of free and open internet will help the city function as a hub for digital infrastructure, allow content creators to thrive, and build user trust.

Government can collaborate with industry to promote security best practices

Hong Kong citizens are optimistic about future digital development, but still have concerns, particularly around digital security. The government can build trust and support digital transformation by reiterating to citizens the benefits of digitization while promoting the use of security best practices such as two-factor authentication.

Expand investments in incubators

Policymakers should build on its incubation policies and support programs to quicken the pace for adopting newly emerging technologies. Support for passionate entrepreneurs is critical. Very often they are the drivers of innovation, creating new markets and solutions which, if channeled correctly, can help numerous industries in Hong Kong become more competitive. The government should not only provide grants and incubation programs, but develop a longer-term policy and vision to ensure that the entrepreneurial spirit and digital skills are built into the DNA of Hong Kong's next generation.

" *It comes down to an old saying 'you either move forward or backwards'. When the whole world moves towards digitalization and we don't, we will be left behind.* "

Maria Lam
Chief Corporate Development Officer, Cyberport

Leverage corporate sector technologies

Policymakers should leverage corporate sector technology beginning with understanding citizens' online queries to improve their own online portals and apps. Moving into higher level of digital integration, policymakers should consider deploying smart cloud services, such as using machine learning-driven speech recognition and translation to serve a multilingual population. Furthermore, policymakers should support open data initiatives to encourage innovation; making public data available and machine readable will encourage developers and incubators to think creatively addressing and solving problems for Hong Kong citizens.

5

Resource

- Methodology
- The 'Voices' of the Digital Experts and the Team

Methodology

This publication is a comprehensive research undertaken about Hong Kong on the subject of digitization and smart city, bringing together the detailed views of consumers, corporate, and policymakers.

1	2	3	4	5
Consumer Explore	**Consumer Deep Dive**	**Corporate & Policymaker**	**Corporate**	**Corporate & Policymaker Review**
Focus groups	Online quantitative survey	In-depth interviews	Online quantitative survey	Fine-tune

In order to have a holistic understanding of consumer, corporate, and government, this study has used extensive primary research via the following steps:

Step 1: Consumer Qualitative Focus Groups

To start with, Nielsen conducted 4 consumer focus groups, each with 6 participants*. The focus group discussions were conducted for two hours and separated by age: 1 focus group for ages 16-21, 2 focus groups for ages 22-33, and 1 focus group for those aged 35-54.

Inclusion criteria:
● Must be part of the smartphone population
● Minimum monthly household income of HKD $25,000
● High or Mid-low digital engagement based on: numbers of digital devices, frequency of usage of digital devices, and self-claimed attitudes towards technology solutions

Step 2: Consumer Deep Dive Survey

Nielsen conducted a 20 minute online survey with 1,000 Hong Kong consumers. The following parameters were set amongst the consumer population group:

- Demographic representation of smartphone populations in Hong Kong
- The survey allowed for natural fallout of the current level of digital engagement

Step 3: Corporate & Policymaker In-depth Interviews

In step three, Nielsen invited 8 corporate & 4 policy leaders from Hong Kong to provide their views on the challenges and opportunities of digitization in their field of expertise. The consumer insights/findings from steps 1 & 2 were also shared and discussed during the interview. Eight interviews were conducted face-to-face for approximately 60 minutes each. Two interviews were conducted over the phone for approximately 30 minutes each. In-depth interviews were conducted with the following:

- 8 leaders equally split from Retail, Travel, Finance, and Living verticals.
- 2 officials from Government, 1 legislator from Legislative Council and 1 leader from Hong Kong Cyberport Management Company Limited.

Step 4: Corporate Deep Dive Survey

In step four, Nielsen reached out to 101 corporate leaders in Hong Kong to deep dive into their digitization perspectives. Corporate respondents were comprised of Nielsen & Google contacts as well as other third party networks who were willing to participate in the study.

Natural fallout resulted in the following representation:
- Representative from verticals of Retail, Travel, Finance, and Living.
- 57 C-level participants and 44 B-level participants
- General management: 37, Marketing: 24, Digital team: 15, IT: 15 and Sales: 10

Step 5: Corporate & Government Recap

In step five, Nielsen held a final round of interviews with 4 thought leaders, including 3 corporate leaders and 1 representative from Legislative Council. In this recap session, Nielsen, Google & the thought leaders discussed the findings and recommendations from Steps 1 through 4, with the goal of gathering additional insights to finalize and conclude our research. Each interview lasted approximately 60 minutes.

DIGITAL SCORE CALCULATION

As part of the consumer quantitative study, a Consumer Digital engagement score was created. This was calculated by assessing consumers' actual behavior and usage across a wide range of mainstream, emerging, and more innovative digital activities. This allows for a better understanding of consumers' true digital engagement, rather than relying on a consumer's self-assessment regarding their digital savviness. Steps for calculating the digital engagement score are as follows:

Step 1: Categorize digital activities

As part of the consumer survey, all 1000 participants were shown a pre-defined list of digital activities. These activities were classified into 3 categories: "mainstream", "early adoption" and "evolutionary". Mainstream activities, being used by the majority of participants, while early adoption and evolutionary activities are still in the forefront of adoption.

Mainstream | Early Adoption | Evolutionary

Step 2: Calculate digital score of each respondent based on actual participation in digital activities

X 1 point + X 2 point + X 3 point = Points awarded (score) to the respondents

In step two, Nielsen calculated the digital score of each respondent based on their participation in each digital item. Scores are calculated by awarding a point value to each participant based on their engagement across all digital activities. The point value assigned is dependent on the category of the activity in which mainstream activities have a lower score whereas evolutionary activities have the highest score. The sum of all points awarded per participant determines their total digital score number.

Step 3: Define digital engagement level of each respondent

Low Engagement
<20% of total score achieved

Mid-Low Engagement
20%-40% of total score achieved

Mid Engagement
40%-60% of total score achieved

Mid-High Engagement
60%-80% of total score achieved

High Engagement
80%-100% of total score achieved

Based on the digital scores achieved in the previous step, Nielsen further arranged participants into 5 digital engagement levels according to the ratio of their individual digital score versus the highest total score possible. The engagement levels that participants were classified into are:

● High, Mid-high, Mid, Mid-low, & Low engagement.

Step 4: Calculate Hong Kong digital score based on the proportion of engagement level

% X 1   % X 3   Hong Kong DIGITAL SCORE
% X 2   % X 4 = 2.35 / 5
         % X 5

Looking at the proportion of all 1000 participants across the 5 engagement levels allows us to know the digital score in Hong Kong as a whole.

The 'voices' of
the digital experts and key contributors

The 'voices' of the digital experts

Google and Nielsen would like to sincerely thank the 101 corporate respondents from retail, finance, travel, living verticals for their participation in online survey.

We also wish to extend special thanks, in particular, to the following Hong Kong business leaders and government representatives for their valuable time and feedback:

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Information Technology, CLP Power Hong Kong Ltd

Andrew Cowen - Group CEO and Director
Hong Kong Express

Brett Free - Deputy Director
Information and Services Department, HKSAR Government

Charles Mok - Legislative Councillor
I.T. Functional Constituency

Dr David Chung Wai-keung - Under Secretary for Information and Technology
HKSAR Government

Kevin Bush - General Manager
Danone Hong Kong

Maria Lam - Chief Corporate Development Officer
Cyberport

Mukesh Pilania - Asia Region Head
Transversal Customer Experience, AXA

Ricky Wong - Chairman
HKTV and HKTVmall

Rita Li - Sales and Marketing Director
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