消費者委員會
CONSUMER COUNCIL

FOSTERING CONSUMER TRUST — ETHICAL ARTIFICIAL INTELLIGENCE IN E-COMMERCE
道德與信心共融　促進電子商務人工智能發展

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Contents

Abbreviations

14th Five-Year Plan	The Fourteenth Five-Year Plan for the National Economic and Social Development and the Long-Range Objectives Through the Year 2035 (Mainland China)
ACCC	Australian Competition and Consumer Commission
AI	Artificial Intelligence
AI Act	Proposal for a Regulation Laying down Harmonised Rules on Artificial Intelligence (EU)
AI HLEG	High-Level Expert Group on AI (EU)
AI4E/AI4K/AI4S	AI Literacy Improvement Programme: AI for Everyone/Kids/Students (Singapore)
AI4EU	European AI on Demand Platform
APAC	Asia-Pacific
AR	Augmented Reality
ArchSD	Architectural Services Department (Hong Kong)
ASTRI	Hong Kong Applied Science and Technology Research Institute
BEUC	The European Consumer Organisation
C&SD	Census and Statistics Department (Hong Kong)
CAC	Cyberspace Administration of China
CCMF	Cyberport Creative Micro Fund (Hong Kong)
CI	Consumers International
CIFAR	Canadian Institute for Advanced Research
CMA	Competition and Markets Authority (UK)
CSIS	Centre for Strategic and International Studies (US)
Cyberport	Hong Kong Cyberport Management Company Limited
DCIA	Digital Charter Implementation Act (Canada)
DMA	Digital Markets Act (EU)
DPPs	Data Protection Principles (Hong Kong)
EC	European Commission
EPIC	Electronic Privacy Information Centre (US)
EU	European Union
FCA	Financial Conduct Authority (UK)
Fintech	Financial Technology
FLAIR	Hong Kong Industrial Artificial Intelligence and Robotics Centre
FTC	Federal Trade Commission (US)
G20	Group of Twenty, an intergovernmental forum comprising 19 countries and the EU
GBA	Guangdong-Hong Kong-Macao Greater Bay Area
GDPR	General Data Protection Regulation (EU)
GPAI	Global Partnership on Artificial Intelligence
GPT-3	Generative Pre-trained Transformer 3
HKMA	Hong Kong Monetary Authority
HKPC	Hong Kong Productivity Council
HKSTP	Hong Kong Science and Technology Parks Corporation
HSITP	Hong Kong-Shenzhen Innovation and Technology Park
I&T	Innovation and Technology
i4Policy	Innovation for Policy Foundation
ICO	Information Commissioner's Office (UK)
ICT	Information and Communications Technology
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IEEE-SA	IEEE Standards Association
IMD	International Institute for Management Development
IMDA	Infocomm Media Development Authority (Singapore)

IoT	Internet of Things
ISED	Department of Innovation, Science and Economic Development (Canada)
ISO	International Organisation for Standardisation
IT	Information Technology
ITB	Innovation and Technology Bureau (Hong Kong)
ITC	Innovation and Technology Commission (Hong Kong)
ITF	Innovation and Technology Fund (Hong Kong)
ITIB	Innovation, Technology and Industry Bureau (Hong Kong)
METI	Ministry of Economy, Trade and Industry (Japan)
MIIT	Ministry of Industry and Information Technology (Mainland China)
ML	Machine Learning
MOST	Ministry of Science and Technology (Mainland China)
MSIP	Ministry of Science, ICT and Future Planning (South Korea)
NGIT	New-generation Information Technology
NIST	National Institute of Standards and Technology (US)
NLG	Natural Language Generation
NSF	National Science Foundation (US)
OECD	Organisation for Economic Co-operation and Development
Ofcom	Office of Communications (UK)
OGCIO	Office of the Government Chief Information Officer (Hong Kong)
OPC	Office of the Privacy Commissioner of Canada
PCPD	Office of the Privacy Commissioner for Personal Data (Hong Kong)
PDPC	Personal Data Protection Commission (Singapore)
PDPO	Personal Data (Privacy) Ordinance (Hong Kong)
PIPL	Personal Information Protection Law (Mainland China)
R&D	Research and Development
RCEP	Regional Comprehensive Economic Partnership
RIE 2020/2025	Research, Innovation and Enterprise 2020/2025 Plan (Singapore)
SFC	Securities and Futures Commission (Hong Kong)
SMEs	Small and Medium-sized Enterprises
STEM	Science, Technology, Engineering, and Mathematics
TCFS	Guangdong-Hong Kong Technology Cooperation Funding Scheme
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
US	United States
WEF	World Economic Forum
WIPO	World Intellectual Property Organisation
WTO	World Trade Organisation

Online Content

All websites and electronically available materials referenced in this Report were last accessed on 31 July 2022.

This Report can be downloaded from www.consumer.org.hk.
In case of any update, the latest version shall prevail.

Executive Summary

Promotion of Consumer Protection under the Irreversible AI Trend

With the wide adoption of Internet-connected devices and advancement of cloud computing technologies, artificial intelligence (AI) has become a mainstream technology today. Currently, there is no widely accepted definition of AI. AI generally refers to a family of technologies that involve the use of computer programmes and machines to mimic the problem-solving and decision-making capabilities of human beings. AI-related technologies are still evolving, and more new applications will likely emerge.

In recent years, the development of AI has expanded rapidly from academic research to commercialisation. Traders have increasingly leveraged AI to save costs, to enhance operational efficiency, and to generate new business insights to fuel growth. With no doubt, AI brings benefits to the society on different aspects, and it is well recognised as an irreversible trend to enable transformation in many countries around the world. E-commerce is one of the key markets that adopt AI widely.

Yet, there are also inherent risks related to AI which might affect consumers and the society. Traders might extract consumers' personal data online at a low cost, and use the data with AI algorithms at the back-end operations for their own benefits, which might result in significant implications for consumers in terms of product pricing, choices, and search results. For example, personalised pricing could turn to be a practice of price discrimination against an individual consumer; biased rankings and fake reviews generated by AI could manipulate consumers' choices. These might distort market competition and harm consumers. **From a consumer protection perspective, the imbalance between consumers and traders in terms of information possession and bargaining power in this digital era must be addressed.**

The Study

In Hong Kong, as e-commerce blossomed on the Internet, online shopping has become Hong Kong consumers' daily activity, particularly after two years staying at home to fight against the pandemic. While the adoption of AI in e-commerce is growing fast, AI-associated risks are also increasingly evident. Acknowledging the importance of studying the topic, the Consumer Council (the Council) conducted a study on the use of AI in E-commerce in Hong Kong, titled "**Fostering Consumer Trust – Ethical AI in Hong Kong**" (the Study). The Study aims to identify key issues concerning consumer rights when traders use AI, and to propose recommendations for consideration of the HKSAR Government (the Government), traders, and consumers. The Council believes that the findings of the Study could offer clear directions on strengthening the digital governance in Hong Kong, especially in the field of AI usage, and advocate meaningful measures in safeguarding the interests of consumers.

The scope of the Study is confined to B2C e-commerce, excluding banking services and insurance products. The Study took a mixed-method approach comprising a quantitative online consumer survey; review of popular e-commerce platforms (AI applications and public information on websites); in-depth interviews with e-commerce traders, technology providers and industry experts in Hong Kong; desk research on guidelines, initiatives and standards about the use of AI in selected jurisdictions, as well as related consumer issues around the globe.

In the course of the research, the Council encountered challenges in securing interviews – apart from difficulty in arranging interviews due to the pandemic, traders' hesitation in sharing their experience with the Council was another obstacle as some of them considered AI strategies a sensitive topic. Furthermore, given some AI applications could be powered by AI, rule-based programmes, or both simultaneously, the Council could not verify whether consumers' experience of using such applications were really related to AI in the consumer survey. The Council could only provide case scenarios to guide consumers before they provided responses.

Consumers' Perception in AI and Privacy Protection

Revealed by the Council's online quantitative consumer survey of 1,219 respondents in Hong Kong (aged 15 or above who have visited local or non-local e-commerce websites), local consumers are quite active in e-commerce. 77% of the respondents visited or made purchases at online stores on either a daily or a weekly basis. Yet, **consumers' familiarity with AI is still low** – up to 75% of the respondents were unfamiliar with it. Some consumers remain sceptical and conservative at the current stage when it comes to their attitude towards AI. In terms of their AI tool using experience, only 57% agreed that AI helped reduce their time spent in choosing products, 41% agreed that AI addressed their needs accurately, and 31% agreed that they trusted AI. Although traders' adoption of AI has been more common, there are still a lot of rooms to improve to reach a high level of consumer satisfaction with AI.

The majority reflected that they had worries and concerns about how traders adopt AI. 74% of the respondents said that they were worried about the excessive data collection of traders, while 72% were worried that if AI algorithms went wrong, no one will be responsible for the problems caused. Besides, information transparency and the choices to opt in and opt out are important in the eyes of consumers. 78% hoped traders to inform them about the use of AI, while 81% of the respondents urged to have the right to opt for the use of AI tools. Consumers thought that there should be clear disclosure on the risks and ways to avoid them.

The consumer survey also reflected that 74% of the respondents had the view that AI would become more popular in Hong Kong in the next five years. In general, 77% of the respondents agreed that more education on AI was needed.

Notwithstanding consumers' concerns about cybersecurity and privacy protection, they do not act cautiously in practice when shopping online. For instance, nearly 60% of the respondents had never read privacy policies at online stores or did not know what privacy policies were, and 27% of them simply neglected the cookie consent messages that popped up from the platforms they visited without choosing whether to accept or decline traders' tracking. To change their online shopping habits, consumer education is indispensable.

Furthermore, among those who had read privacy policies before, 43% of them had terminated browsing an online store, mainly because they found too much of their information would be gathered, too many third-party organisations would receive their personal data and the number of purposes for which their data was collected was excessive. Consumers stopping browsing a website after assessing the risks involved is an effective way to protect themselves.

The Council identified four consumer segments pertaining to their perception of AI, i.e. supportive users, prudent users, unready users and unfavourable users. Different actions and education efforts shall be taken to empower their self-protection ability when encountering and embracing different AI tools.
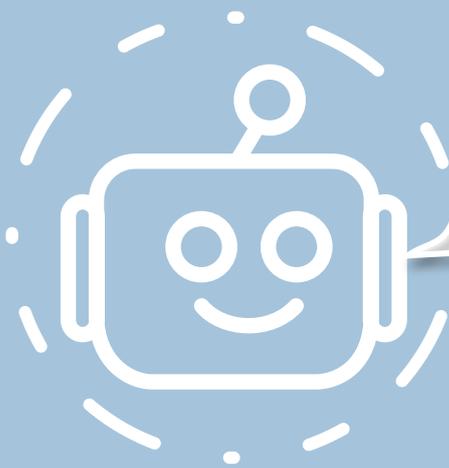
Consumers' Perception and Behaviour

Perception

No/Little Knowledge   Quite/Very Familiar

75%	**Familiarity with AI**	24%

Disagree/Strongly Disagree   Agree/Strongly Agree

39%	**I trust AI**	31%
65%	**I prefer AI to direct human contact**	21%
36%	**Willing to shop at online stores that adopt AI**	33%
25%	**AI helps reduce my time spent in choosing products**	57%
36%	**AI addresses my needs accurately**	41%
13%	**AI will become more popular in Hong Kong in the next 5 years**	74%
43%	**The adoption of AI is well regulated in Hong Kong currently**	34%

Note: The data above does not necessarily add up to 100% as other options like "No opinion" and "Don't know" are not included.

Experience of Using AI Tools

	Product Recommendation	Chatbot	Advanced Biometrics	Augmented Reality (AR)
Usage	89%	75%	55%	32%
Feel improvement brought by the tool	56%	38%	73%	74%
Mind providing information to use the tool	38%	48%	39%	38%

Regarding AI and Data Collection

Demands

81% Online stores can let me choose whether or not to use AI tools

78% Online stores can inform me when they are using AI to provide services

77% More education and promotion about AI are needed in Hong Kong

Top 3 Measures for Increasing Confidence in AI
1. Online stores to increase the security and privacy protection level
2. Online stores to establish a complaint mechanism for dispute resolution
3. Government to strengthen the monitoring of e-commerce market

Worries & Concerns

74% Online stores will collect too much personal information from me when adopting AI

74% Somebody may abuse the use of AI and generate risk to me

72% If AI algorithms go wrong, no one will be responsible for the problems caused

Top 3 Concerned Aspects about AI
1. Cybersecurity
2. Privacy Protection
3. Accuracy

Habit of Reading Privacy Policies and Managing Cookies

60% never read or did not know privacy policies
1. Too lengthy and wordy
2. Trader can gather personal information online no matter I read the privacy policies or not
3. Hard to understand

Privacy Policy

43% stopped browsing an online store after reading its privacy policy due to worries
1. Collect too much personal information
2. Data would be transferred to too many third-party organisations
3. Too many purposes of collecting personal information

27% ignored cookie consent messages

Cookie Policy
Accept

Source: Consumer Survey

Consumers' Experience

Among the four AI applications surveyed, i.e. product recommendation, chatbots, advanced biometrics and augmented reality (AR), product recommendation was the most popular, with 89% of the respondents having used it before. Chatbots (75%), advanced biometrics (55%) and AR (32%) came after.

In terms of consumer satisfaction, the satisfaction with AR (74%) and advanced biometrics (73%) was relatively higher, the authentic experience offered and the stable performance might respectively explain their high ratings. They were then followed by product recommendation (56%). **Chatbots' reception was the lowest**; only 38% of its users deemed it improved their shopping journey. Consumers' discontent with the inaccuracy of chatbots might be a reason.

Respondents have different degrees of mindfulness of providing personal data to use the four AI applications. Chatbots were the function that respondents were the most cautious about (48%), followed by advanced biometrics (39%), AR (38%) and product recommendation (38%).

Traders' Information Disclosure

Among the 112 e-commerce platforms reviewed by the Council, most traders (90%) under review informed consumers about their ways and purposes of data collection, and types of data collected. However, there were just six reviewed traders mentioned the training of AI or machine learning as their purpose of data collection. Moreover, 6% to 10% of reviewed traders would also collect data about employment status, marital status, income and education, which might be considered excessive. Certain information that worth consumers' attention was not easily available on many reviewed e-commerce platforms. For example, only 41% mentioned they would anonymise the data before using it for data analytics; only 17% were specific about the data retention period. Regarding the rights of consumers, merely 42% informed consumers how to reject data collection, and just 39% specified how consumers could opt out of cookie tracking. The findings reflected that **if consumers want to shop on trader's online store, they are "forced" to agree with traders' terms and cannot opt out if they want to continue the purchase. This could undermine consumers' rights and autonomy.**

Roles of Traders

In the 19 in-depth interviews with e-commerce traders, technology providers and industry experts, interviewees opined that **the adoption of AI in Hong Kong is still at an early development stage.** They graded the current AI development in Hong Kong 4.9 out of 10 on average, where a score of 10 refers to extremely advanced development. The interviewees expressed that currently, many traders in Hong Kong have a mindset of using AI for saving costs and enhancing efficiency, but not yet as a differentiator to generate new income. Moreover, traders encountered challenges while adopting AI, such as the scarcity of talents, insufficient financial resources, etc. **Traders in general are not yet fully knowledgeable about AI, and thus the senior management might not be able to realise the benefits of AI at strategic level, and its ethical aspects.**

Interviewed traders also reflected that in Hong Kong, the e-commerce market was rather small and there was limited data that could be used for AI model training. The source and variety of

open data are not yet enough and ready for companies to use. The problem was even more serious for small and medium-sized enterprises (SMEs), and thus might affect their long-term competitiveness in the market. In general, most interviewed traders reflected an insufficient understanding on AI and called for more education and support for AI adoption.

Roles and Opinions of Stakeholders

Amid the pandemic, the Government has been actively promoting the development of digital economy. The Government has constructed various digital infrastructure projects, and adopted the open data policy to encourage innovative applications in the market. Under the "Smart City Blueprint for Hong Kong 2.0", the Government sets out initiatives under six smart areas to take forward the development of smart city and digitalisation in Hong Kong. Various Government bureaux/departments have started working on initiatives to promote the adoption of AI. Meanwhile, the Hong Kong Science and Technology Parks Corporation (HKSTP), the Hong Kong Cyberport Management Company Limited (Cyberport), the Hong Kong Productivity Council (HKPC) and Hong Kong Applied Science and Technology Research Institute (ASTRI) have been providing support in strengthening the application of AI and digital transformation among local enterprises.

The Council has engaged with stakeholders to collect and exchange views on approaches to enable the development of responsible and ethical use of AI in e-commerce. Some stakeholders pointed out that for long, the Government has been investing resources in innovation and deep technologies, and they hoped that more resources could be dedicated to the application of such technologies for the industry.

While the Government has been putting many efforts and resources in opening more data, stakeholders also opined that the e-commerce industry can also contribute and make collective efforts to encourage traders to open up their own data and share with one another to facilitate the growth of AI. Realising Hong Kong is rather a small market and data for AI model training could be insufficient, industry players can make use of other unstructured data, such as speech and image data, to train their AI models, or they can consider forming partnership with other traders or universities, locally or internationally.

Under the new normal, there is a growing trend of building more efficient regional and digital supply chains. Hong Kong should ride on this opportunity to develop its own digital strategy while integrating with the city's unique strength in smart logistic and supply chain management. At the same time, with the close relationship with the Mainland, Hong Kong can take the advantage of cooperating with Mainland partners to facilitate its own development in the digital market.

Currently, established AI guidelines were mainly found in the financial sectors in Hong Kong. For other industries, stakeholders and traders expressed that a **cross-bureau cooperation in establishing a unique, integrated and holistic digital strategy for Hong Kong is crucial**. The Digital Economy Development Committee newly established in June 2022 would be an important step for Hong Kong to establish its own digital strategy with efforts from different bureaux and departments and in collaboration with the business sector.

Traders' Adoption of AI

Information Disclosure

Data Collection

Ways of Data Collection

>90% revealed how they would collect personal data.

Types of Data Collected

>85% would collect basic information for transaction (e.g. name, email address, phone number and residential address).

6–10% would collect data about employment, marital status, income and education, which might be excessive.

Purposes of Data Collection

99% mentioned the purposes.

Only six traders mentioned the collection of data for the training of AI or ML.

Views

Insufficient funding

Blurred responsibility between traders and technology providers

AI adoption in e-commerce in Hong Kong is still at an early development stage

Lack of high-quality data

Talent scarcity

Not yet established a company AI policy

Some perceived data policies as AI policies

Not yet fully knowledgeable about AI

Data Processing and Handling

Data Anonymisation

41% mentioned they would anonymise the data before using it.

Data Transfer

87% specified to whom they would transfer the data.

69% informed about cross-border data transfer.

Data Retention

17% specified the data retention period.

Security Measures

44% specified the cybersecurity measures they took.

Name

Age

Address

Occupation

Payment Method

Rights of Consumers
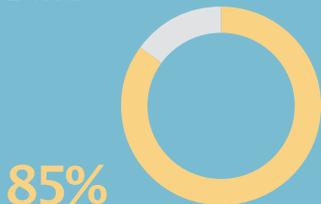
Access and Correct Data

85%

informed consumers how to access and correct data

Decline Data Collection

42%

informed consumers how to reject data collection

Decline the Use of Cookies

39%
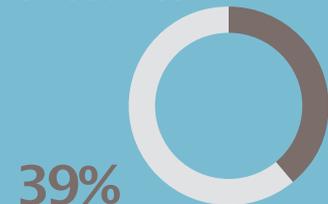
specified how consumers could opt out of cookie tracking

Source: Privacy Policy Content Analysis

Demands to the Government

- Establish a unique, integrated and holistic digital strategy
- Attract and nurture AI talents
- Increase funding to support AI projects to commercialise
- Extend data resources and enable data sharing among traders
- Provide more training for traders

Learnings from Other Jurisdictions

While AI is expected to bring tremendous opportunities for economic development, over 160 sets of AI principles were introduced by various international organisations to mitigate the risks consumers might face. The common themes across all these AI principles for governments, business organisations, and technology developers to follow include accountability, human oversight, transparency and interpretability, data privacy, fairness, beneficial AI, reliability, robustness and security.

Ten jurisdictions reviewed in the Study adopted different approaches when governing development of AI, according to their distinct market characteristics, cultural background and national priorities. Some of these jurisdictions put the focus on technology research and innovation, while others emphasise on economic development or infrastructure establishment. **Some jurisdictions have even put forward initiatives for traders to pursue ethical use of AI, covering national AI strategies, guidance, frameworks, or even regulations. Some have made dedicated efforts in consumer education to promote AI literacy among the public.**

For example, the Mainland focuses on regulating the use of algorithms specifically. Effective from March 2022, the "Administrative Provisions on Algorithm Recommendation of Internet Information Services" seeks to regulate algorithms, especially those that will be employed for recommendation purposes such as in online stores, search filters, or social media. On the other hand, the EU adopts a risk-based approach in its proposed AI Act in April 2021, which bans specific uses of AI with unacceptable risks, and heavily regulates some other uses that carry high risks. Both the Mainland and the EU have incorporated profiling and automated decision-making of data users in their data privacy laws for better consumer protection, allowing consumers to have the right not to be subject to a decision based solely on automated processing. Japan and South Korea conducted regular surveys on the status of consumers' understanding of AI. Singapore focused on the public education to increase AI literacy. Different jurisdictions have been investing in nurturing talents facing the global shortage of AI talents. They also provided various support to foster traders to take-up AI effectively.

When AI has become an even more important enabler of digital and economic development, the Government can make reference to these governing experiences in other jurisdictions to pave the path for Hong Kong to develop the city's own governing framework on AI.

Council's Recommendations

The irreversible rise of AI is projected to bring a huge change to the society, no matter in the global or local marketplace. With an aim to develop Hong Kong into a world-class smart city and to spark economic growth, the Government has been investing in new technologies and infrastructure, and fostering partnerships to accelerate the digital transformation. In line with this policy direction, the Council supports the use of AI as it can bring benefits to consumers, yet it is also necessary to mitigate the associated risks with AI to safeguard consumer interests. By empowering consumers and mitigating the AI-associated risks with them, motivating traders to adopt good trade practices when adopting AI, and urging the Government to strengthen digital governance, it is hoped that **responsible and ethical use of AI in the e-commerce market can be realised, and thus consumer trust can be fostered**.

Actions for Consumers

Be a Smart Consumer

As reflected in the consumer survey, consumers have not yet developed habits to protect their own personal data, which might be exposed to the abusive use by unscrupulous traders. Cultivating good online shopping habits is the first and immediate step consumers can take to protect their own rights. The Council suggests seven practical and simple tips for consumers to protect themselves when shopping online.

Tips for Consumers
1. **Choose the right e-commerce platform** • Shop on secure and trustworthy platforms, e.g. those that adopt a high standard in security measures, and offer a clear and easily accessible dispute resolution mechanism as part of their customer care services. • Make it a habit to always read data privacy policies and T&Cs, and review traders' purposes of collecting and using your personal data from time to time, especially when using the services of new platforms. 2. **Pay attention to website updates** • Read thoroughly the pop-up notices, news and updates when entering a platform; make ensure you understand and agree with the changes or announcements before shopping and confirming your order. 3. **Make the best decision against tracking** • Read cookie consent requests carefully, and decide cautiously the extent to which you allow traders to track your information, e.g. cookies, locations, browsing histories, or feed you with advertisements and promotions. 4. **Provide adequate information only** • Ensure the amount of information you provide to traders is reasonably adequate and not excessive for their purposes of data collection while registering membership or making transactions. 5. **Keep a good record of membership accounts** • Record properly the platforms which you hold an account in or have provided information to; review the record regularly and delete accounts when necessary. 6. **Check privacy settings regularly** • Check your account preference and browser settings related to privacy and tracking technologies regularly. 7. **Exercise your rights against automated decisions when needed** • Ask for explanations and/or file complaints whenever you spot any unreasonable automated decisions made for you.

Actions for Traders

Adopt the Checklist of Best Practices to Formulate Company AI Policy and Governance

Traders' adoption of AI in e-commerce is still at an early stage of development and can be far more strategic if they have better understanding of AI and more assistance in meeting the challenges. Currently, they mainly use AI as a supplementary tool for them to save costs and

enhance efficiency. It is the right time for them to formulate a holistic strategy on AI at company level, and adopt the best industry practices to foster consumer trust and to fuel sustainable business growth.

Checklist of Best Practices for AI
1. **Formulate a clear company policy on AI, data usage and storage with good compliance and disclosure** • Traders can consider (1) inclusive growth and sustainable development; (2) fairness; (3) transparency and explainability; (4) robustness, security and safety for their company policy.
2. **Dedicate resources for AI development with clear accountability, e.g. appointing a person to be accountable for the ethical use of AI** • Centralised or decentralised approaches could be considered depending on the risks of the AI systems. • There should be a unit or a person to steer the company policy direction on AI, to coordinate internal resources to ensure the compliance and ethical standards, and to ensure clear accountability.
3. **Validate AI models before deployment** • AI models should be well validated before deployment. Traders should conduct risk assessments and human oversight at an appropriate level.
4. **Ensure consumers' data is handled in a safe and secure manner to protect consumers' data privacy** • Traders should inform consumers about their security measures and data handling procedures. • Proper documentation of the handling of data should be in place to ensure that the quality and security of data are well maintained over time.
5. **Communicate with staff and ensure they follow the ethical standards of AI** • Management should define the objectives clearly and provide clear guidance to help analytics team build and use AI responsibly. All staff should understand and follow the same standard set. • Management should provide AI training courses for staff so that they can learn how to practise ethical AI applications.
6. **Foster communication with consumers** • Traders should disclose their AI policies to consumers and provide a feedback mechanism to receive consumer comments for engagement and enhancement.
7. **Provide choices for consumers to choose whether to use AI** • Traders should let consumers choose options that best suit their needs, and the options should be easily accessible.
8. **Clarify clear responsibility between traders and third-party technology providers, and ensure data is handled and transformed safely and ethically** • Both parties need to decide who should be responsible for maintenance of AI systems, and ensuring the data collected from consumers is handled and transferred securely and ethically.

Establish a "Consumer Charter" to Protect Consumers

A fair and transparent practice from traders can help build trust from consumers. Otherwise, it would be difficult for them to gain any traction in the market. Yet, many SMEs might have limited resources to establish their own set of AI policies, thus, the Council suggests industry associations and leading traders develop a "Consumer Charter" as guidance to protect consumers in the use of AI and invite their member traders to commit to and follow. Notably, this guidance on AI covers broadly from data governance to the rights of consumers, system security, opt-in and opt-out options, reporting of data breaches, dispute resolution mechanism, and dedicated and clear disclosure of AI policy. By complying with the "Consumer Charter", traders can build stronger reputation in the market when their commitment and efforts are observed by consumers.

A "Consumer Charter" for traders to safeguard consumer rights
1. Be transparent and inform consumers when using AI • Traders should proactively provide consumers with information as in detail as they can when consumers use their services, e.g. the data security measures implemented, the involvement of AI, the ways to opt out of different features. • Traders should also take into account consumers' literacy and ability in reading lengthy and difficult text when disclosing information.
2. Do not manipulate consumers' choices • Traders should not manipulate consumer's choices solely for the sake of profit maximisation.
3. Be fair to all consumers and do not discriminate against consumers • Traders should not exploit the vulnerabilities of AI to discriminate against consumers based on individual characteristics, such as ethnics, gender and age.
4. Provide choices for consumers to opt in and opt out of the use of AI easily with immediate effect • Consumers should have rights to understand the risks associated with AI and make decisions on whether to accept such risks in exchange for the benefits AI brings to them. Traders should provide choices for consumers to opt in and opt out of the use of AI in the first place, and act according to consumers' choices.
5. Ensure consumer requests can be addressed • Consumers should be allowed to ask for explanations on AI outcomes, and object to a decision based solely on automated processing that significantly impacts them.
6. Establish an effective dispute resolution mechanism in case of non-compliance • Traders should provide an effective dispute resolution mechanism for consumers so that they can express their discontent when they encounter issues regarding the misuse of AI. • Traders should train up specialists or have a specific team in the customer services department to focus on handling AI complaint cases.
7. Collect data at an adequate level • Traders need to make sure their collection of data is necessary and adequate for the purposes they state in privacy policies according to the Personal Data (Privacy) Ordinance. It is a good practice for traders to distinguish what data is mandatory and what is optional.

Actions for the Government

Nurture Public AI Understanding

The Study found that many consumers and traders lack knowledge about AI and demand more education about this technology. Education that targets the general public and traders is still insufficient and should be strengthened.

From a societal perspective, education campaigns could be launched to teach consumers about different facets of AI, including its definition and operations, potential benefits and harms, consumer rights regarding the use of AI, related guidelines consumers can refer to, best practices in the marketplace, etc.

In the Study, four consumer segments were identified, namely "supportive users", "prudent users", "unready users" and "unfavourable users". Targeted efforts should be considered for different consumers in order to effectively nurture an AI culture in society. For "supportive users", stakeholders can reinforce their trust in AI and let them continue to be the early adopters. For "prudent users", actions that encourage them to voice their demands can be considered as they still have certain worries when using AI tools. For "unready users", education is needed to cultivate their AI understanding and hence mitigate their concerns. For "unfavourable users", it is needed to rebuild their confidence in AI and hence willingness of using it again. With these efforts, "unready users" and "unfavourable users" can be gradually converted to "supportive users" and "prudent users" when their trust in AI builds up.

Meanwhile, education to traders is also essential. When traders have more knowledge about AI, they have the ability to pursue ethical use of AI.

Moreover, sector-specific regulators (such as Insurance Authority, Travel Industry Authority) and authorities from the Government could strengthen education to traders for using AI in their respective sectors. In particular, AI adoption in the insurance industry and travel industry has been growingly popular, and traders can collect massive consumer data which might be sensitive for their AI model training. Thus, education to traders in these industries is vital. Sector-specific regulators and authorities may also consider AI initiatives such as establishing guidance of adoption of AI based on nature of respective industries, setting standards for the industry players to follow, reporting AI compliance and performance by industry players for public surveillance, and collecting consumer feedback and suggestions for improvements.

Establish a Holistic Policy for AI Development

Globally, some jurisdictions have been considering approaches to regulate AI from a cross-sectoral perspective. To align with international regulatory momentum, the Government should consider having a holistic policy and development plan for AI in place in the long run. Currently, the development of AI is covered as part of the "Smart City Blueprint for Hong Kong 2.0", by far, AI-related initiatives and guidelines are championed by respective authorities based on their own assessment on industry adoption and governing practices. Thus, the Council suggests the Government adopt a progressive approach in establishing a long-term AI development plan that can balance the need of setting rules and encouraging innovation.

A Holistic Policy for AI Development

1. **Establish clear vision and key milestones for AI development**
   - Many other jurisdictions have already developed or are planning to develop new laws to regulate AI-related activities. To keep abreast with the pace of the Mainland and the key jurisdictions in the world, the Council recommends the Government anticipate the need for new regulations overseeing the development of digital economy for effective consumer safeguard.
   - The Government can draw from governing experience in other jurisdictions and develop a unique strategy incorporating the competitive advantages of Hong Kong.

2. **Lead by example to accelerate the digital transformation**
   - The Government should accelerate its digital transformation and lead the way by adopting good AI ethics and data privacy standards while implementing the Smart City Blueprint. Such initiatives would have a positive spill-over effect on enterprises in Hong Kong.

3. **Increase funding to support AI projects to commercialise**
   - Currently, funding is mainly for innovating AI, but for commercialising and mass-producing successful AI solutions, the financial support might still be insufficient.

4. **Enrich open data and encourage utilisation of data**
   - A data enrichment process is always continuous, and never stops. The Government should make efforts to encourage more organisations to share data, and motivate more traders to utilise the data for the benefit of consumers.

5. **Assist traders to build business connections with partners in the Mainland and in the globe**
   - Hong Kong is a rather small market in term of data availability and AI usage, thus traders might look to expand their business to the Mainland or overseas.

6. **Attract and nurture AI talents**
   - AI talents, not only for businesses, but also for the Government to formulate policies and implement effective monitoring measures, are extremely important to accelerate the development of AI in society. Education on AI to cultivate local talents should be set as a long-term goal.

7. **Provide AI ethics training or guidelines to traders**
   - To promote the responsible and ethical use of AI, the Government should provide up-to-date guidelines for traders to follow. The Government should also support traders by providing AI training courses to them.

Build a Fair and Competitive E-commerce Market

In the digital world, data is power. Companies with more data are obviously of a better competitive advantage. To reduce disparities between SMEs and big techs, SMEs must be able to access more data to develop and train their AI models. Government, relevant stakeholders, and trade associations should facilitate the sharing and utilising of data among traders, thus to maintain competitiveness of SMEs.

To ensure a fair and competitive market in the e-commerce industry and to safeguard consumer interests, the Government must take appropriate measures and prevent traders from using big data to manipulate the market for their own advantages. The Competition Commission may devote resources in monitoring the e-commerce market to avoid market distortion by major traders which hold massive data.
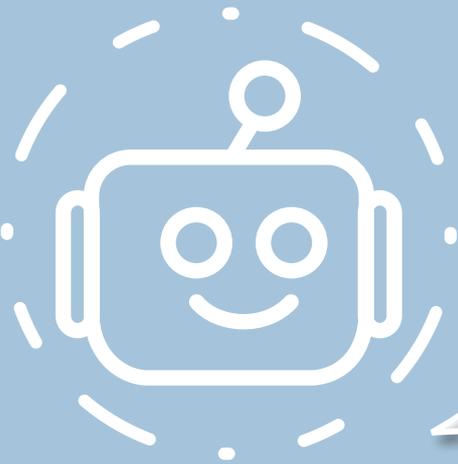
Recommendations to Enable the Development of Responsible and Ethical Use of AI in E-commerce

Consumers

Follow Tips to Be a Smart Consumer

1. Choose the right e-commerce platform; always read privacy policies
2. Pay attention to website updates
3. Make the best decision against tracking
4. Provide adequate information only
5. Keep a good record of membership accounts
6. Check privacy settings regularly
7. Exercise your rights against automated decisions when needed

Traders

Establish a "Consumer Charter" to Enhance Consumer Confidence

1. Be transparent and inform consumers when using AI
2. Do not manipulate consumers' choices
3. Be fair to all consumers and do not discriminate against them
4. Provide choices for consumers to opt in and opt out of the use of AI easily
5. Ensure consumer requests can be addressed
6. Establish an effective dispute resolution mechanism
7. Collect data at an adequate level

Adopt the Checklist of Best Practices for AI

1. Formulate a clear company policy on AI, data usage and storage
2. Dedicate resources for AI development with clear accountability
3. Validate AI models before deployment
4. Ensure consumers' data is handled in a safe and secure manner to protect consumers' data privacy
5. Communicate with staff and ensure they follow the ethical standards of AI
6. Foster communication with consumers
7. Provide choices for consumers to choose whether to use AI
8. Clarify clear responsibility between traders and third-party technology providers

Government

Establish a Holistic Policy for AI Development

1. Establish clear vision and key milestones for AI development
2. Lead by example to accelerate digital transformation
3. Increase funding to support AI projects to commercialise
4. Enrich open data and encourage utilisation of data
5. Assist traders to build business connections with partners in the Mainland and in the globe
6. Attract and nurture AI talents
7. Provide AI ethics training or guidelines to traders

Nurture AI Understanding of the Public and Traders

1. Teach consumers about different facets of AI
2. Educate traders to adopt ethical AI practices

Build a Fair and Competitive E-commerce Market

1. Take appropriate measures to ensure a fair e-commerce market
2. Prevent traders from using big data to manipulate the market
3. Prohibit unethical use of AI
4. Mitigate the risk of "winner-take-all"

BUY

The Way Forward

The Study aims to raise public awareness of the use of AI and to advocate effective measures for a healthy and sustainable AI development in Hong Kong that consumers rights can be well protected. Amid the rapid development of AI, unforeseen vulnerabilities and ethical issues might emerge. Meanwhile, traders might still face ambiguity in AI ethics in the course of conducting business because of inadequate guidance on AI adoption. The Council hopes that the Government can start considering a holistic AI policy and a governance framework with reference to the experience of the other jurisdictions, and lead the way in promoting the development of "Responsible and Ethical AI". Many stakeholders also opined that when the Government adopts a leading role to ensure the orderly and healthy development of the AI market, it would help accelerate the digital transformation in Hong Kong.

Although the Study focuses on the use of AI in e-commerce in Hong Kong, the principles and spirit of the recommendations shall apply across different industries in a broader sense. The recommendations shall be customised according to the distinct nature of the industry and individual business objectives for actual execution.

Meanwhile, aside from monitoring the market to avoid unlawful trade practices, the Council will continue to educate consumers about the benefits and risks of AI and their rights in order to foster better habits of using AI during online shopping. The Council hopes that with the contribution of different stakeholders, concerns and demands of consumers and traders can be better addressed, and the implementation of effective consumer safeguards can be expedited. The Council believes that with the collective efforts by the Government, traders and consumers, the development of AI would be faster and more beneficial to the society, socially and economically.
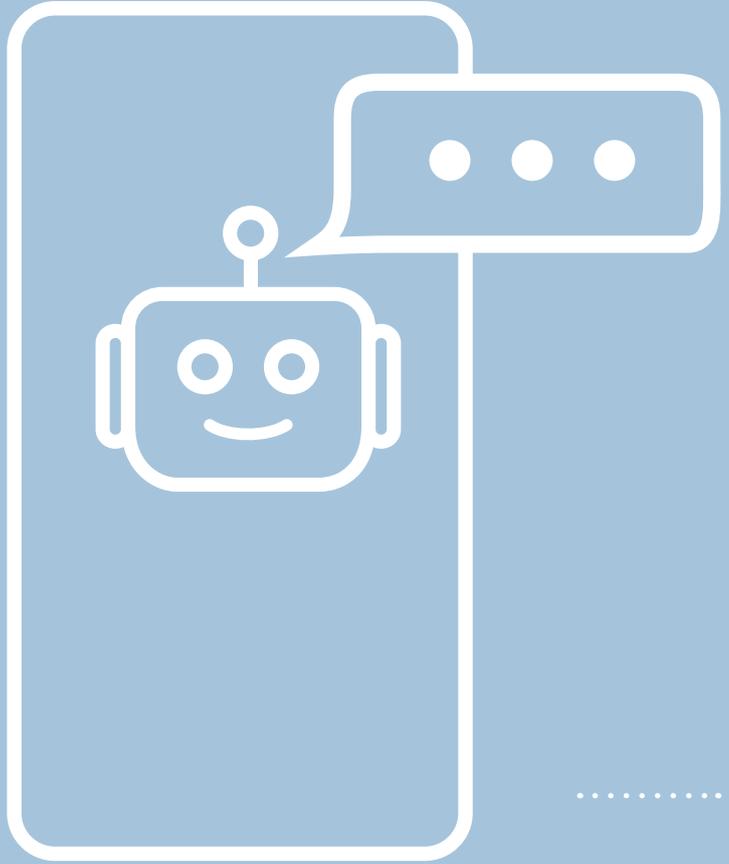
摘要

在不可逆轉的人工智能趨勢下加強消費者保障

隨著網絡互聯設備及雲端運算技術的廣泛應用，人工智能已成為當前科技發展的主流趨勢。至今，人工智能尚未有一個被廣泛接受的定義，它泛指一系列涉及以電腦程式和機器模仿人類解難及決策能力的科技，當人工智能科技不斷發展時，相關應用在市場上亦應運而生。

近年，人工智能已從學術研究突破至商業應用，不少企業利用人工智能技術節省成本、改善運作效率，甚至用於提高商務智能以尋找商機。無可置疑，人工智能可為社會不同層面帶來裨益，更在不少國家成為一股不可逆轉、推動改革的動力。從市場角度而言，人工智能的普及尤見於電商市場。

不過，如果不正當地使用人工智能，也會為社會及市民帶來潛在風險。商家有可能以低成本在網上獲取消費者的個人資料，然後通過後台的人工智能演算法，在產品定價、產品選擇、搜索結果等領域，歸納出對商家有利，但亦悄悄地影響著消費者利益的決定。舉例說，個人化定價可能會對個別消費者的造成價格歧視，商家也可以利用有偏頗的排名次序，或者虛假的評論來操控消費者的選擇，最終影響市場競爭，損害消費者利益。**在這個數碼時代，消費者和商家在資訊擁有和議價能力方面的不平等地位更加明顯，為保障消費者，這些問題必須妥善地處理。**

本研究

隨着電子商務在互聯網上蓬勃發展，再加上在過去兩年疫情之下的居家抗疫，網購已成為香港人的生活日常。不過，電商應用人工智能愈廣泛，消費者面對的風險也日益增加。因此，消費者委員會（消委會）進行了是次針對人工智能在香港電子商務中的應用研究，題為「**道德與信心共融　促進電子商務人工智能發展**」（簡稱本研究）。本研究旨在分析商家在使用人工智能時，對消費者的重要影響，並提出建議予持份者包括香港特區政府（政府）、商家及消費者考慮和討論。消委會冀望，研究結果可為加強香港的數碼管治，特別是在人工智能應用方面提供更明確的方向，以保障消費者的利益。

本研究主要集中企業對消費者（B2C）的零售網購活動，但不包括網上提供的金融服務及保險產品。本研究以多種方式進行，包括進行網上消費者意見調查，檢視香港消費者普遍使用的網購平台（包括商家的人工智能應用以及在網店披露的資料），與應邀的商家、技術供應商和行業專家進行深度訪談，搜集其他司法管轄區在人工智能管治的相關指引、措施和經驗，以及與消費問題相關的個案分析等。

在進行研究的過程中，消委會遇到了不少挑戰，除受疫情影響而訪問回覆率偏低外，一些商家認為人工智能涉及公司的商業策略，題目敏感，對向外分享他們的經驗存有疑慮。此外，鑑於現時很多商家應用人工智能時，都沒有披露背後的操作是涉取人工智能，還是基於電腦程式規則而編寫的系統，又或是兩者並用。所以消委會在進行網上問卷調查時，難以查證消費者所分享的人工智能使用經驗是否百分百與人工智能相關，但本會已盡力通過一些例子說明情境，協助消費者回答問題。

消費者對人工智能和私隱保障的看法

本研究在網上進行消費者意見調查，訪問了 1,219 位 15 歲或以上，曾經瀏覽本地或非本地網店的消費者。調查發現本地消費者在網購方面相當活躍，77%受訪者每週或每日在網店瀏覽或購物至少一次。不過，即使受訪者活躍於網購，**他們對人工智能的熟悉程度仍然很低**— 高達 75%受訪者表示他們不熟悉人工智能。目前，一些消費者對人工智能仍持懷疑和保守態度。從他們使用人工智能工具的經驗來看，只有 57%受訪者同意人工智能有助他們節省選購產品的時間，41%受訪者認為人工智能可以準確地滿足他們的需求，而信任人工智能的僅有 31%。商家雖然採用人工智能日趨積極，但在消費者對人工智能的滿意度方面，仍存在不少改善空間。

一般而言，消費者對商家採用人工智能表示關注和擔憂。74%受訪者表示他們擔心網店收集過多的個人資料，亦有 72%受訪者表示擔心一旦人工智能的算法出錯，沒有人會為問題負責。此外，消費者亦希望有更多知情權及選擇權。78%受訪者希望網店能在使用人工智能提供服務時披露有關資訊；81%受訪者要求網店提供是否使用人工智能工具的選擇權。消費者同時亦認為網店有責任就相關風險和相應的預防措施作清晰的披露。

消費者意見調查亦顯示 74%受訪者認為人工智能在未來五年將日趨普及，而 77%受訪者同意需要加強更多關於人工智能的公眾教育。

儘管消費者關注網絡安全和私隱保障問題，但他們實際的網購行為並不謹慎。舉例說，60%受訪者在網購時從不閱讀網店的私隱政策，甚至不知道甚麼是私隱政策，當網店顯示小型文字檔案訊息（cookie），要求消費者選擇接受或拒絕時，有 27%受訪者會直接忽略這些訊息。由此可見，要消費者養成更謹慎的網購習慣，首要任務是從教育著手。

此外，在曾閱讀私隱政策的受訪者中，43%受訪者試過因為有憂慮而停止瀏覽網店，主要原因包括他們發現網店收集太多個人資料、把資料轉移給太多第三方機構，以及收集個人資料的目的太多。消費者若在評估所涉及的風險後停止瀏覽網站亦是一種有效的自我保護方式。

本研究根據受訪者對人工智能的看法，把受訪者歸類為四個群組，分別為「抱支持態度的消費者」、「審慎的消費者」、「未準備好的消費者」和「抱負面態度的消費者」，若能因應他們的態度而制定針對性的教育活動，會更有效地加強他們在使用不同的人工智能工具時的自我保護能力。

消費者對人工智能和數據收集的

看法

沒有 / 少許認識		頗為 / 非常熟悉
75%	對人工智能的熟悉程度	24%

不同意 / 非常不同意		同意 / 非常同意
39%	我信任人工智能	31%
65%	我偏好與人工智能多於與真人溝通	21%
36%	我更願意往有應用人工智能的網店購物	33%
25%	人工智能幫助我節省選購產品的時間	57%
36%	人工智能準確地處理我的需求	41%
13%	在未來 5 年，人工智能會於香港越來越普及	74%
43%	香港現時對人工智能的應用有完善的規管	34%
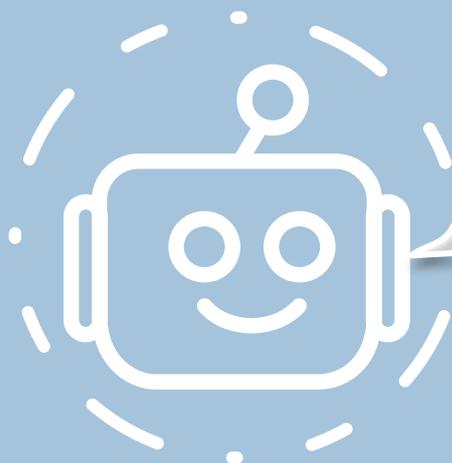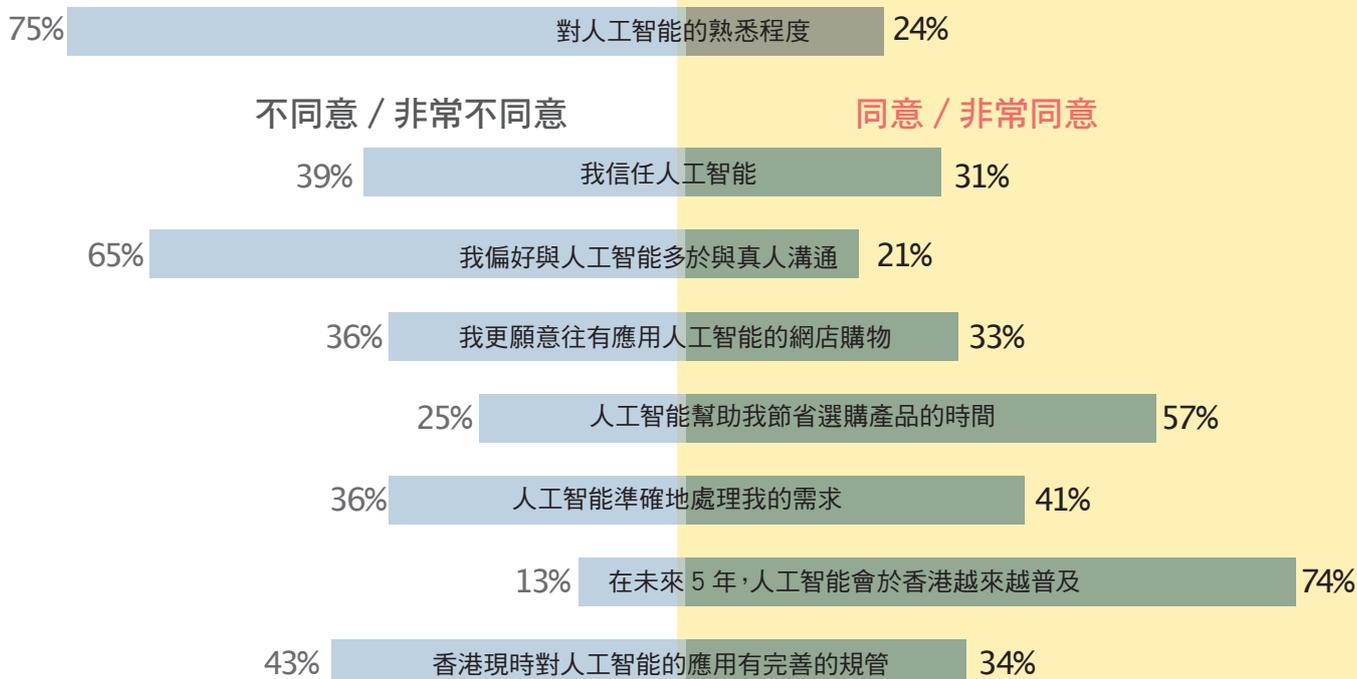
註：因不包括回答其他選項（如「沒有意見」和「不知道」）的受訪者，以上每項數據的總和不等於 100%。

人工智能工具的使用經驗

	產品推薦	聊天機械人	生物識別技術	擴增實境（AR）
使用率	89%	75%	55%	32%
認為該工具有助改善網購體驗	56%	38%	73%	74%
介意提供個人資料以使用該工具	38%	48%	39%	38%

看法和行為

訴求

81% 網店能讓我有權選擇是否使用人工智能

78% 網店能讓我知道他們正在使用人工智能提供服務

77% 香港需要更多有關人工智能的教育

首 3 項提升使用人工智能信心的措施
1. 網店加強網絡安全及私隱保障
2. 網店建立投訴機制處理糾紛
3. 政府加強監察電商市場

憂慮和關注點

74% 網店使用人工智能時需要收集很多我的個人資料

74% 有人會濫用人工智能，對我構成風險

72% 一旦人工智能算法出錯，沒有人會為問題負責

首 3 項對人工智能的關注點
1. 網絡安全
2. 私隱保障
3. 精準度

閱讀私隱政策和處理小型文字檔案 (Cookie) 的習慣

60% 從不閱讀或不知道甚麼是私隱政策
1. 內容冗長累贅
2. 認為網店無論如何也可以在網絡上收集到個人資料
3. 詞彙深奧難明

私隱政策

43% 在閱讀過網店私隱政策後，因憂慮而停止瀏覽該網店
1. 收集太多個人資料
2. 資料轉移給太多第三方機構
3. 收集個人資料的目的太多

27% 忽略小型文字檔案的設置信息

小型文字檔案政策

接受

資料來源：消費者意見調查

消費者的經驗

在四類被檢視的人工智能工具中，即產品推薦、聊天機械人、生物識別技術和擴增實境（AR），產品推薦的應用最為普遍，有 89%受訪者表示他們曾經使用此項人工智能工具。而其他三項人工智能工具的使用率依次為：聊天機械人（75%）、生物識別技術（55%）和擴增實境（32%）。

至於消費者對人工智能工具的滿意度方面，74%及 73%受訪者分別對擴增實境及生物識別技術較為滿意，主要因為它們能提供的體驗真實，而且表現穩定。產品推薦則緊隨其後，有 56%受訪者表示滿意。而**聊天機器人的滿意度為最低**，僅有 38%受訪者認為此工具能改善他們的網購體驗，原因可能與聊天機械人未能準確地回覆問題有關。

受訪者亦對提供個人資料以使用這四類人工智能工具十分關注，48%受訪者對使用聊天機械人特別有戒心，這個比例亦高於生物識別技術（39%）、擴增實境（38%）和產品推薦（38%）。

商家的資訊披露

本研究檢視了 112 間本地及非本地網店的私隱政策，其中 90%都在其網店頁面有披露收集數據方法、目的，和集得的數據種類，不過，針對目的而言，只有 6 間受檢視的網店列明收集數據的目的是為了訓練人工智能模型或用於機器學習。在集得的數據種類方面，檢視亦發現有 6%至 10%網店更會收集一些與交易直接關係不大的數據，例如就業狀況、婚姻狀況、收入和學歷等，此舉有機會被視為超出適度。另外，很多受檢視的電商平台的網頁上並未提及一些消費者關注的重點，例如只有 41%標明在分析數據前會將數據匿名化，只有 17%具體說明數據保留期。另外，網店在說明消費者權益方面也未夠清晰，僅有 42%網店有告知消費者能如何拒絕提供個人資料或瀏覽紀錄，和 39%有明確說明消費者如何可以拒絕 cookie 追蹤，反映**消費者如果想繼續在網上購物，很多時都只能被逼接受商家的條款，個人權利和自主權或因而受損**。

商家的角色

消委會與 19 位電商管理層、技術供應商和行業專家進行了深度訪談。受訪者表示，**香港應用人工智能仍處於早期階段**，對於香港目前的人工智能發展平均評分為4.9 分（10 分代表極先進的發展）。受訪者認為，香港的商家主要利用人工智能輔助營運，以減低開支，增加效率，但並未視其為增加收入的策略性工具。商家在應用人工智能的過程中亦遇到不少挑戰，包括了人才缺乏、資金不足等，**基於仍未全面認識人工智能，所以其管理層亦未能洞悉到人工智能所帶來的策略優勢，以及應用時的道德標準**。

受訪的商家也反映，由於香港的電商市場規模不大，可以用作訓練人工智能模型的數據始終有限。在市場上可供電商使用的開放數據來源和種類既不足夠，亦不能即時用於企業。數據不足的問題對中小企尤其嚴重，對他們的市場競爭力也可能帶來深遠影響。總體而言，大部份受訪的商家都反映他們對人工智能的認知不足，希望能獲得支援和教育。

持份者的角色及意見

在抗疫的同時，政府正積極推動數碼經濟發展。近年，政府籌建了多項數碼基建項目，亦積極推動開放數據政策，鼓勵市場創新。《香港智慧城市藍圖 2.0》提出涵蓋六個智慧範疇的措施，推動香港的智慧城市和數碼化發展。多個政府決策局及部門亦相繼推出與人工智能相關的不同指引，以促進政府及私人市場採用人工智能。與此同時，香港科技園公司、香港數碼港管理有限公司、香港生產力促進局及香港應用科技研究院一直為加強本地企業應用人工智能及數碼轉型提供支援。

消委會就本研究結果與多個持份者探討如何在香港推廣「負責任及符合道德的人工智能」。有持份者表示，政府長久以來一直有集中投放資源在科技創新，但他們仍期望政府在未來可以在技術應用方面加強資源，以扶助企業開發人工智能的應用。

至於數據方面，雖然政府積極推動開放數據政策，但有持份者認為，業界亦可以鼓勵企業開放自己的數據，並在企業間共享，以促進人工智能發展。鑑於香港市場規模較小，可以用來訓練人工智能模型的數據可能不足，商家可以利用語音和圖像等非結構化的資料來訓練人工智能模型，亦可考慮與本地或非本地的商家、大學建立合作夥伴關係，從多個途徑擴展數據資源。

在新常態下，全球供應鏈呈現區域化和數碼化的趨勢。藉此機遇，政府更應結合本港在智慧物流和供應鏈管理方面的獨特優勢，建立一套適合香港的數碼經濟發展策略。加上本港與內地關係密切，商家可利用與內地夥伴合作的優勢促進自身在數碼市場的發展。

目前，香港已發布的人工智能指引較集中在金融行業。至於在其他行業，持份者及商家都認為，**本港要建立一套獨特而完整的數碼經濟發展策略，跨局合作至為重要**。在 2022 年 6 月成立的數碼化經濟發展委員會，象徵集合了香港不同決策局及部門和商界的力量，為推動香港數碼化經濟踏出重要的一步。

商家應用人工智能的情況

資訊披露

數據收集

數據收集途徑

>90% 披露他們如何收集個人數據。

收集的數據類別

>85% 會收集基本資料作交易用途，包括姓名、電郵地址、電話號碼和住址。

6-10% 會收集就業、婚姻狀況、收入、學歷等資料，有機會被視為超出適度。

數據收集目的

99% 提及數據收集目的。

只有 6 個商家列明收集數據的目的包括訓練人工智能模型或用於機器學習。

意見

- 資金不足
- 商家與技術供應商之間的責任模糊
- 香港電商的人工智能應用尚在起步階段
- 缺乏高質素的數據
- 人才短缺
- 尚未就人工智能建立公司政策
- 有商家認為數據私隱政策即人工智能政策
- 對人工智能的認識仍然不足

數據處理

數據匿名化
41% 提及使用數據前會先將其匿名化。

數據轉移
87% 具體列出數據轉移的對象。

69% 說明跨境數據轉移。

數據保留
17% 具體說明數據保留期。

網絡安全措施
44% 具體描述所採用的網絡安全措施。

姓名
年齡
地址
職業
付款方法

消費者權利
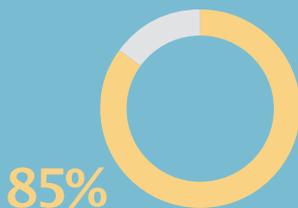
存取及更正數據
85%
告知消費者如何存取及更正數據。
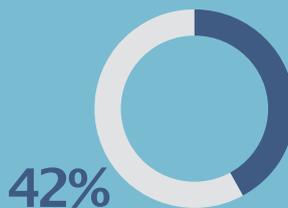
拒絕資料收集
42%
告知消費者如何拒絕資料收集。
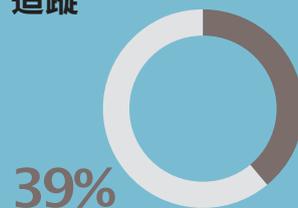
拒絕小型文字檔案追蹤
39%
指示消費者如何拒絕小型文字檔案追蹤。

資料來源：私隱政策內容分析

對政府的訴求

就數碼化發展制定適用於香港且全面的整體政策

吸引及培養人工智能人才

增加資金以支持人工智能項目商業化

豐富開放數據及鼓勵共同應用

為商家提供更多培訓

其他司法管轄區的經驗

雖然人工智能為經濟發展帶來巨大機遇，但為了減低消費者在使用人工智能時可能面對的風險，全球不同的組織已經制定了超過 160 套人工智能道德原則或指引，以便政府、商業組織和技術開發人員遵循。這些原則包括問責性、人為監督、透明度與可解釋性、數據私隱、公平性、帶來裨益的、可靠、穩健及安全性。

本研究檢視的 10 個司法管轄區均根據其獨特的市場特徵、文化背景、國家發展重點，採用不同的方法管治人工智能發展。其中，有些司法管轄區把策略重點放在技術研究和創新上，也有些則強調經濟發展、基礎設施建設等。**一些司法管轄區更以不同手法，包括國家人工智能策略，指引，規範，甚至法例，以促進商家應用人工智能時勿忘實踐以上的道德原則。亦有司法管轄區致力教育消費者，提高公眾對人工智能的認知。**

以內地為例，在 2022 年 3 月實施了《互聯網信息服務算法推薦管理規定》，重點規範人工智能算法的應用，監督在網店、搜尋器、社交媒體使用算法推薦服務的商家。另一方面，歐盟則在 2021 年 4 月提出了人工智能法案，以風險為本為原則，規定必須禁止使用「不可接受風險」的人工智能系統，而「高風險」的人工智能系統必須受到嚴密監管。此外，內地和歐盟均已在其數據私隱保護法中，納入了規管自動化決策相關的條文，為消費者提供更佳的保障，讓消費者有權拒絕接受商家僅採用自動化決策的方式作出決定。另外，日本和南韓對消費者定期進行意見調查，以了解他們對於人工智能的認知程度。新加坡則著重公眾教育以提升對人工智能的認知。面對全球人工智能人才短缺，不同司法管轄區都積極吸納及培養人才，並為商家提供不同支援措拖，以提升他們能應用人工智能的效率。

有見於人工智能將會成為數碼和經濟發展的一個重要動力，政府可以參考這些司法管轄區的管治經驗，加快構建一套適用於本地的人工智能管治架構。

消委會建議

人工智能這股不可逆轉的動力，不論在全球或本地市場都會帶來極大的改變。為實現使香港成為世界級智慧城市的願景和推動經濟發展，政府正積極投放資源於科技創新及數碼基建，並與不同的持份者合作，以加速數碼化轉型。本會認同人工智能的應用，配以政府政策推動，會為消費者帶來莫大裨益，但與此同時，減低使用人工智能對消費者的風險同樣重要。消委會認為若能透過加強消費者自我保護能力以抗衡使用人工智能的風險，鼓勵商家在應用人工智能時採用良好的營商手法，加上政府加強數碼管治，將能**促進各方共同在電商行業發展「負責任及符合道德的人工智能」，而消費者對使用人工智能的信心亦有望提升。**

做個精明消費者

研究結果顯示，消費者尚未在網購時養成能保護個人資料的習慣，容易暴露於資料被隨意濫用的風險。培養良好的網購習慣是消費者保護自身權益最直接有效的一步。所以，消委會鼓勵消費者在網購時遵循以下七個實用和簡單的消費錦囊，加強自我保護能力。

消費錦囊
1. 選擇合適的網購平台 • 在安全可靠的網購平台上購物，例如確保網店已採取高標準的網絡安全措施，以及提供明確的爭議解決機制處理客戶糾紛。 • 養成經常閱讀網店的個人資料私隱政策、條款及細則的習慣；使用新的網購平台時，更要特別留意商家收集和使用您的個人資料的目的。
2. 留意網站資訊更新 • 進入網店時，仔細閱讀不時彈出的通知、消息和更新資訊；確保您在確認訂單前了解及同意這些公告的內容。
3. 小心設定商家可否跟蹤您的位置、瀏覽器等資料 • 仔細閱讀 cookie 的同意請求信息，謹慎決定是否允許商家跟蹤您的資料，例如 cookie、位置、瀏覽記錄，或為您提供廣告和促銷等。
4. 只提供必須填寫的個人資料 • 確保您只提供合理和足夠的個人資料給商家，並且不會超出他們在註冊會員或進行交易時所述明收集數據的目的。
5. 妥善保留會員賬戶的記錄 • 妥善保留所持有會員賬戶的記錄，定期查看並在有需要時刪除閒置的賬戶。
6. 定期檢查私隱設置 • 定期檢查與私隱和跟蹤技術相關的賬戶偏好和瀏覽器設置。
7. 按需要提出您對自動化決定的要求 • 當發現有任何不合理的自動化決定時，可要求商家解釋或作出投訴。

商家的行動

採用行業最佳營商手法以制定公司人工智能政策和企業管治

現階段，大部份商家對人工智能的認識未深，他們主要利用人工智能作為輔助營運的工具，以節省成本和提高效率。本會相信，若然他們對人工智能認識的加深，並得到較多支援以應對挑戰，會更易建立全面和長遠的發展策略。商家若能把握人工智能正值蓬勃發展的機遇，

為機構制定一個應用人工智能的整體策略，並以最佳營商模式執行，可持續的業務增長想必指日可待。

人工智能的最佳營商手法

1. **制定清晰的公司人工智能、數據使用及儲存政策，並遵從良好的合規做法及資訊披露**
   - 制定公司人工智能政策時，商家可以考慮加入（1）包容性增長和可持續發展、（2）公平性、（3）透明度和可解釋性、（4）穩健、保安和安全性等要素。

2. **投入資源以確保有清晰明確的問責制度，例如委任對人工智能作全面監管的負責人**
   - 根據人工智能系統的風險，可考慮以集中或分散的方式管治。
   - 指定專人或專責單位負責公司人工智能的政策方向，協調內部資源以確保工作合規和符合道德標準，並建立清晰明確的問責制。

3. **在推出人工智能工具之前進行測試**
   - 人工智能模型應在正式使用前得到充分的驗證，商家亦應進行適當的風險評估和人為監督。

4. **確保以安全保密的方式處理消費者數據，保障其數據私隱**
   - 商家應告知消費者公司使用的保安措施和數據處理程序。
   - 商家應妥善記錄數據的處理方法，確保數據的質素，以及有足夠的保安措施。

5. **有效與員工溝通，並確保他們遵守公司的人工智能政策及道德標準**
   - 管理層應提供明確的指引，確保所有員工了解並遵循相同的標準，負責任地構建和使用人工智能。
   - 管理層亦應為員工提供人工智能培訓課程，讓他們學習如何實踐符合道德的人工智能應用。

6. **促進與消費者的溝通**
   - 商家應向消費者披露其人工智能政策，並提供渠道接收消費者的意見和作出相應改善。

7. **為消費者提供是否使用人工智能的選項**
   - 商家應讓消費者選擇適合他們的選項，而該選項應該要放置在清晰當眼的位置。

8. **清楚界定商家和第三方技術供應商的責任，確保以安全和合乎道德的方式處理和轉移數據**
   - 雙方需要就人工智能系統的維固保養訂下明確的責任和處理方法，並確保公司以安全和合乎道德標準的方法處理消費者的數據。

訂立「消費者約章」以保障消費者權益

一直以來，公平和具透明度的商家更能獲得消費者的信任，否則難在市場佔一席位。有鑑於很多中小企未必有足夠的資源制定人工智能政策，消委會建議行業商會可以制定「消費者約章」作為保障消費權益的指引，並邀請其會員企業共同承諾和遵守。約章除提供數據私隱指引外，亦涵蓋消費者的權利、系統安全、選擇加入和退出選項，並包括提交數據洩漏報告、建立爭議解決機制，以及披露人工智能政策等。通過遵守「消費者約章」，消費者可以了解商家的承諾，有助商家強化商譽和贏得消費者的信任。

消費者約章

1. **在使用人工智能時以清楚透明態度向消費者闡述相關政策**
   - 當消費者使用商家的服務時，商家應主動向消費者提供詳細信息，例如商家採用什麼措施確保數碼安全，有否使用人工智能，消費者可否選擇退出某些功能等。
   - 商家在披露信息時，應顧及消費者的數碼知識及理解冗長文字的能力。

2. **不可操控消費者的選擇**
   - 商家不應為增加公司的利潤而操控消費者的選擇。

3. **公平對待所有消費者，不能有任何歧視行為**
   - 商家不應根據消費者的個人特徵，如種族、性別和年齡等，利用人工智能作價格歧視。

4. **為消費者提供加入和退出使用人工智能功能的選擇權，並應即時生效**
   - 消費者應有權了解與人工智能相關的風險，並自行決定是否願意接受此風險，以換取人工智能帶來的方便。商家應在消費者首次到訪網站時為消費者提供選擇加入和退出使用人工智能的選項，並按消費者的意願提供服務。

5. **致力解決消費者的訴求**
   - 消費者可要求商家解釋人工智能如何為他們作出決定，並可拒絕接受對他們有重大影響但純粹由人工智能作的自動化決定。

6. **建立有效的爭議解決機制**
   - 商家應為消費者提供有效的爭議解決機制，當商家不當地使用人工智能時，消費者能作出投訴，以示不滿。
   - 商家可培訓專家或在顧客服務部內建立一個專門團隊處理有關人工智能的投訴。

7. **適當地收集消費者數據**
   - 根據《個人資料（私隱）條例》，商家應確保個人資料的收集方式具透明度及公平，亦須盡量減低個人資料的收集。在收集消費者的個人資料時，商家要清楚分辨必須和非必須的資料。

政府的行動

培養公眾對人工智能的認知

本研究發現，許多消費者及商家對人工智能都缺乏了解，並希望得到更多關於這方面的知識。目前，針對公眾和商家的教育仍有待加強，以補不足。

從社會層面而言，啟動連串教育活動有助提升消費者對人工智能不同層面的認知，包括人工智能的基本概念和操作、潛在好處和風險、消費者在使用人工智能的權利，以及市場上相關指引和良好的營商手法等。

消委會在本研究中根據消費者對人工智能的看法歸納出四個特定群組，分別為「抱支持態度的消費者」、「審慎的消費者」、「未準備好的消費者」及「抱負面態度的消費者」。政府和不同持份者可根據此四類不同的群組的特性，培養他們使用人工智能的正確觀念和社會使用人工智能的文化。對於「抱支持態度的消費者」，持份者可以鞏固他們對人工智能的信任，讓他們繼續成為先行者；對於「審慎的消費者」，由於他們對使用人工智能工具仍存有顧慮，因此可以鼓勵他們就自己的疑惑及需求表達意見。至於「未準備好的消費者」，持份者可以通過教育令這群組更多認識人工智能，從而減少他們的憂慮；而「抱負面態度的消費者」則需要重建他們對人工智能的信心，令他們再次嘗試使用人工智能。通過各方面的努力和信心的建立，令一班未準備好和負面的消費者能逐漸轉化為審慎和支持人工智能的消費者。

另一方面，持份者為商家提供適當的教育同樣重要，讓他們有能力實踐合乎道德的人工智能。

在個別行業層面，行業的監管機構（例如保險業監管局、旅遊業監管局等）及政府部門可加強商家教育。尤其在保險業及旅遊業，人工智能的應用越來越普及，商家可以收集到大量的消費者數據，當中可能涉及一些敏感數據。因此，商家教育在這些行業至關重要。監管機構亦可因應行業的特性推行合適措施，包括制定應用人工智能的指引和訂立行業標準讓商家以便遵循，向公眾披露行業合規情況，以及收集消費者對措施的反饋和建議作出改善。

制定人工智能發展的整體政策

放眼全球，一些司法管轄區已經開始考慮從跨界別層面監管人工智能。政府須考慮制定長遠的人工智能整體政策和發展計劃，以緊貼國際的監管步伐。《香港智慧城市藍圖 2.0》中有描述人工智能的發展，但目前都是由個別行業監管機構根據對行內應用人工智能的評估及行業規管方式，制定相關的措施和指引。消委會建議政府可採取循序漸進的方式，為應用人工智能訂立長遠的發展策略，以祈在制定法規和鼓勵創新兩者間取之平衡。

整體政策內容

1. **為人工智能發展建立清晰的願景和里程碑**
   - 許多其他司法管轄區已經制定了或計劃制定新的法規來監管人工智能相關活動。為迎上內地和世界主要司法管轄區的步伐，消委會建議政府宜考慮訂立監管數碼經濟發展的新規例，以保障消費者的利益。
   - 政府可借鑑其他司法管轄區的管治經驗，制定能融合香港競爭優勢的獨特策略。

2. **以身作則加速數碼化轉型**
   - 政府應加速數碼化轉型，並在實施智慧城市藍圖的同時，採用良好的人工智能道德和數據私隱標準。此舉有助政府樹立良好榜樣，以供其他企業效法。

3. **增加資金支持人工智能項目商業化**
   - 目前政府主要投放資金在人工智能科技創新，但對於扶助人工智能項目商業化及量產的資金支持似乎有所不足。

4. **豐富開放數據及鼓勵廣泛使用**
   - 數據資源需要長期及持續累積，政府應採取措施推動機構間的數據共享，並鼓勵更多商家善用數據，令消費者受益。

5. **協助商家與內地及國際夥伴建立合作關係**
   - 就數據量及人工智能應用而言，香港市場相對較小，所以商家都有將業務擴展到內地或海外的願景。

6. **吸引及培養人工智能方面的人才**
   - 要加速人工智能在社會上的發展，人才不可或缺。除了商家外，政府亦需要人工智能人才，以制定相關政策及監察市場。政府應以培養本土人才作為長期目標。

7. **為商家提供人工智能道德培訓或指引**
   - 為促進「負責任及符合道德的人工智能」，政府應不時為商家提供最新的指引和人工智能的培訓課程。

建立一個公平和具競爭力的電商市場

在數碼世界，數據就是力量。企業擁有的數據愈多，競爭優勢愈明顯。為減少中小企和大型科技公司之間的差距，中小企必須能夠獲取到更多數據資源以發展及訓練他們的人工智能模型。政府、相關持份者及行業商會須協助中小企共享及應用數據，保持中小企的市場競爭力。

為確保電商行業的公平性及競爭能力，加上保障消費者權益的考慮，政府應採取適當措施，防止商家為自身利益利用大數據操控市場。香港競爭事務委員會亦可投放資源監察電商市場，避免掌握大量數據的主要商家扭曲市場競爭。
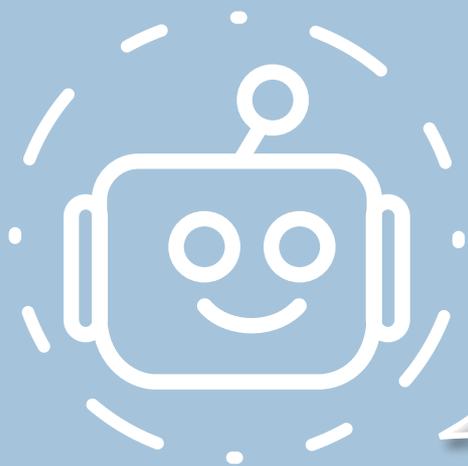
促進電商行業發展「負責任和符合道德的人工智能」的建議

消費者

遵從消費錦囊，精明網購

1. 選擇合適的網購平台，經常閱讀私隱政策
2. 留意網站資訊更新
3. 小心設定商家可否跟蹤您的位置、瀏覽器等資料
4. 只提供必須填寫的個人資料
5. 妥善保留會員賬戶的記錄
6. 定期檢查私隱設置
7. 按需要提出您對自動化決定的要求

商家

業界帶領訂立「消費者約章」，增加消費者信心

1. 在使用人工智能時以清楚透明的態度向消費者闡述相關政策
2. 不可操控消費者的選擇
3. 公平對待所有消費者，不能有任何歧視行為
4. 為消費者提供加入和退出使用人工智能功能的選擇權
5. 致力解決消費者的訴求
6. 建立有效的爭議解決機制
7. 適當地收集消費者數據

採用人工智能的最佳營商手法

1. 制定清晰的公司人工智能、數據使用及儲存政策
2. 投入資源以確保有清晰明確的問責制度
3. 在推出人工智能工具之前先進行測試
4. 確保以安全保密的方式處理消費者數據，保障其數據私隱
5. 有效與員工溝通，並確保他們遵守公司的人工智能政策及道德標準
6. 促進與消費者的溝通
7. 為消費者提供是否使用人工智能的選項
8. 清楚界定商家和第三方技術供應商的責任

政府

制定人工智能發展的整體政策

1. 為人工智能發展建立清晰的願景和里程碑
2. 以身作則加速數碼化轉型
3. 增加資金支持人工智能項目商業化
4. 豐富開放數據及鼓勵廣泛使用
5. 協助商家與內地及國際夥伴建立合作關係
6. 吸引及培養人工智能方面的人才
7. 為商家提供人工智能道德培訓或指引

培養公眾及商家對人工智能的認知

1. 教導消費者從不同角度認識人工智能
2. 教育商家如何實踐符合道德的人工智能

建立一個公平和具競爭力的電商市場

1. 採取適當措施以確保電商市場的公平性
2. 防止商家利用大數據操控市場
3. 禁止不道德的人工智能應用
4. 減低「贏家通吃」的風險

購買

展望將來

本研究旨在提升公眾關注人工智能的應用，並倡議採取有效措施，促進香港人工智能市場的健康及可持續發展，從而保障消費者權益。人工智能發展迅速，相關的漏洞和道德問題難以預見，加上由於現時行業相關的指引不足，有機會導致商家應用人工智能時不清楚如何遵循道德標準。因此，消委會希望政府可以未雨綢繆，借鑒其他司法管轄區的經驗，開始考慮人工智能發展藍圖及監管框架，推動社會發展「負責任及符合道德的人工智能」。不少持份者亦表示，當政府擔任主導角色，確保人工智能市場有序及健康地發展時，將有助加快香港的數碼轉型。

本研究雖然集中探討香港電商市場應用人工智能的情況，但建議的原則與精神可以廣泛地適用於不同行業。就各行業不同的特性，以及不同的商業目的，在實際執行建議時可作出調整。

最後，消委會除會致力監察市場以避免出現不當的營商手法情況外，亦會致力教育消費者在使用人工智能的好處及風險，以及他們的權利，以培養消費者在使用網店的人工智能工具時的良好習慣。消委會希望在持份者的共同努力下，消費者和商家的擔憂和訴求可以得到更好的解決，並可以盡快落實有效的消費者保障措施。消委會相信，惟有政府、商界、消費者的三方通力合作，才能加快整體人工智能市場的發展，為香港社會和經濟帶來無盡裨益。
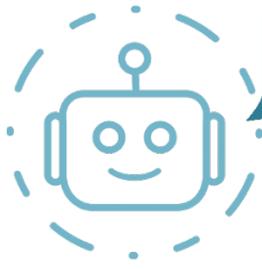
1 Introduction

Artificial intelligence (AI) went mainstream in the past decade thanks to the convergence of increasing computing power. Wide adoption of AI in society nowadays has brought significant implications to consumers, no matter directly or indirectly. While acknowledging the benefits brought by AI, the Consumer Council (the Council) is mindful of the potential issues and risks that might come along. As AI usually runs in the back-end operations by traders, consumers very often do not know the ways in which their personal data is used for AI model training and the subsequent outcomes generated. From a consumer protection perspective, the imbalance between consumers and traders in terms of information possession and bargaining power must be addressed.

In the midst of the COVID-19 pandemic, the Council conducted a study on the use of AI in E-commerce in Hong Kong, titled "**Fostering Consumer Trust – Ethical AI in Hong Kong**" (the Study) to deep dive into these issues. The Study took a mixed-method approach, including both quantitative and qualitative methods, to understand the views and practices of consumers, traders and other key stakeholders.

The Council believes that findings of the Study could offer meaningful directions on strengthening the digital governance of AI in Hong Kong, whereby the power and interests of consumers and traders can be well-balanced in the long run.

1.1 Background

AI as a Global Irreversible Trend

The concept of AI was first coined by John McCarthy, an American computer scientist, in the 1950s, when scientists started to be enthusiastic about studying how machines could mimic human minds to solve problems and make decisions. From the 1960s to the 2000s, resources were increasingly allocated to this field and certain milestones were achieved, yet the development of AI was just moderate.

Only since the 2010s has AI begun to grow rapidly due to technology leaps in both hardware and software. For example, with the invention of the Generative Pre-trained Transformer 3 (GPT-3) autoregressive language model in 2020, computers can write digital text well like humans do. Nowadays, driven by the robust processors and graphics cards in digital devices, the availability of big data and the use of algorithms, tech giants have developed different AI features that allow both consumers and traders to access. According to a worldwide survey by McKinsey in 2021, 56% of the surveyed companies across various industries had already adopted AI.[1] It is believed using AI has become an irreversible trend that will continue to change people's everyday life, in both the global and local marketplaces.

> **What is AI?**
>
> *An AI system is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy.*
>
> *- OECD. (2019) Recommendation of the Council on AI.*

Hong Kong's AI-related Policy Direction in a Nutshell

With the vision of transforming Hong Kong into a world-class smart city and digital economy, the Hong Kong SAR Government (the Government) has been investing in and advocating Innovation and Technology (I&T). AI is undoubtedly a key element in the field.

The Fourteenth Five-Year Plan for the National Economic and Social Development and the Long-Range Objectives Through the Year 2035 (14th Five-Year Plan) of Mainland China (the Mainland) also emphasises expediting the development of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) into an international I&T hub and puts forth expanding digital industries. To accelerate the digital transformation of Hong Kong and thus to align with the national direction, it is believed that the Government will intensify its investment in I&T, and AI will expectedly be one of the top focuses.

Unbalanced Relationship Between Consumers and Traders

While acknowledging the importance of AI and supporting the policy direction, the Council deems it important to ensure consumer rights are well protected and the perceived risks of AI are minimised. As AI has penetrated consumers' daily life, the Council notices an unbalanced relationship between consumers and traders in terms of information possession and bargaining power. This phenomenon is particularly obvious in the e-commerce scene. Very often, AI runs

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[1] McKinsey. (2021) The state of AI in 2021.

in the back-end operations of traders, and there is no way for consumers to learn about how their personal data is used, how AI makes decisions for them, and most importantly, what the impacts on them are. Besides, companies might not take into account individual consumer voices and hence change their business models easily. In consequence, consumers usually have no choice but to agree with the rules set by traders if they want to continue their shopping journey. As consumers might not be able to exercise their rights, they are highly exposed to the risk of being abused by unscrupulous traders, and sometimes, they might not even be aware when they are being abused.

Indeed, recent research reports show that online consumers are concerned about their rights when using AI. For instance, Google and KPMG conducted a survey with 1,000 Hong Kong residents in June 2020 and found that 49% of the respondents were worried about their data being used without their knowledge and permission.[2] Meanwhile, The European Consumer Organisation (BEUC) published a report titled "AI: What Consumers Say" in September 2020[3] and uncovered that 43% of the respondents felt that consumers were not provided with sufficient information about the use of AI. These survey results have raised public awareness of consumer protection concerning the adoption of AI in the digital era.

Although consumers may have different levels of risk acceptance when it comes to AI adoption, the Council believes it is an unshakable principle that consumers should be able to exercise their rights, such as the right to know what risks they are facing, the right to choose whether to take the risks, and the right to decide the degree of risk they are willing to take. The imbalance between consumers and traders must be addressed in order to foster a fair, just and sustainable e-commerce marketplace for Hong Kong.

1.2 Objectives

As AI is an irreversible global trend and a key element for the strategic development of Hong Kong, the Council foresees its impacts on Hong Kong consumers will continue to escalate and deems it necessary to take a deep dive into the issue. As e-commerce prospers and AI-related issues can be more evidently identified, the industry is considered a suitable entry point to look into the consumer implications of AI.

Therefore, the Council conducted a study on the use of AI in E-commerce in Hong Kong, titled "**Fostering Consumer Trust – Ethical AI in Hong Kong**" (the Study), with objectives as follows:

- Probe into consumers' perception and usage of AI in e-commerce;

- Understand e-commerce traders' adoption of AI;

- Explore ways to empower consumers and mitigate AI risks associated with them; and

- Identify ways to encourage good trade practices regarding AI in e-commerce and promote the development of "responsible and ethical AI".

The Council believes that the findings of the Study could offer meaningful directions on strengthening the digital governance in Hong Kong, especially in the field of AI usage, and advocating effective measures to safeguard the interests and confidence of consumers.

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[2] Google, KPMG. (2020) Smarter digital city: AI for everyone.
[3] BEUC conducted a survey with around 2,500 respondents across 9 European Union (EU) countries (Belgium, Denmark, France, Germany, Italy, Poland, Portugal, Spain and Sweden).

1.3 Focus

Definition of AI

As a starting point, it is worth highlighting that there is no common definition of AI in Hong Kong or around the globe. Table 1 illustrates a few examples.

Table 1: AI Definitions by Various Organisations

Organisation	Document/Source	Definition
State Council, the Mainland	「互聯網+人工智能」正催生一場新的工業革命 ("Internet + AI" is Evolving a New Industrial Revolution) (2016)	人工智能是研究、開發用於模擬、延伸和擴展人的智能的理論、方法、技術及應用系統的一門新的技術科學。 (AI is a new technical science that studies and develops theories, methods, technologies, and application systems for simulating and extending human intelligence.)
European Commission (EC)	A Definition of AI: Main Capabilities and Scientific Discipline (2018)	AI refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals.
Group of Twenty (G20)	Towards a G20 Framework for AI in the Workplace (2018)	AI covers automated decision-making informed by complex algorithms and machine learning (ML) capabilities.
World Trade Organisation (WTO)	World Trade Report (2018)	AI is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with humans, such as the ability to reason, discover meaning, generalise or learn from past experience.
Organisation for Economic Co-operation and Development (OECD)	Recommendation of the Council on AI (2019)	An AI system is a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy.
Office of the Privacy Commissioner for Personal Data (PCPD), Hong Kong	Guidance on Ethical Development and Use of AI (2021)	A family of technologies that involve the use of computer programmes and machines to mimic the problem-solving and decision-making capabilities of human beings.

In the Study, the Council regards AI as a more generalised and broader concept by taking into account the common features mentioned by different parties above. For the sake of simplicity, AI mentioned here and hereafter covers "AI systems", "AI models", "AI applications", "use of AI", "AI robots" and similar. In considering the wide spectrum of AI, the Study focuses solely on those consumer-facing tools broadly adopted in the e-commerce industry. They are usually supported by ML, which is the use of historical data to predict future outcomes. Some selected examples are listed below.

Figure 1: Examples of Consumer-related AI Applications

Personalisation of Customer Experience	Detection of Frauds, Deceptive Practices and Unsafe Products	Customer Services, Complaint Handling and Dispute Resolution
Personalised email marketing	Detect frauds	Chatbots/virtual assistants
Personalised website display	Detect counterfeit products	Search engines
Personalised pricing	Detect fake ratings or reviews	Delivery route optimisation
Optimised discounts and offers	Detect product safety issues	Handle complaints and determine redress
Recommendation	Identify traders that infringe product safely policies	Resolve disputes
Image recognition	Detect or remove non-compliant products	
Facial recognition		
Voice recognition		
Other biometrics recognition		

Definition of E-commerce

In general, e-commerce refers to the buying and selling of goods or services over the Internet, and the transfer of money and data to execute these transactions.[4] These business transactions occur as business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C). With the popularisation of the Internet, companies across industries such as retailers, insurers, banks, ticket agencies have been digitalising their business. As the Council targets to understand the impacts of AI adopted by traders on consumers, the scope of the Study is confined to B2C e-commerce. Banking services and insurance products are also excluded from the Study because there are already responsible authorities to regulate their trade practices.

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[4] Research Office of the Legislative Council. (2020). E-commerce in Hong Kong.

1.4 Methodology

In order to achieve the above-mentioned objectives, the Study took a mixed-method approach. This comprised:

- A quantitative online survey on consumers' usage and attitude regarding AI adoption in the e-commerce industry in Hong Kong;

- Review of available AI applications on popular e-commerce platforms in Hong Kong;

- Content analysis of public information available on popular e-commerce platforms accessible to Hong Kong consumers, such as data privacy policies, and terms and conditions (T&Cs);

- In-depth interviews with e-commerce traders, technology providers, and industry experts in the AI field in Hong Kong;

- Desk research on consumer complaints and related issues in local and global AI markets;

- Desk research on guidelines, initiatives and standards about the use of AI in selected jurisdictions; and

- Engagement with stakeholders to collect views on approaches to enable the development of responsible and ethical use of AI in e-commerce.

Due to rounding, numbers presented throughout this Report may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

Reference foreign exchange rates as of 15 July 2022.

Quantitative Online Consumer Survey

The Council commissioned a research agency to undertake a quantitative online survey on consumers' usage and attitude regarding AI adoption in the e-commerce industry in Hong Kong. 1,219 responses were collected online between 18 October and 2 November 2021.

AI Application Review

The Council explored ten e-commerce platforms' potentially AI-powered features, including product recommendation and chatbots, to review their usability and user interface in Q2 2021, and revisited in Q2 2022.

Content Analysis of E-commerce Platforms

Public information available on 112 e-commerce platforms from Hong Kong, the Mainland and overseas which sell products or offer services, including privacy policies and T&Cs, was reviewed in the period of Q2 – Q3 2021. Parameters were set to measure traders' data collection practices, such as types of data collected and purposes and ways of collecting data.

In-depth Interviews with Traders

19 interviews (including written responses if face-to-face interviews were not preferred) with e-commerce traders, technology providers, and industry experts in Hong Kong were successfully arranged in Q1 2021. The interviews covered (1) the adoption and governance of AI technologies; (2) data privacy policies on collection and use of consumer data; (3) opinions on AI barriers and development in Hong Kong, and (4) views on enhancing consumer trust in AI.

Desk Research on Consumer Complaints and related Issues in the AI Field

The Council reviewed complaint cases received from consumers and researched into AI-related consumer issues in both the local and global AI markets, especially complaints lodged by overseas consumer organisations.

Desk Research on AI Governance in Selected Jurisdictions

The Council looked into the AI-related initiatives in Hong Kong as well as AI strategies in ten jurisdictions, namely, the Mainland, Canada, France, Germany, Japan, Singapore, South Korea, the EU, the United Kingdom (UK) and the United States (US). These jurisdictions were selected based on the relevance to the Study of their Governments' AI strategies and action plans.

Stakeholder Engagement

The Council engaged with the Office of the Government Chief Information Officer (OGCIO), the PCPD, the Hong Kong Science and Technology Parks Corporation (HKSTP), the Hong Kong Cyberport Management Company Limited (Cyberport), the Hong Kong Productivity Council (HKPC), and major industry associations in Hong Kong to collect and exchange views on approaches to enable the development of responsible and ethical use of AI in e-commerce.

1.5 Limitations

Although employing a mix of methods could enhance the comprehensiveness of the Study, there were still certain research limitations.

As one of the objectives of the consumer survey was to gauge consumers' attitude and behaviour towards the adoption of AI in e-commerce, only respondents with online shopping experience were recruited. In consequence, the opinions of those who do not shop online could not be obtained. Besides, participation bias (i.e. non-response bias) might exist since consumers who are less digitally active might have rejected or not noticed the survey. In order to capture as many types of respondents as possible, the Council had announced the survey via different channels, including its official website, Facebook page, Oil Price Watch app and the consumer panel of the independent research agency.

For the in-depth interviews, the Council had difficulty in securing interviews, especially with some overseas and Mainland Chinese e-commerce platforms which are also popular in Hong Kong. Out of the 73 companies/individuals the Council had contacted, only 19 in-depth interviews were arranged successfully. Of those who rejected the interview invitations, seven replied that AI strategies were considered a sensitive topic by their companies; and one said the company had not adopted any AI applications yet. The remaining 46 companies did not respond at all. The low response rate might reflect traders' unwillingness or unreadiness of sharing their experience in adopting AI in their business operations. Also, owing to the fourth

wave of the COVID-19 outbreak in Q1 2021, some companies were still operating under flexible work arrangements, which hindered interview scheduling with them.

To understand the practices of those who had not participated in the interviews, the Council made attempts at reviewing the information available on their websites, like data privacy policies and T&Cs, and conducting trial of their AI-related applications. However, as for certain applications such as personalised pricing and facial recognition for payment, the number of platforms that were available for review was rather limited. Besides, as applications like product recommendation and chatbots could be powered by AI, rule-based programmes, or both simultaneously, it was difficult to verify whether the reviewed applications were completely supported by AI or derived from programming. Nevertheless, this limitation implies that consumers might have also faced similar uncertainty as the Council did while shopping online.

1.6 Structure of the Report

The remainder of the Report is structured as follows:

- Chapter 2 presents the implications of AI on consumers and common AI principles.

- Chapter 3 explores Hong Kong consumers' perception of AI in e-commerce based on the consumer survey.

- Chapter 4 discusses Hong Kong consumers' experience in AI applications and traders' information disclosure, with reference to (i) the consumer survey, (ii) the review of AI-related features available on e-commerce platforms, and (iii) the content analysis of traders' online public information.

- Chapter 5 introduces the roles of traders and stakeholders in promoting the use of AI in Hong Kong.

- Chapter 6 examines current AI governance in selected jurisdictions that could be reference for Hong Kong, as well as challenges in AI governance.

- Chapter 7 suggests recommendations to promote "responsible and ethical AI" and to empower consumers in Hong Kong.
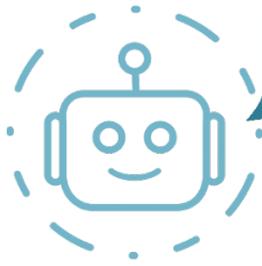
2 AI-Consumer Relationship

In the e-commerce world, although consumers may not realise the adoption of AI in their online shopping journey, AI is actually impacting them on many fronts of their shopping experience. There were cases where AI algorithms might be used in ways that distort competition and harm consumers.

To illustrate, personalised pricing can turn to be a practice of price discrimination against an individual consumer based on his/her willingness to pay deduced from personal characteristics and purchase patterns. Another issue is biased ranking, where e-commerce platforms may manipulate ranking to favour certain products because of the potential benefits they can gain from dealers, such as higher commissions. In addition, they may also use other unfair design practices, such as misleading scarcity messages like "last one" and "best-selling" labels, to exploit consumers' loss aversion and tendency to be influenced by the actions of others. Even worse is unethical traders may generate fake reviews to manipulate consumers' choices. Moreover, the application of AI in mass surveillance and law enforcement, such as social scoring and predictive policing, is always a debate. Facial recognition technology, too, has always been controversial – privacy violation is the top concern related to this technology.

Becoming more aware of the risks AI may pose, organisations around the globe have published more than 160 sets of AI principles, which focus on accountability, human oversight, transparency and interpretability, data privacy, fairness, beneficial AI, reliability, robustness and security. These voluntary principles can be used not only to guide the adoption of AI, but also as a framework to evaluate whether companies use AI ethically and responsibly. In fact, to further mitigate the risks, regulatory momentum has been increasingly realised in some jurisdictions. More regulatory and supervisory frameworks are expected globally for these controversial applications of AI. Meanwhile, it is of vital importance for consumer watchdogs to continue monitoring market movements regularly.

2.1 AI and Society

Many international organisations and subject experts regard AI as a double-edged sword depending on how it is utilised. While proper use of AI is beneficial to the society and consumers, there are also adverse consequences in case of misuse. International discussion on the benefits and risks of AI is presented below.

Benefits of AI

Foster Economic Growth

With the use of complex ML algorithms, AI can analyse a vast amount of data generated in the digital age. According to the OECD, AI helps traders increase cost efficiency and productivity, improve ability to manage risks, intensify prediction and decision-making capacity, and enhance innovation opportunities. For example, traders can collect and analyse data in real time and use AI to personalise offerings and suggestions based on what they know about the consumer. Besides, many large corporations nowadays leverage AI-supported tools such as chatbots to interact with customers 24/7 without human presence. Furthermore, business owners can have much more sophisticated sales or market trend forecasting, data analytics and automated decision-making by investing in their own AI applications. In other words, AI aids businesses in product and service provision, and market monitoring, thus increasing sales and profits. As estimated by PwC, in 2030, AI could contribute up to US$15.7 trillion (HK$123 trillion) to the global economy. Of this, US$6.6 trillion (HK$52 trillion) and US$9.1 trillion (HK$71 trillion) would likely come from increased productivity and from consumption-side effects (e.g. increased demands and purchase intent) respectively.[5]

Increase Quality of Life

AI-enabled devices and applications have penetrated consumers' everyday life, making their life more convenient. In terms of social inclusion, AI can offer accessibility for the disabled. To take people with dexterity disabilities as an instance, usage of voice commands with AI virtual assistants could help them navigate smartphones. As regards healthcare, AI is used to detect diseases more accurately and earlier. For instance, an AI software to detect cancer, developed by researchers at the Houston Methodist Research Institute in the US, could interpret mammograms and translate patient data into diagnostic information 30 times faster than a human doctor, with 99% accuracy. The need for unnecessary biopsies can hence be reduced.[6]

Improve Workplace Safety

AI robots could replace humans for dangerous tasks at work. Nowadays, drones have been increasingly used to conduct risky work like roof inspection on many construction sites. For example, the Architectural Services Department (ArchSD) in Hong Kong has begun adopting robots to cut the tops of piles used in foundation work and deliver heavy materials on worksites. It has also started using drones that fly above and around heritage buildings to check for defects that need to be repaired.

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[5] PwC. (2017) Sizing the prize - What's the real value of AI for your business and how can you capitalise?
[6] Wired. (2016) This AI software can tell if you're at risk from cancer before symptoms appear.

Risks of AI

Infringe Data Privacy

Even though there are different privacy protection laws across jurisdictions, cases of violation occur from time to time. For example, Clearview AI, a company specialising in facial recognition, was sued by the Office of the Privacy Commissioner of Canada (OPC) for violating the country's privacy laws by collecting photographs of Canadian citizens for mass surveillance and facial recognition without their consent, and for commercial sale in 2021.[7] This kind of behaviour not only infringes consumers' privacy, but also reduces their trust in AI. Besides, companies might develop algorithms to track consumer behaviour without their consent. Back In 2012, it was uncovered that Target, an American department store, used AI to find if its consumers were pregnant based on their purchase patterns, and then sent coupons related to maternal products to their addresses. It would be problematic if concerned consumers wanted to safeguard their privacy in pregnancy and objected to tracking.[8]

Create Unclear Liability

AI-enabled devices could take over many decisions from humans, generating difficulty in establishing a clear liability framework around AI.[9] For example, AI is able to make decisions without human control having learnt from "experiences" in its implementation phase. Then, most of the current legal regimes might be unable to provide adequate protection for consumers. Also, AI that relies on ML algorithms could be difficult to understand and therefore might be subject to malicious manipulation and result in "Black Box" problems. If used improperly, AI may undermine human rights, individual autonomy and fairness. Consumers might be harmed and companies that use AI might lose the trust of consumers consequently.

Induce Ethical Issues

It has always been argued that AI technologies, especially facial recognition, could be unethically racist. In 2019, the National Institute of Standards and Technology (NIST) published a report on facial recognition algorithms, showing that majority of the tested algorithms could only work well on middle-aged white men's faces but not so well for people of colour, women, children, or the elderly. Any action taken according to the false results could be devastating.[10]

Cause Disruption to Workforce

As an element of the Fourth Industrial Revolution, i.e. the trend towards automation and data exchange, AI has been impacting the workforce in different industries. According to a survey by the World Economic Forum (WEF) in 2020, it was anticipated that by 2025, 85 million jobs would be displaced (including data entry clerks, administrative secretaries and accounting clerks) while 97 million new jobs (such as data analysts, AI specialists and big data experts) would be created around the globe owing to the automation and a new division of labour between humans and AI machines.[11] Indeed, 43% of the interviewed businesses admitted that they were set to reduce their workforce due to technology integration. Therefore, despite the new opportunities, it is vital to ensure the disrupted workers are given chance of upskilling and reskilling so that they can withstand the AI trend.

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[7] OPC. (2021) Clearview AI ordered to comply with recommendations to stop collecting, sharing images.
[8] Forbes. (2020) AI And Data Privacy – Turning a risk into a benefit.
[9] The Association of Corporate Counsel. (2021) Top ten issues on liability and regulation of AI systems.
[10] Privacy SOS. (2020) Five fast facts from the federal study of demographic bias in facial recognition.
[11] WEF. (2020) Don't fear AI. It will lead to long-term job growth.

2.2 Common AI Principles for the Benefits of Humans

To address the above risks associated with the use of AI and to ensure "responsible and ethical AI", various international organisations and countries have published different ethical standards. To date, more than 160 sets of AI principles have been introduced worldwide. They can be used not just to guide the adoption of AI, but also as a framework to evaluate whether companies apply AI ethically and responsibly. Table 2 below lists some of the common ethical principles for AI adoption.

Table 2: Common Ethical Principles for AI Adoption

Principle	Meaning
Accountability	Companies should be responsible for what they do and be able to provide sound justifications for their actions.
Human Oversight	Companies should ensure that appropriate human oversight is in place for the operation of AI.
Transparency and Interpretability	Companies should disclose their use of AI and relevant policies while striving to improve the interpretability of automated decisions and decisions made with the assistance of AI.
Data Privacy	Companies should put in place effective data governance policy.
Fairness	Companies should avoid bias and discrimination in the use of AI.
Beneficial AI	Companies should use AI in a way that provides benefits and minimises harm to stakeholders.
Reliability, Robustness and Security	Companies should ensure that AI systems operate reliably, can handle errors and are protected against attacks.

However, it is noteworthy that these AI principles are mostly voluntary. Continual monitoring over market activities by consumer watchdogs is still essential.

2.3 How AI Impacts Consumer Rights in E-commerce

In the e-commerce scene, there were cases where traders used AI algorithms to distort competition and harm consumers, such as covertly manipulating choices of consumers, creating unfair rankings, and discriminating against certain consumers when offering products and services. BEUC's consumer survey published in 2020 found that 64% of the respondents in Belgium, Italy, Portugal and Spain agreed or strongly agreed that companies were using AI to manipulate consumer decisions. These issues might ultimately affect consumer trust in the digital economy.

> **Potential Harm of AI to Consumers**
>
> *"Traders' sales tactics have to be controlled as AI can do a lot in the back-end operations to monitor consumer behaviour, which may benefit traders but not consumers."*
>
> *- Industry Expert, In-depth Interview*

Some key ethical issues pertaining to the use of AI in e-commerce are presented in detail below, namely personalised pricing, biased ranking, social scoring, fake review and facial recognition.

Personalised Pricing

Personalised pricing can turn to be the practice of price discrimination against an individual consumer based on his/her willingness to pay deduced from personal characteristics and purchase patterns by machine profiling. As a result, a product sold by the same trader to different consumers could be at different prices. On the one hand, traders can hence maximise profits; but on the other hand, it may increase consumers' time costs and transaction costs as they need to take more steps, such as shopping around, to avoid being charged at premiums and to search for their best deals in mind.

In reality, it is difficult to show evidence about the use of personalised pricing by online traders. Case Study 1 demonstrates one related controversial case.

While personalised pricing might be a concern in global markets, the Council understands from the trader interviews that integrated e-commerce platforms in Hong Kong seldom set the prices of products supplied by third-party sellers, except for products procured on their own or house brands, for the time being. Hence, it might be difficult to examine whether personalised pricing exists in Hong Kong and what the potential detriment is. However, as the digital market is highly dynamic, continual monitoring is needed.

Case Study 1 – Tinder Plus

CHOICE, Australia's consumer organisation, found that the dating app Tinder had collected users' personal data and used it to set differentiated prices for customers of its premium service, Tinder Plus. A total of 60 mystery shopping cases were conducted in February to March 2020 in Australia. The mystery shoppers were asked to sign up to Tinder and take screenshots of the prices on Tinder Plus as well as information on their profile pages. The results confirmed that a pattern of price discrimination based on age was discovered, in which older people were arbitrarily charged more. CHOICE then lodged a complaint to the Australian Competition and Consumer Commission (ACCC) in August 2020 about Tinder's use of customer data to engage in discriminatory pricing practices. It raised three issues:

- Lack of transparency in price setting: Tinder had deliberately misled and deceived users of its app through omission and silence in its policies of how prices were determined or might vary.

- Misuse of data: Tinder had not been transparent in its description of how customers' personal information would be used when they agreed to use the service. This diminished customers' control over their data and caused a significant imbalance in consumer rights.

- Age discrimination: Tinder set higher prices for older users which could not be reasonably justified.

As of July 2022, the complaint had not yet been settled.

Furthermore, Consumers International (CI) conducted a consumer survey on Tinder Plus across six countries, including Brazil, India, New Zealand, South Korea, the Netherlands and the US in 2021. It was found that Tinder Plus drew on age and possibly other unknown factors in its price-setting mechanism.

References:
CHOICE. (2020) Complaint to the ACCC about Tinder's misuse of data and discriminatory pricing.
CI. (2022) A consumer investigation into personalised pricing.

Biased Ranking

Even without the involvement of personalisation, businesses could still exploit platform design to the detriment of consumers in other ways of ranking. For example, e-commerce platforms may manipulate ranking to favour certain products because of the potential benefits they can gain from dealers, such as higher commission payments or revenue shares, or even to promote their own products to optimise profits. They may also use other unfair design practices, such as misleading scarcity messages like "last one" and "best-selling" labels, to exploit consumers' loss aversion and tendency to be influenced by the actions of others. These are considered deceptive designs[12] that inhibit fair market competition and harm consumers. Related examples are demonstrated in Case Studies 2-4.

Case Study 2 – Trivago

In 2020, the Federal Court of Australia found that Trivago breached the Australian consumer law, as its ranking algorithm placed significant weight on the cost-per-click fee paid by online hotel booking sites and did not highlight the cheapest rates for consumers. It misled consumers to believe that it provided an impartial, objective and transparent price comparison of hotel room rates. The Federal Court also found Trivago's hotel room rate comparison that used strike-through prices or text in different colours gave consumers a false impression of saving because they often compared an offer of a standard room with an offer of a luxury room in the same hotel. These unfair ranking practices are harmful to consumers, even without any personalisation of results.

In March 2020, Trivago appealed against the Court's decision, but the Full Federal Court dismissed the appeal in November 2020. Later in April 2022, the Federal Court ordered Trivago to pay penalties of AU$44.7 million (HK$234 million) for making these misleading representations.

References:
ACCC. (2020) Trivago misled consumers about hotel room rates.
ACCC. (2022) Trivago to pay $44.7 million in penalties for misleading consumers over hotel room rates.

Case Study 3 – Google

In November 2021, Google lost its appeal against the US$2.7 billion (HK$21 billion) antitrust fine that was levied against it in 2017 by the EC. The fine was for Google's promotion of its own comparison-shopping service in prominent boxes at the top of its search results – a practice that left competing comparison-shopping services at an unfair disadvantage, given Google's near-total domination of search in Europe. The General Court of the EU found that Google's practices had anti-competitive effects. Consumers' genuine choice of services were being denied. The judges concluded the company promoted its own service "through more favourable display and positioning" while simultaneously relegating rivals "by means of ranking algorithms".

Reference:
EC. (2017) Commission fines Google €2.42 billion for abusing dominance as search engine by giving illegal advantage to own comparison shopping service.

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[12] Deceptive designs are features of user interface design that nudge or push consumers into making choices that are in the best interest of the service provider, rather than in the interest of the consumer.

In 2019, The Wall Street Journal alleged that Amazon had changed its search algorithm to more prominently feature listings that were more profitable. Instead of showing customers mainly the most relevant and best-selling listings while they were searching, the changed ranking favoured Amazon's own private label products at the expense of competing products. Meanwhile, the EC also opened an antitrust investigation into Amazon's business practices that might artificially favour its own retail offers. In 2020, the EC sent a Statement of Objections to Amazon for the company systematically making use of the non-public business data collected from independent sellers on its marketplace, to the benefit of Amazon's own retail business, which directly competes with those third-party sellers.

The case was still not settled as of July 2022.

References:
EC. (2019) Commission opens investigation into possible anti-competitive conduct of Amazon.
EC. (2020) Commission sends Statement of Objections to Amazon.

In view of mitigating such unfair ranking, the European Parliament's Internal Market and Consumer Protection Committee has endorsed the Digital Markets Act (DMA) legislative proposal, which would prevent tech giants from unfairly ranking their own services and products over similar services or products offered by others on their platforms.[13] In July 2022, the European Parliament and the European Council approved the final text of the DMA. The DMA is expected to be published in the EU's Official Journal in October 2022. The DMA will ban certain unfair business practices used by large platforms and enable the EC to carry out market investigation and sanction non-compliant behaviour.[14]

Social Scoring

The application of AI in mass surveillance and law enforcement, such as social scoring and predictive policing, is always a debate. Potential issues it could induce include bias, discrimination, infringement of privacy and human dignity, and so forth. In the light of this, the EU's proposal for a regulation laying down harmonised rules on AI (AI Act) proposed that AI systems used for general purpose of social scoring should be prohibited, regardless of the context under which the data used is collected. Furthermore, BEUC, in its position paper on the AI Act, also recommended a prohibition on AI systems which lead to not just discrimination on the basis of the characteristics, biometric data or otherwise, but also unfair discrimination on economic factors.

Similar scoring technologies can be found in e-commerce. Case Study 5 is an example.

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[13] BEUC. (2021) EU Parliament committee brings consumer interest forward in Digital Markets Act.
[14] European Parliament. (2022) Deal on Digital Markets Act: EU rules to ensure fair competition and more choices for users.

Airbnb patented an AI system capable of generating social scoring to determine consumers' trustworthiness based on a variety of social media/online data. The technology scans the Internet to create a profile of each individual, using news articles, social media profiles, and employment and education records to arrive at a "trustworthiness score". On Airbnb's website, it clearly indicates that "every Airbnb reservation is scored for risk before it is confirmed. We use predictive analytics and ML to instantly evaluate hundreds of signals that help us flag and investigate suspicious activity before it happens". However, from a consumer protection perspective, this kind of AI is likely to lead to the discrimination against some social groups in the market for holiday homes.

In February 2020, the US's Electronic Privacy Information Centre (EPIC) submitted a complaint to the US Federal Trade Commission (FTC) about Airbnb's secret customer-scoring algorithm. According to the EPIC, Airbnb "failed to show that its technique meets the fairness, transparency and explainability standards for AI-based decision-making set out in the OECD AI Principles and the Universal Guidelines for AI". As of July 2022, the complaint was still being handled.

Reference:
EPIC. (2020) EPIC files complaint with FTC about Airbnb's secret "trustworthiness" scores.

Even though social scoring is not yet a very common practice among e-commerce traders in Hong Kong, attention is still needed to be paid to the e-commerce industry given the rapid development of the market.

Fake Review

With the use of Natural Language Generation (NLG) software, one can easily create fake reviews on e-commerce platforms. Fake and misleading reviews can potentially impact businesses' ratings and the display of their services and products on webpages, distorting consumers' shopping experience.

Some traders have been making efforts to fight against fake reviews to protect consumers. For example, according to Tripadvisor, the company removed or rejected nearly one million fake reviews from its platform and identified a swathe of new sites selling bogus reviews in 2020, which accounted for 3.6% of its total reviews.[15]

Overseas regulators also started to pay attention to these fake reviews, whether or not generated by AI. In the UK, the Competition and Markets Authority (CMA) opened a formal probe into Amazon and Google in June 2021 over concerns that they had not been doing enough to combat fake reviews on their websites. However, the CMA has not reached a view on whether Amazon and Google have broken the law at the current stage.[16] In April 2022, the UK Government announced a bundle of consumer protection and competition reforms which could fine platforms that fail to tackle fake reviews up to 10% of their global annual turnover.

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[15] Forbes. (2021) Tripadvisor took down nearly 1 million fake reviews last year.
[16] CMA. (2021) CMA to investigate Amazon and Google over fake reviews.

Facial Recognition

Remote biometric technologies – in particular facial recognition – have gained a lot of traction in recent years. The rapid adoption of facial recognition raises multiple concerns, mainly related to the possibility of its potential to undermine freedom and the right to privacy. To address and mitigate these risks, policies regarding the use of facial recognition technology have started to emerge over recent years.

In the US, some local and state governments have banned the use of facial recognition technology by public agencies, including for the purpose of law enforcement. Major cities such as San Francisco, Oakland and Boston adopted similar measures. At the state level, Washington, Virginia and Massachusetts introduced legislations to regulate the adoption of facial recognition [17] – in 2020, the Washington State Legislature passed a bill establishing new guardrails on government use of facial recognition software. In Virginia, a state-wide ban on facial recognition technology has been in effect as part of House Bill 2031 since 2021. Most police departments will not be allowed to use or buy it without prior legislative approval. Meanwhile, Massachusetts lawmakers also passed one of the first state-wide restrictions of facial recognition as part of a sweeping police reform law in 2021.

The EU's AI Act proposed that AI systems intended to be used for the remote biometric identification of natural persons represent high-risk applications as it can lead to biased results and discriminatory effects. A "remote biometric identification system" refers to an AI system for the purpose of identifying natural persons at a distance through the comparison of a person's biometric data with the biometric data contained in a reference database, and without prior knowledge of the user of the AI system whether the person will be present and can be identified. Such remote biometric identification systems should be subject to specific requirements on logging capabilities and human oversight.

In September 2021, the United Nations (UN) recommended banning AI applications that are incompliant with the international human rights law.[18] It called for a moratorium on the use of facial recognition technologies in public spaces, at least until authorities can demonstrate that there are no significant issues with accuracy or discriminatory impacts and that these AI systems comply with robust privacy and data protection standards.

In October 2021, the WEF outlined a series of best practices for law enforcement agencies using facial recognition technologies in its White Paper titled "A Policy Framework for Responsible Limits on Facial Recognition Use Case". Tests of this framework started in January 2022. [19]

At the same time, some enterprises have also been taking measures to shut down facial recognition. In November 2021, Meta announced to shut down the "Face Recognition" system on Facebook as part of a company-wide move to limit the use of facial recognition in their products.[20] Users who have opted in this setting will no longer be automatically recognised in photos and videos. In June 2022, Microsoft released its "Microsoft Responsible AI Standard, v2" and announced to stop offering face analysis tools that infer emotional states and identity attributes such as gender, age, smile, hair, and makeup.[21]

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[17] WEF. (2021) This is best practice for using facial recognition in law enforcement.
[18] UN. (2021) Urgent action needed over AI risks to human rights.
[19] WEF. (2021) A policy framework for responsible limits on facial recognition.
[20] Facebook. (2021) An update on our use of face recognition.
[21] Microsoft. (2022) Microsoft's framework for building AI systems responsibly.

Case Studies 6-7 show two recent examples related to the use of facial recognition tools.

Case Study 6 – Didi Global

Ride-hailing app Didi Global was fined RMB 8 billion (HK$9.2 billion) by the Cyberspace Administration of China (CAC) in July 2022 for violating the cybersecurity and data laws. The CAC revealed Didi had committed 16 law violations since June 2015, including illegally accumulating 107 million pieces of passenger's facial recognition information, 167 million records of location data, etc. The CAC added that the circumstances were serious, and the punishment should be severe. Didi responded that it will strictly follow the penalty decision, and abide by the requirements of relevant laws and regulations in the future.

Reference:
CAC. (2022) Administrative penalty information on Didi Global.

Case Study 7 – Google Photos

In June 2022, Google agreed to pay US$100 million (HK$782 million) to Illinois residents to settle a class-action lawsuit over one of its facial recognition features in Google Photos. The complaint alleged Google's face grouping tool, which automatically identifies face in photos and videos uploaded to Google Photos, violated Illinois' Biometric Information Privacy Act.

Reference:
The Verge. (2022) Google to pay $100 million to Illinois residents for Photos' face grouping feature.

Figure 2: Illustration of Facial Recognition

In brief, AI could bring both benefits and risks to the society and consumers. The above controversial cases related to personalised pricing, biased ranking, social scoring, fake review, and facial recognition are all examples demonstrating how consumers rights could be undermined in the e-commerce industry. To guide the development of AI, both guidelines and regulations are of vital importance. Regular monitoring over activities in the marketplace by consumer watchdogs is crucial too.
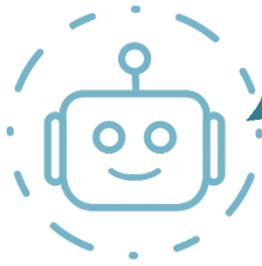
3 Consumers' Perception of AI

Online shopping is growing prevalent in Hong Kong. Revealed by the Council's online quantitative consumer survey, Hong Kong consumers are quite active in e-commerce. This phenomenon is believed to have been catalysed by the COVID-19 pandemic aside from the steadily growing digital literacy. However, in terms of attitude towards AI, some consumers are still sceptical and conservative at the current stage.

Although traders have been increasingly adopting AI tools and related tracking technologies, consumers' familiarity and satisfaction with AI is still low. According to the consumer survey, despite the 99% awareness level of AI, up to 75% of the respondents were unfamiliar with it. Only 41% expressed that AI addressed their needs accurately, and merely 31% agreed that they trusted AI. The majority still reflected that they had worries and concerns about AI. Over 70% of the respondents indicated that they were worried about the excessive data collection of traders, the possibility of traders to abuse the use of AI, and the absence of accountable parties if AI went wrong. Just 34% of them thought that the current regulatory environment in Hong Kong was good enough.

Around 80% of the respondents wished traders to let them choose whether or not to use AI tools, and inform them when AI was applied. They also demanded traders to increase the cybersecurity and privacy protection level, and to establish a complaint mechanism to enhance their confidence in using AI.

Notwithstanding their concerns about cybersecurity and privacy protection, consumers do not act cautiously in practice when shopping online. For instance, up to 60% of the respondents had never read privacy policies at online stores or did not know what privacy policies were, and 27% of them simply neglected the cookie consent messages that popped up from the platforms they visited without choosing whether to accept or decline traders' cookie tracking. To change their online shopping habits, consumer education is indispensable.

3.1 E-commerce and Online Shoppers in Hong Kong

Hong Kong's e-commerce market has been growing rapidly in the last decade, facilitated by high Internet and smartphone penetration, improved electronic payment and logistic infrastructure, and increased consumer confidence in online transactions. Currently, numerous large retailers as well as small and medium-sized enterprises (SMEs) are becoming more aggressive towards e-commerce with the support of technology providers and have marked a presence on social media. Online platforms that offer services such as food delivery, car hailing and ticketing have also grown exponentially in recent years. The trend implies there are more choices of products and services for consumers to choose while shopping online.

The number of online shoppers has also surged in recent years. According to the Census and Statistics Department (C&SD), the online shopping penetration rate in Hong Kong rose to 43.1% in 2020 from 27.8% in 2016. The more actively and frequently consumers shop online, the higher the chance that they will encounter different AI tools on e-commerce platforms.

In particular, the anti-pandemic measures against COVID-19 have boosted the development of e-commerce in Hong Kong since 2020. Consumers are driven to switch from physical shops to online stores. Euromonitor revealed that Hong Kong's e-commerce retail value sales went up by 27% year-on-year (yoy) to HK$49 billion in 2020. As reported by PwC, the value of online retail sales made up 8.1% of the total retail sales in 2021, which is even an increase of 39% yoy.[22]

More recently in July 2021, the Government launched the Consumption Voucher Scheme in order to stimulate the economy as well as fostering digitalisation of financial activities. Over 630 million people successfully registered for the scheme. In 2022, there were two more rounds of the scheme, and the amount disbursed in total was a double as compared to 2021. It is believed the widening adoption of digital payment will further fuel the growth of e-commerce.

3.2 Survey Background

Objectives

As consumers' activeness in e-commerce grows, their expectations on many fronts will also increase. It is worth studying their concerns and demands as regards the use of AI in e-commerce. While there have been studies exploring traders' opinions on AI, related research from consumers' perspective is rather limited in Hong Kong's context. In the light of that, the Council conducted an online quantitative consumer survey to:

- Comprehend consumers' online shopping habits and experience of using AI tools (behavioural level);
- Understand consumers' awareness and perception of AI adoption in the e-commerce industry (attitudinal level); and
- Identify the potential risks that consumers might encounter, and mitigation they call for regarding the application of AI at online stores.

Eventually, understanding consumers' concerns and expectations enables the Council to examine whether traders' current practices can fulfil consumers' needs and thus to provide suggestions for enhancement.

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[22] PwC. (2022) Hong Kong's total retail sales to grow by 7% in 2022.

Methodology

An independent research agency was appointed to undertake the online consumer survey. The data collection period was from 18 October to 2 November 2021. Target respondents were Hong Kong residents who were aged 15 or above and had visited any e-commerce platforms in the past regardless of the regions or countries where the online shops were based. To ensure the majority of the samples properly represented the online population in Hong Kong, quotas were set on gender, age and monthly household income (MHI) according to the information technology usage and penetration data in the Thematic Household Survey Report No. 73 released by the C&SD in April 2021.

A total of 1,219 responses were successfully collected online. Findings are set out below.

3.3 Consumers' General Online Shopping Behaviour

Before diving into consumers' perception of AI in e-commerce, their overall online shopping patterns have been examined to keep track of their latest consumption behaviour.

Online Shopping Frequency and Experience

Most online consumers in Hong Kong are frequent e-commerce platform visitors. 77% of the total respondents visited or made purchases at online stores on either a daily or a weekly basis (Figure 3). Specifically, females shopped slightly more often than males did. Respondents aged 55 or above had the lowest frequency; only 66% of them shopped online daily or weekly. The highest frequency was recorded among respondents aged 35-44 (81%).

Figure 3: Online Shopping Frequency by Gender and Age Group (%)

	Daily	Weekly	Less Frequently
Total	22	55	23
Male	20	56	24
Female	25	53	22
Age 15-24	22	52	25
Age 25-34	22	57	21
Age 35-44	25	56	19
Age 45-54	21	57	22
Age 55 or above	18	48	34
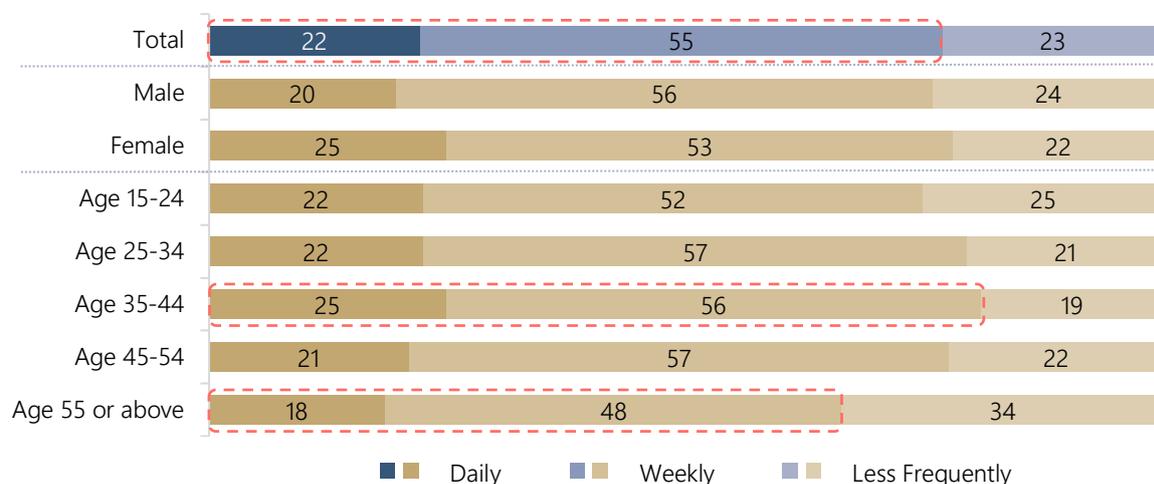
Base: N=1,219 (Male – 633; Female – 586; Age 15-24 – 147; Age 25-34 – 316; Age 35-44 – 314; Age 45-54 – 258; Age 55 or above – 184)

Although consumers shop online frequently in general, a certain number of them are relatively new to online shopping. As shown in Figure 4, the percentage of those who had three years' experience or less was 38%. Especially among the youngest segment aged 15-24 and the oldest segment aged 55 or above, the proportion was even more than 50%, implying many consumers from these age groups have only started to shop online over the recent few years, which was possibly catalysed by the COVID-19 pandemic and traders' aggressive promotions.

Figure 4: Online Shopping Experience by Age Group (%)

	10 years or above	7 to 9 years	4 to 6 years	1 to 3 years	Less than 1 year
Total	18	13	31	32	6
Age 15-24	3	9	36	41	10
Age 25-34	16	17	35	30	3
Age 35-44	25	11	33	28	4
Age 45-54	23	15	26	30	6
Age 55 or above	15	11	22	40	11
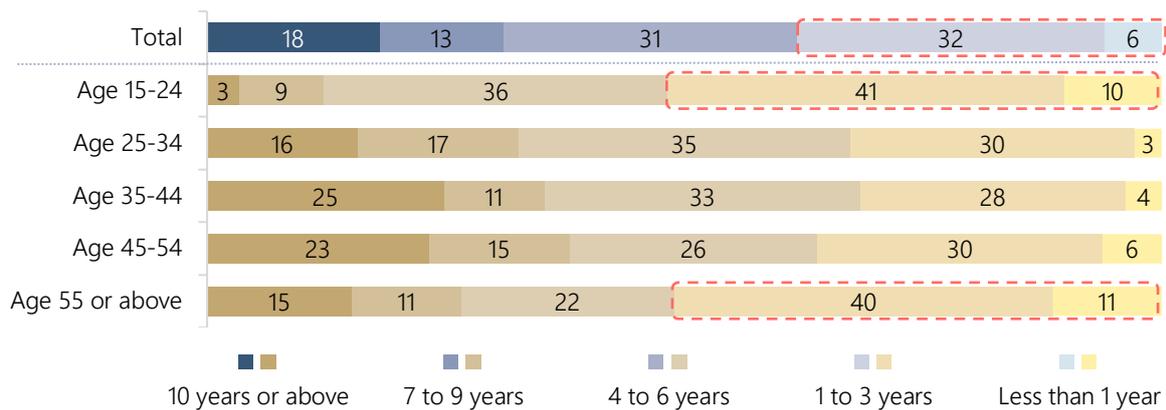
Base: N=1,219

Online Shopping Spending and Preference

For monthly online spending, the median amount that respondents reported was around HK$1,000. 36% of the respondents spent HK$2,000 or more (Figure 5). Yet, the expenditure differed among age groups. The youngest segment and the oldest segment tended to spend less online than the others did. Up to 33% of the former spent no more than HK$500 per month, probably due to their lower spending power; while for the latter, the percentage was 29%, which could likely be attributed to their prudent spending behaviour and attitude.

Figure 5: Online Spending by Age Group (%)

	HK$3,000 or above	HK$2,000-2,999	HK$1,000-1,999	HK$500-999	Less than HK$500
Total	20	16	24	21	19
Age 15-24	11	13	20	23	33
Age 25-34	24	19	24	21	13
Age 35-44	21	14	27	22	15
Age 45-54	24	21	22	19	14
Age 55 or above	13	8	26	24	29
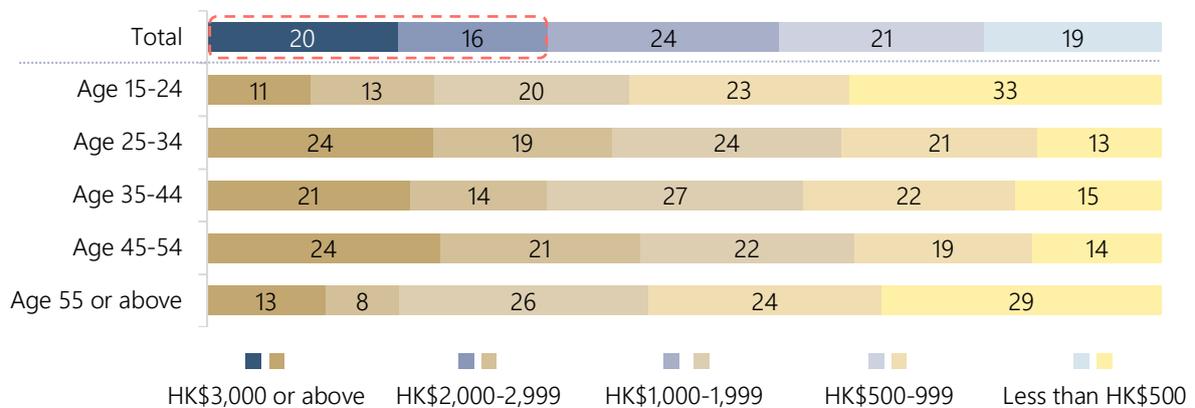
Base: N=1,219

Figure 6 shows the top 10 online stores that respondents claimed to visit most often. Despite their different origins, majority of them are integrated platforms which sell a variety of consumer products. The results showed that consumers prefer the convenience of one-stop shopping they offer.

22

Figure 6: Online Stores Browsed Most Often

When it comes to the categories browsed online, products (99%) were in general more popular than services (57%) (Figure 7). By product type, daily household goods (49%), clothes & shoes (47%), and food & beverages (45%) were the top three most prevailing categories. For services, food delivery (37%) and travel-related ticketing (25%) were relatively common, probably owing to the growing demands during the COVID-19 pandemic.

Figure 7: Product/Service Types Browsed Most Often Online (%)
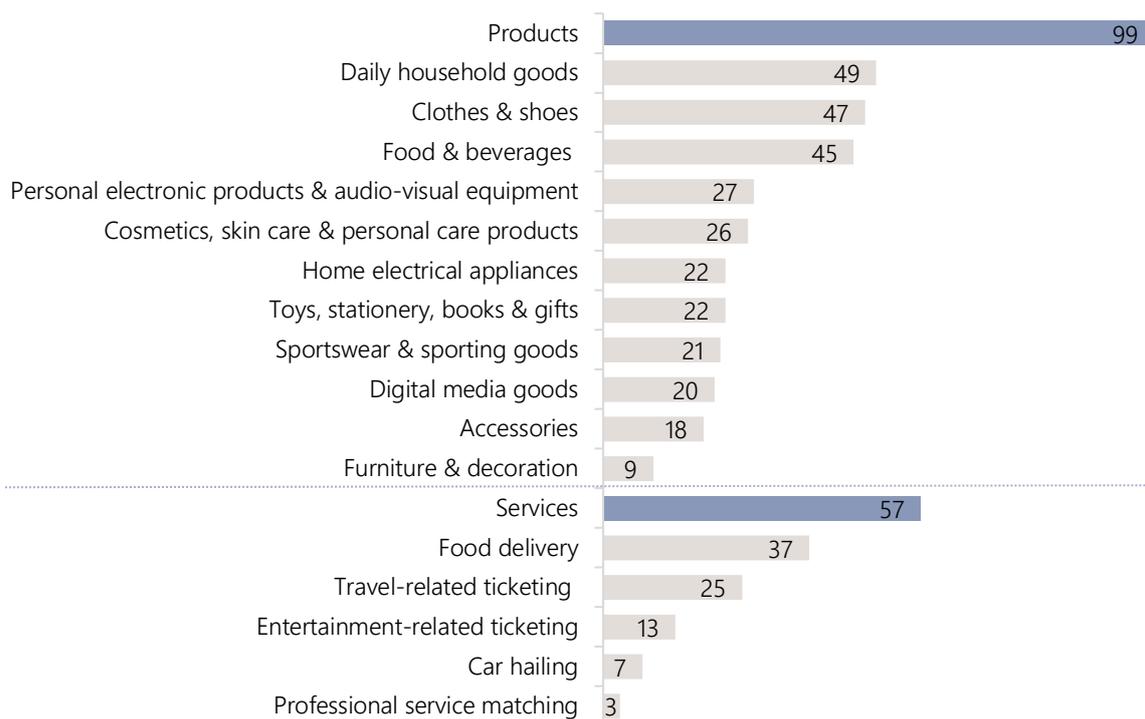
The above findings affirmed that shopping online has become a common habit for consumers to purchase a wide range of products and services. As the application of AI in e-commerce widens, consumers will likely experience more AI-related features without a full understanding of their rights and possible safeguards. Their opinions on AI as well as user experience need to be examined so that areas for traders to improve their AI adoption can be identified.

3.4 AI in Consumers' Eyes

This section deep dives into consumers' perception of AI.

Awareness of AI

When respondents were asked whether they had heard of AI and how familiar they were with it, almost all of them (99%) had heard of the technology, yet the extent of familiarity differed. As shown in Figure 8, those who had no or only little knowledge about AI accounted for 75% of total respondents, showing that AI is still a new technology to most consumers in spite of its widening application.

Figure 8: Awareness of AI by Subgroup (%)

	Heard of AI, and very familiar with it	Heard of AI, and quite familiar with it	Heard of AI, but only have little knowledge about it	Heard of AI, but no knowledge about it at all	Never heard of AI
Total	4	20	64	11	1
Age 15-24	6	31	57	6	
Age 25-34	4	22	63	11	
Age 35-44	4	15	67	14	1
Age 45-54	4	22	63	10	1
Age 55 or above	2	15	66	15	1
Secondary education or below	1	12	66	19	2
Post-secondary education	5	24	63	8	
Daily shoppers	8	20	59	13	
Weekly shoppers	3	20	66	10	1
Less-frequent shoppers	2	20	63	15	1

Base: N=1,219 (Secondary education or below – 360; Post-secondary education – 859; Daily shoppers: 270; Weekly shoppers – 667; Less-frequent shoppers – 282)

It is not a surprise that the youngest group aged 15-24 had the best knowledge about AI as compared with the others. Up to 37% of them claimed they were quite or very familiar with the technology. However, a clear digital divide existed for respondents aged 55 or above – not even 20% of them had relatively high familiarity with AI. Furthermore, higher education level and online shopping frequency obviously heightened consumers' AI awareness.

General AI Performance

Consumers are just moderately satisfied with the performance of AI at the current stage. Referring to Figure 9, only about 57% and 41% of the respondents respectively agreed that AI helped reduce their time spent in choosing products and addressed their needs accurately, which implies what considered beneficial to e-commerce traders might not necessarily be favourable in consumers' eyes.

Figure 9: Opinions on AI Performance (%)

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion/Do not know
AI helps reduce my time spent in choosing products	8	49	20	5	18
AI addresses my needs accurately	5	36	30	6	23

■ Strongly agree ■ Agree ■ Disagree ■ Strongly disagree ■ No opinion/Do not know
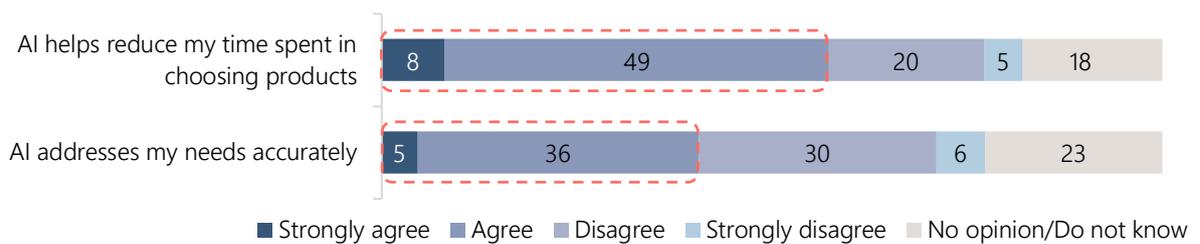
Base: N=1,219

Consumers' Attitude Towards AI

Respecting the attitude towards AI (Figure 10), some consumers are still quite sceptical. Only 33% of the respondents expressed that they were more willing to shop at online stores that adopted AI; 31% said that that they trusted AI; and merely 21% preferred AI to direct human contact. Such a conservative attitude might be related to their moderate satisfaction level with the AI tools they have experienced.

Figure 10: Attitude towards AI (%)

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion/Do not know
I am more willing to shop at online stores that adopt AI	5	28	29	7	31
I trust AI	4	27	30	9	30
I prefer AI to direct human contact	5	16	42	23	14

■ Strongly agree ■ Agree ■ Disagree ■ Strongly disagree ■ No opinion/Do not know
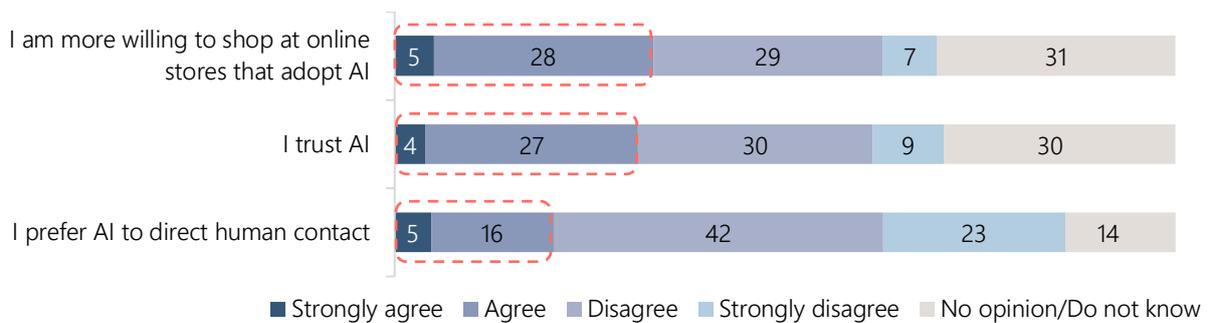
Base: N=1,219

Consumers' Worries when Using AI

Over 70% of the respondents agreed or strongly agreed that they were worried about AI pertaining to excessive data collection, the possibility for traders to abuse the use of AI, and the lack of responsible parties in case of errors or losses (Figure 11).

Figure 11: Worries when Using AI (%)

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion/Do not know
I am worried that online stores will collect too much personal information from me when adopting AI	22	52	12	3	10
I am worried that somebody may abuse the use of AI and generate risk to me	22	52	11	3	11
I am worried that if AI algorithms go wrong, no one will be responsible for the problems caused	21	51	14	3	11

■ Strongly agree ■ Agree ■ Disagree ■ Strongly disagree ■ No opinion/Do not know

Base: N=1,219

Echoing with the above worries, consumers treat online security more important than the potential benefits of AI and related ethical principles when it comes to the AI adoption at online stores. As shown in Figure 12, respondents primarily paid attention to cybersecurity (49%) and privacy protection (47%). Following these two, there were factors pertaining to the performance of AI, including its accuracy (28%), the extent of AI helping them pay less (22%) and its efficiency (21%). This shows consumers primarily care about what technical measures traders take to ensure cybersecurity, and how traders handle and process their personal data.

Figure 12: Concerned Aspects about AI (%)

| Category	Aspect	Value
Safety-related	Cybersecurity	49
	Privacy protection	47
Functions/ Benefits	Accuracy	28
	Product prices	22
	Efficiency	21
	Personalised shopping experience	19
Ethical concerns/ Consumer rights	Right to choose	18
	Accountability	18
	Legality	17
	Right to know	16
	Explainability	9
	Fairness	9

Base: N=1,219, multiple answers allowed

Consumers' Desires when Using AI

Although consumers seem to put their right to choose, right to know and other ethical elements at a lower priority, they are still very forthcoming about what they would like traders to do. Respectively, 81%, 78% and 68% of them demanded online stores to let them choose whether to use AI tools or not, to inform them when AI was used, and to explain how AI computed and made decisions for them in their purchase journey (Figure 13).

Figure 13: Desires when Using AI (%)

Statement	Strongly agree	Agree	Disagree	Strongly disagree	No opinion/Do not know
I hope online stores can let me choose whether or not to use AI tools	27	54	8	3	8
I hope online stores can inform me when they are using AI to provide services	21	57	9	2	11
I hope online stores can explain how AI computes and makes decisions for me	14	54	10	3	19

■ Strongly agree ■ Agree ■ Disagree ■ Strongly disagree ■ No opinion/Do not know

Base: N=1,219

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Accountable Parties for Loss Caused by AI

When asked about who should be held most accountable if AI went wrong, respondents' answers varied. "Traders who own the online stores" (50%) and "technology providers who support the online stores' operations" (37%) were the two most common answers (Figure 14). The results indicated consumers generally tend to attribute the loss to parties who are directly related to the development and management of AI.

Figure 14: Accountable Parties for Loss Caused by AI (%)

- Traders who own the stores
- Technology providers who support the operation of the stores
- Government
- Shoppers themselves
- No one
- Don't know/No opinion

Base: N=1,219

From the above findings, it is clear that certain consumers are not yet content and fully comfortable with the performance of AI, and some may still feel conservative and sceptical about it. Worries about the adverse consequences that misuse of AI might cause are common. In spite of putting cybersecurity and data protection first, consumers also demand traders to do more to protect their rights.

3.5 Consumers' Behaviour and Attitude Regarding Data Privacy

As AI model training inevitably involves data collection, and traders might use cookie to track consumers' online behaviour, it is important to understand consumers' views on personal information provision and their habits pertaining to reading privacy policy and handling cookie.

Consumers' Privacy Policy Reading Habit

The consumer survey revealed that reading privacy policies at online stores has not yet been a habit among consumers. As presented in Figure 15, 57% of the respondents had never read privacy policies during online shopping, and 3% did not even know what privacy policies were. Although the remainder claimed they had viewed the policies, up to 30% just did it rarely, occasionally or in particular situations such as when registering accounts, or when encountering problems after making purchases.

The habit of reading privacy policy differed among age groups. The results showed that the younger the respondents were, the more likely they had read privacy policies. Their higher digital literacy and care for privacy through education might be an explanation. Besides, it was discovered that frequent online shoppers tended to read privacy policies more often, hinting that they are more concerned about personal data.

Consumers may not be aware of the types of information that would be gathered and used by traders if they do not read privacy policies carefully. Hence, the infrequent habit of reading privacy policies has to be addressed in order to ensure consumers know how to protect themselves in the world of AI.

Figure 15: Privacy Policy Reading Frequency by Subgroup (%)

Subgroup	Always/Often	Occasionally/Rarely/Seldom	Only in particular situations	Never	I do not know what privacy policies are
Total	10	26	4	57	3
Age 15-24	8	34	7	50	1
Age 25-34	9	28	4	55	3
Age 35-44	10	26	4	57	3
Age 45-54	14	21	2	59	5
Age 55 or above	10	23	3	60	3
Daily shoppers	21	27	4	46	2
Weekly shoppers	8	28	5	56	4
Less-frequent shoppers	5	21	2	68	4
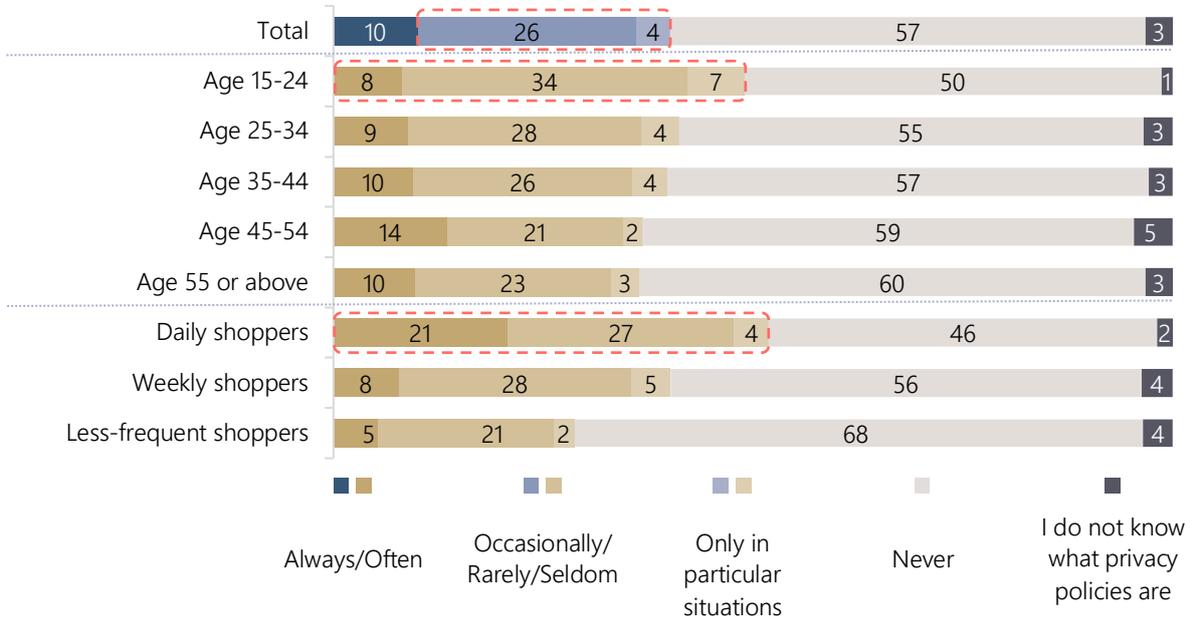
Base: N=1,219

As regards the reasons for such neglect among those who had never read privacy policies, or only seldom or occasionally read them, the top three hurdles were the lengthy and wordy content (68%), the assumption that traders could collect personal information anyway (47%), and the difficulty in understanding the privacy policies (31%) (Figure 16). Particularly, certain respondents provided written feedback in the survey that consumers were in a disadvantageous position as they had no choice but to agree to the terms set by traders if they wanted to continue shopping online.

Figure 16: Reasons for Not Reading Privacy Policies (%)

Reason	%
The privacy policies are too lengthy and wordy	68
Whether I read the privacy policies or not, online stores can gather my personal information online anyway	47
The privacy policies are hard to understand	31
I think the online stores I use are reliable and trustworthy enough	25
The privacy policies do not pop up when I first enter the online stores, so I am not aware/do not remember	24
I am satisfied with my online shopping experience in general, so I have no need to read the privacy policies	24
I do not care about privacy policies	13
I do not think the privacy policies are related to me	4

Base (Respondents who had never read privacy policies, or only read them rarely, occasionally or in particular situations): N=1,056, multiple answers allowed

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While it is traders' responsibility to disclose the ways they collect and handle data in privacy policies, consumers might find the lengthy and wordy information unfavourable. To strike a balance between revealing details and catering for consumers' digital literacy and tolerance level is crucial.

Furthermore, respondents who had read privacy policies before were asked whether they had stopped browsing an online store after reading its privacy policy and the reasons (Figure 17 and Figure 18). The findings presented that 43% of them had terminated browsing an online store, mainly because they found too much of their information would be gathered (48%), too many third-party organisations would receive their personal data (43%) and the number of purposes for which their data was collected was excessive (41%). Moreover, "too many channels to collect personal data" (38%), "too many data tracking tools" (33%), "lengthy and cumbersome content" (32%), and "insufficient privacy protection measures" (32%) were also important reasons. Consumers stopping browsing a website after assessing the risks involved is an effective way to protect themselves.

Figure 17: Incidence of Not Browsing an Online Store after Reading Its Privacy Policy (%)

Yes
No
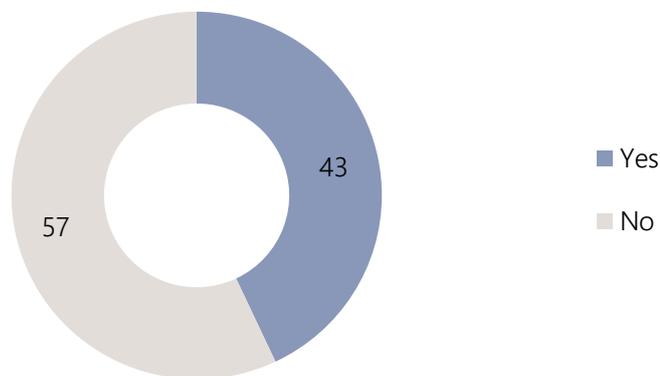
Base (Respondents who had read privacy policies before): N=489

Figure 18: Reasons for Not Browsing an Online Store after Reading Its Privacy Policy (%)

Reason	%
It collected too much personal information	48
The data would be transferred to too many third-party organisations	43
There were too many purposes of collecting personal information	41
There were too many channels to collect personal information	38
Too many data tracking tools were used	33
The content was lengthy and cumbersome	32
The privacy protection measures were insufficient	32
I was worried about not being able to amend or delete the registered information	29
The data retention period was unclear or too long	28
The wording was hard to understand	24
The content was rough, and the information I wanted to know was unclear	22

Base (Respondents who had stopped browsing an online store after reading its privacy policy): N=209, multiple answers allowed

Consumers' Cookie Handling Habit

Traders often use cookies or other tracking technologies to track visitors' engagement with different webpages, thus consumers' cookie handling behaviour is another dimension reflecting their data protection attitude. At some online stores, a message may pop up to obtain consent from consumers when they first visit so that traders are allowed to collect their cookie information. According to Figure 19, when respondents saw this kind of message, the top reaction was neglecting them (27%), which shows that a considerable number of consumers do not know or refuse to decide how to handle the cookie settings.

Figure 19: Cookie Handling Habit (%)

- Accept all cookies — 16
- Accept many of the cookies — 22
- Only accept essential cookies for the websites' operation — 25
- Reject all cookies — 8
- Just leave it there or close it, and then continue browsing — 27
- Have not encountered this situation previously — 2

Base: N=1,219

30
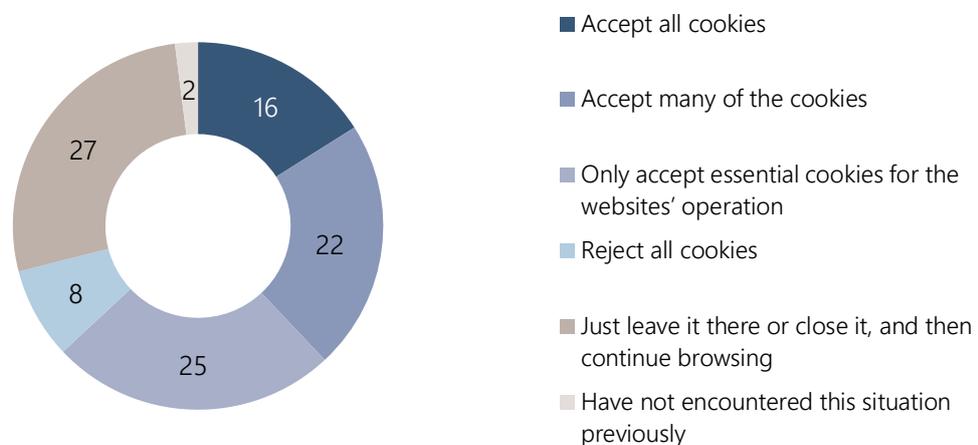
In brief, consumers' loose behaviour in reading privacy policies and passive reaction to cookie messages somehow hint their potential exposure to risks like personal data leakage and misuse. With the growing popularity of AI adoption in e-commerce, it is believed that personal data collection and usage will be even more intense, and thus privacy risks will be higher too. It is important for consumers to improve their online shopping habits.

3.6 Future Development of AI

Respondents were further asked about their views on the outlook of AI in Hong Kong and the measures that could help improve their confidence in using AI. Details are presented as follows.

Perspective on the AI Market Environment

Majority (74%) of the respondents had the view that AI would become more popular in Hong Kong in the next five years (Figure 20). However, only 34% of them thought that there were adequate measures to govern the use of AI in Hong Kong, but in fact, Hong Kong has not yet formulated any AI-specific laws. Noteworthily, up to 23% of them did not comment about this, reflecting that they might not know what has been done in Hong Kong in this regard. In alignment with the fact that a considerable number of the respondents only had limited knowledge about AI, they strongly asked for more education and promotion on this important subject (77%).

Figure 20: Perspective on the AI Market Environment (%)

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion/Do not know
More education and promotion about AI are needed in Hong Kong	21	56	9	2	11
AI will become more popular in Hong Kong in the next 5 years	17	57	9	4	13
The adoption of AI is well regulated in Hong Kong currently	8	26	29	14	23

Base: N=1,219

Measures for Increasing Confidence in AI

Consistent with respondents' concerns about cybersecurity, most respondents (48%) deemed "online stores to increase the security and privacy protection level" the best measure to increase their confidence in using AI (Figure 21). It is not only about what technical measures that traders take but also about how traders collect and handle their data. Actions on both dimensions are expected. The other measures coming after were related to the governance of online stores and consumer rights, i.e. "online stores to establish a complaint mechanism" (38%), "Government to strengthen the monitoring of e-commerce market" (36%), and "online stores to provide them with the right to choose whether or not to use AI" (36%).

Notably, respondents aged 55 or above especially had a higher demand for privacy protection and cybersecurity reinforcement (54%), and stronger monitoring (41%).

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Figure 21: Measures for Increasing Confidence in AI (%)

Measure	Total	Age 55 or above
Online stores to increase the security and privacy protection level	48	54
Online stores to establish a complaint mechanism	38	34
Government to strengthen the monitoring on e-commerce market	36	41
Online stores to let me choose whether or not to use AI	36	38
Online stores to increase the transparency when using AI	30	27
Government or industry associations to establish industry standards	28	34
Government to strengthen education and promotion	26	27
Online stores to explain how AI computes and makes decisions for me	17	14
I have enough confidence in AI already	1	1

■ Total   ■ Age 55 or above

Base: N=1,219, multiple answers allowed

In other words, consumers are aware of the increasing prevalence of AI adoption in e-commerce. They expect different parties to take further action on different levels, such as regulation, education and business practices, so that their online shopping journey could be protected on different fronts.

3.7   Consumer Segments

Facing the widening application of AI, different consumers might have different points of view owing to their own background and profile. Based on the above survey results, consumers can be classified broadly into four segments, i.e. supportive users (19%), prudent users (19%), unready users (31%) and unfavourable users (27%). The first two segments, who account for less than 40% of the total respondents, are relatively positive towards AI, while close to 60% are either unready to use AI or not in favour of it. Given AI is an irreversible trend, it is of paramount importance to advocate attitudinal changes, especially building trust and enhancing understanding, among different types of consumers according to their characteristics so that they could embrace the technology.

Their views on AI and key shopping behaviour are described as follows.
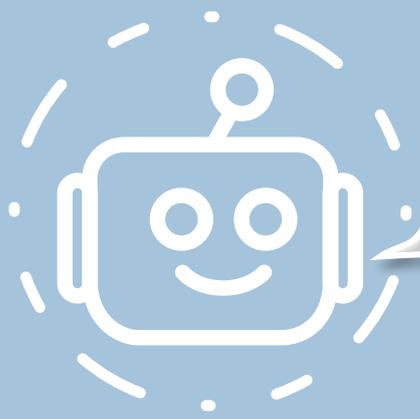
4 Segments of Consumers

Supportive Users 19%

What I think of AI
- Most familiar with AI
- Positive perception
- Satisfied with the performance
- Less worried about the adoption
- Optimistic about the development

How I Shop
- Tend more to accept all or many cookies
- Less mindful of providing traders with personal information to use AI

Action Reinforce trust and usage

Prudent Users 19%

What I think of AI
- Positive perception
- Willing to use AI but still have worries
- Lower demand for traders to improve the adoption of AI
- Less optimistic about the development

How I Shop
- Tend more to read privacy policies
- Less mindful of providing traders with personal information to use AI

Action Encourage to voice demands

Unready Users 31%

What I think of AI
- Least familiar with AI
- Negative perception
- Strong worries about AI
- Dissatisfied with the current regulatory environment

How I Shop
- Shop online less frequently
- Tend more not to read privacy policies
- More mindful of providing traders with personal information to use AI

Action Enhance understanding

## Unfavourable Users 27%

What I think of AI
- Negative perception
- Dissatisfied with the performance of AI
- Strong worries about AI and desires for improvement

How I Shop
- Spend less online
- Tend more not to read privacy policies
- More mindful of providing traders with personal information to use AI

Action Rebuild confidence

Note: The definition of each segment is based on a cluster analysis that considers all statements in the question about the perception of AI. Respondents of each group are mutually exclusive. In total, 1,175 respondents are grouped. 44 respondents are not included as they answered "Don't know" or "No opinion" mostly.
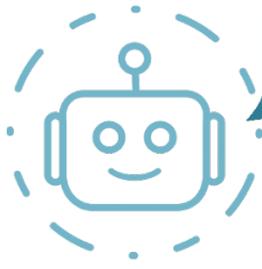
4 Consumers' Experience in AI Applications and Traders' Information Disclosure

Although product recommendation, chatbots, advanced biometrics and augmented reality (AR) are common AI applications, it is not necessary that they are solely powered by AI; instead, they could also be supported by rule-based programmes or by both technologies simultaneously. Such kind of information is usually untransparent when consumers experience these applications.

By far, product recommendation and chatbots are relatively popular. However, when it comes to performance, consumers are more satisfied with AR and advanced biometrics, likely because the application of these tools is more mature and the performance is more stable. On the other hand, chatbots are not as well-received likely owing to its inaccuracy.

Besides, certain consumers are mindful of providing traders with their personal information to use AI tools. Theoretically, traders' privacy policies could help assure consumers of appropriate data collection and usage, but in practice, consumers might still not be able to have their concerns addressed even if they read the policies. For instance, although most traders under review inform consumers properly about their ways and purposes of data collection in their privacy policies, there are certain issues found, including excessive data collection, insufficient information transparency and disclosure (such as in terms of data retention period and security measures implemented), and the lack of options to opt out of data collection and tracking technologies like cookies. When traders show improvement in these areas, consumer trust shall be strengthened.

## 4.1 Consumers' Experience of Using Selected AI Applications

In addition to consumers' perception of AI, it is of equal importance to know their usage of AI tools in their shopping journey. This section summarises consumers' experience of using four selected tools that are usually powered by AI, namely product recommendation, chatbots, advanced biometrics, and AR, found in the online quantitative consumer survey and related consumer complaints received by the Council.

Consumers' Usage of Selected Tools Potentially Powered by AI

Before answering related questions in the consumer survey, respondents were presented examples pertaining to each AI tool so that they had a basic understanding of the tools and their linkage to AI. Still, as some respondents might not know whether the tools they had experienced before were powered by AI or rule-based programmes, they might take both types of experience into account when responding. Hence, their feedback meant a combined reflection on AI-powered tools and rule-based ones.

94% of the respondents had experienced at least one of the four AI tools asked. Product recommendation and chatbots are relatively popular among the four features, used by 89% and 75% of the respondents respectively (Figure 22). In contrast, the usage rates of advanced biometrics (e.g. for payment) (55%) and AR (32%) were lower. In general, the younger the respondents were, the more AI features they have experienced.

Figure 22: Usage of AI Tools by Age Group (%)

Base: N=1,219

35
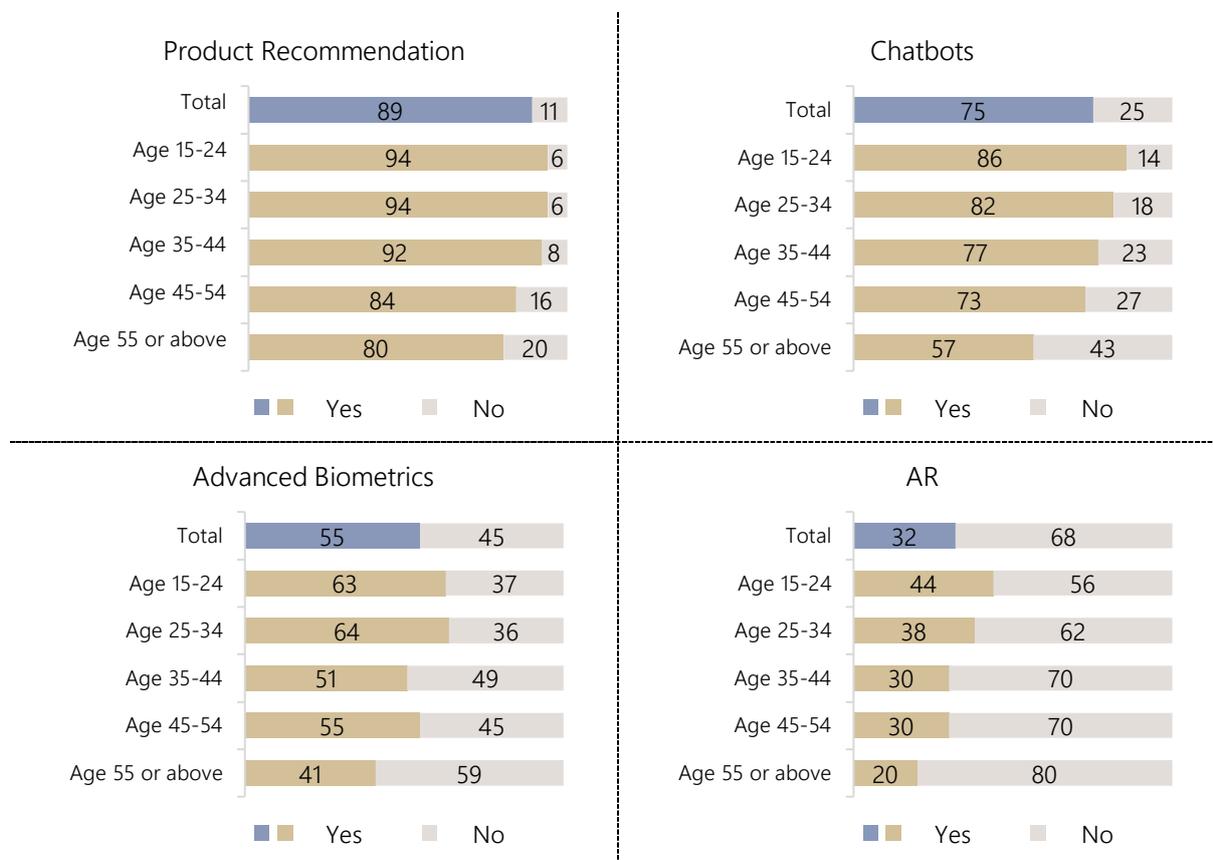
When asked about the performance of these four AI tools and their level of satisfaction, respondents provided very diverse answers, signifying a wide degree of discrepancy between traders' desired propositions and consumers' acceptance of the quality of the tools.

Product Recommendation

It was a favourable finding that up to 56% of the users deemed product recommendation improved their shopping journey, while only 5% thought the opposite (Figure 23). Noteworthily, 37% of the respondents did not feel any difference in their shopping experience with product recommendation.

In alignment with the findings pertaining to the overall opinions on AI performance, respondents who were younger, shopped more frequently, and had higher familiarity with AI had a higher satisfaction with product recommendation. Among different segments, less-frequent shoppers were the least satisfied with the tool.

Figure 23: Changes Brought by Product Recommendation by Subgroup (%)

	Improved a lot	Improved a bit	Almost no change	Worsened a bit	Worsened a lot	No opinion
Total	11	45	37	4	1	2
Age 15-34	13	47	35	4	1	1
Age 35 or above	10	43	38	5	1	3
Daily shoppers	19	41	33	3	2	2
Weekly shoppers	10	51	33	4	1	2
Less-frequent shoppers	6	33	51	7	1	2
Familiar with AI	19	43	32	5		1
Not familiar with AI	9	46	38	4	1	2
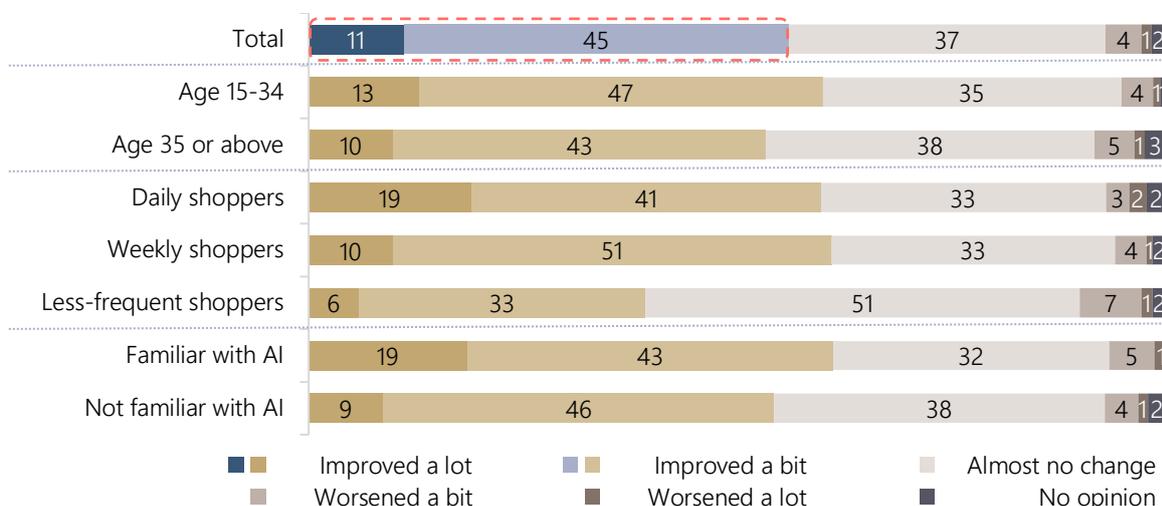
Base (Product recommendation users): N=1,089 (Age 15-34 – 434; Age 35 or above – 655; Daily shoppers – 253; Weekly shoppers – 599; Less-frequent shoppers – 237); N=1,083 (Familiar with AI – 270; Not familiar with AI – 813)

Respondents' feedback on product recommendation is presented below:

Positive Comments

「產品推薦功能有助我認識所選擇的產品及它的周邊配件產品。」
(Product recommendation helps me know more about the product I have chosen and its accessories.)

「有時這個功能可以給我提供額外的產品選擇，甚至比我原先選擇的產品更適合我，所以我也樂意使用這功能。」
(Sometimes the function provides other product choices which may even suit me more, so I am willing to use it.)

「推薦的產品跟我想買的東西相近。」
(The recommended products are similar to what I want to buy.)

Negative Comments

「產品推薦功能扼殺了我獲取其他類型產品資料的權利。」
(Product recommendation limits my right to acquire information about other types of products.)

「害怕會被商家監察。」 *(I am scared that I am overseen by traders.)*

「沒有太多作用。」 *(Not too useful.)*

「商家推薦的產品不一定適合我。」
(The recommended products might not be suitable for me.)

Chatbots

The satisfaction with the performance of chatbots is the lowest among the four features. Only 38% of the users felt improvement in their shopping experience with chatbots (Figure 24). On the other hand, 35% of them indicated no change, and 27% deemed the feature worsened their shopping journey. These figures might explain respondents' moderate rating on AI in terms of its ability to address needs and reduce time cost mentioned in Chapter 3.

Similar to the patterns of product recommendation, a higher proportion of younger respondents, frequent shoppers, and respondents with higher familiarity with AI agreed that they felt good with chatbots in their shopping experience.

Figure 24: Changes Brought by Chatbots by Subgroup (%)

	Improved a lot	Improved a bit	Almost no change	Worsened a bit	Worsened a lot	No opinion
Total	9	29	35	15	12	1
Age 15-34	10	30	34	15	10	2
Age 35 or above	8	28	35	16	13	1
Daily shoppers	16	29	27	17	9	1
Weekly shoppers	7	30	35	16	12	1
Less-frequent shoppers	4	25	44	11	14	2
Familiar with AI	13	26	34	14	12	1
Not familiar with AI	7	30	35	16	11	1
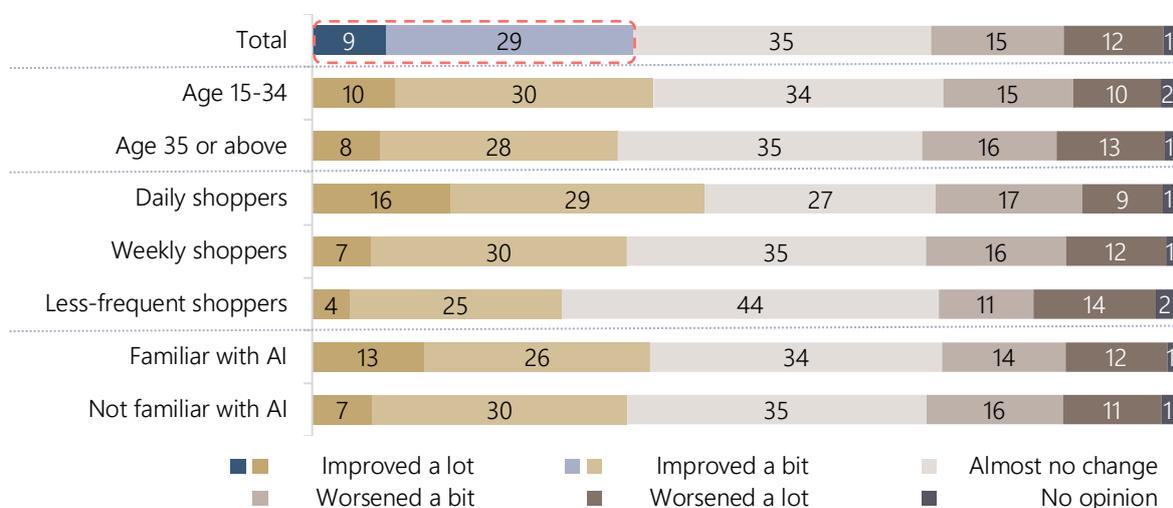
Base (Chatbot users): N=917 (Age 15-34 – 384; Age 35 or above – 533; Daily shoppers – 224; Weekly shoppers – 510; Less-frequent shoppers – 183); N=916 (Familiar with AI – 245; Not familiar with AI – 671)

Positive Comments

「方便查詢，能即時解答問題。」 *(Able to respond immediately, it makes enquiring easier.)*

「令我驚訝，態度友善講述詳細，比真人更親切。」
(I am surprised. It is friendly and answers in detail. It is even nicer than real persons.)

Negative Comments

"Chatbots are only able to give simple and prepared answers. They are fast but may not be helpful if the question is too specific and difficult."
(聊天機械人的回答都是簡單且早已準備好的，雖然回覆得快，但當問題太仔細和深奧時，就必未幫得上忙。)

「答非所問。」 *(Give irrelevant answers.)*

「聊天機械人倒模式打招呼令人不快。」 *(Standard responses by chatbots are annoying.)*

「答案很官方。這個機械人的設計像是要來打發顧客，多於解決問題。」
(Chatbots only provide standard answers. The reason for adopting chatbots seem more about brushing off customers rather than solving problems.)

「聊天機械人根本不能取代真人，因為很多問題聊天機械人都不理解及不能即時回應！」
(Chatbots cannot replace real persons because there are lots of questions they do not understand and hence respond to immediately.)

Complaint Cases Regarding Chatbots

Some complainants expressed their unpleasant experience of using chatbots during online shopping. Companies involved ranged from home appliance companies and grocery stores to airlines and food delivery platforms. The key complaints included:

- Continuously providing robotic and standard answers that can be found on the frequently-asked question (FAQ) page;

- Being slow in response;

- Lacking real persons' involvement even when requested; and

- Failing to answer case-specific questions.

In spite of the relatively high prevalence of chatbots in Hong Kong, there is still much room for improvement in aspects such as efficiency and accuracy in solving consumers' enquiries.

Advanced Biometrics

Biometric payment is one of the emerging payment methods available to consumers while shopping online. Probably due to the stable performance of facial recognition and fingerprint recognition technology,[23] a higher satisfaction with advanced biometrics was observed as compared with product recommendation and chatbots.

As shown in Figure 25, 73% of the users thought advanced biometrics enhanced their shopping journey. While favourable comments were received, there were still areas that the consumers would like to see enhancement in, as well as risks that they are worried about.

In terms of findings by familiarity with AI and shopping frequency, the patterns were in line with the above two functions. However, the difference in terms of age was not obvious.

Figure 25: Changes Brought by Advanced Biometrics by Subgroup (%)

	Improved a lot	Improved a bit	Almost no change	Worsened a bit	Worsened a lot	No opinion
Total	33	40	22	4	1	1
Age 15-34	33	41	20	3	1	1
Age 35 or above	32	39	23	5	1	
Daily shoppers	31	43	18	8		
Weekly shoppers	35	40	21	3	1	1
Less-frequent shoppers	27	37	31	2	1	2
Familiar with AI	41	36	18	4	1	
Not familiar with AI	29	42	23	4	1	1
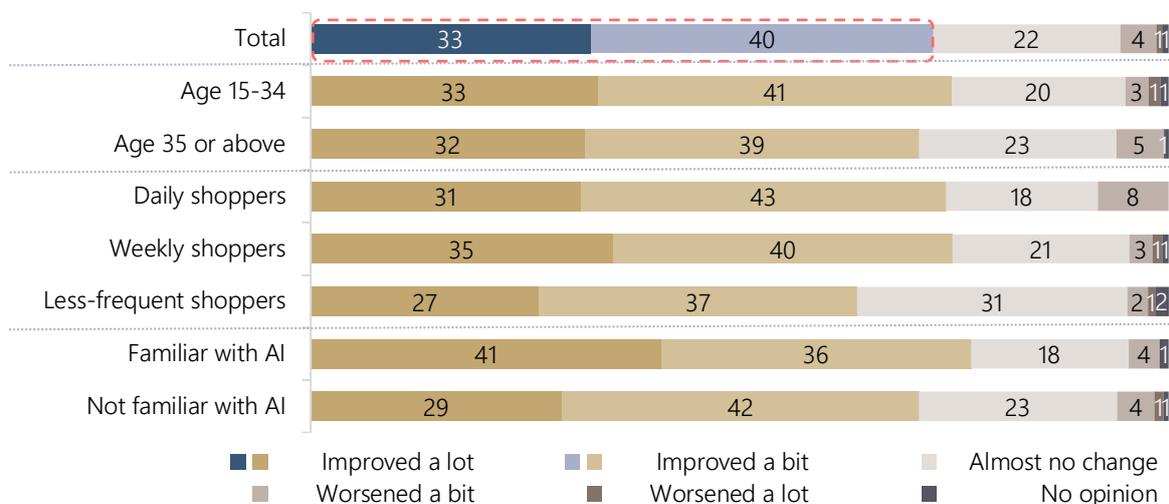
Base (Advanced biometrics users): N=674
(Age 15-34 – 296; Age 35 or above – 378; Daily shoppers – 181; Weekly shoppers – 369;
Less-frequent shoppers – 124); N=672 (Familiar with AI – 191; Not familiar with AI – 481)

Positive Comments

「不用每次付款都輸入密碼，用指紋即可，十分方便。」
(With fingerprint recognition, I no longer have to enter the password every time making a payment. It is very convenient.)

「減省繁瑣的資料填寫時間，增加購物的動力，而且感覺比較安全。」
(It reduces the time I spend in filling in information, hence increasing my purchase intent. I feel safer using the function too.)

「減少大量記住不同密碼組合和要求的煩惱，加快交易速度，也提升交易的安全性。」
(It mitigates the trouble in remembering different sets of passwords. It also speeds up transaction and enhances security.)

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[23] The Centre for Strategic and International Studies (CSIS) published a report in April 2020 revealing that facial recognition reaching a 99.97% accuracy level. Another study report released by the NIST in the US in 2020 showed that with multiple finger combinations, fingerprint scanners performed at a high accuracy level of over 99.5%.

Negative Comments

「指紋會因為手指受傷而無法登入。」
(I cannot login with fingerprint recognition if my finger gets injured.)

「希望網站加強網絡安全。」
(I hope websites can intensify their cybersecurity level.)

「擔心資料被洩漏。」 *(I am worried about information leakage.)*

「很怕不小心就結了帳。」 *(I am afraid I might check out carelessly.)*

Complaint Case Regarding Advanced Biometrics

Although advanced biometrics can provide consumers with convenience, incidents such as unintended payments can possibly happen. In 2020, the Council received a complaint case that a consumer bought a set of virtual goods in an online game with facial recognition by mistake. The game publisher refused to refund the complainant and asked him to contact the app store. The complainant found the accountability unclear until he got the credit card statement that evidently showed the payment was accepted by the game publisher. It took the complainant around 6 months to resolve the case.

Augmented Reality (AR)

In spite of the lowest usage, AR was the best-received tool that 74% of the users deemed their shopping experience optimised with its adoption (Figure 26). On the other hand, a small portion of them (4%) deemed AR worsened their shopping journey. As regards subgroups, the findings largely resembled those of the other three tools.

Figure 26: Changes Brought by AR by Subgroup (%)

	Improved a lot	Improved a bit	Almost no change	Worsened a bit	Worsened a lot	No opinion
Total	25	49	21	3	1	1
Age 15-34	25	50	22	2	1	1
Age 35 or above	26	48	21	4		
Daily shoppers	34	46	17	1		1
Weekly shoppers	23	50	22	2	1	1
Less-frequent shoppers	11	50	28	9	2	
Familiar with AI	32	48	16	2	2	
Not familiar with AI	22	49	24	3		1
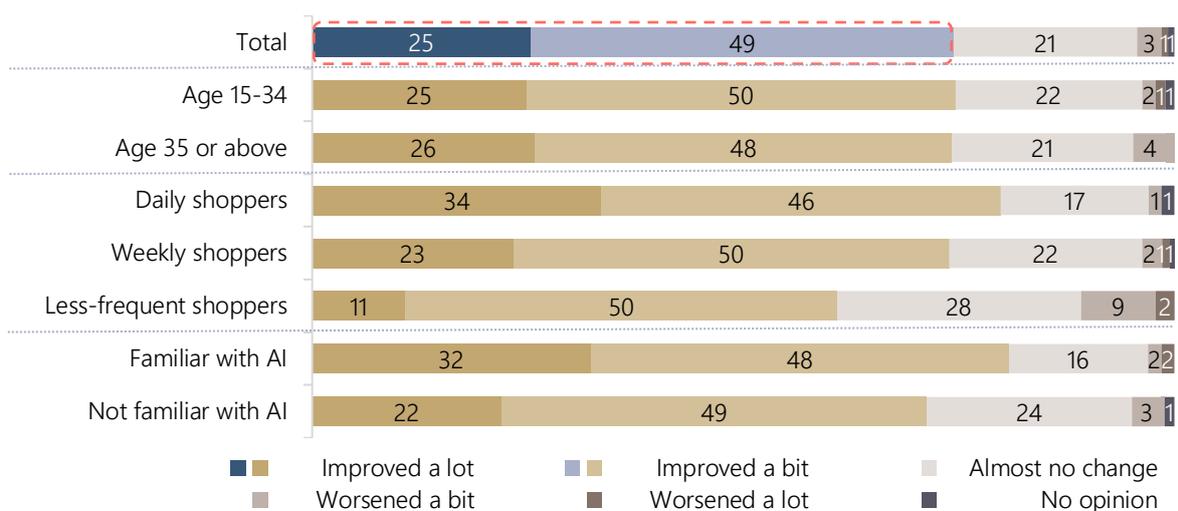
Base (AR users): N=394 (Age 15-34 – 185; Age 35 or above – 209; Daily shoppers – 134; Weekly shoppers – 214; Less-frequent shoppers – 46; Familiar with AI – 130; Not familiar with AI – 264)

Positive comments

「身臨其境，彷彿先用後買，體驗大大提高。」
(I feel like I am immersed in a real environment. It seems I can use a product before buying it. The experience is greatly enhanced.)

「更有真實感。」 *(It feels more authentic.)*

Negative comments

「具體物件大小未必準確。」 *(The sizes of objects might not be accurate.)*

「影像質素仍然有很大進步空間。」 *(The image quality still needs to be improved.)*

Mindfulness of Providing Personal Information for the Usage of AI Functions

Respondents were also asked whether they minded providing traders with their personal data to use the selected AI tools. They have different degrees of mindfulness regarding different features (Figure 27). Chatbots were the function that respondents felt the most cautious about (48%), followed by advanced biometrics (39%), product recommendation (38%) and AR (38%).

Figure 27: Mindfulness of Providing Personal Data to Use AI Tools (%)

	Yes	No	No opinion
Product Recommendation	38	42	20
Chatbots	48	34	18
Advanced Biometrics	39	45	16
AR	38	45	17
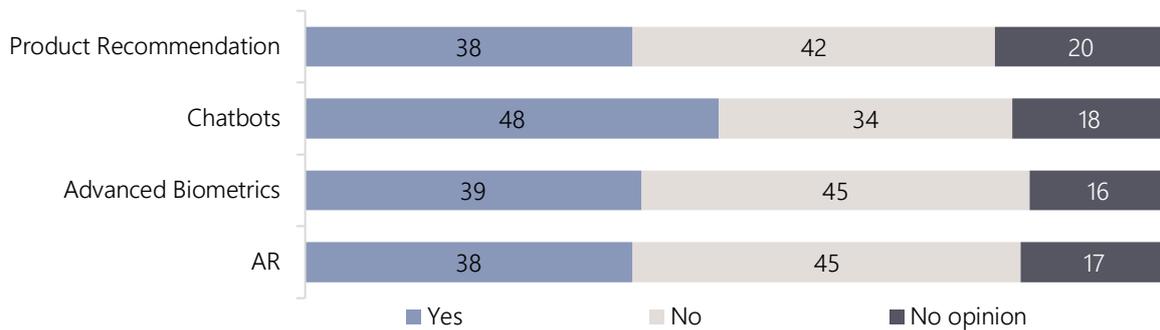
Base (Respective tool users): Product recommendation – 1,089; Chatbots – 917; Advanced biometrics – 674; AR – 394

Indeed, consumers always struggle between having personalised services and protecting personal data privacy, which makes it important for traders to balance the two ends.

Dilemma Between Data Analytics and Data Privacy

"On the one hand, consumers demand personalised services; on the other hand, they do not want to provide too much data to traders. Traders need to strike a balance between data analytics and data privacy."

- Industry Expert, In-depth Interview

Briefly, it is believed the application of different AI tools will continue to grow. Notwithstanding the satisfaction with the some of the selected tools, concerns raised by consumers about data security and consumer rights are worthy of attention and have to be addressed so that a better and safer user experience can be created.

4.2 Review of Common AI Applications on E-commerce Platforms

To supplement the abovementioned findings and review the actual performance of the AI tools, the Council selected ten popular e-commerce platforms which are potentially supported by AI to try out their tools. Similar to the limitation mentioned in Section 4.1, there is a lack of ways to distinguish between AI-powered tools and rule-based programmed tools, so the Council could only select these platforms according to related news that hinted their tools were powered by AI. The other sampling criteria included the platforms' popularity (referring to the answers provided in the consumer survey), their business nature and the types of AI technologies they adopted. The list of the selected platforms could be referred to Appendix 1. The trial was conducted in two rounds – Q2 2021 and Q2 2022 – so that changes made by the platforms over time could be observed. In the end, three platforms which employed product recommendation and nine which adopted chatbots were reviewed for the objectives below.[24]

- To examine the clarity of the interface where AI tools were displayed;

- To assess whether or how the AI tools would collect and store consumers' information;

- To check whether consumers' rights could be realised, including the right to know and the right to opt out; and

- To evaluate the performance of the AI tools.

Product Recommendation

It is becoming popular for online stores to adopt AI-powered recommendation functions to recommend products tailored to consumers' interests and preference based on their browsing or shopping history.

Interface

It seemed common for the reviewed e-commerce platforms to distinguish the suggested products with a title like "You may also like (猜你喜歡)" and "Products below might be suitable for you (以下產品適合你)" when they adopted product recommendation (Figure 28). For further differentiation, one trader even displayed the recommended products with a different background colour (Figure 29).

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[24] Two platforms adopted more than one AI feature and hence were reviewed more than once.

Figure 28: Example of Traders Displaying Recommended Products with a Distinguishable Title
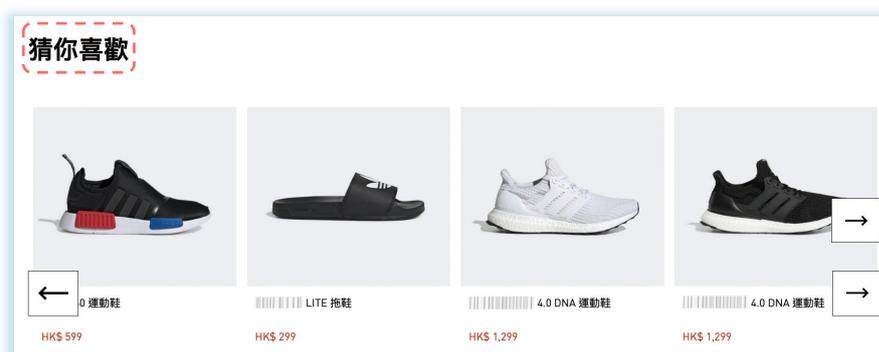

Figure 29: Example of Traders Displaying Recommended Products with a Different Background Colour

Consumers' Rights

However, among the three reviewed platforms, showing details about whether the products were ranked by AI, how they collected data and generated such recommendations, or how long they were going to keep the data was not common. Even when consumers see the titles or colours for recommended products, they might not know if there involves the application of AI, and thus their right to know might be undermined.

In terms of the right to opt out, it was rarely seen that consumers were provided with an opt-out option if they did not want to receive personalised recommendations. One trader once showed the choice of "using default ranking (轉回預設排列方式)" for consumers to decline AI recommendation, but it was disabled in the second round of trial in Q2 2022 (Figure 30).

Figure 30: Example of Traders Providing an Option to Opt out of Product Recommendation

Performance

Overall, the performance of product recommendation was satisfactory, tallying with consumers' positive feedback. For example, when user searched for the keyword "wine" in the search engine on one of the reviewed platforms, different brands of wine were displayed, and related products were suggested, such as glasses and decanters (Figure 31). Nonetheless, whether brands of the recommended products enjoy any privilege, such as better display ranking, given by e-commerce platforms, and whether the function causes any biased results from consumers' perspective are potential issues that could not be verified in this review.

Figure 31: Example of Traders Displaying Recommended Products for a Search Query

Chatbots

There were relatively more e-commerce platforms that adopted chatbots in Hong Kong, and the Council reviewed nine of them in this review. Two types of chatbots were included in the review – one was those built into the websites (adopted by six of the reviewed platforms) and the other one was those linked to external messaging applications such as WhatsApp (adopted by three of the reviewed platforms).[25] In order to conduct the review in a systematic way and ensure a fair comparison, the Council asked each chatbot six commonly-asked questions in both Traditional Chinese and English. The question list and detailed results will be presented in Table 3.

Interface

Displaying a conversation icon on the website was the most common way for the reviewed e-commerce platforms to signify their chatbot functions (Figure 32). However, the icons on two platforms were not necessarily self-explanatory that they were chatbots for enquiries because there were no words indicating what they meant (one example shown in Figure 33). Providing an option of "customer services" on the homepage menu was another way to inform consumers about the availability of chatbot services, but it was rare – only one reviewed trader adopted such practice.

Figure 32: Examples of Traders Displaying the Option of Chatbot with a Clear Indication for Enquiry

Figure 33: Example of Traders Displaying the Option of Chatbot with an Unclear Indication for Enquiry


Consumers' Right

All the sampled e-commerce platforms did not require consumers to sign in as members or provide personal information prior to the use of their chatbot functions.

As regards the right to know, none of the sampled platforms specified whether the conversations with chatbots would be retained by traders. Among the six reviewed platforms with built-in chatbots, the records disappeared either right after the pages were refreshed (50%) or after the browser windows were closed (50%). For the three supported by WhatsApp, the records were still kept on users' devices just as other private conversations, whereas it was uncertain how long they would be kept on traders' side.

Besides, whether the conversations were handled by AI was unknown because there was no such indication around the icons or the conversation boxes. Some traders mentioned words like "automated service", "virtual agent" or "intelligent assistant" at the interface (Figure 34), but consumers might not know if AI is involved simply based on these hints. It is worth noting that two traders disclosed the names of the third-party technology providers that supported their chatbot services in the chat windows, which is considered a good practice in terms of disclosure.

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[25] For the latter, chatbots work as an intermediary to first gather basic information about consumers' enquiries and then pass it to human agents to handle.

Figure 34: Examples of Chatbots Introducing Themselves as "Automated Service" and "Virtual Agent"
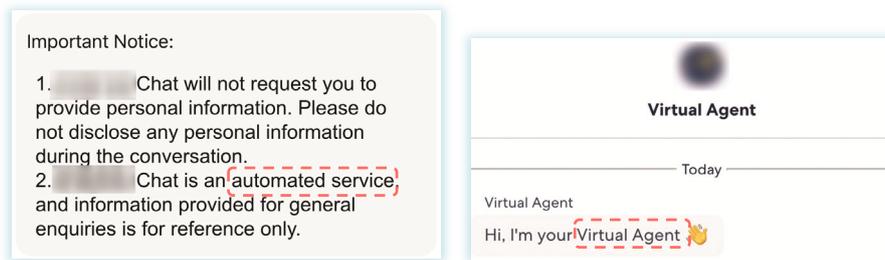
Concerning the right to choose alternatives, all nine reviewed chatbots were able to offer alternative methods for consumer to communicate with human agents either by showing the option on a menu in the beginning (Figure 35) or after a few conversation lines (Figure 36). Among the six built-in chatbots, three requested consumers to fill in certain information, such as name, email address and enquiry description, before proceeding. For the remaining three that were operated via WhatsApp, the option to turn to human agents would appear after consumers finished answering a few multiple-choice questions (Figure 37).

As to the waiting time, only four chatbots suggested it concretely; the length ranged from several minutes to 48 hours, and human agents did reply within the promised time. Five chatbots were not specific, of which, three could have agents get back within 20 minutes during the Council's review.

Figure 35: Example of Chatbots Providing the Option of Talking to Human Agents on a Menu
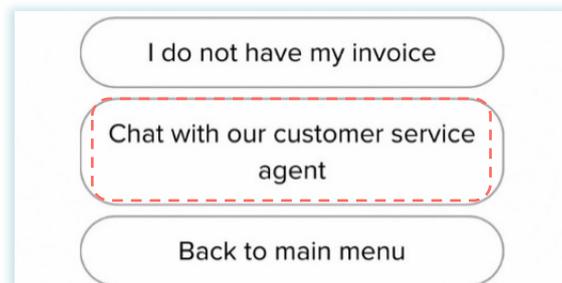

**Figure 36: Example of Chatbots Providing Access to Human Agents after a Few Conversation Lines**

46
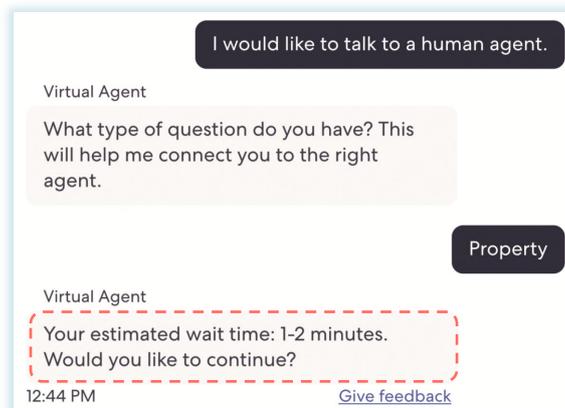
Figure 37: Example of Chatbots Providing Access to Human Agent after a Few Multiple-choice Questions


Performance

Eight of the reviewed chatbots provided a list of categories for consumers to choose either right after the conversations began, or when consumers entered certain keywords, which could help minimise miscommunication (Figure 38).

Figure 38: Examples of Chatbots Providing a List of Categories for Consumers to Choose
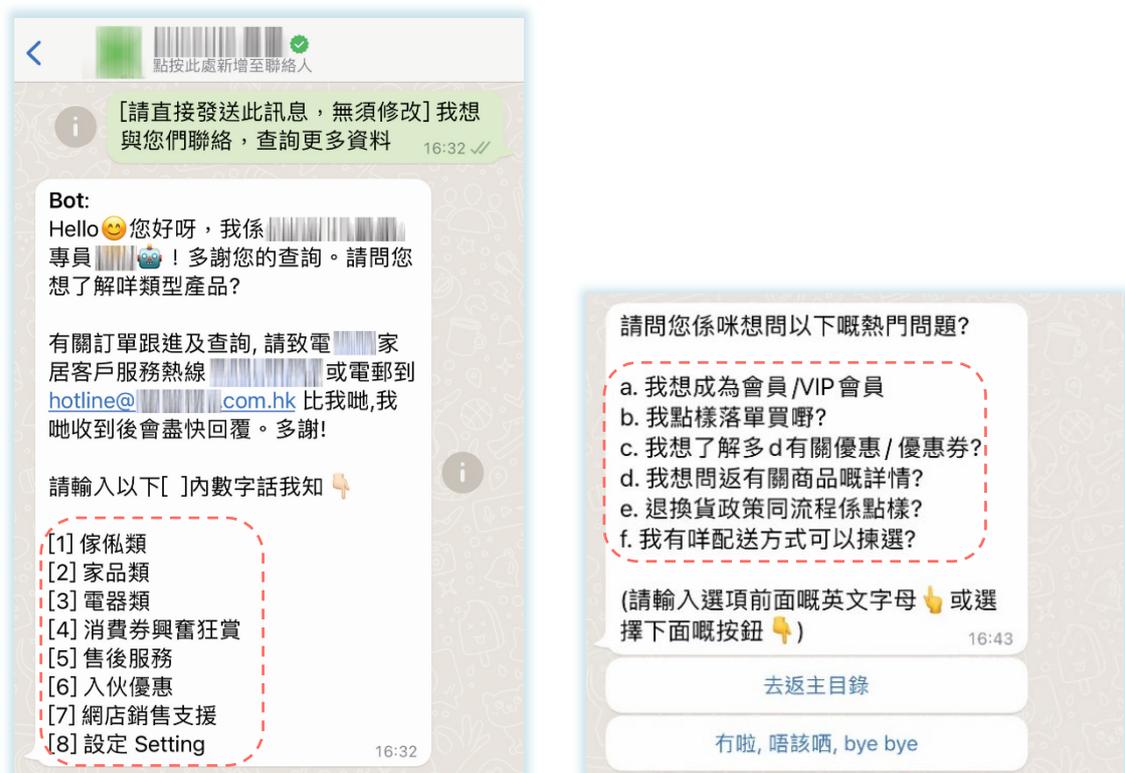
The quality of the six built-in chatbots' answers to the six commonly-asked questions in general was not satisfactory. Although some of their answers were direct and relevant (49%), it was still common for them to provide irrelevant responses or pass the enquiries to human agents due to the inability to handle (51%). The findings are in line with consumers' mixed feedback revealed in the consumer survey in Section 4.1. In terms of language, whether the answer accuracy is higher in Traditional Chinese or English cannot be concluded as it varied depending on the questions asked. Table 3 below provides a summary of the review.

Table 3: Summary of Chatbot Review on Six E-commerce Platforms

Questions	Provided direct and relevant answers, or ask sensible follow-up questions	Unable to handle, and then showed the main menu or provided access to human agents	Provided irrelevant answers
I forgot my account ID/password. Please help.	3	1	2
我忘記了帳戶名稱／密碼，請協助。	3	1	2
I would like to revise my order information. Please help.	5	1	0
我想更改訂單資料，請協助。	4	2	0
I entered the correct discount code, but it was not accepted. Please help.	3	1	2
我輸入了正確的優惠碼，但不被接受，請協助。	2	2	2
I was charged twice for the same order and would like to get a refund for the extra payment. How should I do?	0	2	4
信用卡重覆過數，想申請退回多付的款項，請問手續如何？	1	2	3
I don't like the product I received and would like to return it and get a refund. How should I do?	4	1	1
我收到的貨品不合心意，想退款和退貨，請問手續如何？	4	1	1
I would like to talk to a human agent.	2	2	2
我想跟真人客服聯絡。	4	1*	1*
Total	35 (49%)	17 (23%)	20 (28%)

Base: N=6 (e-commerce platforms that had built-in chatbots)

Remarks: Figures in the table represent the number of chatbots. Sum of the figures on the last row represents the total number of questions asked [6 chatbots * (6 English questions + 6 Chinese questions) = 72]; percentages in brackets represent the shares.

* The chatbots were unable to answer the question correctly, but the option of "talking to human agents" existed on their menu.

Some examples of conversations with chatbots are shown as follows (Figures 39-41):

**Figure 39: Examples of Chatbots Providing Relevant Responses**
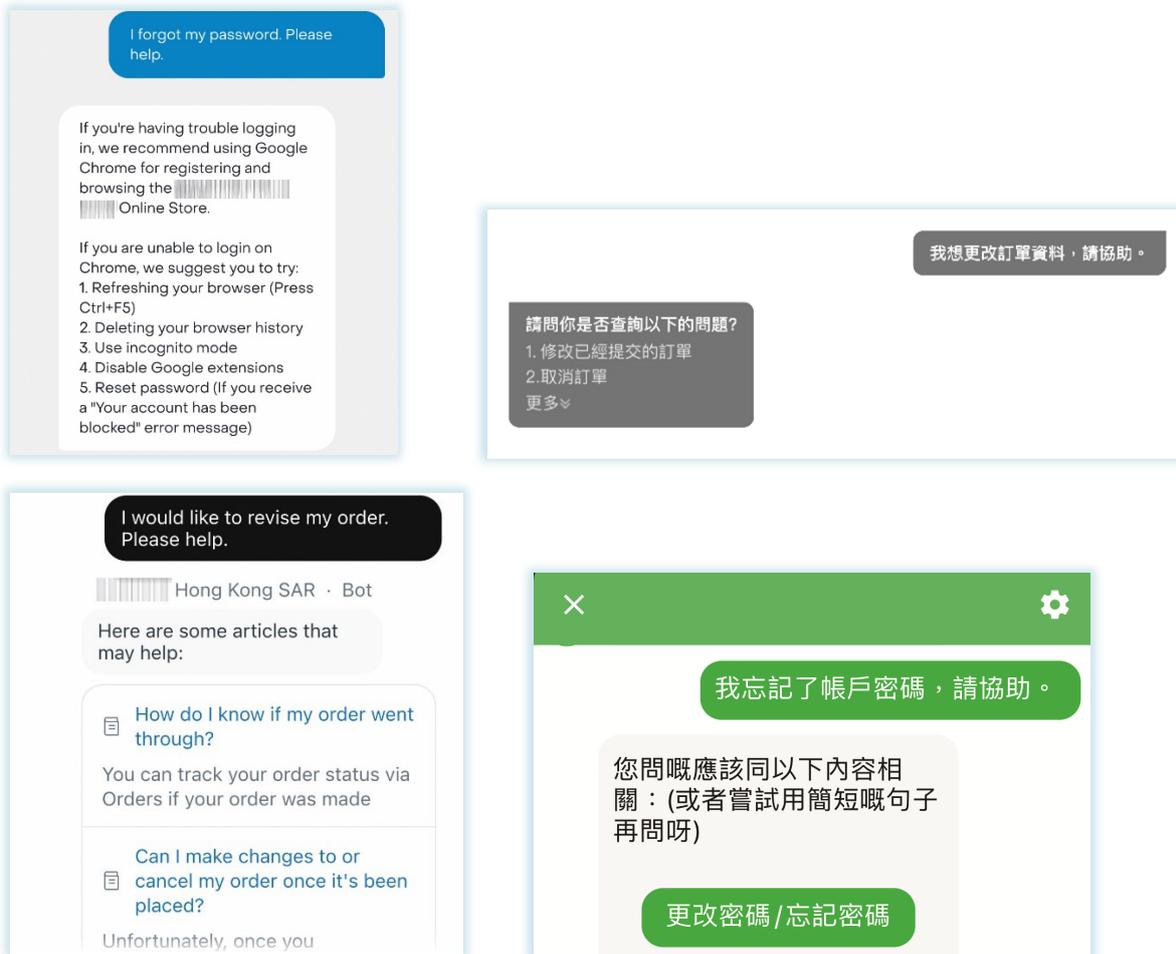
Figure 40: Examples of Chatbots Being Unable to Handle Enquiries, and then Showing the Main Menu or Providing Access to Human Agents
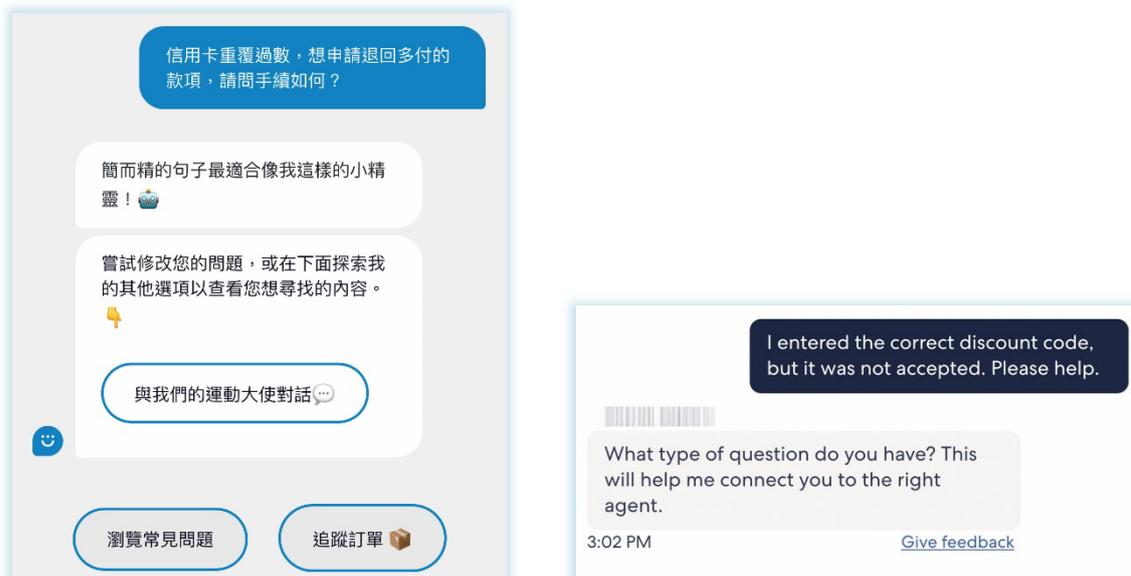
Figure 41: Examples of Chatbots Providing Irrelevant Answers
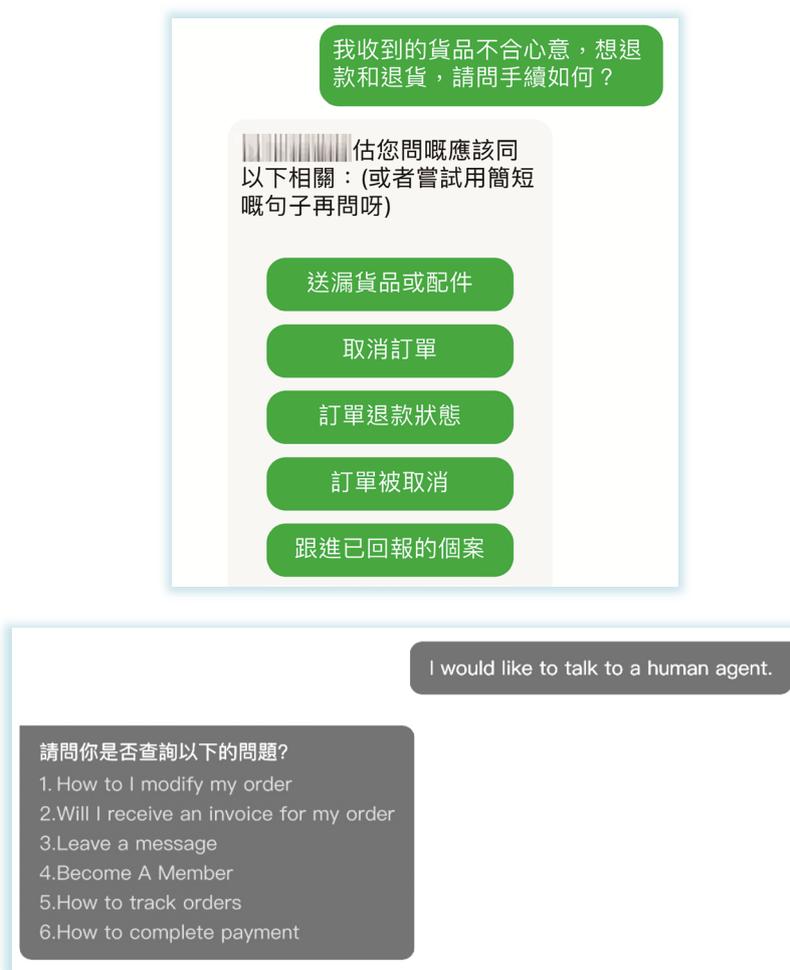
In short, majority of the e-commerce platforms under review displayed their chatbot services clearly, showed options to switch to human agents, and allowed consumers to use without login. However, in terms of information disclosure (e.g. ways to opt out, data retention, etc.) and answer accuracy, there is still huge room for improvement.

Summary of AI Application Review

Owing to the present limited availability of AI tools in Hong Kong, the Council could only select mainstream e-commerce platforms that have relatively more AI applications to try out.

To respond to the objectives mentioned in the beginning, traders under review are generally able to display the recommended products and chatbot features in a distinguishable way, but some may use unclear icons for representation. In terms of data retention, most traders are still not transparent enough. As regards consumers' right to know, it is still uncommon for them to inform consumers about the operations behind, such as how the recommended products are generated. For the right to choose alternatives or opt out, while it can easily be realised with chatbots, consumers are rather passive when it comes to product recommendation. Respecting the AI applications' performance, the reviewed production recommendation features are generally acceptable. Nevertheless, the chatbots under review have much room for improvement in terms of answer relevancy and accuracy.

4.3 Content Analysis of E-commerce Traders' Online Information

To gauge what information consumers could usually obtain from trader's websites, the Council conducted a content analysis of the data collection policies of 112 e-commerce platforms or online stores. The analysis was carried out from Q2 to Q3 2021. Selection criteria were established to ensure the platforms' variety and representativeness, including the platforms' popularity (referring to the answers provided in the consumer survey), types of products or services they offered, their operational modes, their origins, etc. A brief profile of the platforms is presented in Table 4, while the detailed list can be referred to Appendix 2.

Table 4: Profile of Selected Online Stores

		Number	%
Total		**112**	**100**
Product/Service Type	Integrated platforms that provide products/services across categories	*28*	25
	Clothes, shoes & accessories	*7*	6
	Cosmetics, skincare & personal care products	*7*	6
	Digital media goods	*7*	6
	Electrical appliances, electronic & audio-visual products	*7*	6
	Furniture, decoration & household goods	*7*	6
	Sportswear & sporting goods	*7*	6
	Toys, stationery, books & gifts	*7*	6
	Car hailing	*7*	6
	Entertainment-related ticketing/booking	*7*	6
	Food delivery	*7*	6
	Professional service matching	*7*	6
	Travel-related ticketing/booking	*7*	6
Operational Mode	Third-party platform	*86*	77
	Brand-owned store	*24*	21
	Social media platform	*2*	2
Origin of Online Store	Hong Kong	*56*	50
	The Mainland	*10*	9
	Overseas	*46*	41
Have Physical Stores in Hong Kong or Not	Yes	*56*	50
	No	*56*	50

Among the selected e-commerce platforms, 25% were integrated platforms, while other product/service types accounted for around 6% each. In terms of operational modes, 77% of them were third-party platforms that sell products or services of diverse brands; brand-owned stores accounted for 21%; the remaining 2% were popular social media platforms.

With regard to the origin of online stores, Hong Kong-based stores made up 50% of the total, followed by overseas ones (41%) and Mainland-based ones (9%).

Noteworthily, any data user who controls the collection, holding, processing or use of the personal data shall comply with the requirements under the Personal Data (Privacy) Ordinance (Cap. 486) (PDPO).

<table>
<tr><td colspan="2" align="center">Personal Data (Privacy) Ordinance (PDPO)</td></tr>
<tr><td colspan="2">The PDPO outlines how data users (i.e. traders in the Study) should collect, handle and use personal data to ensure the process is on a fully-informed basis and in a fair manner. Specifically, there are six Data Protection Principles (DPPs) that all traders in Hong Kong have to follow when the collection of personal data is involved.</td></tr>
<tr><td>DPP 1 – Collection Purpose and Means</td><td>Personal data must be collected in a lawful and fair way, for a purpose directly related to a function/activity of the data user. All practicable steps shall be taken to notify the data subjects of the purpose of data collection, and the classes of persons to whom the data may be transferred. Data collected should be necessary but not excessive.</td></tr>
<tr><td>DPP 2 – Accuracy and Retention</td><td>Personal data is accurate and is not kept for a period longer than is necessary to fulfil the purpose for which it is used.</td></tr>
<tr><td>DPP 3 – Use</td><td>Personal data is used for the purpose for which the data is collected or for a directly related purpose, unless voluntary and explicit consent is obtained from the data subject.</td></tr>
<tr><td>DPP 4 – Security</td><td>A data user needs to take practical steps to safeguard personal data from unauthorised or accidental access, processing, erasure, loss or use.</td></tr>
<tr><td>DPP 5 – Openness</td><td>A data user must make known to the public its personal data policies and practices, types of personal data it holds and how the data is used.</td></tr>
<tr><td>DPP 6 – Data Access and Correction</td><td>A data subject must be given access to his personal data and to make corrections where the data is inaccurate.</td></tr>
</table>

A universal practice for traders to demonstrate their conformity with the law is the disclosure of privacy policies on their websites, apps or other platforms. Nevertheless, without a standardised template of how the privacy policy shall be written, individual traders' privacy policies might vary drastically in length, detailedness and ease of understanding. Figure 42 below summarises the findings, and detailed analysis will follow.

**Figure 42: Summary of Findings from Privacy Policy Content Analysis**

Data Collection

- **Ways of Data Collection** — More than 90% revealed how they would collect personal data.

- **Types of Data Collected**
  - Over 85% would collect basic information for transaction (e.g. name, email address, phone number and residential address).
  - 6-10% would collect data about employment, marital status, income and education, which might be considered excessive.

- **Purposes of Data Collection**
  - 99% mentioned the purposes.
  - "Basic operation & product/service provision" (100%), and "direct marketing" (99%) were the most common.
  - Six traders mentioned the collection of data for the training of AI or ML.

Data Processing and Handling

- **Data Anonymisation** — 41% mentioned they would anonymise the data before using it.

- **Data Transfer**
  - 87% specified to whom they would transfer the data..
  - 69% informed about cross-border data transfer.

- **Data Retention** — 17% were specific about the data retention period.

- **Security Measures** — 44% specified the cybersecurity measures they took.

Rights of Consumers

- **Access and Correct Data** — 85% informed consumers how to access and correct data.

- **Decline Data Collection** — 42% informed consumers how to reject data collection.

- **Ask for Explanation on Data Collection** — It was still a rare practice.

- **Decline the Use of Cookies** — 39% specified how consumers could opt out of cookie tracking.

- **Decline the Use of Certain AI Functions** — It was still a rare practice.

Data Collection

Ways of Data Collection

From the privacy policies, consumers could learn how traders would collect their data, which can generally be classified into three ways: (i) provided by consumers directly; (ii) transferred by third parties with consumers' prior consent; and (iii) automatically collected by devices or browsers with tracking technologies. Majority (98%) of the selected e-commerce platforms disclosed their ways of collecting data, and 90% of them also revealed that they adopted tracking technologies, such as cookies, flash cookies, web beacons, clear pixels, pixel tag, analytical tags and web server logs to collect data automatically (Figure 43).

Figure 43: Disclosure of Ways of Collecting Data and Tracking Technology Usage (%)

Ways of Data Collection

Tracking Technology Usage

- Disclose specifically
- Disclose genereally
- Not mention
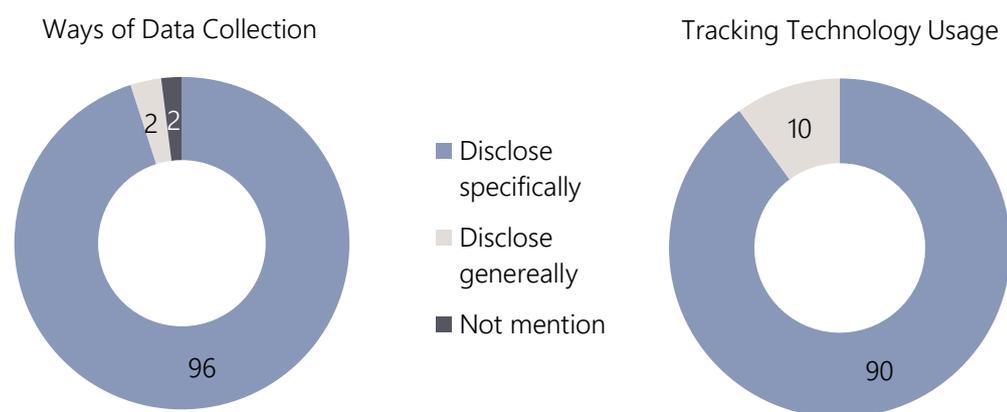
Base: N=112

Types of Data Collected

Majority of the reviewed traders clearly informed consumers about the types of data they would collect. Referring to the breakdown in Figure 44, among the data collected from consumers, basic contact information including names, email addresses, phone numbers and residential addresses was the most common as it is essential for service provision, such as delivery and enquiry handling. Other data like payment details, date of birth, gender, social media connection, personal hobbies, and identity proof came after. 6% to 10% of the traders even claimed they would collect information such as employment status, marital status, income level and education level. Some of this information might not be necessary for providing services, but traders rarely indicated its necessity.

In terms of data collected by tracking technologies, traders commonly disclosed in their privacy policies that they were collecting Internet Protocol (IP)/domain names (74%), browsing history (63%) and browser settings (59%).

Figure 44: Disclosure of Data Types Collected (%)

Information Provided by Consumers

Data Type	%
Name	96
Email address	93
Phone number	88
Living district/Address	86
Payment details	65
Date of birth	54
Account credentials	50
Gender	48
Social media contact/connection	33
Personal interests/hobbies	32
Identity proof	23
Age	19
Employment status/Job nature	10
Marital status/number of kids	7
Income level	6
Education level	6

Information Collected by Tracking Technologies

Data Type	%
IP/Domain name	74
Browsing history	63
Browser type/setting	59
GPS/Location tracking record	49
Operating system of device	46

Base (E-commerce platforms that specifically disclosed the types of data collected): N=109

It was noticed that majority of the reviewed traders just listed all types of data collected but did not indicate in their privacy policies whether the data is necessary or optional for consumers to input (Figure 45). This may increase consumers' worries when traders request them to enter so much personal information, especially data which is not directly related to transactions. To enhance consumer trust, as a good practice, traders can consider indicating mandatory items by remarks or symbols to distinguish them from other optional items (Figure 46).

Figure 45: Example of Traders Listing Types of Data to be Collected without Distinguishing Between Mandatory and Optional Ones

> **個人資料：我們收集甚麼以及為甚麼收集個人資料**
>
> 3. 要成為登記客戶並享用我們的各種產品和服務，您需要向我們提供某些必要的個人資料。我們亦可能要求您提供其他資料，以協助我們為您提供及挑選我們認為您感興趣的產品及服務。我們可能收集的個人資料類型包括您的姓名、地址、電子郵件、電話號碼、出生日期、性別、年齡、購物喜好及嗜好等。

Figure 46: Example of Traders Distinguishing Mandatory Items and Optional Items when Collecting Consumer Data



```
        i. name*;
       ii. phone number*;
      iii. email address;
      iv. home address;
       v. correspondence with us;
      vi. IP address or other unique device identifiers;
     vii. payment and banking information*;
    viii. geolocation*;

  *mandatory personal data
```

Purposes of Data Collection

Nearly all reviewed online stores explained to consumers the reasons why they collected personal data in their privacy policies. Only one trader did not disclose its purpose of personal data collection as the content of its privacy policy was more about T&Cs and not related to data collection. Pursuant to the PDPO, traders have a duty to take all practicable steps to make sure that the purpose of collection is explicitly conveyed to consumers on or before collection of the personal data.

As presented in Figure 47, "basic operation & product/service provision" (100%), and "direct marketing" (99%) were the two most common purposes for data collection. "Survey, market research & data analysis" came third (85%), followed by "general communication" (82%), "product design, innovation & improvement" (81%), and "identity verification & account management" (74%). Noteworthy, only 51% stated "customised experience" as their purpose for collecting data.

Figure 47: Disclosure of Data Collection Purposes (%)

Basic operation & product/service provision	100
Direct marketing	99
Survey, market research & data analysis	85
General communication	82
Product design, innovation & improvement	81
Identity verification & account management	74
Crime/fraud prevention & credit risk assessment	59
Legal obligation	59
Customised experience	51
Troubleshooting & technical updates	26
Accounting & auditing	20
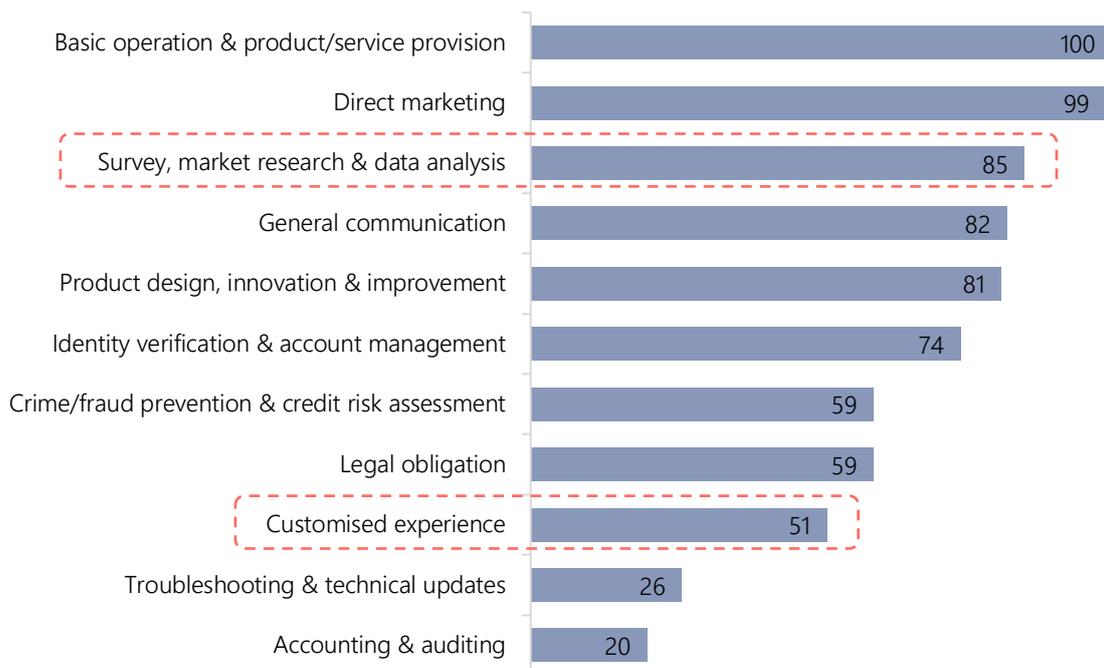
Base (E-commerce platforms that specifically disclosed the purposes of data collection): N=111

Only six traders mentioned the collection of data for the purpose of AI model training or ML (Figure 48). For traders who collect data for such purpose but do not disclose it, they might consider it part of "survey, market research & data analysis" and thus believe it is not necessary to state it separately. Given the adoption of AI is new to consumers and for the sake of transparency, traders are recommended to disclose their use of AI and related data privacy practices individually and prominently according to PCPD's "Guidance on the Ethical Development and Use of AI".

Figure 48: Example of Traders Mentioning AI or ML in Data Privacy Policies

> **8. Aggregated and anonymised data**
>
> Aggregated or anonymised data that does not include any personally identifiable information, may be used by us, our Partners, our ▎▎▎▎▎▎▎▎▎members or other third parties for various purposes, including enabling them to better understand customer needs or to improve and adapt their operations, products and services, or for the purposes of industry benchmarking, machine learning, research or analytics.

Data Processing and Handling

Table 5 summarises how traders would process and handle personal data in different facets.

Table 5: Disclosure of Ways of Processing and Handling Data

	Data Anonymisation /Aggregation	Data Transfer to Third Parties	Cross-border Data Transfer	Data Retention	Data Security Measures
Mention	41%	Specify to whom: 87%	69%	Specify the time: 17%	Provide examples: 44%
		Mention generally: 5%		Mention "as long as needed" only: 54%	Mention "appropriate measures" only: 44%
Not Mention	59%	8%	31%	29%	12%

Base (E-commerce platforms that disclosed the collection of data): N=111

<u>Data Anonymisation or Aggregation</u>

Notably, whether the identifiable data collected would be anonymised or aggregated prior to usage was not commonly shown to consumers. As demonstrated in Table 5, only 41% of the traders who revealed their collection of data emphasised so in their privacy policies. Figure 49 is one of the examples.

Figure 49: Example of Traders' Emphasis on Data Anonymisation

> (e) Statistics: Carry out statistics and data analysis, such reports will contain only anonymous data for the Company's reference as well as improving our service and product quality;

<u>Data Transfer</u>

Traders might transfer the collected data to third parties for different purposes, such as AI model training, data analysis, direct marketing, etc., thus it is important to examine how they inform consumers about it. According to Table 5, 87% of the traders explicitly indicated to whom they would transfer the data. For instance, the names and/or types of the third parties were mentioned (Figure 50). The rest either only mentioned "third parties" generally (5%) or even did not indicate at all (8%) (Figure 51).

Figure 50: Example of Traders' Disclosure of Types of Third Parties Involved in Data Transfer

此外，我們可能會向下列各方轉移閣下的個人資料：

閣下的授權代表及／或法律顧問（在閣下要求下）；
下述為提供行政、付款及/或核實交易資料、售票系統操作、會員卡服務、提供折扣/優惠、網頁管理、系統開發及維修保養、法律及/或業務支持的機構：

電訊網絡營運商；
我們的附屬成員、海外辦事處、委託人、受讓方及代表；
我們的專業顧問，包括我們的會計師、核數師、律師及保險人；及
本公司的商業推廣伙伴

銀行及其他商業夥伴，為會員計劃作兌換用途，包括但不限於協助會員登記參與有關的活動；
政府及監管機構及其他法律規定或授權的機構；及／或
有關我們的全部或部份運營業務的任何潛在或實際參與者、委託人或受讓方。

Figure 51: Example of Traders Generally Mentioning Third Parties Involved in Data Transfer

Q: Do we disclose any information to outisde parties?

A: We do not sell, trade, or otherwise transfer to outside parties your personally indentifiable information. This does not include trusted third parties who assist us in operating our website, conducting our business, or servicing you, so long as those parties agree to keep this information confidential. We may also release your information when we believe release is appropriate to comply with the law, enforce our site policies, or protect ours or others rights, property, or safety. However, non-personally identifiable visitor information may be provided to other parties for marketing, advertising, or other uses.

Moreover, as the reviewed e-commerce platforms might have operations in other jurisdictions, or their servers might be located overseas, the data they collected from consumers in Hong Kong might be transferred to other countries. Only 69% of them inform consumers about the cross-border transfer of data (Table 5); the remaining 31% did not mention it.

In fact, Section 33 of the PDPO, which has not been brought into effect, restricts the transfer of personal data to places outside Hong Kong unless one of the specified conditions is met.[26] Regardless of when Section 33 will take effect, the PCPD provided the "Guidance on Personal Data Protection in Cross-border Data Transfer" in December 2014 and encouraged traders to adopt the recommended practices as part of their corporate governance responsibility when transferring data outside Hong Kong. In May 2022, the PCPD further issued the "Guidance on Recommended Model Contractual Clauses for Cross-border Transfers of Personal Data" to provide a practical basis for facilitating transfers of personal data from Hong Kong.

Complaint Cases from Consumers Regarding Privacy Policies

Complaints about traders' inappropriate collection and handling of personal data in e-commerce are common. For example, there were cases where consumers were dissatisfied with certain matchmaking services providers disclosing their personal profiles on social media or other platforms without their consent.

Another typical type of complaint cases lies in telecommunications. Some telecommunications companies might offer bundled plans to consumers, whereas certain parts of the plans, such as over-the-top media services, were provided by third parties. Consumers might not realise that their personal data would be transferred to those third-party companies until they received direct marketing materials from them. When consumers requested the telecommunication companies not to provide personal information to the third parties, the companies argued that this type of information had already been written in their privacy policies and contracts agreed in the first place. Such disputes could have been prevented if both consumers and traders had taken their respective responsibilities, i.e. thoroughly reading related documents and transferring data to third parties in an explicit and upright manner.

Data Retention

Well-adopted data retention and security measures can increase consumers' confidence in using trader's websites. As shown in Table 5, merely 17% of the reviewed e-commerce platforms described the actual period of retaining data (Figure 52); while the majority (54%) just mentioned generally that they would keep the data "as long as it is needed" for certain purposes (Figure 53). Notably, 29% did not mention the data retention period at all. Although such non-disclosure does not violate the PDPO, e-commerce traders should be more concrete about the retention period, such as at least stating a specific period of time after account deactivation or deletion.

Figure 52: Example of Traders Stating the Data Retention Period Clearly

(4) Data use period: For as long as membership remains valid, or within 6 months of account deletion, or for non-members 6 months after the purpose of the data collection is no longer valid.

---

[26] Except when transferring to places specified in "White List"; having adequate data protection regime in the destined jurisdiction; having written consent by data subjects; transferring for avoidance and mitigation of adverse action against data subjects; using personal data which is exempted from DPP 3; or having reasonable precautions and due diligence taken by data users (e.g. contract clauses).

Figure 53: Example of Traders Stating the Data Retention Period Ambiguously

> # 5.安全性與資料保存
>
> 我們致力保障你的資料免受未經許可的查閱和非法處理、意外丟失、破壞或損毀。我們將會根據上述目的或法律規定來保存你的資料一段合理的時間。
>
> 當你選好讓你可存取網站某些部分的密碼後，你則有責任確保這個密碼保密。我們建議你不要與任何人分享密碼。
>
> 很遺憾，經由互聯網傳送資料並非完全安全。雖然我們會致力保護你的資料，我們並不能保證你的資料能安全傳輸到網站上；你須自行承擔任何傳輸所涉的風險。我們收到你的資料後，將按照嚴謹程序及保安措施來嘗試預防未經授權的查閱。

It is also considered a good practice for traders to mention to consumers that data will be deleted or anonymised regularly (Figure 54).

Figure 54: Example of Traders Stating the Practice of Deleting or Anonymising Data Regularly

> 除非法律規定要求本公司須保存閣下的個人資料一段特定的時間，本公司只會將個人資料保存至達到收集個人資料之原來目的，或直接與其有關之目的為止。我們會根據本公司之內部程序按時篡輯、清洗、銷毀或以匿名方式處理本公司系統內不必要之個人資料。

Security Measures

Merely 44% of the traders specified the measures they took to safeguard personal data, such as Secure Sockets Layer (SSL), Transport Layer Security (TLS), one-time passwords and so on. On the other hand, up to 56% only mentioned security measures were in place generally or did not disclose. Related examples are demonstrated in Figures 55-56.

Figure 55: Example of Traders Specifying the Security Measures

> **Transmission of Registration / Transaction Information**
>
> All registration / transaction information is sent to our secure system through a protocol called Secure Sockets Layer (SSL). SSL encrypts your registration / transaction data so they are unreadable in online transmission.
>
> **Storage of Registration / Transaction Information**
>
> Registration / Transaction information is stored securely in our system when it reaches us. The system is protected by Intrusion Protection System and firewalls that ensures customers' sensitive information is not available to unauthorized computers. Technology is moving forward rapidly and we shall continue to implement new and improved security and privacy measures. Your registration / transaction information will be retained during the validity period of your membership or within a reasonable time after your termination of membership.

Figure 56: Example of Traders Mentioning the Security Measures Generally

> 11.8 Security of Personal Data
> i. Our company has adequate measures to protect your personal information from unauthorized access, accidental loss or destruction.
> ii. If our company has a contract with another third party organization to provide a service on its behalf, our company will ensure they have appropriate security measures and only process your information as our company has authorized. Those organizations will not be entitled to use your personal information for their own purposes. Our company will take reasonable steps to check these organizations to make sure that they are meeting the security requirements set by our company.

Rights of Consumers

In terms of consumers' rights, the detailedness of the information consumers could obtain varied depending on the degree to which traders' data collection would be affected when consumers exercise the rights (Table 6). For instance, correcting personal information would likely not affect the collection of data but improve the data quality, so traders seemed more willing to inform consumers how to do so. Nevertheless, traders might not be able to conduct comprehensive analysis when consumers rejected to provide data, so they might be more reluctant to tell consumers how to decline.

Table 6: Disclosure of Ways to Exercise Consumer Rights

	Access and Correct Data	Decline Data Collection	Decline the Use of Cookies
Specify How	85%	42%	39%
Mention the Right Briefly	8%	34%	43%
Not Mention	7%	23%	19%
Base	*111 (E-commerce platforms that disclosed the collection of data)*		*101 (E-commerce platforms that disclosed the use of tracking technologies)*

Access and Correct Data

Up to 85% of the reviewed traders explained to consumers how to access and correct their personal data, such as by email or by post. However, there were 15% of them that either only brought up the right or did not mention it at all.

Decline Data Collection

42% of the reviewed traders informed consumers how to reject data collection or request data deletion in detail. The other 34% just mentioned this right and some of them emphasised that the company might not be able to provide services to consumers if they reject data collection. This kind of "all-or-nothing" expression makes rejection not much an option to consumers.

Decline the Use of Cookies

Pertaining to cookies, 39% of the traders provided details about opting out of cookie tracking; 10% even illustrated their cookie policies on individual pages to explain what cookies actually are, how to change the related settings, etc. Having said that, the majority either brought up cookies briefly (43%) or even not mentioned it at all (19%).

Ask for Explanation on Data Collection

Currently, only four reviewed traders stated clearly that consumers should have the right to ask for explanations on privacy policies, such as purposes of data collection and automated decisions. Figure 57 shows an example of traders providing a clear description of the rights of consumers, especially the right to ask for explanations on computer-system decisions. This practice is currently rare but worth traders' consideration.

Figure 57: Example of Traders Explaining Consumers' Rights

You have a lot of rights relating to your personal information, these are:

- The right to be informed about how your personal information is being used (like this notice!)
- The right to access the personal information we hold about you
- The right to request the correction of inaccurate personal information we hold about you (although you can probably do most of this through My Account
- The right to request that we delete your data, or stop processing it or collecting it, in some circumstances
- The right to stop direct marketing messages, which you can do through My Account
- The right to withdraw consent for any consent-based processing at any time
- The right to request that we transfer or port elements of your data either to you or another service provider
- The right to ask us to explain any computer-system decision about you

Decline the Use of Certain AI Functions

There were some popular e-commerce websites from the Mainland surfed by Hong Kong consumers providing options for consumers to opt out of personalised recommendation. This is considered a good practice for consumers to have better control on their shopping preference and choice.

Figure 58: Example of Traders Informing Consumers about the Decline of Product Recommendation

（2）商品/服务信息展示和搜索

为了向您展示商品或者服务，我们会收集您的**设备信息（包括设备名称、设备型号、MAC地址及IMEI、设备识别码、移动应用列表等软硬件特征信息、操作系统和应用程序版本、语言设置、分辨率、服务提供商网络ID（PLMN））、设备所在位置相关信息（包括您授权的GPS位置信息以及WLAN接入点、蓝牙和基站传感器信息）、浏览器类型**来对相应的商品或者服务内容进行排序以适应您的设备界面。

为了向您提供搜索历史、浏览记录、收藏的商品或店铺、关注的店铺、购物车或订单商品或服务展示服务，我们会收集您的**浏览信息、搜索记录、收藏记录、关注记录、加购信息、订单信息**。

我们会根据您的上述信息以及其他您已授权的信息，进行数据分析、预测您的偏好特征，在京东服务或者其他第三方应用中向您推送您可能感兴趣的商品/服务、商业广告、商业性短信及其他营销信息。如您需修改向您展示的商品或服务排序或者商业性广告及其他内容，可通过以下方式实现：

1) 如您对首页"为你推荐"展示的商品或者服务不感兴趣，可以通过长按被推荐的商品或服务图片，根据提示弹窗选择减少或者屏蔽相关商品或服务类目；

2) 如您不想接收搜索页为您综合推荐的商品或服务，可以选择按销量、价格或者其他页面可选的维度接收相应的搜索结果展示；

3) 如您不想接收商业性短信，可以根据短信内容提示，来取消我们给您发送的手机促销短信；

4) 如您不想接收APP发送的消息通知，可以通过移动端APP"消息中心–消息设置"设置；

5) 如您想管理我们给您发送的个性化广告，您可以在"我的–账户设置–通用–隐私设置–广告管理"中进行设置。点击前往。

6) 如您想管理我们给您发送的个性化内容，您可以在"我的–账户设置–通用–隐私设置–推荐管理"中进行设置。点击前往。

7) 其他：您可通过PC端账户设置页面的邮件订阅菜单中取消邮件订阅的促销信息。

Subgroup Analysis

Data Processing and Handling by Origin of Online Store

As regards the disclosure of information about data handling and processing by origin of online store, it was found that platforms based in the Mainland were more specific than Hong Kong and overseas shops on various aspects, such as data retention period and data transfer to third parties (Table 7), which is probably due to the need to comply with the articles in the Mainland. Still, their privacy policies could be references for other traders to learn.

Table 7: Specific Disclosure of Data Processing and Handling by Origin of Online Store

	Hong Kong	The Mainland	Overseas
Data Anonymisation/Aggregation	38%	50%	41%
Data Transfer to Third Parties	76%	**100%**	98%
Cross-border Data Transfer	2%	10%	33%
Data Retention Period	7%	**40%**	24%
Data Security Measures	42%	60%	43%
Base (E-commerce platforms that disclosed the collection of data)	*55*	*10*	*46*

Data Processing and Handling by Operational Mode

A higher portion of the brand-own stores informed consumers about their data anonymisation, and were specific about data transfer and security measures (Table 8). It is noteworthy that among these brand-own stores, up to 88% were non-local (from the Mainland or overseas), implying that many of them need to comply with the requirements of their own jurisdictions in addition to Hong Kong's.

Table 8: Specific Disclosure of Data Processing and Handling by Operational Mode

	Brand-own Stores	Third-party Platforms
Data Anonymisation/Aggregation	**50%**	36%
Data Transfer to Third Parties	96%	85%
Cross-border Data Transfer	**29%**	11%
Data Retention Period	17%	15%
Data Security Measures	**58%**	40%
Base (E-commerce platforms that disclosed the collection of data)	*24*	*86*

Rights of Consumers by Origin of Online Store

Concerning the disclosure of consumer rights by origin of online store, it was found while Hong Kong e-commerce traders tended more to inform consumers how to access and correct data, traders based in the Mainland were more specific about declining data collection, and overseas ones were relatively explicit in terms of rejecting cookie tracking (Table 9). Traders could learn from one another in this regard.

Table 9: Specific Disclosure of Rights of Consumers by Origin of Online Store

	Hong Kong	The Mainland	Overseas
Access and Correct Data	87%	80%	83%
Decline Data Collection	31%	60%	52%
Base (E-commerce platforms that disclosed the collection of data)	*55*	*10*	*46*
Decline Cookie Tracking	28%	33%	50%
Base (E-commerce platforms that disclosed the use of tracking technologies)	*46*	*9*	*46*

Complying Data Regulations outside Hong Kong

Aside from the PDPO, the General Data Protection Regulation (GDPR) of the EU is worth traders' attention if they do business with EU consumers. The GDPR sets a new high-water mark when it became effective in all Member States of the EU and European Economic Area on 25 May 2018. It applies to all citizens of the EU, implying that any business or organisation which holds, and processes, the personal data of these citizens has to comply with the GDPR. Given the diversified business or transaction models today (e.g. online transactions), it is necessary for traders in Hong Kong to ascertain if the GDPR is applicable to them. Among the 112 e-commerce platforms under review by the Council, only 15% mentioned in their privacy policies about their conformity to the GDPR. Traders, particularly those involving EU consumers, are obligated to ensure their compliance with the GDPR.

Besides, the Mainland's Personal Information Protection Law (PIPL) took effect on 1 November 2021. The Mainland Government defines personal information more broadly than many other countries. As long as the data is "related to identified or identifiable natural persons", it could still fall under the PIPL. Given the close economic tie between Hong Kong and the Mainland, traders shall pay extra attention to ensure their compliance with the PIPL if they also have operations in the Mainland.

To wrap up, most of the traders reviewed generally comply with the PDPO. They disclose information such as ways and purposes of data collection, types of data collected and transfer of data to keep consumers informed. Nevertheless, some traders may tend to be more ambiguous in certain regards. For example, it is still not common for them to specify the data retention period, advise consumers how to opt out of certain features, or explain the data security measures. Although according to the PDPO, some of these practices are not mandatory, the Council suggests that traders should provide as much information as they could, especially when notifying consumers about the use of AI. Nonetheless, as revealed in Chapter 3 that consumers might not be fully digitally literate and tolerant to wordy and lengthy privacy policies, it is vital for traders to come up with a way that caters for consumers while keeping the detailedness and openness. Ultimately, increasing transparency is a way to enhance consumer trust.
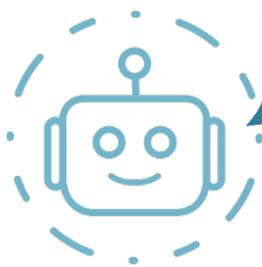
5 Roles of Traders and Stakeholders in Promoting the Use of AI in Hong Kong

AI has become a mainstream technology and an irreversible trend. In this era, what have traders done in adopting AI in their business? What efforts have been made by the Government? This Chapter sheds light on these important issues.

From traders' perspective, the adoption of AI in Hong Kong is still at an early development stage. While enjoying the benefits of AI, they encounter challenges when adopting the technology, such as the scarcity of talents, insufficient financial resources, and the unavailability of up-to-date open data. There also exists difficulty in validating AI models and thus ensuring the reliability of the outcomes. Besides, traders' current AI adoption might induce potential risks. For instance, a comprehensive AI strategy at company level is still rare owing to the lack of related knowledge or limited resources. The unclear responsibility between traders and technology providers, and some traders' inattention to AI risks should be addressed too. To expedite the use of AI in e-commerce, both education and support from the Government are essential.

In fact, the Government has been promoting the development and adoption of innovative technologies (including AI) in the industry and within government bureaux and departments. For example, the Office of the Government Chief Information Officer (OGCIO) established the Smart Government Innovation Lab to encourage and facilitate wider adoption of innovation and technology (I&T) in the Government. The Hong Kong Science and Technology Parks Corporation (HKSTP), the Hong Kong Cyberport Management Company Limited (Cyberport), the Hong Kong Productivity Council (HKPC) and Hong Kong Applied Science and Technology Research Institute (ASTRI) have also been advocating and providing support in developing and adopting innovative technologies including the application of AI in Hong Kong.

While the Government deems governing a specific technology might hinder innovation, stakeholders still opined that an integrated and holistic blueprint for AI development was necessary given the currently fragmented AI initiatives in Hong Kong. With the newly established Digital Economy Development Committee in June 2022, it is expected that the city's digital strategy can be crystalised and further accelerated. Still, the Government should strengthen its role as a pioneer of AI adoption by widening the use of AI and boosting digital transformation. In a society that embraces the trend of technology adoption with appropriate governance, both consumers and traders would be benefited.

5.1 Roles of Traders with Adoption of AI

Consumers are rather passive when it comes to the application of AI tools in e-commerce, thus the role of traders becomes crucial – the interests of consumers largely depend on how traders adopt AI in their business. To date, more and more traders are exploring the possibility of applying AI in their operations as well as provision of goods and services. According to Google's report "Smarter Digital City – AI for Everyone" in 2020, 78% of the interviewed businesses in Hong Kong believed that AI was beneficial and could bring improvements, and 83% of them had already implemented or were planning to implement training programmes to develop AI capabilities and expertise. The increased funding and talents resources in Hong Kong have also attracted start-ups to set up business related to AI. Noteworthily, some of the start-ups are even local unicorn companies with valuations of more than US$10 billion (HK$78 billion), such as DJI, Lalamove and SenseTime.

To gather the views of e-commerce practitioners of AI adoption in Hong Kong, the Council invited 73 e-commerce companies for in-depth interviews in Q1 2021. In the end, 19 interviews were successfully completed with seven traders who operate popular e-commerce platforms accessible to Hong Kong consumers, nine technology providers which offer AI-enabled services to consumer-facing e-commerce platforms in Hong Kong, and three IT experts. The rest of the invitees rejected the interviews mainly because they were not ready to commence AI-related initiatives, or they regarded AI strategies sensitive to reveal. Details including the selection criteria and the interviewee list can be referred to Appendix 3.

Among the 16 traders and technology providers that accepted the invitation, six of them had their founders or CEOs attend the interviews, while ten sent their senior managers for IT development as representatives. It is noteworthy that in general, the interviewees had less than ten years of experience in the e-commerce sector, reflecting that the rapid growth of e-commerce in Hong Kong probably only took place in the past decade.

Questions asked during the interviews could be divided into two dimensions, namely at market environment level and at company level. While the former was about the general development of AI in Hong Kong, the latter covered topics like types of AI tools adopted, reasons for investing in AI, challenges the interviewees were facing, governance of AI, and measures to protect consumers. Results are presented below in detail.

Adoption of AI

In Hong Kong, the adoption of AI in e-commerce was at an early stage, according to many interviewees. They indicated that the market trends were led by key retailers in the e-commerce industry, and that most traders, especially the SMEs, just followed the trends instead of innovating AI tools or usage themselves. Correspondingly, they graded Hong Kong's recent AI development in e-commerce 4.9 out of 10 on average, where a score of 10 refers to extremely advanced development (Figure 59).

Figure 59: Traders' Rating on the current AI Development in Hong Kong's E-commerce
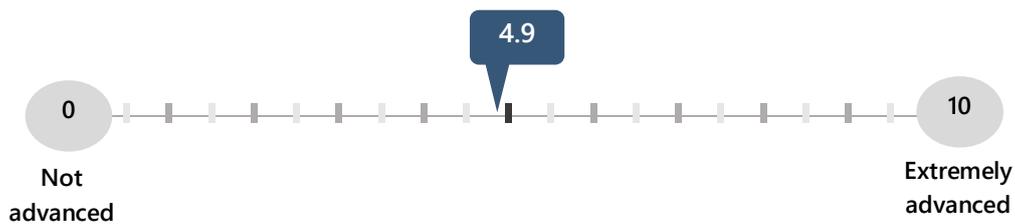
Popular AI Use Cases

Interviewees responded that product recommendation and chatbots were the most popular consumer-related AI applications, which echoed the findings in the consumer survey and the Council's desktop research. Besides, traders also favoured personalised marketing, while technology providers preferred investing in image recognition. However, interviewees also pointed out that these AI tools were usually adopted piece by piece rather than in a systematic way due to the lack of a comprehensive AI strategy in many companies.

Reasons for Investing in AI

For the top three reasons for interviewees to invest in AI, providing better customer services was a major reason indicated by both interviewed traders and technology providers. The other two reasons, however, varied between these two types of companies (Table 10). Traders believed AI could lead to better predictions and results, and could enable them to provide more personalised experience to shoppers, thus they were willing to invest in it; while for technology providers, better efficiency and cost reduction were more important so that they could provide more competitive solutions to their clients. However, generating new income was not considered one of the key reasons by the interviewees.

Table 10: Reasons for Investing in AI by Rank Order

Traders	Technology Providers
Better customer services	Improve efficiency
Lead to better predictions and results	Reduce cost
Provide more personalised experience	Better customer services

Base: N=19, multiple answers allowed

Purpose of Using AI

"Many traders in Hong Kong still have a mindset that AI is only used for saving costs and enhancing efficiency, but not as a differentiator to generate new income."

- Representative of Industry Stakeholder

Yet, both traders and technology providers also faced barriers while investing in AI. Interviewees said the lack of talents and insufficient funding were the two major obstacles for companies to deploy AI (Table 11). In terms of AI talents, interviewees reflected that apart from the scarcity of supply, IT specialists were more tempted to work in other markets that are more AI-mature than Hong Kong, such as the Mainland and the US. As regards funding, given investing in AI might not bring immediate business return, it was not the top priority for the management of many companies although they were fully aware of the potential benefits of AI and the trend of AI adoption.

Table 11: Major Barriers to the Deployment of AI by Rank Order

Traders	Technology Providers
Lack of talents	Lack of funding
Lack of funding	Lack of talents
Lack of high-quality data	Lack of AI knowledge

Base: N=19, multiple answers allowed

Indeed, the lack of talents might cause further difficulties. For example, some interviewees revealed that many technology providers required traders to prepare and clean the data prior to sharing it with them for AI model training. Even though traders knew the quality of AI outcomes relies fundamentally on data quality, without related experts, they might find data collection and data cleaning a hard task to complete. Aside from internal data handling, the unavailability of public data was another issue. It was reflected that in Hong Kong, there was a lack of open data which is up-to-date and ready for companies to use in the e-commerce scene. Consequently, limited data might affect the accuracy of AI model training.

Additionally, interviewees also pointed out that some companies encouraged staff to adopt open-source AI tools to save costs. However, there might be cases that their IT staff were not knowledgeable enough about AI and hence not able to explain the results generated.

AI Deployment

Both developing AI solutions in-house and outsourcing to third-party technology providers were common, as stated by the interviewees. They revealed that building in-house AI solutions might have better flexibility and provide higher customisation. Yet, the shortage of skilled AI professionals, and the cost and time of investment could be big hurdles for this in-house option. For example, looking for new talents and training existing workers are time-consuming and tiring. Besides, there is no guarantee that the AI project developed will be successful eventually.

Meanwhile, some interviewees outsourced their AI solutions because of the lower development costs compared with in-house innovation – the AI solutions have already been developed by technology providers, and the return of investment can hence be realised faster. However, some interviewees also highlighted the business risks of choosing a wrong or substandard partner, such as errors caused by inexperienced AI developers and scope creep leading to higher costs. Furthermore, certain industry experts also pointed out issues related to traders – they were worried that once outsourcing the task, traders would not care much about how the AI model was run but only target to look for immediate short-term results.

No matter which way traders choose to develop their AI solutions, it is crucial that their management understand the logic, algorithms and related concepts behind AI. A dedicated committee or unit is needed to be responsible for the outcomes of AI and ensure the AI solutions are beneficial and safe to consumers. Nevertheless, in the interviews, none of the interviewees reflected that they have established such unit at all.

Company Policies on AI

As abovementioned, interviewed traders rarely had their own comprehensive AI strategies. Nevertheless, the presence of a comprehensive AI policy is essential for the top management of companies to demonstrate their commitment to the ethical development and use of AI. Reflected from the interviews with traders, many of them had vague understanding of what AI policies are, and often referred to privacy policies as the main component when governing the use of AI. One interviewee did not even know there are global AI principles and guidelines to follow. Meanwhile, an industry expert also expressed that it might be difficult for SMEs to follow and comply with the guidelines given the limited resources they had.

Current Situation of Company Policies on AI

"Our company does not have a guideline in black and white, as the AI application itself is still under testing and not yet ready for use."

- Trader, In-depth Interview

Accountability for AI Models and Outcomes

Accountability ensures that if an AI tool makes mistakes or causes harm, there is someone that can be held responsible, be it the trader or the technology provider of AI-powered solutions. In the event of damage incurred, there must be a mechanism for redress so that victims can be sufficiently compensated. However, the reality is not as ideal. Many interviewed traders revealed that the after-sales support from technology providers was insufficient. For instance, it could happen that some technology providers might not provide security updates regularly after selling the AI solutions to traders, yet traders might lack the knowledge to review and update the AI solutions themselves. Meanwhile, certain technology providers might not provide enough support for traders to explain the AI models to consumers when inquired. However, not necessarily all technology providers would still consider these tasks their responsibilities after selling the solutions.

In terms of data collection, some interviewed technology providers emphasised that traders were responsible to collect consumer data, deploy and train AI themselves, yet some interviewed traders might rather regard data cleaning and training of AI models as the responsibility of technology providers due to their lack of expertise.

The above findings demonstrated the blurred responsibility between traders and technology providers. It is important for them to clarify and reach a consensus in this regard, so that an accountable party could be identified in case of any business or consumer disputes.

Human Oversight

In many principles set by international organisations, human oversight is a key measure to mitigate the risks of using AI. In any event, human actors should ultimately be held accountable for the decisions made by AI. However, according to the interviews, only six interviewees revealed that they would adopt human oversight at the live running stage. Some would also monitor the AI models after the deployment. For instance, traders or technology providers would manually review and monitor their chatbots on a regular basis to ensure the answers provided were appropriate. Besides, they would evaluate if the product recommended was a suitable outcome from the algorithms. It is noteworthy that human oversight is still important even when the adoption of AI becomes mature.

Human Oversight for Software Development

"Our company implements very strict static code analysis tools and human review processes to ensure consistent quality in our software development practices."

- Technology Provider, In-depth Interview

Importance of Human Oversight

"Human actors need to judge if the product recommended is a suitable outcome. AI algorithm needed to be explainable."

- Trader, In-depth Interview

When asked about AI governance risks, ten interviewees regarded "AI reliability" as the top risk and eight interviewees thought it was "AI validation". The former were uncertain about the reliability of AI models and thus often reviewed the results generated by AI models with human judgement, while the latter reflected that it was difficult to validate the AI models if they were using services provided by third-party technology providers. In spite of the awareness of the importance of testing and validating AI models, related disclosure to consumers was rather limited. It might not be necessary for company to disclose in detail how they validate the models, but at least they should inform consumers that the outcomes have been validated and thus reliable; otherwise, it might be difficult to promote trust and confidence of consumers in the use of AI.

Besides, two interviewees said they were not so worried about the adverse consequences caused by the wrong outcomes of AI because they deemed the adoption of AI in the retail industry were of relatively "low-risk" as compared with fields like surgery and autonomous driving. From a consumer protection perspective, this kind of mindset is quite worrying and should be rectified promptly to ensure traders operate AI with good ethics and principles.

Data Protection During Training of AI Model

Training of AI models fundamentally involves large amount of data, and some of the data may contain personal information. In the interviews, all interviewees said that they used only aggregated data which did not contain personal information and could no longer be used to identify the identity of data subjects for AI model training. Nevertheless, it is worthy of attention that however strict the anonymisation process is, there is still risk that the data could be re-identified if there is data leakage, or if the data is cross-referenced with other publicly available data. Thus, secure storage of data is of paramount importance too. For technology providers, majority of the interviewees said such aggregated data were not stored by them but the traders.

The Way in which a Smart Kiosk Works to Collect Masked Data

"Our company has developed technologies for traders to collect data to train AI without identifiable personal information involved. For instance, when a smart kiosk is placed at the entrance of a store, it can identify gender, age, and emotion of potential consumers and identify return customers on the spot. The smart kiosk is able to detect consumers' facial features, then label the features with numbers, and only store the numbers (but not the image of consumers) in its database."

- Technology Provider, In-depth Interview

Summary of In-depth Interviews

Overall, AI adoption in e-commerce in Hong Kong is at an early development stage and has much room to shape and evolve. In spite of a few market leaders that have taken the initiatives to apply AI, majority of the traders simply follow their lead and employ AI to a limited extent. While enjoying the business benefits of AI, traders still face certain challenges, including insufficient funding, the lack of AI talents and unavailability of high-quality data. There also exists difficulty in validating AI models and thus ensuring the reliability of the outcomes.

Besides, traders' current way of using AI is not fully satisfactory and might induce potential risks. For example, a comprehensive AI strategy at company level that provides guidance on aspects like human oversight and information transparency is still rare owing to the lack of related knowledge or limited resources. The unclear responsibility between traders and technology providers are another issue. Some traders' inattention to AI risks is worrying too.

In view of the above issues, more education and service support provided to traders shall be needed. Meanwhile, it is vital for both traders and technology providers to put consumer safeguards at the top of their priorities while spending efforts in overcoming all the business challenges and issues identified.

5.2 Roles of the Government and Stakeholders to Promote AI

Developing Hong Kong into a World-class Smart City

AI has been of growing importance in Hong Kong. As outlined in the 14th Five-Year Plan, the Central Government of the Mainland indicates clear support for developing Hong Kong into an I&T hub, and the Hong Kong SAR Government has been promoting and investing in the development of smart city and digital economy in Hong Kong through a data-driven approach.

I&T has been a key sector which the Government targets to develop over the past decade. The Government has injected over HK$150 billion in establishing I&T infrastructure, promoting research and design (R&D), nurturing talents, and supporting the industry, thereby to enhance the I&T eco-system in Hong Kong. The Government also identifies AI as one of the four major areas of development, along with smart city, financial technology (fintech) and biotechnology.

The Government first launched the "Smart City Blueprint for Hong Kong" in December 2017, outlining its policy objectives to pursue smart city development, and make use of I&T applications to address urban challenges and enhance city management. It then updated the document and released the "Smart City Blueprint for Hong Kong 2.0" in December 2020, expanding the scale from 76 initiatives to over 130 initiatives in six areas, including smart mobility, smart living, smart environment, smart people, smart government and smart economy. Two new chapters, namely "Use of I&T in Combating COVID19" and "Smart Village Pilots" have also been included in the Blueprint 2.0 to cover relevant initiatives.

In realising Hong Kong's vision to become a world-class smart city, the Government, together with other stakeholders, has launched a broad range of initiatives and guidance for reference by the business sectors. Recently in June 2022, the Government established the Digital Economy Development Committee to advise the Government on the development of digital economy in Hong Kong, a highly recognisable step to crystalise the city's digital strategy and to accelerate the implementation. Still, unlike other jurisdictions such as the EU and the UK where a regulatory framework has been proposed to govern the adoption of AI, Hong Kong does not employ such approach. The Government is of the view that technology is evolving fast, and governance of technology might hinder innovation. Individual business domains can consider their needs for governing the adoption of a particular technology based on specific business and relevant legal requirements.

### Innovation, Technology and Industry Bureau (ITIB)

The ITIB, retitled from Innovation and Technology Bureau (ITB) in July 2022, is responsible for formulating holistic policies related to I&T; strengthening the coordination among the government bureaux and departments, industries, academia and research fields; and expediting the development of innovation, technology and related industries in Hong Kong. It also actively promotes the opening up of data by public and private organisations in a bid to foster technological research and innovation – this is particularly important for the development of AI which requires large data sets for model training.

Back in 2017 and 2020, the former ITB released the abovementioned Blueprint and Blueprint 2.0 respectively. Besides, the ITB established two "InnoHK" research clusters in the Science Park to attract world renowned universities, research institutes and technology enterprises to conduct more collaborative research in Hong Kong. One of its research clusters developed in

early 2021 is "AIR@InnoHK", which directs towards AI and robotics technologies, including big data analytics, mobile robots, ML and intelligent agents.

The Innovation and Technology Commission (ITC), the Office of the Government Chief Information Officer (OGCIO) and the Efficiency Office (EffO) are the important operating arms of ITIB (Figure 60).

Figure 60: Structure of ITIB
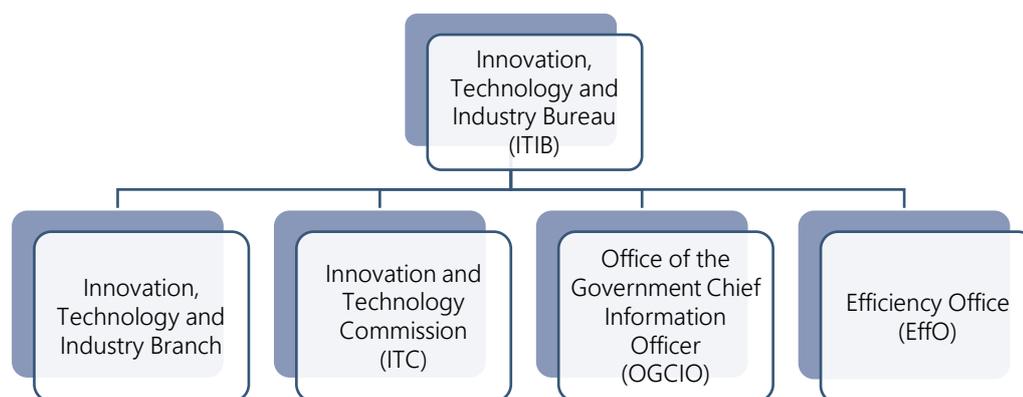
Source: ITIB

Innovation, Technology and Industry Branch

The Innovation, Technology and Industry Branch coordinates to formulate I&T policies, thereby fostering the development of I&T and related industries in Hong Kong, and raising the competitiveness of Hong Kong.

Innovation and Technology Commission (ITC)

The ITC implements I&T related policies, measures and works closely with government departments, the industrial and business sectors, tertiary institutions and industrial support organisations to promote applied R&D in different technology areas. It also administers the Innovation and Technology Fund (ITF), which aims to increase the added value, productivity and competitiveness of Hong Kong's economic activities by supporting projects that help industries develop innovative ideas and upgrade their technological level. As of April 2022, the ITF had approved an accumulative total of over 34,000 projects with a total approved funding of around HK$29.5 billion, across a number of industrial sectors, such as biotechnology, electrical and electronics, IT, environmental, textile/clothing/footwear, etc.

Office of the Government Chief Information Officer (OGCIO)

The OGCIO provides leadership in delivering information and communications technology (ICT) functions within the Government and enables the Government to take a proactive and leading role in information technology development. It has introduced a variety of AI applications within and outside the Government in recently years, such as the GovHK AI Chatbot "Bonny" (Figure 61) that aids users in finding government forms and related e-government services. With the Next Generation Government Cloud Platform and Big Data Analytics Platform that commenced operations in September 2020, it has effectively facilitated the data interchange among government bureaux and departments, and the implementation of more projects that involve AI adoption AI and big data analytics. So far, it has supported over 360 digital

government services and more than 15 projects related to big data analytics.[27] Besides, it also launched the "Ethical AI Framework (2021)", in consultation of the PCPD for ethical adoption of AI and big data analytics in IT projects by government bureaux and departments.

**Figure 61: GovHK AI Chatbot "Bonny"**

Efficiency Office (EffO)

The EffO, through its role as an internal management consultant, supports the Government in taking forward transformation projects, which include the application of I&T in business processes. The EffO organises events such as solution days and trade shows to help government bureaux and departments understand the latest technologies in the market, including AI. Such events facilitate the idea exchange between different parties through networking sessions, experience sharing sessions and discussion panels.

Other Government-related Organisations which Support I&T Development

The Government also provides support for I&T via different statutory bodies and organisations. The ITC collaborates with various strategic partners in assisting start-ups and SMEs to develop their I&T capabilities and commercialise their innovations. Some of the strategic partners are shown in Figure 62.

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[27] Hong Kong Government. (2022) Development of digital economy.

Figure 62: Strategic Partners of ITC
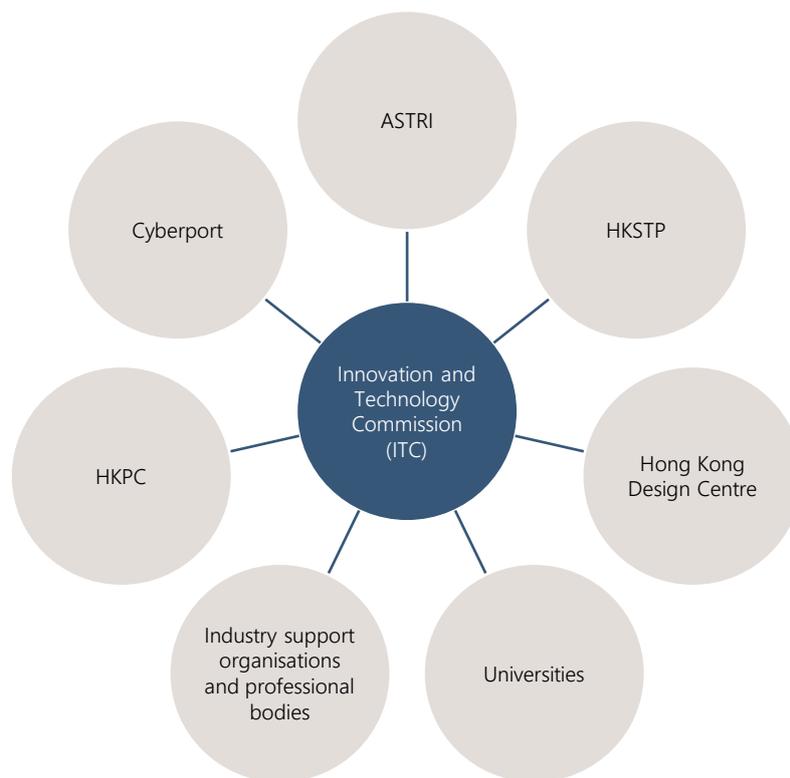
Source: ITC

Hong Kong Science and Technology Parks Corporation (HKSTP)

The HKSTP is a statutory body founded in 2001 for building an environment to incubate technology enterprises and providing the younger generations with I&T opportunities. It primarily focuses on four strategic areas, namely AI and robotics, biomedical, data and smart city, and fintech. It also manages the Hong Kong Science Park, a hub that accommodates more than 1,100 technology companies from 22 countries/regions as of July 2022.

In terms of work related to AI, the HKSTP's AI and Robotics community has over 200 companies. It launched the HKAI Lab with Alibaba Group Holding Limited and SenseTime in May 2018 to advance the frontiers of AI, to empower start-ups to commercialise their new inventions, and to inspire new ideas and knowledge sharing among academics, scientists and entrepreneurs. Later in 2020, the HKSTP unveiled the AI PLUG and Robotics Catalysing Centre 2.0. More than 100 AI PLUG members enjoy technical, business, funding and training support from 28 service partners under the four key areas of services – Tech Shop, AI Infrastructure, Corporate Innovation and AI Academy. More lately in January 2021, it also built a Data Technology Hub in the Tseung Kwan O Industrial Estate to provide a base of operations for data transfer and global telecommunications.

Hong Kong Cyberport Management Company Limited (Cyberport)

The Cyberport focuses on fostering the transformation of Hong Kong into a smart city through three major application clusters, including fintech, smart living, and digital entertainment and esports. The Cyberport is wholly owned by the Government. It manages an innovative digital community with over 1,650 start-ups and technology companies as of June 2022. Its main vision is expediting the development of key technology trends, including cybersecurity, AI and

blockchain. The Cyberport aims to accelerate the growth of start-ups specialising in AI and big data analytics by providing them advice and technical support.

In 2020-21, the Cyberport Creative Micro Fund (CCMF) provided 96 applicants specialising in fintech, smart living, digital entertainment, AI, big data, blockchain and other clusters with pivotal seed funding to develop prototypes for business establishment and investor pitching. The Cyberport Greater Bay Area Young Entrepreneurship Programme connects the youth in Hong Kong, Guangdong and Macau for tech co-creation and collaboration. In 2020-21, the programme received around 350 applications from the GBA cities for 160 places to join the online bootcamp and to contest HK$100,000 grants to realise innovations. Meanwhile, in Hong Kong, the Cyberport Digital Tech Internship Programme 2020 matched I&T jobs for 120 students, reaching a record high in the recent decade.

Hong Kong Productivity Council (HKPC)

The HKPC is a multi-disciplinary organisation set up in 1967. It focuses on sourcing, developing and transferring new technologies and management know-how to enhance the competitiveness and sustainability of Hong Kong industries in the world market, such as in the field of smart products, smart manufacturing, automation, new materials, smart mobility, green transportation and environmental technology. It is committed to strengthening the application of AI and robotics among local enterprises. More specifically, it organises seminars and collaborates with international organisations on a number of AI and robotics-related R&D projects to promote advanced manufacturing based on the relevant technology for the continuous and long-term development of Hong Kong. It also established the Hong Kong Industrial Artificial Intelligence and Robotics Centre (FLAIR) at the Hong Kong Science Park. In addition, the HKPC also offers relevant technology courses for the industries through the "Reindustrialisation and Technology Training Programme".

Hong Kong Applied Science and Technology Research Institute (ASTRI)

With the mission of enhancing Hong Kong's competitiveness through applied research, the ASTRI's core R&D competence in various areas include Trust and AI Technologies, Communications Technologies, Internet of Things (IoT) Sensing and AI Technologies, and Integrated Circuits and Systems. It is applied across six core domains which are smart city, fintech, intelligent manufacturing and re-industrialisation, digital health, application specific integrated circuits and metaverse. As of March 2021, there were 62 employees in AI and Big Data Analytics, accounting for over 10% of the total number of employees. By 2021, the ASTRI had transferred almost 800 technologies to the industry and had been granted over 900 patents in the Mainland, the US, and other countries.

5.3 AI-related Legislations/Guidance Advocated by the Government and Stakeholders

Although there have been various voluntary codes of ethics regarding the use of AI globally, at present, similar to many other places in the world, there is no AI-specific law in Hong Kong. In case of any disputes, they are then subject to related existing laws, such as the Sale of Goods Ordinance (Cap. 26), the Control of Exemption Clauses Ordinance (Cap. 71), the Trade Descriptions Ordinance (Cap. 362), the Supply of Services (Implied Terms) Ordinance (Cap. 457) and the Unconscionable Contracts Ordinance (Cap. 458), or references from other jurisdictions. However, as these local laws only regulate the sales of products and services in general, they might not be completely applicable when AI or data collection is involved. In view of the

phenomenon that AI has been used across different industries, three statutory bodies in Hong Kong have released their own guidelines to advise businesses on the application of AI, including the Office of the Privacy Commissioner for Personal Data (PCPD), the Hong Kong Monetary Authority (HKMA) and the Securities and Futures Commission (SFC). Although they adopt similar principles when it comes to AI, such as transparency and accountability, their areas of focus are different. While the PCPD provides guidance for the general usage of data when adopting AI, the HKMA and the SFC govern the use of AI in the banking industry and the investment industry respectively.

Office of the Privacy Commissioner for Personal Data (PCPD)

The training of AI models requires a large amount of data, which, in many cases, inevitably contains certain personal information, thus posing challenges to privacy, data security and potentially individuals' rights and interests. Therefore, in August 2021, the PCPD published the "Guidance on the Ethical Development and Use of AI" to assist companies to comply with the requirements of the PDPO while they develop or use AI. It is worth noting that the Guidance is not legally binding. In line with international standards, the Guidance suggests seven ethical principles for AI adoption and recommends practice guides to companies under four areas, as illustrated in the Tables 12-13 below.

Table 12: Ethical Principles in the PCPD's Guidance on the Ethical Development and Use of AI

Data Stewardship Value	Ethical Principle for AI Adoption
Being Respectful	• Accountability • Human oversight • Transparency and interpretability • Data privacy
Being Beneficial	• Beneficial AI • Reliability, robustness and security
Being Fair	• Fairness

Table 13: Practice Guides in the PCPD's Guidance on the Ethical Development and Use of AI

Practice Guide for Ethical AI Adoption	Description
AI Strategy and Governance	An AI strategy and an AI governance committee are needed to steer the development and use of AI.
Risk Assessment and Human Oversight	Comprehensive risk assessment is necessary for systematically identifying, analysing and evaluating the risks, including privacy risks, in relation to the development and use of AI. Besides, appropriate human oversight should be devised according to the risk level, and there should be human actors held accountable for AI decisions ultimately.
Development of AI Models and Management of AI Systems	The development of AI models by way of ML involves several steps, namely, (1) collecting data; (2) preparing data; (3) choosing the types of ML models, (4) developing AI models by feeding training data to the ML algorithms, and (5) testing, evaluating and tuning the AI models.
Communication and Engagement with Stakeholders	Communications with stakeholders should be in plain language, clear and understandable by laymen, and drawn to the attention of stakeholders.

In May 2022, the PCPD further issued the "Guidance on Recommended Model Contractual Clauses for Cross-border Transfers of Personal Data" to provide a practical basis for facilitating transfer of personal data from Hong Kong. As transferring data across borders for AI training or other AI-related purposes gets common among traders, the Guidance would thus be particularly applicable.

Hong Kong Monetary Authority (HKMA)

The banking industry is one of the early adopters of AI in the world, and Hong Kong has no exception. In view of the increasing adoption of AI among banks in Hong Kong, in November 2019, the HKMA published a document that advises on the usage of AI and big data, titled "High-level Principles on AI". The document recommends several rules that companies in the banking industry should follow. For example, on governance, senior management should be accountable for the outcomes of AI applications; when designing the AI applications, companies should be fair and transparent to consumers, and assure them of explainability and validation of the AI models; and for ongoing monitoring and maintenance, companies should review and monitor the AI models to ensure cybersecurity.

Moreover, the HKMA also published a letter to banks in Hong Kong with a set of guiding principles in respect of the use of big data analytics and AI from the aspect of consumer protection in 2019. These guiding principles focus on four major areas, namely governance and accountability, fairness, transparency and disclosure, and data privacy and protection. The HKMA emphasises that banks should adopt a risk-based approach commensurate with the risks involved in their use of big data analytics and AI. Meanwhile, banks should ensure appropriate governance, oversight and accountability framework; provide appropriate level of explainability of the AI models; make sure the AI models produce objective, consistent, ethical and fair outcomes to customers; provide appropriate level of transparency to customers regarding their AI applications through proper, accurate and understandable disclosure; and implement effective protection measures to safeguard consumer interests.

Securities and Futures Commission (SFC)

With the potential rise of online investment platforms, the SFC issued the "Guidelines on Online Distribution and Advisory Platforms", which became effective in July 2019. The Guidelines provide tailored guidance to the industry on the design and operations of online platforms, and clarify how the suitability requirements would operate in an online environment. There is specific guidance on robo-advice mentioned in the Guidelines. For example, a robo-adviser should provide sufficient information on its online platform to enable investors to make an informed decision regarding whether to employ its services. A robo-adviser should also make clear and adequate disclosure of relevant material information to clients on its online platform on an ongoing basis, including the limitations, the risks, the generation of key components of its services, and the degree of human involvement. Moreover, a robo-adviser should ensure that algorithms used are not programmed to direct clients towards particular investment products for which the robo-adviser or its affiliates receive higher commissions. It is of equal importance that a robo-adviser should have a documented plan with details on the scope and strategy for the testing of algorithms, and have robust policies and procedures in place to monitor and test the algorithms.

5.4 Stakeholders' Engagement

The Council engaged with the officials of the OGCIO and the representatives of the PCPD, the HKSTP, the Cyberport and the HKPC, as well as multiple major industry associations[28] in Hong Kong in Q2 2022 to collect and exchange views on approaches to enable the development of responsible and ethical use of AI in e-commerce.

Strategic Policy Direction of Hong Kong

Some stakeholders pointed out that for long, the Government has been investing resources in innovation and deep technologies. Still, most stakeholders hoped that more resources could be dedicated to the application of such technologies for the industry.

The Government has been putting many efforts and resources in opening more data in recent years. Stakeholders opined that the e-commerce industry could also contribute and make collective efforts to encourage traders to open up their own data and share with one another to facilitate the growth of AI. Some stakeholders also indicated that other unstructured data, such as speech and image data, could be used to train AI models too. Still, as Hong Kong is relatively a small market and data for AI model training could be insufficient, traders can consider forming partnership with other traders or universities, locally or internationally.

Under the new normal amid the COVID-19 pandemic, global markets have been revisiting their strategies and turning their focus to building more efficient regional supply chains. Hong Kong should ride on this opportunity to develop its own digital strategy while integrating with the city's unique strength in smart logistics and supply chain management. At the same time, with the close relationship with the Mainland, Hong Kong can take the advantage of cooperating with Mainland partners to facilitate its own development in the digital market.

Furthermore, industry stakeholders and traders expressed that cross-bureau cooperation in establishing a unique digital strategy for Hong Kong was crucial. With the newly established Digital Economy Development Committee, more collaborative efforts across bureaux and departments within the Government, and between the Government and the business sector shall be expected, and a unique digital strategy for Hong Kong shall be formulated efficiently.

Demand for Clear Guidance when Adopting AI and a Holistic Blueprint for AI

Industry stakeholders generally indicated that there is no existing guideline or law to regulate the use of AI in the e-commerce market. Setting principles or guidelines for the industry may be useful. For example, traders should be required to provide enough disclosure to consumers related to the use of personal data and AI, such as the data retention period and the way they store and process consumers' data. With clear guidance, not only can traders' sales tactics be better controlled, but the rights of consumers can also be protected ultimately.

At the same time, industry stakeholders commented that AI-initiatives in Hong Kong remained rather fragmented currently. Industry associations and trade organisations believed that an integrated and holistic blueprint for AI development is necessary for Hong Kong amid the rapid technological development.

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[28] Industry associations included: E-commerce Association of Hong Kong, Federation of Hong Kong Industries, Hong Kong Federation of E-commerce, Hong Kong General Chamber of Commerce, Hong Kong Retail Management Association and The Chinese General Chamber of Commerce.

Lack of Resources for SMEs

Stakeholders reckoned that e-commerce traders in Hong Kong are mainly SMEs. Without much financial resources, many of them do not have the ability to develop their own robust algorithm and AI models; instead, they mainly adopt AI solutions supplied by vendors or technology providers. They do not have the capability to validate the AI models either. Meanwhile, SMEs might not be able to afford using consultancy services or employing specialists to advise them on the use of AI. Facing these financial constraints, stakeholders opined that appointing a person in a company to be responsible for the ethical use of AI would be more practical.

Dominance of Big Market Players

Some stakeholders expressed that large e-commerce traders and technology providers were more advantageous as they possess more consumer data, and thus they could easily dominate the market. To most of the large market players, data is too valuable a company asset to share with others, especially SMEs. In addition, SMEs can only rely on vendors or technology providers for payment gateways, setting up online stores, or other technical support.

Potential Harm of Market Dominance

"If there are only a few companies which can provide products/services consumers want, consumers may be "forced" to agree with the terms of those traders even if they are not willing to provide their personal data."

- Representative of Industry Stakeholder

Demand for Education to Traders

Some stakeholders opined that there was a large gap between traders and technology providers, probably due to the formers' lack of AI knowledge. If traders do not understand what AI is, it is difficult for them to notice and follow the ethical guidelines on AI, or realise the necessity of dedicating a person to be responsible for the use of AI in the company. Education to traders must be improved.

Blurred Responsibility Between Traders and Technology Providers

"Traders do not have knowledge about AI and do not know how to follow the best practices. Meanwhile, vendors do not know the operations of traders and it is difficult for them to tell traders how to follow the best practices."

- Representative of Industry Stakeholder

5.5 Latest Development in Hong Kong and Collaboration with Cities in the GBA

Latest Development in Hong Kong

With the efforts in promoting AI in Hong Kong, the trend of applying AI and other related technologies in different industries is evidently on the rise. In the Global Innovation Index 2021 by the World Intellectual Property Organisation (WIPO), Hong Kong ranked 14th among 132 economies around the global and 5th in Asia-Pacific (APAC).[29] Besides, in the International Institute for Management Development (IMD)'s World Digital Competitiveness Ranking 2021, Hong Kong climbed up to the 2nd place within 64 economies from the 5th in 2020.[30]

Looking into the future, the 14th Five-Year Plan mentions expediting the development of the GBA into an international I&T hub and puts forth nurturing and building up of emerging digital industries, including AI, big data, blockchain, cloud computing and cybersecurity in the era of digital economy. In response, the Government has put forward a series of I&T infrastructure initiatives, including the Cyberport expansion project that will strengthen its I&T eco-system and continue to drive the development of cutting-edge technologies such as AI, big data and blockchain; and the Phase Two expansion of the Hong Kong Science Park project which will focus on the needs of research activities for technologies like AI.

The Government has been adopting a multi-pronged approach to enlarge the I&T talents pool through attracting, nurturing and retaining talents. With a view to nurturing students' interest in I&T and enhancing their IT knowledge from a young age, the IT Innovation Lab in Secondary Schools and Knowing More About IT Programme subsidises publicly-funded secondary and primary schools respectively to organise extra-curricular activities related to IT. In addition, the Government has introduced various schemes such as the Science, Technology, Engineering, and Mathematics (STEM) Internship Scheme and the Research Talents Hub, and provided funding for the Innovation and Technology Scholarship to support university students to pursue further development in I&T. Moreover, the Reindustrialisation and Technology Training Programme funds local enterprises on a 2:1 basis to train their staff in advanced technologies.

Meanwhile, in the 2022-23 Budget, the Government states it will double the maximum annual funding support under the ITF for the 16 State Key Laboratories in Hong Kong and six Hong Kong Branches of Chinese National Engineering Research Centres up to HK$440 million in total, so that they can have more resources to carry out various R&D tasks, which include nurturing local talents, attracting more local and overseas I&T talents, and further their co-operation and exchanges with institutions in the Mainland.

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[29] WIPO. (2021) Global innovation index 2021.
[30] IMD. (2021) World digital competitiveness ranking 2021.

Collaborations with the Mainland

<u>Infrastructure</u>

Cooperation with cities in the GBA has been part of the Government's policies. The Government is working on the establishment of the Hong Kong-Shenzhen Innovation and Technology Park (HSITP) and aims to complete the eight buildings in Batch One in phases from end-2024. The HSITP will classify big data and AI as the prioritised R&D domains.

Besides, the Government is taking forward the development of the Shenzhen-Hong Kong Innovation and Technology Co-operation Zone, comprising the HSITP and the Shenzhen Innovation and Technology Zone, to establish the "One Zone, Two Parks". The HKSTP will kick start the establishment of the Shenzhen branch of the Hong Kong Science Park in the Shenzhen I&T Zone, allowing institutes and enterprises that are interested in starting business in the GBA to first establish a presence in the zone. The HKSTP will also set up the GBA InnoAcademy in the Shenzhen branch of the Hong Kong Science Park as a resource centre, a training hub, and an exchange platform for talents. Additionally, it will initiate the GBA InnoExpress to nurture start-ups and support Hong Kong and Mainland I&T enterprises to capitalise on Hong Kong's pivotal roles to attract foreign investment and go global. Besides, it is going to work with the seven Hong Kong universities to establish incubator networks in their GBA campuses and nurture the next generation of I&T talents.

<u>Funding</u>

The ITC will continue to operate the Guangdong-Hong Kong Technology Cooperation Funding Scheme (TCFS) with the relevant department or commission of Guangdong/Shenzhen to enhance the level of collaboration among universities, research institutes and technology enterprises in Hong Kong and Guangdong/Shenzhen. In recent years, those themes covered by Category C of the TCFS (i.e. projects jointly solicited and funded by Hong Kong and Guangdong/Shenzhen) include core technologies of digital economy, e.g. new-generation information technology (NGIT), AI, blockchain and fintech, IoT, big data and cloud computing. R&D results of those funded projects, if commercialised, could be a driving force of developing digital economy in the GBA.

<u>Talents</u>

In order to facilitate talents admission to Hong Kong, the Technology Talents Admission Scheme handles applications that involve the admission of non-local talents to undertake R&D work in Hong Kong expeditiously, covering 13 technology areas such as AI. From June 2018 to July 2022, a total of 71 AI talents were admitted to Hong Kong under the scheme. Meanwhile, the Global STEM Professorship Scheme supports universities in attracting world-renowned I&T scholars and their teams to undertake teaching and research work in Hong Kong.

The Government will also further increase the annual quota of the Quality Migrant Admission Scheme, as well as exploring the extension of the Immigration Arrangement for Non-local Graduates to cover graduates of Hong Kong universities' GBA campuses.
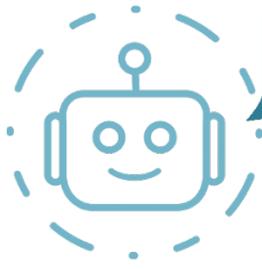
6 Global AI Governance and Consumer Protection

While AI is expected to bring tremendous opportunities for economic development, over 160 sets of AI principles were introduced by various international organisations to mitigate the risks consumers might face. The common themes across all these AI principles for governments, business organisations, and technology developers/providers to follow include accountability, human oversight, transparency and interpretability, data privacy, fairness, beneficial AI, reliability, robustness and security.

At the same time, ten jurisdictions reviewed in the Study adopted different approaches when governing the development of AI according to their distinct market characteristics, cultural background and national priorities. While some adopt the risk-based approach, some the adopt classification by usage, or the catch-all approach when governing AI uses. Some of these jurisdictions put the strategic focus on technology research and innovation, while others emphasise on economic development, infrastructure establishment or public education.

When AI has become an even more important enabler of digital and economic development, appropriate policy actions would become essential to address the possible challenges and make the most of the opportunities empowered by AI. All these governing experiences in other jurisdictions will definitely serve as useful and practical references for Hong Kong, and pave the path for Hong Kong to develop the city's own governance framework for AI.

6.1 Global Actions in AI Principles and Governance

As governments, organisations and companies around the globe are becoming more aware of the benefits and risks AI may pose, calls for ethical use of AI have mounted in recent years. Clear guidance and governance that provide organisations and businesses with recommended ethical practices and actions are particularly crucial to safeguard consumers. When designing the AI governance framework, some may adopt different approaches, such as the risk-based approach, the classification by usage, or the catch-all approach.

AI Principles and Guidance Published by International Organisations

Given the need for regulations to create a framework for responsible and ethical use of AI, various international organisations have published documents on related ethical standards to be met. As of June 2022, more than 160 sets of AI principles have been introduced worldwide. Table 14 lists some of the examples.

Table 14: Selected AI Principles and Guidance Published by International Organisations

Organisation	Name of Guidance	Launch Date
OECD	Recommendation of the Council on AI	May 2019
	Framework for the Classification of AI Systems	Feb 2022
WEF	Framework for Developing a National AI Strategy	Oct 2019
	Empowering AI Toolkit	Jan 2020
UN	Recommendation on the Ethics of AI	Nov 2021

Organisation for Economic Co-operation and Development (OECD)

The "Recommendation of the Council on Artificial Intelligence" was adopted by the OECD Council in May 2019. All 38 OECD members and several partner countries adopted the "OECD Principles on AI", including Australia, Canada, France, Germany, Japan, Korea, the UK and the US. The "OECD Principles on AI" sets standards for AI that are practical and flexible to stand the test of time in a rapidly evolving field. It follows the risk-based approach and identifies five complementary values-based principles for the responsible stewardship of trustworthy AI:

- AI should benefit people and the planet by driving inclusive growth, sustainable development and well-being;

- AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and they should include appropriate safeguards – for example, enabling human intervention where necessary – to ensure a fair and just society;

- There should be transparency and responsible disclosure around AI systems to ensure that people understand AI-based outcomes and can challenge them;

- AI systems must function in a robust, secure and safe way throughout their life cycles and potential risks should be continually assessed and managed; and

- Organisations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

In February 2022, the OECD released the "Framework for the Classification of AI Systems" to guide policy makers, regulators, legislators and others as they characterise AI systems for specific projects and contexts. The framework classifies AI systems and applications along the dimensions as shown in Table 15.

Table 15: Framework for the Classification of AI Systems by OECD

People and Planet		
Users of the system	Impacted stakeholders	Optionality and redress
Human rights and democratic values	Well-being, society and the environment	Displacement potential
Economic Context		
Industry sector	Business function	Business model
Impacts critical functions/ activities	Breadth of deployment	Technical maturity
Data and Input		
Detection and collection	Provenance of data and input	Dynamic nature
Rights associated with data and input	Identifiability of personal data	Data quality and appropriateness
Structure of the data and input	Format of data and metadata	Scale
AI Model		
Model information availability	AI model type	Rights associated with model
Discriminative or generative	Single or multiple model(s)	Model-building from machine or human knowledge
Model evolution in the field	Central or federated learning	Model development and maintenance
Deterministic and probabilistic	Transparency and explainability	
Task and Output		
Task(s) of the system	Combining tasks and actions into composite systems	Action autonomy
Core application area(s)	Evaluation methods	

World Economic Forum (WEF)

The WEF formed the Global AI Council in May 2019, which develops policy guidance and addresses governance gaps, in order to reach a common understanding among countries on the best practices in AI policies. In October 2019, the Global AI Council released the "Framework for Developing a National AI Strategy" to guide governments that are yet to develop or are currently developing a national strategy for AI. The WEF described it as a way to create a "minimum viable" AI strategy and includes four main stages:

- Assessing long-term strategic priorities;

- Setting national goals and targets;

- Creating plans for essential strategic elements; and

- Developing the implementation plan.

In January 2020, the WEF developed the "Empowering AI Toolkit" to help companies make informed decisions about AI solutions that protect consumers (Table 16). Later in June 2022, it further published "A Blueprint for Equity and Inclusion in AI" to identify challenges and solutions for equity and inclusion across AI development life cycle and its governance ecosystem.

Table 16: Empowering AI Toolkit by WEF

Strategy Modules
Brand: employing AI to maintain brand reputation
Competition: exploiting AI to accomplish the organisation's mission
Customers: strengthening customer relationships with AI
Cybersecurity: building resilience to AI cyber risks
Operating model: using AI to improve processes
People and culture: making it possible for AI and people to work together
Technology: managing the implementation of AI
Sustainable Development: harnessing AI to sustain our resources

Control Modules
Audit: complying with obligations
Ethics: setting standards for proper development, deployment and use
Governance: structuring AI oversight
Risk: managing corporate risks

Supporting Modules
Responsibility: overseeing duties of board directors that are common to many or most of the modules

United Nations (UN)

The UN has held the "AI for Good Global Summit" since 2017, which focuses on strategies to ensure the safe and inclusive development of AI. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) produced the draft of "Recommendation on the Ethics of AI" in September 2020. As of November 2021, 193 UNESCO member states had adopted this recommendation. Different from the risk-based approach, the recommendation recognised that ethical concerns should be considered for all AI systems regardless of their levels of risk.[31]

The UNESCO recommends its member states to apply the provisions of the recommendation, and requires them to report every four years on their progress and practices.

In January 2022, the UNESCO and the Innovation for Policy Foundation (i4Policy) proposed ten building blocks across agenda setting, drafting, implementation and evaluation stages for the policy process towards creating inclusive AI policies, which included:

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[31] UNESCO. (2021) Intergovernmental meeting of experts (Category II) related to a draft recommendation on the ethics of AI.

- Raise awareness and demystify AI;

- Define AI and be clear on terminology;

- Use an expert group to determine the AI landscape;

- Provide clarity on the participatory AI policy process;

- Co-create and consult AI policy;

- Make sure participation is followed by influence on outcomes;

- Make AI policy agile and flexible;

- Protect human rights, embrace data protection and ethics guidelines;

- Combine the AI strategy with an action plan; and

- Monitor and evaluate throughout the policy cycle.

International Collaboration on AI Governance

International efforts have recently been announced to develop multilateral AI strategies. The Global Partnership on Artificial Intelligence (GPAI) established in Jun 2020 is one of them. The GPAI is a multi-stakeholder initiative which aims to bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities. As of December 2021, the GPAI had 25 members, including Australia, Belgium, Brazil, Canada, Czech Republic, Denmark, France, Germany, India, Ireland, Israel, Italy, Japan, Mexico, New Zealand, Poland, Singapore, Slovenia, South Korea, Spain, Sweden, the EU, the Netherlands, the UK, and the US.

6.2 National AI Strategies in Selected Jurisdictions

AI has become a top strategic priority of many countries with potential to be a key driver of economic development. This calls for important policy actions in addressing possible challenges and making the most of the opportunities empowered by AI.

Around the world, at least 61 jurisdictions have developed, or are in the process of developing, their own national AI strategies as of July 2022. Table 17 lists some selected examples. Some of these AI strategies put the focus on technology research and innovation, while others may emphasise on economic development, infrastructure establishment, social governance, or international competition.

Table 17: National AI Strategies in Selected Jurisdictions (in Alphabetical Order)

Country	AI Strategy	Launch Year
Canada	Pan Canadian AI Strategy	2017
Finland	Age of AI	2017
France	AI for Humanity: French Strategy for AI	2018
Germany	AI Made in Germany	2018
India	National Strategy on AI: #AiforAll	2018
Indonesia	National Strategy for the Development of AI	2020
Japan	AI Technology Strategy	2017
Norway	National Strategy for AI	2020
Portugal	AI Portugal 2030	2019
Russia	National Strategy for the Development of AI	2019
Singapore	National AI Strategy	2019
South Korea	National Strategy for AI	2019
Spain	National AI Strategy	2020
Sweden	National Approach to AI	2018
The Mainland	A Next Generation AI Development Plan	2017
The Netherlands	Strategic Action Plan for AI	2019
The UK	AI Sector Deal	2018
The UK	National AI Strategy	2021
The US	American AI Initiative	2019
The US	The National AI Initiative	2021

Among them, ten jurisdictions' strategies were reviewed in detail given the higher relevance to the Study, namely, the Mainland, Canada, France, Germany, Japan, Singapore, South Korea, the EU, the UK and the US. Their initiatives differ widely in terms of goals, the extent of their investment, and their commitment to developing ethical frameworks. The diversity offers valuable references for Hong Kong in formulating the city's policy for AI. Selected initiatives in the aspects related to regulations, guidance, governing approach, data privacy law, consumer protection, education, support to traders and nurturing talents are discussed in brief below, and summarised in Table 18. Details could be referred to Appendix 4.

AI-related Regulations

Legislation on AI can be classified into comprehensive legislation and sectoral legislation. As of July 2022, a comprehensive or cross-sector law governing AI was not yet established in the ten reviewed jurisdictions. However, some proposals were tabled already. It is expected that the regulatory momentum on AI will continue to increase.

The Mainland

The Mainland focuses on regulating the use of algorithms specifically, with a catch-all approach. Effective from March 2022, the "Administrative Provisions on Algorithm Recommendation of Internet Information Services" seeks to regulate algorithms, especially those that will be employed for recommendation purposes in online stores, search filters, or on social media.

Canada

Canada proposed the "AI and Data Act" under the "Digital Charter Implementation Act 2022". The "AI and Data Act" would aim to regulate international and interprovincial trade and commerce in AI. It requires the adoption of measures to mitigate risks and biased output related to high-impact AI systems; provides public reporting on AI; authorises the Minister of Innovation, Science and Industry to order the production of records related to AI systems; and establishes prohibitions pertaining to the possession or use of illegally obtained personal information for the purpose of designing, developing, using, or making available for use an AI system and making such use available if it causes serious harm to individuals.

The EU

Similar to Canada, the EU adopts a risk-based approach in its proposed AI Act. The proposal distinguishes between AI systems posing (i) unacceptable risk (activities which are prohibited under the Act such as those relating to social scoring), (ii) high risk (activities relating to medical devices and consumer creditworthiness), (iii) limited risk, and (iv) low or minimal risk. Under this approach, AI applications with unacceptable risk would be prohibited, while AI applications with high risk would be regulated.

The UK

The UK Government unveiled plans to regulate AI in a policy paper titled "Establishing a pro-innovation approach to regulating AI" in July 2022. It proposed establishing a pro-innovation framework for regulating AI which is underpinned by a set of cross-sectoral principles tailored to the specific characteristics of AI, and invited stakeholders to provide views about how the UK can best set the rules for regulating AI in a way that drives innovation and growth while protecting fundamental values by September 2022.

Not limiting to the e-commerce industry, governments and legislative bodies across the globe are increasingly seeking to pass laws to foster public trust for AI development and innovation. The AI Index published by Stanford University conducted an analysis of laws passed in 25 countries by their legislative bodies that contain the words "AI" from 2016 to 2021. Taken together, the 25 countries analysed have passed a total of 55 AI-related bills. There has been a sharp increase in the total number of AI-related bills passed into law, from just 1 in 2016 to 18 in 2021. Spain, the UK, and the US passed the highest number of AI-related bills in 2021 with each adopting three. Noteworthily, these bills are sector-specific.

NUMBER of AI-RELATED BILLS PASSED into LAW in 25 SELECT COUNTRIES, 2016–21
Source: AI Index, 2021 | Chart: 2022 AI Index Report
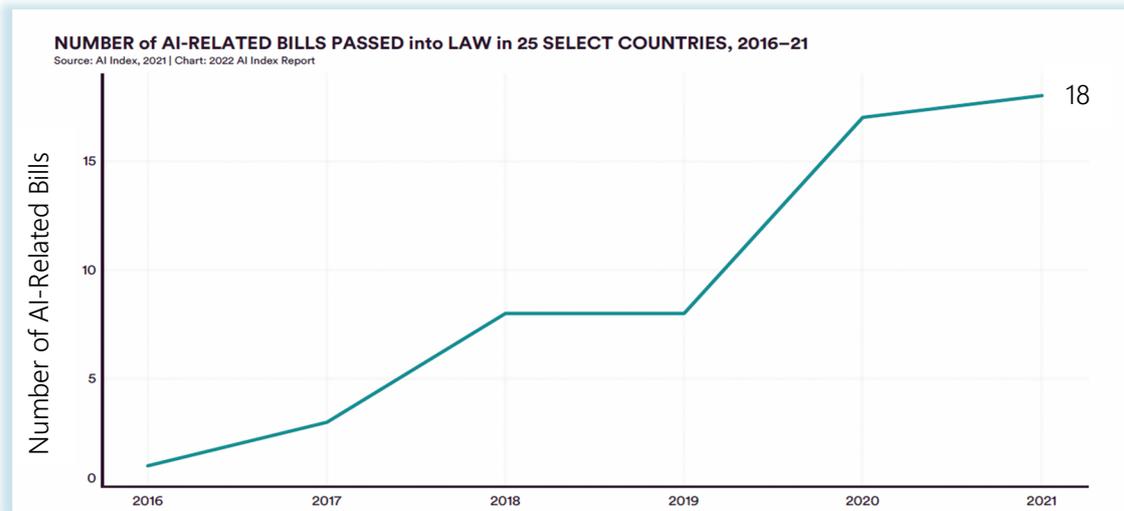
Source: Stanford Institute for Human-Centred AI. (2022) AI index report 2022.

Guidance on Ethical AI

All the ten reviewed jurisdictions launched their respective guidance on the ethical and responsible use of AI. For instance, the Mainland published its "New Generation AI Ethics Specifications"; Singapore has its "Model Governance Framework", South Korea has the "National Guidelines for AI Ethics"; the EU launched the "Ethics Guidelines for Trustworthy AI", the UK released the "Understanding AI Ethics and Safety Guide"; and the US announced the "Principles of AI Ethics for Intelligence community".

Data Privacy Law about Automated Decision Making/Profiling

Data privacy laws in some jurisdictions already cover profiling and automated decision-making of data users, which could help ensure transparency and accountability in the use of data.

The Mainland

One example is the Mainland's PIPL which requires processors of personal information using personal information in automated decision making to ensure that the decision-making processes are transparent, and the results are fair and impartial. Furthermore, there shall not be any unreasonable price discrimination against individuals. If the automated decisions cause significant impact on individuals' rights and interests, the individuals shall have the right to request the processors of personal information to provide explanations, and to object to the decisions made solely by automated process.

The EU

The GDPR requires that a data subject must be provided with certain information if the data processing activities involve profiling and automated decision-making, such as meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing to the data subject. It further states that a data subject shall have the right not to be subject to a decision based solely on automated processing, if it produces legal effects on him/her or has an important bearing on him/her.

Consumer Protection

The use of AI may limit the autonomy of consumers, thus consumer protection is an important aspect when government launch their AI governance framework.

The Mainland

The Mainland's "Administrative Provisions on Algorithm Recommendation of Internet Information Services" obliges traders to check, assess, and verify the algorithm mechanisms, as well as their models, data, and outcomes in order to prevent practices that could induce addiction in consumers. Moreover, it intends to give consumers more control over their personal data – Traders will have to equip consumers with the ability to select or delete the "user labels" that target their personal traits. Traders will be required to give consumers the option of not being targeted due to their individual characteristics and the option to stop using the services. They are also required to be more transparent, for example, disclosing the rules that govern their services, and informing users about the means and basic principles of the recommendation services, their intended purposes, and the main operational mechanisms.

France

The French Government is of the view that AI must not become a new way of excluding parts of the population. A discrimination impact assessment is vital to facilitate audits of AI systems. This could involve the creation of a group of certified public experts who can conduct audits of algorithms and databases and carry out tests using any methods required.

Japan

The Consumer Affairs Agency in Japan published the "AI Utilisation Handbook – How to Use AI Wisely" in 2020 to provide use cases for AI developers from a consumer protection perspective. It also conducted surveys on the status of consumers' understanding of AI, consumers' expectations on AI, their perceived challenges with respect to AI, and their knowledge about the risks associated with AI services.

South Korea

Similarly, to engage citizens and collect opinions on the use of AI, the South Korean Government regularly hosts discussions and public conferences. In November 2021, the Korea Information Society Development Institute held a seminar to present a draft "self-checklist" for individuals and companies to assess their compliance with the "National Guidelines for AI Ethics". The Institute also surveyed public opinions and used the feedback to improve and enhance social acceptance and trust in AI technology and services.

The US

In the US, the FTC issued business guidance on AI and algorithms in April 2020 to avoid bias or other harm to consumers. Specifically, the FTC recommends companies to be transparent about how automated tools are used, and when sensitive data is collected. The FTC recommends that an operator of an algorithm should ask four key questions – (1) How representative is your data set? (2) Does your data model account for biases? (3) How accurate are your predictions based on big data? And (4) Does your reliance on big data raise ethical or fairness concerns? The FTC encourages companies to consider how to hold themselves accountable, and whether it would make sense to use independent standards or independent expertise to step back and take stock of their AI.

Limited Involvement by Consumer Advocates

To pursue a high level of consumer protection, it is important to ensure that the development and use of AI are adequately regulated and that consumers can exercise their rights in relation to data collection and AI. However, according to CI's Global Member Perception Survey 2020, there is limited involvement by consumer advocates – 50% of the consumer organisations reflected consumer advocates were not involved in the government process of legislating for AI. As a result, there may exist a gap between consumer protection and the AI regulations launched by governments.

Education

It is vital to promote AI literacy among the public given AI's widening application.

Germany

The German Federal Government offers the public a free online course "Elements of AI", which was initiated by the University of Helsinki. The course is available in German and users can follow it at their own pace without previous experience in coding skills.

Singapore

The Singapore Government provides support for upskilling Singaporeans with baseline AI and computing knowledge. From 2018 to 2020, more than 55,000 students and adult learners were trained in basic AI literacy skills under AI Singapore's AI for Everyone (AI4E), AI for Students (AI4S), and AI for Kids (AI4K) programmes. Starting from 2021, as part of the Ministry of Education's National Digital Literacy Programme, baseline digital competencies – including computational thinking and data competencies – will be enhanced at the Higher Education level. Coverage of digital and AI competencies will also be deepened for students entering sectors ripe for AI adoption.

Support to Traders

To foster the take-up of AI across businesses, different governments have been launching different innovative initiatives to help traders, covering areas such as funding support, training, and toolkits for traders.

Germany

The German Federal Government provides funding for AI coaches based at the Mittelstand 4.0 Centres of Excellence. These AI coaches work directly with SMEs to raise awareness of the technological and economical potentials of AI.

Singapore

The Singapore Government has launched multiple tools for traders. One example is the "Implementation and Self-Assessment Guide for Organisations", which is a companion guide to help companies assess the alignment of their AI governance practices with Singapore's "Model AI Governance Framework". "A.I. Verify" is another toolkit for companies that wish to demonstrate responsible AI in an objective and verifiable manner. Technology developers and traders can verify the claimed performance of their AI systems against a set of principles through standardised tests. The toolkit will generate reports for technology developers and traders, covering major areas in demonstrating responsible AI.

South Korea

Similarly, the South Korean Government provides AI-vouchers to SMEs and start-ups that need AI-powered products or services. Using the vouchers, the beneficiary companies can purchase necessary AI solutions from AI-solution suppliers. Each company can receive up to KRW 0.3 won (HK$2 million) AI vouchers.

The EU

In the EU, the European AI on Demand Platform (AI4EU) project is an AI-on-demand platform that aims to help SMEs in the EU adopt AI. AI4EU brings together 79 research institutes, SMEs and large enterprises in 21 countries to build a focal point for AI resources. The AI4EU project received a total funding of EUR€20 million (HK$156 million) in 2019, part of it was used to fund promising projects.

The UK

The UK Government has invested more than GBP£2.3 billion (HK$21 billion) into AI across a range of initiatives since 2014. Of which, over GBP£372 million (HK$3 billion) was invested into AI companies. The UK has the 3rd highest number of AI companies in the world after the US and the Mainland.

Nurturing Talents

There is a global shortage of AI talents. To develop the right skills for the jobs of the future and to create the environment for AI development and deployment, various initiatives were launched in different countries.

Canada

The Canadian Federal Government invested CAD$1.8 billion (HK$11 billion) in its Innovation Superclusters program, which leverages innovative technologies like AI to spur economic development. It promises to create 66,000 jobs and grow Canada's economy by CAD$66 billion (HK$392 billion) by 2030.

The UK

The UK Government announced to establish 16 AI Centres for Doctoral Training at universities across the country, backed by up to GBP£100 million (HK$920 million) and aimed to deliver

1,000 new PhDs over five years. It offered GBP£46 million (HK$423 million) for the Turing AI Fellowships to attract and retain top AI talents.

6.3   Centralising and Decentralising AI Governance

Due to the horizontal and generic nature of AI, AI governance always needs collaborative efforts across different government levels and institutions. Different countries may adopt different approaches in governing the development of AI. Policy design and implementation can be top-down relying upon the authority of a lead actor, or bottom-up and emergent. Some countries may adopt the centralised approach, while others may prefer the decentralised approach or a hybrid-approach, according to the distinct cultures in respective countries.

For example, the Mainland's CAC takes the lead in governance of AI and algorithms as an Internet-focused regulator. Other authorities such as the Ministry of Industry and Information Technology, the State Administration for Market Regulation monitor the use of AI in respective sectors. South Korea's AI policies network is also highly centralised and steered by the Ministry of Science, ICT and Future Planning (MSIP); while in Singapore, the Infocomm Media Development Authority (IMDA) takes the lead in formulating the AI policies.

In contrast, in the US, innovation policy landscape is rather decentralised, with influential organisations spanned across different sectors, such as the National Science Foundation (NSF), the Office of Science and Technology Policy, the Department of Commerce, and the Department of Education. US policy emphasises collaboration between federal agencies, academia, the private sector, and non-profit organisations to foster an innovation ecosystem. In 2021, the US also established the National AI Initiative Office with an aim to integrate the federal government's AI efforts and serve as a central hub for national AI research.

Similarly, the UK established the Office for AI overseeing implementation of the AI. For actual implementation, it spanned across different departments including the Competition and Markets Authority (CMA), the Financial Conduct Authority (FCA) and the Information Commissioner's Office (ICO).

Different forms of coordination could exist between these government institutions, and all these international experiences could be valuable references to the Government to develop a good AI governance framework in Hong Kong.

6.4   Challenges in AI Governance

Good governance can help reduce AI risks, and support sustainable development of beneficial AI. However, there are always challenges to adopt a good governance framework in reality, which include the predictability of AI technology, the explainability of AI, and the cross-border governance issues.

AI Solutions May Not Be Predictable for Good Governance

Good governance needs to be based on an understanding of the technology. As AI continues to develop rapidly, the gap between the law and technology is widening while the complexity and wide-reaching application of AI continue to grow. The development of more versatile AI systems combined with advances in ML makes it all but certain that issues pertaining to unforeseeable AI behaviour will crop up with increasing frequency and that the unexpectedness of AI behaviour will rise significantly.

It is also remarked that the behaviour of a learning AI system depends in part on its post-design experience, so even the programmers and manufacturers will not be able to control or predict what it will experience after it leaves their care. Thus, AI solutions may not be foreseeable to human – even AI designers.

"Explainable AI" May Be Difficult in Practice

There is no one-size-fits-all approach to what constitutes a reasonable explanation. The meaningfulness of explanation could vary between groups of audience since the level of complexity that a lay person is interested in or can understand may be very different from that which is appropriate or that an AI expert finds acceptable. For instance, attempting to explain an AI system's prediction in terms of the underlying mathematical equations is unlikely to be decipherable by lay users.

In practice, it may be difficult to have an explainable and transparent AI too. AI system may contain multiple components developed by different programmers. Although commercial off-the-shelf hardware and software components may be easy to acquire, their coding often is proprietary. Meanwhile, some companies may not be willing to reveal their algorithms in order to protect their commercial interests. Algorithms of an AI system may not be susceptible to reverse engineering.

Difficulty in Maintaining AI Governance Across Borders

The application of AI technology is usually not confined to one jurisdiction, and the components of an AI system could be designed in different places and at different times without any conscious coordination. AI programmes may also have software components taken from multiple open-source libraries, each of which can be built and developed discretely from the others in different countries. Thus, it is in fact a big challenge to create and maintain good governance and privacy practices across borders. In addition, as multinational corporations may need to follow multiple guidance in respective regions, it is difficult for them to offer unified services to consumers in different countries. In short, determining who owns the data, where it is stored and who has responsibility for it is also a complex task for regulators.

6.5 Setting Up of International AI Standards

Establishing international standards could be another way govern the ethical use of AI. Some standards setting bodies, such as the International Organisation for Standardisation (ISO) and the Institute of Electrical and Electronics Engineers (IEEE), have already established AI related global standards for the adoption of businesses.

For example, to address issues of trust in AI, the ISO and the International Electrotechnical Commission (IEC) released the "ISO/IEC TR 24028:2020, Information technology – AI – Overview of trustworthiness in AI" in 2020, which analyses the factors that can impact the trustworthiness of systems providing or using AI. It can be used by any business regardless of its size or sector.

Meanwhile, in 2019, the IEEE Standards Association (IEEE-SA) released the first version of ethics guidelines for automation and Intelligent systems, titled "Ethically Aligned Design: A vision for Prioritizing Human Well-being with Autonomous and Intelligent Systems". These standards can act as "due diligence" best practice processes in relation to developing and applying AI.

Table 18: Summary of AI Governance Initiatives in Selected Jurisdictions

	The Mainland	Canada	France	Germany
AI roadmap	Next Generation AI Development Plan	Pan-Canadian AI Strategy	National Strategy on AI	AI Made in Germany
Regulations on AI (related to e-commerce field)	Administrative Provisions on Algorithm Recommendation of Internet Information Services (Mar 2022)	Digital Charter Implementation Act (proposed, 2022)	Follow the EU	Follow the EU
Guidance on ethical AI	New Generation AI Ethics Specifications; Governance Principles for the New Generation AI	Canada's Digital Charter	Follow the EU	Follow the EU
Data privacy law related to automated decision making/ profiling	Personal Information Protection Law	Personal Information Protection and Electronic Documents Act	Follow the EU	Follow the EU
Consumer protection	• Traders are required to give consumers the option of not being targeted due to their individual characteristics and the option to stop using the services. • Traders must not restrict consumers' choice of transaction based on automated decision making by providing options that are not based on relevant consumers' personal features.	• Traders are required to adopt measures to mitigate risks of harm and biased output which relate to high-impact AI systems. • Traders are prohibited from using illegally obtained personal data for the purpose of designing, developing, using, or making available for use an AI system and making such use available if it causes serious harm to individuals.	• AI must not exclude parts of the population. • It is vital to facilitate audits of AI systems. This could involve the creation of a group of certified public experts who can conduct audits of algorithms and databases and carry out testing using any methods required.	• Focus of the AI strategy should always be on the benefits of AI for citizens.
Education	• Includes education on AI in primary and secondary school curriculums.	• N/A	• Aims to double the number of students trained in AI from 2018-2022.	• Offers free courses to citizens.
Support for traders	• Nurtured over 3,000 AI-related enterprises as of June 2022.	• N/A	• Aims to support 500 SMEs and intermediate-sized companies to adopt and use AI solutions, tripling the number of AI start-ups by 2025.	• Provides funding for AI coaches to SMEs.
Nurturing talents	• Attracts and retains AI talents with regional initiatives.	• Runs the Innovation Superclusters Program, which aims to create 66,000 jobs in the AI field. • National AI institutes have trained over 1,500 graduate students and post-doctoral fellows.	• Funded 500 PhD students in the field of AI since 2018. • In 2021, there were over 500 AI start-ups in France, employing 13,459 people and generating 70,000 indirect jobs.	• Established Konrad Zuse Schools of Excellence in AI.
Responsible organisations	• The State Council • Cyberspace Administration of China • Ministry of Industry and Information Technology • State Administration for Market Regulation	• Canadian Institute for Advanced Research • Department of Innovation, Science and Economic Development	• Ministry of Higher Education, Research and Innovation • Ministry of Economy and Finance	• The Federal Ministry of Education and Research • The Federal Ministry for Economic Affairs and Energy

Japan	Singapore	South Korea	The EU	The UK	The US
AI for Everyone: People, Industries, Regions and Governments	National AI Strategy	National AI Strategy	European Strategy on AI	AI Sector Deal; National AI Strategy	American AI Initiative; National AI Strategy
N/A	N/A	N/A	AI Act (proposed, 2021)	Establishing a pro-innovation approach to regulating AI (proposed, 2022)	N/A
Social Principles for Human-centric AI	Model AI Governance Framework	National Guidelines for AI Ethics	Ethics Guidelines for Trustworthy AI	Understanding AI ethics and safety guide	The Principles of AI Ethics for the Intelligence Community
N/A	N/A	N/A	General Data Protection Regulation	Data Protection Act 2018	California Privacy Rights Act
• Published the "AI Utilization Handbook – How to use AI Wisely" to provide use cases for AI developers from a consumer protection perspective.	• Traders are encouraged to provide general information on how AI is used in decisions in relation to consumers. • Traders should consider providing individuals with the option to opt out of the use of AI services.	• Launches surveys to collect public opinion, and the feedback was used to encourage social acceptance and trust in AI technology and services.	• AI systems with unacceptable risks will be prohibited. • AI systems with high risks will be strictly regulated.	• A vision was set over the next decade to be "the most trustworthy jurisdiction for the development and use of AI, one that protects the public and the consumer while increasing confidence and investment in AI technologies".	• Traders are recommended to be transparent about how automated tools are used, and when sensitive data is collected. • Traders are recommended to consider how to hold themselves accountable.
• N/A	• Offers education programs, namely AI for Everyone/ Students/Kids.	• Introduced AI as a new subject in local high schools since 2021.	• N/A	• Offers 2,500 places on AI and data science conversion courses to students.	• Compiles lessons and web resources for students.
• Establishes funds to accelerate R&D of advanced technologies.	• Provides tools for traders, e.g. "Implementation and Self-Assessment Guide for Organisations", "A.I. Verify".	• Provides AI-vouchers to SMEs and start-ups that need AI-powered products or services	• AI4EU project funds promising projects of traders. • Gaia-X project provides data exchange infrastructure.	• Invests to set up a "data innovation hub" to help SMEs capture and use their data.	• N/A
• N/A	• Establishes AISG PhD Fellowship Programme for talents in pursuing PhD.	• Aims to establishing six AI graduate schools, cultivating 5,000 AI specialists.	• N/A	• Sets up the Turing AI Fellowships to attract AI talents.	• Supports fellowship and scholarship programs for graduate and postdoctoral studies in AI.
• Council for Science, Technology and Innovation • Strategic Council for AI Technology • Ministry of Economy, Trade and Industry	• Infocomm Media Development Authority • Advisory Council on Ethical Use of AI and Data	• Ministry of Science, ICT and Future Planning	• European Commission • European AI Board (proposed)	• The Alan Turing Institute • Competition and Markets Authority • Financial Conduct Authority • Information Commissioner's Office	• White House • National AI Initiative Office • National Science Foundation
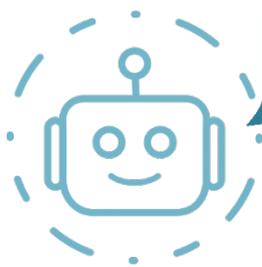
7 Recommendations

The previous chapters present a clear picture of the current status of AI development in the e-commerce market in Hong Kong. While consumers begin to be aware of AI, they have limited knowledge about the technology. In the consumer survey, consumers express their worries when using AI, and they want traders to better safeguard their rights and provide better information disclosure when adopting AI. Consumers also demand to know more about the technology to empower themselves.

Indeed, AI adoption in e-commerce in Hong Kong is at an early development stage, where traders' understanding of AI is still insufficient. Traders encounter multiple challenges while adopting AI, such as the scarcity of talents, insufficient financial resources, and the unavailability of up-to-date open data. They call for more funding and talent support.

Riding the wave of AI, the Government has been investing to accelerate digital transformation in Hong Kong, yet governing initiatives were rather fragmented at the moment. A holistic AI development plan should be in place in the long run. In this final chapter, the Council sets out recommendations to address consumers, traders and stakeholders' concerns about the adoption of AI in e-commerce. By empowering consumers and mitigating the AI-associated risks with them, motivating traders to adopt good trade practices when adopting AI, and urging the Government to strengthen digital governance, it is hoped that responsible and ethical use of AI in the e-commerce market can be realised and thus consumer trust can be fostered.

7.1 Rationale for Recommendations

The irreversible rise of AI is projected to bring a huge change to the society, no matter in the global or local marketplace. With an aim to develop Hong Kong into a world-class smart city and to spark economic growth, the Government has been investing in new technologies and infrastructure, and fostering partnerships to accelerate the digital transformation. In line with this policy direction, the Council supports the use of AI as it can bring benefits to consumers, yet it is also necessary to mitigate the associated risks with AI to safeguard consumer interests. As analysed in previous Chapters, consumers are of a rather passive role when it comes to AI adoption, as most AI-powered tools are not visible to consumers. Hence, apart from relying on policy directions and regulations to be established by the Government in the long run, it is even more important for traders to take immediate actions and direct initiatives to safeguard consumer interests and not to harm them in their course of AI adoption.

The Council puts forward the following recommendations with a vision to enable the development of responsible and ethical use of AI in e-commerce to safeguard consumer interests, including actions for consumers, traders and the Government, respectively.

Although the Study focuses on the use of AI in e-commerce in Hong Kong, the principles and spirit of the recommendations shall apply across different industries in a broader sense. The recommendations shall be customised according to the distinct nature of the industry and individual business objectives for actual execution.

7.2 Actions for Consumers

Cultivating good online shopping habits is the first and immediate step consumers can take to protect their own rights. The consumer survey in the Study revealed that consumers have not yet developed habits to protect their own personal data, which might be used in AI model training by unscrupulous traders, even though they are concerned about both cybersecurity and privacy protection when it comes to AI in e-commerce. For instance, they seldom read privacy policies and are uncertain about how they should handle traders' cookie tracking requests. Therefore, consumers should be aware of how to shop online safely and be alert of common applications of AI, and the possibility to search for opt-out options.

Be a Smart Consumer

To empower consumers to protect themselves when shopping online, they are encouraged to follow the seven practical and simple tips below.

Tips for Consumers
1. **Choose the right e-commerce platform** • Shop on secure and trustworthy platforms, e.g. those that adopt a high standard in security measures, and offer a clear and easily accessible dispute resolution mechanism as part of their customer care services. • Make it a habit to always read data privacy policies and T&Cs, and review traders' purposes of collecting and using your personal data from time to time, especially when using the services of new platforms. 2. **Pay attention to website updates** • Read thoroughly the pop-up notices, news and updates when entering a platform; make ensure you understand and agree with the changes or announcements before shopping and confirming your order. 3. **Make the best decision against tracking** • Read cookie consent requests carefully, and decide cautiously the extent to which you allow traders to track your information, e.g. cookies, locations, browsing histories, or feed you with advertisements and promotions. 4. **Provide adequate information only** • Ensure the amount of information you provide to traders is reasonably adequate and not excessive for their purposes of data collection while registering membership or making transactions. 5. **Keep a good record of membership accounts** • Record properly the platforms which you hold an account in or have provided information to; review the record regularly and delete accounts when necessary. 6. **Check privacy settings regularly** • Check your account preference and browser settings related to privacy and tracking technologies regularly. 7. **Exercise your rights against automated decisions when needed** • Ask for explanations and/or file complaints whenever you spot any unreasonable automated decisions made for you.

7.3 Actions for Traders

Traders in Hong Kong currently have a mindset that AI is only used as a supplementary tool for saving costs and enhancing efficiency. Therefore, it is essential for traders to formulate a holistic and long-term strategy on AI and devote dedicated resources for the development instead of taking it as a tactical attempt for a short-term gain.

Moreover, the Council also noticed that as AI mainly runs in the back-end operations of traders, it is extremely difficult for consumers to realise the potential risks behind AI, and whether they are of any disadvantage compared to others. The Council is of the view that only when traders take the first step to change and adopt best industry practices, consumers can follow and learn what they should be aware of. Thus, as an immediate recommendation, it is essential for traders to adopt ethical AI principles and the best industry practices when adopting AI, in order to foster consumer trust and to fuel sustainable business growth.

Adopt the Checklist of Best Practices to Formulate Company AI Policy and Governance

Based on the desktop research on the AI governance in other jurisdictions, there are many references for traders to follow progressively when designing their AI policy at company level. The "Self-assessment Checklist" from the Hong Kong PCPD's "Guidance on the Ethical Development and Use of AI" is one of them. The Mainland's "Administrative Provisions on Algorithm Recommendation of Internet Information Services" underline detailed norms and actions an AI actor should take to protect consumer rights. The Singapore Government released an "Implementation and Self Assessment Guide for Organisations" to help companies assess the alignment of their AI governance processes with its "Model AI Governance Framework", identify potential gaps in their existing processes and address them accordingly. The UK Government also published a detailed guidance on how to build and use AI in the public sector. These are all useful references and tools for traders in Hong Kong without wasting resources to learn everything from scratch.

Summarising from the abovementioned references, the Council encourages local and international e-commerce traders who operate in Hong Kong to consider the following checklist when formulating their own company AI policy and governance.

Checklist of Best Practices for AI
• Formulate a clear company policy on AI, data usage and storage with good compliance and disclosure
• Dedicate resources for AI development with clear accountability, e.g. appointing a person to be accountable for the ethical use of AI
• Validate AI models before deployment
• Ensure consumers' data is handled in a safe and secure manner to protect consumers' data privacy
• Communicate with staff and ensure they follow the ethical standards of AI
• Foster communication with consumers
• Provide choices for consumers to choose whether to use AI
• Clarify clear responsibility between traders and third-party technology providers, and ensure data is handled and transferred safely and ethically

Formulate a Clear Company Policy on AI, Data Usage and Storage

As discussed in Chapter 5, many traders lack a clear vision and strategy in adopting AI, and subsequently, a clear company policy to guide the organisation to realise the proper AI development. The Council suggests e-commerce traders adopt best practices for the use of AI in their AI company policy, which should consider (1) inclusive growth and sustainable development; (2) fairness; (3) transparency and explainability; (4) robustness, security and safety. As a socially responsible company, traders should disclose the company policy on AI to the

general public and inform the public how they use and handle consumer data collected in their business operations.

Dedicate Resources for AI Development with Clear Accountability

Chapter 5 also shows that appointing an internal unit to be responsible for AI adoption is uncommon among e-commerce traders in Hong Kong. AI governance can be realised through both the centralised model and decentralised model. Singapore's "Implementation and Self-Assessment Guide for Organisations" suggests that a centralised model can be used for AI solutions that could be potentially contentious, while a decentralised approach may be used when respective departments can judge whether to deploy the AI solution based on a predetermined whitelist and/or blacklist. No matter what model the trader uses, there should be a unit or a person to steer the company policy direction on AI, to coordinate internal resources to ensure the compliance and ethical standards, to build and retain expertise, to ensure clear accountability, and to lead in disclosure and reporting to the public. SMEs with limited financial resources can consider a centralised approach, but the above responsibilities should not be omitted. Traders may also consider a sandbox type of governance to test-bed and deploy AI solutions, before fully-fledged governance structures are put in place.

Validate AI Models Before Deployment

In the first place, traders should ensure the fairness of data collection and data quality prior to using data for AI model training, and prevent discrimination. Moreover, AI models should be well validated before deployment, for instance, by observing model outcomes and out-of-time validations. Traders should conduct risk assessments and human oversight at an appropriate level. Pilot test might be conducted before official launch.

Ensure Consumers' Data Is Handled in a Safe and Secure Manner to Protect Consumers' Data Privacy

Traders should inform consumers about their security measures and data handling procedures. Meanwhile, regular system updates are necessary to protect consumer data from hackers and malware attacks. The PCPD suggests that proper documentation of the handling of data should be in place to ensure that the quality and security of data are well maintained over time. The kinds of documentation might include the allowable uses of the data, where the data is stored, and how the data quality is well maintained over time.

Communicate with Staff and Ensure They Follow the Ethical Standards of AI

Effective communication between management and staff is essential. Management should define the objectives clearly and provide clear guidance to help analytics team build and use AI responsibly on different facets, for example, the measures used to evaluate AI in terms of bias and fairness, the ways they acquire data, etc. All staff should understand and follow the same standard set. A clear KPI that includes measurement of compliance with ethical principles should be beneficial in enabling management to monitor the work progress and to ensure the development is on the right track. Management should provide AI training courses for staff so that they can learn how to practise ethical AI applications.

Foster Communication with Consumers

Traders should disclose their AI policy to consumers and provide a feedback mechanism to receive consumer comments for engagement and enhancement (see also next section on "Establish a "Consumer Charter" to Protect Consumers").

Provide Choices for Consumers to Choose Whether to Use AI

Traders should let consumers choose options that best suit their needs, while the options should be easily accessible (see also next section on "Establish a "Consumer Charter" to Protect Consumers").

Clarify Clear Responsibility Between Traders and Third-Party Technology Providers, and Ensure Data Is Handled and Transferred Safely and Ethically

Some traders and technology providers may have blurred roles and responsibility. Both parties need to decide who should be responsible for maintenance of AI systems, data handling, and provide explanation to consumers. Both parties should also work together to ensure the data collected from consumers is handled and transferred securely and ethically. Personal data should not be transferred to other third parties without consumers' consent. Companies that possess personal data should also be accountable for the quality and accuracy of the data, and shall offer the right to be forgotten to consumers through simple and accessible means.

Establish a "Consumer Charter" to Protect Consumers

Consumers are looking for fair and transparent practices from traders, and this reflects the importance of having a framework for traders to follow. In view of the absence of regulation for AI and the use of AI algorithms, the Council suggests industry associations and leading traders develop a "Consumer Charter" as guidance to protect consumers in the use of AI and invite their member traders to commit to and follow. Notably, this guidance on AI is not equivalent to guidance on data privacy, and the principles would be much broader to cover the disclosure of consumer rights, system security, opt-in and opt-out options, reporting of data breaches, dispute resolution mechanisms, and dedicated and clear disclosure of AI policy.

The guidance is also helpful to some SMEs which might have limited resources to establish their own set of AI policies. By complying with the "Consumer Charter", traders can steer internal focus for the effective deployment of AI, and also build a stronger reputation in the market when their commitment and efforts are observed by consumers.

In execution, the "Consumer Charter" should include the following elements.

A "Consumer Charter" for Traders to Safeguard Consumer Rights
• Be transparent and inform consumers when using AI
• Do not manipulate consumers' choices
• Be fair to all consumers and do not discriminate against consumers
• Provide choices for consumers to opt in and opt out of the use of AI easily with immediate effect
• Ensure consumer requests can be addressed
• Establish an effective dispute resolution mechanism in case of non-compliance
• Collect data at an adequate level

Be Transparent and Inform Consumers when Using AI

Traders should proactively provide consumers with information as in detail as they can when consumers use their services. For example, the implemented data security measures, the involvement of AI and the ways to opt out of different features are information many

consumers demand but could seldom find online. It is vital for traders to note that increasing transparency means fostering consumer trust. Nonetheless, traders should also take into account consumers' literacy and ability in reading lengthy and difficult text when disclosing information. The PCPD stated that the information disclosed to ordinary consumers should not be too technical, otherwise they may not understand it. In other words, accuracy and ease of understanding in traders' communication are both important.

Do Not Manipulate Consumers' Choices

Traders should not manipulate consumer's choices solely for the sake of profit maximisation. For example, the Mainland's "Administrative Provisions on Algorithm Recommendation of Internet Information Services" states that traders should not use algorithms for unfair competition, and to register fake user accounts to post fake "likes" or comments, or to manipulate search ranking, which may affect consumers' choices.

Be Fair to All Consumers and Do Not Discriminate Against Consumers

All consumers need to be treated fairly. Traders should not exploit the vulnerabilities of AI to discriminate against consumers based on individual characteristics, such as ethnics, gender and age. Certainly, discriminated pricing by means of personalised and non-personalised automated assessments is not acceptable, if there is no reasonable justification. Besides, many search engines powered by ML nowadays still mirror and even amplify gender biases. For example, images of shopping and washing are mainly linked to women while coaching and shooting are associated with men more.[32] Traders should ensure eliminate this kind of bias on their platforms.

Provide Choices for Consumers to Opt In and Opt Out of the Use of AI Easily with Immediate Effect

Consumers should have the rights to understand the risks associated with AI and make decisions on whether to accept such risks in exchange for the benefits AI brings to them. For instance, consumers should have the rights to choose whether to provide personal data, and to opt out of AI features that are by default manipulated by traders (such as search ranking and recommendation engines). Traders should provide choices for consumers to opt in and opt out of the use of AI in the first place, and act according to consumers' choices. In practice, user-friendly opt-in and opt-out options with immediate effects should not be a difficult function to offer by traders. The Mainland's "Administrative Provisions on Algorithm Recommendation of Internet Information Services" also mentioned that traders should provide an option for consumers to stop using the services.

Ensure Consumer Requests Can Be Addressed

Traders ought to make sure consumer requests can be addressed. Consumers should be allowed to ask for explanations on AI outcomes, and object to decisions based solely on an automated processing that has significant impact on them.

Establish an Effective Dispute Resolution Mechanism in Case of Non-Compliance

In strengthening consumer confidence in the use of AI, traders should provide an effective dispute resolution mechanism for consumers so that they can express their discontent when they encounter issues regarding the misuse of AI. It is believed when the application of AI continues to widen, the number of related complaints might increase too. Training up

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[32] Wired. (2017) Machines taught by photos learn a sexist view of women.

specialists or having a specific team in the customer services department to focus on handling AI complaint cases, or providing more training on handling AI-related issues are necessary investment for customer care regarding the adoption of AI.

Collect Data at an Adequate Level

Traders need to make sure their collection of data is necessary and adequate but not excessive in relation to the purposes they state in privacy policies according to the PDPO. It is a good practice for traders to distinguish what data is mandatory and what is optional, so that consumers could decide how much information they would like to provide.

In addition, traders should also make reference to the PCPD's "Guidance on the Ethical Development and Use of AI", such as to inform consumers about the types of data that have been used in the automated or AI-assisted decision-making process and why these types of data are considered relevant and necessary. If the traders have business with EU citizens, they should also ensure that the company follows the GDPR.

7.4 Actions for the Government

From a global perspective, national AI strategies and regulations on AI have been getting in place, and more legislations will be ready to launch in the near future. However, as mentioned by various industry stakeholders and traders in Chapter 5, a holistic AI policy and development plan is yet to be formulated in Hong Kong. The Government should ensure a healthy market environment for AI development.

Nurture Public AI Understanding

As found in the consumer survey, currently, many consumers lack knowledge about AI and demand more education about this technology. Traders also reflected that they lack knowledge about AI in the in-depth interviews. Notwithstanding existing AI-related programmes in the school curricula, education that targets the general public and traders is still insufficient and hence should be strengthened.

Societal Perspective
• Campaigns could be launched to educate consumers about different facets of AI, including its definition and operations, potential benefits and harm, consumer rights regarding the use of AI, related guidelines consumers can refer to, and the best practices in the marketplace.
• Education to traders is also essential. When traders have more knowledge on AI, they have the ability to pursue ethical use of AI.
• Such initiatives could be led by the ITIB, the PCPD, statutory bodies, or commercial entities. For example, the Government and stakeholders may provide alerts about frauds related to AI, and advise the corresponding actions consumers should take. The PCPD may suggest some privacy policy templates for traders, which should be consumer-friendly and easy to understand.

Sector-specific Perspective
• Sector-specific regulators (such as Insurance Authority, Travel Industry Authority) and authorities from the Government could strengthen the education to traders on using AI in specific sectors. In particular, AI adoption in insurance industry and travel industry has been growingly popular, and traders can collect massive consumer data which might be sensitive for their AI model training. Thus, education to traders in these industries is vital. • They may also consider AI initiatives, such as establishing guidance for AI adoption based on the nature of respective industries, setting standards for industry players to follow, reporting AI compliance and performance by industry players for public surveillance, and collecting of consumer feedback and suggestions for improvement of such initiatives.

In Chapter 3, four consumer segments were identified, namely "supportive users", "prudent users", "unready users" and "unfavourable users". Targeted efforts should be considered for different consumers in order to effectively nurture an AI culture in society.

For "supportive users", stakeholders can reinforce their trust in AI and let them continue to be the early adopters. For "prudent users", actions that encourage them to voice their demands can be considered as they still have certain worries when using AI tools. For "unready users", education is needed to cultivate their AI understanding and hence mitigate their concerns. For "unfavourable users", it is needed to rebuild their confidence in AI and hence willingness of using AI again. With these efforts, "unready users" and "unfavourable users" can be gradually converted to "supportive users" and "prudent users" when their trust in AI builds up.

Establish a Holistic Policy for AI Development

Having a vision to become a world-class smart city as well as a data hub and innovation centre, the Government identified AI as a major area of strategic development. However, as Hong Kong is a relatively small market in terms of data volume for AI model training, it is undoubtedly important for Hong Kong to cooperate with other places to enable and accelerate the growth of AI. As mentioned in the Policy Address 2020, "Hong Kong's development opportunities under the Mainland's new development pattern are evident. Hong Kong can further strengthen its "intermediary" role in international circulation. Besides, Hong Kong can focus on the business opportunities in the Mainland market, better integrate into the overall development with the Mainland with GBA as an entry point, and proactively become a "participant" in domestic circulation and a "facilitator" in international circulation."[33] It is clear that the future market of AI would not stay just within Hong Kong, as potential from the Mainland is significant. To foster the development, it is crucial to take proactive action to ensure a systematic and ethical governing environment for AI in Hong Kong, while aligning tactfully with the regulations and guidelines from the Mainland as well as the international counterparts.

As revealed in Chapter 5, currently, a clear AI roadmap that outlines the path to reach a regulatory environment in which both the private and public sectors could benefit from AI is still missing in Hong Kong. As technological evolution speeds up exponentially, consumers could be at risk without appropriate monitoring and regulation. From a global perspective, national AI strategies and regulations on AI have been getting in place, and more legislations will be ready to launch in the near future.

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[33] HK Government. (2020) The Chief Executive's 2020 Policy Address.

Although the development of AI is covered as a part of the "Smart City Blueprint for Hong Kong 2.0", by far, AI-related initiatives and guidelines are championed by respective authorities based on their own assessment on industry adoption and governing practices. While it is a good step forward, a more AI-specific and holistic policy at city level might soon be needed, given the broad, diverse and speedy adoption of AI across business sectors, and possibly, the civic society in the long-run.

Thus, the Council suggests the Government adopt a progressive approach in establishing a long-term AI plan that can well balance the need of setting rules and encouraging innovation. As AI can be widely adopted across different industries and economic activities, involving issues on various dimensions including payment, logistics, etc., cross-bureau and inter-department efforts should be made to safeguard consumers.

Below are a number of approaches that could be included in the AI development plan.

A Holistic Policy for AI Development
• Establish clear vision and key milestones for AI development
• Lead by example to accelerate digital transformation
• Increase funding to support AI projects to commercialise
• Enrich open data and encourage utilisation of data
• Assist traders to build business connections with partners in the Mainland and in the globe
• Attract and nurture AI talents
• Provide AI ethics training or guidelines to traders

Establish Clear Vision and Key Milestones for AI Development

At presence, there is no single dedicated law on e-commerce or the use of AI algorithms in Hong Kong. However, many other jurisdictions have already developed or are planning to develop new laws to regulate AI-related activities. Taking reference from the Mainland, legislations and guidelines have already been in place since March 2022 to ensure the appropriate use of algorithms, and more regulations on AI and algorithms are expected to come. To keep abreast with the pace of the Mainland and key jurisdictions in the world, the Council recommends the Government anticipate the need for new regulations overseeing the development of digital economy, that obviously covers the use of AI in the e-commerce sector, for effective consumer safeguards. The Government can draw from governing experience in other jurisdictions and develop a unique strategy that can incorporate the competitive advantages of Hong Kong.

Meanwhile, current data privacy legislations in Hong Kong may lag behind the technological advancement. For example, the PIPL from the Mainland and the GDPR in the EU both include articles regarding the use of personal data in making automated decisions, such guidance is only reflected in Hong Kong's existing voluntary "Guidance on the Ethical Development and Use of AI". Also, under the GDPR, when cookies can identify an individual via their devices, it is considered personal data. Hong Kong may need to consider corresponding amendments in legislations in order to align with international practices.

Lead by example to accelerate digital transformation

The Government should accelerate its digital transformation and lead the way by adopting good AI ethics and data privacy standards while implementing the Smart City Blueprint. Such initiatives would have a positive spill-over effect on enterprises in Hong Kong. The Government should also assist traders and other organisations in accelerating their digital transformation. For instance, a common issue that traders face is the unavailability of up-to-date open data. Even though some data hubs have already been built or planned to be built, the effects might still be not immediate. The Government could speed up the establishment of this type of infrastructure for traders' and technology providers' usage. In addition, to take the Mainland as an instance, there are AI innovative development pilot zones across the country for testing new AI features and policy measures. Similarly, the Government could consider developing zones to try out innovative AI tools and AI governance policies.

Increase Funding to Support AI Projects to Commercialise

In spite of all the incentives provided by the Government demonstrated in Chapter 5, traders and technology providers still encounter difficulties while commercialising AI for business adoption. For example, the scarcity of funding to deploy AI is common. Currently, funding is mainly for innovating AI, but for commercialising and mass-producing successful AI solutions, the financial support might still be insufficient. As a result, it might not be affordable for traders to purchase those AI solutions, especially considering the economic revival has just begun after two years in fighting against the pandemic. Therefore, one of the approaches in the AI roadmap could be increasing funding to support AI projects to commercialise.

Enrich Open Data and Encourage Utilisation of Data

The Government pursued the open data policy since 2018 and traders have been utilising the data and generating their own data to innovate new services for consumers. Yet, a data enrichment process is always continuous, and never stops. The Government should make efforts to encourage more organisations to share data, and at the same time, motivate more traders to utilise the data for the benefit of consumers.

Assist Traders to Build Business Connections with Partners in the Mainland and in the Globe

Hong Kong is a rather small market in term of data availability and AI usage, thus traders might look to expand their business to the Mainland or overseas. Given the strengthening collaborative partnerships with the GBA, the Government could make use of this opportunity and plan for more business collaboration in the area so that local traders could build connections with traders outside Hong Kong and hence ramp up their expansion.

In January 2022, the Government applied for accession to the Regional Comprehensive Economic Partnership (RCEP), the world's largest free trade agreement. After joining the RCEP, Hong Kong may benefit from the measures such as market access commitments and streamlined customs procedures, and it is expected that the regional economic integration would be deepened. Those companies in regions under the RCEP might leverage AI to facilitate the provision of quality professional services to international markets, thus the development of AI should worth more attention from the Government.

Attract and Nurture AI Talents

Indeed, there is a surging need for AI talents across all industries worldwide including commerce, finance, healthcare, entertainment, and more, but the supply is of scarcity. The existing talent nurturing and admission schemes in Hong Kong might not be enough or immediate. AI talents, not only for businesses, but also for the Government to formulate policies and implement effective monitoring measures, are extremely important to accelerate the development of AI in society. The Government could explore further measures to attract and cultivate AI experts to meet the local demands. More education on AI to cultivate local talents should be set as a long-term goal.

Provide AI Ethics Training or Guidelines to Traders

To promote the responsible and ethical use of AI, the Government should provide up-to-date guidelines for traders to follow. Besides, as indicated by some traders, they might lack funding to provide training for their staff. The Government should also support traders by providing AI training courses to them. Eventually, consumers shall benefit when traders adopt AI ethically and responsibly.

Build a Fair and Competitive E-commerce Market

While AI technologies can be used to improve people's life, it can also be exploited, especially by those with big data and market power. Afterall, companies with more data are obviously of a better competitive advantage in the e-commerce industry – the more the consumer data a company can leverage in training AI models, the more accurate the prediction it can provide, and thus the better the outcomes the company can get, such as maximising profits, enhancing operation efficiencies and reducing costs.

A fair market in the e-commerce industry is vital. Traders, especially the local traders with limited resources compared to large international corporates, demand the Government to provide more support and guidance for them in order to compete with the international giants. To ensure a fair and competitive market in the e-commerce industry and to safeguard consumer interests, the Government must take appropriate measures and prevent traders from using big data to manipulate the market. Meanwhile, to protect consumers' interests, the Government must prohibit the unethical use of AI, while mitigating the worldwide-concerned risk of "winner-take-all".

Data is the key to AI and data analytics. To reduce disparities between SMEs and big techs, SMEs must be able to access more data to develop and train their AI models. The Government, relevant stakeholders, and trade associations should provide a platform for traders to share and utilise data with others within their own industry, thus to maintain the competitiveness of SMEs.

The Council recommends that the Competition Commission may devote resources to monitor the e-commerce market to avoid market distortion by major traders which hold massive data.

7.5　The Way Forward

As the development of AI is fast-evolving, unforeseen vulnerabilities and ethical issues might emerge.　It is very important to anticipate changes in the market and provide effective safeguard to consumers.　The findings of the Study point to the fact that there is an urgent need for e-commerce traders to adopt good trade practices when using AI.　Trade associations could also consider establishing a "Consumer Charter" for traders to follow, hence protecting consumers.　In the meantime, education should be provided for consumers to change their online shopping behaviour and raise their AI awareness so that they can shop online with caution and autonomy.

Besides, other jurisdictions are in the process of developing a cross-sectoral approach to regulate AI.　The Mainland has released regulations on the use of algorithms, and it is expected that more AI-related regulations will come.　Besides, some proposals were tabled already in Canada, the EU, and the UK.　In line with the increasing international regulatory momentum, the Government should take proactive action to ensure a systematic and ethical development of AI in Hong Kong.　For instance, creating a holistic AI roadmap could be considered, in which facets like regulation, talent nurturing, infrastructure, financial support shall be included.　Additionally, continual surveillance over the market is essential as well to avoid undesirable trade practices that might harm consumer rights.

The Council understands that long-term engagement of the Government and stakeholders is essential for accelerating the growth of AI, thus more planning should be considered now.　All these recommendations for consumers, traders and the Government should run parallel in the short, mid and long term.

The recommendations are made to stimulate discussion among related stakeholders so that their views and concerns can be taken into account for Hong Kong to lead the way in AI governance and promote the development of "responsible and ethical AI".

Meanwhile, aside from monitoring the market to avoid unlawful trade practices, the Council will continue to educate consumers about the benefits and risks of AI and their rights in order to foster better habits of using AI during online shopping.　The Council hopes that with efforts paid by different stakeholders, concerns and demands of consumers and traders can be better addressed, and effective consumer safeguards can be implemented as soon as possible.　In the future, certainly, further research is needed to assess and quantify the benefits and risks consumers come across when using AI, as the digital market is evolving rapidly.

Appendix 1: List of E-commerce Platforms Reviewed for AI-related Tool Trial

The Council explored AI-related features on ten popular e-commerce platforms/online stores, including product recommendation and chatbots, to review their performance and user interface in Q2 2021, and revisited in Q2 2022. Owing to the lack of ways to distinguish between AI-powered tools and rule-based programmed tools, the Council could only select these platforms according to related news that hinted their tools were supported by AI. The other sampling criteria included the platforms' popularity (referring to the answers provided in the consumer survey), their business nature and the types of AI technologies they adopted.

(In alphabetical order)

	E-commerce Platform	AI Tool Reviewed
1	adidas	Product Recommendation and Chatbot
2	big big shop	Product Recommendation and Chatbot
3	Decathlon	Chatbot
4	Expedia	Chatbot
5	Fortress	Chatbot
6	HKTVmall	Chatbot
7	Pricerite	Chatbot
8	Sephora	Chatbot
9	ZALORA	Chatbot
10	Ztore	Product Recommendation

Appendix 2: List of E-commerce Platforms Reviewed for Content Analysis of Privacy Policies

The Council conducted a content analysis of the privacy policies of 112 e-commerce platforms/online stores to gauge what consumers could usually obtain from trader's websites. To ensure the platforms' variety and representativeness, a number of selection criteria were established, including the platforms' popularity (referring to the answers provided in the consumer survey), types of products or services they offered, their operational modes and their origins. The analysis was carried out in Q2 – Q3 2021.

(In alphabetical order)

1	adidas	29	Expedia	57	Klook	85	Sony PlayStation
2	Adobe	30	Facebook	58	LALAMOVE	86	Spotify
3	AEON	31	Foodpanda	59	Lazy	87	Strawberrynet
4	Agoda	32	Fortress	60	MAMA730	88	SUNING
5	Amazon	33	Francfranc	61	Mannings	89	Taobao
6	Amway	34	Freehunter	62	Marathon Sports	90	The Club
7	ASOS	35	GENKI SUSHI	63	McDonald's	91	The Overlander
8	Banana Portal	36	Gmarket	64	MCL Cinema	92	Ticketflap
9	BANDAI	37	GOGOX	65	Ming Pao	93	Tiny
10	big big shop	38	HelloToby	66	My Book One	94	Tmall
11	Boatat	39	HelperGo	67	MyDress	95	Toys"R"us
12	Bonjour	40	HK TICKETING	68	MySkill	96	Trip.com
13	Book Depository	41	Hkbusgo	69	Netflix	97	Uber
14	Broadway Cinema	42	HKTaxi	70	Nike	98	Ulferts
15	Broadway Lifestyle	43	HKTVmall	71	Nintendo	99	Under Armour
16	c!ty'super	44	HOME+	72	OnTheList	100	UNIQLO
17	Canon	45	Hong Kong Movie	73	PARKnSHOP	101	URBTIX
18	Carousell	46	Hong Thai Travel	74	Pickupp	102	Vipshop
19	China Travel	47	HT Mall	75	Pinduoduo	103	Watsons
20	Choi Fung	48	I.T	76	Pinkoi	104	Wellcome
21	CoCoMall	49	IKEA	77	Pizza Hut	105	Workeroom
22	Columbia	50	Instagram	78	POPTICKET	106	Xiaomi
23	DCH Food Mart	51	J SELECT	79	Pricerite	107	Yata
24	Decathlon	52	Japan Home City	80	Rakuten	108	YOHO
25	Deliveroo	53	JD.com	81	SANRIO Gift Gate	109	YOOX
26	DiDi Hong Kong	54	KFC	82	Sasa	110	ZALORA
27	Eatigo	55	KKBOX	83	Sealy	111	ZARA
28	Eslite Global	56	KKday	84	Sephora	112	Ztore

Appendix 3: List of Companies Invited for In-depth Interviews

The Council invited 73 major companies and organisations in the e-commerce industry to participate in individual in-depth interviews in Q1 2021. The selection criteria included the companies' popularity, types of products or services they offered, their years of experience in the industry, etc. To ensure receipt of the invitations and encourage participation, the Council made phone calls to reach the contact points of the companies and sent follow-up emails to remind them to respond. Besides, the Council provided a number of interview ways for the companies to choose, including face-to-face interviews, virtual meetings and self-completion questionnaires, so as to cater for different companies' needs.

In the end, 19 interviews with the founders and the senior management of the companies were conducted successfully. The topics covered were (1) the adoption and governance of AI technologies; (2) privacy policies on collection and use of consumer data; (3) AI barriers and development in Hong Kong, and (4) ways to enhance consumer trust in AI.

The relatively low response rate could be attributed to a number of challenges, including:

- Some companies considered AI strategies a sensitive topic;
- Some companies considered they had not yet started investing in AI;
- It was difficult to schedule an interview amid the fourth wave of the COVID-19 pandemic; and
- It was hard to reach companies that were often visited by Hong Kong consumers but did not have physical presence in Hong Kong.

The tables below respectively list the companies that accepted the interviews (19), rejected the interviews (8) and did not respond (46).

(In alphabetical order)

Interviews completed (19)		
Traders (7)		
Amway	big big shop	Codeco
Fortress	HKTVmall	PARKnSHOP
Watsons		
Technology providers (9)		
Asiabots	Delvify	EternityX
GS1	Laclary	Omnichat
Shopline	Xiaoi	Zyetric Tech
Industry experts (3)		
blu.ltd	HKAI Lab	The Life Underwriters Association of Hong Kong

Invitation rejected (8)		
Traders (7)		
Alibaba Group (Taobao, Tmall, Tmall HK)	Facebook	Foodpanda
KFC	McDonald's	Pricerite
Sasa		
Technology providers (1)		
Amazon Web Services (AWS)		

No response (46)		
Traders (36)		
adidas	AEON	Amazon
ASOS	Banana Portal	Bonjour
Carousell	Chow Tai Fook	Deliveroo
Gmarket	HelloToby	HOME+
IKEA	JD.com	Japan Home City
KKday	Klook	MyDress
New World Group	OpenRice	Pinduoduo
Pinkoi	Rakuten	Sephora
Strawberrynet	SUNING	Tencent
The Lane Crawford Joyce Group	UNIQLO	Vipshop
Wellcome	Xiaomi	Yata
yuu Rewards, Dairy Farm	ZALORA	Ztore
Technology providers (10)		
Appier	Bingo HK	Boutir
Clare	Dayta	Imbee
Parami	SenseTime	Viewider
Whatsquare		

Appendix 4: AI-related Initiatives of Selected Jurisdictions

The Mainland

National AI Strategy

The State Council put forward the "Made in China 2025 Plan" in 2015 and the "Next Generation AI Development Plan" in 2017, both of which had a clear target of making the Mainland a global leader in AI by 2030. The Ministry of Industry and Information Technology (MIIT) issued a three-year action plan in 2018 to stimulate the development of AI in China, while the Cyberspace Administration of China (CAC) takes the lead as an Internet-focused regulator. Other authorities such as the State Administration for Market Regulation monitor the use of AI in respective sectors.

Later in March 2019, the Ministry of Science and Technology (MOST) established a professional committee "New Generation AI Governance Expert Committee" for AI governance. The Committee released non-binding principles to guide AI development in the Mainland in June 2019, namely the "Governance Principles for the New Generation AI: Developing Responsible AI". In September 2021, it further released the "New Generation AI Ethics Specifications", which outlines more detailed specifications for AI development and applications.

The Mainland has launched both voluntary guidance with AI principles and mandatory regulations to govern AI, algorithms and the use of data in recent years, demonstrating its determination in regulating the fast-growing digital economy. The launch of these guidance and regulations is mainly driven by the Mainland Government. Selected regulations, plans and guidance are listed in the table on p.117.

Regulations on Algorithms and Consumer Protection

In terms of regulations, the Mainland focuses on regulating the use of algorithms. Effective from March 2022, the "Administrative Provisions on Algorithm Recommendation of Internet Information Services" seeks to regulate algorithms, especially those that will be employed for recommendation purposes such as those used in online stores, search filters, or on social media.

As regards the protection of consumers, the regulation obliges service providers to check, assess, and verify the algorithm mechanisms, as well as their models, data, and outcomes in order to prevent practices that could induce addiction in consumers. Moreover, it intends to give consumers more control over their personal data – Traders will have to equip consumers with the ability to select or delete the "user labels" that target their personal traits. The regulation also forbids actions such as registering fake accounts, manipulating user accounts, and fake engagement. Traders will be required to give consumers the option of not being targeted due to their individual characteristics and the option to stop using the services. They are also required to be more transparent, for example, disclosing the rules that govern their services, and informing users about the means and basic principles of the recommendation services, their intended purposes, and main operational mechanisms.

The new regulations are a part of the Mainland's ongoing efforts in regulating technology platforms in terms of market competition, data privacy, and cybersecurity. The regulations will have huge impact on companies relying on recommendation algorithms both inside and

outside the country. Foreign companies with business in the Mainland may have to ensure that their Chinese operations comply with the regulations while maintaining other sets of services that align with other countries' approaches. How these regulations are enforced and how companies adapt to the terms will likely affect the global AI ecosystem.

Personal Information Protection Law (PIPL) and Consumers' Rights Related to Automated Decision Making

Moreover, in November 2021, the PIPL came into effect. In Article 24, it regulates automated decision-making, which refers to the use of computer programmes to automatically analyse, assess and make decisions about the behaviour, habits, interests, hobbies as well as financial, health and credit conditions of individuals. The PIPL requires that processors of personal information using personal information in automated decision making shall ensure that the decision-making processes are transparent, and the results are fair and impartial. Furthermore, there shall not be any unreasonable price discrimination against individuals. If the automated decisions cause significant impact on individuals' rights and interests, the individuals shall have the right to request the processors of personal information to provide explanations, and to object to the decisions made solely by automated process.

Pilot Zones for AI-integrated Socio-economic Development

From 2019 to 2021, the Mainland already established 17 "New Generation AI Innovation and Development Pilot Zones" including Beijing, Hangzhou, Shanghai, Shenzhen, Tianjin, etc., which serve as pilot zones for AI-integrated socio-economic development. With the experience of these pilot zones, it is hoped that reproducible best practices could be established and applied to other cities. Key initiatives in these pilot zones included:[34]

- Trialling various models of AI-integrated socio-economic development in the fields of manufacturing, agriculture and rural, logistics, finance, commerce, home furnishing, medical care, education, government affairs, transportation, environmental protection, national security, urban management, and elderly care.
- Exploring innovative policy tools for AI governance, in terms of data protection, intellectual property rights, cybersecurity, talents cultivation, finance and taxation, social security, and international cooperation.
- Carrying out social experiments for AI to explore new ways of governance in the digital era by organising long-term social experiments; evaluating the impact of AI technology on individual and organisational behaviour, employment structure, and income changes.
- Promoting the establishment of AI infrastructure by strengthening the construction of network infrastructure, big data infrastructure, and computing infrastructure.

Looking into the future, the CAC announced a joint plan in September 2021 with eight other government agencies over next three years to create a comprehensive regulatory system for algorithms which might have massive implications on the provision of personalised services.[35] Meanwhile, draft documents were already launched in cities including Shanghai and Shenzhen. Further regulatory control on using algorithms could be expected.

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[34] HKTDC. (2019) China outlines plans for 20 dedicated AI development zones.
[35] Global Times. (2021) China to set up governance rules for algorithms.

Selected Regulations, Plans and Guidance Related to AI and the Use of Data in the Mainland

Date	Regulation/Plan/Guidance	Details
Jul 2017	Next Generation AI Development Plan	Sets a road map to make Mainland the world's primary AI innovation centre by 2030
Mar 2019	Guiding Opinions on Promoting the Deep Integration of AI	Promotes in-depth integration of AI and the real economy
Jun 2019	Governance Principles for the New Generation AI: Developing Responsible AI	Provides non-binding high-level principles to guide AI development in the Mainland
Aug 2020	Next Generation AI Standards System Development Guidelines	Confirms the top-level design of AI standardisation
Jan 2021	Guidelines on Ethical Security Risk Prevention of AI	Provides guidelines for safely carrying out AI R&D, design and manufacturing, deployment, and application
Feb 2021	Antitrust Guidelines for Platform Economy	Clarifies that algorithm conspiracy as a new form of a monopoly agreement
Mar 2021	14th Five-Year Plan (2021-2025)	Mentions that Next Generation AI as one of the priorities, including R&D of special chips, construction of open-source algorithm platforms, and innovation in natural language recognition processing
Jun 2021	Regulations on the Promotion of AI Industry in Shenzhen Special Economic Zone (Draft)	Aims to set up a standardised and comprehensive system to manage AI industry statistics collection and oversight; if passed, Shenzhen will be the first local government to establish targeted policies for AI
Aug 2021	Provisions on Prohibited Acts of Unfair Online Competition (Draft)	Prohibits business operators from using data, algorithms or other technical information or means to influence' users' choice, hijack traffic or disrupt the operations of website products and services provided by other business operators
Sep 2021	Data Security Law	Regulates data activities, safeguards data security, promotes data development and usage, protects individuals and entities' legitimate rights and interests
Sep 2021	New Generation AI Ethics Specifications	Outlines six basic principles for AI systems, including a stipulation that AI systems are "controllable and trustworthy"
Nov 2021	Personal Information Protection Law	Prohibits the use of automated decision-making based on personal information if it leads to discriminatory trade practices such as unreasonable price discrimination against individuals
Nov 2021	Application Guidelines on Using Algorithm for Marketing Activity of Internet Platforms in Shanghai (for Trial Implementation)	Prohibits the use of algorithms from (i) implementing improper personalised pricing and other unreasonable differential treatment on consumers; (ii) providing consumers with search results based on their personal characteristics; and (iii) conducting rewarded sales through deception; bans platforms from using algorithms to hinder competition and abuse their dominant position
Mar 2022	Administrative Provisions on Algorithm Recommendation of Internet Information Services	Formulates and publishes algorithmic recommendation-related service rules, such as informing users about the "basic principles, purpose and main operation mechanism" of the algorithmic recommendation service; providing users with options to opt out of recommendation services via algorithms; providing users with options to select or delete tags that are used to power recommendation algorithms

Canada

National AI Strategy

Canada was the first country in the world to announce a national strategy for AI. The Government of Canada appointed the Canadian Institute for Advanced Research (CIFAR) to develop the "Pan-Canadian AI Strategy" in March 2017. Since then, up to CAD$125 million (HK$742 million) has been invested in AI deployment. As of 2020, Canada hd established three new AI Institutes, supervising over 1,200 trainees. Over 45 companies have invested in Canadian AI research labs since 2017.

Recently in 2021, the Government of Canada announced new funding of CAD$443 million (HK$3 billion) in support of the next phase of the "Pan-Canadian AI Strategy". It has also launched ten principles under the "Canada's Digital Charter", including universal access, safety and security, control and consent, transparency, portability and interoperability, open and modern digital government, a level playing field, data and digital for good, and strong enforcement and real accountability.

Digital Charter Implementation Act 2022

In June 2022, the Government of Canada tabled the "Digital Charter Implementation Act (DCIA) 2022". The DCIA 2022 was proposed with the aim of enacting three new Acts, namely the "Consumer Privacy Protection Act", the "Personal Information and Data Protection Tribunal Act", and the "AI and Data Act". The "AI and Data Act" would aim to regulate international and interprovincial trade and commerce in AI. It requires the adoption of measures to mitigate risks and biased output related to high-impact AI systems; provides public reporting on AI; authorises the Minister of Innovation, Science and Industry to order the production of records pertaining to AI systems; and establishes prohibitions related to the possession or use of illegally obtained personal information for the purpose of designing, developing, using, or making available for use an AI system and making such use available if it causes serious harm to individuals.

Support for R&D and Traders

In 2019, the Department of Innovation, Science and Economic Development (ISED) assembled AI experts from industry and academia to form an Advisory Council on AI. In February 2020, the Advisory Council released a series of policy recommendations addressing the various phases of the AI commercialisation process, from research to marketing. The ISED also runs the CAD$1.8 billion (HK$11 billion) Innovation Superclusters Programme, which leverages innovative technologies like AI to spur economic development in specific sectors and industries across the country. It promises to create 66,000 jobs and grow Canada's economy by CAD$66 billion (HK$392 billion) by 2030.

France

National AI Strategy

France launched its 5-year national strategy on AI in March 2018 and dedicated EUR€1.5 billion (HK$12 billion) to the development of AI by the end of 2022, including EUR€700 million (HK$5 billion) for research. It later unveiled the second phase of this strategy in 2021. The Ministry of Higher Education, Research and Innovation is at the centre of the governance network.

Consumer Protection

The French Government was of the view that ethics could be a core part of the European AI strategy, and AI must not become a new way of excluding parts of the population. A discrimination impact assessment could be introduced, similar to the privacy impact assessments already made compulsory by the GDPR for some data processing. Besides, it is vital to facilitate audits of AI systems. This could involve the creation of a group of certified public experts who can conduct audits of algorithms and databases and carry out tests using any methods required.

Support for Traders

The French government aims to support 500 SMEs and intermediate-sized companies to adopt and use AI solutions, tripling the number of AI start-ups by 2025.

Nurturing Talents

In terms of funding, since 2018, nearly 500 additional PhD students have been funded in the field of AI. In 2021, there were over 500 AI start-ups in France, employing 13,459 people and generating 70,000 indirect jobs.

Germany

National AI Strategy

In November 2018, the German Government launched its AI strategy "AI Made in Germany". The strategy was updated in 2020. The German Government has allocated a total of EUR€5 billion (HK$39 billion) by 2025 for the promotion of AI. The Federal Ministry of Education and Research and the Federal Ministry for Economic Affairs and Energy are responsible for majority of AI policy initiatives.

Support for Traders

To foster the take-up of AI across SMEs, the Federal Ministry for Economic Affairs and Energy has been providing funding for AI coaches based at the Mittelstand 4.0 Centres of Excellence. These AI coaches work directly with SMEs to raise awareness of the technological and economical potentials of AI.

Promoting AI Literacy

The German Federal Government offers the public a free online course "Elements of AI", which was initiated by the University of Helsinki. The course is available in German and users can follow it at their own pace without previous experience in coding skills.

Japan

National AI Strategy

The Japanese Government formulated the "AI Technology Strategy" in March 2017, and further launched the national AI strategy titled "AI for Everyone: People, Industries, Regions and Governments" in 2019. The Japanese AI strategy is a key part of the transition to the envisioned Society 5.0, which aims to create a human-centred society. The Japanese Cabinet Office has a coordinative role regarding strategic matters, while coordination of efforts and information exchange is the responsibility of the Council for Science, Technology and Innovation.

AI-related Guidance

The Ministry of Economy, Trade and Industry (METI) formulated the "Contract Guidelines on Utilisation of AI and Data" in 2018 to provide a reference for businesses that explains approaches to conclude contracts for utilisation of data or for the development and utilisation of software with AI technology. The guidelines were further updated by the METI in December 2019. Additionally, in March 2019, the Japanese Government also introduced the "Social Principles for Human-centric AI". Furthermore, the METI, together with the Expert Group on How AI Principles Should be Implemented, compiled the document, "Governance Guidelines for Implementation of AI Principles Ver. 1.1," which summarises what to put into practice when respecting the "Social Principles of Human-Centric AI".

Consumer Protection

The Consumer Affairs Agency published the "AI Utilization Handbook – How to use AI Wisely" in 2020 to provide use cases for AI developers from a consumer protection perspective. It also carried out surveys on consumers' understanding of AI, their expectations on AI, their perceived challenges with respect to AI, and how much they recognise and understand the risks associated with AI services.

Support for R&D

Japan is set to establish a JPY 100 billion (HK$6 billion) fund to accelerate R&D of advanced technologies and reinforce economic security. The Japanese government plans to kick off the fund in 2022 and investments will be focused on AI, robotics, quantum technology, and biotechnology.

Singapore

National AI Strategy

In November 2019, Singapore announced its "National AI Strategy" with the vision to become a leader in developing and deploying scalable, impactful AI solutions, in key sectors of high value and relevance to citizens and businesses by 2030. The Infocomm Media Development Authority (IMDA) takes the lead in formulating the AI policies. Besides, Singapore formed the Advisory Council on Ethical Use of AI and Data to bring together a range of key stakeholders to inform the government about approaches to ensure consumer trust in AI-powered products and services.

Model AI Governance Framework

The "Model AI Governance Framework", released in January 2019 and updated in January 2020, aims to provide detailed and readily implementable guidance to organisations in the private

sector to address key ethical and governance issues when they deploy AI solutions. Singapore also launched the "Implementation and Self-Assessment Guide for Organisations" as a companion guide to help companies assess the alignment of their AI governance practices with the Model Framework. In addition, the IMDA also supported the Singapore Computer Society's efforts to develop an "AI Ethics and Governance Body of Knowledge" in October 2020 to provide a reference document for business leaders and professionals on the ethical aspects related to the development and deployment of AI technologies.

Support for R&D

The Singapore Government funded SG$500 million (HK$3 billion) for AI-related activities under the Research, Innovation and Enterprise 2020 Plan (RIE 2020), it further invested another SG$180 million (HK$1 billion) under the Research, Innovation and Enterprise 2025 Plan (RIE 2025) for AI R&D. These investments will be used to support various research in areas that address challenges of AI adoption, such as privacy preserving AI, and of societal and economic importance including healthcare, finance, and education. The funds will also facilitate research collaborations with the industry to drive the adoption of AI.

Support for Traders

In May 2022, the IMDA and the Personal Data Protection Commission Singapore (PDPC) launched A.I. Verify – the world's first AI Governance Testing Framework and Toolkit for companies. Technology developers and traders can verify the claimed performance of their AI systems against a set of principles through standardised tests. The Toolkit will generate reports for technology developers and traders, covering major areas in demonstrating responsible AI.

Promoting AI Literacy

The Singapore Government has provided support for upskilling Singaporeans with baseline AI and computing knowledge. In 2018-2020, more than 55,000 students and adult learners were trained in basic AI literacy skills under AI Singapore's AI for Everyone (AI4E), AI for Students (AI4S), and AI for Kids (AI4K) programmes. From 2021, as part of the Ministry of Education's National Digital Literacy Programme, baseline digital competencies – including computational thinking and data competencies – will be enhanced at the Higher Education level. Coverage of digital and AI competencies will also be deepened for students entering sectors ripe for the adoption of AI.

South Korea

National AI Strategy

In December 2019, the South Korean Government announced its "National AI Strategy", and it further published the "National Guidelines for AI Ethics" for promoting trustworthy AI adoption in 2020. South Korea's AI policies network is highly centralised and steered by the Ministry of Science, ICT and Future Planning (MSIP).

In 2018, South Korea announced a KRW 2.2 trillion (HK$13 billion) budget for R&D in AI and expansion of AI-related infrastructure as part of the nation's bid to transform the country into an AI heavyweight by 2022. Further, in March 2022, South Korea announced to invest more than KRW 20 trillion (HK$118 billion) in data, network and AI sectors over the next three years in a bid to help nurture future-oriented industries. The country will also push for the expansion of specialised 5G networks in an effort to spur new service innovations.

<u>**Support for Traders**</u>

The South Korean Government facilitates the use of the acquired data by establishing an AI hub to provide companies and researchers with AI training data from the dam and cloud-based high-performance computing. The ecosystem will include big data platforms to produce and manage data, especially for sectors such as finance and healthcare. South Korea has also provided AI-vouchers to SMEs and start-ups that need AI-powered products or services. Using the vouchers, the beneficiary companies can purchase necessary AI solutions from AI-solution suppliers. Each company can receive up to KRW 0.3 billion (HK$2 million) AI vouchers.

<u>**Consumer Engagement**</u>

To engage citizens and collect opinions on the use of AI, the South Korean Government, the private sector, and academia regularly host discussions and public conferences. In November 2021, the Korea Information Society Development Institute held a seminar to present a draft "Self-checklist" for individuals and companies to assess their compliance with the "National Guidelines for AI Ethics". The Institute also surveyed public opinion and used the feedback to improve and enhance social acceptance and trust in AI technology and services.[36]

The European Union (EU)

<u>**Guidance on AI Principles**</u>

The EU adopts a risk-based approach when designing the AI governance framework. The EC set up an independent expert group named "High-Level Expert Group on AI" (Expert Group) in June 2018. Following the publication of the European Strategy on AI in 2018, the Expert Group developed the "Ethics Guidelines for Trustworthy AI" in April 2019. In July 2020, the Expert Group published "Assessment List for Trustworthy AI",[37] where AI principles are translated into an accessible and dynamic checklist that guides developers and deployers of AI in implementing such principles in practice.

<u>**The EU's AI Act to Safeguard Consumers' Safety and Fundamental Rights**</u>

Building on the above guidelines and assessment list, in April 2021, the EC further released the AI Act, which captures the risks posed by the use of high-risk AI. The draft bill aims to ensure that any AI improvements are based on rules that safeguard consumers' safety and fundamental rights as well as the functioning of markets and the public sector.

Recent Regulations and Guidance related to AI in Europe

Name of Guidance	Launched Date
Ethics Guidelines for Trustworthy AI	April 2019
Assessment List for Trustworthy AI	July 2020
Proposal for a Regulation Laying down Harmonised Rules on AI (AI Act)	April 2021

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[36] World Bank. (2022) Harnessing trustworthy AI: A lesson from Korea.
[37] EC. (2020) Assessment list for trustworthy AI for self-assessment.

In May 2022, the European Parliament passed recommendations from the Special Committee on AI in a Digital Age. The recommendations include policy options covering AI related to health and medicine, the environment and climate change. The report will feed into upcoming parliamentary work on AI, in particular the AI Act, which is currently being discussed in the Internal Market and Consumer Protection and the Civil Liberties, Justice and Home Affairs Committees. The AI Act is to be voted on jointly by the two Committees in late September 2022. It said that with the necessary support infrastructure, education and training AI can increase capital and labour productivity, innovation, sustainable growth and job creation in the EU. However, it also said that the EU should not always regulate AI as a technology, the level of regulatory intervention should be proportionate to the type of risk associated with the particular use of an AI system. The EU Parliamentarians called in its recommendations for international cooperation with "like-minded partners" to safeguard fundamental rights while also minimising new technological threats.

The GDPR and Consumers' Rights Related to Automated Decision Making

Although the EU's AI Act is not yet passed, there is already the GDPR that regulates profiling and automated decision-making of companies which serve consumers in the EU. For example, Article 13 of the GDPR requires that a data subject must be provided with certain information if the data processing activities involve profiling and automated decision-making, such as meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing to the data subject. Article 22 further provides that a data subject shall have the right not to be subject to a decision based solely on automated processing, if it produces legal effects on him/her or has an important bearing on him/her. These requirements may help to ensure transparency and accountability in the use of AI.

The use of AI, with its specific characteristics (e.g. opacity, complexity, dependency on data, autonomous behaviour), can adversely affect a number of fundament rights and users' safety. To address those concerns, the AI Act follows a risk-based approach whereby legal intervention is tailored to concrete levels of risk. To that end, the proposal distinguishes between AI systems posing (i) unacceptable risk (activities which are prohibited under the Act such as those relating to social scoring), (ii) high risk (activities relating to medical devices and consumer creditworthiness), (iii) limited risk, and (iv) low or minimal risk. Under this approach, AI applications would be regulated only when strictly necessary to address specific levels of risk.

In order to increase product safety and improve the identification of faults, the developers of high-risk AI should ensure that accessible logs of algorithmic activity are maintained securely. Where relevant, developers should design high-risk AI systems with embedded mechanisms, the "stop buttons", for human intervention to safely and efficiently halt automated activities at any moment and ensure a human-in-the-loop approach. Moreover, AI systems' output and reasoning should always be comprehensible by humans.
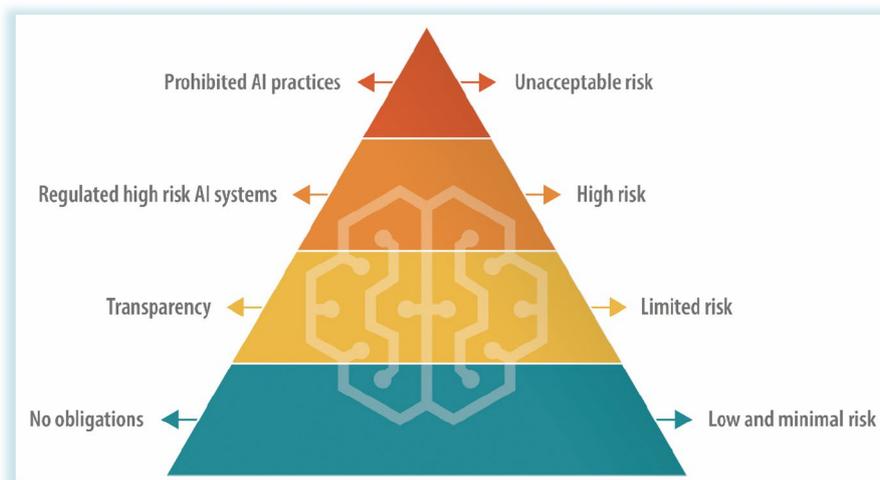
At the EU level, the proposal suggests the establishment of a European AI Board to facilitate harmonised implementation of the new rules and to ensure cooperation between the national supervisory authorities and the EC. At the national level, Member States of the EU would have to designate one or more competent authorities, including a national supervisory authority, which would be tasked with supervising the application and implementation of the regulation. National market surveillance authorities would be responsible for assessing operators' compliance with the obligations and requirements for high-risk AI systems. Administrative fines of varying scales (up to EUR€30 million (HK$234 million) or 6 % of the total worldwide annual turnover), depending on the severity of the infringement, are set out to sanction non-compliance with the AI Act.

Support for Traders

In terms of assistant to traders, the European AI on Demand Platform (AI4EU) project is an AI-on-demand platform that aims to help SMEs in the EU adopt AI. AI4EU brings together 79 research institutes, SMEs and large enterprises in 21 countries to build a focal point for AI

resources. The AI4EU project received a total funding of EUR€20 million (HK$156 million) in 2019, part of funding was used to fund promising projects.

In terms of data exchange, there are initiatives of the European cloud federation, such as the European Alliance for Industrial Data, Edge and Cloud, as well as the Gaia-X project, which aim to develop a federated data infrastructure and create an ecosystem that allows scalability, interoperability and self-determination of data providers.

The United Kingdom (UK)

National AI Strategy

The UK published its "AI Sector Deal" in April 2018, and the "AI Sector Deal" was updated after one year in May 2019. The deal outlines a package of up to GBP£0.95 billion (HK$9 billion) of support for the AI sector. In September 2021, the Office for AI released a new "National AI Strategy" for the next ten years. The strategy emphasised that "an effective governance regime that supports scientists, researchers and entrepreneurs to innovate while ensuring consumer and citizen confidence in AI technologies is fundamental to the government's vision over the next decade."

The UK Government is working with The Alan Turing Institute and regulators, such as the Competition and Markets Authority (CMA), the Financial Conduct Authority (FCA), the Information Commissioner's Office (ICO) and the Office of Communications (Ofcom), to examine regulators' existing AI capacities.

In May 2021, the UK Government published the "Ethics, Transparency and Accountability Framework for Automated Decision-making", which is a framework to guide the safe and ethical use of algorithms and automated systems for public sector organisations.

Policy Paper on AI Regulation

The UK Government unveiled plans to regulate AI in a policy paper titled "Establishing a pro-innovation approach to regulating AI" in July 2022. It proposed establishing a pro-innovation framework for regulating AI which is underpinned by a set of cross-sectoral principles tailored to the specific characteristics of AI, and invited stakeholders to provide views about how the UK can best set the rules for regulating AI in a way that drives innovation and growth while protecting fundamental values by September 2022.

Investment of AI in Business the Sector

Up to now, the UK Government has invested more than GBP£2.3 billion (HK$21 billion) into AI across a range of initiatives since 2014, of which, over GBP£372 million (HK$3 billion) was invested into UK AI companies in the growing sectors. The UK has the 3rd highest number of AI companies in the world after the US and the Mainland.

Nurturing Talents

To develop the right skills for the jobs of the future and to create the environment for AI development and deployment, the UK Government announced to establish 16 AI Centres for Doctoral Training at universities across the country, backed by up to GBP£100 million (HK$921 million), and aimed to deliver 1,000 new PhDs over five years. It offered GBP£46 million (HK$423 million) for the Turing AI Fellowships to attract and retain top AI talents.

The United States (US)

National AI Strategy

The US launched the "American AI Initiative" in February 2019 and further launched the "National AI Initiative" in 2021. R&D is a top priority of the US national strategy for AI. Demonstrating this priority, in August 2020, the White House, the National Science Foundation (NSF), and additional Federal partners announced US$140 million (HK$1 billion) in awards over five years to 7 NSF-led AI Research Institutes. The NSF further announced a US$220 million (HK$2 billion) investment in 11 new institutes in 2021.

The US has not yet introduced horizontal legislation in the digital field, and has so far focused on sector-specific laws and facilitating investments. The US AI policy landscape is rather decentralised, with influential organisations spanned across different sectors.

In November 2020, the US Government released the first guidance memorandum for federal agencies on regulating AI applications in the private sector. In December 2020, the "Executive Order on Promoting the Use of Trustworthy AI" in the Federal Government was signed to foster public trust in AI. This order recognises the potential for AI to improve government operations, such as by reducing outdated or duplicative regulations, enhancing the security of Federal information systems, and streamlining application processes.

In January 2021, the US Government issued its first national AI strategy, committed to doubling AI research investment, forged new international AI alliances, and established guidance for governmental use of AI.

National AI Initiative Office

The White House established the National AI Initiative Office in January 2021, further accelerating efforts to ensure America's leadership in this critical field for the future. In 2021, the White House's Office of Science and Technology Policy launched a fact-finding mission to look at facial recognition and other biometric tools used to identify people or assess their emotional or mental states and characters. Although the current US administration plans to bring forward a new bill of rights to limit AI harms, the US approach will remain market-driven.

Consumer Protection

In April 2020, the Federal Trade Commission (FTC) issued business guidance on AI and algorithms. The FTC recommends that use of AI tools should be transparent, explainable, fair and empirically sound, while fostering accountability. Specifically, the FTC recommends companies to be transparent about how automated tools are used, and when sensitive data is collected. The FTC also suggests that in order to avoid bias and other harm to consumers, an operator of an algorithm should ask four key questions, i.e. (1) How representative is your data set? (2) Does your data model account for biases? (3) How accurate are your predictions based on big data? And (4) Does your reliance on big data raise ethical or fairness concerns? The FTC encourages companies to consider how to hold themselves accountable, and whether it would make sense to use independent standards or independent expertise to step back and take stock of their AI.

Appendix 5: Reference List

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