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香港恒生大學
THE HANG SENG UNIVERSITY OF HONG KONG

School of Business
The Hang Seng University of Hong Kong
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Vol. 4, No. 1 (September 2022)

The Hang Seng University of Hong Kong Business Review

01 A Case Study: Is Unmanned Store a Futuristic Retail Operation in Hong Kong?
Lei Hong Weng, Lawrence / Leung Kim Ping, Thomas / Chung Pek Ki, Pecky / Kwok Sin Ting, Maggie

02 Background to the Enactment of the New Economic Substance Laws
Leung Yuen Shan, Ivy

03 The Impacts of the Trade War Between China and the United States: A Perspective from the Computable General Equilibrum Model
Chui Kam Hung, David / Cheong Tsun Se, James

04 Rebuilding a More Sustainable Fashion Industry after COVID-19
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Vol. 4, No. 1

The Hang Seng University of Hong Kong Business Review

cover_layout.pdf 2 20/10/2022 12:46 PM

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cover_layout.pdf 3 20/10/2022 12:46 PM

Message from the Editor-in-Chief

Dear Readers,

I hope you are all doing well.

I am pleased to publish another issue of the Hang Seng University of Hong Kong Business Review (Volume 4, No. 1).

We have a combination of four interesting articles in this issue. In the first article, Lei et al. introduced the new operational mode of retail stores, the unmanned store concept, and provided an in-depth analysis on why this concept is not applicable in the retail industry in Hong Kong, although it has been adopted by the retail industries in many Asian and foreign countries. The second article is a law-related article. Leung, a barrister in Hong Kong, shared with readers the knowledge about economic substance laws and discussed in detail the potential impact of their enactment on businesses. The third article is a brief for policy simulation. Chui and Cheong discussed the impacts of the trade war between China and the United States. They argued that the existing policies which restrict trade with China cannot revive the U.S. economy, but the impacts of these policies could be serious. In the fourth article, Chan et al. analysed the primary field data collected from design managers in the fashion industry in Hong Kong. Based on the unique perspectives from their interviewees, Chan et al. concluded that the development of a sustainable model in the fashion design industry is highly needed to address environmental and social problems caused by unsustainable practices in various stages of the supply chain.

On behalf of the editorial team, I would like to once again express our warmest gratitude to all the authors who have contributed to this issue of the Hang Seng University of Hong Kong Business Review.

See you in the next issue.

Stay negative to Covid-19, but please stay positive in life!



Lawrence Lei (PhD)
Editor-in-Chief
The Hang Seng University of Hong Kong Business Review

cover_layout.pdf 4 20/10/2022 12:46 PM

Table of Contents

Vol.4, No.1 (September 2022)

07 **A Case Study: Is Unmanned Store a Futuristic Retail Operation in Hong Kong?**
Lei Hong Weng, Lawrence
Leung Kim Ping, Thomas
Chung Pek Ki, Pecky
Kwok Sin Ting, Maggie

15 **Background to the Enactment of the New Economic Substance Laws**
Leung Yuen Shan, Ivy

25 **The Impacts of the Trade War Between China and the United States: A Perspective from the Computable General Equilibrum Model**
Chui Kam Hung, David
Cheong Tsun Se, James

37 **Rebuilding a More Sustainable Fashion Industry after COVID-19**
Chan Man Hin, Eve
Cheng Hiu, Febbie
Lau Yui Yip, Joseph
Lee Wai Ying, Liane
Ho Chi Kuen, Danny

article01_layout.pdf 1 20/10/2022 12:54 PM



01 A CASE STUDY: IS UNMANNED STORE A FUTURISTIC RETAIL OPERATION IN HONG KONG?

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INTRODUCTION

The unmanned store is a new operation mode in the global retail industry. It aims at reducing human resource-related costs by providing customers with a staff-free and cashier-free shopping environment while reducing customers' queuing time at the check-out point. Its conceptualization can be traced back to 2012 when Cisco Internet Business Solutions Group published a paper on the potential development

article01_layout.pdf 2 20/10/2022 12:54 PM

of an unmanned store (Finke et al., 2012). All transactions are handled by mobile technologies such as sensor fusion, RFID, and facial recognition technology. A customer can grab the products he/she wants in an unmanned store, and he/she will be automatically charged through his/her credit card while coming out of the store. Within minutes, the customer will receive an accurate receipt for everything that he/she takes from the unmanned store. The concept started taking the world by storm in 2017. Some leading firms such as Amazon and Alibaba have established their own unmanned stores around the world as shown in Table 1.

Table 1. Brands Unmanned Stores Development

Original Brand	Original Industry	New Brand for Unmanned Stores	Countries
Amazon	E-commerce	Amazon Go, Amazon Go Grocery	The United States
Alibaba	E-commerce	Tao Cafe	China
Jing Dong	E-commerce	JD.ID X-mart	Indonesia, China
7-11	Convenience store	7-11 X-store, 7-11 Signature	Taiwan, South Korea

Prominent Asian players joined the bandwagon of this futuristic technology. Traditional convenience store brands such as 7-Eleven Stores, FamilyMart, Lawson, Ministop and Newdays have planned to introduce RFID technologies and auto-payment systems so that all their stores can become unmanned before 2025 (Commercial Times, 2019, May 9). The mayor of Taipei, Ko Wen Je, has also announced that the Taipei City Government would try to promote non-cash transactions by establishing unmanned stores in 236 primary and secondary school campuses to help students familiarise themselves with this new shopping experience (Lin, 2019, April 23). All these aggressive initiatives aim at capitalising the market potential of unmanned stores in the Asian market.

Preliminary evidence also shows that Hong Kong may have a perfect environment to implement the unmanned store concept. In saying that, Hong Kong has the second-highest density of 7-Eleven stores in the world, and 7-Eleven is currently operating more than 900 stores in Hong Kong and Macau (7-Eleven, n.d.). Also, customers can do cashless shopping whenever they process an Octopus Card (Li et al., 2017, July 27). Nevertheless, the unmanned store concept is still at an experimental stage in Hong Kong. An unmanned store, "T-Shop and Lab," has been established at the Hong Kong Science Park since August 2019 to provide a living laboratory to test and collect the "the unmanned shopping experience" for its deployment in a real-world environment (Sharon, 2019, August 27). The operator of the store claims that an unmanned store has many advantages including reduction of overhead, production of more dynamic pricing strategies with high accuracy, and generation of a better retail brand image.

The authors of this article, however, argue that there are other factors that may hinder the development of this unmanned concept in Hong Kong. This article aims to show factors that influence the adoption of this technology in the Hong Kong market besides the technology itself. In fact, the hindrance of technological adoption may be due to the unique cost structure in the Hong Kong retail market, customer demographics, customers' confidence, customer relationship for unmanned stores to be prevalent in Hong Kong.

COST

Since Hong Kong retailers do not have any experience establishing an unmanned store, they normally rely on the data generated from other countries for reference when considering whether they should adopt this mode of operation in the city or not.

Hong Kong is unique in terms of its population and cost structure. Indeed, Hong Kong is a tiny city with a small land size of only four-hundred-square-mile but it is the home for around 7.5 million people. The population density alone easily puts Hong Kong at the top of the busiest cities in the world. In addition, Hong Kong is the hub of Asia with an average of 56 million overseas travellers flowing into the city every year. The massive population traffic in the city provides another favourable environment for the unmanned store operation (Census and Statistics Department, HKSAR, 2021).

Indeed, the massive population traffic in the city also comes with a very high rental cost structure. According to a survey report carried out by Okayasu, the average annual rental cost per square foot in one of the prime areas in Hong Kong, i.e., Tsim Sha Tsui, was US$1,607 which made it the most expensive retail area in the world in 2020 (Okayasu, 2021, April 22). In fact, the rental cost has become a major burden for Hong Kong retailers (Okayasu, 2021, April 22). By contrast, the minimum wage in Hong Kong is surprisingly low when compared to that of other countries. For instance, the official minimum wage per hour in Hong Kong is HK$37.5 or a little bit less than US$5. According to the statistics provided by the official website of New York State, the minimum wage per hour in New York State is US$15.00, which is double that of Hong Kong (https://www.ny.gov/new-york-states-minimum-wage/new-york-states-minimum-wage). As a result, a Hong Kong retailer has a much higher incentive to reduce rental costs but a much lower motivation to save human resource-related costs when compared to its US counterpart.

Moreover, the configuration of an unmanned store heavily depends on a system of technologies. Hong Kong retailers may not be willing to invest in the unmanned system because it is costly. For instance, Rakina, one of the technology providers of Alibaba's unmanned stores, revealed that the cost of a 15 square-meter unmanned store is around ¥150,000 in

article01_layout.pdf 3 20/10/2022 12:54 PM

China (equivalent to HKD$167,000) (Shi et al., 2018, April 28). Dr Leung Wai Fung, the Vice-Chairperson of the Hong Kong Retail Technology Industry Association, also suggested that the high initial investment cost of a technology relative to the financial return may hinder the development of unmanned stores in Hong Kong (Leung, 2018, September 9).

Readers of this article may argue that the experimental unmanned store at the Hong Kong Science Park (HKSP) may provide the necessary operational data for Hong Kong retailers to consider its feasibility in Hong Kong. However, HKSP is owned by the Hong Kong Government and the offices there are rented out at one-third of the market rate to motivate high-tech companies to establish businesses in Hong Kong (Legislative Council, 2010). The retail environmental context within the park is totally different from that outside the park. The experimental unmanned store there may be able to demonstrate the operation of unmanned facilities rather than providing operation data for the Hong Kong retailers to judge the possibility of establishing an unmanned store in the real Hong Kong retail context.

An initial analysis shows that Hong Kong retailers are more eager to consider the costs relating to the rental and investment returns in unmanned technologies. Some other resistant factors are at work as well that will be discussed below.

DEMOGRAPHICS

In terms of demographics, operating an unmanned store may be unfit because not all Hong Kong customers know how to use mobile payments and possess a smartphone. In saying so, an unmanned store can only accept non-cash payments. Customers need to download an application onto their smartphones to complete their e-payment at the checkout, which may not be user-friendly and may even be seen to be discriminating against the elderly and children who do not have much e-payment knowledge. Statistics of the Hong Kong Government in 2021 shows that among five elderly people, only three have a smartphone (Census and Statistics Department, HKSAR, 2021). Of those who have a smartphone, it is not clear if they know how to facilitate e-payments. Research conducted by Influence Central (2016) reveals that children do not have their own smartphones until they are 10 years old ("Kids tech", n.d.). Also, some e-wallet applications have set an age limit for registration. Take Octopus Wallet (O! ePay) as an example: Only people over 12 years old can open an account for any online payment (https://www.octopus.com.hk/en/consumer/customer-service/faq/wallet/apply.html). Therefore, the unmanned configuration of an unmanned store may not be suitable to those who do not have a smartphone, which deters them from shopping there.

CUSTOMERS' CONFIDENCE

The unmanned system in an Amazon Go store recognises the face, checks the identity, records the spending pattern, payment history of every customer, and even how long and how many times each customer stays in a store or stands in front of a shelf. After coming out of an unmanned store, customers' personal data will be released to the system at the same time. Hong Kong customers may feel very uncomfortable about possible personal information leakage when shopping under the monitoring of many cameras. Their concerns about privacy may generate resistance for them to enter an unmanned store.

RELATIONSHIP WITH CUSTOMERS

Some may think that unmanned stores are welcome in Hong Kong because it promotes efficiency. However, Hong Kong, as a shopping paradise, places a great emphasis on hospitality. For example, the Hong Kong Association for Customer Service Excellence was established in 2000 which aimed at fostering customer service excellence in Hong Kong (http://www.hkace.com.hk/about-mission.php). Members of this association include different government departments and market leaders in different industries. The operation mode of an unmanned store goes against this hospitality initiative because there is no personal selling strategies in the whole purchasing process of the customers, and the mentioned strategies include personal presentations by the sales force for the purpose of attracting customers and building customer relationship. Because the operation of an unmanned store is totally automatic, customers can only see machines rather than staff inside the store. If customers have product inquiries, no one can give them instant advice. As a result, customers may turn to traditional stores to obtain personal service and help. Worse still, it is hard for an unmanned store to maintain customer loyalty because there is no communication between the store and customers.

CONCLUSION

The unmanned store operation mode is attractive to retail operators because of its cost-saving features related to human resources. It may be profitable to retail operators in countries where human-related costs like wages are high. Nevertheless, the concept may present challenges to retail operators in Hong Kong's unique environment. The challenges are related to Hong Kong's unique cost structure, demographic, consumer confidence, and the emphasis attached to customer relationship management by Hong Kong retailers. Unmanned stores also need to compete with traditional retail stores and online sellers. It is paramount for unmanned stores to differentiate themselves from their competitors.

article01_layout.pdf 4 20/10/2022 12:54 PM

Potential store operators in Hong Kong should not be purely motivated by the futuristic feature of unmanned technologies. Instead, they should turn to the basics of studying the cost and benefit related to the unmanned establishment, the investment return of the technology, the concern of customers' privacy and the issue of relationship with customers.

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article02_layout.pdf 1 20/10/2022 12:53 PM



02 | BACKGROUND TO THE ENACTMENT OF THE NEW ECONOMIC SUBSTANCE LAWS

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Economic Substance Laws and Their Possible Impact on Businesses

Businesses and individuals set up offshore companies in tax havens for the purpose of tax avoidance. It was estimated that American Fortune 500 companies alone held approximately $2.6 trillion offshore in 2017 while individuals were also estimated to have stashed away trillions in tax havens (Shaxson, 2019, September).

Apart from tax liability, tax havens give rise to other issues, namely, these tax havens enable their main users, that is, elites and multinationals or large financial institutions to escape from their duty of disclosure, financial regulations, criminal liability arising from illicit activities etc., give them thereby an

article02_layout.pdf 2 20/10/2022 12:53 PM

unfair advantage over the less powerful majority and small and medium enterprises (Shaxson, 2019, September).

While tax havens defend themselves by arguing that they are "tax neutral" and their role is to facilitate the smooth flow of international finance and investment, which obviously brings benefit to the relevant players in the private sector, the free flow of capital across countries does give rise to risks such as financial instability in emerging economies (Shaxson, 2019, September).

However, setting up and using offshore entities solely for the purpose of tax avoidance has become a growing concern of global bodies (Tricor Group, 2021, April 19).

Against this backdrop and in order to address this issue, the European Union (EU) Code of Conduct Group evaluated the tax policies of jurisdictions with no or only nominal tax (NOONs), also known as tax havens, against the criterion of 'economic substance' in December 2017 (Deloitte, 2019). This criterion, the EU's 'fair taxation principle', states that "a jurisdiction should not facilitate offshore structures or arrangements aimed at attracting profits which do not reflect real economic activity in the jurisdiction" (KPMG, 2019, February 1, p.1).

As early as in July 2013, the Organisation for Economic Co-operation and Development (OECD) published an Action Plan on Base Erosion and Profit Shifting (BEPS) (Deloitte, n.d.). BEPS is tax-planning strategies designed and employed to avoid or limit any tax liability (Tricor Group, 2021, April 19). This sets out 15 BEPS actions and the aim of Action 5 is to identify and combat harmful tax practices, taking into consideration transparency and substance (Deloitte, n.d.).

In November 2018, the OECD Forum on Harmful Tax Practices (FHTP) of the OECD introduced its economic substance criterion which requires jurisdictions that operate a 'no or only nominal' business tax regime to impose a substance requirement on business entities based there, namely, that an entity in these countries needs to prove that it employs staff and incurs expenditures adequate for its core income-generating activities (Step, 2020, November 23). The aim of this requirement is that companies must prove that they carry out genuine business activities in the relevant jurisdiction rather than being there only for tax reasons (Step, 2020, November 23).

In January 2019, a number of offshore jurisdictions, including the British Virgin Islands (BVI), Cayman Islands, Bermuda, Guernsey, Jersey and Isle of Man, enacted new economic substance laws (KPMG, 2019, February 1) in response to the OECD's efforts in enhancing global tax transparency under Action 5 of the BEPS initiatives (Yeung & Tee, 2019, September 13).

The United Arab Emirates (UAE) also enacted Economic Substance Rules in April 2019 which similarly require certain legal entities set up in the UAE to demonstrate that they perform substantial economic activities in the UAE (Pinsent Masons, 2019, October 29). The definition of an entity which falls within the scope of the relevant economic substance guidelines is rather broad and includes any entity which has a UAE trade license and carries out a 'relevant activity' (Hammond, n.d.).

The aim of the economic substance laws is to ensure that if profits are earned by an offshore company, then those profits have to be aligned to where the business or profit-generating activities are being performed (Yeung & Tee, 2019, September 13).

The economic substance laws require local entities (relevant entities) which carry on specified activities in these countries (relevant activities) under the economic substance laws to reform their economic substance requirements so as to bring them into line with the EU's 'fair taxation' principle in order to avoid being included in the EU's list of non-cooperative jurisdictions (EU Blacklist) (KPMG, 2019, February 1).

WHAT IS A RELEVANT ACTIVITY?

Notwithstanding the fact that each jurisdiction concerned has drafted and enacted their own economic substance legislation independently, the substance requirements are very similar across each of these offshore jurisdictions because they are based on the guidance and requirements issued by the EU and the OECD (Deloitte, 2019). These requirements came into effect from 1 January 2019, with a six-month grace period given to existing entities to meet the requirements (KPMG, 2019).

Both local and foreign registered companies and limited partnerships which are engaged in 'relevant activities' in a relevant offshore jurisdiction and are not tax resident in another country are required to comply with the economic substance requirements for such activities there (KPMG, 2019, February 1).

The relevant activities referred to in the economic substance laws of this legislation cover the following nine businesses (KPMG, 2019, February 1):

i. Banking business;
ii. Distribution and service centre business;
iii. Finance and leasing business;
iv. Fund management business;
v. Headquarters business;
vi. Holding company business;
vii. Insurance business;
viii. Intellectual property holding business; and
ix. Shipping business.

In order to establish and maintain economic substance in respect of a relevant activity, an entity needs to fulfil the following requirements:

i The entity must be managed and directed in the offshore jurisdiction.
   a. "Manage and direct" means, for instance, having board meetings properly conducted with adequate frequency, physical presence of directors with the requisite quorum, directors equipped with the skills and expert knowledge necessary for discharging their duties, keeping of proper minutes etc (Deloitte, 2019).

ii. Core income generating activities (CIGAs) must be shown to be undertaken and carried out in the offshore jurisdiction in respect of the relevant activity, with the level of income derived from such an activity taken into account (Deloitte, 2019). Although outsourcing of CIGAs to corporate service providers is possible, they may be reluctant to perform key CIGAs functions owing to concerns about liability (Deloitte, 2019).

iii. The entity maintains adequate physical presence

article02_layout.pdf 3 20/10/2022 12:53 PM

in the relevant offshore country, which means having office space and facilities, equipment, etc. (Deloitte, 2019).

iv. The entity employs adequate properly qualified full time employees in the offshore jurisdiction with suitable qualifications (Deloitte, 2019).

v. Adequate operating expenditure is incurred in the offshore jurisdiction in respect of the relevant activity (Deloitte, 2019).

Whether a particular entity is considered to have satisfied the adequacy test in relation to physical presence, staffing and expenditure depends on its size, the kind of relevant activity carried out by it and the circumstances under which it operates, etc.

However, holding companies of offshore jurisdictions subject to the general economic substance requirements mentioned above are only required to meet reduced economic substance requirements while intellectual property companies, on the contrary, have to fulfil more onerous economic substance requirements (The Law Society of Hong Kong, 2019).

Entities engaged in a relevant activity have to discharge reporting obligations relating to their compliance with economic substance requirements to local tax authorities. A relevant entity's failure to provide the required information and breach of economic substance requirements in relation to its operation can result in penalties such as fines, imprisonment and/or strike-off (KPMG, 2019, February 1).

POSSIBLE IMPACT OF THE ENACTMENT OF THE ECONOMIC SUBSTANCE LAWS ON BUSINESSES IN HONG KONG

Business relating to intellectual property

Intellectual property can easily be used as a vehicle to shift profits from a high tax jurisdiction to a low tax jurisdiction, thus giving rise to the issue of tax avoidance. For example, by applying transfer pricing, a firm's affiliate may hold a patent in a tax haven and charge excessively high royalties to affiliates in a high-tax jurisdiction and thereby maximize profits in the low-tax jurisdiction (Shaxson, 2019, September).

As regards intellectual property, the BVI and UAE are jurisdictions which have rather detailed economic substance rules.

According to the Economic Substance (Companies and Limited Partnerships) Act, 2018 (the "Economic Substance Act") of the BVI, 'intellectual property business' is defined as 'the business of holding intellectual property assets' which means "any intellectual property right in intangible assets, including but not limited to copyright, patents, trademarks, brand, and technical know-how, from which identifiable income accrues to the business (such income being separately identifiable from any income generated from any tangible asset in which the right subsists)" (Economic Substance Solutions, 2020, March 10). Under the Economic Substance Act, income in relation to an intellectual property asset includes:

i. royalties;

ii. capital gains and other income from the sale of an intellectual property asset;

iii. income from a franchise agreement; and

iv. income from licensing the intangible asset.

Any BVI 'legal entity' which is only engaged in a 'relevant activity' and which is an 'IP business' will be subject to the economic substance test set out in the Economic Substance Act and the requirements of the economic substance test to be satisfied in respect of that 'IP business' are similar to those already discussed above, namely:

a) the 'IP business' is directed and managed in the BVI;

b) the entity employs an adequate number of staff with suitable qualifications, incurs adequate expenditure and has physical offices and premises appropriate for conducting core income generating business in BVI, taking into account the scale and nature of the 'IP business' in question (Economic Substance Solutions, 2020, March 10).

According to the draft International Tax Authority Economic Substance Code issued on April 22, 2019 (the "Guidance") which was related to the Economic Substance Act, the definition and requirements for compliance with economic substance do not apply to a business which owns intellectual property only as a supplementary part of its business (Economic Substance Solutions, 2020, March 10). For instance, if a manufacturer owns a patented formula for producing a drug, it is the production of the drug, not the ownership of the patented formula, which directly generates income for the manufacturer.

Further, the Economic Substance Act also defines specifically what is a 'high risk IP legal entity'. Under the Economic Substance Act, it is presumed that a legal entity does not conduct core income generating activity if the legal entity is a high risk IP legal entity (Economic Substance Solutions, 2020, March 10). A high risk IP legal entity is defined as a legal entity which is engaged in an intellectual property business and which

i. has acquired the relevant intellectual property asset either from an affiliate; or

ii. in return for funding research and development done by another person in a country or territory other than the British Virgin Islands; and

iii. licenses the asset in question to one or more affiliates or generates income from such an asset as a result of activities undertaken by foreign affiliates (Economic Substance Solutions, 2020, March 10).

The economic substance requirements regulating intellectual property business of the UAE are similar to those of BVI. For instance, the Economic Substance Rules do not apply to an UAE entity if it simply owns and holds IP assets such as trademarks, patents, copyrights for protection of their own branded goods and products without exploiting them to derive a

article02_layout.pdf 4 20/10/2022 12:53 PM

separate income from them (Hammond, n.d.). If, however, an entity makes use of their Intellectual Property assets to obtain a separate income, for example, by entering into a licensing or franchise agreement to receive royalties, the entity will be regarded as conducting the relevant activity of intellectual property business and has to demonstrate its compliance with the economic substance requirements (Hammond, n.d.).

Moreover, the concept of 'High Risk Intellectual Property Licensee' under UAE is also similar to that of the 'high risk IP legal entity' under BVI economic substance laws. If the income generated by a 'high risk IP legal entity' is not derived from a genuine economic activity, it poses the risk of "artificial profit shifting" (Pinsent Masons, 2019, October 29). An example of profit shifting has already been mentioned above, namely, an entity holds an intellectual property asset in a tax haven and charges a related entity in a high tax jurisdiction excessively high royalties so that profits shift from a high tax to a low tax jurisdiction.

Some business owners who have set up a company in a tax haven to hold intellectual property assets there have expressed concern about the effects of the enactment of economic substance laws in that jurisdiction and it is advisable for them to seek professional consultation to ascertain if their intellectual property business in that jurisdiction needs to fulfil the economic substance laws there.

Listed companies in Hong Kong

Role of off-shore companies in listing on the Hong Kong Stock Exchange

Some off-shore jurisdictions such as Cayman, Bermuda and British Virgin Islands are the most popular vehicles for a Hong Kong listing (Lee, 2015, May 2015). Listed entities in Hong Kong usually have offshore companies in their corporate structures mainly for reasons such as simple and easy registration process the flexible environment in which they operate and above all, tax exemptions (Tricor Group, 2021, April 19).

As at December 31, 2019, 57 per cent of the 2,449 companies listed on the Hong Kong Stock Exchange were Cayman companies and BVI Companies, with the majority being Cayman companies and some being BVI companies set up as intermediary holding companies in listed groups (Harneys, 2020, October 21).

In Hong Kong, many issuers are incorporated solely for the purpose of raising debt or equity capital on the relevant market and hold shares in one or more of their subsidiaries (Harneys, 2020, October 21). If an issuer finances its subsidiaries by way of equity or capital contributions, only holds equity participations in these entities and earns dividends and capital gains, such an issuer may well be regarded as a pure equity holding company and qualifies for a reduced economic substance requirement (Harneys, 2020, October 21). As long as an issuer does not hold assets other than equity participations, it only needs to fulfil reduced economic substance requirements (Harneys, 2020, October 21).

Economic substance requirements of Cayman Islands and BVI in respect of a pure equity holding company

As many of the listed companies in Hong Kong are Cayman companies and BVI companies, it is worthwhile to discuss how the economic substance requirements of Cayman Islands and BVI can be fulfilled.

Based on the Cayman Islands Guidance, a pure equity holding company can fulfil economic substance requirements by complying with all applicable filing requirements under the Company Law and having adequate premises in the Cayman Islands and employing adequate staff for holding and managing equity participation in other entities there (Harneys, 2021, September 6).

As regards a pure equity holding entity incorporated in BVI, the entity in question is not required to be directed or managed there and the entity does not need to carry out any CIGA, or to outlay a certain level of expenditure in BVI, as a holding business has no CIGA (Yeung & Tee, 2019, September 13)

A pure equity holding company in both Cayman Islands and BVI substance requirements is permitted to outsource its BVI substance requirements to local service providers (Yeung & Tee, 2019, September 13).

In practice, and depending on the particular circumstances of the entity concerned, it may be sufficient for a pure equity holding company to outsource its company's secretarial and entity maintenance to local service providers (Yeung & Tee, 2019, September 13). Therefore it seems that it is not difficult for a pure equity holding company to comply with the reduced substance requirements from an administrative perspective (Yeung & Tee, 2019, September 13).

In Hong Kong, many issuers which are BVI or Cayman companies are in practice either not engaged in any relevant activity or they qualify for a reduced economic substance requirement as pure equity holding companies and hence the economic substance laws do not have a marked impact on them.

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03 THE IMPACTS OF THE TRADE WAR BETWEEN CHINA AND THE UNITED STATES: A PERSPECTIVE FROM THE COMPUTABLE GENERAL EQUILIBRIUM MODEL

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INTRODUCTION

The Global Financial Crisis in 2008 not only struck a heavy blow to the economy of the United States but also many countries in the world. Since then, the global economic landscape has changed dramatically, and China has emerged to be the world's second largest economic superpower after overtaking Japan in 2010. China has experienced tremendous economic prosperity in the last four decades. Although the economic growth rate of China dropped to 6.1% in 2019, which was the lowest in almost three decades, it was still much higher than those in many developed or developing countries.

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One important driver of the extraordinary economic growth in China is the rapid expansion of the manufacturing sector since the initiation of the Economic Reform in 1978. China joined the World Trade Organisation (WTO) on December 11, 2001, and has since become the "Factory of the World" by exporting all sorts of merchandise goods to every part of the world. From the shelves of Walmart in New York, to those of Harrods in London, and to those of Milnerton Flea Market in Cape Town, many shops are swarmed with goods made in China. One can always find products from China even in the most remote area of the world.

In fact, the incredible success of China's export story can be attributed to the development of globalisation in the last century. However, it is interesting to note that the definition of globalisation varies greatly amongst scholars, and this paper uses this term to refer to economic globalisation which focuses mainly on the increase in international movement of goods, capital, services, technology and information.

The process of globalisation has accelerated in the last few decades with more and more countries opening up for international investment and trade. Many U.S. multinational corporations (MNCs) have reaped the benefits of globalisation by moving their production facilities overseas. Given that the wages of production workers in many developing countries are much lower than those in the U.S., the production costs have been reduced greatly by setting up factories in these countries. These MNCs can thus expand their production and increase their market share by taking advantage of the low wage level, thereby boosting revenue.

Many Asian countries have also benefitted in this process, for example, the four Asian Tigers, namely, Hong Kong, Taiwan, South Korea, and Singapore. All of them had rapid economic growth from the 1960's to 1990's. However, the focus then moved to China, and a lot of the MNCs have invested in China in the form of foreign direct investment (FDI) after the economic reform and opening up in 1978. It is notable that the effects of FDI on China are more dramatic than the four Asian Tigers because of China's enormous economic size and the effects of agglomeration economies.

The revenue made by these MNCs provides a solid support to the economy in the U.S. Another advantage of globalisation is that the manufacturing products made in the developing countries are much cheaper than those produced in the U.S. Therefore, the imports of these manufacturing goods can also ameliorate inflation and benefit the consumers to a large extent.

The business sectors and consumers in the U.S. are definitely winners in the process of globalisation. However, it is worth noting that one can always find winners and losers for every economic policy. The supporters of economic globalisation claim that people can benefit from the more efficient allocation of production factors after opening up for globalisation. However, the truth is that it does not guarantee a fair distribution of wealth after the implementation of these policies. In fact, many manufacturing workers in the U.S. have become losers as they just lose their jobs in the process of relocation of production facilities by the MNCs.

Imported manufacturing goods from Japan, South Korea, China, and many other developing countries have caused the decline in the number of jobs offered by the manufacturing sectors in the U.S. Actually, many workers in the "Rust Belt", namely, the Northeastern and Midwestern parts of the U.S. have become unemployed in this process. These workers are the victims of the globalisation policies adopted by the U.S. government. Given that the industrial sector has played an important role in the economic structure for many states in the Rust Belt, the decline in industrial activities has led to economic upheaval in these regions. One gleaming example is the city of Detroit which filed for Chapter 9 bankruptcy on July 18, 2013. Many people have fled to other cities and the population of Detroit dropped 29.3% from 2000 to 2018.

The resentment among the populace has affected the politics in the U.S. government. Given that China is the largest exporter of manufacturing products, therefore, the U.S. government has taken steps to reduce reliance on Chinese products by imposing new tariffs. The rationale behind these measures is to reduce imports from overseas and promote investment in the manufacturing sectors in the U.S., thereby increasing the income of U.S. workers and "making America great again". However, unfortunately, this will surely lead to an intensification of the trade war between China and the U.S. in the future.

This research study aims to examine the impacts of an intensification of trade war on the economy of the U.S. and run a policy simulation for that scenario. Given that Hong Kong relies heavily on entrepot trade and always acts as the doorway and the stepping stone for trading with China, it is of interest to examine the impacts on Hong Kong as well, so that illuminating insight can be derived.

COMPUTABLE GENERAL EQUILIBRIUM MODEL

The economic model employed in this paper is a Computable General Equilibrium (CGE) model which is mainly used for policy analysis. The CGE model is deemed to be the most useful tool in analysing the impacts of changes in government policies, consumers' preferences, and any socioeconomic shocks on the economy. It includes all the major sectors within an economy and one can evaluate the impacts on the gross domestic product (GDP) of a region, and also the employment level, price level, demand and supply in all sectors. Pragmatic policy suggestions can then be derived accordingly. The CGE model is often employed by government agencies in evaluating the impacts of policies, and it is also frequently employed by many think tanks and research centres in examining different kinds of socioeconomic shocks. Moreover, corporations and trade associations can also use it to prepare forecasts on the demand, supply, and prices of different commodities so that they can make a better planning for investment and production. However, the CGE model is often very complicated and some models can have millions of equations.

In order to promote the use of this important tool in conducting economic analysis, the Department of

article03_layout.pdf 3 20/10/2022 12:52 PM

Economics and Finance of the Hang Seng University of Hong Kong has incorporated the training of CGE modeling into the new Bachelor of Business Administration (Economics) Programme. It is a core module for students to gain hands-on experience in CGE modeling, thereby giving them an edge in employment.

In this paper, we will use a global CGE model, namely, the Global Trade Analysis Project (GTAP) model which is coordinated by the Center for Global Trade Analysis at Purdue University. The model has 121 countries and 20 aggregated regions, and it includes 98% of world GDP and 92% of world population. There are a total of 65 sectors in the model, therefore, all the major sectors in an economy of all the countries and regions are covered. For the latest version, the model also offers eight production factors for conducting analysis. For the sake of brevity, the details of the GTAP model cannot be included in this paper though interested readers are encouraged to look for details by visiting the GTAP website hosted by Purdue University.

SCENARIO DETAILS

The U.S. has a large trade deficit with China. The total value of bilateral trade between the U.S. and China was US$559 billion, compared with US$346 billion in 2019. It is worth noting that, except tariff, the government has many other ways to restrict trade with other countries. There are some other measures which are called non-tariff barriers that the government can employ in restricting trade, including quotas, embargoes, sanctions, and levies. Given the increase in tension between China and the U.S., the imposition of these non-tariff barriers would not be surprising. Therefore, the policy simulation will not be based on tariffs, but the total exporting volume from China to the U.S. This is a more direct way to simulate the situation as it can reflect not only the impacts of tariff, but also all the non-tariff barriers.

In order to present the findings in a concise way, the countries are aggregated into 10 regions, namely, the U.S., China, Hong Kong, Japan and Korea, North America, Southeast Asia, Oceania, Latin America, the European Union (EU), and the Rest of World. The industrial sectors are aggregated into eight sectors, namely, Agriculture and Food, Extraction, Heavy Manufacturing Products, Light Manufacturing Products, Transportation and Trade, Business and Finance, Other Services, and Utility. Similarly, for the sake of presentation, the endowments are combined into five groups, namely, Land, Capital, Natural Resources, Skilled Labour, and Low-skilled Labour.

Two policy simulations are run, the first one is that the U.S. would reduce the imports of light manufacturing goods and heavy manufacturing goods by 10%. The second one is the reduction of the two kinds of goods by 25%. The standard closure is used for the exercise with a swapping of the endogenous variables of the quantity of exports from China to the U.S. for both the Heavy Manufacturing Products and Light Manufacturing Products with the exogenous variables of the supply of the Skilled Labour and Low-skilled Labour in the U.S. The shocks that will be applied are the 10% and 25% reduction of the two kinds of imports from China to the U.S.

FINDINGS

The aim of this study is to examine the impacts on the U.S. economy with a reduction of imports of heavy manufacturing products and light manufacturing products from China. The impacts on the real GDP of the U.S. and other regions are presented in Table 1. It can be observed that the real GDP of most of the regions would increase, while the U.S. would suffer a loss of 3% in real GDP for a reduction of 10% in trade, and the drop would increase to 8% for a reduction of 25% in trade.

It is noteworthy that since Hong Kong relies heavily on entrepot trade with many countries in the world, Hong Kong would also suffer a loss in real GDP because of a reduction in trade between China and the U.S. (though the loss of Hong Kong would be negligible as compared to that of the U.S.). One reason behind this observation is that Hong Kong has always benefitted greatly from the close relationship with China, and since China not only can recover from the loss in trade with the U.S., but is also capable of achieving a positive economic growth, therefore, the adverse impacts on Hong Kong would be ameliorated considerably.

Table 1. The Impacts on Real GDP for Different Regions for 10% and 20% Reduction of Exports of Manufacturing Goods from China to the U.S.

Real GDP Change (%)	10%	25%
U.S.	-3.2176	-8.0272
Hong Kong SAR	-0.0015	-0.0041
China	0.0678	0.1900
North America	0.0788	0.2051
Japan and Korea	0.0971	0.2540
Southeast Asia	0.0200	0.0512
Oceania	0.1004	0.2566
Latin America	0.1002	0.2551
European Union	0.1671	0.4182
Rest of World	0.0380	0.0951

article03_layout.pdf 4 20/10/2022 12:52 PM

The impacts on the output of the sectors in the U.S. economy are presented in Table 2. It shows that all the sectors would suffer a reduction in production quantity. The Capital Goods sector suffers the most and the output would drop by 13% for a 10% reduction in trade, and it would decline for 38% for a 25% reduction in trade. It is worth mentioning that the Capital Goods sector represents investment in a country. Therefore, the results suggest that investment in the U.S. would drop a lot. The Business and Finance sector would also drop considerably and the decline would be 5% and 12% respectively. Another interesting finding is that the two manufacturing sectors, namely, the Light Manufacturing Products sector and the Heavy Manufacturing Products sector, would both suffer a loss in output despite a reduction in the imports of these goods.

Table 2. The Impacts on Real Outputs for Different Sectors in the U.S. for 10% and 20% Reduction of Exports of Manufacturing Goods from China to the U.S.

Real Output Change (%)	10%	25%
Agriculture and Food	-1.79	-4.95
Extraction	-1.17	-3.86
Light Manufacturing Products	-1.52	-4.57
Heavy Manufacturing Products	-1.46	-4.40
Transportation and Trade	-2.13	-5.73
Business and Finance	-4.92	-11.63
Other Services	-3.56	-8.60
Utility	-1.04	-3.05
Capital Goods	-13.49	-37.85

The price level in the U.S. can be observed from Table 3. It shows that, except the Business and Finance sector, all other sectors would register a decline in price. This is an important finding as the decline in the price level and the drop in output (from Table 2 above) in almost all the sectors are the characteristics of a recession. Another concern is the decline of the wage level of the two kinds of labour. The low-skilled workers would suffer a reduction of 10% in wage for a 10% reduction in trade, and 22% reduction in wage for a 25% reduction in trade.

Table 3. The Impacts on Price Level for Factors and Products in the U.S. for 10% and 20% Reduction of Exports of Manufacturing Goods from China to the U.S.

Real Level Change (%)	10%	25%
Land	-4.048	-9.356
Low-skilled Labour	-9.897	-22.050
Skilled Labour	-0.211	-3.061
Capital	-8.940	-22.134
Natural Resources	-6.324	-19.024
Agriculture and Food	-2.424	-5.507
Extraction	-1.612	-3.999
Light Manufacturing Products	-3.696	-9.149
Heavy Manufacturing Products	-2.735	-7.067
Transportation and Trade	-6.555	-15.592
Business and Finance	1.032	0.985
Other Services	-6.695	-17.500
Utility	-8.428	-19.133
Capital Goods	-4.901	-12.660

The impacts on the welfare (measured at 2014 price) of the U.S. and the world are presented in Table 4. The findings suggest that the U.S. would suffer a loss of US$615 trillion and US$1.528 quadrillion for a 10% and 25% reduction in trade respectively. It is interesting to note that the welfare in China would also drop, but Hong Kong would register an increase in welfare along with all the other regions. However, global welfare (which is the sum of all the changes in all regions) would drop due to the huge decline in the U.S.

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Table 4. The Impacts on Welfare for Different Regions for 10% and 20% Reduction of Exports of Manufacturing Goods from China to the U.S.

Welfare Change (US$ million, at 2014 price)	10%	25%
U.S.	-615190	-1528127
Hong Kong SAR	3367.875	8286.021
China	-4917.08	-22657.4
North America	8253.803	22359.56
Japan and Korea	11315.49	32368.23
Southeast Asia	2446.551	5214.984
Oceania	4477.317	10974.78
Latin America	17206.89	44476.21
European Union	58727.98	149717.7
Rest of World	13528.77	27740.01
Total	-500783	-1249647

For evaluating the employment situation after the implementation of related policies, the changes in the demand of the two kinds of labour are presented in Table 5. It shows that there would be an increase in the demand of low-skilled labour. In contrast, the demand for skilled labour would drop a lot in the process. This is an alarming finding as skilled labour always enjoy a higher level of wage than low-skilled labour. The substantial drop in the demand for skilled labour may lead to a disruption in the job market and the economy.

Table 5. The Impacts on the Demand of Labour in the U.S. for 10% and 20% Reduction of Exports of Manufacturing Goods from China to the U.S.

Demand Change (%)	10%	25%
Low-skilled Labour	2.88	4.16
Skilled Labour	-9.42	-20.61

DISCUSSIONS AND CONCLUSIONS

It is of interest to note that the findings are very different from those proposed earlier in the Introduction section. It is worth mentioning that the intended outcomes are to reduce the reliance on imports from China so that more factories would move back to the U.S., thereby increasing investment and the income levels of low-skilled workers. However, the findings suggest otherwise, that the real GDP of the U.S. would drop sharply, and the output of all the sectors would also decline considerably. In fact, the capital goods sector would suffer the most, representing a huge decline in investment. The price level would also drop and the welfare of the U.S. would suffer a huge loss.

The missing link between the intended outcomes and the findings can be explained by the misallocation of resources, the decline in wage for both types of labour, the drop in the demand for skilled labour, and the deterioration of household income. It is worth noting that the reason why the U.S. importers would like to purchase from Chinese suppliers is simply because of the quality and the price of products. Maintaining a similar level of quality in manufacturing goods in the U.S. can be accomplished easily. However, given that the wage levels of all the sectors in the U.S. are much higher than those in China, if producers would like to move back to the U.S. and start production there, in order to remain competitive, they could only offer a wage level which is much lower than the existing one in the U.S. This would lead to a fall in the overall wage level across the U.S. As a result, forcing the factories to move back to the U.S. and increasing the production there would lead to a misallocation of resources. For that reason, one can observe that there would be a large decline in the wage level of the low-skilled labour. As a result, there would be an increase in the demand for low-skilled labour as well, but that increase would be very small.

Some people suggest that the U.S. can restructure the supply chain and invest in other countries to reduce reliance on imports from China. However, this is easier said than done. For relocation of a production facility, one has to take a lot of factors in consideration, which includes the wage levels, the infrastructure, the ease of transportation, the availability of upstream suppliers of parts and intermediate goods, the ease of compliance with local laws and regulations, cultural differences, the education level and the availability of the factory workers, and the availability of other professionals, for example, engineers, accountants, IT professionals, and managers. Therefore, relocation of production facilities is not an easy task and it may take years or even a decade to return to former production capacities.

Given that the imports of China's goods would be reduced, consumers in the U.S. would need to purchase from other sources. Therefore, the import prices would be much higher than those before. Moreover, it is worth mentioning that some of the manufacturing goods will be used as intermediate goods in the production processes. Therefore, the producers in the U.S. would also need to purchase parts and intermediate goods for a much higher price, thereby lowering profits. All of these would

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reduce the welfare and income of households in the U.S.

The decline of wages for workers and the fall in profits for producers implies that people would be poorer than before. Consumers would then reduce their consumption because they could not afford it. Therefore, there would be a sharp decline in the price levels of different goods in almost all the sectors in the U.S. The reduction in household income would also reduce saving and therefore, investment would drop by a large extent as well.

Moreover, producers would also reduce their volume of production because they would need to face two new difficulties: The first one is the decline in demand because consumers are now poorer, and the second one is increase in the production costs which can be attributed to the higher labour costs and higher purchase costs for parts and intermediate goods. The combination of the decline in investment and the reduction in production volume of the producers would in turn reduce employment in other sectors. So one can observe that there would be a huge decline in the demand for skilled labour in other sectors.

Turning to China and Hong Kong, it is worth mentioning that China would also suffer in the trade war as shown in its welfare change. However, the impacts on China are not significant as it can still export to other countries even when the U.S. stops importing its goods. Actually, most of China's exports went to countries other than the U.S. (the ratio of exports to the other countries other than the U.S. to total exports of China was 81% in 2018). Another reason is that, with the emergence of the middle-class in China, domestic consumption plays a much bigger role in the economy than exports (the ratio of final consumption to GDP was 54.3% in 2018) and the share of net exports to GDP has dropped significantly (the ratio of net exports of goods and services to GDP was 0.84%, while the ratio of total exports of goods and services to GDP was 18% in 2018). The huge economic size of China can absorb the loss in exports to the U.S. easily. For Hong Kong, thanks to the close economic ties with China, it is resilient enough to withstand the shocks from the trade war.

It is of interest to note that the actual impacts of a policy are always very different from the intended outcomes. The reason is that many traditional analyses are not comprehensive enough and they do not consider the interactions within an economy fully. It is necessary to consider the impacts on the other sectors and the economy as a whole. The simulation exercise employed in this study not only clears up common misunderstandings but also highlights the advantages and power of CGE modeling for policy analysis.

In summary, the policies of restricting trade with China cannot help the U.S. in reviving the economy. On the contrary, the introduction of these policies would exert adverse impacts on its economy instead. The reduction in the profits made by the producers, the decline in income earned by the households, and the shrinkage in investment made by the investors would lead to widespread unemployment in many sectors. Actually, only a small portion of the low-skilled workers may benefit from these policies, but a lot more workers will face unemployment, especially, for skilled labour. However, even though one can find a job, the wage level would be much lower than that of the previous one.

In fact, it is impossible to promote economic growth by increasing the number of low-skilled production line workers in a developed country. Actually, the proper way in reviving the economy for the U.S. is to allocate resources to train low-skilled workers so that they can be transformed into skilled labour. It is definitely unwise to try to boost the number of low-skilled workers in a developed country and try to compete with the developing countries in low-skilled production activities which the developed countries just do not have any chance to win due to the huge wage differences.

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04 | REBUILDING A MORE SUSTAINABLE FASHION INDUSTRY AFTER COVID-19

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) has brought sweeping disruption to all sectors of the world economy. Without exception, the apparel and textile sector, which heavily relies on the global supply chain network, has been hard hit by the pandemic. Many countries worldwide had instituted either a full or

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partial lockdown during various COVID-19 waves. That had a detrimental effect on the demand for apparel and textiles. In response to this threat, several major international retailers, such as Primark and Forever 21, decided to postpone or cancel orders. In some cases, they even refused to pay for apparel which had already been manufactured. The effects of cancelled and delayed payments are devastating. Thousands of garment factory workers were laid off, with most having to return to their hometowns empty-handed and without hope of immediate employment. Workers in Asian developing countries, with a large portion of their export trades contributed by the apparel and textile sector (Chan et al., 2021; Ho et al., 2020; Lau et al., 2017), suffered a lot.

The COVID-19 outbreak has generated one of the vital disturbances experienced during the past 50 years, "breaking many global supply chains" (Lau et al., 2020, p.127). Against this backdrop, a question that begs to be asked is, "how to rebuild a more sustainable fashion industry after COVID-19?" Despite serious threats COVID-19 has brought to businesses, it presents a great opportunity for businesses to create a real, resilient, and sustainable renaissance. Consumers and producers have started to rethink and cast doubt on the relevance of pre-COVID-19 business models and consumption values. And quest for transformation from eco-efficiency to eco-effectiveness and from cradle-to-grave to cradle-to-cradle approach to improving sustainability in the fashion industry (Ho, 2014). Yet, that requires the involvement of many key stakeholders to co-create value for all (Ho et al., 2020).

For decades, the fashion industry has caused significant environmental damage to the world (Lau & Chan, 2021). Among all industries, the global fashion industry uses the second-largest amount of water in the world, generating 20 per cent of global water waste. The industry also produces 8.1 per cent of global greenhouse gas emissions annually. In a world facing a climate crisis, people need to be more aware of the environmental harm of the global fashion industry and the industry needs to shift to more sustainable methods of production. There is an urgency for large players in the fashion industry to accelerate the change from linear to circular economy and develop a system of closed-loop supply chains (D'Adamo & Lupi, 2021). The COVID-19 crisis has only made it more obvious and brought the gross inequalities that persist in the labour market to the forefront. So now that we can no longer feign ignorance, what is the best way forward? The answer may lie in sustainability. Since the COVID-19 outbreak in December 2019, many industry insiders have started to believe that the pandemic could be a rare opportunity for the industry to reset itself. Businesses and fashion designers have started to think of ways to end the cycle of overconsumption and overproduction while using more sustainable fabrics and production methods.

The purpose of this paper is to examine the knowledge of and attitudes towards sustainable fashion from the perspective of fashion industry practitioners and to uncover the challenges in implementing sustainable design practices after the outbreak of COVID-19. In addition, the paper offers recommendations to increase people's awareness of sustainability and addresses the implications of current government policies toward sustainability, especially the mass market.

This study is divided into five main sections. Section 1 introduces the research background and objectives. Section 2 explains the fashion industry in the COVID-19 context. Section 3 describes the research methodology. Section 4 discusses the key research findings. Section 5 presents the conclusion.

HOW THE COVID-19 PANDEMIC HAS AFFECTED THE ENVIRONMENTAL SUSTAINABILITY PRACTICES IN THE GLOBAL FASHION INDUSTRY

As lockdown continues in Europe, the US, Australasia, and much of Asia following suit, how is isolation affecting the fashion industry's design and manufacturing teams? What problem-solving solutions are being deployed? What will be the impact for the next fashion collections? We have a view on how they may be experienced (virtually, according to part one of this series), and in the latter part of this paper, insights from designers, software solution providers, manufacturers, and supply chain experts on how COVID-19 is affecting product design, development and production, now and in the foreseeable future.

The coronavirus pandemic has sweeping repercussions on all sectors of the economy worldwide. However, the sectors that were extremely hard hit are the ones that come in the category of non-essential spending. Design apparel and footwear fall under this category. In just six months, COVID-19 has pummelled the US$2.5 trillion global fashion industry. With lock-down measures and unemployment on the rise, consumers have lost interest in buying clothes and shoes. McKinsey predicts that the sector will contract by up to 30% in 2021 vs. 2020; the luxury market will be hit even harder, contracting by up to 39%. The majority of the global fashion supply chain have already been hurt, from the garment workers who have been laid off to designers stuck with piles of unsold inventory (D'Adamo & Lupi, 2021).

At the same time, however, many industry insiders believe that the pandemic could be a rare opportunity for the industry to reset itself. Designers are using this moment to start selling products online and connect with customers directly. They are contemplating how to rebuild the supply chain in a more ethical, sustainable way, and to end the cycle of overconsumption and overproduction. The much-needed changes in business practices reflect the commitment to the pursuit of Sustainable Development Goals (SDGs) advanced by the United Nations (UN), specifically on SDG 12 – Responsible Consumption and Production (United Nations, 2022).

Much has been said in the literature about managing the fashion supply chain by a scientific approach, harnessing the power of emerging technologies, encouraging responsible sourcing practices, and decreasing waste generation through reduction, reuse, prevention, and recycling, among others. Yet, there is lacking timely reporting on how practitioners think about these practices and their feasibility and effectiveness in rebuilding the global fashion supply chain after COVID-19.

article04_layout.pdf 3 20/10/2022 12:48 PM

RESEARCH METHODOLOGY

For this paper, we conducted interviews with 10 fashion industry professionals with mass-market backgrounds and asked them 20 open-ended questions. Through a qualitative research approach, researchers can acquire a thorough understanding of the underlying effects of human behaviour and social life in a natural environment. The current study applied qualitative research to improve the comprehension of the interpretation people attribute to events and actions and investigate the complex situation faced by researchers and industry practitioners (Habermas, 2007). The interview mainly covered the changes in business operations and the demand for sustainable products after the outbreak. The interview questions are divided into five sections: general questions, and questions specific to the fashion industry, public attitudes, academic/educational norms, and government policies. The interview questions are shown as follows:

1. **General Questions**
   a. Have you heard of sustainable fashion? What does it mean to you?
   b. Have you used any sustainable design techniques in the design process?
   c. Where did you learn about sustainable design techniques?
   d. After the outbreak of COVID-19, do you think sustainability has become a more critical issue? Why?

2. **Fashion Industry**
   a. Have you noticed any changes in the industry after the start of COVID-19?
   b. Has there been a difference in the level of awareness in Hong Kong's fashion industry towards sustainable fashion after the start of COVID-19?
   c. Does the company you work for provide training on sustainability?
   d. Is sustainability part of the company's business strategy?
   e. Has the design process changed after the start of COVID-19?
   f. Compared to pre-COVID-19, are there any areas of the design process that you will pay more attention to or ones that you will start using?
   g. Will you consider or focus more on the following Sustainable Development Goals (SDGs)?

3. **Public**
   a. Compared to pre-COVID-19, do you think there is a difference in the level of awareness in Hong Kong's society towards sustainable fashion?
   b. Do you think consumers have a greater acceptance of sustainable fashion after the outbreak?
   c. Do you think consumers are willing to pay more for sustainable fashion after the outbreak?

4. **Academic**
   a. Was the concept of sustainability mentioned in your fashion degree programme?
   b. If yes, do you think what you learned about sustainability made you more interested in the subject?
   c. Do you think sustainability education enhances your ability in the workplace?

5. **Government**
   a. Do you think the Hong Kong government provides more support for sustainable fashion before or after the start of the COVID-19 pandemic?
   b. Do you think the Hong Kong government has been effective in promoting and educating the public on sustainability after the outbreak?
   c. In your opinion, has the Hong Kong government developed an effective plan to promote sustainable fashion after the start of the COVID-19 outbreak?

Ten interviewees carrying the job title of design manager, technical design manager, or technical designer were selected through convenience sampling. They worked for companies which are large fashion retailers and trading firms with business operations across countries. The number of years of work experience in the fashion industry of the interviewees ranges from 10 to 35 years. The profiles of the interviewees are shown in Table 2. Two face-to-face interviews were conducted, and the remaining interviews were done over the phone or online due to the need for social distancing. Each interview lasted for about 45 minutes. The interviews were transcribed. Data were analysed to find common patterns in the sample.

Table 1. Profiles of the Interviewees

Interviewee	Type of Company	Job Position	Number of Years Working in the Fashion Industry
A	Fashion Retailer	Design Manager	15
B	Fashion Retailer	Founder	10
C	Textile Trader	Design Manager	12
D	Textile Trader	Designer	10
E	Fashion Retailer	Technical Designer	12
F	Fashion Retailer	Design Manager	20
G	Fashion Retailer	Technical Designer	18
H	Fashion Retailer	Technical Design Manager	20
I	Fashion Retailer	Design Manager	16
J	Fashion Retailer	Technical Design Manager	35

article04_layout.pdf 4 20/10/2022 12:48 PM

RESULTS AND DISCUSSION

From the responses, we found that many interviewees associated the idea of sustainable fashion with the phrases "fair trade production", "eco-friendly materials and production", "recycling", and "waste management". Interviewee C mentioned that customers strongly influence what is considered to be sustainable fashion. Interviewees B, H, and I pointed out that they believe that sustainable fashion is a key part of corporate social responsibility. 90% of interviewees indicated that they have applied sustainable design techniques in the design process, for example, by using sustainably sourced materials, designing classic and timeless clothing, and producing custom made and high-quality fashion.

The interviewees mentioned that they learned about sustainable design techniques through the internet, competitions, clients, in-house training programmes, industry associations, trade shows, and professional magazines and newspapers. Most of the interviewees said that they think that over time more people will prioritise sustainability due to stronger community empowerment, relevant government policies, higher customer expectations, and growing concern for the well-being of underprivileged people.

Most of the interviewees mentioned that there is a remarkable difference in the fashion industry after the outbreak of COVID-19. From the operational perspective, operations have stopped or progressed very slowly, even for a fast-paced mass market. More brands have started to apply sustainable design techniques and use sustainable or responsibly sourced materials in their work. Furthermore, customers now look for minimal design, daywear, loungewear, and machine washable clothing. They prefer to purchase durable fashion products rather than fast fashion. Corporations have now included sustainability in their business strategies. For example, firms now require suppliers to join the system, implement carbon neutral policies, and publish an Impact Agenda to outline plans to meet their sustainability goals over 5-10 years.

Most of the interviewees focused on SDGs 8 (decent work and economic growth), 12 (responsible consumption and production), 14 (life below water), and 15 (life on land). To a large extent, there is an increasing level of awareness in the Hong Kong fashion industry towards sustainable fashion. Regarding SDG 8, it supports employment creation, rights at work, social dialogue, and social protection in achieving responsible consumption and production. For SDG 14, responsible consumption and production contribute to new, innovative solutions for garment handling and dyeing to minimize the destruction of sea life. For SDG 15, responsible consumption and production improve unsustainable production and overproduction approaches. As such, it can help to restore, promote, and protect sustainable adoption of terrestrial ecosystems and avoid biodiversity loss.

Four interviewees expressed that their firms have provided more training on sustainability. Interviewee F shared that the company they work for had shared new sustainability initiatives with their vendors. However, the vendors hesitated to incorporate these new initiatives due to the COVID-19 pandemic. Also, the cost of incorporating sustainable initiatives may be too high for some vendors to bear.

Compared to pre-COVID-19, there is an increasing level of awareness in Hong Kong's society towards sustainable fashion. Generally, since the start of the outbreak, consumers have shown more acceptance of sustainable fashion products and are willing to pay more for these products. This is promising for policymakers, government bodies, and industry practitioners to promote sustainable fashion products among the public. However, all the interviewees expressed that the government does not provide enough support for sustainable fashion and that the government does not do enough to promote and educate the public on sustainability. Moreover, the interviewees commented that the government has failed to introduce an effective plan to promote the use of sustainable fashion and textiles. Therefore, the government should take a leading role to collaborate with different stakeholders and industry practitioners to strengthen Hong Kong as a regional fashion and textile trading centre in the Asia Pacific region.

Most of the interviewees pointed out that during their education, there was not enough emphasis on sustainability. Some interviewees stated that none of the courses they took in their degree programmes mentioned sustainability. However, most of the interviewees agreed that having a strong awareness of sustainable fashion enhances their abilities in the workplace. As suggested by Lau et al. (2018), professional development programmes improve employability and increase the substantial growth of industry creating improving productivity. Due to the benefits of having courses in sustainability in fashion degree programmes, we propose that vocational training programmes and bachelor's degree programmes in fashion should include modules on sustainability.

The design managers in Hong Kong, as interviewed in this study, viewed that global fashion industry has had a huge environmental impact in the world associated with the overuse of resources, waste generation, and environmental pollution. And the growing consumer awareness regarding the social and environmental impacts of clothing and textile production has led to the creation of a new market for sustainable and ethical products after COVID-19. However, there are challenges from internal (individual and company level) and external (consumer needs and government support) of businesses to incorporating sustainability into the fashion design process. Based on these findings, we argue that a business model that is guided by SDG should be adopted by fashion companies. In particular, design practices that improve social, economic, and environmental sustainability should be promoted in businesses. Effective government policies and regulations like mandatory ESG disclosures should be implemented across jurisdictions. The idea of design for sustainability should be advocated through education.

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CONCLUSION

This research has gathered and analysed primary field data from relevant informants and provided insights into the role of design in developing a sustainable fashion industry beyond COVID-19 from the unique perspectives of design managers. The findings of this study are consistent with the expectation that the pandemic has accelerated the adoption of sustainability principles in fashion design. It is encouraging to see that most designer managers in this study considered that they could make a difference to contribute to sustainable development of the fashion industry. Yet, more needs to be done in addition to improving design practices. Given that the global fashion supply chain is long, fragmented and opaque, it takes a holistic approach that integrates major stakeholders' resources and effort to address environmental and social problems caused by unstainable practices along various stages of the supply chain.

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