Is current government policy sufficient, given the rise of the digital economy in Singapore today?

CCCS-ESS Essay Competition 2020

Abstract

Advancements in technology and the recent COVID-19 pandemic have led to the rapid growth of the digital economy. In Singapore, the digital economy can be credited with reducing barriers to entry in many traditional markets, providing consumers with increased choice, and alleviating information asymmetry.

Currently, the Competition Act prohibits anti-competitive behaviour from firms, while the Consumer Protection Act protects consumers from unreasonable and deceptive sales practices. CCCS has applied these laws to new cases about competition and consumer protection in digital markets to much success, showing they might be broadly generalizable.

Nevertheless, any one-size-fit-all legislation will never be fully adequate for the complex and multi-faceted digital economy. This paper highlights five potential areas of concern.

Firstly, companies which operate digital ecosystems may abuse their market dominance to take over related industries, or lock users in with restrictive data controls, creating high barriers to entry.

Second, increased availability in pricing data and advances in machine learning may facilitate collusion between rival companies, or worse still, cases of unintended collusion.

Third, the rise of cross-border transactions has surfaced gaps in consumer protection legislation, as consumers have little remedy in the case of defective or misrepresented products.

Fourth, the use of online platforms in marketing has led to deceptive online sales tactics, and the emergence of insidious dark patterns which exploit human fallibilities.

Last, despite the Personal Data Protection Act, consumers remain unaware of how their data is acquired and used, and firms continue to resell data illegally.

To tackle these issues, we recommend establishing a Digital Economy Watchdog, a specialised organisation to centralize technical expertise, and facilitate the implementation of targeted solutions, such as regular surveillance of pricing algorithms, digital tools to help users to avoid unfair practices, personal data stores for individuals, and online resolution mechanisms for cross-border e-commerce.

(298 words)

Infographic

THE DIGITAL ECONOMY: KEY AREAS OF CONCERN

Competition

- The rise of **digital ecosystems** 1
- **Collusion**: easier to implement, harder to detect 2

Consumer Protection

- Deceptive sales tactics and the prevalence of **dark patterns** 1
- Protecting consumers' **data privacy** 2
- Growing challenges in protecting consumers from **defective products** 3

RECOMMENDATION: DIGITAL ECONOMY WATCHDOG (DEW)

Competition

- Strengthening **surveillance** of pricing algorithms 1

Consumer Protection

- **Empowering users** to avoid unfair practices 1
- Developing **personal data stores** for individuals 2
- Developing **dispute resolution mechanisms** for **cross-border** e-commerce 3

Icon credits: icons8.com

Table of contents

1. Introduction

The digital economy, as defined by the G20, is an economy where “digitized information is the key factor of production...and an important driver of productivity growth”. In recent years, the digital economy has been characterised by the spread of platform services, which have transformed industries from retail, banking to logistics. Newer technologies like the Internet of Things (“IoT”), Artificial Intelligence and Augmented Reality are still being scaled up commercially but hold tremendous disruptive potential.

The digital economy is set to be an important pillar in Singapore’s Smart Nation initiative, with the COVID-19 epidemic accelerating the trend towards digitalisation. As this essay will argue, the digital economy has generally promoted competition, and delivered new and improved products for consumers. However, with increasing rivalry for consumer attention and data, the rise of algorithms, and greater cross-border digital trade, new concerns for competition and consumer protection have arisen, resulting in a need to supplement existing laws with new measures.

2. Current policy

2.1. Inherent benefits of Singapore's digital economy

The digital economy has made markets more contestable. The Internet has provided firms with a new marketing and distribution channel, allowing firms to enter new markets with little fixed capital investment. Take Love, Bonito, which broke into the retail scene as a blogshop with $500 in start-up capital, and has since expanded into a multimillion-dollar brand (Salim, 2017). Meanwhile, in the telecommunications industry, the emergence of cost-efficient mobile virtual network operators has brought cheaper data plans to consumers, forcing incumbents to cut prices (Ng, 2019).

In addition, many new challengers leverage on technology to develop new value propositions and improve the user experience, boosting dynamic efficiency. Ride hailing platforms have reduced waiting time for commuters by matching demand and supply through surge-pricing mechanisms and improved utilization of spare capacity (Lim, 2016). Incumbent firms have also been driven to better differentiate their products. In response to online competition, local brick-and-mortar stores are starting to offer more personalized shopping experiences with image recognition technologies (Tan, 2019), augmented reality and more efficient queue systems (Heng, 2019).

Consumers are better off because of the digital economy too. They can access more niche products through the "long-tail effect" (Anderson, 2010), as seen from the vibrant handmade industry in Singapore, catalysed by digital marketplaces like Etsy. (Zachariah, Vasko, & Toh, 2014). Crowdsourced ratings also help consumers make

more informed choices. (Foster, 2019). Many markets vulnerable to adverse selection in the pre-digital era have flourished with this new trust mechanism, as epitomized by the second-hand goods platform Carousell.

2.2. Government efforts

Apart from industry-specific regulators in sectors like energy and finance, the Competition Commission of Singapore ("CCCS") is the statutory board tasked with administering the Competition Act ("CA") and the Consumer Protection (Fair Trading) Act ("CFTA") for most goods and services.

Most consumer protection and competition laws in Singapore have translated well into the digital economy. CCCS emphasizes an effect-based assessment in evaluating business practices, allowing it to extend enforcement into the digital context without changing competition laws. In 2018, CCCS was able to take action when Grab's acquisition of Uber significantly lessened competition in the ride-hailing market and increased the former's pricing power (CCCS, 2018). Consumer protection laws have also been generalizable to the Internet domain. Recently, CCCS stopped an e-commerce retailer from carrying out a subscription trap, invoking the clause in CFTA that prohibited the concealment of facts pertaining to the supply of goods (CCCS, 2020).

When necessary, laws in Singapore have also been updated in dealing with issues associated with the digital economy. For instance, the Personal Data Protection Act ("PDPA") was established to provide users greater control over their personal data.

3. Key areas of concern of the digital economy

However, there are aspects of the digital economy which are detrimental to consumers and competition, and policymakers must tackle them head-on. The following section outlines these challenges.

3.1. The rise of digital ecosystems

Digital ecosystems are on the rise. Described by the World Economic Forum as "interacting organizations that are digitally connected and enabled by modularity" (Jacobides, Sundararajan, & Van Alstyne, 2019), digital ecosystems deliver a suite of services, sometimes in partnership with other digital complementors. The increasing containerization of digital services can provide users with a more seamless experience, as evinced from the popularity of super-apps in China which span digital payments, social media, ride hailing and gaming.

Nevertheless, as digital ecosystems expand, they may pose a threat to competition. As a firm gains market dominance, it could abuse their position to enter new markets by tying these products together in their ecosystem. The market share that Windows Media Player and Google Chrome enjoy today are a result of "platform envelopment" from adjacent markets for PCs and search respectively (Eisenmann, Parker, & Van Alstyne, 2010).

"Walled gardens" are a more recent concern. As noted by our Minister for Smart Nation, "every big IT company wants to create, behind its own walls, a unique ecosystem"

(Tanoto, 2018). Digital ecosystems may act as gatekeepers, competing for access points and attempting to lock users in. One approach is to prevent multi-homing by excluding competitors from the digital ecosystem or providing unfair terms. For instance, e-stores which use WeChat are not allowed to accept payments via Alipay, and vice versa. To disincentivize users from using alternative short video apps like Tiktok, Tencent stopped their direct playback on WeChat (Liu, 2019). Others may actively restrict the transfer of data to other platforms, increasing switching costs. For instance, a frequent pain point for Apple users switching to Android is the unavailability of the Apple messaging app iMessage, which severs their access to previous chats.

Many tech firms already operate in Singapore, although research on the competition dynamics between digital ecosystems is limited. More homegrown digital ecosystems may emerge over time. Razer and Grab, for instance, are moving into new fields like digital banking and insurance, while Gojek is partnering with Singtel to provide lifestyle benefits and mobile data plans (Chong, 2019). Singapore must therefore work proactively to arrest the development of any closed ecosystems.

3.2. Collusion: easier to implement, harder to detect

Price comparison websites are common in the online travel booking industry and have also been rolled out for various markets in Singapore including groceries, fuel and electricity (Tan, 2020). Although they improve efficiency by reducing search costs and price dispersion ratios (Passyn, Diriker, & Settle, 2013), they have also made it easier for firms to monitor prices of rival firms. Research shows that price transparency stabilizes and facilitates collusive outcomes, allowing firms to match or change prices

in the case of tacit collusion (Schultz, 2016), and punish price deviations easily in cartels (OECD, 2001).

Furthermore, the proliferation of algorithms in price determination has made collusion harder to detect. Individualized pricing leads to a significant range of prices dependent on location, time and individual characteristics, rendering standard price comparisons moot (OECD, 2017). Firms could also coordinate prices by using the same intermediary for their pricing algorithms through “hub-and-spoke agreements” (OECD, 2017). These algorithms need not be extremely sophisticated - experiments show that simple algorithms implementing the tit-for-tat strategies can enforce collusion extremely well (Axelrod, 1984).

Finally, algorithms can lead to unintended collusion, leading to questions about liability. Unsupervised learners could independently decide to fix prices to maximize profits, resulting in an outcome that may be difficult to differentiate from deliberate human intervention. (Calvano, Calzolari, Denicolò, & Pastorello, 2019). More worryingly, recent research on the predictable agent theory of collusion suggests that even deterministic algorithms may inadvertently lead to collusion, as humans are likely to design algorithms which respond to endogenous information in a consistent way, reducing strategic uncertainty (Connor, 2019).

Since a 2015 case involving Amazon Marketplace, little action has been taken by competition authorities against collusion using algorithmic pricing (Connor, 2019), suggesting that conventional competition tools may be inadequate at determining and

proving such cases. While no cases have been reported in Singapore yet, the issue is not well-studied. Given advances in machine learning technology and the increasing availability of price data, it should be taken seriously.

3.3. Deceptive sales tactics and the prevalence of dark patterns

While unfair trade practices are currently prohibited under CFTA, CCCS' recent market study revealed that online travel agencies often marketed their products misleadingly, through strategies like drip pricing and strikethrough pricing (CCCS, 2019). Guidelines were subsequently established to advise firms against these practices. However, only one case of deceptive online sales tactics has been investigated. (CCCS, 2020).

Given the sheer scale of the Internet, it is likely that many instances of unfair online pricing locally are undetected. No information exists regarding the prevalence of these practices in most digital markets in Singapore, but various high-profile firms ranging from Amazon, Trivago to Ticketmaster, all of which are active locally, have been found guilty of these unsavoury pricing tactics in OECD countries (OECD, 2019).

Another worrying trend is the use of "dark patterns", which a study found 2000 instances of in a sample of 50,000 websites. Rather than concealing or omitting information, many dark patterns "use language, aesthetics and emotions to steer users into making certain choices", exploiting their bounded rationality (Mathur et al., 2019). For instance, confirm-shaming embarrasses users into making a purchase or subscription, while visual interference redirects their attention to premium products by

greying out lower price alternatives. Such strategies limit consumer sovereignty by preying on cognitive biases and deserve to be looked into further in Singapore.

3.4. Protecting consumers' data privacy

The increasing volume and velocity in data flows, facilitated by advances in network architecture, has led to the commodification of data (Mayer-Schönberger & Cukier, 2013). In Singapore, these privacy concerns have motivated the PDPA, which limits the data that firms can collect and retain, preconditioned on the informed consent of users. Nevertheless, gaps in policy remain.

First, the information asymmetry between firms and consumers regarding personal data use and collection remains. Policing may not be adequate, with 90% of local apps in potential breach of PDPA (Tham, 2015), either failing to disclose how consumer data is used, or collecting more data than necessary. Due to consent fatigue, consumers grant data permissions mechanically without understanding, with an average person taking 30 full days to read the privacy policies of their visited websites in a year (McDonald & Cranor, 2008).

Second, personal data is still being traded without obtaining consent. There exists a cottage industry of data brokers in Singapore, which continue to resell personal data, either acquired through public sources or private companies (Yang, 2019).

Last, technological developments may render PDPA's exception on the use of anonymized data for data mining (PDPC, 2013) impractical in the long run. As smart sensors become increasingly embedded in daily life through the IoT, it will be much easier to identify individuals given the sensitivity and granularity of the data collected, and to track them - not only across devices, but between online activity and physical interactions (Ram & Murgia, 2019). Hence, removing traditional personal identifiers may not be a robust privacy safeguard any longer.

3.5. Growing challenges in protecting consumers from defective products

Cross-border e-commerce has always been popular in Singapore, with 73% of Singaporeans shop on foreign websites and 14% doing so exclusively (Ng, 2018). Yet, online shopping, "disembedded from relations of personal trust and physical presence", is very different from the physical retail experience. Consumers may not enjoy the same amount of protection when shopping online overseas, especially in regions where counterfeits are more common and rule of law weaker (Lianos, Mantzari, Durán, Darr, & Raslan, 2019). While e-commerce sites do have reputation systems for sellers, they are not fool-proof, suffering from issues like order brushing (Cohan, 2019) and positivity bias (Breinlinger, Hagiu, & Wright, 2019).

Unfortunately, consumers in Singapore have no official recourse if they purchase a defective product from a foreign supplier. The Lemon Law does not allow consumers to make claims for defective products against firms which are not locally registered, as they are not subject to Singaporean legislation (Lin, 2017). While some e-commerce platforms provide dispute resolution mechanisms, not all of them do.

4. Recommendations

We propose the establishment of a Digital Economy Watchdog ("DEW") to deal with new technologies at speed. Active practitioners in AI and computer science can be recruited, complementing legal and economic analysis with domain knowledge. These technological capabilities will facilitate the implementation of the targeted solutions below.

4.1. Strengthening surveillance of pricing algorithms

Firms should be discouraged from using unsupervised algorithms, given the difficulty of assigning responsibility. As recommended by the OECD, standards of "Interpretable AI" should be created, requiring firms using pricing algorithms to justify pricing decisions if queried. DEW should conduct regular audits of pricing algorithms with a hidden set of user profiles, particularly in concentrated industries. To determine collusion, prices at the different firms can be compared with the same benchmark user, circumventing the issue of individualized pricing.

4.2. Empowering users to avoid unfair practices

DEW can create an annual ranking of popular e-commerce sites based on their use of deceptive pricing and develop tools like AI-powered web extensions to help users identify dark patterns (Mathur et al., 2019). This can help users avoid sites with unfair sales practices and encourage a "race to the top" among online retailers. Behavioural experiments may also help to quantify the disutility caused by dark patterns, and hence, if more intervention is required.

4.3. Developing personal data stores for individuals

To help individuals safeguard their digital sovereignty, Singapore could launch a personal data store (“PDS”) for individuals, modelled after the EU's successful DECODE project. A PDS integrates data from a variety of sources and provides individuals with a “standard way to express…preferences about how [they] want [their] data to be used” (Symons & Bass, 2017), reducing the mental bandwidth of making privacy decisions.

Firms can only access user information by connecting to the PDS and are required to complete transactions or analysis involving data within its environment (Symons & Bass, 2017). As firms cannot retain data, consumers do not have to worry about their data being resold. Furthermore, as individuals control their accrued data, they can easily switch between digital ecosystems, preventing the development of “walled gardens”.

4.4. Developing dispute resolution mechanisms for cross-border e-commerce

The government should explore automated and assisted negotiation, and online mediation for international e-commerce disputes (Jain, 2015), tapping on Singapore’s expertise in alternative dispute resolution methods. This can streamline the process of settling e-commerce disputes, which is often complex and time-consuming when done in court. Singapore can consider piloting these methods through digital economy agreements, before implementing them in other trade agreements.

5. Concluding remarks

As the digital economy takes shape, Singapore is at a critical juncture. Market abuses, collusion and unethical trade practices can take different forms in the virtual world – as data silos, pricing algorithms, misleading visuals or even international disputes. With its strong base of pre-existing laws, Singapore is well-placed to respond to these challenges. Assured of a fair playing field and strong consumer protection, our journey going digital will be much smoother.

(2500 words)

Bibliography

Salim, Z. (2017). Built On Just $500, This S'pore Brand Has Now Grown Into A Multi-Million Fashion Powerhouse. *Vulcan Post.* Retrieved from https://vulcanpost.com/628312/love-bonito-turned-500-into-multi-million-fashion-powerhouse/

Ng, J. (2019, July 6). The Big Read: Singapore's big telcos face rude awakening, as the little guys get the last laugh. *Today.* Retrieved from https://www.todayonline.com/big-read/big-read-singapore-big-telcos-face-rude-awakening-little-guys-get-last-laugh

Lim, A. (2016, March 15). Waiting time for taxis still biggest bugbear: Study. *The Straits Times.* Retrieved from https://www.straitstimes.com/singapore/transport/waiting-time-for-taxis-still-biggest-bugbear-study

Tan, W. (2019, June 11). SK-II CEO: We're using artificial intelligence to transform the way you shop. *CNA Lifestyle.* Retrieved from https://cnalifestyle.channelnewsasia.com/style/sk-ii-future-x-smart-store-11611610

Heng, M. (2019, August 20). Furniture label Commune to launch AR app that lets customers preview furniture in homes. *The Straits Times.* Retrieved from https://www.straitstimes.com/singapore/furniture-label-commune-to-launch-ar-app-that-lets-customers-preview-furniture-in-homes

Heng, M. (2019, June 17). Hate lining up for the fitting room? Stores turn to tech to address gripes about queues and more. *The Straits Times.* Retrieved from https://www.straitstimes.com/singapore/stores-turn-to-technology-to-address-pain-points-on-fitting-room-queues-and-in-product

Anderson, C. (2010, January 4). The Long Tail. *Wired.* Retrieved from https://www.wired.com/2004/10/tail/

Zachariah, N. A., Vasko, L., & Toh, K. (2014, June 8). Crafting a business: Handmade industry growing in Singapore but faces challenges. *The Straits Times.* Retrieved from https://www.straitstimes.com/lifestyle/crafting-a-business-handmade-industry-growing-in-singapore-but-faces-challenges

Foster, J. (2019, September 28). On the Relative Efficiency of Crowdsourced Rating Mechanisms: Experimental Evidence. Retrieved September 28, 2019, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3472119

Competition and Consumer Commission of Singapore (2018, September 24). Sale of Uber's Southeast Asian business to Grab in consideration of a 27.5% stake in Grab. Retrieved from https://www.google.com/url?q=https://www.cccs.gov.sg/-/media/custom/ccs/files/public-register-and-consultation/public-consultation-items/grab-uber-id-24-sep-2018/20180924-infringement-decisiongrab-uber-merger--publiccleanfinal.pdf?la%3Den%26hash%3DBA7A090A218A0EB4729E11343951B57A335E79A9&sa=D&ust=1593490600315000&usg=AFQjCNHfHSaW8W_uKJ8V4UVo8pavNvuJ1g

Competition and Consumer Commission of Singapore (2020, January 17). E-Commerce Retailer Fashion Interactive Ordered to Cease Unfair Trade Practices and Stop Using "Subscription Traps". Retrieved from https://www.cccs.gov.sg/media-and-consultation/newsroom/media-releases/fashion-interactive-court-order-17-jan-2020

Jacobides, M. G., Sundararajan, A., & Van Alstyne, M. (2019, February). Platforms and Ecosystems: Enabling the Digital Economy. *World Economic Forum.* Retrieved from http://www3.weforum.org/docs/WEF_Digital_Platforms_and_Ecosystems_2019.pdf

Eisenmann, T., Parker, G., & Van Alstyne, M. (2010, July 27). Platform Envelopment. *Harvard Business School.* Retrieved from https://www.hbs.edu/faculty/Publication%20Files/07-104.pdf

Tanoto, B. (2018, March 21). Government's duty to set open standards for Internet of Things deployment: Vivian Balakrishnan. *CNA*. Retrieved from https://www.channelnewsasia.com/news/singapore/government-s-duty-to-set-open-standards-for-internet-of-things-10062284

Liu, C. (2019, September 2). Super apps: WeChat, Go-Jek and rivals battle to do it all in Asia. *Nikkei Asian Review*. Retrieved from https://asia.nikkei.com/Business/Industry-in-focus/Super-apps-WeChat-Go-Jek-and-rivals-battle-to-do-it-all-in-Asia

Chong, C. (2019, April 24). Gojek makes first super app move in Singapore with Singtel partnership. *The Business Times.* Retrieved from https://www.businesstimes.com.sg/garage/gojek-makes-first-super-app-move-in-singapore-with-singtel-partnership

Tan, C. (2020, January 14). Check with Fuel Kaki to find the cheapest petrol. *The Straits Times.* Retrieved from https://www.straitstimes.com/singapore/transport/check-with-fuel-kaki-to-find-the-cheapest-petrol

Passyn, K. A., Diriker, M., & Settle, R. B. (2013). Price Comparison, Price Competition, And The Effects Of ShopBots. Journal of Business & Economics Research (JBER), 11(9). Retrieved from https://clutejournals.com/index.php/JBER/article/download/8068/8122

Schultz, C. (2016, March). Collusion in markets with imperfect price information on both sides. Retrieved from https://econ.au.dk/fileadmin/Economics_Business/Research/Seminars/2016/two_sided_transparency-RevIO-revised_march_2016.pdf

Organisation for Economic Co-operation and Development (2001). Price Transparency. Retrieved from http://www.oecd.org/competition/abuse/2535975.pdf

Organisation for Economic Co-operation and Development (2017), Algorithms and Collusion: Competition Policy in the Digital Age www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm

Axelrod, R. (1984). The Evolution of Cooperation. Retrieved from https://ee.stanford.edu/~hellman/Breakthrough/book/pdfs/axelrod.pdf

Calvano, E., Calzolari, G., Denicolò, V., & Pastorello, S. (2019, February 3). Artificial intelligence, algorithmic pricing, and collusion. *VoxEU*. Retrieved from https://voxeu.org/article/artificial-intelligence-algorithmic-pricing-and-collusion

Connor, C. (2019, September 27). When robots collude. *Global Competition Review*. Retrieved from https://globalcompetitionreview.com/insight/gcr-q3-2019/1202826/when-robots-collude

Competition and Consumer Commission of Singapore (2019, September 30). Online Travel Booking Sector in Singapore. Retrieved from https://www.cccs.gov.sg/-/media/custom/ccs/files/media-and-publications/media-releases/otb-and-price-transparency-guidelines-30-sept-19/cccs-market-study-report-online-travel-booking-30-sep-2019.pdf?la=en&hash=9DFDBAE0EF2D19F27A986C6F0CB37C8BBD6CF0B4

Competition and Consumer Commission of Singapore (2020, January 17). E-Commerce Retailer Fashion Interactive Ordered to Cease Unfair Trade Practices and Stop Using "Subscription Traps". Retrieved from https://www.cccs.gov.sg/media-and-consultation/newsroom/media-releases/fashion-interactive-court-order-17-jan-2020

Organisation for Economic Co-operation and Development (2019, September 10). Good Practice Guide on Online Advertising: Protecting Consumers in E-commerce. Retrieved from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/CP(2018)16/FINAL&docLanguage=En

Mathur, A., Acar, G., Friedman, M. J., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019, November). Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites. Retrieved from https://arxiv.org/pdf/1907.07032.pdf

Mayer-Schönberger, V., & Cukier, K. (2013). Big data: The essential guide to work, life and learning in the age of insight. *Hachette UK.*

Crain, M. (2016). The limits of transparency: Data brokers and commodification. *New Media & Society, 20*(1). Retried from https://journals.sagepub.com/doi/pdf/10.1177/1461444816657096

Tham, I. (2015, November 2). 90% of mobile apps could be in breach of Singapore privacy law. *The Straits Times*. Retrieved from https://www.straitstimes.com/tech/90-of-mobile-apps-could-be-in-breach-of-singapore-privacy-law

McDonald, A. M., & Cranor, L. F. (2008). The Cost of Reading Privacy Policies. *I/S: A Journal of Law and Policy for the Information Society.* Retrieved from https://lorrie.cranor.org/pubs/readingPolicyCost-authorDraft.pdf

Yang, C. (2019, May 26). Turning data into dollars: Firms selling individuals' personal info for cash. *The Straits Times*. Retrieved from https://www.straitstimes.com/singapore/courts-crime/turning-data-into-dollars?fbclid=IwAR0s_OreDjYXxRGij67iRz3Rv2ceKHJ_5Hpx07DO2DNwNfH1885EZJ5EReg

Personal Data Protection Commission (2013, September 24). Advisory Guidelines on the Personal Data Protection Act for Selected Topics. Retrieved from https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Advisory-Guidelines/AG-on-Selected-Topics/Advisory-Guidelines-on-PDPA-for-Selected-Topics-9-Oct-2019.pdf?la=en

Ram, A., & Murgia, M. (2019, January 8). Data brokers: Regulators try to rein in the 'privacy deathstars'. *Financial Times*. Retrieved from https://www.ft.com/content/f1590694-fe68-11e8-aebf-99e208d3e521?accessToken=zwAAAXMA12lAkdPxWQaU_mgR6NOuv5niCNPlIQ.MEYCIQDEhAWrBvZ2cXZSIDijKo_Pohwiy2-ispG3GC-SwKsjKAIhAJIcaFODVMzoLeM2bhp57bz_3VvoLKmzk_iBZaXPLlzo&sharetype=gift?token=452c8e70-b309-4327-8a72-19e6ef259d4b

Ng, J. (2018, December 11). Singapore shoppers 2nd in Asia-Pacific for buying foreign goods online: Study. *The Straits Times*. Retrieved from https://www.straitstimes.com/singapore/spore-shoppers-2nd-in-asia-pacific-for-buying-foreign-goods-online-study

Lianos, I., Mantzari, D., Durán, G. M., Darr, A., & Raslan, A. (2019, March). The Global Governance of Online Consumer Protection and E-commerce: Building Trust. *World Economic Forum*. Retrieved from http://www3.weforum.org/docs/WEF_consumer_protection.pdf

Cohan, P. (2019, November 26). Fake Product Review Problem Persists For Amazon Customers. *Forbes*. Retrieved from https://www.forbes.com/sites/petercohan/2019/11/26/fake-product-review-problem-persists-for-amazon-customers/#7782d1374503

Breinlinger, J., Hagiu, A., & Wright, J. (2019, July 2). The Problems with 5-Star Rating Systems, and How to Fix Them. *Harvard Business Review*. Retrieved from https://hbr.org/2019/07/the-problems-with-5-star-rating-systems-and-how-to-fix-them

Lin, M. (2017, January 20). Beware of errant online retailers. *The Straits Times*. Retrieved from https://www.straitstimes.com/singapore/beware-of-errant-online-retailers

Symons, T., & Bass, T. (2017, September). Decode: Me, my data and I: The future of the personal data economy. European Commission. Retrieved from https://pilab.nl/onewebmedia/decode-02.pdf

Jain, S. (2015, October 11). Online Dispute Resolution: Mechanism, Modus Operandi and Role of Government. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2779901#:~:text=Online%20Dispute%20Resolution%20(ODR)%20is,a%20combination%20of%20all%20three