Does big data generate value on Netflix and Facebook platforms and how should tax these value?

Author: Yiming Zhang Beirão

Anr: 415105

Supervisor: Dr. R. Antón

Second Supervisor: Pr. R. Russo

Academic year: 2018-2019

Does big data generate value on Netflix and Facebook platforms and how should tax these value?

Master thesis International Business Tax Economics

Tilburg School of Economics and Management

Tilburg University

Author: Yiming Zhang Beirão

Anr: 415105

Supervisor: Dr. R. Antón

Second Supervisor: Pr. R. Russo

Date of completing the thesis: 6/17/2019

In the digital economy, the way for MNE to conduct business has been changed dramatically and the traditional value chains have been reshaped according to the innovative new schemes. Although with different business models, Facebook and Netflix both implement the technology including big data and data mining technology into their value-creating procedures. However, the current international tax system seems to be challenged to properly detect and allocate the value created by the big data. Does the big data used by Facebook and Netflix generate value? If it does, how should the value be properly allocated to different jurisdictions?

Table of Contents

Acronyms and Abbreviations

BEPS: Base Erosion and Profit Shifting

MNE: Multinational Enterprise

OECD: Organization for Economic Co-operation and Development

EU: European Union

BEAT: Base Erosion and Anti-abuse Tax

US: United States

FB: Facebook

GDPR: General Data Protection Regulation

IAS: International Accounting Standards

PE: Permanent establishment

TP: Transfer Pricing

SEP: Significant Economic Presence

DEMPE: Development, Enhancement, Maintenance, Protection and Exploitation of Intangibles

EMEA: Europe, Middle-East, and Africa

NL: Netherlands

WHT: Withholding Tax

1. Introduction

The digitalization of an industry is defined as the intelligent connection of the machines powered by information and digital technologies.[1] MNEs benefit from digitalization with more opportunities for performing new functions, enhancing efficiency and reliability, and optimizing the procedures.[2] It leads to the increase of the overall value generated by MNEs for the customers and companies themselves. Many MNEs implement digital technologies such as "data mining algorithms" to analyze the "big data" in order to customize their products and services, increase the speed of operations, improve decision-making, become more competitive and generate more turnovers.

Data is raw and unorganized facts that could be very simple and seemingly random. When data is processed, organized, structured or presented in a given context, it becomes useful and turns into information. Big data is where parallel computing tools are needed to handle data[3] whose sizes are beyond the capability of commonly used software tools to capture, curate, manage and process data within a tolerable elapsed time.[4] It represents the information assets characterized by such a high volume, velocity and variety to require specific technology and analytical methods for its transformation into value.[5] Big data always need to have the algorithm to analyze and predict the big data simultaneously. Big data constitutes one of the important components of inputs into the value creation process for highly digitalized business models. Data mining refers to the techniques, methods, and algorithms to analyze big data to extract the key knowledge, pattern and information.[6] It is considered as the part of a business model that creates value out of data.[7]

The digitalization of the economy is considered as a major driver of innovation, social change, and economy growth.[8] It was predicted that in the next five years, the level of digitalization of enterprises

[1] Parida, V., Rönnberg Sjödin, D., Lenka S., and Wincent, J. 2015. "Developing Global Service Innovation Capabilities: How Global Manufacturers Address the Challenges of Market Heterogeneity." *Research-Technology Management, September 2015* (Research-Technology Management) 35-44.
[2] id
[3] Fox, C. 2018. *Data Science for Transport.* Zurich: Springer International Publishing.
[4] Snijders, C., Matzat, U. and Reips, U.-D. 2012. ""Big Data": Big Gaps of Knowledge in the Field of Internet Science." *International Journal of Internet Science, 7 (1)* 1–5.
[5] De Mauro, A., Greco, M., and Grimaldi, M. 2016. "A formal definition of Big Data based on its essential features." *Library Review, vol. 65 Issue: 3*, p. 122-135.
[6] Witten, I. H., Frank, E., Hall, M. A., Pal, C. J. 2005. *Data Mining: Practical Machine Learning Tools and Techniques.* Cambridge: Elsevier.
[7] Olbert., M. and Spengel, C. 2019. "Taxation in the Digital Economy - Recent Policy Developments and the Questions of Value Creation." *ZEW Discussion Paper No. 19-010.*
[8] Brynjolfsson, E. and Kahin, B. 2000. *Understanding the Digital Economy - Data, Tools, and Research* . Cambridge: MIT Press; Peitz M., Waldfogel J. 2012. *The Oxford Handbook of the Digital Economy.* Oxford: Oxford University Press, ix

would rise between 42% and 74% in North America, between 31% and 67% in Asia-Pacific, and between 41% and 71% in Europe, the Middle East and Africa.[9] The digitalization of industries and highly digitalized companies lead to the new era of the global economy. It also brings challenges for the government and tax authorities worldwide to understand the digital economy and update the rules and policies to reflect the value created by the business.

Traditional tax law and rules are still governing new ways of conducting business, but current international tax law and its underlying principles "may not have kept pace with changes in global business practices".[10] The expanding role of big data raises questions about whether big data is being appropriately characterized, whether big data create value for tax purposes, whether current nexus rules are still appropriate, and whether any profits attributable to big data should be taxable in the State where the data is collected.

In 2015, OECD released BEPS reports to address the challenges in the digital economy. In 2018, the OECD delivered the detail "Tax Challenges Arising from Digitalization - Interim Report 2018"[11] as a part of Action 1 of Action Plan on BEPS. In the report, the OECD analyzes the highly digitalized business models and value creation process. Through several case studies, it was intended for the first time to substantiate the term "value creation" by distinguishing three types of digital value creation: value chains, value networks, and value shops.[12] The common characteristics of digital business models are introduced and more critical discussion of potential solutions to address the tax challenges arising from digitalization are included. The common characteristics are cross-jurisdictional scale without mass[13], the importance of intangible assets, and the importance of data, user participation and their synergies with IP.[14]

In March of 2019, the OECD published a public consultation document "Addressing the Tax Challenges of the Digitalisation of the Economy". In the report, the OECD introduced three proposals for revising the profit allocation and nexus rules in response to the tax challenges posed by digitalization.[15] The proposals acknowledged that value can be created in a jurisdiction where users or customers are located even if the

[9] PWC. 2016. "Industry 4.0: Building the digital enterprise." *PWC.* https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf.
[10] OECD. 2013. *Addressing Base Erosion and Profit Shifting.* Paris: OECD Publishing, 7
[11] OECD. 2018. "Inclusive Framework on BEPS ." *OECD.* July. http://www.oecd.org/tax/flyer-inclusive-framework-on-beps.pdf.
[12] Olbert, M., and Spengel, C.. 2019. "Taxation in the Digital Economy - Recent Policy Developments and the Qestions of Value Creation." *ZEW Discussion Paper No. 19-010.*
[13] Mass refers to a firms' physical presence in the location of the user or the customer's market.
[14] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing, para 130
[15] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.

companies are not physically present therein. Therefore, it is possible and necessary to allocate taxing rights to such a jurisdiction correspondingly. The "user participation" proposal is targeted for the social media platforms, search engines and online marketplaces.[16] Scholars argue that it has the narrowest scope and shows a clear ring-fencing effect. The "marketing intangibles" proposal preserves neutrality among various industries and forms of conducting business.[17] The "significant economic presence" proposal has the broadest scope and better maintains tax neutrality.

At the same time, the EU and several countries have introduced the unilateral solutions targeted the digital economy in the domestic tax system. European Commission released a legislative proposal identified the significant digital presence as the taxable nexus.[18] Governments of many countries prompted their respective proposals by declaring that the current international income tax regime applicable to multinational companies results in the under-taxation of such companies and that the regime needs to be reformed to allocate greater taxing rights to marketing jurisdictions where the users and consumers are located.[19] In 2015, specific regimes targeted at large firms, namely the diverted profits tax was applied in the United Kingdom.[20] In January 2019, the Spanish Government issued the final bill introducing a 3% Digital Services tax imposed on gross income derived from certain digital services for which user participation is essential for creating value.[21] France started 3% tax on ad sales from tech giants such as Google, Apple, Facebook and Amazon from January 2019.[22] In India, the 6% tax in the form of an equalization levy was introduced on the amount paid to internet companies by domestic advertisers.[23] The base erosion and anti-abuse tax (BEAT) Provisions were implemented in the US from 2017 to limit future profit shifting of US multinational corporations.[24] It is very important and necessary to reach consensus among countries to mitigate the double taxation in the digital economy and make sure the investment and business trans-border would not be hindered.

---

[16] id

[17] Pistone, P., Nogueira, J.F.P. and Rodríguez, B. A. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2.*

[18] European Commission. 2018. *Proposal for a council directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services.* Proposal, Brussels: European Comission.

[19] Cui, W. and Hashimzade, N. 2019. "The Digital Services Tax as a Tax on Location-Specific Rent." *SSRN.*

[20] HM Revenue and Customs. 2018. "Diverted Profits Tax: Guidance ." https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/768204/Diverted_Profits_Tax_-_Guidance__December_2018_.pdf

[21] Carreño, F., and Perelló, J. 2019. "Spain - Plans Regarding Digital Taxes." *International Transfer Pricing Journal, vol. 26, No 2.*

[22] *See* Ministero dell'Economia e delle Finanze. 2017. "Political Statement - Joint Initiative in the Taxation of Companies Operating in the Digital Economy." September 7. http://www.mef.gov.it/inevidenza/banner/170907_joint_initiative_digital_taxation.pdf, ch. 2.2.

[23] Cleartax. 2019. *Equalisation Levy.* May 29. https://cleartax.in/s/equalisation-levy

[24] Pérez Gautrin, C. 2019. "United States- US Tax Cuts and Jobs Act: Part 2 – The Base Erosion and Anti-Abuse Tax(BEAT)." *Bulletin for International Taxation, vol. 73, No 3.*

This thesis aims to address the question of **whether big data creates value for the two digital platforms Facebook and Netflix for tax purposes**. I choose to take two platforms as examples because they have different business models and utilize big data for different purposes. Facebook monetizes the big data for selling them to the third parties or providing the target advertisement. However, Netflix uses big data to improve the user experience of customized services. Through the comparison, when and in which stage of the business model that the big data creates value will be identified. In addition, if big data create value, it is important to align the transfer pricing outcomes with value creation. It is necessary and meaningful to identify **whether the proposals in the public consultation document "Addressing the Tax Challenges of the Digitalisation of the Economy" would better allocate the profit to market jurisdictions.**

Netflix and Facebook develop information technologies in Silicon Valley. The platforms collect big data and implement the algorithm in the user jurisdictions. For example, the users in Asia and in Europe are active on Facebook and receive the advertisement, which is "designed" for them, or subscribe to the Netflix service and enjoy the customized channels. The companies have a limited physical presence in Asia and Europe. The digital platforms allocate limited or no value to the user or customer market jurisdictions under the traditional transfer pricing rules. With the current transfer pricing rules, the big data and data mining process is excluded for the functional analysis and the big data is not considered as an asset in the user jurisdiction.

Through comparison of business models and value creation processes of the two digital platforms, it is clear that big data and data analysis process plays an important role. After analysis of the function and purposes of big data, the author argues that big data creates value even when the big data does not monetize directly. From the economic theory perspective and corporate perspective, the market value or actual payment from the customers does not truly reflect the actual value of big data. It is important and necessary to take the qualitative value into consideration during the recognition of the value of big data. Understanding the data mining process would also help to acknowledge that the value of big data increases during the algorithm analysis procedure.

In addition, the present thesis will take the current tax nexus rule and transfer pricing guideline into consideration. The emphasis of the physical presence hinders the market jurisdiction to tax the value created by the big data collected from the local users.

Finally, the thesis will analyze more profoundly the "user participation" proposal, the "market intangibles" proposal, and "significant economic presence" proposal. Whether any of these proposals would help to better align the value creation with the transfer pricing outcomes will be discussed.

1.2 Limitations

This thesis is to assess different proposals for the tax on the value created by big data at the international level. The EU proposal for the Significant Digital Presence is excluded from the scope of this thesis.

1.3 Methodology

The methodology of the paper includes analysis of available business models for the two platforms, economic theory, legal literature, legislation, country reports and especially the Tax Challenges Arising from Digitalization - Interim Report 2018 and public consultation document "Addressing the Tax Challenges of the Digitalisation of the Economy". These documents are of outstanding importance to the understanding and allocation of the value of the big data. The paper will analyze whether the value created by bid data on the two digital platforms. After that, the main focus is to discuss the new proposed approaches and its possible impacts from different perspectives. In the last part, all conclusion of this analysis will be presented.

2.Business models analysis and big data value creation

2.1 Business model analysis for Facebook Platform

2.1.1 Customer Segments

One of the customer segments on the Facebook platform is the users. As of the fourth quarter of 2018, Facebook had 2.32 billion monthly active users.[25] It is the world's largest social network until now. Users are free to create an account, share the post and image, "like" and comment to keep in touch with friends, share special occasions and organize social events. People also read the news, interact with brands and make buying decisions on Facebook.

The other element of customer segments is the advertisers. The business or customers purchase the advertising space on the platform. The platform provides different ways of advertising such as the promotion of content that appears in news feeds, and promotion of trends and commercial user accounts.[26]

[25] Statista. 2019. *Number of monthly active Facebook users worldwide as of 1st quarter 2019 (in millions).* https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/.
[26] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing.

The advertisement would be shown differently according to the geography, demography, events, interests, keywords of the content, and device type.[27]

2.1.2 Value Proposition

Facebook provides a social networking platform that virtually connects people with their friends, family or strangers all over the world. It facilitates the sharing of contents through the social graph, the digital mapping of people's real-life social connections. On the other hand, the advertisers can target users on the platform and get a direct conversion on sales with less cost.[28]

2.1.3 Main revenue

The annual revenue generated from the Facebook platform is 55,838 million in 2018.[29] The main profit is from the advertisement revenue.[30] It provides the targeted advertising service to the business or customers more efficient due to the awareness of preference, habits, needs and habitual choices of the users.[31] There are mainly three fundamental types of advertisement on the Facebook platform, including:

I. Advertisement places on Facebook's page.[32] It is not difficult to create by the advertisers. The advertisers first address the links they want to be directed to the advertisement, and then provide the name and descriptions; at the same time specify the target customers by user data such as location, gender, age, hobby, searching records, etc and choose the payment option either pay per click or pay per view.[33] Then the ads will be displayed on target users' pages.

II. Social advertisement pages on the platform.[34] Businesses, organizations, and brands can create their own Facebook page and demonstrate their social images with the contents they want on the platform. The contents can be photos, videos, music or platform applications. These social advertisement pages allow the users to directly communicate with the business by commenting on the business' Wall or giving the feedback by clicking "thumb up" or "thumb down" buttons on the page. These preference data is also collected, stored and analyzed by the platform.

---

[27] id

[28] Marr, B. 2016. *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results.* New York: John Wiley & Sons.

[29] Facebook. 2019. *Facebook Reports Fourth Quarter and Full Year 2018 Results.* January 30. https://investor.fb.com/investor-news/press-release-details/2019/Facebook-Reports-Fourth-Quarter-and-Full-Year-2018-Results/default.aspx.

[30] id

[31] Sponder, M. 2013. *Social Media Analytics: Effective Tools for Building, Interpreting, and Using Metrics.* New York: McGraw-Hill Education.

[32] Visual Steps (Firm). 2014. *Working with Facebook*. Uithoorn: Visual Steps.

[33] Dodson, I. 2016. *The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns.* New York: Wiley.

[34] Broeder, P., and Derksen, R. 2018. "Exclusivity in online targeted promotions: cross-cultural preferences of consumers." *International Journal of Business and Emerging Markets 10(4)* 396-408.

III. The exclusive third-party advertising platform partner for Microsoft Corp.[35] The two company expanded their advertising partnership from 2007 and Microsoft is able to post advertising banners on Facebook's page.

2.1.4 Sources of Expense

The cost of the platform mainly includes research & development cost, cost of revenue, and marketing costs.[36] Facebook is the world's number one social media network and still face many competitors in the market. In order to keep the competitive advantages, the company invests tremendous at the R&D to develop and update the platform, improve the technology, enhance the user experiences and provide more accurate target advertisement.[37] In order to provide a more accurate target advertisement, Facebook develops the technology to collect and analyze big data, and optimize the system and software. There is also the cost for the data center since the platform collects a huge amount of data for analysis and need storage to store them.[38]

The cost of revenue includes expenses related to the delivery and distribution of goods and services, the depreciation of assets and other costs. For Facebook, the cost of revenue would include the facility and severe equipment expense and depreciation, energy and bandwidth costs and maintenance costs.[39] These costs are mainly generated in the head office.

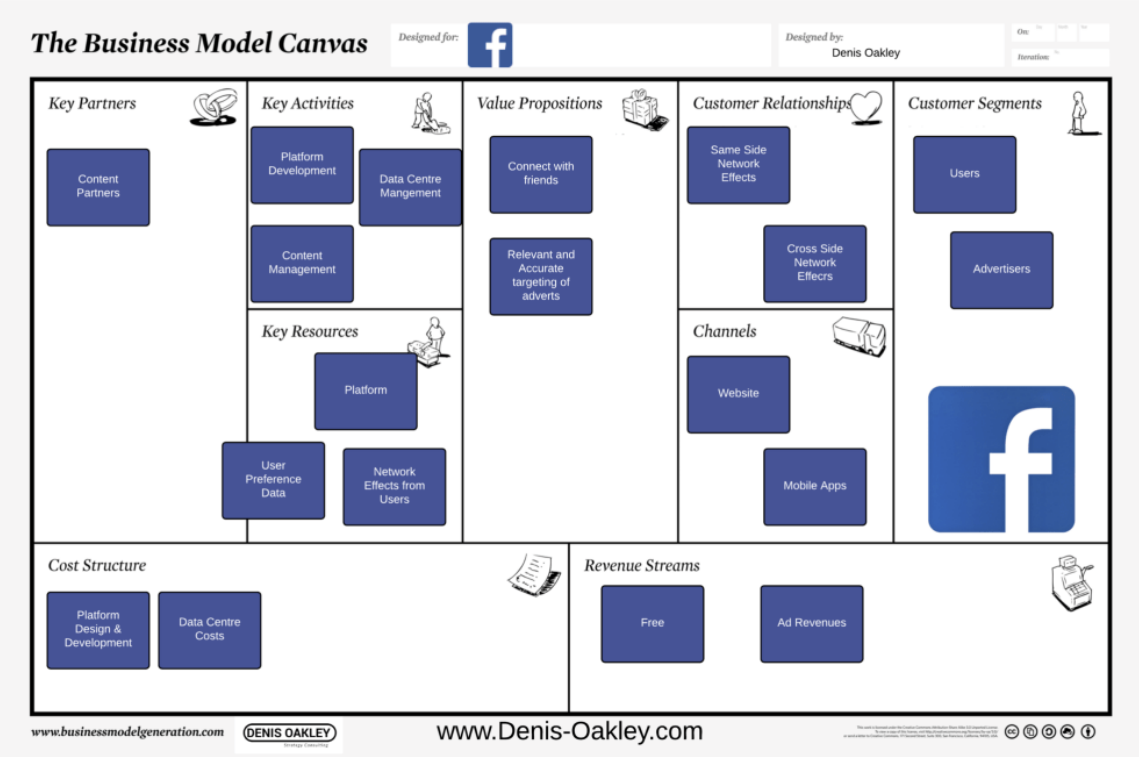
Marketing and customer service cost refers to the cost to maintain the brand. It includes marketing expenses to attract and maintain the users, cost to provide customer support and assistance.

2.1.5 Key resources and key activities:

Key resources for Facebook include platform, network effects from users, technology and user preference data.[40]

[35] Hu, X. 2011. *Social Media Business Model Analysis - Case Tencent, Facebook, and Myspace.* Logistics Masters Thesis, Helsinki: Aalto University.
[36] Facebook. 2019. *Facebook Reports Fourth Quarter and Full Year 2018 Results.* January 30. https://investor.fb.com/investor-news/press-release-details/2019/Facebook-Reports-Fourth-Quarter-and-Full-Year-2018-Results/default.aspx
[37] International Conference on Strategic Innovative Marketing (5th : 2016 : Athens, Greece). 2017. *Strategic Innovative Marketing : 5th Ic-Sim, Athens, Greece 2016*. Edited by Androniki Kavoura, Damianos P Sakas, and Petros Tomaras. Springer Proceedings in Business and Economics. Cham: Springer International Publishing.
[38] id
[39] id
[40] Jones, K. B. 2013. *Search Engine Optimization : Your Visual Blueprint for Effective Internet Marketing* (version 3rd ed.). 3rd ed. Visual Blueprint, V. 61. Hoboken: Wiley.

Key activities are platform development, content management, and data center management. The platform collects big data consistently and needs to manage data analysis and storage.[41]



[42]

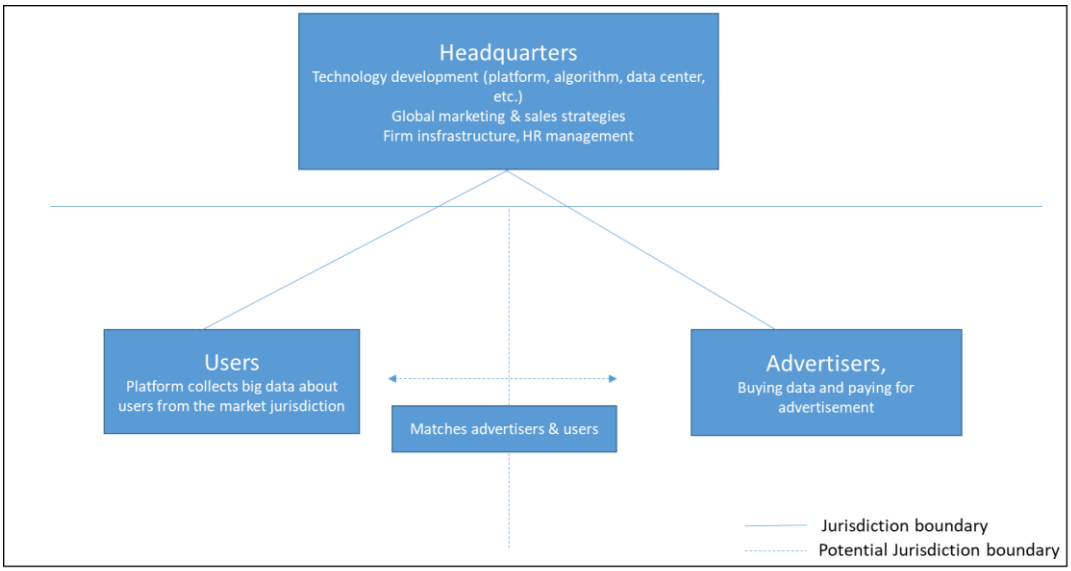
2.2 Value network analysis for Facebook

Value networks rely on a mediating technology: a technology used by platform operators to link customers interested in engaging in a transaction or relationship.[43] Facebook as internet-enabled value networks bring individuals together in a social capacity and allow advertisers to target specific user groups. In a value network, value is generated through the action of linking.[44] Technological development is extremely important to value creation activities to maintain the platform and improve the user experience to lock in the users with the platform, at the same time, collect and analyze the big data to monetize by providing targeting advertisement.

[41] Evans, Liana. 2010. *Social Media Marketing : Strategies for Engaging in Facebook, Twitter & Other Social Media*. Indianapolis, IN: Que.
[42] www.Denis-Oakley.com
[43] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing, 128.
[44] McCarthy, D., Fader, P. and Hardie, B. 2016. "Valuing Subscription-Based Businesses Using Publicly Disclosed Customer Data." *SSRN.*

Compared to the other platforms which normally collect data from the users' browsing habits, Facebook often has full access to straight-up demographic data[45] about users such as where they live, work, play, travel, how many friends they interact on FB, marital status, what they do in their spare time and any stars, writers, musicians they like. Facebook collects big data from market jurisdiction and implements data mining technology to analyze the big data in order to make the decision on what services and advertisement to offer where and when, and how to develop them. It is able to enhance the user experience about the platform in order to keep the users lock in with the platform and to help advertisers to better target customer in order to strengthen advertising sales.[46] The big data is monetized and generated the revenue from the advertisement for commercial customers. However, the size of the network, the number of users, the amount of time users spend on the platform and the technology used for data mining are very important. The more users use the social network and provide their personal data, the more valuable and interesting the service is for advisers. Big data and data mining become central features of the business.[47] The larger the size of big data, the more user-generated content and the more advanced technology for analysis will lead to more refined user preferences and better targeting advertisement can be delivered.

Figure 2



45

[46] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing, para 109

[47] Aggarwal, C. C. 2011. "An Introduction to Social Network Data Analytics. In: Aggarwal C. (eds). Springer, Boston, MA." *Social Network Data Analytics.* Boston: Springer.

2.3 Business model analysis for Netflix Platform

2.3.1 Customer Segments

Movie streaming industry emerges heavily depending on the development of computer and networking technology. Netflix is the global Internet TV station and the customers are the users who subscribe to the streaming service and pay the monthly flat fee. As of January 2019, the service had 139 million paid subscriptions worldwide, including 60.55 million in the United States, and over 148 million subscriptions from more than 190 nations in total including free trials.[48]

In order to provide the customized service, Netflix made micro-segmentation as more than 2000 taste clusters for the Netflix users.[49] Netflix also segments the customers according to geo-demography, viewing behaviors, browsing behaviors, and what device used to watch the contents. The main technology used to segment the customers is the big data and algorithm that analyzes the users' preferences and makes the recommendations.

2.3.2 Value Proposition of Netflix

Netflix provides the users legal access to huge movies and TV shows database, personalized suggestion algorithm, and service without the interruption of advertisement. Compared to other TV channel or streaming services, it releases new and exclusive series as full seasons and not one episode at a time. It also makes original contents. The service is supported on the widest range of devices including PCs, TVs, mobiles, tablets and gaming consoles. In addition, it provides localized content depending on the users' location and language.

2.3.3 Main revenue

The annual revenue generated from Netflix is 15,794 billion in 2018.[50] The main revenue is from the flat subscription fees. There are three subscription plans: international streaming, US streaming, and US DVD. The potential revenue could be licensing revenue for Netflix-owned content in the future.[51]

[48] Netflix. 2019. *Q4 2018 Letter to Netflix Shareholders*

[49] Rodriguez, A. 2017. *Netflix divides its 93 million users around the world into 1,300 "taste communities".* March 22. https://qz.com/939195/netflix-nflx-divides-its-93-million-users-around-the-world-not-by-geography-but-into-1300-taste-communities/.

[50] Macrotrends LLC. 2019. *Netflix Revenue 2006-2019 | NFLX.* https://www.macrotrends.net/stocks/charts/NFLX/netflix/revenue.

[51] Uenlue, M. 2019. *Netflix Business Model Canvas.* June 8. https://www.innovationtactics.com/netflix-business-model-canvas/

2.3.4 Sources of Expense

The cost for the platform mainly includes the cost of revenue, research & development cost, and marketing and general administration cost.[52]

The cost of revenue includes amortization of licensing cost and product cost, payment processing fees, customer service, streaming delivery cost and operation costs. In order to stream the shows and movies to the users in a legal environment, Netflix needs to bear a cost to license and acquire content. Netflix also invests in original content producing. Every year, the company needs to amortize these licensing and product costs.

The research and development cost mainly cover the technology used for collecting big data and analyzing data to make personalized recommendation system. It also covers the cost to maintain the platform, the cost for data storage and cloud computing.

In order to compete with the other content streaming website on the internet such as Hulu and Amazon Prime, Netflix use marketing strategies such as advertisement, partner with compatible device enterprises, and free trial for the first month. All these costs are marketing cost.

2.3.5 Key activities and resources

There are 33 million different versions of Netflix in order to give the user more customized service and happier experiences.[53] There are tons of films and shows. If the platform knows what kind of film or shows uses like to watch and put films together in front of users, it would make life so much easier than going through hundreds of movie and try to find the film they like. Technology makes it possible. More than 80 percent of the TV show people watch on Netflix are discovered through the platform's recommendation system.[54]

Netflix has identified nearly 80,000 "micro-genres" such as "comedy films featuring talking animals" or historical dramas with war themes".[55] Netflix can now figure out what films you like watching far more accurately than simply identify the preference as a horror film or love theme. It enables to predict more accurately what film people would like to watch.

---

[52] id

[53] Joris Evers, Director of Global Communication of Netflix

[54] Plummer, L. 2017. *How do Netflixs Algorithms Work Machine Learning Helps to Predict what Viewers will Like.* August 22. https://www.wired.co.uk/article/how-do-netflixs-algorithms-work-machine-learning-helps-to-predict-what-viewers-will-like.

[55] Marr, B. 2016. *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results.* New York: Wiley.

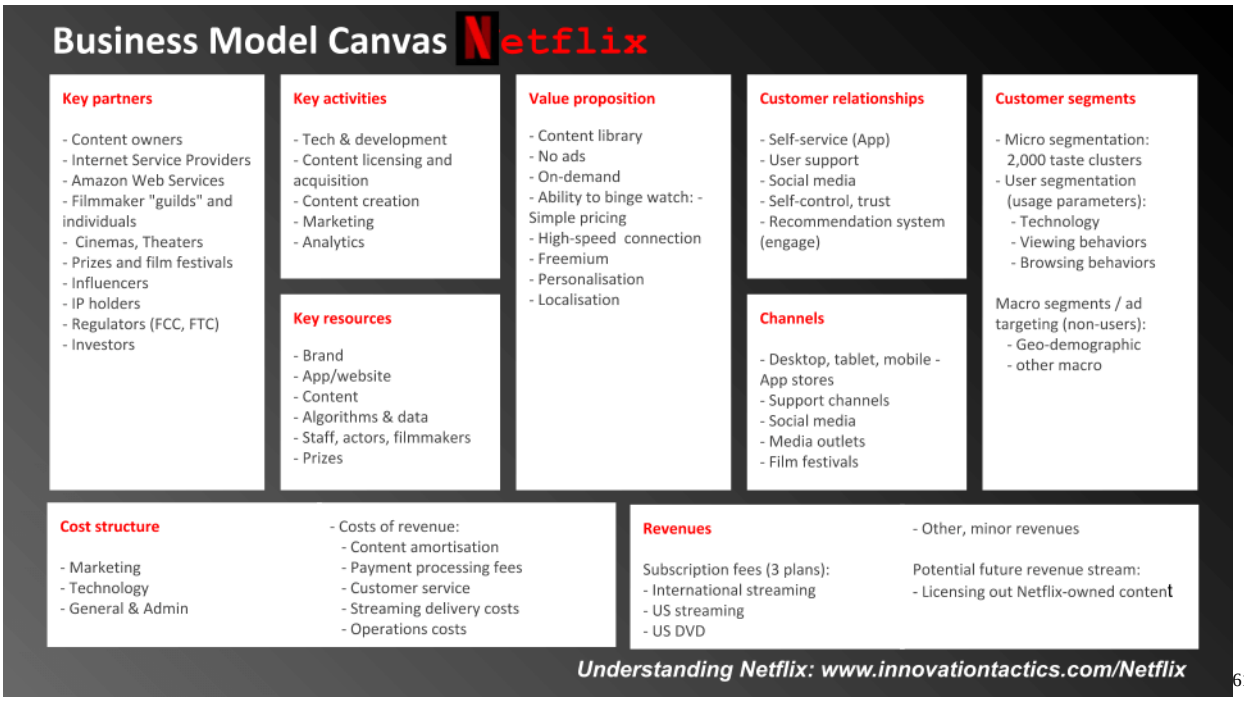
After analyzing the information collected from the users to better understand the viewing habits, Netflix personalizes the rows of the shows a user is presented with. There are tens of thousands of row Netflix can show to the user.[56] No user will be shown exactly the same combination rows. People who like fighting theme and who like the romance theme will have different rows. Netflix even collects the data about where you stop the movie or show and where you repeat watching. With more data, the algorithm would make a more precise prediction and make a recommendation which would be better accepted by the users. Netflix also occasionally throw in new shows and types of shows it thinks a person may be interested in. In this way, the users probably spend more time with Netflix and have less tendency to cancel the subscription.

Even the images people see before they choose to watch a movie or video may be different. Since the title and image which depicts the movie are first exposure for individuals to the content, choosing an image which is attractive to the person can affect the decision to watch it. In order to increase the chance for the viewers to click and start to watch the film, Netflix personalize the image it uses to depict the movie based on how much a member prefers different genres and themes. [57] For example, a movie contains a famous comedian actor and also romance. Netflix shows the artwork containing the romantic image to the people who have watched many romantic movies and show the artwork containing the famous comedy actor for the people who have watched many comedies. It increases the chances for people to click and start to watch the film.[58]

Content creation, Netflix does not only use big data to customize the recommendation system for the members but also use big data to influence the content of the series. After outbidding other networks for the right to House of Cards, Netflix decided to use David Fincher as the director and Kevin Spacey as the main character because the data showed that the subscribers had a voracious appetite for these two.[59] Netflix's letter to shareholder in April 2015 shows its Big Data strategy was paying off. They added 4.9 million new subscriber in Q1 2015 due to the successful data strategy towards their "ever-improving content" such as House of Cards. [60]

---

[56] Burgess, M. 2018. *This is how Netflix's secret recommendation system works.* August 18. https://www.wired.co.uk/article/netflix-data-personalisation-watching.
[57] Chandrashekar A., Amat F., Basilico, J. and Jebara, T. 2017. *Artwork Personalization at Netflix.* December 17. https://medium.com/netflix-techblog/artwork-personalization-c589f074ad76
[58] id
[59] Marr, B. 2016. *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results.* New York: Wiley, p.20
[60] Netflix. 2015. *Letter to Shareholders, first quarter earnings, 2015.* https://s22.q4cdn.com/959853165/files/doc_financials/quarterly_reports/2015/q1/Q1_15_Earnings_Letter_final_tables.pdf.



[61]

2.4 Value chain analysis for Netflix

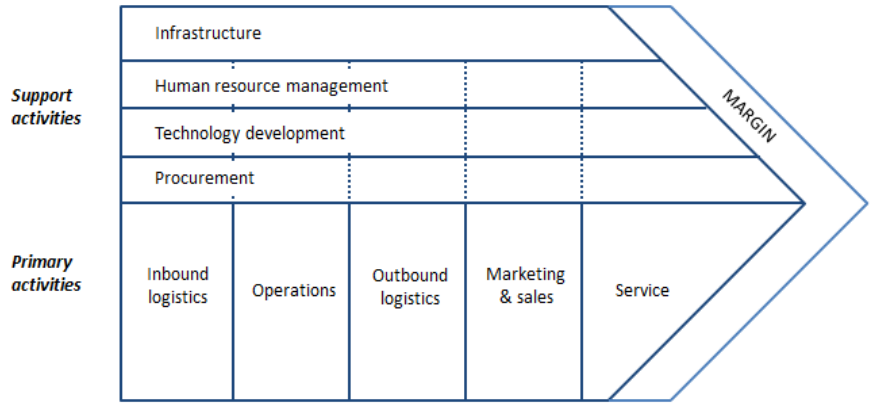
Value chain concept was introduced to the management of the company can better understand the value creation process transforming from the inputs into final products and the costs associated.

From the value chain perspective, the input of Netflix is the contents either self-produced or purchased from third parties. The final product is the personalized platform for intangible products. Technology development is part of the group of activities (R&D, data mining algorithm, data center cost, media design, etc.) to provide the customized recommendation system on the platform and improve user experience. Technology development is also very important for the decision making process for the new original content creating. Compared to Facebook or other searching engines, the data applications of Netflix are more subtle since the data mining process helps in developing services internally[62] and not directly monetized.

Increase the speed of transaction, closer relationship between service providers and their customers, efficiency

[61] www. Businessmodelcavas/Netflix.edu

[62] Olbert, M., and C. Spengel. 2019. "Taxation in the Digital Economy - Recent Policy Developments and the Qestions of Value Creation." *ZEW Discussion Paper No. 19-010.*



3. The Value created by big data

3.1 big data for the internal purpose and the external purpose on Facebook and Netflix

For highly digitalized businesses, such as Facebook and Netflix, big data helps to reach an advanced level of connection in the business to customer relationship. Facebook is the biggest social networking platform. Netflix is the most popular streaming service with the largest global subscription pool. All of these platforms made the revolution from the traditional business forms by using big data as a secret source of success. Facebook monetize big data to sell to the goods and service providers and provides the targeting advertisement to the users. Netflix uses big data to customize the offering for the streaming services and involve in the production of the contents. In both digital platforms, Data is a core component of the business models.

However, the value of big data also depends on the companies and use purpose of big data. In order to identify whether big data generates value on two platforms for tax purposes, it is necessary to further analyze different types of data.

Within the big data of Facebook and Netflix, there are different types of data for different functions below.

I. Metric data is used to measure business performance such as attrition rates in analyzing how frequent members use the service.
II. Business data is utilized to improve user experiences and services.

III. Certain other data is sold to the third parties.[63]

These three types of data can be divided into two pillars.[64]

I. Data for internal purpose includes Metric data and Business data and does not generate revenue.
II. Data for external purpose refers to the data sold to the third parties and generates revenue.

After identify how big data is utilized by the business, it is clearer to identify how the value is generated. However, the OECD does not define "value" and "value creation". Current tax systems throughout the world normally rely on the approximation by the market prices or actual payment based on market prices in order to determine the value for tax purposes. Data for external purpose is for sale to the third parties and has the market price and lead to actual payment. It will create substantial revenue and could be connected with high profits. Therefore, data for external purpose is valuable.

However, since OECD gives no definition on value or value creation, does the market price or actual payment reflects the true and full amount of value? Should the monetary revenue from the customers be the sole elements taken into consideration during the value recognition and allocation process? Does the big data for internal use purpose also generate any value for tax purpose even though it does not generate monetary revenue from the third party?

3.2 Does the monetary revenue (the market price or actual payment) reflect the total and true value from economics theory perspective?

From the19th century, the economists Carl Menger and Leon Walras proposed a version of the 'subjective' theory of value according to that the value of a good or service lies in the opinion of the beholder, such as the consumer.[65] Carl Menger explained the theory with the example of the value of spring. For the inhabitants of an oasis, who have command of a spring that abundantly meets their requirements for water, a certain quantity of water at the spring itself will have no value. But if a sudden earthquake happens and the spring decreases yields of water, the spring water would immediately attain value for each inhabitant.[66] Another example would also demonstrate this theory. Normally we do not pay for air. However, when air pollution is overwhelming in China, there are people selling the good quality of air in the container for people to breath. Then the air generate value. With changes in this relationship, value arises and disappears. The value of goods mainly arises from their relationship to our needs and is

[63] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.
[64] id
[65] Menger, C. 1950. *Principles of Economics.* New York: The Free Press.
[66] Id, 120

not inherent in the goods themselves. If the supply of the goods is way lower than the demand, the value of the goods will increase. The value is closely related to the 'maximum willingness to pay' and is the monetary equivalent of goods that the consumer or laborer is willing to give up.

There are certain valuable goods that we normally do not need to pay for, such as sunshine, family and friends, etc. However, for the goods not provided naturally or voluntarily, there are markets where goods are offered against payment and the government where goods are provided following a collective decision and paid by taxes.[67]

Assuming the lack of market frictions, a market occurs when service or goods can be produced with the cost no more than the consumer's valuation. It means if the costs of producing goods or providing services are more than consumer's valuation, there will be probably no demands from the customer and consequently no market for these goods and services. Assuming under perfect competition, the good is trade in the market at a certain price is equivalent to the marginal production cost[68] and marginal willingness to pay. In general, marginal willingness to pay is the amount of money customers are willing to pay for a particular feature of the product (e.g. how much customers are willing to pay for an upgrade of the features, in addition to the price they are already paying).[69] When the marginal consumer's willingness to pay and, thus, the market price is lower than the average consumer's willingness to pay, it lead to profit from trade and welfare increases.[70]

Therefore, the market price could be likely less than the average consumer's willingness to pay. It means that although often connected to the value, the monetary revenue (the market price or actual payment) does not accurately demonstrate the true amount of value.

3.3 Does the monetary revenue (the market price or actual payment) reflect the total and true value from the corporate perspective?

In general, at the beginning stage of every business, management of the company needs to form the business models, which are developed in order to address:[71]

I. A company's strategy to create value for shareholders, customers, and other stakeholders

[67] Becker, J. and Englisch, J. 2018. "Taxing Where Value is Created: What's 'User Involvement' Got to Do With It?" *SSRN*. https://ssrn.com/abstract=3258387

[68] The marginal cost of production is the change in total cost that comes from making or producing one additional item

[69] Kenton, W. 2018. *Marginal Cost Of Production* . March 30, https://www.investopedia.com/terms/m/marginalcostofproduction.asp

[70] Mas-Colell, A., Whinston, M. D., and Green, J. R. 1995. *Microeconomic Theory.* Oxford: Oxford University Press.

[71] Shanker, A. 2012. "A Customer Value Creation Framework for Businesses That Generate Revenue with Open Source Software." *Technology Innovation Management Review, Rev. 3* (Technology Innovation Management Review) 18-22.

II. Resources and procedures needed to deliver the value according to the strategy

III. A profit formula

In the strategy making process, it would be presumed that the concept of value may attribute to various social phenomena.[72] The value creation for the business models includes the value created for the customers, shareholders, and the company itself. When people demonstrate the market price in the business, the company normally only takes the value for the customer into consideration. It lacks consideration of certain value generated for the shareholders, and for the company itself.

Although the data for internal use does not generate revenue directly for customers, it does creates considerable value to improve the service the company provides and consequently generate more revenue from customers. The data for internal use for Facebook enhance the network effects and keep the users "lock in" the platform. It leads to the result that the platform could collect more data for external use and generate revenue. The big data for internal use for Netflix enhance the user experiences and help decision making for digital content production. [73] It creates the value for the platform and the company itself.

It is also argued that obtaining returns requires the company either provide the distinctive product to attract customers or have a low cost if the company sells the identical products compared to the competitors.[74] It demonstrates that the value may be considered as (a) the additional advantages offered to the customers in order to make the differentiated and unique products; or (b) the more valuable cost position. These advantages lead to the qualitative part of the value proposition.[75] Big data (for internal use and external use) is the input for the data mining process. Big data and data mining can lead to better predictions and improve the efficiency of the company. It will lead to lower expenses.

To sum up, from the corporate perspective, the value of big data include the value generated for the customers, shareholders and the company itself. The market price or actual payment does not accurately reflect the true amount of value. The big data for internal purposes also generate value for the companies and platforms.

---

[72] Bowman, C., Ambrosini, V. 2000. "Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy." *British Journal of Management, vol. 11, Issue 1* 1-15.

[73] Brauner, Y., and Pistone, P. 2017. "International - Adapting Current International Taxation to New Business Models: Two Proposals for the European Union." *Bulletin for International Taxation, vol. 71, No 12,* 4a.

[74] id

[75] Petruzzi, R., and Buriak, S. 2018. "International - Addressing the Tax Challenges of the Digitalization of the Economy-A Possible Answer in the Proper Application of the Transfer Pricing Rules?" *Bulletin for International Taxation, vol. 72, No 4a/Special Issue*, 11.

3.4 Use value and exchange value

The approach of distinguishing use value and exchange value is another way to analyze the value.[76] Use value is referred to "the distinct characteristics of the products or services perceived by the customers in regarding their demands".[77] Exchange value is referred to "the monetary amount realized at a single point in time when the exchange of the goods or services takes place".[78] Thus, it is reasonable to take consideration of two value to analyze the value creation. The value creation process can be regarded as the consolidation of valuable resources to provide a distinctive design of products and to receive profit in exchange.

Use value on Facebook and Netflix themselves could be the special characteristics that the users experiences regarding their needs. Facebook gives a safe and virtual platform to connect with people online. Netflix provides the users personalized channels so the users would enjoy more with the platform.

To sum up, when the company analyzes the value creation, it is important to take the qualitative value into consideration. The monetary amount of profit received out of a specific controlled transaction should not be served as the starting point of analysis in order to highlight the value creation procedure of the company.

3.5 Big data as new digital assets

Big data is composed of a huge amount of data. The legal ownership of data belongs to the users. The users have the rights and capability to have the business access to the data, prohibit access or delete all the data. In the EU, there is the General Data Protection Regulation 2016/679 (GDPR) to ensure personal data is properly protected. In this case, the data is the property of the individual user instead of an asset of a company or public goods. However, from the economic perspective, scholars tended to value big data as intangible assets whose ownership may not be protected by legal rules.[79]

The International Accounting Standards (IAS) defines an intangible asset as an identifiable non-monetary asset without physical substance. An asset is a resource that is controlled by the entity as a result of past events (for example, purchase or self-creation) and from which future economic benefits (inflows of cash or other assets) are expected.[80] It further states that there are three key attributes of intangible assets: (1)

[76] Bowman, C., Ambrosini, V. 2000. "Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy." *British Journal of Management, vol. 11, Issue 1.*
[77] id
[78] id
[79] Corrado, C., Haskel, J., Jona-Lasinio, C., Iommi M. 2012. "Intangible Capital and Growth in advance Economies: Measurement and Comparative results." *IZA Discussion Paper No. 6733*.
[80] IAS 38.8, IAS, 2004

identifiability (a product of a transaction), (2) control (power to obtain benefits from the asset), and (3) future economic benefits.[81]

The big data should be considered as an intangible asset in the digital economy since it is a resource without physical substance that controlled by the companies which collect and store them, as a result of purchase or collection, and lead to future economic benefits. Marketing and sales strategies extensively depend on big data and data mining technology that makes it one of the most valuable intangible asset for a digitalized company in the digital era.[82]

3.6 Data mining process and the value of big data

In 2019, the global big data industry was expected to be worth about USD 55 billion.[83] The market for big data is predicted to grow consistently in the future and provides companies substantial possibilities. Although big data is considered an important asset for the companies, how to accurately reflect the value of the big data in the accounting aspect is in the process of debate.[84] We can take another perspective from the investment and activities companies conduct to create value with big data.

Data mining is part of business models of Facebook and Netflix in order to increase the return on investment. Targeting advertisement and personalized channel rely on the data mining process. Big data is the input of the data mining process. During the data mining process, the value of data increases.

Big data is where parallel computing tools are needed.[85] The parallel computing tools are generally referred to the data mining technology. In order to pull value out from big data, companies need to experience an "entire discovery process that requires insightful analysts, business users, and executives who ask the right questions, recognize patterns, make informed assumptions and predict behavior". Several activities are required during the data mining process in order to transform raw data into valuable knowledge. Before the collection of big data, the company needs to decide upon the selection of target data that is relevant to make analysis and predictions. Afterward, the data will be cleaned to improve the quality of data and transform the data into a certain format. Then the company's data scientists and other employees from relevant departments collaborate to analyze the data in order to recognize patterns and

[81] Moody, D., Walsh, P. 1999. "Measuring The Value Of Information: An Asset Valuation Approach." *European Conference on Information Systems (ECIS'99).* Copenhagen, Denmark. 1-17.
[82] Teece, D. J., and Linden, G. 2017. "Business models, value capture, and the digital enterprise." *Journal of Organization Design 6:8* 1-14.
[83] Statista. 2019. *Forecast of Big Data Market Size, based on Revenue, from 2011 to 2017 (in billion U. S. dollars).* https://www.statista.com/statistics/254266/global-big-data-market-forecast/.
[84] Lev, B., and Gu, F. 2016. *The End of Accounting and the Path Forward for Investors and Managers.* New York: Wiley, sec. 8.
[85] Snijders, C., Matzat, U., Reips, U.-d. 2012. "'Big Data': Big Gaps of Knowledge in the Field of Internet Science." *International Journal of Internet Science, 7 (1)* 1–5.

models within the data. Then the patterns will be interpreted and certain prediction will be made for the decision-making. The value of big data increases during the process of data mining. The more advanced data mining technology, the more value the companies can extract from the big data.

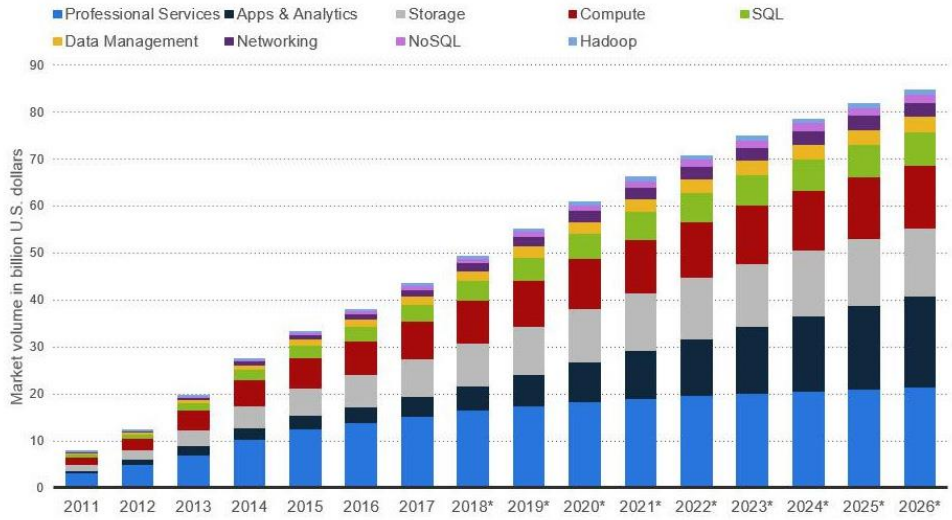


Figure 1 Big data market forecast worldwide from 2011-2016, by segment (in USD billion)[86]

Interim conclusion

To sum up, big data for internal use and external use all generate value for Facebook and Netflix. The monetary revenue which can be market price or actual payment does not reflect the total and true value of big data in two digital platforms since the big data for internal use is also valuable. When the companies measure the value of big data, they should take into consideration of value created for the companies themselves along with the revenue generated from the customers. The big data enhances the network effect, gets involved in the content production, and improves the user experiences, at the same time improves the efficiency and helps to decrease the cost. This qualitative value is also very essential to be taken into consideration. Big data is considered as an important intangible asset in the digital era and its value increases during the data mining process.

4.The current international tax rules and analysis of proposals

4.1 The current international tax rules

The current international tax rules consider business functions, the control of assets and risks as determination keys to entitle the taxing rights and allocate the taxable profit or loss to the countries.[87] The rules are reflected in the OECD Model Tax Convention:[88]

- Article 9: The profits of a company within a group should be allocated according to the value generates through its activities for the group under the arm's length principle

- Article 5: In addition to the taxing rights over resident companies, countries have rights to tax non-resident companies that have PEs which are permanent physical presence in their jurisdiction
- Article 7: Countries are entitled to tax non-resident companies on profits attributable to the activities undertaken through PEs

These rules and the guidelines do not recognize the value created by user data, big data or data mining process. The presence of an active user base in a jurisdiction is not of itself sufficient to evidence of a PE in that jurisdiction, and does not, therefore, entitle the jurisdiction taxing rights to tax the business's profits. It requires the physical nexus for the entitlement of taxing rights in a jurisdiction.

In the age of the digital economy, companies reshape the way of conducting business and utilize heavily internet and global web as main marketing tools. Compared to the traditional way of doing business, the main goals and primary activities in the digital economy have remained consistent. The business mainly provides goods or services aiming to make profits. However, the business structures and process of value creation have significantly changed especially for certain industry or companies.[89]

From the analysis of business models of two digital platforms, it is obvious that the digital economy makes it easier to offer services to customer all over the world without setting up a physical PE or a subsidiary in the market jurisdictions.[90] Under the current taxing rules, the value created by the big data and data mining in the market jurisdiction is not likely to be taxed.

---

[87] OECD. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris, Article 5, 7 & 9.
[88] OECD. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris, Article 5, 7 & 9.
[89] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing, para 130.
[90] European Commission 2018. *Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence.* Brussels: European Commission, p.2; OECD. 2015. *Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing; Schön, W.

In 2015, OECD released BEPS reports to address the challenges in the digital economy. The OECD identifies tax challenges that can be categorized into nexus for taxation, the use of data and the respective attribution of value.[91] Action 1, Action 6 and Action 7 propose amendments to counter abusive tax planning by circumventing the concept of PE. The action 8-10 of Final Report advises ensuring the alignment of profit allocation/transfer pricing outcomes with value creation.

In 2018, OECD released Tax Challenges Arising from Digitalisation – Interim Report 2018. It recognizes that characteristics became common for the business in the digital economy such as cross-jurisdictional scale without mass, the importance of intangible assets, and the importance of data, user participation and their synergies with IP.[92] It means that the technology which analyzes the user data becomes one of the core value of the business and makes it possible to conduct business trans-border without having the subsidiary, branches or other kinds of significant physical presence in other jurisdiction. Data and data analysis are becoming progressively fundamental assets for business during the business decision-making process.

In March 2019, addressing the Tax Challenges of the Digitalisation of the Economy Public Consultation Document laid out three proposals for revising the profit allocation and nexus rules in response to challenges posed by digitalization. Proposals include the "user participation" proposal, the "marketing intangibles" proposal and the "significant economic presence" proposal. These three proposals seek to change the current PE nexus rule and expand the taxing rights of the user or market regardless of whether the business has a local physical presence.

4.2 The "user participation" proposal

It proposed that regarding the activities or participation of users, the profit allocated to a user jurisdiction be calculated through a non-routine or residual profit split approach.[93] At a basic level, the approach includes:

- Calculating the residual or non-routine profit of a business, i.e. the profits that remain after routine activities have been allocated under arm's length principle[94]

2018. "International - Ten Questions about Why and How to Tax the Digitalized Economy." *Bulletin for International Taxation, vol. 72, No 4/5.*

[91] Petruzzi, R. 2019. "International- Transfer Pricing, Users' Participation and Profit Attribution to Digital Permanent Establishments: A Case Study." *International Transfer Pricing Journal, vol. 26, No 2.*

[92] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing, para 130.

[93] id, page 9

[94] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing, para 24.

- Attributing a proportion of those profits to the value created by the activities of users, which could be determined through quantitative/qualitative information, or through a simple pre-agreed percentage[95]
- Allocating those profits between jurisdictions in which the business has users, based on an agreed allocation metric such as revenues[96]
- Giving those jurisdictions taxing rights to tax that profit.[97]

Under this approach, the way to attribute profit to the routine activities of a group would not be affected and still in line with the arm's length principle. The only effect would be to reallocate a certain amount of the non-routine profit of the business from the entities that are currently realizing profit to the jurisdiction in which users are located.[98] The proposal could rely on formulas that would approximate the value of users and the users of each country to a business and also be combined with a strong dispute solution to minimize dispute and double taxation.[99]

To establish nexus with the user jurisdiction through at least four channels, such as the generation of content, depth of engagement with the platform, network effects and externalities, and contribution to brand.[100]

4.3 Rational of the "user participation" proposal

Under the current tax rules, the profits are mainly taxed in the country where the IP (data mining tools such as algorithm, for example) is beneficially owned or used[101] (if there is a subsidiary or a PE) and not taxed in the jurisdictions of the user. The "user participation" proposal is based on the idea that sustained engagement and active participation of users is a critical component of value creation for certain highly digitalized business.[102] It is in line with profit allocation outcomes with value creation.

To goal of this proposal is to align taxable nexus and the allocation of taxing rights with value creation and adequate recognition of the contribution by the user.[103] It acknowledges the difficulties in using

[95] id
[96] id
[97] Id
[98] id, page 9, para 25
[99] id, page 9, para27
[100] HM Treasury. 2018. *Corporate Tax and the Digital Economy: Position Paper Update.* London: Assets Publishing Service, para. 2.5.
[101] OECD. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris, Article 5, 7, and 12.
[102] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing, para 18.
[103] Pistone, P., Nogueira, J.F.P., and Rodríguez, B. A. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2*, page 14.

traditional transfer pricing methods for determining the amount of profit that should be allocated to a user jurisdiction.[104] In analyzing the user base under the arm's length principle, we normally need to hypothesis the user base as a third party and ask the price in its dealings with other group entities. It is not proper for the business model of the digital platform and difficult or impossible to find the proper benchmark.

4.4 Analysis of the "user participation" proposal

The proposal suggests that the allocation of residual profit based on users of the digital platform would be rational. However, in practice, it needs to address certain issues.

Firstly, this proposal is premised on the idea that soliciting the sustained engagement and active participation of users is an important component of value creation for Facebook.[105] However, a distinction would need to be drawn between active user participation and passive user participation. How active a user needs to be in order to be defined as an active user. How frequently do the users publish contents counts as active, several times in a day or several times in a week?

Secondly, the allocation key for the attribution of residual profits should correspond with the subject for which the amount is due.[106] It is acknowledged that some advisors consider the allocation key to be users. However, the allocation key should be the activities of the user. The activities of the user on Facebook would be providing data. How to measure the amount of relevant data collected in a jurisdiction? In reality, it is very difficult to measure. There are research articles stating that blockchain would solve the problem for identifying the value of data and user participation.[107] However, blockchain technology is still developing and not fully implemented. Maybe in the future, it will solve the evaluation problem when blockchain technology is fully developed and deployed. In addition, reliability and veracity of the information would be necessary to identify false information, multiple accounts, fraudulent accounts, and bot-driven accounts.[108] The administrative burden will increase and the technical challenge will arise to ensure the accurate amount of the relevant accounts.

---

[104] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.
[105] id, para 18
[106] Zalando,
[107] Elliot, C. B. 2019. "Blockchain Could Dictate Future of Digital Taxation (March 2019)." *Taxnews.* April 1. https://www.taxnotes.com/worldwide-tax-daily/digital-economy/blockchain-could-dictate-future-digital-taxation/2019/04/01/299dt.
[108] Comments on the Public Consultation Document from Dhruva Advisors

Thirdly, the residual profit split approach will work in parallel with the arm's length principle.[109] It is essential to first identify the profit allocated to the established global routine functions of the MNE under the arm's length principle. Then the total profit or loss minus the amount of routine return will lead to the residual profit.[110] However, transfer pricing audits and disputes regarding the application of arm's length principle happen often. Since the tax return and local files are often filed a certain period of time following the financial year, the audit results will be noticed to the taxpayer normally more than three years. Once the dispute starts, it takes years to resolve. Some jurisdiction applies statutes of limitation which means that a transfer pricing dispute may arise several years after the transactions. For example, Article 25 of the OECD Model Tax Convention states that requests for competent authority assistance must be presented within three years from the first notification of the action resulting in international double taxation. These adjustments would subsequently influence the size of the residual profit.

Consequently, the residual profit would not be sure until all jurisdictions where the enterprise carries out routine services audit, dispute and resolve the arm's length application of the relevant transactions and functions.[111] The residual profit needs to wait to be distributed after all the jurisdictions exercising their rights to audit and dispute the transaction. Otherwise, any transfer pricing adjustment affecting the residual profits would be absorbed either by the country of the principle(s) or to be redistributed to the market jurisdictions.[112] It is doubtful if the countries would arrive at the consensus to solve these problems. According to the sovereignty principle, it is impractical to expect the country to be willing to accept the lower tax base because of the settlement between two other states that this country is not involved. For Facebook, there are users in more than 60 jurisdictions.[113] Netflix members are in over 190 countries.[114] If the adjustment is redistributed to all these market jurisdictions, it will increase the tremendous possibilities of dispute and administration burden for the taxpayers and tax authorities.

Even if there are solutions to solve this problem and residual profit is known at the time of distribution, the question of how to identify and calculate the residual still exists.[115] There are two theoretical options to identify the residual-total global residual of the entire enterprise or the residual of a segment. If the

[109] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing, para
[110] Volvo page 10
[111] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.
[112] id
[113] Facebook. 2019. *Facebook Reports Fourth Quarter and Full Year 2018 Results.* January 30. https://investor.fb.com/investor-news/press-release-details/2019/Facebook-Reports-Fourth-Quarter-and-Full-Year-2018-Results/default.aspx.
[114] Netflix. n.d. *Where is Netflix available?* https://help.netflix.com/en/node/14164
[115] Petruzzi, R. 2019. "International- Transfer Pricing, Users' Participation and Profit Attribution to Digital Permanent Establishments: A Case Study." *International Transfer Pricing Journal, vol. 26, No 2.*

enterprise calculates the total global residual, it needs to consider all the business lines, business areas, product, and services. For example, Facebook owns several online platforms, WhatsApp, other applications and game design, etc. The profitability of these services is different. The platform Facebook offers service in different jurisdictions and have a different amount of advertisement revenue. However, according to the user participation approach, the overall profitability would be shared equally by all market jurisdictions. For Netflix, the residual profit will be distributed to the market jurisdictions regardless of the number of users in each jurisdiction. It means the residual profit will be distributed without the connection between value creation and taxation.[116] It is not in line with the goal of the BEPS project.

If the enterprise calculates the residual profit from a separate segment, it will lead to challenges with the working load for the taxpayers with multi-business-line and administration burden for the tax authorities. Facebook has multiple lines of business. Each line of business has different levels of profitability and user participation, so the residual profit calculation and allocation could be different for each other. Besides, the development of an active user base for a digital platform is the result of digital platform and marketing strategies, and services tailored to local markets. User participation only focuses on the allocation of net profit. But costs occurred to meet requirements to enter a specific jurisdiction should also be allocated to that jurisdiction as they were incurred with the intention of enlarging the local active user base. Global profitability does not imply that all jurisdictions are profitable from a business perspective. If the profit for the whole business line is negative, there will be no value to distribute to the market jurisdiction. It will lead to a problem because the costs incurred to develop digital platforms typically precede the generation of revenues in one particular jurisdiction. It is difficult to reasonably allocate profit based on user participation. It does not necessarily demonstrate true value creation.

More and more traditional businesses improve their offering by bundling together their traditional products and services with platforms where customers can discuss and improve such products and services. Such platforms may resemble social media. Similar examples arise in search engines and marketplaces too. The scope of the measures is at risk of becoming larger and larger as the economy continues to digitalize and traditional business implement new digital ways of doing business.[117] The user participation differs based upon the facts and circumstances of an enterprise's business model. The user participation approach is limited to certain digital platforms. When the proposal is with the highly limited scope, it may not reach future business models. It may result in the difficulty to broaden the scope for the

[116] Bal, A. 2018. "International – (Mis)guided by the Value Creation Principle – Can New Concepts Solve Old Problems? (Oct. 2018)." *Bulletin for International Taxation, vol. 72, No 11.*

[117] Nieminen, M. 2018. "International – The Scope of the Commission's Digital Tax Proposals." *Bulletin for International Taxation, vol 72, No 11.*

taxing right in the digital economy.[118] Since the fast evolution of the digitalized economy, this approach may lead to a significant ongoing burden on box tax authorities and taxpayers due to a constant need to redefine the scope of the measures.[119] It will demand updates to reflect future economic changes all the time otherwise the ongoing international consensus would weaken and lead to a new proliferation of uncoordinated unilateral measures.[120]

Lastly, the proposal requires additional reporting obligations on the trans-border basis, following the information exchange mechanism.[121] The scope of taxation would request using and disclosing sensitive business data to the extent never required before.[122] The user data is sensitive intangible. Traditional businesses are not mandatory to report such detailed and specific intangible information locally nor in a country-by-country report. It may distort the level playing field between digitalized business and traditional business.

In summary, although the "user participation" proposal recognizes the value created by the big data collected from the users in the market jurisdiction, it is not a suitable approach to allocate the value to different jurisdictions. It does not address the issue with active and inactive users. The residual profit split approach it suggested is complicated and time-consuming to apply in practice. It has the ring-fencing effect and harms the tax neutrality.

4.4 The "marketing intangibles" proposal

The "marketing intangibles" proposal widens the scope of implementation for more digital business.[123] For Facebook and Netflix, trust, popularity, and reputation of the brand are essential to create and maintain the networking effect. These marketing intangibles are built in the state where users and consumers are. This approach aims to solve the situation that the MNE group develop a user/customer base and other marketing intangibles without essentially "reach into" a jurisdiction.[124] The marketing

[118] Valente, P. 2019. "International - The Data Economy: On Evaluation and Taxation." *European Taxation, vol. 59, No 5.*
[119] Collier, R., and Vella, J. 2019. "International – Five Core Problems in the Attribution of Profits to Permanent Establishments." *World Tax Journal, vol. 11, No 2.*
[120] Petruzzi, R., and Buriak, S. 2018. "International - Addressing the Tax Challenges of the Digitalization of the Economy-A Possible Answer in the Proper Application of the Transfer Pricing Rules?" *Bulletin for International Taxation, vol. 72, No 4a/Special Issue.*
[121] Petruzzi, R. 2019. "International- Transfer Pricing, Users' Participation and Profit Attribution to Digital Permanent Establishments: A Case Study." *International Transfer Pricing Journal, vol. 26, No 2.*
[122] Valente, P. 2019. "International - The Data Economy: On Evaluation and Taxation." *European Taxation, vol. 59, No 5.*
[123] Nieminen, M. 2018. "International – The Scope of the Commission's Digital Tax Proposals." *Bulletin for International Taxation, vol 72, No 11.*
[124] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing, page 12, para 28

jurisdictions are able to entitle the taxing rights for the value generated by user data or other marketing intangibles under this approach.

The intrinsic functional link between marketing intangibles and the market jurisdiction is demonstrated in two ways.[125] Firstly, marketing intangibles, such as brand and brand name are considered to create value in the market jurisdiction when the customers have the positive or good impression toward the brand. Secondly, other marketing intangibles, such as user data, customer lists and customer relationship are acquired from activities targeted at users and customers in the market jurisdiction.[126] It leads to that market jurisdiction would have taxing rights on the profit on the marketing intangibles from highly digitalized business even the business has no PE or tax presence in that jurisdiction.[127]

The proposal requires that the non-routine or residual income of the MNE group generated from marketing intangibles and corresponding risks be allocated to that market jurisdiction.[128] All other income, which can be attributed to routine marketing and distribution functions or to technology-related intangibles generated by research and development activities, continue to be allocated based on existing profit allocation principle.[129] It demonstrated a revised residual profit split analysis that uses more mechanical approximation. Firstly, it needs to determine relevant profit, identify routine functions and compensation, deduct routine profit from total profit and then conclude the final residual profit. Secondly, non-routine or residual profit need to be allocated in different ways ranging from, e.g., cost-based methods (e.g. costs incurred to develop marketing intangibles versus costs incurred for R&D and trade intangibles) to more formulaic approaches (e.g. using fixed contribution percentages, which may differ by business model).[130] The amount of income attributable to different market jurisdictions can be based on an agreed metric, such as sales, revenue, or the users of the platform.

4.6 Analysis of the "marketing intangibles" proposals:

Firstly, intangible is intended to address something which is not a physical asset or a financial asset, which is capable of being owned or controlled for use in commercial activities, and whose use or transfer would be compensated had it occurred in a transaction between independent parties in comparable circumstances.[131]

---

[125] Valente, P. 2019. "International - The Data Economy: On Evaluation and Taxation." *European Taxation, vol. 59, No 5.*
[126] OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing, page 12, para 31.
[127] id, para 38
[128] id, para 43
[129] id, para 43
[130] id, para 47
[131] Hubbard, D. W. 2014. *How to Measure Anything: Finding the Value of Intangibles in Business.* New York: Wiley.

In OECD BEPS report, marketing intangible is defined as an intangible that relates to marketing activities, aids in the commercial exploitation of a product or service and/or has an important promotional value for the product concerned.[132] Depending on the context, marketing intangibles may include, for example, trademarks, trade names, customer lists, customer relationships, and proprietary market and customer data that is used or aids in marketing and selling goods or services to customers.[133] The category of marketing intangible is too broad and open-ended as described in the OECD TP Guidelines.[134]

With the development of business in different countries, new marketing intangibles may constantly appear in the future. If countries are not consented with the category of the marketing intangibles, the dispute will not be avoidable.[135] For example, Facebook and Netflix cover a huge amount of the jurisdictions which have their own definition of marketing intangibles. If they all agree to include customer data as marketing intangibles, the dispute will be avoided. However, in the future, if the business model changes or technology advances, there may be other forms of marketing intangibles. The situation will exist that the marketing jurisdiction recognizes it as marketing intangibles and claim the taxing rights but the jurisdiction of the principle does not agree. It may be even more difficult for certain developing countries which are lack of capacity and sufficient suitable information to follow the updates and keep track of the new feeds.[136]

Secondly, trade intangible is a commercial intangible other than a marketing intangible. It is tough to separate value creation from the trade intangibles and marketing intangibles. The two intangibles are likely intended to grow together and it is challenging to have clear rules to distinguish what profit is attributable to one or the other. Hence, it may eventually end up into a situation that the global value would somehow be apportioned (under a pre-determined formula) to trade and marketing intangibles of the market jurisdiction, leading to an artificial way of granting taxing rights to the market state.

Last but not least, it will have a similar problem regarding the routine, non-routine function and residual profit as for "user participation" proposal. It will probably lead to high compliance and administrative costs.

---

[132] OECD. 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017.* Paris: OECD Publishing, para 6.6.

[133] id

[134] OECD. 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017.* Paris: OECD Publishing, para 31.

[135] Peng, C. X. 2017. "China (People's Rep)/International – A Rethink of Location – Specific Advantages with an Analysis of the Chinese Approach (Oct. 2017)." *International Transfer Pricing Journal, vol. 24, No 6.*

[136] Bilaney, S. K. 2016. "India - Marketing Intangibles: An Indian Perspective." *International Transfer Pricing Journal, vol. 23, no. 6.*

4.7 The "significant economic presence" proposal and analysis

In Article 5 of the OECD Model tax convention, permanent establishment means a fixed place of business through which the business of an enterprise is wholly or partly carried on.[137] It demonstrates that the international tax rules historically emphasized the key role of a physical presence in source countries for them to tax profits generated therein in the cross-border situation. However, from the 1990s the business models and global economy changed substantially. Academics tried to explore how the PE concept could be further diluted to be more suitable for the new world of global digital commerce.[138] For example, Luc Hinnekens studied how to create a "virtual" PE through a qualitative test regarding the facts and circumstances surrounding nonresident sales.[139] There were also discussion about how a more straightforward quantitative test (such as sales above a certain threshold) could be used to trigger PE status.[140]

The "Significant Economic Presence" proposal introduced new prong to the PE concept as so-called virtual or digital permanent establishment. The OECD 2018 reports and 2018 proposal of the European Commission[141] also mentioned this SEP nexus proposal. However, in the public consulting report the Significant Economic Presence proposal first time laid out the possibility of allocating profits to PEs according to the arm's length standards as well as in a no arm's length measure.[142] It is possible to arrive at the profit split and operate it depending on a politically agreed, fixed allocation key.[143] It could be a fixed percentage, which sets a certain percentage for the resident state and other states, or a more precise allocation key which could be fractional apportionment based on assets, labor and sales.[144]

This proposal has vital advantages with reference to neutrality, simplicity and inter-nation fairness.[145] Compared with the other two proposals, the SEP proposal does not differentiate between routine and non-routine functions or trade and market intangibles. The proposal can apply to digital platforms such as

---

[137] OECD. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris.
[138] Skaar, A. A. 1991. *Permanent Establishment: Erosion of a Tax Treaty Principle.* Boston: Deventer.
[139] Hinnekens, L. 1998. "Looking for an Appropriate Jurisdictional Framework for Source-State Taxation of International Electronic Commerce in the Twenty-First Century." *Intertax, Issue 6/7* 192–200.
[140] Cockfield, A. J. 2003. "Reforming the Permanent Establishment Principle Through a Quantitative Economic Presence Test." *38 Can. Bus. L.J.* 400. In this article, the author proposed a quantitative economic presence test that enables source countries to tax above-threshold sales (for example, gross revenues in excess of US $ 1 million) despite the absence of any physical presence. This article was published in 2003.
[141] European Commission 2018. *Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence.* Brussels: European Commission.
[142] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing.
[143] Pistone, P., Nogueira, J.F. P., and Rodríguez, B. A. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2.*
[144] European Commission (2018), Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence
[145] Pistone, P., Nogueira, J.F. P., and Rodríguez, B. A. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2.*

Netflix and Facebook which create value and generate profit in market jurisdictions on a consistent basis without a "significant physical presence".

The SEP proposal still operates within the framework of the PE concept. Permanent Establishment concept under the current tax treaty convention needs to be amended and include a virtual or digital PE to the current definition of PE. When the profit attributes to PE, it is necessary to take into account of the business function performed by users and customers, including those directly interact with algorithms and AI used by the non-resident digitalized enterprise in order to actively operate in the market country in the absence of a physical presence in its territory.

For the digital platforms Facebook and Netflix, the SEP proposal will work well if the proposal works with an upfront allocation of the taxing rights to the market country.[146] It would solve the problems connected with the lack of a physical presence of the platforms in the market jurisdiction. The market jurisdiction can secure the tax revenue by levying withholding taxes. The amount of withholding tax should be determined by reference to the pre-determined amount according to the business models.[147] The business models of Facebook and Netflix are different. The value of the raw data collected from users is different for the two digital platforms. The application of different criteria and thresholds to the two platforms in the presence of different forms of interaction with users and customers enhance the exercise of taxing jurisdiction by market country in line with the concept of a digital PE.

The user participation proposal and market intangible proposal apply the residual profit split method and the value attributed to the market jurisdiction depends on the whole profitability level of the whole enterprise or certain business line. It may have the situation that the market jurisdiction would have no profit allocated because of the loss occurred in other jurisdiction. However, the SEP gives the significant economic presence jurisdiction a non-residual taxing power on the business profits. Such taxing rights are not interfered by what happened outside of the jurisdiction and would be less complicated compared to other two proposals.[148] It does not need to identify the users and routine functions of a business or allocate marketing intangibles. The profit is attributable to the PE when the value is created in the market jurisdiction even if the loss occurs at the headquarter level. If the loss is recognizable at the PE level, it should be taken into consideration in the country of the significant economic presence.

The risk of double taxation would be mitigated under the SEP proposal. It still operates within the framework of the PE concept. It allocates the appropriate profit to the PE in the market jurisdiction and

[146] OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing.
[147] European Commission. 2015. *Communication from the Commission to the European Parliament and the Council of Europe, A Fair and Efficient Corporate Tax System in the European Union: 5 Key Areas for Action.* Brussels: European Commission.
[148] Brauner, Y., and Pistone, P. 2017. "International - Adapting Current International Taxation to New Business Models: Two Proposals for the European Union." *Bulletin for International Taxation, vol. 71, No 12.*

the residence country grant tax relief.[149] This proposal facilitates the enforcement particularly in developing countries where the tax authorities have limited technical capacity.

4.8 TP Analysis of Facebook platform under SEP proposal

One example with the TP analysis for the SEP in NL will be presented below.

Facebook develops the specific and valuable software and data mining algorithm in the headquarter in the US and has the users in the Netherlands. For the purpose of this thesis, we can assume that there is a treaty for the avoidance of double taxation in force between US and NL including a similar provision as the Significant Economic Presence proposal that creates similar rights and obligations. Facebook also has a significant economic presence in NL.

The first step toward profit allocation to the significant economic presence located in NL is the application of a separate entity approach. It will apply authorized OECD approach and consider the PE as a separate entity.[150] In the functional analysis of the SEP, the key function undertaken by Facebook in NL would be providing user data, immediate data mining process and other deemed DEMPE functions. The assets of the digital PE in NL would be the user data, part of software/hardware tool (i.e. the website) enabling the significant economic presence to collect the user data. The algorithm for processing data and other software for deemed DEMPE function are developed in the head office in the US and implemented in the market jurisdiction - NL.

The risks arising from the function undertaken in the NL would be market risk, reputational risk and socio-political risk.[151] Market risk is linked to possible competitors carrying on more successful and popular platforms. Reputation risk is associated with possible deterioration of the business reputation due to scandals such as data leaking scandals. Socio-political risk is linked to possible significant changes in the socio-political environment, including political instability and legal uncertainty influencing the business model objectives.

4.9 TP Analysis of Netflix platform under SEP proposal

One example with the TP analysis for the SEP in NL will be presented below.

Netflix has physical PE in the Netherlands for the business of EMEA. It provides the content to the users and charges the flat fee. For the purpose of this thesis, we can assume that there is a treaty for the

[149] OECD. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris.
[150] OECD. 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017.* Paris: OECD Publishing.
[151] Samari, A. S. 2018. "European Union - Digital Economy and Profit Allocation: The Application of the Profit Split Method to the Value Created by a "Significant Digital Presence"." *International Transfer Pricing Journal, vol. 26, No 1.*

avoidance of double taxation in force between US and NL including a similar provision as the Significant Economic Presence proposal that creates similar rights and obligations. Netflix has physical PE and Significant Economic Presence in NL.

The first step toward profit allocation to the physical PE and significant economic presence located in NL is the application of a separate entity approach. It will apply authorized OECD approach and consider the PE as a separate entity.[152] When we analyze the function, assets, and risks of the PE in the Netherlands, it is important to take into account of those for Physical office and digital PE.

The key function undertaken by Netflix in NL would be providing user data, immediate data mining process, other deemed DEMPE functions, administration, marketing, customer care and other detailed function for the physical PE. The assets of the digital PE in NL would be the user data, part of software/hardware tool (i.e. the website) enabling the significant economic presence to collect the user data and provide the customized service to the users. The algorithm for processing data and other software for deemed DEMPE function are developed in the head office in the US and implemented in the market jurisdiction-NL.

The risks arising from the physical PE function undertaken in NL would be market risk, reputational risk, socio-political risk and obsolescence risk. Market risk is linked to possible competitors carrying on more successful and popular streaming services. Reputation risk is associated to possible deterioration of the business reputation due to scandals. Socio-political risk is linked to possible significant changes in the socio-political environment, including political instability and legal uncertainty influencing the business model objectives. The obsolescence risk is linked to the possibility that the software allowing user data collected through the website would become obsolete and less effective.

The OECD could consider introducing a "force of attraction rule". When an enterprise has a physical PE and a significant economic presence PE in a jurisdiction, all profits would be allocated to the physical PE or to the most profitable physical PE which is required for the allocation of profits and collection of taxes. It will ensure the collection of tax and lower the administrative burden for taxpayer and tax authorities.

5. Conclusions

Primary, an analysis of the business model and value network for Facebook shows that big data creates value for Facebook due to the fact that the big data is directly monetized by sale to the third parties. Big data on Netflix does not have a market price or generate actual payment and is mainly used to improve the

[152] OECD. 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017.* Paris: OECD Publishing.

services. However, the market price or an actual payment based on the market price does not reflect the true value of the big data. From the economic theory perspective, the value of a product or service is the price "willing to pay" from the customers and normally higher than the market price. From the corporate perspective, the market value of the big data demonstrates the value created for the customers and ignore the value creates for the corporate itself. It is important to take into consideration of the qualitative value that can enhance the networking effect for Facebook, get involved in the production of content for Netflix, and lower the cost and improve the efficiency for both platforms. Besides, the analysis of the data mining process demonstrates that the value of big data increases during the data analysis procedures.

Secondary, the current international tax rules and transfer pricing guidelines require the physical presence as nexus for allocating the tax rights. Therefore, the market jurisdictions are not entitled to tax the value generated by the big data which is collected from the users of their jurisdictions. In order to align the value creation with the transfer pricing outcomes, the OECD published three proposals- the "user participation" proposal, the "market intangible" proposal and the "significant economic presence" proposals.

Thirdly, under the "user participation" proposal, the value of big data collected from the users is recognized. However, it has a ring-fencing effect and harms the tax neutrality. The residual profit split approach suggested by this proposal is complicated and time-consuming to implement in practice. The "market intangible" proposal widens the scope of implementation to more digital business. Despite that, it recognizes the value created by a user/customer base and other marketing intangibles without essentially "reach into" a jurisdiction, the category of marketing intangible is too broad and open-ended. It will lead to the difficulty to implement especially for the developing countries and disputes between jurisdictions.

Finally, the "significant economic presence" proposal is the most suitable approach to allocate the value created by big data to market jurisdictions for Facebook and Netflix. This proposal has vital advantages with reference to neutrality, simplicity and inter-nation fairness.[153] What is more, through the comparison and analysis of two platforms, it can be concluded that the big data create different value for different companies and it is very important to analyze the business models and value chain in order to understand how the big data create value and properly allocate the value to different jurisdictions. Company and tax authorities need to exam the value of big data on a case-by-case basis.

[153] Pistone, P., Nogueira, J.F. P., and Rodríguez, B. A. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2.*

Bibliography

Journal Articles

Bal, A. 2018. "International – (Mis)guided by the Value Creation Principle – Can New Concepts Solve Old Problems? (Oct. 2018)." *Bulletin for International Taxation, vol. 72, No 11.*

Becker, J. and Englisch, J. 2018. "Taxing Where Value is Created: What's 'User Involvement' Got to Do With It?" *SSRN.*

Bilaney, S. K. 2016. "India - Marketing Intangibles: An Indian Perspective." *International Transfer Pricing Journal, vol. 23, no. 6.*

Bowman, C., Ambrosini, V. 2000. "Value Creation Versus Value Capture: Towards a Coherent Definition of Value in Strategy." *British Journal of Management, vol. 11, Issue 1* 1-15.

Brauner, Y., and P. Pistone. 2017. "International - Adapting Current International Taxation to New Business Models: Two Proposals for the European Union." *Bulletin for International Taxation, vol. 71, No 12.*

Broeder, P., and Derksen, R. 2018. "Exclusivity in online targeted promotions: cross-cultural preferences of consumers." *International Journal of Business and Emerging Markets 10(4)* 396-408.

Carreño, F., and J. Perelló. 2019. "Spain - Plans Regarding Digital Taxes." *International Transfer Pricing Journal, vol. 26, No 2.*

Chao C.-n., Hegarty N., and Fray, I. 2016. "Impact of Movie Streaming over Traditional DVD Movie Rental-An Empirical Study." *Journal of Industrial and Intelligent Information, Vol. 4, No. 2* 104-109.

Cockfield, A. J. 2003. "Reforming the Permanent Establishment Principle Through a Quantitative Economic Presence Test." *38 Can. Bus. L.J.* 400.

Collier, R., and J. Vella. 2019. "International – Five Core Problems in the Attribution of Profits to Permanent Establishments." *World Tax Journal, vol. 11, No 2.*

Corrado, C., Haskel, J., Jona-Lasinio, C., Iommi M. 2012. "Intangible Capital and Growth in advance Economies: Measurement and Comparative results." *IZA Discussion Paper No. 6733.*

Cui, W. and Hashimzade, N. 2019. "The Digital Services Tax as a Tax on Location-Specific Rent." *SSRN.*

De Mauro, A., Greco, M., Grimaldi, M. 2016. "A formal definition of Big Data based on its essential features." *Library Review, vol. 65 Issue: 3* 122-135.

Hinnekens, L. 1998. "Looking for an Appropriate Jurisdictional Framework for Source-State Taxation of International Electronic Commerce in the Twenty-First Century." *Intertax, Issue 6/7* 192–200.

McCarthy, D., Fader, P. and Hardie, B. 2016. "Valuing Subscription-Based Businesses Using Publicly Disclosed Customer Data." *SSRN.*

Nieminen, M. 2018. "International – The Scope of the Commission's Digital Tax Proposals." *Bulletin for International Taxation, vol 72, No 11.*

Olbert, M., and C. Spengel. 2019. "Taxation in the Digital Economy - Recent Policy Developments and the Qestions of Value Creation." *ZEW Discussion Paper No. 19-010.*

Parida, V., Rönnberg Sjödin, D., Lenka S., and Wincent, J. 2015. "Developing Global Service Innovation Capabilities: How Global Manufacturers Address the Challenges of Market Heterogeneity." *Research-Technology Management, September 2015* (Research-Technology Management) 35-44.

Peng, C. X. 2017. "China (People's Rep)/International – A Rethink of Location – Specific Advantages with an Analysis of the Chinese Approach (Oct. 2017)." *International Transfer Pricing Journal, vol. 24, No 6.*

Pérez Gautrin, C. 2019. "United States- US Tax Cuts and Jobs Act: Part 2 – The Base Erosion and Anti-Abuse Tax(BEAT)." *Bulletin for International Taxation, vol. 73, No 3.*

Petruzzi, R. 2019. "International- Transfer Pricing, Users' Participation and Profit Attribution to Digital Permanent Establishments: A Case Study." *International Transfer Pricing Journal, vol. 26, No 2.*

Petruzzi, R., and S. Buriak. 2018. "International - Addressing the Tax Challenges of the Digitalization of the Economy-A Possible Answer in the Proper Application of the Transfer Pricing Rules?" *Bulletin for International Taxation, vol. 72, No 4a/Special Issue.*

Pistone, P., J.F. P. Nogueira, and B. A. Rodríguez. 2019. "The 2019 OECD Proposals for addressing the tax challenges of the digitalisation of the economy: an assessment." *International Tax Studies, Volume 2, No 2.*

Samari, A. S. 2018. "European Union - Digital Economy and Profit Allocation: The Application of the Profit Split Method to the Value Created by a "Significant Digital Presence"." *International Transfer Pricing Journal, vol. 26, No 1.*

Schön, W. 2018. "International - Ten Questions about Why and How to Tax the Digitalized Economy." *Bulletin for International Taxation, vol. 72, No 4/5.*

Shanker, A. 2012. "A Customer Value Creation Framework for Businesses That Generate Revenue with Open Source Software." *Technology Innovation Management Review, Rev. 3* (Technology Innovation Management Review) 18-22.

Sheppard, L. A. 2018. "International - Digital Permanent Establishment and Digital Equalization Taxes." *Bulletin for International Taxation, vol. 72, No 4a/Special Issue.*

Snijders, C., Matzat, U., Reips, U.-d. 2012. "'"Big Data": Big Gaps of Knowledge in the Field of Internet Science." *International Journal of Internet Science, 7 (1)* 1–5.

Teece, D. J., and Linden, G. 2017. "Business models, value capture, and the digital enterprise." *Journal of Organization Design 6:8* 1-14.

Valente, P. 2019. "International - The Data Economy: On Evaluation and Taxation." *European Taxation, vol. 59, No 5.*

Zott, R., and C. Amitt. 2001. "Value Creation in E-business." *Strategic Management Journal 6/7*, 496.

Books

Aggarwal, C. C. 2011. "An Introduction to Social Network Data Analytics. In: Aggarwal C. (eds). Springer, Boston, MA." *Social Network Data Analytics.* Boston: Springer.

Brynjolfsson, E. and Kahin, B. 2000. *Understanding the Digital Economy - Data, Tools, and Research .* Cambridge: MIT Press.

Dodson, I. 2016. *The Art of Digital Marketing: The Definitive Guide to Creating Strategic, Targeted, and Measurable Online Campaigns.* New York: Wiley.

Evans, L. 2010. *Social Media Marketing : Strategies for Engaging in Facebook, Twitter & Other Social Media.* Indianapolis, IN: Que.

Fox, C. 2018. *Data Science for Transport.* Zurich: Springer International Publishing.

Hu, X. 2011. *Social Media Business Model Analysis - Case Tencent, Facebook, and Myspace.* Logistics Masters Thesis, Helsinki: Aalto University.

Hubbard, D. W. 2014. *How to Measure Anything: Finding the Value of Intangibles in Business.* New York: Wiley.

Jones, K. B. 2013. *Search Engine Optimization : Your Visual Blueprint for Effective Internet Marketing (version 3rd ed.). 3rd ed. Visual Blueprint, V. 61.* Hoboken: Wiley.

Witten, I. H. , Frank E., Hall M. A., and Pal C. J. 2005. *Data Mining: Practical Machine Learning Tools and Techniques.* Cambridge: Elsevier.

Kahin, E., Brynjolfsson, L.M. 2002. *Understanding the Digital Economy – Data, Tools, and Research.* Boston: The MIT Press.

Lev, B., and Gu, F. 2016. *The End of Accounting and the Path Forward for Investors and Managers.* New York: Wiley.

Marr, B. 2016. *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results.* New York: John Wiley & Sons.

Mas-Colell, A., Whinston, M. D., and Green, J. R. 1995. *Microeconomic Theory.* Oxford: Oxford University Press.

Menger, C. 1950. *Principles of Economics.* New York: The Free Press.

Peitz M., Waldfogel J. 2012. *The Oxford Handbook of the Digital Economy.* Oxford: Oxford University Press.

Porter, M. E. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance.* New York: Free Press.

Rayport, J.F., and J. J. Sviokla. 1995. "Exploiting the virtual value chain." *Harvard Business Review*, November-December.

Sponder, M. 2013. *Social Media Analytics: Effective Tools for Building, Interpreting, and Using Metrics.* New York: McGraw-Hill Education.

Skaar, A. A. 1991. *Permanent Establishment: Erosion of a Tax Treaty Principle.* Boston: Deventer.

Visual Steps (Firm). 2014. *Working with Facebook.* Uithoorn: Visual Steps.

Official Reports and Documents

Dhruva Advisors. 2019. "Comments on the Public Consultation Document Addressing the Tax Challenges of the Digitalization of the Economy."

European Comission. 2018. *Proposal for a council directive on the common system of a digital services tax on revenues resulting from the provision of certain digital services.* Proposal, Brussels: European Comission.

European Commission. 2015. *Communication from the Commission to the European Parliament and the Council of Europe, A Fair and Efficient Corporate Tax System in the European Union: 5 Key Areas for Action.* Brussels: European Commission.

—. 2018. *Proposal for a Council Directive laying down rules relating to the corporate taxation of a significant digital presence.* Brussels: European Comission.

Facebook. 2019. *Facebook Reports Fourth Quarter and Full Year 2018 Results.* January 30. https://investor.fb.com/investor-news/press-release-details/2019/Facebook-Reports-Fourth-Quarter-and-Full-Year-2018-Results/default.aspx.

HM Revenue and Customs. 2018. "Diverted Profits Tax: Guidance ." *assets.publishing.service.gov.uk.* December. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/768204/Diverted_Profits_Tax_-_Guidance__December_2018_.pdf.

HM Treasury. 2018. *Corporate Tax and the Digital Economy: Position Paper Update.* London: Assets Publishing Service.

Ministry of Economy and Finance of Italy. 2017. "Political Statement - Joint Initiative n the Taxation of Companies Operating in the Digital Economy." September 7. http://www.mef.gov.it/inevidenza/banner/170907_joint_initiative_digital_taxation.pdf.

Netflix. 2015. *Letter to Shareholders, first quarter earnings, 2015.* https://s22.q4cdn.com/959853165/files/doc_financials/quarterly_reports/2015/q1/Q1_15_Earnings_Letter_final_tables.pdf.

—. 2019. *Q4 2018 Letter to Netflix Shareholders.* https://s22.q4cdn.com/959853165/files/doc_financials/quarterly_reports/2018/q4/01/FINAL-Q4-18-Shareholder-Letter.pdf.

OECD. 2013. *Addressing Base Erosion and Profit Shifting.* Paris: OECD Publishing.

OECD. 2015. *Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.

OECD. 2019. *Addressing the Tax Challenges of the Digitalisation of the Economy - Public Consultation Document, OECD/G20 Base Erosion and Profit Shifting Project.* Paris: OECD Publishing.

—. 2015. *Aligning Transfer Pricing Outcomes with Value Creation, Actions 8-10 - 2015 Final Reports.* Paris: OECD Publishing.

—. 2017. *BEPS public consultation on the tax challenges of digitalisation .* November 1. www.oecd.org/tax/beps/public-consultation-on-tax-challenges-of-digitalisation-1-november-2017.htm.

OECD. 2018. "Inclusive Framework on BEPS ." *OECD.* July. http://www.oecd.org/tax/flyer-inclusive-framework-on-beps.pdf.

OECD. 2015. *Measuring and Monitoring BEPS, Action 11 - 2015 Final Report.* Paris: OECD Publishing.

—. 2017. *Model Tax Convention on Income and on Capital: Condensed Version 2017.* OECD Publishing: Paris.

OECD. 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017.* Paris: OECD Publishing.

—. 2013. *OECD/G20 Base Erosion and Profit Shifting Project.* OECD Publishing: Paris.

OECD. 2018. *Tax Challenges Arising from Digitalisation – Interim Report 2018.* Paris: OECD Publishing.

PWC. 2016. "Industry 4.0: Building the digital enterprise." *PWC.* https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf.

Zalando. 2019. "Comments on the Public Consultation Document Addressing the Tax Challenges of the Digitalization of the Economy." Letter, Berlin.

Conference Proceedings

Greco M., De Mauro, A., and Grimaldi, M. 2015. "What is Big Data? A Consensual Definition and a Review of Key Research Topics." *4th International Conference on Integrated Information, Madrid 2014, AIP Conference Proceedings 1644, 97.* AIP Publishing.

International Conference on Strategic Innovative Marketing (5th : 2016 : Athens, Greece). 2017. "Strategic Innovative Marketing : 5th Ic-Sim, Athens, Greece 2016. Edited by Androniki Kavoura, Damianos P Sakas, and Petros Tomaras." *Springer Proceedings in Business and Economics. .* Cham: Springer International Publishing.

Moody, D., Walsh, P. 1999. "Measuring The Value Of Information: An Asset Valuation Approach." *European Conference on Information Systems (ECIS'99).* Copenhagen, Denmark. 1-17.

Webpages

Burgess, M. 2018. *This is how Netflix's secret recommendation system works.* August 18. https://www.wired.co.uk/article/netflix-data-personalisation-watching.

Business Management Degree.net. 2019. *How does Facebook Make its Money.* https://www.business-management-degree.net/facebook/.

Chandrashekar A., Amat F., Basilico, J. and Jebara, T. 2017. *Artwork Personalization at Netflix.* December 17. https://medium.com/netflix-techblog/artwork-personalization-c589f074ad76.

Cleartax. 2019. *Equalisation Levy.* May 29. https://cleartax.in/s/equalisation-levy.

Elliot, C. B. 2019. "Blockchain Could Dictate Future of Digital Taxation (March 2019)." *Taxnews.* April 1. https://www.taxnotes.com/worldwide-tax-daily/digital-economy/blockchain-could-dictate-future-digital-taxation/2019/04/01/299dt.

Kenton, W. 2018. *Marginal Cost Of Production .* March 30. https://www.investopedia.com/terms/m/marginalcostofproduction.asp.

Macrotrends LLC. 2019. *Netflix Revenue 2006-2019 | NFLX.* https://www.macrotrends.net/stocks/charts/NFLX/netflix/revenue.

—. 2018. *Here's Why Data is not the New Oil.* March 5. https://www.forbes.com/sites/bernardmarr/2018/03/05/heres-why-data-is-not-the-new-oil/#55ba94f73aa9.

Netflix. n.d. *Where is Netflix available?* https://help.netflix.com/en/node/14164.

Plummer, L. 2017. *How do Netflixs Algorithms Work Machine Learning Helps to Predict what Viewers will Like.* August 22. https://www.wired.co.uk/article/how-do-netflixs-algorithms-work-machine-learning-helps-to-predict-what-viewers-will-like.

Rodriguez, A. 2017. *Netflix divides its 93 million users around the world into 1,300 "taste communities".* March 22. https://qz.com/939195/netflix-nflx-divides-its-93-million-users-around-the-world-not-by-geography-but-into-1300-taste-communities/.

Statista. 2019. *Forecast of Big Data Market Size, based on Revenue, from 2011 to 2017 (in billion U. S. dollars).* https://www.statista.com/statistics/254266/global-big-data-market-forecast/.

—. 2019. *Number of monthly active Facebook users worldwide as of 1st quarter 2019 (in millions).* https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/.

Uenlue, M. 2019. *Netflix Business Model Canvas.* June 8. https://www.innovationtactics.com/netflix-business-model-canvas/.

Wagner, K. 2018. *This is how Facebook uses your data for ad targeting.* April 11. https://www.vox.com/2018/4/11/17177842/facebook-advertising-ads-explained-mark-zuckerberg.