CHAPTER 19

Transfer Pricing in the IT Sector

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1 INTRODUCTION

The IT industry has permeated every aspect of life; it has changed how life is lived, how work is done, and communication with others. It is also a key driver of industry

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convergence and the foundation of the digital economy. The IT industry has extraordinary diversity, scale[1] and scope in terms of participants and the underlying technologies. It is also characterized by a rate of innovation that is unprecedented in history with new technologies spawning new business models and companies at an extraordinary rate.

The IT industry is a leading and top-performing sector within the S&P 500 Index[2] and comprises companies primarily engaged in the provision of IT-related and software development services; manufacturing of the technology hardware and storage; and the production of electronic equipment and components, including semiconductors and related equipment.[3] Premised on Moore's law,[4] the IT industry has experienced exponential growth over the past few decades. Currently, the world's top largest companies rated by market capitalization are the leading MNEs operating in the IT industry.

Considering the importance of the IT industry, tax authorities worldwide have taken a significant interest in how IT companies operate, how they generate revenues and, of course, how profits are taxed in their respective jurisdictions. In this context, a key concern for tax authorities is TP, especially when IT companies operate cross-border as they often do with relative ease. However, understanding TP within the IT industry is not a trivial exercise, especially given the wide variety of business models that are employed by companies in the industry. Furthermore, with the rate of innovation in this industry, business models are constantly changing and evolving, making it twice as difficult to precisely identify how value is being generated and how it should be taxed.

This chapter investigates the rudimentary elements of this challenge and reviews the fundamentals of how value is created in the IT sector in order to begin to attempt to effectively address the critical TP questions. To do so, section 2 discusses how value is created in the IT sector with a particular emphasis on the uniqueness of value creation in this sphere. Section 3 builds on this understanding of value creation and uses a stylized case study to illustrate this comprehension can help inform the TP analysis of IT business models. The last section concludes with a number of observations on the future of TP in the IT industry.

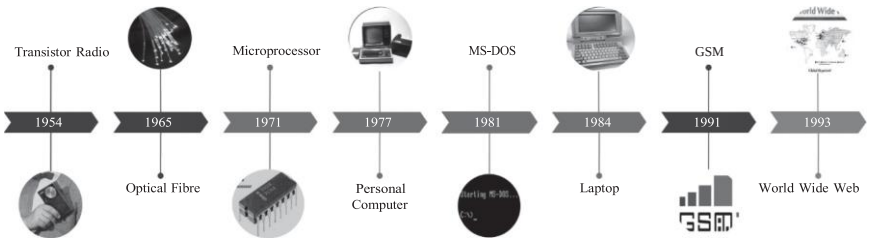
1. According to Gartner, Worldwide IT spending is expected to reach $ 4.5 trillion in 2022, https://www.gartner.com/en/newsroom/press-releases/2022-01-18-gartner-forecasts-worldwid e-it-spending-to-grow-five-point-1-percent-in-2022 (last accessed 30 January 2022).
2. As of February 2021, IT industry companies had a total market capitalization of USD 18.9 trillion, S&P Capital IQ, Market Analysis, https://www.capitaliq.com/CIQDotNet/IndustryIntelligence/industryAnalysis.aspx (last accessed 27 February 2021).
3. Louis Bellucci, Jodie Gunzberg, *S&P Sector Primer Series: Information Technology*, 1 (2019).
4. Moore's law is a principle of exponential growth suggesting that computing speed and capability doubles approximately every two years.

2 VALUE CREATION IN THE IT INDUSTRY

2.1 History of Value Creation in the IT Industry

The value chain analysis as a concept was first introduced in the mid-1980s by Michael Porter.[5] He has argued that a company should be analysed through a sequence of the distinct activities that it performs and, to gain a competitive advantage over its competitors, a company must either perform these activities at a lower cost or perform them in a manner that leads to differentiation. In addition, he also introduced the concept of a value driver which can be viewed as either an input-output metric or a factor that results in a sustainable competitive advantage. The key value drivers and the sources of value creation in the IT industry – efficiency, productivity, and growth – can be analysed through two distinct yet consecutive time frames, i.e., pre- and post-internet eras.

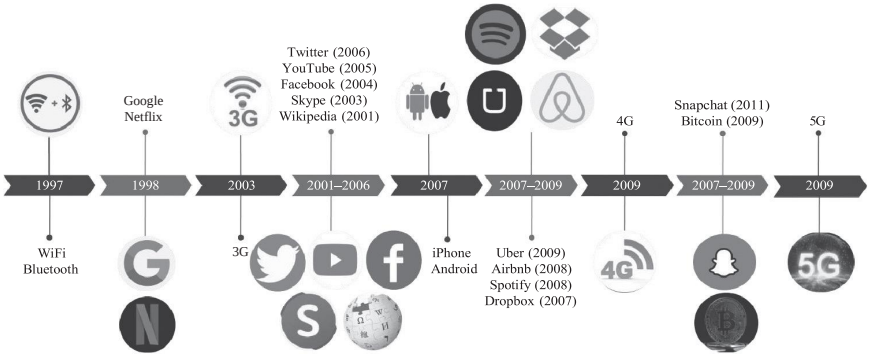
Figure 19.1 Timeline of Innovations, Pre-internet Era[6]



As shown in Figure 19.1, the pre-internet era is characterized by the parallel development of telecommunication and technological innovations that have converged with the internet's creation in 1993. The pre-internet's key value drivers were standardization, increase in processing power, and miniaturization of computing equipment, and a gradual replacement of mainframes with personal computers and laptops. The pre-internet era's key players, leading manufacturers of computing equipment – IBM, Apple, and Dell – competed in the market employing the customer-centric strategies that revolved around the democratization of processing equipment and their widespread use.

5. Michael E. Porter, Victor E. Millar, *How Information Gives You Competitive Advantage*, Harvard Business Review, 3 (1985).
6. The timeline depicted here has been adapted from Figure 1-9 Timeline of ICT Innovations in Harald Overby, Jan A. Audestad, *Digital Economics*, 21 (2018).

Figure 19.2 Timeline of Innovations, Post-internet Era[7]



The invention and the introduction of the World Wide Web in the early 1990s transformed the IT industry since it enabled the emergence of a commercialized version of the internet as it is known today. Its impact was a watershed moment that radically changed the entire economic structure of the IT industry and can only be compared to the creation of the internal combustion engine that enabled the rapid development of the physical transportation network.[8]

As shown in Figure 19.2, the internet has been a primary driving force behind the evolution of the technology, solutions and market participants in the IT industry. It connected the world digitally, made jurisdictional borders indistinguishable, and enabled cross-border commerce of digital goods and services at a rate and scale unprecedented in history. It transformed the economic construct of international markets by reducing entry barriers for new market players, expanding access to a wider base of customers and suppliers, popularizing platform-based businesses, and creating a zero-marginal cost economy. Value creation in the post-internet era has also shifted from value chains to value shops and value networks.[9] Due to the internet, value is now generated in ways that were unimaginable even a few decades ago by transforming data in even more creative ways, innovating at an unprecedented pace, and leveraging network effects bolstered by the newly created economies of scale and scope.

7. The timeline depicted here has been adapted from Figure 1-9 Timeline of ICT Innovations in Overby, Audestad, *supra* n. 6.
8. The concept of radical change through the employment of new technology was first introduced by Russian economist Nikolai Kondratieff, a founder of the theory of the economic cycles, i.e., Kondratieff waves.
9. OECD, *Tax Challenges Arising from Digitalisation: Interim Report 2018: Inclusive Framework on BEPS*, OECD/G20 Base Erosion and Profit Shifting Project (Paris: OECD Publishing, 2018), 35.

2.2 Industry 4.0: Key Characteristics and Market Players

History repeats itself in cycles, and the world has already experienced tectonic shifts of paradigms and market constructs. The First Industrial Revolution dates back to the mid-eighteenth century and began with the invention of the steam engine. The Second Industrial Revolution occurred during the twentieth century with the introduction of electricity and the internal combustion engine. The Third Industrial Revolution aligned with the rapid development of communication and information technologies as described in Figure 19.1. Since the emergence of the internet, rapid advances in connectivity and accessibility of data have transformed the nature of the economy. The world economy is now increasingly digital and is based on automation and collaborative consumption. These new technological shifts are often referred to as the Fourth Industrial Revolution or Industry 4.0 (4IR).[10] It has three key features: mobility, network effects, and data usage. These are explained in more detail below:[11]

(1) Mobility: once the blueprint for a digital product has been developed, the marginal costs of producing, replicating, and providing a digital product to customers around the world are normally minimal. The main cost is thus the fixed cost of developing the blueprint, and the replication stage can be located wherever total costs are the lowest.
(2) Network effects: whenever the value of a product to its users increases with the number of other product users, demand-side economies of scale and scope are created through these network effects.
(3) Data usage: the third feature of 4IR is the growing usage of data that is 'continuously driving down the costs of collecting, storing and analysing data'. As the volume of data increases and the costs of generating and storing data decrease, the market-making costs (i.e., the costs of search, negotiations, monitoring, and enforcement) also decline, generating even more opportunities for domestic and cross-border trade.

As Porter predicted thirty-five years ago, access to data and the information revolution has affected competition in three vital ways:[12]

(1) It changed the industry structure and, in so doing, altered the rules of competition.
(2) It created sustainable competitive advantages by giving innovative companies entirely new ways to outperform their rivals.
(3) It spawned whole new businesses.

10. Klaus Schwab, *The Fourth Industrial Revolution*, 7 (2017).
11. Lorraine Eden, Niraja Srinivasan, Srini Lalapet, *Transfer Pricing Challenges in the Digital Economy: A Case Study of the Internet of Things (Part I of II)*, Tax Management International Journal, 48, 251 (2019).
12. Porter, *supra* n. 5, at 15-21.

The 4IR has also spurred the emergence of new technologies that have challenged the established market players' status quo in the IT sector. Progress in information technology characterized by digitization and servitization has led to a structural transformation of the economy. It has also modified the business strategies of the established market players who have been forced to innovate and determine new ways to continue competing effectively. As a consequence, the current IT market is shared by the two groups of companies that can be broadly described as follows:[13]

(1) 'Going Digital' – these companies are traditional IT 'brick-and-mortar' businesses adapting to the new business environment and market construct, and
(2) 'Born Digital' – 4IR 'millennials', i.e., businesses established in the post-internet era and operating based on digital economics principles.

The traditional IT companies are reinventing themselves and leveraging the power of new technologies to transform their business models to compete (going digital). These companies enjoy significant infrastructure and processing facilities at their disposal and most commonly compete via modification of their products into XaaS (infrastructure, platform, or software) offerings. The XaaS requires high initial set-up costs or a developed infrastructure – financial and physical assets – that is available to the established market players. These companies further provide access to their infrastructure, platform, or software on a subscription basis.[14]

The IT 'millennials' (born digital), i.e., companies that have emerged since the internet can be classified into the 'machine – platform – crowd' categories based on the emerging technologies they employ:[15]

- machine: companies competing through automation, algorithms, and use of big data, i.e., robotics, AI, machine learning, and big data analytics, e.g., Microsoft, Amazon, and Google;
- platform: large and influential young platform-based companies, key disruptors in the IT industry competing through network effects, e.g., Uber and Airbnb;
- crowd: start-up decentralized businesses utilizing and synthesizing accumulated human knowledge and expertise distributed worldwide to create significantly beneficial products, e.g., Linux, bitcoin, and blockchain.

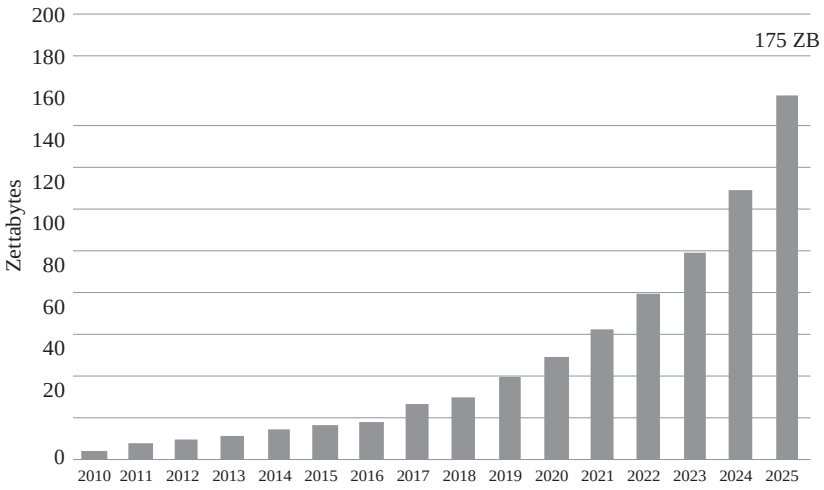
2.3 4IR: Value Drivers

Pre-internet, value was generated through sales of products that benefitted from discrete product-specific innovations sold as upgrades/newer versions at higher profit margins. The key value drivers of that era were standardization, miniaturization, and an increase in processing power.

13. Eden, Srinivasan, Lalapet, *supra* n. 11, at 3.
14. Overby, Audestad, *supra* n. 6, at 64.
15. Andrew McAfee, Erik Brynjolfsson, *Harnessing Our Digital Future: Machine*, *Platform*, *Crowd*, 14 (2017).

However, the 4IR free-flowing streams of information made available through the internet have given rise to data as a new value driver utilized by companies to generate value. The International DataSphere Project measures the amount of data exponen- tially created and consumed in the world each year and forecasts data volume to reach 175 zettabytes (trillion gigabytes) by 2025 as shown in Figure 19.3.

Figure 19.3 Annual Size of Global Datasphere[16]



The volume of data is expected to increase with the popularization of 5G networks that would allow new technologies such as the IoT to create vast new data sets. Substantial volumes of data coupled with advances in processing technologies have now enabled the development of other associated emerging technologies such as data science, predictive analytics, and AI.

An increase in connectivity and access to data expanded the variety of choices presented to customers and brought forward agility and flexibility as the key value drivers. As a result, customers' expectations about ownership have evolved rapidly and created a new FCM. Customers expect to receive and use products as and when they need them, paying only for how much they use. Similarly, business decision- makers increasingly expect the pay-as-you-go services and require frictionless access to software and hardware without having to support and maintain it.[17]

With the creation of new value drivers generating revenues in the 4IR, the questions of if, how, and when value drivers can be treated as intangibles become important to answer. Unfortunately, there is no uniform definition of an intangible for TP, account- ing, and valuation purposes.

16. David Reinsel, John Gantz, John Rydning, *An IDC White Paper: The Digitization of the World From Edge to Core*, 6 (2018).
17. Erik Day, *Why Everything as a Service Is a Game Changer for Small Businesses* (29 January 2020), https://www.business.com/articles/everything-as-a-service-gamechanger (last accessed 30 January 2022).

The value of data and when it might rise to the level of an intangible has been hotly debated. Indeed, not all data is created equal, and the volume of raw data cannot be a sole indicator of economic value. As long as data is unstructured and inaccessible for analysis or is unlinked and not aggregated, its potential value may remain unrealized.[18] Like other digital products and services, collection and cleaning of data require significant initial investments (in hardware, software, systems, and processes), low marginal costs of further reproduction and, most critically, human expertise.

In the context of a value chain analysis, data could begin generating value at the 'analytics' stage when it has been collected, cleaned, and processed. At this stage, data could potentially generate economic value as it can provide useful insights for the decision-makers, i.e., an effective allocation of existing resources or a formation of new capabilities. That stated, there is no real consensus on how this economic value should be measured and whether it can actually be considered an intangible asset in its own right.

Another important value driver within the 4IR is network effects. In economics, this arises when each element's value grows as the overall size of the network increases such that the whole is greater than the sum of the parts. With the increase in connectivity, network effects have become valuable drivers of economic value for platform businesses as the aggregation of network participants could potentially generate value. The networks are organized and driven by network orchestrators (owner of the platform) who are responsible for the growth of the network until it reaches a scale that brings benefits for network participants.

2.4 4IR: Trends

The McKinsey Global Institute has identified the following trends shaping the IT industry:[19]

- big data;
- Internet of (All) Things;
- XaaS;
- automation of work;
- integrated digital/physical experiences; and
- the evolution of commerce.

The trend of big data has emerged with an advance in processing capabilities coupled with an uninterrupted flow of large volumes of data. As the world becomes increasingly interconnected and digital, the abundance of data increases. Big data is harnessed to develop insights and new products through advanced and predictive analytics and inform decision-making.

18. HM Treasury, The Economic Value of Data: Discussion Paper, 4 (2018).
19. Jacques Bughin, Michael Chui, James Manyika, *McKinsey Global Institute: Ten IT-Enabled Business Trends for the Decade Ahead* (May 2013).

Internet of (All) Things is a technology that allows real-time remote monitoring and management of objects and systems across a network with the help of installed sensors bringing physical infrastructure into a connected digital space. The rapid advancement of this trend is driven by three key factors: a decrease in the price of the sensor equipment, the ability to connect the devices wirelessly, and an increase in the processing power of big data.

XaaS refers to the internet-enabled provision of digital services coupled with cloud computing that resulted in a trend to consume services online and receive access to assets on demand. The companies adopted a new way of business by providing solutions that are light on upfront investment and focus on flexible consumption.

Automation of work is enabled by the availability of big data combined with unprecedented computing power and connectivity that gave rise to significant advances in data analytics, AI, and natural user interfaces. This allows for automation of routine tasks, expansion of the knowledge workers' capabilities with machine learning, and expanded access to information systems through natural language interfaces.

Advances in connectivity and natural user interfaces allow giving the physical world digital characteristics and improving productivity and experience through tactile, mobile devices. The trend of integrated digital/physical experiences is expected to expand with the introduction of 5G networks and an increase in augmented and virtual reality devices.

An increase in mobile connectivity and a reduction in transaction costs resulted in the creation of digital marketplaces and platform businesses. This evolution of e-commerce enabled the inception of a 'sharing economy' that provides a platform to monetize unused assets and offer services to a wide pool of customers. A new type of multisided business model has emerged for which value is generated through interactions with multiple stakeholders.

The new complexities and varieties of business models form a highly fragmented and competitive market within the IT industry. In addition, an increase in processing speed, storage capacity, and data flow has given rise to the following key aspects of GVCs at the sectoral and firm levels. These are discussed in the subsection below.

2.5 Global Value Chains

Traditionally, GVCs in the IT industry are longer, more fragmented, and span across more jurisdictions than most industries. The latest trend, however, has a reverse trajectory. The GVCs are shortening (reducing their physical length, not the fragmentation) as a result of the following events:[20]

- trade tensions between the world's leading economies: the trade wars disrupted the established value chains and led to increased reshoring and regionalization;

20. United Nations Conference on Trade and Development, *World Investment Report* (2020).

- rapid digitalization of GVCs: the innovation-based 'megatrends' impact GVCs, and they become increasingly platform based and asset-light. As a result, they become less linear and transform into value networks; and
- servitization of the economy: the widespread use of digital technologies and the interaction of these technologies over the past decade led to a rapid upsurge in trade in services and the proliferation of intangibles in GVCs.

There is an increase in the pace of innovation *at a sector level*, a transition from analogue to digital, and a shift to acquiring innovation versus developing it internally.[21] Historically, the IT industry's innovation was driven by either in-house or outsourced technological R&D activities. The advent of the internet is enabling technology that transformed commercial and personal interactions and converged digital and physical worlds through instant access to the internet with smartphones. Consequently, data has emerged as a new variable that has led to the development of data-driven emerging technologies and new business models. The leading industry experts contend that data has formed a new type of capital that is similar to financial capital, and it is now widelyused to create an assortment of products and services.

At the firm level, the 'going digital' companies are increasingly adopting their business models to compete in the new business environment. The B2B operating models are rapidly shifting to B2C models. The digital future requires agile ITsupported by hybrid cloud operating models that enable data visibility and data management through a standardized infrastructure solution operating as a system.

Customers increasingly require flexibility, variety of choice, and simplicity, thus prefer the XaaS solutions that allow them to subscribe online for the pay-as-you-go products, tools, and technology services. The global market of the XaaS solution is predicted to steadily expand at a compound annual growth rate of 24%.[22] Its provider is expected to deliver a seamless and simple experience that allows customers to focus on their businesses.[23] The incumbent industry players, i.e., established manufacturers of hardware and software solutions, partner with the providers of cloud APIs to respond to new customer requirements, e.g., partnerships of Dell, HP, IBM with Amazon (AWS), Microsoft (Azure), and Google (Google Cloud) creating a multi-cloud hybrid business environment established on both public and private clouds.

2.6 4IR: Challenges

With the emergence of big data, a servitization trend, and the creation of numerous highly complex business models, multiple questions remain unanswered. There is an attempt to unbundle some of them below.

21. Andrew McAfee, Erik Brynjolfsson, *Harnessing Our Digital Future: Machine*, *Platform*, *Crowd*, 265 (2017).
22. Anything-as-a-Service Market: Global Industry Trends, https://www.businesswire.com/news/home/20190628005112/en/Anything-as-a-Service-Market-Grow-CAGR-24---Global (last accessed 30 January 2022).
23. Deepak Patil, Senior VP and General Manager of Dell's Cloud Platforms and Solutions Group: Dell's Strategy for Cloud and Delivering Data Centers as a Service by the Data Center Podcast (soundcloud.com) (last accessed 30 January 2022).

In the data-driven business models, value is generated with human expertise working in concert with software and hardware assets to collect and transform data. Therefore, a comprehensive understanding of the relative contribution of people versus physical assets is still critically important. Similarly, it is also important to acknowledge that, in certain business models, what is transacted itself, i.e., data, may also be a driver of economic value. For instance, the leading companies in the IT industry possess fewer physical assets but have a significant amount of data, e.g., Airbnb, Facebook, and Netflix. Like physical assets, data can have a long-term value and be defined as a good that is a non-rivalrous, non-fungible experience.[24]

Another interesting fact is the data circularity attribute. While physical assets generally exhibit decreasing returns to use, the quality of data increases the more it is used as it acquires additional attributes. For example, Google Inc.'s Waze navigation and traffic application integrate real-time crowdsourced data from drivers, so the Waze mapping data has increased value as more people use it.[25] Additional data improves predictive accuracy and enhances the information content, especially when combined with other data, including recommendations and customer feedback. Finally, it is also critical to acknowledge that even the best data in the world cannot replace the strategic insight that is necessary to use the data in a manner that actually generates economic value and sustains a company's competitive advantage for the long term.

The legal mechanisms set out below are the most common in data ownership management and could potentially give rise to economic value depending on how data is used:[26]

- data protection law grants individuals rights over their data;
- copyrights established over a database; and
- restrictions to data access at collection and storage, e.g., at a server level.

In this context, data privacy is an important aspect to consider within a data ownership framework as big data is often collected from personal data. At the EU level, new standards for protecting personal data are established through the EU's GDPR that provides people more control over the use of their data. The GDPR brings transparency about the personal data that is collected and allows customers to make a conscious choice on the 'trade-off' between disclosing their data and the benefits they receive from the personalized products and services. The rules of data ownership are still crystallizing at both the national and international levels. In most countries, there is no established comprehensive legal framework guiding data ownership and control.

2.7 4IR: Operating Models

The enhanced complexity in the IT industry has resulted in the emergence of a multitude of business models. In particular, the XaaS operating model is the focus of

24. MIT Technology Review, White Paper: The Rise of Data Capital, 4 (2016).
25. James E. Short and Steve Todd, *What's Your Data Worth*, MIT Sloan Management Review 3 March 2017 (Spring 2017).
26. HM Treasury, The Economic Value of Data: Discussion Paper, 11 (2018).

the analysis in this section since it is used by many of the so-called 'going digital' companies, and it can illustrate the complexity of emerging business models.

As discussed above, the IT industry has experienced a significant shift towards FCM. The FCM, often referred to as XaaS models, offers customers access to products as a service including different payment options aligning payment with actual use. FCMs are customer-centric models unlike traditional business models which are more product-centric.

With the XaaS offerings, customers, i.e., consumers, businesses, or governments, pay for what they use on demand. The customers pay for outcomes and not products which is a practical business model. By reducing their capital expenditure outlay, customers increase budget flexibility and decrease the risk of product failure or obsolescence. Instead, they pay for outcomes as needed which results in savings and the production of new revenue streams.[27]

Some of the key benefits of the FCM consumptions models are as follows:[28]

- Simplicity: Delivering turnkey and scalable solutions that are fully managed by providers. Customers usually have a single web interface enabling them to easily manage every aspect of their XaaS journey.
- Choice and Flexibility: For customers to decide what solutions to run as a service and pay for them the way they want (e.g., as they use it or pay for it as they go, leverage subscriptions, etc.) with all of the different options that ultimately provide operating expense flexibility. This may include everything from an infrastructure offering to the storage, server, networking, data protec- tion, hyper-converged infrastructure, etc.
- Consistency: Consistent operating experience whether customers are running their XaaS experience on-premises, through the cloud, or moving and interacting with workloads at the edge.

3 TP ISSUES IN THE IT SECTOR

3.1 General Remarks

The previous section highlighted the pace at which the IT sector is innovating, transforming, and expanding. Complexity, uncertainty, and volatility mark the diversity of multiple hybrid business models and customer offerings within the same MNE, especially the going digitals. Revenue size and growth, profitability, intangible assets, capital invested, and risk across the business units can be markedly different.

It was also noted that the GVCs in the IT industry are transforming into shorter, more regionalized value chains. The combination of GVC changes as well as the diversity of product and service delivery models makes the TP policies and challenges of IT MNEs

27. Tasker O. Generes Jr., *Get Ready for the Product-as-a-Service Revolution*, https://www.forbes.com/sites/servicenow/2020/10/15/get-ready-for-the-product-as-a-service-revolution/?sh=1042cd942267 (last accessed 30 January 2022).
28. 5 Keys to Dell's Revamped as-a-Service Strategy, https://www.crn.com/slide-shows/cloud/5-keys-to-dell-s-revamped-as-a-service-strategy-dell-svp/1 (last accessed 30 January 2022).

a complex and interesting study. As outlined in section 2, new IT industry business models have propelled a shift in value creation within MNEs.

The alignment of value creation with TP outcomes is firmly embedded in the OECD TPG, the US TP regulations,[29] the UN TPM and numerous local country TP guidelines and legislations. Any TP analysis should be undertaken from the perspective of value generation within the industry and country(ies) in which a multinational company operates.

This section will highlight the significant TP issues for key intra-group transactions within IT MNEs. With the help of a stylized case study of an FCM business model, the application of traditional TP methods to tangible, intangible, and services transactions will be reviewed. Whether the existing framework (and the likely legislative framework from the BEPS 2.0 and other local country tax reform initiatives) suffices for establishing an outcome that is both at arm's length and fair for both taxing authorities and MNEs will also be examined. Attention is paid to the significant trends in value creation that are discussed in the preceding section and the question of the adequacy of existing methods in valuing the transfer of IP and value-added or strategic service.[30] The section concludes by providing a brief overview of the major tax jurisdictions that have enacted or are contemplating DSTs and the impact that it will have on the global IT industry.

3.2 FCM TP Application and Challenges

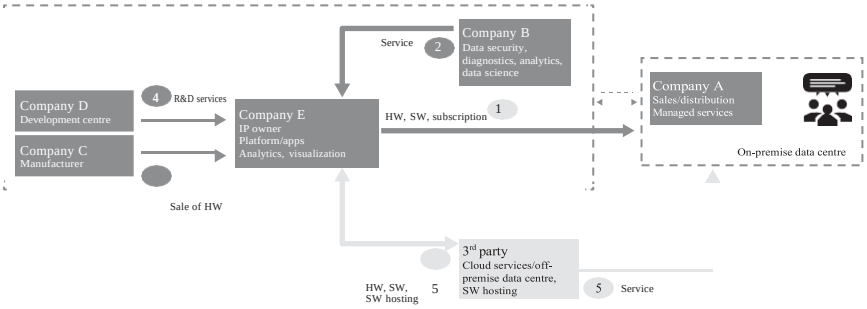
The IT industry's myriad of business models is rapidly evolving and opening up another challenge for TP practitioners: do new service offerings such as the IoT and FCM or new delivery modalities such as multisided platforms change the functions, risks, and assets of the entities within the MNE that fulfil the customer contract? This is best illustrated with a case study of a newly developed FCM customer offering to customers.

Figure 19.4 provides a simplified view of the intra-group transactions that occur within a going-digital MNE that offers their customers the choice of either buying IT equipment and software outright in a single transaction or purchasing an as-a-service solution. The case study assumes that the MNE's existing customers have switched to a multi-year contract with the MNE's local sales and distribution subsidiary for access to an on-premise data centre[31] and software consumed as-a-service based on usage-based subscription. The value proposition to the as-a-service customer is rapid delivery

29. CFR 26, Internal Revenue Code section 482.
30. The analysis in this section refers to the current US Internal Revenue Code section 482 that governs transfer pricing in the US, the current TP legislation and practice around the world, and the OECD Inclusive Framework Pillar One Blueprint (OECD/IF). OECD/G20 Base Erosion and Profit Shifting Project, *Tax Challenges Arising from Digitalisation: Report on Pillar One Blueprint; Inclusive Framework on BEPS* (12 October 2020), https://www.oecd-ilibrary.org/deliver/beba0634-en.pdf?itemId=%2Fcontent%2Fpublication%2Fbeba0634-en&mimeType=pdf.
31. In reality, the MNE can simultaneously offer on-premise, off-premise, or a 'lease to buy' datacentre solution all based on the customer's needs. This example simplifies the case toon-premise equipment.

and deployment on customer premises as well as a usage-based consumption model. To illustrate the intra-group transactions and TP, the case assumes that the customer places an order to access ten terabytes of data centre storage and unlimited use of software.

Figure 19.4 TP in the FCM/As-a-Service Model: Illustrative



Example

Company A, located in Country X, Company B, located in Country Y, Company C, located in Country Z, Company D, located in Country V, and Company E, located in Country W, are part of the ABC Group. Company A is a sales, marketing, and installation services entity that sells the as-a-service offering to customers. For simplicity, it is assumed that all customers are located and use the FCM model in Country X. Company B is a provider of data security and diagnostic and analytical services related to the FCM solution. B's work is to transform the FCM usage data generated by customers into information and insights using proprietary algorithms. Company C manufactures data centre storage and edge devices. Company D designs software and hardware devices for Company E. Company E owns the legal and economic rights to the intangible assets that are generated by ABC Group's various development and design companies.

Inside the MNE's ecosystem of its 'order to fulfil' cycle, the customer's request effectuates a set of four distinct intra-group transactions between five related parties (Companies A through E in Figure 19.4). These four intra-group transactions that result in providing the end customer with their as-a-service solution are:

Transaction 1:	Company A purchases data centre equipment from Company E and instals it at the customer's site although maintaining the equipment on its balance sheet. It then leases access to the customer.

Transaction 2:	Company B employs engineers and data scientists who provide services under contract with E and work closely with Company E's R&D personnel and IP lawyers to develop the MNE's group intangible assets, such as patented machine learning algorithms.
Transaction 3:	Company C manufactures hardware devices under a contractual arrangement with Company E.
Transaction 4:	Company D designs and develops software under the contractual arrangement with Company E.

A fifth transaction shown in Figure 19.4 has Company E licensing unrelated party cloud hosting services to provide cloud/off-premise data centre services to Company A.

The first step in deciding what specific TP methods can be considered for each of these transactions, the functional analysis of the related parties should lead to the selection of the TP method and PLI. Again, for illustrative purposes, we present a summarized FAR matrix in Table 19.1.

Table 19.1 Illustrative FAR for an FCM Business Model[32]

Related Party	*Company A*	*Company B*	*Company C*	*Company D*	*Company E*
Key functions	Sales, marketing	Data security, diagnostics, analytical services	Manufacturer	Development centre	IP owner and ABC Group Headquarters
Assets – tangible (other than office space, leasehold)	Hardware sold as-a-service	IT equipment	Manufacturing PPE	R&D lab	IT equipment
Assets – intangible	Customer lists	None	None	None	Patented and unpatented SW, algorithms, know-how

32. This table has been created by the authors solely for the purposes of illustrating the functional profiles of the ABC Group companies in this example.

Related Party	*Company A*	*Company B*	*Company C*	*Company D*	*Company E*
Risks	Customer contracts cancellation Limited pricing risk Capex	Workforce retention	Workforce retention	Workforce retention	Workforce retention Technology obsolescence Quality, compatibility Capex, pricing risk Market risk
Characterization	LRD	Service provider	Manufacturer	Service provider	Global Principal

It is necessary to point out that the rapid innovation in the IT industry can mean that the functional analysis of related parties can also change rapidly, sometimes within a single year. This makes it problematic for the MNE TP practitioner to record the 'predominant' functions and risks borne by the entity in its local file submission for the fiscal year. For example, in a single year, the MNE's business leaders may decide to shift a service such as the monitoring of data generation from a local distribution subsidiary to the headquarters entity or to an R&D group, all located in different countries. This change in each entity's functional profile is the outcome of the MNE management decision to centralize or decentralize certain service operations to more effectively serve the customer. Considering the dynamic nature of digital solutions and relative flexibility in increasing efficiency of the operating model, characterization of the entities and resultant TP methods will be variable rather than long-term status quo.

3.3 Application of TP Methods to Specific Transaction Types

3.3.1 Tangible Property

The manufacturing and sale of tangible property such as IT hardware are typically priced using traditional transaction methods (CPM) or transactional profit methods (TNMM). Under these TP methods, the selection of appropriate PLIs for routine, full-fledged, contract, and toll manufacturing such as the return on sales, return on tangible assets, return on total assets, return on capital employed has been widely used by MNEs and taxing authorities and has acquired a certain familiar acceptance in the course of documentation and tax enquiries and audits.

Example (continues from the previous example)

In transaction 1, Company A purchases equipment from Company E. If no other comparable uncontrolled prices or transactions exist, the MNE may consider using a CPM or TNMM and ROS to benchmark Company A's return on marketing and distribution activity. In transaction 3, Company E purchases the equipment from Company C, the CPM or TNMM may also be appropriate to benchmark the arm's length return on Company C's manufacturing activity, and the return on assets or on capital employed are frequently used PLIs.

The approach that is discussed in the example is not without challenge in a going-digital MNE. As it has an increasing share of revenue arising from the FCM, several factors can increase or decrease the relative intensity of functions, risks and assets of the related parties. The MNE may bear more fixed asset risk (costs of holding the equipment), obsolescence risk (risk of tangible property becoming technologically obsolete), and commercial risk (risk of customer contractual cancellation, repricing, and renegotiation of terms with respect to duration, fixed fee versus pay-as-you-go models). As customers and big data multiply, the MNE stands to gain a competitive advantage from network effects and lower cost of managing big data. The question that need to be answered is what is the relative value of the effective management of the risk, and does that represent a new economically significant function? The familiar TP methods and/or PLIs may need to be reconsidered or amended for better comparability.

Box 3.1
Does Pillar One Amount B minimize marketing and distribution TP controversy for the IT sector?

The Amount B proposal in the Pillar One Blueprint released by the OECD/IF on 14 October 2020 and updated in October 2021 is designed to standardize the return to certain BMDA that takes place in a market jurisdiction. For going-digital and born-digital MNEs in the IT sector, can standard returns be defined, applied, and defended in a manner that minimizes controversy? The OECD/IF provide guidance on what does and does not constitute the BMDA by referring to negative and positive activities lists. However, (as of now) it has not elaborated further on the distinctions between LRDs that offer purely digital XaaS solutions such as Company A in this case study and those that are traditional sellers of tangible property. The IT sector has the largest concentration of digital services LRDs than any other industry, and the relatively narrow definition of Amount B activities do not qualify the as-a-service as clearly within or outside the scope of the BMDA. In fact, new compensation models for platforms and value shops create new functional profiles for the customer-facing entities. In the IT sector, digital sales LRDs are primarily engaged in technical market research, negotiating and generating advertising revenues, and acting as in-country liaison offices for regulatory/governance bodies. They do not manage 'supply chains' in the

same manner as do the LRDs selling IT hardware. Higinbotham et al. (2021) contend that 'while CFB marketing and distribution models and operations are relatively well understood and their activities fall neatly into the positive or the negative list, this may not be true for marketing and distribution models in ADS'.[33]

3.3.2 Intra-group Services

Intra-group services are evolving into the most interesting and complex TP topics for the IT sector. These services span a wide range of service activities from headquarters management services provided by a parent company to operating subsidiaries to contract R&D and marketing services performed on behalf of principal or IP companies. The core of the TP challenges is the characterization of the activity as routine or non-routine and the consequent determination of the transfer price to apply. There are intra-group services that have no reliable third-party comparable benchmarks, and the complex nature of the activity and its value creation potential allows it to be characterized by the MNE as a service and the taxing authority as intangible, or vice versa. The definition of what constitutes routine and non-routine services is critical for determining the application of the appropriate TP method.

Example (continues from the previous example)

In transaction 2, Company B provides data analytics services to Company E. Company B's engineers have access to customer XaaS usage data and deploy AI and machine learning techniques to anonymize and sanitize the data as well as run it through MNE proprietary software and algorithms to extract information about customers' usage of the tax software and their error and learning patterns. The information can now be turned into ways to improve features of the software and to optimize the customer's cost of leasing datacentre storage. Company D's software development engineers will work with Company B's engineers and Company E's commercial strategists and IP lawyers to develop and exploit the improved XaaS offering. Further, as the number of customers increases and the MNE develops new metrics to capture even more differentiated customer data,the amount of data increases and information derived from data transformation and analytics becomes more valuable to the MNE's future products and XaaS revenue. The analysis of storage and software usage patterns converts the bigdata into information and enables the MNE to develop faster, more cost-efficient customized offerings for existing and new customers.

33. Harlow Higinbotham, Niraja Srinivasan, Vladimir Starkov, Nihan Mert-Beydilli, Lorraine Eden, *Amount B: Facts and Circumstances Matter – Even for Routine Distributors*, Bloomberg Tax, Daily Tax Report (5 February 2021), https://news.bloombergtax.com/daily-tax-report/amount-b-facts-and-circumstances-matter-even-for-routine-distributors.

At the outset, the MNE characterizes Company B as a routine data analysis services provider for which it is able to find broadly similar third-party analytical services companies. It applies a CPM or TNMM method to establish the intra-group price per hour service charge from Company B to Company E. As the various iterations and improvements described above take place, the inherent complexity of analysing 'bigger data' may require the MNE to make substantial investments in hiring additional highly skilled engineers and machines with extremely high computational speeds. Company B may possibly evolve in a different direction; it may begin to play a more strategic role in the type of advanced data analytics being performed and deciding how the resultant infor- mation is used in the MNE's strategic decisions. It could therefore transform intoa value shop and a value driver for the entire MNE. Under these circumstances,the PSM, rather than CPM or TNMM, may be the most appropriate method todetermine B's share of the total system profit. Another option is that Company B could simply continue to provide data transformation and analytical services. In this case, the MNE is fully entitled to continue using the one-sided TP method rather than the PSM. Depending on the asset intensity of the business, the PLImight also change from cost-plus to return on total assets.

In recent years, the character of intra-group services has come under heavy scrutiny as the basis for much of the TP controversy. When does the high-value service become a key value driver? The OECD TPG provides guidance for determining the arm's length pricing for transactions between related parties, including intra-group services. The arm's length profit is determined by considering functions performed, assets used, and risks assumed. From the perspective of the value generated by specific intra-group services, these can be grouped into two categories, i.e., routine and non-routine. Specifically, non-routine services bring a lot of complexity when considering the arm's length compensation. Due to the broad definition of intangible assets in the OECD TPG, embedded IP is likely to be found in a number of these transactions. To stipulate thearm's length compensation in some cases, a separate benchmarking analysis of embedded IP is necessary. This might not be a straightforward task leading to use of different IP valuation approaches. Specific guidance for taxpayers on how to approach these situations clearly does not exist.

A common feature of increasing efficiency within MNEs is the centralization of routine functions, particularly back office, which are then provided as intra-group service to other entities within MNEs. There is concern from tax authorities that there can be a tendency to overstate the functions performed or the fee charged which might result in tax base erosion. The OECD TPG addresses these issues in Chapter VII via a benefit test and a definition of the low value-adding services.

The US IRS' LB&I division announced the launch of the CSP Campaign on 16 April 2019. The CSPs are companies within MNEs for which their sole or primary function is to provide intra-group services to the parent company and/or other affiliates. The services they provide range from customer and technical support services, back-office services, software development and testing, document review and data entry, etc.

There is concern that excessive pricing for these services may result in shifting taxable income to the CSPs and erode the US tax base. The goal of this campaign is to ensure that US MNEs are paying their CSPs (usually based in India, Malaysia, China, and other skilled labour surplus locations) no more than arm's length prices.[34] However, are there situations when CSPs perform high-value non-routine services which may have intangibles embedded in them? This requires a deeper assessment and evaluation to minimize significant controversy.

3.3.3 Intangible Assets

Arguably, the most challenging and controversial area of IT industry TP is the pricing of the intra-group transfer of intangibles. At the core of the audits and litigation is the identification of what is a marketing or technology intangible asset. The TP analysis involving intangibles begins with an identification of intangible assets followed by specifying the legal and economic ownership of these assets leading to an identification of which entity within an MNE is entitled to returns generated by intangible assets. There are multiple regulations and guidance[35] that the taxpayer encounters while attempting to define whether an activity and its associated costs create an intangible asset.

When assessing the value of intangibles within their organizations, tax executives typically refer to their business leaders to define what activities and pools of expense are critical to the company's competitiveness and profitability and attempt to apply existing TP methods. TP audits almost always contain, as a central component, a disagreement about the business facts and circumstances as well as the relative value contributed by the parties. In the IT sector, with its rapid technological changes and dynamic redistribution of routine and complex work and organizations across jurisdictions, this fundamental disagreement takes on a higher magnitude, especially when it concerns questions of value creation and intangibles. Furthermore, the standard and periodic TP compliance documentation that is currently required by most tax authorities (local files, master files, country-by-country reports, ad hoc DEMPE analysis, etc.) is merely a starting point but certainly not conclusive evidence of where and how value creation occurs. Thus, who 'should' be defining value? The authors contend that the MNE business leaders who make the commercial decisions on where routine and non-routine work is performed and for what operational and financial reasons must be given the role of explaining this to the taxing authority. Regrettably, too often, this exchange occurs only at a contentious stage of an audit.

34. https://www.irs.gov/businesses/corporations/lbi-active-campaigns (last accessed 30 January 2022).
35. For transfer pricing purposes, an intangible asset as defined by the OECD TPG is (1) not a physical or financial asset and (2) is capable of being owned or controlled for use in commercial activities, aids in the commercial exploitation of a product or service, and has an important promotional value for the concerned product. In the US, taxpayers look to sections 197, 367(d) in addition to section 482. A review of tax court positions is also necessary. MNEs also consult the OECD Hard to Value intangibles guidance, the EU, and other regional and country guidelines or regulations.

Court Case

In the case of *Amazon.com*,[36] the US Court of Appeals agreed with the tax court's 2017 decision that the US tax authorities' inclusion of residual business assets (Amazon's culture of innovation, the value of workforce in place, going concern value, goodwill, and growth options) in the computation of the buy-in payment stepped beyond the prevailing § 482 cost-sharing regulations in force during the audit years. The dispute centred around the correct method for arriving at a fair market value of the pre-existing intangibles, and the court concluded that the definition is limited to independently transferable assets.

The second major challenge in setting transfer prices is the valuation of identified intangibles. Are financial appraisal techniques for intangible assets adequate for TP purposes, and are they being inadequately applied? The MNE, tax authorities, and their economists very often disagree on the appropriate discount rate to apply to IP cash flows, the economic useful life of the underlying intangible assets, and the market conditions at the time of the transfer between related parties. The market conditions also determine what *standard* of value must be applied to the intangible asset or economic right being transferred: fair market value, investment value, distressed sale value, or other standards of value. Whether it is marketing intangibles, technology hardware, or new platform models, the identification, character, and valuation are highly contested topics in almost every TP audit in the IT sector, and controversies often reach the US or EU Tax Court.

Court Case

In the case of *Veritas Software*,[37] the matter under contention was the calculation of the buy-in payment under the US company's cost-sharing arrangement with its Irish affiliate. To value the transfer of pre-existing intangibles, the US tax authorities' expert aggregated the intangibles under the synergy theory, treating it as a bundled sale rather than a sale of each separate intangible asset. The court rejected the US tax authorities' method on the grounds that it did not differentiate between the value of subsequently developed intangibles and pre-existing intangibles. The intangibles included access to marketing and R&D teams that are not among the intangibles recognized by the US TP rules. Furthermore, the US tax authorities incorrectly assigned a perpetual useful life for transferred intangibles that have a useful life of four years.

A third but nascent challenge is the significance and role of data in the identification and valuation of intangible assets. As discussed in section 2, large datasets that are proprietary to the MNE – either because it was the first mover to generate, collect, and

36. Ninth circuit US Court of Appeals, 16 August 2019, *Amazon.com, Inc. & Subsidiaries v. Commissioner*, 148 T.C. 108 (2017).
37. US Tax Court, 10 December 2009, *Veritas Software Company v. Commissioner* 125 T.C. 37 (2009).

clean data that existed in the public domain or because the data was generated in the course of its exclusive contract with a customer – are key value drivers for MNEs in the IT sector. The authors argue that, while raw unstructured data has no inherent value, it does become a source of competitive advantage for the MNE when it is transformed into insight. However, the challenge for TP lies in whether to ascribe value to proprietary datasets or to attribute it to the entities that create these datasets. Further research is required to analyse whether the existing IP valuation methods under financial standards or tax regulations can be applied to data if it was indeed considereda valuable asset.

3.4 Digital Services Tax

Considering an increased uncertainty around application of TP methods for the newly created business models and associated intangibles coupled with a fast-paced digitalization of the economy, countries around the world have launched unilateral measures to introduce additional taxes on certain types of digital payments, i.e., DSTs. The DSTs are similar to indirect taxes insofar that they are levied on turnover or transactions. The DSTs are heterogeneous; they take a variety of shapes and forms and are levied on different types of transactions. The non-uniform nature of the DSTs further intensifies the compliance burden for MNEs and brings a heightened uncertainty to their business operations. It is also worthwhile noting that one-sided measures such as these would be contrary to the OECD's Pillar One initiative.

Following a landmark Supreme Court ruling in the *South Dakota v. Wayfair, Inc* case that abolished a physical-presence nexus test for establishing taxing rights,[38] a number of the US states, e.g., District of Columbia, Maryland, and New York, launched unilateral taxation measures on revenues generated from digital activities. This includes the sale of digital products, online streaming, digital advertising, etc.

As of the writing of this chapter, the majority of the European countries have already either implemented or announced the introduction of some form of DSTs. The DSTs in Europe are primarily direct taxes with a tax rate from 1.5% to 7.5% levied on different types of tax bases, e.g., revenues generated from online advertisement, sale of user data, social media platforms, internet search engines, and online marketplaces.[39]

India was a pioneer in digital taxation with the introduction of an equalization levy in 2016 addressing revenues from online advertisement services. Since then, it has attempted to expand the scope with a replacement of a physical nexus with a significant economic presence test and eventually broadened the scope of a new DST on a wide range of digital services.[40] Following India's lead, a number of other countries in the region – Indonesia, Singapore, Malaysia, Pakistan, Taiwan, and

38. US Supreme Court, 21 June 2018, *South Dakota v. Wayfair, Inc.*, No. 17-494.
39. Elke Asen, *What European OECD Countries Are Doing about Digital Services Taxes*, https://taxfoundation.org/digital-tax-europe-2020 (last accessed 30 January 2022).
40. Office of the US Trade Representative, Report on India's Digital Services Tax, 3 (2021).

Vietnam – launched their own DSTs. China, Japan, New Zealand, and Thailand have announced the potential implementation of digital taxes.[41]

Multiple countries in the Latin American region have also introduced or announced an introduction of the DSTs. For example, digital tax legislation has been enacted in Argentina, Brazil (draft legislation), Costa Rica, Mexico, Paraguay, and Uruguay.

Similarly, in Africa, digital taxes were enacted in the local legislation in Kenya, Nigeria, Sierra Leone, Tunisia, and Zimbabwe.

This section has attempted to highlight the many challenges faced by MNE tax practitioners and tax authorities when trying to establish intra-group prices for dynamic and rapidly evolving 4IR models with the FCM case study. From entity characterization to the selection of the best TP methods and PLIs, the FCM case study illustrated how TP must be contemporaneously adjusted to reflect significant changes in where value is created. An important conclusion is that documentation is key for audit and controversy minimization in the IT sector, and documentation must exceed an updated local file and master file and include key reports and presentations from non-tax leaders in commercial and operational strategy.

4 CONCLUSION

As has been seen in this chapter, TP within the IT industry is a complex exercise that involves, first and foremost, a clear understanding of how value is created and sustained within a specific business model employed by a particular company. Given the plethora of IT industry business models that are continuously evolving, it is incredibly difficult to create a 'one-size-fits-all' TP approach that would be appropriate for the purpose of a single company, let alone an entire industry. This challenge is further exacerbated by the complexity of understanding the value of data and how it is used to generate revenue and profitability for IT companies in particular.

As this chapter has demonstrated, the most effective approach, at least from a TP perspective, is to review the sources of value creation within a specific business model and then seek to pry open the relative contribution of individual legal entities using a standard functional and risk analysis. Once this has been done, the subsequent challenge will be to apply TP methods to determine an arm's length remuneration for routine activities wherever possible. In cases when it is not possible to clearly demarcate a routine versus non-routine contribution, it may be worthwhile to consider alternatives such as higher routine margins or an application of profit split methods to ensure that various entities that contribute value are appropriately compensated. That stated, given the complexity of IT business models, areas of ambiguity will remain, and this will inevitably lead to tax disputes between MNEs and tax authorities.

In conclusion, as business models continue to evolve and new forms of value creation come to the forefront in the IT industry, the only given is that TP within the IT industry will continue to present new challenges for TP practitioners everywhere.

41. KPMG, *Developments summary – Taxation of the digitalised economy*, updated: 15 January 2021, https://tax.kpmg.us/content/dam/tax/en/pdfs/2020/digitalized-economy-taxation-developments-summary.pdf (last accessed 30 January 2022).