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# AMERICAN VERSUS DOMESTIC DIGITAL COMPANIES IN THE CHINESE MARKET

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***Abstract:*** *The digital economy has become an increasingly important part of the world economy. It is vastly concentrated in two economies, namely, the United States and China. The main aim of our study is to investigate Chinese digital companies and government policy enabling the rapid development of the country's digital economy and the largest American digital companies' performance in the Chinese market. Our findings show that the largest American digital companies, which are globally active players, usually have a very limited market share in different segments of the Chinese digital economy or have been forced to leave the Chinese market after a short period of operation. In the future, Chinese government policy will continue to ensure the priority role of domestic digital companies in the upgrading and structural transformation of the Chinese economy driven by services, high-tech sectors, and consumption while limiting the role of American digital companies.*

**Keywords**: *Digital companies; China; USA; government policy.*

## 1. Introduction

Since the global financial and economic crisis of 2008-2009, China's economic growth has significantly decelerated. The crisis has resulted – among others – in the 'launching of China's industrial upgrading and economic transformation from an export, manufacturing, and investment-driven growth model to a consumption, innovation, and service sector-driven one' (Völgyi & Lukács, 2021, p. 172). 'The services sector, in particular producer services (transportation, logistics, warehousing, posts and telecommunications, finance, computer services and software, and leasing and business services, etc), and the high-tech sector will be the core drivers of growth' (KPMG, 2018, p. 23) in the new development stage of the Chinese economy. In 2015, the services sector became the 'foremost driver of growth

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in the Chinese economy. Its contribution to GDP growth surpassed the 50 percent mark for the first time since the beginning of the "reform and opening up"' (KPMG, 2018, p. 23). In 2020, the services sector's contribution to China's economic growth reached 60 percent (Wong, 2020). 'The high-tech sector serves as an important driver of industrial growth. Since 2012, growth in value added from high-tech has consistently outpaced the manufacturing sector. Technology now also clearly outperforms the traditional manufacturing sector in terms of its contribution to total economic growth' (KPMG, 2018, p. 23). From the expenditure approach of GDP, we can say that in the 'years since 2011, and with the exception of 2013 and 2020, consumption has exceeded investment in terms of its annual contribution to economic growth' (KPMG, 2018, p. 13). In 2021, consumption had again the largest contribution (5.3 percentage points) to GDP growth rate (8.1 percent) (National Bureau of Statistics of China, 2021, 2022). In other words, domestic consumption has become the main driver of growth in the Chinese economy.

In our study, we investigate the largest Chinese digital companies that have been playing a significant role in the country's new growth model and development path. The digital economy reached 30 percent of the Chinese GDP by 2017 (UNCTAD, 2019). The market capitalization of Chinese digital companies is comparable to their American counterparts (e.g., Alphabet (Google), Amazon, Apple, Facebook, eBay, Booking), which together have been dominating the list of top 20 internet companies in the world. The further rapid development of the Chinese digital economy is supported by the 14th Five-Year Economic Plan and several recently launched elements of the state industrial policy, such as 'Internet Plus', 'Made in China 2025' and 'National Informatization Development Strategy'. Chinese government policy gives an advantage to domestic companies in the Chinese digital market and strives to preserve the benefits from the upgrading and structural transformation of the Chinese economy driven by services, high-tech sectors, and consumption exclusively for them by limiting the role of American digital companies or even excluding them from the domestic market.

## 2. The Evolution of the Digital Economy

'The digital economy is becoming an ever more important part of the global economy' (UNCTAD, 2017, p. iv). The development of the digital economy can be divided into two phases. The first phase started in the 1980s, whereas the second began in the 2000s. Table 1 gives a clear overview of the main features of the digital economy 1.0, and the new ones brought in by the second phase of the digital economy.

**Table 1.** The evolution of the digital economy (Li, 2017)

| | **Digital economy 1.0** | **Digital economy 2.0** |
|---|---|---|
| *Supporting technology* | computer, software, communication, internet | mobile internet, big data, cloud computing, Internet of Things (IoT), artificial intelligence (AI), robots, 3D printing, virtual/augmented/mixed reality (VR/AR/MR) |
| *Characteristics* | consumption internet, commercial internet | industrial internet |
| *Field of use* | news, search engine, email, shopping, | supply chain management, manufacturing, customized services, smart city, smart transportation, |

| | | |
|---|---|---|
| | communications, games | smart healthcare, smart home devices, fintech, wearable devices |
| *Business model* | web portal, e-commerce, instant messaging, online music, video, games, etc. | mobile e-commerce, mobile social network, sharing economy, online-to-offline (O2O) commerce, crowdsourcing, self-media, location-based services (LBS), etc. |

The global advance of the digital economy can be measured by several indicators. The ICT sector accounted for 4.5 percent of the global GDP in 2017 (UNCTAD, 2019). Between 2017 and 2019, the estimated value of global e-commerce sales grew from 23.8 trillion US dollars to 26.7 trillion US dollars (UNCTAD, 2020, 2021a). Between 2015 and 2020, exports of ICT services increased by 49 percent, to 676 billion US dollars. Trade in ICT goods had exceeded 2.354 trillion USA dollars by 2020. In 2020, due to the global pandemic, there was a drop in total trade in goods and services, but the trade of ICT goods and services increased by growing demand for 'accelerating digitalization and deepening reliance on digital technologies' (UNCTAD, 2021b, p. 2). 'Global internet protocol (IP) traffic grew from about 100 gigabytes per second in 2002 to some 88,000 gigabytes per second in 2020' (UN, 2021, p. 13). In 2020, 'the global pandemic had a dramatic impact on internet traffic, as most activities increasingly took place online. The global internet traffic in 2022 is expected to exceed all the internet traffic up to 2016' (UNCTAD, 2021, p. 17). There are significant differences in the development of the digital economy between developed and developing countries (digital divide). For example, 'in 2021, an estimated 37 percent of the global population did not have internet access. Of the 2.9 billion people still offline, an estimated 96 percent lived in developing countries' (ITU, 2021a). 90.3 percent of the population in developed countries and 57.1 percent in developing countries used the internet (ITU, 2021b). Nevertheless, between 2005 and 2021, the number of global internet users expanded by 3.9 billion people, of which 3.3 billion people are from developing countries (ITU, 2021b). In the case of the most populous country, namely China, the contribution to this expansion was significant where the share of internet users in the total population increased from 8.5 percent in 2005 to 71.6 percent in 2021 (ITU, 2021c; CNNIC, 2021). In addition, we have to emphasize the effect of the pandemic on global internet usage. A 'COVID connectivity boost' has brought an estimated 782 million additional people online since 2019 (ITU, 2021a). The rapid increase of global e-commerce (B2B, B2C) is also evidence for the headway of the digital economy. 59 percent of the population aged 15 years or older in high-income countries bought something on the internet in 2017, while less than 2 percent of the population aged 15 years or older in low-income countries did the same (UNCTAD, 2019). In 2019, the United States had the largest e-commerce market, followed by Japan and China in the global ranking. However, if only B2C commerce is taken into consideration, then China has the largest market, followed by the USA in second place. The global ranking of cross-border B2C e-commerce sales is led by China, the United States, and the United Kingdom. Cross-border B2C e-commerce sales (440 billion US dollars) accounted for 9 percent of the global B2C e-commerce sales in 2019 (UNCTAD, 2021a). The advancement of the digital economy is also underpinned by the rapid spread of robots and 3D printers. According to data of the International Federation of Robotics, sales of industrial robots grew worldwide by an average 9 percent per year between 2015 and 2020. The number of newly installed robots grew from 254,000 units in 2015 to 422,000 units in 2018. This number decreased to 382,000 units in 2019, which 'reflected the difficult times the two main consumer industries,

automotive and electrical/electronics, experienced and the trade conflict between China and the United States' (IFR, 2021, p. 12). However, despite the global pandemic situation, it slightly increased to 384,000 units in 2020. A further increase is expected to 518,000 units in 2024. The stock of industrial robots operating worldwide grew from 1.6 million units in 2015 to 3 million units in 2020. The number of robots per 10,000 persons employed in manufacturing has the highest level in South Korea, Singapore, Japan, and Germany. Nevertheless, according to sales data, since 2013 the largest robot market has been China, which accounted for 44 percent of total installations in 2020 (IFR, 2021).

Besides the aforementioned indicators measuring the development of the digital economy, it is worth mentioning the so-called Digital Intelligence Index that 'encompasses several scorecards measuring various aspects of the global digital economy' (Chakravorti et al., 2020, p. 16). Digital Evolution scorecard (2020) is one of them, which 'tracks the state and historical momentum of 90 economies – comprising 95 percent of the world's online population – over twelve years (2008-2019)' (Chakravorti et al., 2020, p. 16). It primarily captures the four driving forces of the digital economy: supply conditions (how developed is the infrastructure that facilitates digital interactions and transactions); demand conditions (how inclined and able are consumers to participate in the digital economy); institutional environment (how do government policies and regulations promote digital development); and innovation and change (what kind of innovations took place in a country's digital economy). According to the Digital Evolution scorecard results of 2020, Singapore, the United States, Hong Kong, Finland, Denmark, and Switzerland have the most advanced digital economy. If we take the development performance of the digital economy of different countries between 2008 and 2019 into consideration, we can find China, Azerbaijan, Indonesia, India, Vietnam, and Iran in the top six places (Chakravorti et al., 2020). 'As in the two previous editions of Digital Evolution (2014, 2017), China remained the fastest-moving economy in terms of the pace of change in its digital evolution – i.e., digital momentum' (Chakravorti et al., 2020, p. 16) in 2020.

A short analysis of the development of the global digital economy cannot omit the introduction of digital and ICT companies spurring the process itself. According to the definition of UNCTAD, digital companies are purely digital players, which operate in the digital dimension, or mixed players, which operate in both the digital and physical dimensions. Examples of the former are internet platforms (e.g., search engines, social networks, sharing platforms, etc.) and digital solution providers (e.g., electronic and digital payment operators, cloud players, etc.). Examples of the latter are e-commerce companies (e.g., internet retailers, online travel agencies, etc.), and producers and distributors of digital content (e.g., videos, music, e-books, games, data, etc.). ICT companies provide infrastructure and access to the internet to consumers and companies. They include telecom companies and IT companies producing software and hardware (UNCTAD, 2017a). Table 2 exemplifies each activity with specific companies. Each category includes three companies listed on the stock exchange with the world's largest operating revenues (in 2015). (Classification was made according to the most important activity of each company. Nevertheless, most companies are usually present in other digital sectors as well.)

**Table 2.** The most significant digital and ICT companies (UNCTAD, 2017a)

| Digital companies | | | |
|---|---|---|---|
| internet platforms | | e-commerce | |
| search engines | Alphabet (Google), Baidu, Yahoo! Japan | internet retailers | Amazon, JD.com, Alibaba |
| social networks | Facebook, NetEase, IAC/Interactive | other e-commerce | PricelineGroup (now Booking Holding), Expedia, Amadeus IT |
| other platforms | eBay, Red Hat, Groupon | | |
| digital solution | | digital content | |
| electronic payments | FirstData, PayPal, Worldpay | digital media | Comcast, Time Warner, 21st Century Fox |
| other digital solution | ADP, Salesforce, VMWare | games | Tencent, Activision Blizzard, Electronic Arts |
| | | information and data | Thomson Reuters, Alliance Data Systems, Nielsen |
| ICT companies | | | |
| IT | | | |
| software and services | Microsoft, HP Enterprise, Oracle | | |
| devices and components | Apple, Samsung, Hon Hai | | |
| telecom | AT&T, Verizon, ChinaMobile | | |

In PricewaterhouseCooper's list of global top 100 companies ranked by market capitalization, we can find several digital and ICT companies. In the forefront, in the first ten places, US companies such as Apple, Microsoft, Amazon, Alphabet, and Facebook and Chinese companies such as Alibaba and Tencent are listed (PWC, 2021). According to the survey of Van Alstyne (2016), the share of North America, Asia (mainly China), Europe, Africa, and Latin America in the total market capitalization of digital and ICT companies with more than 1 billion US dollar market capitalization was 75.8, 18.1, 4.4, 1.6 and 1.6 percent, respectively. In other words, it means that the headquarters of most of these companies are located in the United States or China. Figure 1, which contains the ranking of the most significant internet companies by market capitalization, also shows the dominance of the aforementioned US and Chinese companies on which this study focuses. (Apple is not listed because it is primarily considered as an ICT software and hardware company. However, we examine this company because it provides several digital services).

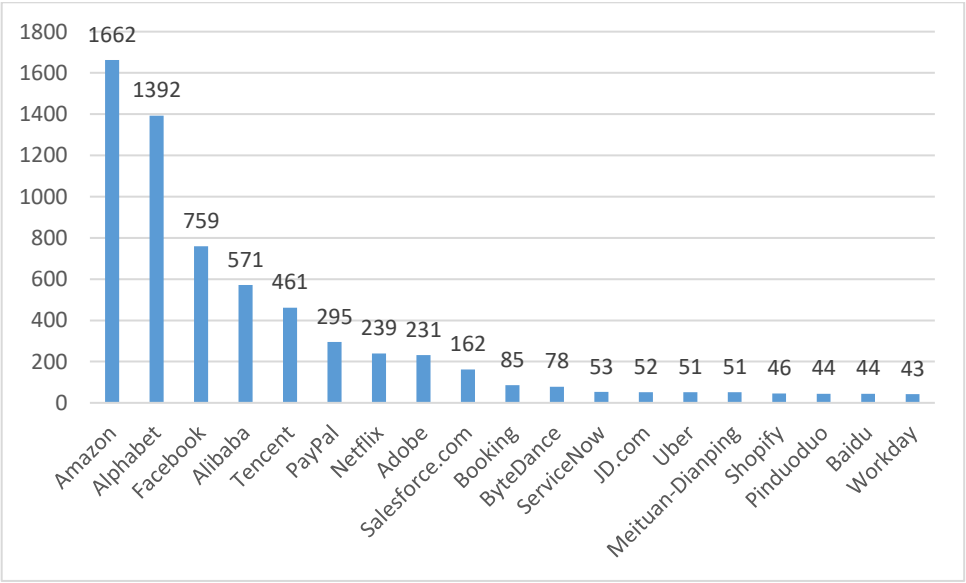


**Figure 1.** The largest internet companies by market capitalization, February 2021 (billion US dollars) (Markinblog, 2021)

## 3. The Digital Economy of China

According to calculations of UNCTAD, the global digital economy accounted for 4.5 percent of the global GDP, if we take the narrow scope of the digital economy into consideration that covers telecommunications, information services, software and IT consulting, hardware manufacturing, as well as digital and platform-based services. The broader scope of the digital economy, which additionally covers the use of various digital technologies for performing different economic activities (e.g., sharing economy, gig economy, e-business, e-commerce, industry 4.0, etc.), accounted for 15.5 percent of global GDP in 2017 (UNCTAD, 2019). The global digital economy is vastly concentrated in two economies, namely, the United States and China. According to the broader definition, China's digital economy reached 30 percent of the country's total GDP in 2017. In the case of the United States, the same indicator was 21.6 percent. Nevertheless, estimations based on the narrow definition showed a slight advantage

to the US with a 6.9 percent share compared to a 6 percent share for China in 2017 (UNCTAD, 2019).

In 2021, 4.9 billion people used the internet worldwide of which 1.01 billion people lived in China, in other words China had the largest number of internet users in the world (ITU, 2021a; CNNIC, 2021). In June 2021, the internet penetration rate stood at 71.6 percent in China. The proportion of mobile internet users to the total number of internet users was 99.6 percent (CNNIC, 2021).

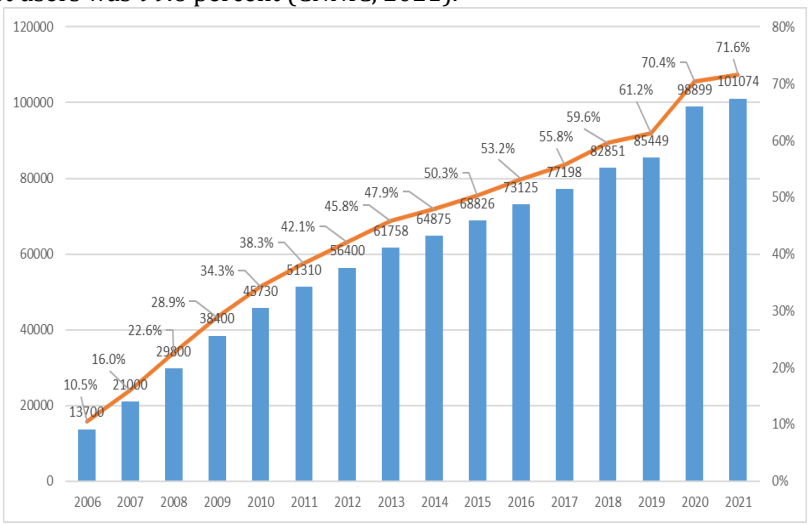


**Figure 2.** The number of Chinese internet users (10,000 persons) and the internet penetration rate (CNNIC, 2021)

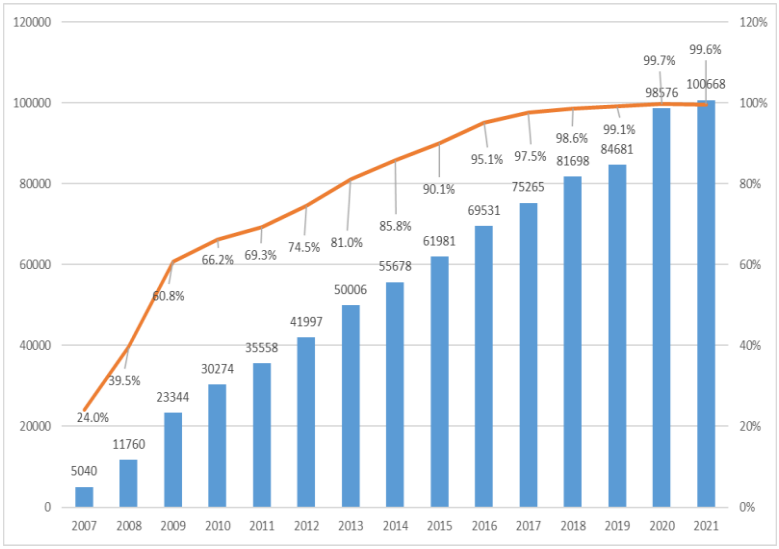


**Figure 3.** The number of mobile internet users in China (10,000 persons) and its proportion to total internet users (CNNIC, 2021)

In China, we can see a rapid increase in the number of mobile internet users in the last 15 years and a growing reliance on mobile internet among internet users as the high penetration rate reflects. 'The number of mobile payment users in China grew from 125 million people in 2013 to 852 million people in 2020' (CNNIC, 3rd February,

2021). 'The adoption rate of mobile payment among mobile internet users reached 86 percent' (Sina.com.cn, 3rd February 2021). 'In 2018, the market share of mobile payments in China accounted for 83 percent of all payments, indicating an explosive growth from 3.5 percent in 2011' (Daxue Consulting, 10th May 2019). China is the world's largest retail e-commerce market, as we have already mentioned above. According to estimates, in 2021, the share of China in global online retail sales reached 52.1 percent, exceeding that of the United States (19 percent), the United Kingdom (4.8 percent), Japan (3 percent), South Korea (2.5 percent) and Germany (2.1 percent) combined (eMarketer, 14th July 2021). '86.1 percent of all transactions in China's online shopping market (B2C, C2C)' (iResearch, 30th June 2020) are carried out via mobile phones.

China is a key player in the global digital economy not only from the side of consumption but also from that of business (He et al., 2021). In China, Baidu, Alibaba, and Tencent can be considered as the most significant digital companies, which are often simply referred to as BAT. The initial activity of each company focused only on one particular segment of the digital economy, but since then they have considerably diversified their activities. The core activity of *Alibaba* is e-commerce. '56 percent of all Chinese e-commerce went to Alibaba in 2020' (Buchholz, 2020). Alibaba.com was established as a B2B website in 1999, followed by the creation of an online consumer website (C2C platform), Taobao, in 2003. One year later, the company introduced digital payment services through Alipay. In 2008, it created its B2C platform, Taobao Mall (now Tmall.com). In 2009, it launched Alibaba Cloud, which provides cloud computing services. In 2014, Alihealth was introduced which is now 'a leading online retailer of medical prescriptions and over-the-counter medicines in China' (M&G Investments, 2021). Alibaba is also present 'in digital wealth management through Yu'e Bao and in entertainment through the acquisition of Youku Tudou in 2016 which is a major video streaming and internet TV player' (Woetzel at al., 2017b, p. 9). *Baidu* started its activity as a search engine, which nowadays controls 76 percent of search volume in China (Buchholz, 2020). Later, it gradually expanded its activities towards mobile services. In the last few years, it has invested significant amounts in O2O (online-to-offline) services such as food delivery, financial products, and group buying. Moreover, the company puts a growing emphasis on development activities related to artificial intelligence and their application in the business sector (e.g., automotive industry [autonomous vehicles]). The main profile of *Tencent* is social network. One of its most important services is the WeChat messaging application, which was introduced in 2011 and, nowadays, '78 percent of all Chinese internet users have accounts on WeChat' (Buchholz, 2020). After social media, Tencent has started to expand towards segments such as digital payment (Tenpay), online banking services (WeBank), and dining services (Meituan-Dianping) (Woetzel at al., 2017b).

WeChat and Alipay can be called super applications in which they multiplied their original functions in just a few years. WeChat and Alipay cover several functions in different fields such as public services, social media, finance, education, communications, purchasing, entertainment, travel, etc. Both belong to the applications most frequently used by Chinese internet users. Besides these, QQ, iQiyi, and Taobao also can be found in the top 5 list (Figure 4). QQ is a messaging service of Tencent as well. Beyond the messaging service, QQ provides online social games, music, shopping, and movie related services. iQiyi is an online video platform owned by Baidu.

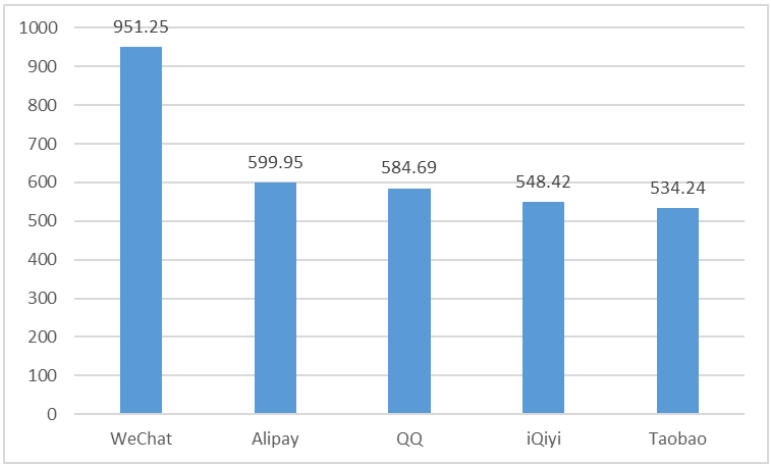


**Figure 4.** Monthly active users of the leading apps in China in January 2022 (in millions) (Analysys, 2022)

Besides the three digital giants, there are several other digital companies operating in China. Nevertheless, these three companies have been playing an important role in the development of further digital companies (Woetzel et al., 2017a). For example, in Figure 1 we can find apart from BAT other Chinese companies such as ByteDance, JD.com, Meituan-Dianping, and Pinduoduo. Tencent has been the largest shareholder of JD.com until recently, which is 'China's second largest e-commerce company' (He, 2021) after Alibaba. Tencent is also a major shareholder in Pinduoduo, which was founded in 2015 and 'attained a gross merchandise value of 15 billion US dollars only two years from launch, a milestone that took incumbents Alibaba and JD.com 5 and 10 years to achieve' (Natason, 2019). Pinduoduo managed to overtake Alibaba in terms of active users in 2020 (Chen 2021). Tencent also invested heavily into the merger of two startups Meituan and Dianping in 2015 (Osawa & Carew, 2019) and in 2021; it increased its stake in Meituan-Dianping to 17.2 percent (Fu, 2021). ByteDance founded in 2012 'is the creator of the short video app TikTok and news aggregator service Toutiao and one of the most valuable private technology firms in the world' (Kharpal, 2019a). Its aim is to replicate the growth model of tech giants such as Alibaba and Tencent, 'using buyouts and investments to push into new business areas' (Kharpal & Cheng, 2022).

China is a very active player in the global digital economy in terms of investments and the launching of new companies. A growing part of venture capital investments is directed towards digital technologies. China belongs to the world's three most significant venture capital investors in the fields of 'virtual reality, autonomous vehicles, 3D printing, robotics, drones, and artificial intelligence' (Woetzel et al., 2017b, p. 3).

## 4. American Digital Companies in the Chinese Market

The large domestic market, China, has facilitated the establishment of domestic giant digital companies. We can easily identify the Chinese counterparts of every significant American digital company, which are dominating different segments of the digital market, leaving only few business opportunities for American companies. For example, Alphabet (Google), Facebook, Youtube, and Netflix have not been available at all in China due to government censorship. Baidu search engine could be considered

as the Chinese counterpart of Google, which has a 76 percent share in the Chinese market. Like Google, as mentioned before, Baidu has been investing significant amounts in the development of autonomous cars. Tencent is China's Facebook, which is well-known for its messaging and social media platforms. Of these, WeChat stands out with nearly 1 billion monthly users. It is China's largest social services provider (Dunn, 2017). Chinese counterparts of Amazon are Alibaba and JD.com. Alibaba's activities expand well beyond e-commerce, but the company still relies mainly on its online shopping sites such as Tmall.com and Taobao. The former is China's largest retail e-commerce site, whereas the latter could be considered the Chinese eBay. Behind Tmall.com, JD.com is the second largest B2C e-commerce platform in China. Similar to Amazon, it has been investing large amounts in the development of drone delivery. We have already mentioned Alibaba-owned Youku Tudou, which is the Chinese counterpart of the American Youtube. Last, but not least, we can highlight iQiyi owned by Baidu as well, which is China's Netflix (Dunn, 2017).

Most of the American giant digital companies (e.g., Amazon, Alphabet [Google], eBay, Facebook) tried to conquer China's large market with great growth potential, but they have not proved to be successful. Amazon is almost synonymous with online shopping in the United States, however in the Chinese online retail market in 2016, it had only a 1.3 percent share (Keyes, 2017). This share further eroded to less than 1 percent in 2019 (Kharpal, 2019b). Amazon entered the Chinese market in 2004 when it acquired online bookseller Joyo. The company was renamed Amazon China in 2011. In October 2016, Amazon China launched its premium membership program. Its premium subscription offerings did not make the company outstanding among competitors. Offerings of Chinese local companies were at least as favorable as, or even better than, that of Amazon. Additionally, its premium video service was banned by Chinese government censorship, which further decreased the merit of the premium subscription. So it is easy to understand Amazon's unsuccessful performance in the Chinese market. Furthermore, the other reason for the failure of Amazon was that its mobile application design fell behind the Chinese mobile applications (Keyes, 2017); it is widely known that more than 80 percent of retail e-commerce transactions are made via mobile phone in China. In addition, Amazon China was less visible in terms of marketing. Finally, in 2019, Amazon decided to 'shut down its domestic e-commerce marketplace business in China' (Kharpal, 2019b). Stiff competition from the largest market players, Alibaba and JD.com, was a significant factor that sealed the fate of Amazon China. Besides e-commerce, Amazon has also entered the market of cloud services in China in 2013, which is mostly dominated by Chinese companies. According to Chinese regulations, Amazon Web Services can provide cloud services only with a local partner. Chinese cyber security regulations that came into effect in the summer of 2017, which were intended to control the cross-border flow of data more rigorously, required local storage of data, which forced Amazon to sell a part of its physical infrastructure of cloud services to its local partner, Sinnet. These regulations have been limiting not only Amazon's Chinese activity in the field of cloud services, but also that of other American companies such as Apple, Microsoft, and Oracle (Cadell, 2017). Amazon Web Services started to operate with its second local partner, NWDC since December 2017, in full compliance with the aforementioned Chinese regulations. Moreover, Chinese regulators are rigorously stepping up against the use of VPNs and other services (and their providers) that give access to foreign sites, such as Facebook, Twitter, and Google, which are blocked by the Chinese 'Great Firewall'. Local partners of Amazon Web Services limit access to this aforementioned software, which secures further operation for its web services in the Chinese market.

Google established its Chinese subsidiary Google China in 2005. It was the third largest search engine behind Baidu and Soso.com in the Chinese market. In 2009, the Chinese government blocked the use of Google because of content directed against the Communist leadership. In 2010, Google pulled out of the search engine market of China, citing government censorship and continuous hacker attacks as the reason. However, according to market analysts, the intervention of the Chinese government was not the only reason for Google's exit. It is also true that Google could not manage to demolish the view of Chinese consumers according to which Baidu is created for the Chinese community, but Google is rather established for foreigners (Pierson, 2016), namely, Google was not well-positioned in the Chinese market.

Facebook entered China in 2005. The Chinese government blocked Facebook in 2009 when it turned out that activists participating in the riots of Ürümqi used Facebook for communication. Since then, the website has not been available.

In 2003, eBay appeared on the Chinese market with the acquisition of Eachnet, which was the largest online auction site at that time, and in response to this, Alibaba established the previously mentioned Taobao. Taobao overtook eBay in the Chinese market in a very short period. Between 2003 and 2005, the market share of Taobao increased from 8 percent to 59 percent, while the market share of eBay decreased from 79 percent to 36 percent. In 2006, eBay closed down its online auction activities in China. The failure of eBay can be mainly explained by its misunderstanding of how the Chinese market operates (Wang, 2010).

Booking (Priceline before 2018) is the eighth largest American digital company based on market capitalization (see Figure 1). 'It is the world's leading provider of online travel and related services' (accommodation, car hire, air tickets, etc.) (Booking Holdings, 2022). Before the pandemic, the value of gross travel bookings through Booking grew from 7.4 billion US dollars in 2008 to 96.4 billion US dollars in 2019 (Booking Holdings, 2022). The growing middle class of China has become an increasingly important market for Booking. The American company does not want to compete directly with Chinese travel websites; therefore, it acquired a stake in the Chinese Ctrip.com in 2012, through which the offerings of Booking.com reach Chinese consumers. Ctrip uses Booking.com for outbound international travel. In 2017, the American company bought shares in Meituan-Dainping as well, the travel division of which cooperates with Agoda.com (O'Neill, 2017). In addition, it invested 500 million US dollars in the Chinese car-hailing giant Didi Chuxing in 2018. 'Didi supplies rides to customers of Booking's apps around the world. Its American partner, in turn, allows Didi users to make hotel reservations on Booking.com and Agoda.com' (Chan, 2018). Executives of Booking consider the Chinese and – in a broader sense – Asian market as the biggest business opportunity, but at the same time this is where they meet the most challenges. Therefore, Booking has chosen to acquire shares in domestic companies to enter China instead of launching its subsidiaries and building up its own business activities.

Apple, which is the world's largest ICT company based on market capitalization (PWC, 2021), started to sell iPhone devices in China in 2009. In 2015, China became the world's largest market of activated iPhones (Horowitz, 2016). In China, the sales of iPhones reached a peak of 71.2 million US dollars in 2015, but since then they have fallen to 31.4 million US dollars in 2019. In 2020, they showed only a slight increase to 34.9 million US dollars (Curry, 2022). In 2020, China was the world's third largest market for iPhone sales behind the USA and Europe, but still, only 18.1 percent of smartphone owners use iOS in China (Kantar Worldpanel, 2022). In the peak year of iPhone sales, 2015, Apple launched iTunes Movies, iBooks, and Apple Music to China and some months later, Apple Pay. However, six months after the rollout, on orders of

the Chinese authorities, Apple was forced to close down iTunes Movies and iBooks services. Services such as Apple Music and Apple Pay could still operate further (Hsu, 2017). In 2016, Apple secretly signed an agreement (about 275 billion US dollars) 'with the Chinese government that allowed Apple to grow most of its operations in the country. In turn, Apple promised it would do its part to develop China's economy and technological prowess through investments, business deals and working training' (Scherr, 2021). To woo the Chinese government, Apple opened two data centers and invested 1 billion US dollars into ride hailer Didi Chuxing (Van Boom, 2018). In order to boost the performance of Apple Music and Apple Pay in the Chinese market, Apple has started to cooperate with Chinese companies, such as Meituan-Dianping, Ant Financial (Alipay), and Tencent Music Entertainment (All Tech Asia, 2017; Van Boom, 2018; Grogan, 2021, Ouyang et al., 2022). In the last five years, Apple was requested several times by the Chinese government to remove apps from the App Store (Gurman, 2019; Gallagher, 2020), which means Apple has been operating under strong censorship in China. Despite all difficulties, China is an important market for Apple; it was the third largest in terms of revenues in 2020 (Curry, 2022).

As mentioned above, the largest American digital companies have faced significant challenges in the Chinese market, which can be traced back to several reasons. Firstly, most of them did not understand the needs of Chinese customers, which led to market failure. Secondly, almost every American digital company has a Chinese counterpart (strong competition in the market). These Chinese digital companies that rely on the large domestic market could and can grow rapidly; furthermore, they are also supported by government policy giving advantages and subsidies to domestic companies and limiting foreign competition. The Chinese government often prevented leading American digital companies from acquiring Chinese companies in the initial stage of their development (Heilmann, 2017). Thirdly, the Chinese government often uses the tool of censorship against foreign companies if it is in their strategic interests.

## 5. Chinese Government Policy for Promoting Domestic Digital Companies

Since the global economic and financial crisis, there has been a change in the economic strategy of the Chinese government. Instead of exports and foreign direct investments, the government has started to promote domestic innovations and companies (Pierson, 2016). In the future, the economic growth of China will rely increasingly on services, the high-tech sector, and consumption. The Chinese government strives to preserve the most lucrative market opportunities for domestic companies. In the 13th Five-Year Economic Plan (2016-2020), the Chinese government assigned the development of the ICT sector as the upmost priority field (Hong, 2017), which has been playing a significant role in the transition of China's aforementioned economic growth model. According to Wang (as quoted in Drinhausen, 2018, p. 3), 'the Chinese government understood the importance of the digital economy and included specific goals and measures for its promotion in the 13th plan.' During the period of the 13th Five-Year Plan, several ongoing elements of the Chinese state industrial policy targeting the development of digital economy were introduced such as 'Internet Plus', 'Made in China 2025', and 'National Informatization Development Strategy'.

The main aim of 'Internet Plus', initiated by the Chinese government in 2015, is to modernize and transform the operation of the traditional manufacturing sector and society through the help of the internet. The 'Internet Plus' action plan 'identifies mobile devices, cloud computing, big data, and the Internet of Things (IoT) as key tools

for this transformation' (Borst, 2018, p. 9). It 'maps development targets and supportive measures for key fields where the government hopes that it can establish new industrial modes by integration with internet technologies, including mass entrepreneurship and innovation, manufacturing, agriculture, energy, finance, public services, logistics, e-commerce, transportation, environment protection, and artificial intelligence. According to the plan of the Chinese government, 'Internet Plus' will become a new economic model and an important driving force for economic and social innovation and development by 2025' (China Daily, 2015). Moreover, it is worth highlighting that the action plan is definitely aimed at decreasing China's dependence on foreign technology innovations and providing more state support for domestic business development (Chang, 2016). For example, the government supports the establishment of new digital companies with tax allowance and initial capital. In 2016, approximately 2500 incubator facilities were ready across China to help with the start of new businesses. The Chinese government established a 30-billion-dollar venture capital fund in Shenzhen in 2016, which also supports start-ups. In 2017, 'Beijing Zhongguancun Inno Way, a high-tech community known as China's Silicon Valley, launched its first 75.3 million US dollar venture capital targeting AI-related startups' (Woetzel et al., 2017b, p. 32). In the same year, 'the Cyberspace Administration of China and the Ministry of Finance launched a 100-billion-renminbi fund to support digital companies and the 'Internet Plus' action plan through equity investments. Several Chinese banks also pledged to back up the initiative through providing credit' (Borst, 2018, p. 9). The concept of 'Internet Plus' originates from Tencent CEO Ma Huateng. The other significant (private) digital companies (e.g., Alibaba, Baidu) also participated in working out the guidelines of the concept (Stepan & Shih, 2016).

Unlike 'Internet Plus', the plan of 'Made in China 2025' is characterized by a top to bottom approach and was adopted by the Chinese government in 2015 to develop smart manufacturing (which means the use of automatization and digitalization technologies in industrial production and organizations). The industrial production of China still shows backwardness in comparison to that of developed countries. Low level of automatization and lack of digitalization are characteristics of most Chinese factories. However, a rapid increase in demand for automatization and digitalization technologies is generated by Chinese industry. The plan of 'Made in China 2025' is different from former industrial strategies because it disposes of larger financial sources and includes several efforts, which were not previously synchronized. With its plan, the Chinese government would like to support the technological upgrading of small and large as well as private and state-owned companies. Moreover, the other main aim of the government is to replace and substitute foreign technologies with domestic technologies. In ten high-tech sectors (new generation information technology, high-end computerised machines and robots, space and aviation technology, maritime equipment and high-tech ships, advanced railway transportation equipment, new energy and energy-saving vehicles, energy equipment, agricultural machines, new materials, biopharma, and high-tech medical devices), the Chinese government promotes Chinese companies (national champions) 'to create innovative technology solutions and replace their foreign competitors in the domestic market' (Wübbeke et al., 2016, p. 20) and to expand abroad as well.

The 'National Informatization Development Strategy', which partially covers the two aforementioned plans, was adopted by the Chinese government in 2016. It is an adjustment and development of the 'National Informatization Development Strategy 2006-2020' (China Copyright and Media, 2016). This strategy projects the broad IT goals of the Chinese government and state regulation and control of cyberspace for the next ten years. The most important goal of the strategy is to boost the domestic IT

sector with the 'upbringing' of internationally competitive digital and ICT companies, as well as to overtake leading countries such as the USA and Germany. According to the strategy, between 2016 and 2020, China's aim was to strengthen the domestic industry (e.g., integrated circuit, software services) in the field of some core technologies and expand 3G and 4G services in the whole country, and promote 5G technology related R&D activities. By 2025, China would like to build up mobile networks similar to that of developed countries. Foreign expansion of leading Chinese companies and innovations are also included in the goals. The value of IT products and services and e-commerce are planned to be quadrupled by 2025. The strategy is also aimed at relying more on domestic technology innovations and decreasing dependence on foreign ones. The government supports research cooperation among universities, research institutions, and companies. Highlighted fields are mobile internet technology, cloud computing, big data, the Internet of Things (IoT), etc. (Zhao & Heatley, 2016). The strategy also mentions further severity of domestic regulation of cyber security, which has a disadvantageous impact on the activities of foreign companies in the Chinese market.

Digitalization has remained a key priority in the latest Five-Year Economic Plan (2021-2025) 'which is now pushing the general application of digital and smart solution in the economy, governance and the social sector' (Grünberg & Brussee, 2021). Moreover, the 14th Five-Year Economic Plan has reinforced China's efforts to attain self-reliance in science and technology. 'Despite calls for continued openness and international cooperation, China is looking internally to ensure its future development' (Dudley, 2021) or in other words, the 14th plan prioritizes the 'internal cycle' of China's so-called dual circulation strategy.

## 6. Conclusion

The digital economy is a rapidly growing segment of the global economy. This process is highly supported and enabled by the so-called digital and ICT companies. The global list of the top 20 internet companies ranked by the size of market capitalization is mainly dominated by American and Chinese companies. According to the broader definition of UNCTAD, the share of the digital economy in GDP is higher in China than in the USA. Our study focuses on the latest developments of the Chinese digital economy, especially the activities of the most important market players, namely, Alibaba, Tencent, and Baidu. Our major findings are that the largest American digital companies (such as Alphabet (Google), Amazon, Apple, Facebook, eBay, Booking), which are globally active players, usually have a very limited market share in the different segments of the Chinese digital economy, or have been forced to leave the Chinese market after a short period of operation. In its catching-up phase, China has brought up its national champions now dominating the domestic digital market. We can easily identify the Chinese counterparts of every American digital giant: Baidu – Google; Tencent – Facebook; Tmall.com (Alibaba) and JD.com – Amazon; Taobao (Alibaba) – eBay; Youku Tudou (Alibaba) – Youtube; iQiyi (Baidu) – Netflix, etc. In the future, the 14th Five-Year Economic Plan and the recent elements of the state industrial policy, such as 'Internet Plus', 'Made in China 2025' and 'National Informatization Development Strategy', will continue to ensure the priority role of domestic digital companies in the upgrading and structural transformation of the Chinese economy driven by services, high-tech sectors, and consumption.

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