



Università
Ca' Foscari
Venezia

Master's Degree
in Languages, Economics
and Institutions of Asia
and North Africa
"Second Cycle (D.M. 270/2004)"

Final Thesis

**The Chinese
urban-rural
Digital Divide and
the development
of E-commerce in
rural China**

Supervisor

Ch. Prof. Daniela Rossi

Assistant supervisor

Ch. Prof. Franco Gatti

Graduand

Rocco Ferraro
Matriculation number
858650

Academic Year

2019/ 2020

TABLE OF CONTENTS

前言	3
INTRODUCTION	7
1 THE CHINESE E-COMMERCE INDUSTRY.....	11
1.1 CHAPTER OVERVIEW	11
1.2 THE DEVELOPMENT OF E-COMMERCE IN CHINA.....	12
1.3 ALIBABA: A TURNING POINT.....	21
1.4 E-COMMERCE INDUSTRY NUMBERS IN CHINA: INSIGHT ON THE MAIN PLATFORMS, USERS DEMOGRAPHICS, SALES DATA.....	28
2 THE DIGITAL DIVIDE	37
2.1 CHAPTER OVERVIEW	37
2.2 WHAT IS THE DIGITAL DIVIDE?	38
2.3 DEFINING CHINESE RURAL AREAS, POVERTY-STRICKEN COUNTRIES AND THE CHINESE CITIES TIER SYSTEM 48	
2.4 THE GAP IN ACCESS TO ICTS BETWEEN RURAL AND URBAN CHINA	50
2.5 BEYOND THE DIGITAL DIVIDE: <i>CONNECTIVITY DIVIDEND DIFFERENCE</i>	67
3 E-COMMERCE IN RURAL CHINA.....	72
3.1 CHAPTER OVERVIEW.....	72
3.2 RURAL E-COMMERCE.....	73
3.3 RURAL E-COMMERCE CHALLENGES.....	84
3.4 THE RISE OF TAobao VILLAGES.....	87
3.5 GOVERNMENT’S INVOLVEMENT IN E-COMMERCE DEVELOPMENT IN IMPOVERISHED AREAS	91
3.6 NEW E-COMMERCE BUSINESS MODELS: THE “PINDUODUO” CASE AND THE DEVELOPMENT OF NEW E-COMMERCE PLATFORMS IN IMPOVERISHED AREAS AND LOW-TIER CITIES.....	96
CONCLUSIONS.....	109
REFERENCES.....	112

前言

本论文旨在探讨电子商务在中国农村的发展及其对贫困地区经济发展所带来的机遇。最后一点，这篇论文将通过分析《拼多多》电商模式及其在低线城市的发展，来考察为贫困地区的需求打造的新电子商务模式的诞生。

本论文第一章将以电子商务产业在中国的发展为主线，对电子商务从90年代末在中国出现至今的历史沿革作一个简要的回顾。本论文显示，电子商务在中国的发展一直是不平衡的。尽管政府支持促进电子商务的发展，但多年来它一直是一个高度集中在沿海发达地区的现象，而内部地区、省份直到最近几年才持续落后。

阿里巴巴（Alibaba）是中国电子商务发展史上的一个里程碑，它彻底改变了电子商务模式，并首次挖掘了网上市场的潜力，成为如今的电子商务巨头，业务遍及各个行业。阿里巴巴对贫困地区发展的贡献也是不可否认的：阿里巴巴的农村淘宝和扶贫基金会项目在促进贫困地区经济发展方面发挥了至关重要的作用。通过农村淘宝计划，阿里巴巴旨在扩大面向农村消费者的产品种类，并对农村居民进行电子商务教育，为他们提供进入电子商务创业的必要工具，包括培训、专业人员协助、改善物流网络等方面。借助扶贫基金会，阿里巴巴出资100亿元，在电子商务、生态、教育、卫生、妇女五大领域开展扶贫开发。最后，第一章将对中国电子商务产业的现状进行数字和数据分析。统计数据表明，电子商务市场充满活力，并持续增长。然而，在那些几乎达到饱和的地区（如浙江、江苏、北京、上海），该行业的增长正在放缓，而内陆省份则显示出了增长更快的迹象，这些省份是后进者进入行业的。

尽管政府和私营部门努力帮助扶贫贫困地区，但东部和西部省份之间的收入和信通技术普及的差距从未真正平整。

本论文的第二章将着重于所谓的《数字鸿沟》。专家们将“数字鸿沟”一词称为不同群体、地区、城市在获得技术方面的差距，它是进一步经济发展的一个关键障碍。数字鸿沟在全球和国家内一级都存在。在全球范围，研究表明，世界上最发达的国家，包括位于北美和欧洲地区的国家，与发展中国家和不发达国家，包括位于非洲和亚洲的国家，之间在获得信息和通信技术方面存在着巨大差距。这既是财富水平下降的原因，也是它结果：一方面，不发达国家的居民认为科技是很少人能负担得起的奢侈品；另一方面，科技是增加收入的根本要求。此外，数字鸿沟还可追溯到教育水平、基础设施发展、人口心理本身等原因。

第二章还分析了中国各省之间存在的数字鸿沟。北京、上海、浙江、江苏、广东等富裕的东部城区省份与贵州、云南、甘肃、西藏等较贫穷的内陆农村省份之间存在很大的差距。中国互联网络信息中心（CNNIC）的报告显示，这些省份的互联网普及率是国家上最低的，同时，按收入和国内生产总值（GDP）排名最低的省份。

其次，第二章将参考现有的关于采用信通技术对农民收入的益处的研究：智能手机和计算机的采用与农业和非农业收入的增加有关，因为它们有助于获取信息、改善通信和促进技术进步。

最后，本章将介绍近年来在数字鸿沟领域提出的一个新概念，也就是互联网红利差异。传统的数字鸿沟只关注获取信息和信通技术方面的差距，而互联网红利差异重于人们通过互联网资本获得的利益的差异。互联网资本指的是以往投入的各类资产在互联网上取得的利益。

本论文的最后一章将显示中国农村电子商务发展现状的数据。同时，第三章还将介绍近年来兴起的社交电商和直播电商等新电商模式，为农村电子商务的进一步发展做出了贡献。《农村电商》是指利用互联网向农村地区购买产品和销售商品。尽管农村电商与城市电商相比处于落后地位，但近

几年来，农村电商呈现出明显的增长迹象：2019年，县级网上零售额达到30961.6亿元。

本章还将以淘宝村现象为例，探讨电子商务作为促进经济发展、赋予少数民族权力，促进社会流动性的手段。现有的四千多个淘宝村帮助许多乡村和贫困县脱贫，主要分布在东部地区的乡村县城。尽管淘宝村是一个空间集中的现象，但淘宝村在整个中国版图上已经站稳脚跟，同时也在内陆省份萌芽，支撑着基于地方特色的乡村和县域经济的发展。

第三章将对近几年来兴起的社交电商、直播电商两个新电子商务模式进行深入分析。考虑到社交电商的低价以及直播电商模拟传统零售购物的现场商业体验，这些模式最适合农村人口的需求，它们能够极大地扩大中国农村地区的销售额，因为它们对消费者进行关于产品的教育，娱乐消费者，建立社区，促使购物者相互交流，提供优惠券和优惠。

最后，第三章将以“拼多多”平台为例，说明挖掘农村和低线城市市场的潜力。由于最近的发展带来了更好的条件，低线城市和农村地区的消费人群增加了，特别是麦肯锡(McKinsey)将“年轻的自由消费者”称为三线或更低线城市的一个有吸引力的市场细分。虽然该市场占总人口的25%，但占总支出增长的60%。与此同时，三四线城市可支配收入较高的家庭不断增加（与2018年相比增加了38%）。这证明了一个新的、不断增长的市场细分在那些曾经被视为“贫穷”地区的市场正在崛起，而拼多多等公司在充分挖掘县城和低线城市市场潜力后取得了巨大的成绩。

凭借其基于团队购买和社交媒体分享的创新商业模式，拼多多在2015年诞生后的短短时间内，在中国建立了一个新的电子商务巨头。批量采购可以降低买家的价格和卖家的成本，从而引发一个良性循环，这对所有参与在线交易的各方都是有利的。同时，该平台率先在农产品市场推出，通过“多多农园”模式，解决了过去制约该行业发展的的问题。拼多多推迟了农

产品配送的物流网络，改善了“第一英里”和“最后一英里”的连接，从而降低了现在负责自己农产品运输的农场主该负担的成本。同时，买家可以获得优惠券和折扣。由于农产品很容易易腐，这种模式允许农民通过优化库存量和种植计划来实现利润最大化和减少损失。

第三章的最后一部分将强调拼多多对振兴云南贫困县经济的贡献，以及它在贵州、甘肃、新疆等地区的贫困县计划复制同样的模式。

凭借拼多多平台独创的经营方式和农业项目，它已经成为中国最大，最重要的在线农业平台，农业商品总值为 1360 亿元（同比增长 109%），活跃买家为 2.4 亿（同比增长 174%），商户为 58.6 万（同比增长 142%），蔬菜商品总值和订单量同比增长了 150%，大米、面粉、粮食、干粮同比增长约 400%，肉类转基因食品和订单量同比增长 370%以上。

INTRODUCTION

Despite years of unprecedented economic development, China is still characterised by a deep urban-rural economic disparity. The urban-rural Digital Divide has contributed to increasing the income inequality caused by decades of urban-oriented policies. This affects the E-commerce industry, which has become a cornerstone of Chinese economy. The urban-rural gap also exists in the E-commerce sector, as the biggest portion of sales and revenues is concentrated in cities. Nevertheless, in recent times, rural China underwent a vigorous growth in Internet penetration and has entered the E-commerce industry as an important player. E-commerce gave great contribution to local economy, also thanks to policies by both the Government and the private sector aiming at alleviating poverty in rural regions. Furthermore, rural areas witnessed the birth of Taobao Villages, which have gained growing importance in the sector in recent years and have contributed to lifting millions of people from poverty. The present work analyses the E-commerce industry in China and how the Digital Divide issue affected economic development. The purpose of this work is to investigate on the expansion of E-commerce in rural China and the opportunities it represents for the economy of impoverished areas. As a final point, the work will examine the birth of new E-business models tailored to the needs of poorer areas by taking into analysis the case of Pinduoduo and its growth in low-tier cities.

The first chapter of the present dissertation will focus on the evolution of E-commerce industry in China, providing a brief historical overview from its appearance in China in the late 90s to this day. As evidenced in the present work, E-commerce evolution in China has always been uneven and, in spite of the government support to foster its development, for years it has been a phenomenon that was highly concentrated in coastal, developed areas, while inner regions and provinces have continued to lag until recent years.

A milestone in the Chinese E-commerce evolution was Alibaba, which revolutionised the E-commerce models and, for the first time, leveraged the potentiality of marketplaces, becoming the E-commerce giant it is nowadays, operating in all sectors. Alibaba's contribution to the development of poorer areas is undeniable as well: the company's *Rural Taobao* and *Poverty Alleviation Fund* programmes played a crucial role in boosting the development of impoverished areas' economy. Through the *Rural Taobao* programme, Alibaba aimed at broadening the variety of products available to rural consumers, as well as educating rural dwellers on E-commerce and provide them with the necessary tools to venture into E-commerce entrepreneurship (including training, assistance by specialised personnel, improved logistic networks...).

With the *Poverty Alleviation Fund*, Alibaba funded RMB 10 billion to foster poverty alleviation in five target areas: E-commerce, ecology, education, health and women. Lastly, the chapter will provide numbers and data about the E-commerce industry current situation in China. As evidenced by statistics, the E-commerce market is highly dynamic and continued to grow. The growth of the industry, however, is understandably slowing down in those areas where it has almost reached saturation (Zhejiang, Jiangsu, Beijing, Shanghai), while signs of faster growth are shown by inland provinces which have entered the game as late movers.

In spite of several attempts by both the Government and the private sector to reduce poverty in rural areas, the gap in terms of income and ICTs accessibility was never really bridged. The second chapter of this work will focus on the so-called Digital Divide. Experts refer to the term “Digital Divide” as the disparity in access to technology between different groups, regions, cities, and it is a crucial obstacle to further economic development. The Digital Divide exists on both the global and the national level. Globally, research shows that a significant gap in ICTs access exists between the world’s most developed countries (traditionally located in the regions of North America and Europe) and developing and least-developed countries (mainly Africa and Asia). This is both the cause and the result of lower wealth levels: on the one side, technology is seen as a luxury that few people can afford; on the other side, it is a fundamental requirement to increase income. In addition, the Digital Divide traces back to further causes: education levels, infrastructures development, the population’s mentality itself.

The second chapter shows the existence of a relevant Digital Divide among Chinese provinces. The gap exists between the wealthy, eastern, urban provinces (in particular Beijing, Shanghai, Zhejiang, Jiangsu, Guangdong) and poorer, inland rural provinces (mainly including Guizhou, Yunnan, Gansu, Tibet). Such provinces show the lowest Internet Penetration Rates, as evidenced by CNNIC reports, and, at the same time, rank among the lowest provinces by income and GDP.

The chapter will reference extant research on the benefits that ICTs adoption has been proven to have on farmers’ income: smartphones and computers adoption have been linked with an increase in both farmers’ and off-farm income, since they facilitate access to information, improve communication, and enhance technological advancement.

Lastly, the chapter will present a novel notion that has been brought to the table in recent years in the field of Digital Divide: Connectivity Dividend Difference. While the traditional Digital Divide focuses on the mere disparity in access to ICTs, Connectivity Dividend Difference focuses on the differences in benefits that people manage to gain through Connectivity Capital,

which refers to the assets formed by past investments that has access to the Internet market and benefits from it.

The final chapter of the present dissertation will provide data on the current state of rural E-commerce development in China. At the same time, the chapter will introduce the new E-commerce models that rose in recent times (social-commerce and live-commerce) and contributed to further development of rural E-commerce. The term “rural E-commerce” refers to the usage of the Internet to purchase products from and sell goods to rural areas. In spite of its backwards position compared to E-commerce in urban areas, rural E-commerce has shown significant signs of growth in the last years: in 2019 county-level online retail sales reached RMB 3096.16 billion.

The chapter will also investigate on the phenomenon of Taobao Villages as an example of E-commerce as a means to boost economic development, minorities empowerment and social mobility. The over four thousand existing Taobao Villages have contributed to lifting from poverty countless rural villages and impoverished counties, mainly located in the eastern region. Despite being a spatially concentrated phenomenon, Taobao Villages are gaining a foothold in the whole Chinese territory and are sprouting in inland provinces as well, backing the development of villages and counties economies based on local specialties.

The third chapter will provide an insight on the new E-commerce models that originated in recent years: social-commerce and live-commerce. As these models best suit the needs of rural population (considering the low prices embedded in social-commerce and the experience of live-commerce as a mimic of traditional retail shopping), they were able to enormously expand sales in rural China because they: educate consumers about products, entertain them, build communities to push shoppers to interact with each-other and offer coupons and great deals.

In conclusion, the chapter will present the case of the “Pinduoduo” platform to exemplify the potential of leveraging the market of rural areas and lower-tier cities. Due to better conditions deriving from recent development, spenders in low-tier cities and rural areas have increased: in particular, McKinsey refers to “Young Free Spenders” as an appealing market segment in third- or lower-tier cities, which constitutes 25% of the total population but accounts for 60% of total spending growth. At the same time, households in tier 3 and tier 4 cities with higher disposable income are constantly increasing (+38% compared to 2018). This is the proof that a new, growing market is rising in those that once were considered “poorer” areas, and companies like Pinduoduo achieved great results after leveraging the potential of rural and lower-tier cities markets.

Thanks to its innovative business model based on team purchases and social-media sharing, in a short window of time from its birth in 2015, Pinduoduo established as a new E-commerce giant in China. Bulk purchasing leads to a reduction in prices for buyers and costs for sellers, thus triggering a virtuous circle that is beneficial to all the parties involved in online transactions. At the same time, the platform launched in the agriproducts market as a first mover, tackling the issues that in the past constrained the development of this sector through the “Duo Duo farm” project. Pinduoduo delayed the logistics network for agriproducts distribution, improving the “first mile” and “last mile” connection and, thus, reducing costs for farmers, who are now responsible for the shipment of their own agricultural products, and buyers, that can obtain coupons and discounts. At the same time, due the perishable nature of agriproducts, this model allows farmers to maximise profit and reduce losses by optimising the stock quantities and planting schedules.

The final part of the chapter will emphasise the contribution of Pinduoduo to revitalising the economy in poverty-stricken counties in Yunnan, as well as the company’s plans to replicate the same model in other poverty-stricken counties located in other regions such as Guizhou, Gansu, Xinjiang.

Thanks to its fresh approach and agricultural programmes, Pinduoduo has become the largest online agriculture platform in China, with an agriculture GMV of RMB 136 billion (109% YoY growth), 240 million active buyers (174% YoY growth), 586,000 merchants (142% YoY growth), 150% year-on-year growth for vegetable GMV and order volume, about 400% year-on-year growth of rice, flour, grain and dry goods, over 370% of meat GMV and order volume YoY growth.

1 THE CHINESE E-COMMERCE INDUSTRY

1.1 CHAPTER OVERVIEW

The first chapter of this thesis paper aims to analyse the E-commerce industry in China and how it affected the patterns of doing business both for domestic and foreign companies in the Chinese market. The analysis will also emphasise the fundamental steps in the evolution of E-commerce and highlight those companies (such as *Alibaba*) that contributed to taking the industry to the point where it is now.

E-commerce reach has continuously expanded since the very first stages of the industry in the late 90s and first 2000s, with the earliest platforms based on B2B or B2C businesses mainly operating in urban areas. The rapid growth of E-commerce that came in the following years was supported by both spontaneous factors (such as a shift in the Chinese consumers' mentality towards online shopping) and external targeted support provided by the private sector as well as by the Chinese government, which saw E-commerce as an opportunity for the Country's economic development.

E-commerce evolution in China, however, has always been uneven. Since the beginning, it has expanded predominantly in eastern, coastal provinces and urban areas, with Guangdong, Jiangsu and Zhejiang as the provinces with the highest number of E-commerce activities. In spite of China's rapid economic growth in the last decades, because of the urban-biased policies the gap between urban and rural areas in terms of GDP, education opportunities, technology accessibility and correlated challenges (such as the diffusion of E-commerce) was never really bridged, in spite of several attempts by the government through many pro-rural policies¹. To this day, that gap still translates, in the E-commerce industry, as a significantly lower reach of E-commerce in rural, impoverished areas. Nevertheless, such a gap implies significant growth opportunities for E-commerce in such areas, considering that, as commonly agreed, E-commerce has reached its maximum expansion in urban and coastal areas and its growth rate in those regions has significantly slowed down in the last years.

The major turning point in E-commerce development was the rise of *Alibaba*. As this chapter will later show, through continuous innovation and over twenty years of experience the company managed to build a reputation as the industry leader and has become a milestone in the

¹ Gao, Y.; Zang, L. & Sun, J. (2018). Does Computer Penetration Increase Farmers' Income? An Empirical Study from China. *Telecommunications Policy*, 42 (5), 345-360.

Chinese economy operating in a wide range of sectors thanks to its numerous partnerships and acquisitions.

Finally, this chapter will give a brief insight on the state of E-commerce in China to this day, listing the main platforms and analysing data about sales, reach and users demographics.

1.2 THE DEVELOPMENT OF E-COMMERCE IN CHINA

E-commerce now represents a key sector in Chinese economy and for a company to perform well on the Chinese market also depends more and more on its ability to take full advantage of the E-commerce channels available. Throughout the years, E-commerce underwent a rapid evolution that followed the paths of changes in economy, technology and society. As a result, the industry is highly diversified and presents several patterns for the online purchase, sell and promotion of goods.

It is possible to identify three main types of E-commerce:

1. **Business-to-Business (B2B):** commercial transactions between different businesses. It is the most frequent type of transaction, as it is also widely used, for instance, in supply chain processes.
2. **Business-to-Consumer (B2C):** commercial transactions between a business (the seller) and a consumer (the buyer), involving finished products and services. This type of transactions also includes online banking services, travel services (booking hotels, flights etc.), real estate services and so on.
3. **Consumer-to-Consumer (C2C):** online transactions among consumers involving a third party platform that hosts the transaction.

In addition to those, there are other, less common types of E-commerce, such as Consumer-to-Business (C2B), Business-to-Government (B2G), Government-to-Business (G2B), Government-to-Consumer (G2C).

In China, the E-commerce industry underwent an unmatched development and rapidly took over national economy. Such a fast expansion of the Chinese E-commerce industry in the years has been sustained by three elements: social changes, progresses in infrastructures and government policies. In his “National Report on E-commerce in China”, Yue identifies four stages in the development of E-commerce. These phases are characterised by high dynamicity and continuous changes in a relatively short time window that goes from 1994 to 2017.

After China gained access to the international Internet network in 1994, the first E-commerce enterprises appeared, specifically in the years between 1996 and 2000. Statistics show that 5.2% of Chinese E-commerce platforms currently operating were born during that period². The E-commerce business model of that period was dedicated mainly to B2B transactions. The B2C and C2C sectors emerged in the late 90s with the birth, in 1999, of websites such as *8848*, which was the first domestic B2C E-commerce platform, the *eBay* network, the first C2C service website, and *Alibaba*, with a main business that was B2B. In the same year, the first online payments appeared in the industry thanks to China Construction Bank, which, for the first time, paved the way for online banking services.

Decisive steps forward towards the recognition of E-commerce as an operating industry that could benefit the whole national economy were taken in 2000, when the China Electronic Commerce Association was officially established and certified by the government. This also was the turning point for the accelerated development of E-commerce, which was yet hindered by three main problems:

- a. Only a narrow segment of the Chinese population had access to the Internet, thus limiting the market potential of E-commerce.
- b. Lack of proper infrastructures and services, as logistic and distribution networks were not completely developed.
- c. Chinese people lacked confidence in the online payment system and did not completely trust long-distance purchasing.

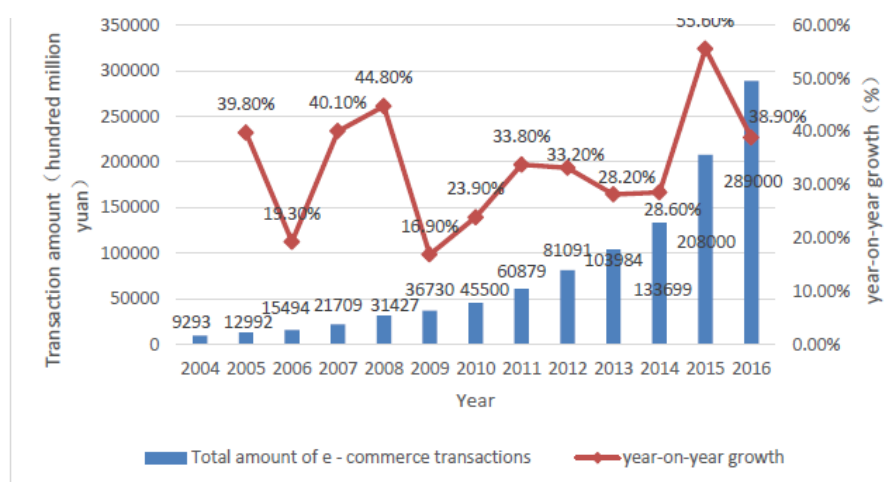
The early 2000s were characterised by a rapid growth in E-commerce. In those years, the sector expanded from enterprise services to personal services, and in doing so it became a crucial trading channel for both enterprises and consumers. At the same time, those problems that characterised the early stages of the E-commerce industry were tackled by 2005. In June 2004, the first network business conference was held in Hangzhou, which brought about the large-scale C2C model in China. In October of the same year, *Alibaba* launched *Alipay* to guarantee the security of online payment and, in 2005, *Taobao* signed a logistic supply agreement with YuanTong Express.³

² Yue, H. (2017). National Report on E-commerce Development in China. Inclusive and Sustainable Industrial Development Working Paper Series WP17. United Nations Industrial Development Organization: Vienna, Austria.

³ Yue, H. (2017). National Report on E-commerce Development in China. Inclusive and Sustainable Industrial Development Working Paper Series WP17. United Nations Industrial Development Organization: Vienna, Austria.

In 2007, the State Council promulgated the first national E-commerce development plan on a national level, with the State Development and Reform Commission and the State Council Information Office jointly issuing the *E-commerce Development Five Year Plan*. The plan marked a shift for the E-commerce industry from its acceleration stage to its standardisation stage, which is framed in the years between 2008 and 2014. Those years witnessed an exponential growth in online shopping revenues (from RMB 128.128 billion in June 2008 to RMB 1.2 trillion in 2012⁴) and transactions (figure 1.1).

Figure 1.1 China's Total E-commerce transactions from 2004 to 2016



Source: China's E-commerce report, 2015 and 2016 data from Ali Research Institute and Avatar large data processing center.

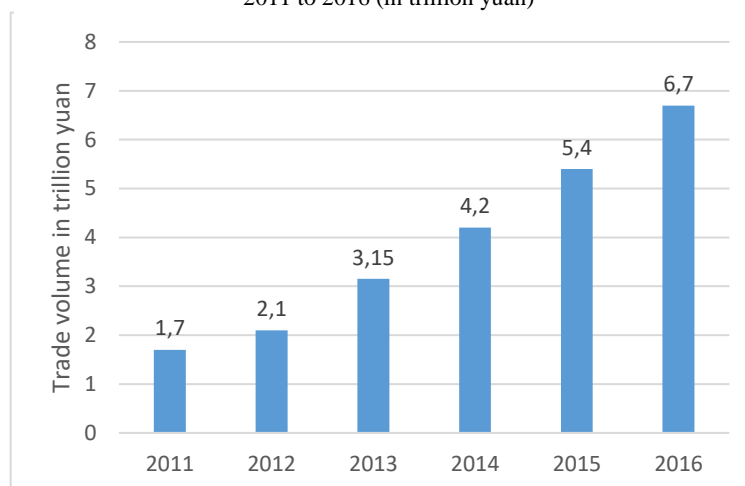
The Government continued to launch E-commerce regulatory policies, leading to the consolidation of the national policy management system of the E-commerce industry. Such policies (which, amongst the others, included the *12th Five Year Plan*) supported and encouraged the expansion of E-commerce both internally and externally. As a matter of fact, thanks to the increasing number of global Internet users and to the improved system of cross-border payments, logistics and other services, China's cross-border E-commerce business (both B2C/C2C) was thriving. In 2011, the total trade volume of China's cross-border E-commerce players was RMB 1.7 trillion⁵: this number experienced an upward growth in the following years, reaching a total volume of RMB 6.7 trillion in 2016. (figure 1.2).

⁴ CNNIC.

⁵ <https://www.statista.com/statistics/722987/china-cross-border-e-commerce-players-trading-volume/>

The consolidation of Chinese cross-border E-commerce was supported by the rise of cross-border E-commerce platforms such as *Aliexpress*, and was seen as an opportunity for many SMEs to start operating in the international market.

Figure 1.2. Trade volume of China's cross-border E-commerce players from 2011 to 2016 (in trillion yuan)



Source: Statista.

Domestic E-commerce also underwent great advancements and statistics show a constant increase in the share of Internet users who shop online. The percentage stood at 24.8% in 2008 and rose to 73.6% in 2018, with the growth peaking between 2009 and 2010⁶.

In the Globalisation stage (the fourth E-commerce development stage, according to Yue), the Chinese E-commerce model went through a series of changes that altered the traditional way of doing business and, most of all, contributed to the consolidation of the industry as a pool with humongous potential for economic development.

The majority of domestic business platforms mapped out their own strategies for global capital development, while many regions of China started to venture into cross-border E-commerce. This is the case of Zhejiang province, which established its own cross-border E-commerce network with Hangzhou and Ningbo as the main pilots for a management system and set of rules on global cross-border E-commerce, and Guangzhou Province, which built the first cross-border E-commerce model city in Southern China. In particular, the provinces with international

⁶ CNNIC.

borders paved the way for cross-border E-commerce: Guangxi province endorsed cooperation between China and Vietnam through E-commerce trade, Heilongjiang Province appointed the Suifenhe border economic cooperation zone as a base for the development of cross-border E-commerce and focused on initiating cross-border trade with Russia.

According to research and calculation by China E-commerce Report, Ali Research Institute and the Avatar Large Data Processing Center, the annual average growth rate of China's E-commerce transactions was 38.2% between 2011 and 2016⁷. A single-day trading volume on November 11th, 2016 shopping festival was more than 120.7 billion yuan and set a record of 50 billion yuan trading volume in two and a half hours. With such a high-growth trend, E-commerce stole the spotlight in China's economy, and even though the growth pace understandably slowed down in the past three years, statistics show that transactions volume is still increasing. E-commerce growth in China has continued over the years thanks to improvements in infrastructure, logistics services and payment systems. In 2018, total trade volume of E-commerce reached 32 trillion yuan⁸, setting a new record for the industry.

One key factor contributing to the yearly growth in earnings in the industry are also Chinese Shopping festivals, such as *11/11* and *12/12*. During shopping festivals, E-commerce market leaders attempt at increasing consumers' engagement by offering high-end products, as well as lower quality goods, at discounted prices. They boast skyrocketing numbers in terms of revenues and amount of goods sold, and every year they keep setting new records that are still to be paralleled on a global level. In 2019, *Double 11* (双 11) total sales revenue - including *TMall*, *JD*, *Suning* and *Pinduoduo* revenues, plus several minor E-commerce platforms - added up to RMB 409.7 billion, corresponding to approximately USD 58.53 billion. It was a never-seen before digit that surpassed the United States' GMV of Black Friday, Thanksgiving and Cyber Monday combined (~17.8 billion USD). This gives a clear idea of the power behind the E-commerce industry in China, which has rapidly become a fundamental engine for Chinese economy.

The numbers that E-commerce boasts on both global and national levels remark the crucial role it plays in the overall Chinese economy. According to McKinsey, in 2016 China accounted for more than 40% of the global value of E-commerce transactions. The growth of E-commerce in

⁷ Yue, H. (2017). National Report on E-commerce Development in China. Inclusive and Sustainable Industrial Development Working Paper Series WP17. United Nations Industrial Development Organization: Vienna, Austria.

⁸ World Bank; Alibaba Group. (2019). "E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

China is unmatched: in the years between 2004 and 2018, yearly E-commerce trade volume continually increased with a growth from RMB 930 billion to RMB 32 trillion⁹. Such a vigorous expansion has its roots in three main factors: widespread trusted digital payment systems, strong logistical infrastructure and increasing mobile adoption. It was, in particular, the brisk growth in mobile penetration and mobile users that stimulated the development of E-commerce, as pointed out by Morgan Stanley Research in 2015.

E-commerce development goes hand-in-hand with Internet penetration and mobile penetration: as a result, it is understood that E-commerce started its booming journey as Internet penetration in China increased. Nowadays, smartphones are the first device for the usage of Internet in China: as of March 2020, 99.3% of the total netizens population access the Internet through their mobile phones¹⁰ (figure 1.3).

Figure 1.3 Usage of Internet Access Devices



Source: CNNIC.

The rapid growth in mobile penetration undoubtedly gave a great contribution to the increase in usage of E-commerce and the data available prove it, as the growth in E-commerce follows the same upwards path of the growth in mobile penetration. Data from CNNIC show a constant increase in the usage of mobile phones as a device to access the Internet, which peaked in the years that also characterise the exponential growth of E-commerce (figure 1.4).

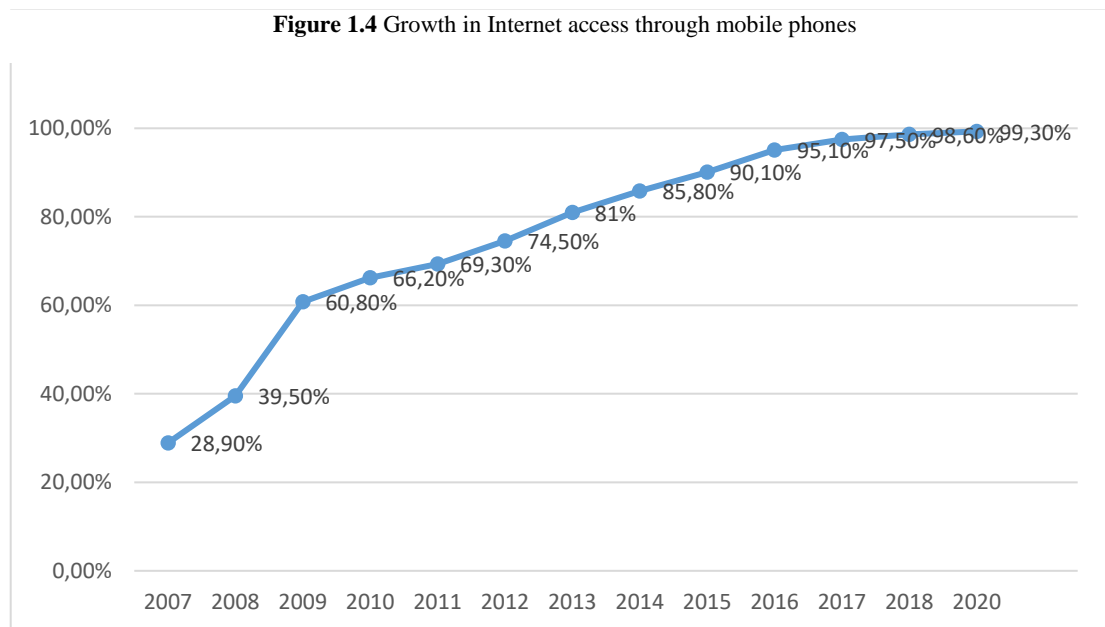
⁹ China, Ministry of Commerce.

¹⁰ 中国互联网络信息中心. (April 2020). “第 45 次中国互联网络发展状况统计报告”. [Online] Available from: http://www.cac.gov.cn/2020-04/27/c_1589535470378587.htm

Such a brisk growth may be due to:

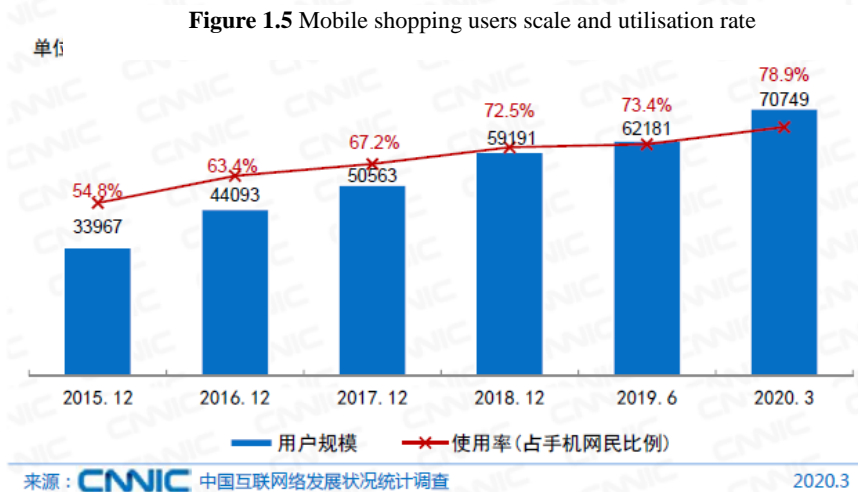
- a. Generally speaking, using a computer requires higher skills than using a mobile phone, and may be challenging to uneducated users;
- b. The cost of mobile phones is lower than the cost of computers.

As a result, for years, the purchase of a computer in impoverished areas has been limited to those with a real need like rural business or agricultural activities, or to those households that experienced an increase in income. Mobile phones appeared as a solution to Internet access in rural areas (as well as in the rest of the country) thanks to their underlying accessibility.



Source: CNNIC.

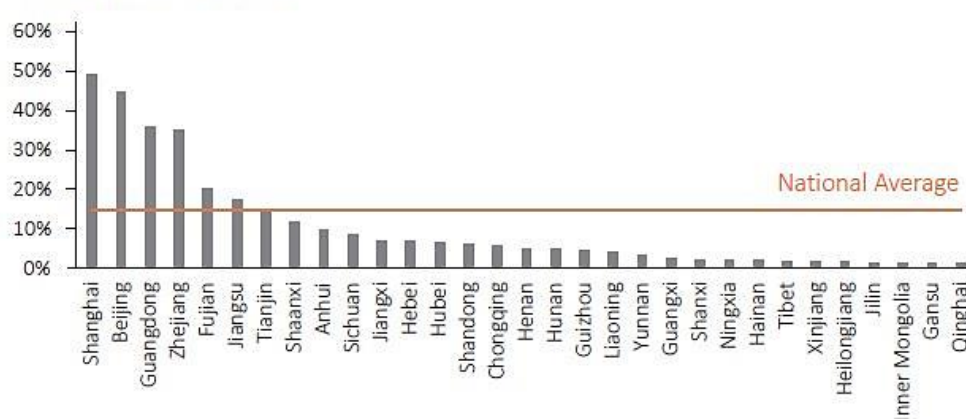
CNNIC reports (figure 1.5) show the growth both in users size and utilisation rate in mobile shopping. Specifically between 2019 and 2020, the numbers show significant growth which, once again, confirms the crucial role played by mobile phones as a support for the development of E-commerce.



Source: CNNIC.

Nevertheless, an essential aspect that needs mentioning is that the development of online retail has been unevenly distributed among Chinese provinces. The majority of online sales are concentrated in coastal areas that present higher economic development levels, such as Shanghai (where, in 2017, the share of online retail sales of consumer goods to total retail sales of consumer goods was 49%), Beijing (approximately 44%), Guangdong (36%) and Zhejiang (35%). At the same time, as the graph figure 1.6 shows, the share is much lower in traditionally poorer provinces and, in particular, in seven inland provinces (Tibet, Xinjiang, Heilongjiang, Jilin, Inner Mongolia, Gansu and Qinghai provinces).¹¹

Figure 1.6 Share of Online Retail Sales of Goods to Total Retail Sales of Consumer Goods in Provinces (2017)



Source: World Bank, Alibaba Group staff calculation based on China Statistical Yearbook 2018.

¹¹ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

Additionally, there has been a decline in regional concentration of online retail sales. The aforementioned top-five provinces in online sales volume jointly shared almost 68% of online retail sales in 2017, 4 percentage points less than 2015 and, at the same time, online retail sales also grew faster in the western region than in the eastern region. In 2017, the annual growth of online retail sales in western regions was 45%, 12 points higher than in the eastern region. There was also a moderately rapid increase in the number of online shops in some western provinces as well, such as Qinghai, Tibet, and Gansu¹².

There is a prominent gap in the development of E-commerce between urban and rural areas. This is undoubtedly due to the difference in Internet penetration between rural and urban areas. In 2018, Internet penetration in rural areas was 38%, compared to 75% in urban areas. In the same year, rural Internet users (222 million) accounted for about 27% of the national total (829 million), while urban Internet users were 73%,¹³ much higher than the share of urban population (60%).

The potential of E-commerce in urban China, as well as in rural areas, has been remarked several times also by Communist Party's representatives. For instance, the Premier of the State Council of the People's Republic of China Li Keqiang (李克强) in a speech held in March 2015¹⁴ underlined the importance of E-commerce for Chinese economy. In the speech, he proposed "Internet Plus" (互联网+), which refers to the application of the Internet and other Information Technology in conventional industries in order to foster new industries and business development in China. One of the goals of the strategy was to promote the use of E-commerce in medium-small towns, in rural areas and in small communities, overlaying the online market with the physical one (Offline2Offline, O2O).

The development of E-commerce in Chinese rural areas will be explored more in depth in the next chapters.

¹² China, Ministry of Commerce (2018).

¹³ CNNIC (2019) 第 44 次中国互联网络发展情况统计报告.

¹⁴ SINA.COM 新浪, Li Keqiang zuo zhengfu gongzuo baogao (quanwen) 李克强作政府报告 (全文) (Li Keqiang's Government Work Report (Full text), 2015, <http://news.sina.com.cn/c/2015-03-05/105331571230.shtml>, 08/2016

1.3 ALIBABA: A TURNING POINT

1.3.1 A brief overview on *Alibaba's* development

The development of E-commerce in China was particularly rapid since the very first years and saw the rise and fall of many online platforms. As previously mentioned, the very first E-commerce websites were vertical B2B platforms, while the earliest Chinese B2C E-commerce website was *8848*, established in 1999. The *eBay* network, the first C2C service website, and *Alibaba* were established in the same year.

Alibaba particularly represented a turning point in the evolution of E-commerce in China. The website was founded in 1999 by Jack Ma and other 18 tech developers whose goal was to leverage the power of the Chinese wholesale Internet marketplace. *Alibaba* was conceived at first as a B2B industrial directory. Later on, it set up *Taobao* Marketplace in 2003 and in 2004 it launched *Alipay* digital payment. The latter gave a great contribution to the expansion of E-commerce to new users as it provided safe payment services and offered a solution to the lack of confidence in the online payment system and distrust of long-distance purchasing by Chinese users. A new milestone was set in 2008 with the launch of *TMall*, a third party commerce platform for brands and retailers. In the following years, the *Alibaba* group continued to innovate and expand its business venturing into new areas:

- *Alibaba* Cloud was launched in 2009, operating in the computing cloud business;
- *Aliexpress*, *Alibaba's* global marketplace, rose in 2010;
- Ant Group, which has now become the highest-valued FinTech company in the world, was formally established in 2014;
- A long-term partnership between *Alibaba* and the International Olympic Committee was signed in 2017 through 2028;
- In 2017, *Freshippo* (known as Hema in Chinese) was launched: this was the birth of *Alibaba's* proprietary grocery retail chain, as part of the New Retail Initiatives;
- In 2018, *Alibaba* acquired Ele.me, a leading on-demand delivery and local services platform;
- 2019 marked a further international expansion of *Alibaba*, as it ventured in the import market by declaring its goal to import USD 200 billion worth of goods into China from over 120 countries over five years;
- In 2019 again, the *Alibaba* Group was listed on the main board of the Hong Kong Stock Exchange, becoming the first Chinese Internet company to be listed on both the New York Stock Exchange and the Hong Kong Stock Exchange.

The *Alibaba* Group does not only dominate the Chinese E-commerce industry thanks to the *TMall* and *Taobao* platforms, but it also got a foothold on the whole Chinese economic framework. This was restated in 2020, when the Group launched the *2020 Spring Thunder Initiatives* to help SMEs find novel opportunities during the COVID-19 crisis. These initiatives, launched in April 2020, aim to help export-oriented SMEs explore opportunities in domestic markets, as well as help them expand into new markets through *Alibaba.com* and *Aliexpress*. Other goals include developing digitalised manufacturing clusters, fostering the digital transformation of China's agricultural sector, alleviating financial pressures of SMEs by working with Ant Group and its partners.

1.3.2 The key to *Alibaba's* success

In 2020, *Alibaba* boasted 780 million consumers in China, of which 726 million were consumers from China retail marketplaces, mainly *TMall* and *Taobao*, and the remaining were consumers on Tao Piao Piao, Ele.me, Koubei, Youku and *Freshippo* platforms. Outside China, consumers were 180 million in total, mainly consumers from Lazada and *Aliexpress*.

In fiscal year ended in March 31, 2020, the Group's total revenue reached RMB 509.7 billion and *Alibaba* Digital Economy presented a reached GMV of over USD 1 trillion, roughly corresponding to RMB 7,053 billion.

Year-over-Year growth also showed positive signs: Core Commerce (*TMall*, *Taobao*, *Freshippo*, AliHealth, 1688 and more) Revenue presented 35% YoY, Cloud Computing Revenue 62%, Youku Average Daily Subscriber Base 50%.

Such a brisk growth is given to the successful strategies implemented by the *Alibaba* Group. The Group continues to innovate in the areas of business models, products and services, and technology. The goal of such a pursuit of innovation is to create value for both consumers and businesses. Strategies continuously evolve in order to follow trends of both consumers and businesses and best serve their interests.

It is possible to state that marketplaces are the key to *Alibaba's* growth. Besides restructuring fragmented and inefficient markets, Marketplaces can also expand the sector they operate in as a whole by offering new, better options and lower prices. Marketplaces, such as *Alibaba*, that have established leadership in their markets become securities in people's lives that are difficult to challenge. *Alibaba* has remained the unquestionable E-commerce leader in China since the industry came to rise and its numbers still show that it plays a crucial role in Chinese online shoppers' habits.

It is possible to give a practical explanation of *Alibaba's* success by carrying out a SWOT analysis of the Group¹⁵.

a. **Strenghts**

The group's strengths include: strong recognition (*Alibaba* managed to create strong brand awareness through customer convenience, service quality and innovation); leadership in the E-commerce market (*Alibaba* owns more than 50% of all retail E-commerce shares in China); fast-growing revenue (constant increase in the Group's financial position); growing cloud business (*Alibaba* is world's third largest and Asia Pacific's largest infrastructure as a Service provider by revenue in 2019 in U.S. dollars¹⁶. *Alibaba* Group is also China's largest provider of public cloud services by revenue in 2019, including Platform as a Service, or Paas, and IaaS services¹⁷); research and innovation (product development expenses increased by 15%, from RMB 37,435 million in fiscal year 2019 to RMB 43,080 million in fiscal year 2020, and investments in technology and R&D are always increasing¹⁸).

b. **Weaknesses**

The *Alibaba* Group's weaknesses can be traced back to its overdependence on the domestic market and core business and to its limited international presence. Despite some attempts to find foothold on foreign markets (such as investing in the Indonesian E-commerce site Tokopedia), the Group has yet to build a name for itself in major markets such as India or European and Middle Eastern markets.

c. **Opportunities**

Alibaba's limited presence on the international market, however, could also be turned into an advantage as international expansion could represent a good opportunity for the group to continue its growth, especially in the European, Middle Eastern and Asian markets. By investing in overseas markets and gaining a foothold in European and Middle Eastern markets, the Group could also reduce its overdependence on the domestic market, finding a solution to one of its major challenges. Technological innovation also presents significant growth opportunities for *Alibaba*. By investing in research and innovation, the Group could increase its growth pace and

¹⁵ Pratap, A. (2019) "SWOT Analysis of Alibaba Group". [Online] Available from: <https://notesmatic.com/2019/05/swot-analysis-of-alibaba-group/>

¹⁶ Gartner, Market Share: IT Services, 2019, Dean Blackmore et al., April 13, 2020.

¹⁷ IDC Semiannual Public Cloud Services Tracker, 2019.

¹⁸ Alibaba Fiscal Year 2020 Annual Report, 2020, available from [https://doc.irasia.com/listco/hk/alibaba-group/annual/2020/ar2020.pdf](https://doc.irasia.com/listco/hk/alibaba/group/annual/2020/ar2020.pdf)

grow its competitive advantage. Digital marketing represents an important growth opportunity as well: the company ought to invest in digital marketing strategies in order to keep up with the international competitors, engage a larger pool of users and grow its customer base. Finally, partnerships with international brands or acquiring international brands will help *Alibaba* grow its business. The key to a faster international development is the diversification of its business and venturing into new market areas.

d. **Threats**

The major sources of threat to *Alibaba*'s growth come from three aspects: international competition, trade barriers and legal threats. The global E-commerce leader, *Amazon*, mainly dominates international markets, even though other regional players are also part of an intense competition. Outstanding in the market requires high investments in digital marketing as well as in research and development. International tensions, such as those between China and the United States, also jeopardise *Alibaba*'s expansion, since tensions often result in trade barriers and bigger challenges for Chinese companies to do business overseas. The international legal framework is the last challenge for *Alibaba* to face when dealing with international expansion. This is specifically referred to two main aspects: user privacy and increasing compliance related costs for technology brands. Noncompliance implies high costs and significant fines that can affect the brand's revenue¹⁹

In conclusion, it has been 21 years since its foundation and the *Alibaba* Group has once again proven to be the E-commerce leader in the Chinese domestic market, as confirmed by the results reached in fiscal year 2020. Great opportunities can be found in the E-commerce retail services and the Cloud business, thanks to which the Group was already able to acquire strong brand knowledge among domestic users. However, international expansion still represents a big challenge which requires high investments in digital marketing and research and development.

1.3.3 *Alibaba*'s involvement in Rural Development in China

One of the key priorities for *Alibaba* is rural development, closing the digital divide²⁰ and alleviate poverty through economic opportunity. The *Alibaba* Group has always played an important role in targeted support for E-commerce development in less-developed areas, including

¹⁹ Pratap, Ab., (2019) "SWOT Analysis of Alibaba Group" [Online] Available from: <https://notesmatic.com/2019/05/swot-analysis-of-alibaba-group/>

²⁰ An in-depth insight on digital divide will be given in the following chapter.

rural areas and poverty-stricken counties²¹. Combined with the programmes issued by the Government of China, the *Alibaba*'s experiences in supporting rural growth and expand employment opportunities in poor areas have drawn the attention on the use of E-commerce as a tool for poverty alleviation and rural vitalization.

Alibaba Rural Taobao Program

The *Alibaba Rural Taobao Program* was launched in 2014 with the aim to offer a broader variety of goods and services to rural residents and to help increase farmers' revenue by selling agricultural products to urban consumers through online platforms. The programme also aimed at building an E-commerce ecosystem in rural areas by establishing a service system in 100,000 administrative villages situated in 1,000 counties across China. *Alibaba* funded the project by investing RMB 10 million over three to five years, in collaboration with local governments²².

The programme has evolved in stages. Initial efforts to establish a rural E-commerce system focused on assisting villagers in becoming familiar with online shopping. This generally consisted of village partners who worked part-time helping villagers to make online purchases (*Rural Taobao 1.0*). With rising familiarity with E-commerce, some partners began to work full time, occasionally assisted by part-time partners (*Rural Taobao 2.0*). Starting in 2016, *Rural Taobao* became a wide-ranging rural online service system. In this stage, the efforts moved to encouraging villagers to sell agricultural products online. During *Rural Taobao 3.0*, service stations at village level were improved to deliver higher-quality services to rural villages.

The main activities of the programme focused on developing county and village-level E-commerce service networks and create new employment opportunities, improve logistical connections in villages and counties, provide training in E-commerce, foster entrepreneurship and deliver rural financial services.

The key element to develop E-commerce service networks and raise employment is the creation of *Rural Taobao Partners*, or *Taobao* shop assistants at the village level (full-time) and *Taobao Aides* (part-time). Their role is to support villagers in familiarising with the *Alibaba* online platforms, educate them on E-commerce and help them place orders and collect payments.

²¹ According to State Council Leading Group of Poverty Alleviation and Development, there are 832 poverty-stricken counties in China. The provinces with the highest numbers of poverty-stricken counties are Yunnan (88), Tibet (74, which is the totality of Tibet's counties), Guizhou (66), Sichuan (66), Gansu (58), Shaanxi (56).

²² World Bank; Alibaba Group. (2019). "E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

Two of the main challenges of E-commerce in rural areas have always been the long delivery time and high costs of shipping the “last kilometre”. As a consequence, it is fundamental to improve logistical networks for villages (including remote ones) and promote two-way circulation of goods and services. *Rural Taobao* aims at addressing this problem through “two-stage delivery”, building out the *Cainiao* network by using regional logistic providers for the delivery of packages from counties to villages. *Alibaba* collaborates with over twenty local providers to make secondary distribution and warehouse services available, as well as subsidizing cooperatives that run distribution from the county level to villages. *Alibaba* Group reports that in 2018 the *Rural Taobao* network was delivering 60% of the goods on the same day (from county to village) and 99% by the next day in over 30,000 villages covered. This shows a significant improvement compared to the previous average delivery time of two days. The *Cainiao* network also seeks to develop the E-commerce system by facilitating connect the “first-kilometre” for online sales from villages (mainly agricultural products, specifically oranges and apples).

Training is provided to villagers through eleven E-commerce training bases built by *Taobao* University, which, by the end of 2017, conducted 133 training sessions.

Financial services, including online insurance, online payment support as well as credit/loans, are delivered through Ant Financial.

By the end of 2018, the *Rural Taobao Program* had a business team of 1,000 people, covered 1,174 counties in 29 provinces, including 349 national poverty counties. There were more than 30,000 village-level service stations and a rural service team at the village level of nearly 60,000 people. In total, 160 agricultural brands were incubated.²³

Alibaba Poverty Alleviation Fund

The second programme launched by *Alibaba* is the *Alibaba Poverty Alleviation Fund*, officially launched in December 2017 with the aim of fostering poverty reduction and alleviation in five target areas: E-commerce, ecology, education, health and women.²⁴ For this project, *Alibaba* funded RMB 10 billion over five years.

E-commerce poverty alleviation focuses on helping impoverished regions develop E-commerce industries for the sale of agricultural products, and *Alibaba* assists in the process by building a sales platform, arranging resource support, implementing the incubation mechanisms.

²³ World Bank; Alibaba Group. (2019). “E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

²⁴ Women condition in rural areas improvement will be discussed more in depth in Chapter 3.

Ecological poverty alleviation encourages the use of local resources in a manner that harmonises ecological conservation with economic development.

Education poverty alleviation offers assistance, rewards and capacity enhancement services for rural teachers and rural education leaders with verified ability. This is done to raise the quality of the learning environment, to provide occupational training for people in impoverished regions who are employed in E-commerce and cloud computing and to develop and increase occupational education.

Women's poverty alleviation activities embrace insurance, business development and children instruction, as well as support in the care of children.

Health poverty alleviation was born after a partnership between Alibaba Philanthropy, Ant Financial Philanthropy, Ant Financial Insurance and China Foundation for Poverty Alleviation. Health insurance is delivered to impoverished areas by means of donations gathered online.

The outcomes of *Alibaba Poverty Alleviation Fund* programme have been positive over the years in all fields. It has worked with 435 counties in 22 provinces and autonomous regions, including 151 poverty-stricken counties, and has incubated 2,532 products since January 2018. In 2018, the *Alibaba* platforms registered over RMB 63 billion sales revenues for Poverty-stricken counties. *Alibaba* trained more than 260,000 people working in E-commerce in 2018 and set up nine E-commerce training bases in impoverished counties. Besides, the programme also provided training for 18,200 women and helped 10,600 women get a job position in E-commerce.²⁵

In conclusion, *Alibaba* was able to sense the market potential of rural Chinese areas and gave a great contribution to the development of its business and of the E-commerce industry in those areas. This was done from a dual perspective: not only did the group manage to find a fair market portion in rural population, but also it was able to expand that market by fostering employment, contributing to poverty alleviation and educating people and, in doing so, it was able to increase sales and revenue.

²⁵ World Bank; Alibaba Group. (2019). "E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

1.4 E-COMMERCE INDUSTRY NUMBERS IN CHINA: INSIGHT ON THE MAIN PLATFORMS, USERS DEMOGRAPHICS, SALES DATA.

1.4.1 E-commerce platforms and services

The patterns of E-commerce market shares in China have changed throughout the years and differ across B2B, B2C and C2C. In 2011, B2C share was 25%, which later increased to 52% in 2015.²⁶ At the same time, C2C market share in 2011 was 75%, while it rapidly decreased in the following years.

As already mentioned in the previous paragraphs, the E-commerce industry is dynamic and it has been reshaping the Chinese economy in the last decades. Since the early stages of the industry, many platforms have risen and have fallen, while some others have remained staples in the industry and a milestone for Chinese consumers.

Platforms vary in types of business, offer of goods, range of prices and many other factors. Based on the volume of transactions and customers, it is possible to list out the main E-commerce platforms operating in China to this day.

- *Taobao*. The C2C giant is the main E-commerce platform in China, its main strength is the variety of items offered and cheap prices. This is due to two main factors: products are typically sold by small business owners, and buyers can decide their purchases on previous customers ratings, on the shop credit and comments. *Taobao* is a platform primarily for small businesses and individual retailers and registration is free. In this sense, accessibility is the key to the platform's success: virtually any retailer or consumer can open their own personal online shop on *Taobao* and make a business out of it.
- *TMall*. The second most used platform is *TMall* by *Alibaba*, which is a B2C marketplace and is also the third most visited website in the world. The premise for *TMall* is different from the *Taobao* one. *TMall* acts as an online shopping centre for high-end products and offers products by many international brands such as Gucci, Burberry, Yves Saint-Laurent and many others. The idea behind *TMall* is to make a selection of sellers to accept only the high-quality ones, which serves as a warranty for the quality of goods purchased.

²⁶ Deloitte, China E-Retail Market Report, 2016.

- *JD (Jingdong)*. *JD* the largest B2C online retailer in China and, for years, it has been the largest competitor of *Alibaba*. It sells electronics, home appliances, apparel. It features fast delivering services and guaranteed quality, but the main problem is the lack of an instant online customer service.
- *Little red book (Xiaohongshu)*. This fresh platform mainly targets young generations also thanks to its innovative app, which combines social media and E-commerce (social E-commerce, which has become the new frontier of E-commerce as will be shown in the next chapters). *Xiaohongshu* serves as a sort of shopping guide for the purchase of high-end products by mainly international brands. It rapidly became a forum for users to post shopping tips and share the latest trends. These posts and comments are useful to educate consumers about the products on display, thus increasing their engagement. The platform accounted for 300 million users as of 2019, and the number is still growing.
- *Suning*. It is one of the largest non-government retailers in China. The products it offers include home appliances, books, cosmetics, baby care products, household commodities.
- *Kaola*. The site has built a reputation as a retailer of authentic and trustworthy goods. It maintains high quality standards by setting up purchasing teams in foreign cities, such as Tokyo, and maintains low prices by negotiating directly with producers. In a reliability survey of cross-border E-commerce companies in the first half of 2017, it ranked first, followed by *Amazon.com* and *Xiaohongshu*.
- *Pinduoduo*. It is a new emerging platform that has shown an impressive growth over the last couple of years. It is based on a new business model (social E-commerce, similarly to *Xiaohongshu*) and, since its birth, it has focused on smaller, lower-tier Chinese cities by offering users the best deals and the possibility for them to cooperate to get items at bulk prices. *Pinduoduo* customers can get deals, discounts, gifts and even free items by promoting goods, sharing links and pushing people to register on the platform. With its fresh take on E-commerce and consumers engagement, *Pinduoduo* has made a name for itself as the king of Chinese social E-commerce.

E-commerce is not to be meant as the mere online purchase and sale of material goods. A big portion of Chinese E-commerce, especially mobile online shopping, is occupied by online services such as banking services, travel planning, vehicle for hire services, food delivery and many more.

a. Food delivery platforms (*Waimai Pingtai*), such as *Meituan Waimai* and *Ele.me* underwent a rapid growth and gradually became fundamental suppliers in the food and beverage sectors in China. Starting from 2019, *Waimai platforms* have increased their support to businesses through intelligent payment systems, smart-terminals and advanced meal-ordering systems, and they have also set new goals to raise the quality of products and services. The graph in figure 1.6 shows the patterns of growth of the usage of mobile food delivery platforms. As of March 2020, the number of Chinese *Waimai* users is 398 million, corresponding to 44% of total Internet users.²⁷ The scale was bigger in 2019: according to June 2019 reports, the number of *Waimai* consumers was million, 49.3% of total netizens. The SARS-CoV-2 pandemic affected badly the sector's revenues and the quantity of consumers, future prospects are positive thanks to customers retention and the popularity that such platforms have gained on the Chinese market. It is important to point out that almost the totality of usage derives from mobile phones (approximately 396 million mobile users out of 398 million total users in March 2020).

Figure 1.6 Waimai platforms users scale and utilisation rate



Source: CNNIC.

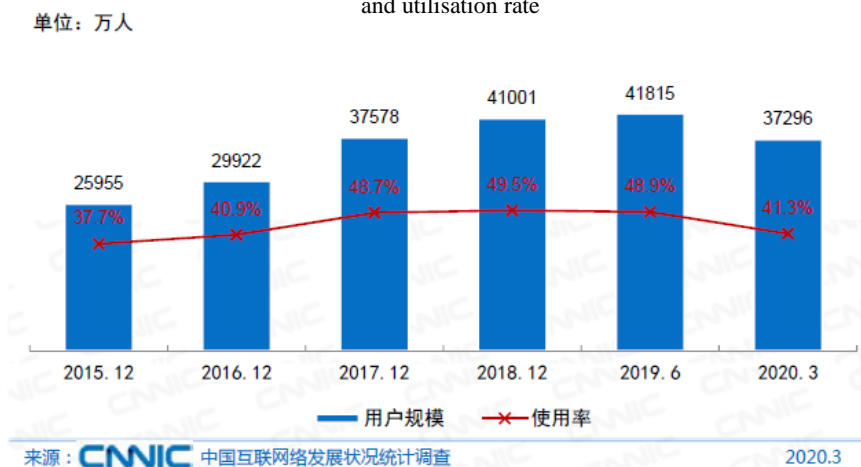
b. Online purchase of travel services is another fundamental sector in E-commerce and mobile E-commerce. This includes the online purchase of plane, train and buses tickets, online accommodation and guided tours booking. Up to March 2020, there were 373 million people booking their trips online.²⁸ The number had a steady growth until 2019 (figure 1.7), but in 2020 it is lower than compared to previous years (more than 418

²⁷ CNNIC (2020) 第 45 次中国互联网络发展状况统计报告.

²⁸ *Ibidem*.

million in 2019²⁹). That is logically due to the effects of the SARS-CoV-2 pandemic and is expected to go back to its growth in the middle-long term.

Figure 1.7 Scale of users of online travel booking services and utilisation rate



Source: CNNIC.

- c. The vehicle for hire sector plays a crucial role in modern Chinese society, and is one of the sectors in E-commerce that underwent a significant development in recent years. Reports show that up to March 2020, the total amount of users in such sector was 362 million, corresponding to 40.1% of total users.³⁰ Once again, the number of users drastically fell compared to previous years (404 million in 2019) as a consequence of the suspension of transportation services in many cities following the SARS-CoV-2 pandemic. Nevertheless, the sector is expected to fully recover in the middle-long term and to continue its expansion.

Figure 1.8 Share of users of vehicle for hire platforms and utilisation rate



Source: CNNIC.

²⁹ *Ibidem.*

³⁰ CNNIC (2020) 第 45 次中国互联网络发展状况统计报告.

1.4.2 Sales volume and users demographics

In March 2020, the user size of online shopping was 710.23 million, 78.6% of total Chinese Internet users, with an increase by 1.8% compared to June 2019.³¹ (figure 1.4). As the figure shows, the number of online shoppers has kept increasing in the last five years, even though the growth has understandably slowed down after 2017.

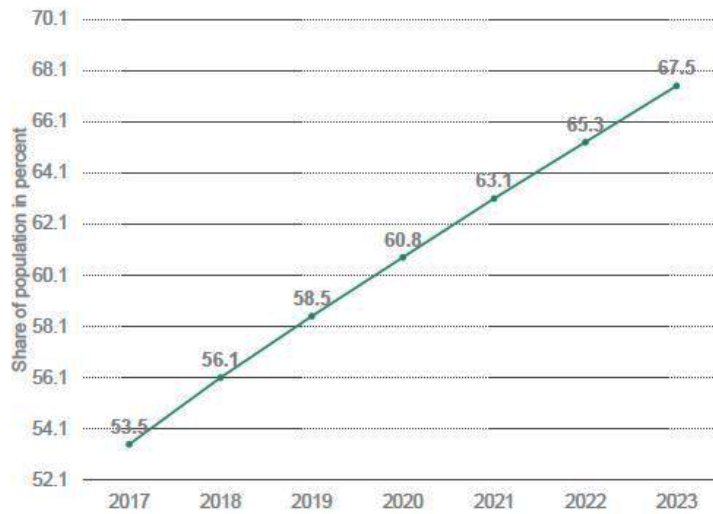


Source: CNNIC.

Digital buyer penetration has shown a growth curve over the last few years and is expected to keep growing in the next years. Data from figure 1.5 show that the number was 53.5% in 2017, 56.1% in 2018, with forecasts estimating a growth up to 67.5% in 2023.

³¹ CNNIC, 第 45 次中国互联网络发展状况统计报告, 2020 年 4 月

Figure 1.10 Digital buyer penetration between 2017 and 2023



Source: Statista; ID 891315, via Italian Trade Agency.

The China Family Panel Studies surveys show that in 2014 around 40% of households did not use the Internet for commercial related activities such as online banking and online shopping. This number, however, declined to 33% in 2016, showing an increase in the usage of commercial online activities in household contexts.³²

According to the same survey, in 2015, 26% of households made online purchases, and for such households, online purchases accounted for 8% of the total consumption. The survey shows that the share of households with high per capita expense, in eastern regions and in urban areas that have shopped online is higher than the share of households with low, lower middle or upper middle per capita expense, living in central or western regions and in rural areas. This highlights the gap in E-commerce reach between eastern, urban and richer areas and western, rural and poorer areas.

The share of rural netizens is 28.2% as of March 2020, with an increase by 1.5% compared to December 2018 (26.7%).³³ In spite of that, the Internet penetration rate in rural areas is growing at a faster level than that of urban areas, increasing from 38.4% in December 2018 to 46.2% in March 2020. This once again proves that the Internet is gaining popularity in rural areas and carries significant growth potential and business opportunities for E-commerce.

The share of people shopping online is still higher in the eastern region (21% as of 2015) than in central and western regions (respectively 19% and 16%), however, these last regions have

³² <http://opendata.pku.edu.cn/dataverse/CFPS?language=en>.

³³ CNNIC (2020) 第 45 次中国互联网络发展状况统计报告.

shown growth in the rate of online shoppers, while that of the eastern region has remained almost unvaried.

According to CFPS surveys, the percentage of women shopping online is higher than that of men (20% of women, 18% of men), while the average online consumption amount per person is higher for men than for women.

The majority of online shoppers are aged 16 to 30 years old (60%), 29% are aged between 45 and 60 years old, 1% are aged above 60 years old.³⁴

Surveys also show that online consumption grows with education level: 72% of people with university education or above shopped online in 2015 (nonetheless, it is important to keep in mind that the biggest share of Chinese Internet users are students, who make up 26.9% of total Internet users³⁵). At the same time, E-commerce usage has increased across all education groups. The share among people with two or three years of college education is 36%, for people with high school education it is 36%, and for people with junior high school education it is 22%. Percentages drastically fall as education level goes down: share of online shoppers among people with primary school education is slightly above 7% in 2015 and 0.9% of illiterate or semi-illiterate people shop online.³⁶

Considering that E-commerce usage grows with education levels, given the urban-rural education gap that has remained in spite of the Chinese rapid economic growth, the lower usage of E-commerce in rural areas compared to that of urban areas is understandable.

A survey from 2017 (figure 1.6) shows that the highest completed education level of 44.1% of rural students is junior middle, and only 6.2% of students proceed to an undergraduate or graduate degree course, differently from the urban students percentage (27.9%). 41.8% of rural students' performance was considered as "good", while 58.2% was "average" or "poor". The percentage of urban students whose school performance was "goods" is significantly higher (61.1%). The overall household conditions reflect the same trend (figure 1.7), with only 1.3% of rural parents owning a higher education diploma and 55% completing only junior middle

³⁴ World Bank; Alibaba Group. (2019). "E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

³⁵ CNNIC, 第 45 次中国互联网络发展状况统计报告, 2020 年 4 月

³⁶ All data are drawn from CFPS 2016 survey.

school, while urban parents average education level is senior middle or vocational school (43.7%), immediately followed by higher education levels (33.2%).³⁷

Figure 1.6 Characteristics of children/youth (aged 6-25)

Characteristics of children/youth (aged 6-25)		Temporary migrant	Rural	Urban	Permanent migrant
Gender	Male	56.3	52.2	51.5	47.3
	Female	43.7	47.8	48.5	52.7
Age	6-11	22.6	15.5	21.3	24.8
	12-14	15.1	13.3	14.2	13.8
	15-17	17.4	16.7	15.1	15.3
	18-21	29.8	29.9	24.3	22.0
	22-25	15.0	24.6	25.1	24.0
In School	Yes	64.7	55.9	76.0	75.7
	No	35.3	44.1	24.0	24.3
Highest completed educational level	Elementary not completed	20.3	16.1	19.2	22.8
	Elementary	24.7	22.4	19.4	19.4
	Junior middle	29.6	40.2	16.2	15.6
	Senior middle	7.7	8.5	9.4	11.3
	Vocational	7.5	6.6	7.9	10.2
	Undergraduates/graduates	10.2	6.2	27.9	20.8
School duration mean (median)		7.75 (8)	7.94 (8)	9.43 (10)	8.86 (9)
School performance	Good	44.3	41.8	61.1	55.5
	Average/poor	55.7	58.2	38.9	44.5
School type	Public school	86.7	-	94.4	96.3
	Private school	13.2	-	5.1	3.1
	Other	0.1	-	0.5	0.7
Age when started school	5	3.4	2.3	1.1	1.3
	6	27.1	18.1	39.8	34.0
	7	57.1	73.8	57.1	62.1
	8	10.4	5.2	2.0	2.6
	9+	2.0	0.6	-	-
Health status	Good	91.0	91.8	87.0	92.6
	Poor	9.0	8.2	13.0	7.4

Source: Zhang, H. (2017) on China Economic Review, based on RUMiC data.

Figure 1.7 Characteristics of parents/household head of children/youth (aged 6-25)

Characteristics of parents/household head of children/youth (aged 6-25)					
Parents' highest completed educational level	No school or Elementary	21.1	23.5	3.7	6.7
	Junior middle	54.0	55.0	19.4	30.0
	Senior middle or vocational	22.4	20.2	43.7	42.3
	Higher education	2.5	1.3	33.2	21.0
Occupation of household head	Professionals, managers, clerks	3.3	4.3	48.8	44.8
	Service/sale	34.3	6.3	19.1	22.7
	Construction and manufacturing	20.2	23.5	17.9	13.8
	Private business/self-employed/family business	41.3	4.2	7.8	12.4
	Farmer	0.2	55.6	0.5	1.4
	Not employed	0.6	6.1	5.9	4.9
Type of job contract of household head	Permanent	7.4	-	38.3	26.2
	Long term contract	17.0	-	36.8	35.9
	Short term contract	5.2	-	5.0	6.0
	Temporary	17.7	-	9.6	11.4
	Self-employment/family business	52.7	-	10.2	20.5
Highest wage income of household head or spouse mean (median) (Yuan)		2088 (1500)	913 (600)	2337 (1800)	2383 (1650)
	Sample size	1137	8458	2470	511

Source: Zhang, H. (2017) on China Economic Review, based on RUMiC data.

³⁷ Zhang, H. (2017) Opportunity or new poverty trap: Rural-urban education disparity and internal migration in China. *China Economic Review*, 44, pages 112-124.

In conclusion, E-commerce development has been understandably slower in rural China and it started its journey in local economy later than in urban regions. Such a delay is the result of urban-oriented policies and of a mixture of logistical, economic and education factors.

The gap in the reach of E-commerce between rural and urban areas can be taken on from a dual perspective. If, on the one side, the necessity to educate rural consumers to online shopping, mobile technology and the Internet in general can require big efforts, on the other side the low extent of rural E-shoppers implies a vast potential market for domestic and international companies, which also carries ample expansion and profit opportunities.

2 THE DIGITAL DIVIDE

2.1 CHAPTER OVERVIEW

The purpose of the present chapter is to analyse Digital Divide issue on both the global level and the local one in China. The chapter will analyse its evolution path and aims at offering an overview on novel perspectives about the topic.

The term “Digital Divide” refers to the disparity in access to technology across different groups, regions, cities, and represents an obstacle to further economic development. It is described as the gap between the “*haves and have-nots*”, in terms of ICTs access and use.

It is commonly agreed that access to ICTs (Information and Communication Technologies) can give great contribution to socio-economic development; ICTs can help raise the quality of health and education systems and enhance industrial productivity. In the last decades, extensive research has been conducted on the Digital Divide and it has been designated as a critical issue to tackle in order to smooth out economic disparity in the world.

Globally, a big gap in access to ICTs exists between Europe and the Americas on one side, and Asia and Africa on the other side. Even though recent research has shown that the countries lagging have been making big progress in the field of ICTs diffusion, the gap is still relevant and translates as inequality in job opportunities, welfare, and education.

The Digital Divide places its roots on both endogenous and exogenous factors. On the one side, it stems mainly from a lack of infrastructures, both the basic ones (such as telephone lines and broadband connection) and the advanced ones (optic fibre, 4G, 5G connections). The Digital Divide exists on different levels and varies based on several factors. The other main cause for the issue is users’ mentality itself, which often leads to distrust towards technology, lack of motivation, the perception of technology as too difficult to understand or as useless, or lack of education on the matter.

A significant Digital Divide exists across Chinese regions, predominantly between the eastern, urban region on the coast and the western, inland rural regions. The Chinese Digital Divide is the result of years of urban-oriented policies and has triggered a downwards spiral that, starting from a situation of equality in 1978, has led to a deep urban-rural income gap. Access to ICTs still represents a challenge for many rural dwellers, and even though the situation is showing signs of improvement, policies must be implemented in order to contribute to further rural economic development.

It has been proven, indeed, that with higher levels of technological development comes economic development, and research has linked the usage of smartphones and computers with an increase in farmers' income.

For years, the discussion about the Digital Divide has focused around the issue of accessibility. This, however, is slowly shifting towards a new area of interest, that is Connectivity Dividend Difference. Accessibility gap depends on external intervention on support infrastructure for technology; on the other hand, differences in Connectivity Dividend (which refers to the surplus revenue generated by the Internet) depend on how a user is able to generate income through the Internet market.

2.2 WHAT IS THE DIGITAL DIVIDE?

As history shows, technology can expand at a fast pace, but, at the same time, its spread is elitist and tends to follow specific patterns and to concentrate on certain areas. This is the case, for example, of the first printing houses in the 16th century: moveable type printers were widely common in most of Europe, but their usage in Islamic countries or India was rejected until centuries later.³⁸

Gaps in the diffusion of technology in all sectors have shaped the world as we know it today, a world characterised by high disparities between a wealthy north and an impoverished south.

The Digital Divide originates from the disparity in technology accessibility. It is identified as “*the gap that exists between individuals who have access to modern information and communication technology (ICT) and those who lack access.*”³⁹ This does not only include the Internet, but the whole ensemble that constitutes the new information technologies: media, infrastructures, land-line and mobile phones and more.

Nowadays, disparities in technology accessibility between urban and rural areas represent one of the main obstacles to a further global development⁴⁰, as in modern society disparity in information and communication technology and Internet availability frequently translates as social and economic exclusion.

³⁸ Zocchi, P. (2003). “Il Digital Divide globale”. [Online] [www.astrid-online.it>P-ZOPDF](http://www.astrid-online.it/P-ZOPDF)

³⁹ Steele, C. (2019) What is the Digital Divide?, Digital Divide Council. [Online] <http://www.digitaldividecouncil.com/what-is-the-digital-divide/>

⁴⁰ Zocchi, P. (2003). “Il Digital Divide globale”. [Online] [www.astrid-online.it>P-ZOPDF](http://www.astrid-online.it/P-ZOPDF)

Theoretically speaking, Digital Divide is the gap in technology availability that exists between industrialised countries and developing countries. Nevertheless, at the same time, it can represent an opportunity to foster the overall growth of societies and influence positively Development Index on a global scale.⁴¹

Nowadays, on a global level, North America and Europe are the continents with the highest Internet Penetration rate, respectively 94.6% and 87.2%.⁴² On the contrary, the continents with the lowest Internet Penetration Rate are Asia (53.6%) and Africa (39.3%)⁴³, which take global average at 58.7%.

Digital Divide can be measured through the ICT Development Index proposed by the International Communications Union (ITU). International Telecommunications Union identified three stages in the advancement towards an information society: ICT Readiness (infrastructure, access) and ICT Capability (skills), which determine ICT Use (intensity). These three factors define the outcomes of ICT on societies (ICT Impact). In doing so, ITU advanced the ICT Development Index (IDI), a composite index combining 14 indicators, the goal of which is to measure ICT Development across the globe according to a common standard.⁴⁴

The objectives of IDI are to measure:

- The level and evolution over time of ICT developments in countries and the experience of those countries compared to other countries;
- Progress in ICT development in both developed and developing countries;
- The Digital Divide;
- The development potential of ICTs and the degree to which they can be used to boost countries' growth and development.

The index takes into analysis data coming from three main sources:

- a. Telecommunication data: percentage of households owning a computer, percentage of households with Internet access, International Internet bandwidth per Internet user, percentage of population covered by 3G/LTE mobile network, fixed-broadband subscriptions by speed as a percentage of total fixed-broadband.

⁴¹ *Ibidem*.

⁴² Internet World Stats (2020) <https://www.internetworldstats.com/stats.htm>

⁴³ *Ibidem*.

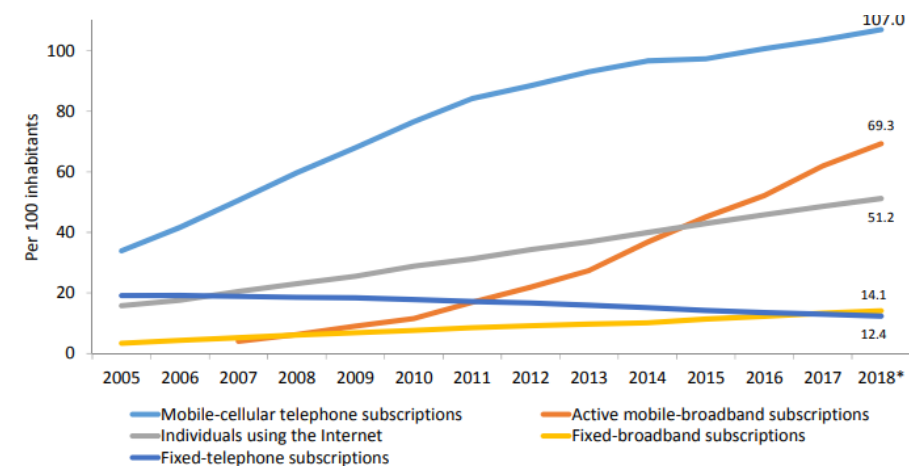
⁴⁴ International Telecommunication Union (2019) "The ICT Development Index (IDI). Methodology, indicators and definitions". https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/ITU_ICT%20Development%20Index.pdf

- b. Household/individual ICT data: percentage of individuals using the Internet, active mobile-broadband subscriptions per 100 inhabitants, mobile-broadband Internet traffic per mobile-broadband subscribers, fixed-broadband Internet traffic per fixed-broadband subscribers, percentage of individuals who own a mobile phone.
- c. Education data: years of school, gross enrolment ratio (secondary level), gross enrolment ration (tertiary level), and proportion of individuals with ICT skills.⁴⁵

ITU estimates that, at the end of 2019, 53.6% of global total population (4.1 billion people) were using the Internet. ITU reports confirm that the main gap in technology accessibility is present between developed countries (which are all located in North America and Europe with the exception of Australia, Israel, Japan, New Zealand and Russian Federation) and developing countries (mainly Asian and African Countries, including China).⁴⁶

Throughout the years, ICT usage patterns and devices have evolved and some of the IDI indicators have decayed in favour of others. Figure 2.1 shows global ICT developments from 2005 to 2018. There has been a constant growth in the number of individuals using the Internet: however, the usage of mobile Internet underwent a steep progression in the face of a decline in fixed-telephony subscriptions.

Figure 2.1 Global ICT developments, 2005-2018



Note: * ITU estimate.
Source: ITU.

Source: ITU.

The number of fixed telephony subscriptions reached its maximum expansion in 2006, when it went up to 1.3 billion, corresponding to 19.2 subscriptions for every 100 inhabitants globally.

⁴⁵ *Ibidem*.

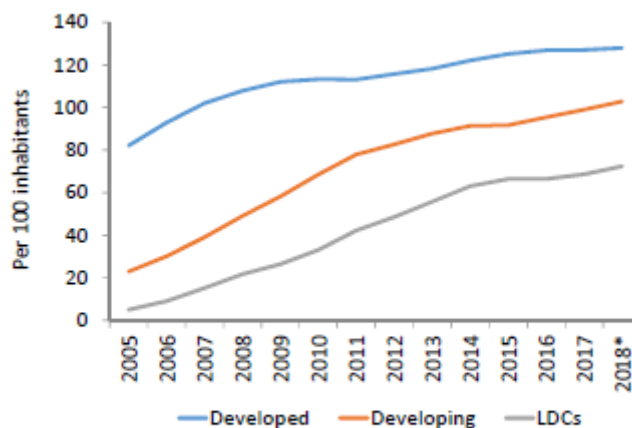
⁴⁶ Countries classification is based on UN M49 standard.

Fixed telephony was never able to reach an all-encompassing penetration, especially in developing countries and, most of all, in least developed countries. That is due to the high cost of establishing the infrastructures, which made fixed telephony unavailable or unaffordable for the majority of local population in those regions.⁴⁷

In the years after 2006, fixed-telephone penetration rate dropped in all regions of the world, leading to a 12.4% penetration rate in 2018. The decline was most significant in the Asia and the Pacific region, with a 42.2% reduction from 2005 to 2018.⁴⁸

With the fall of fixed telephony, came the rise of mobile phones. This new technology offered a solution to the problems related to fixed telephony (high costs, long waiting times, inflexibility and usage restricted to enclosed environments). As a result, mobile penetration underwent a fast growth and has now reached saturation rate, meaning that on a global level, there are more mobile cellular subscriptions than inhabitants. This does not mean that every one is connected, as people may be subscribed to different operators and data or voice plans, but mobile penetration rate was able to accomplish what fixed telephony failed to. In particular, mobile penetration grew in developing and least developed countries as well (figure 2.2) and statistics forecast that LDCs will continue to reduce the gap with developed countries.

Figure 2.2 Mobile-cellular subscriptions per 100 inhabitants, by level of development, 2005-2018



Note: * ITU estimate.
Source: ITU.

Source: ITU.

⁴⁷ ITU (2018) “Measuring the Information Society Report. Volume 1”. ITU Publications.
<https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>

⁴⁸ *Ibidem*.

Starting from 2014, in particular the Asia and Pacific area experienced a rapid growth in mobile penetration. In 2018, it reached saturation rate from approximately 80 subscriptions per 100 inhabitants in 2015.⁴⁹

Fixed-broadband subscriptions are also metres for evaluating technology accessibility in specific regions. In developed countries, subscriptions grew from 12% circa in 2005 to an average 32.7% in 2018, with a slower growth as the number gets closer to saturation rate (considering that fixed-broadband is usually shared by households members, it is highly unlikely that the penetration rate will ever surpass even 50%). Penetration rate in developing countries is still lower, but its growth speeded up starting from 2014, and it reached 10.4% in 2018.

In least developed countries, 2014 was a major year for fixed-broadband expansion, even though the rate is still extremely low (approximately 2% in 2018).⁵⁰ The areas with the highest rate of fixed-broadband subscriptions by region are Europe (~30%) and the Americas (~15%), followed by the Asia and Pacific region (~10%). The regions with the lowest numbers are the Arab States (less than 5%) and Africa (around 1%).⁵¹

Despite its relatively low fixed-broadband penetration rate, in terms of speed, in 2017 Asia and Pacific had the highest share of fixed-broadband subscriptions at speed equal or above 10 Mbit/s (89%).⁵²

Mobile-broadband has become a pivotal factor in modern information society and mobile-broadband penetration has been linked with GDP levels: recent research estimates that an increase by 1% in mobile-broadband penetration rate corresponds to an increase by 0.15% in GDP.⁵³ At the same time, mobile accessibility is increasing as prices are going down.

Globally, mobile-broadband subscriptions rapidly grew from 268 million in 2007 to 5.3 billion in 2018, showing a CAGR of 31.1%.⁵⁴ The growth was steady in developed countries, while it reached a turning point in 2013 in developing countries and LDCs. In developing countries, in particular, growth was much faster than in developed countries and penetration rate reached 61% in 2018. Penetration rate in LDCs reached 28.4% in 2018, which is considerably higher than

⁴⁹ ITU (2018) “Measuring the Information Society Report. Volume 1”. ITU Publications.
<https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>

⁵⁰ *Ibidem*.

⁵¹ *Ibidem*.

⁵² ITU (2018) “Measuring the Information Society Report. Volume 1”. ITU Publications.
<https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>

⁵³ *Ibidem*.

⁵⁴ *Ibidem*.

fixed-telephony penetration rate thanks to the lower prices and wider availability of mobile subscriptions.

The level of technology accessibility is determined by yet another factor, that is computer penetration.

Data from ITU show that in 2018 almost half of households, on a global level, owned a computer. From a regional point of view, Europe and the Commonwealth Independent States regions are the two regions with the highest percentage of households owning a computer, respectively around 80% and above 60%. The CIS region is the region that experienced the biggest growth rate in the percentage, from 20% in 2005, along with the Arab States region, in which computer penetration rate grew from around 12% in 2005 to 40% in 2018. Asia and Pacific (~30%) and Africa (9.2%) are the regions with the lowest penetration rate.⁵⁵

The percentage of households with Internet access kept growing over the years, also thanks to new technologies that have made it possible to access the Internet without a computer, which is no longer a fundamental requirement to surf the web. As a result, globally, 57.8% of households had Internet access at home in 2018, compared to 18.9% in 2005.⁵⁶ In 2018, the percentage of households with Internet access in developed countries stood at 85.3%. The percentage was above 40% in developing countries and a positive 17.8% in LCDs, while it was almost equal to zero in 2005.

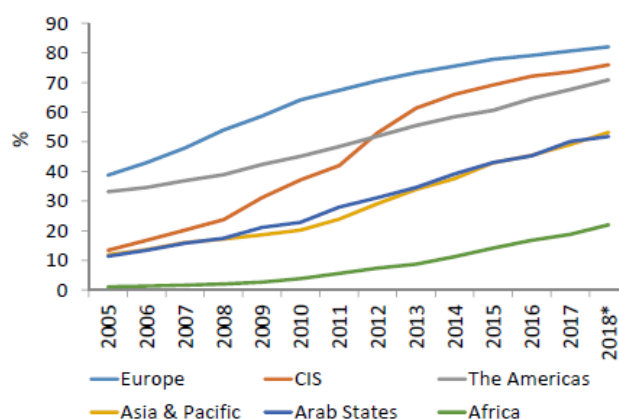
From a regional perspective, the chart in figure 2.3 shows that, in 2018, the regions with the highest percentage of households with Internet access are Europe (slightly below 80%) and CIS (around 70%). The Americas (approximately 65%) have been overtaken by the CIS region because of the modest regional growth rate, compared to a much stronger one in CIS region. Asia and Pacific and the Arab States boast similar patterns of growth and their percentage stood at 40% in 2018.⁵⁷

⁵⁵ *Ibidem*.

⁵⁶ *Ibidem*.

⁵⁷ ITU (2018) "Measuring the Information Society Report. Volume 1". ITU Publications.
<https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>

Figure 2.3 Percentage of households with Internet access at home, by region, 2005-2018



Note: * ITU estimate.
Source: ITU.

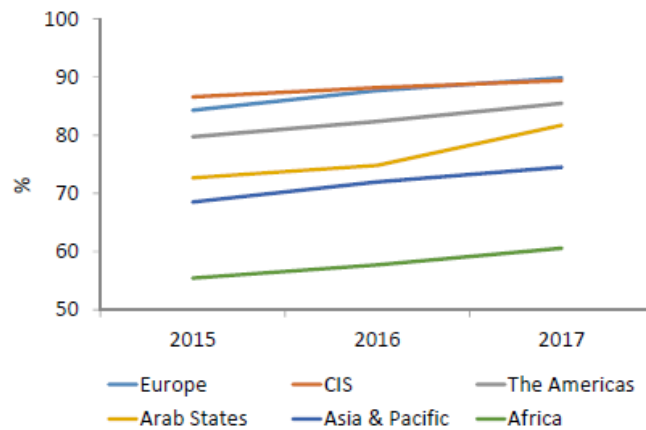
Source: ITU.

Ownership of mobile phones is viewed as an important tool for social and economic development, as mobile phones can be a means for women empowerment and lead to a reduction of gender inequality, they can alleviate poverty and provide employment opportunities. They are important for social connections and can be helpful for maintaining family ties.

As already mentioned, the global penetration rate of mobile subscriptions is above 100%, however, in 2017, 76.4% of global population owned a mobile phone. In developed countries, the percentage was 92.1%, while it was 56% in LDCs. On a regional level, the percentage in Europe and the Americas in 2017 was above 90%, the percentage in CIS was over 80% and almost 80% for the Arab States. Asia and the Pacific and Africa were lagging behind, but still, their levels were relatively high, with respectively 75.5% and 60.6%⁵⁸ (figure 2.4).

⁵⁸ *Ibidem*.

Figure 2.4 Percentage of people owning a phone, by region, 2015-2017

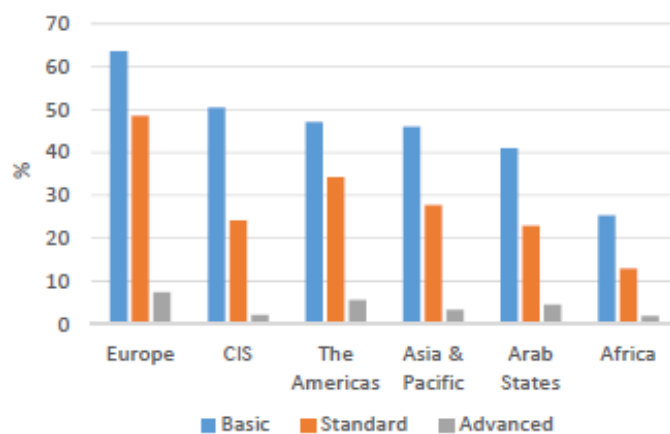


Source: ITU.

Source: ITU.

ICT skills are a crucial factor when speaking of Digital Divide as they directly affect the extent to which ICT are used in a certain area. ICT skills are often linked to social and economic well-being. Developed countries are the countries with the highest number of people with ICT skills (including basic, standard and advanced skills), followed by developing countries and LCDs in the last position. As shown in the chart in figure 2.5, Europe, CIS and the Americas are the regions with the highest skills-level, even though Asia and Pacific countries are rapidly catching up, followed by the Arab States and Africa with the lowest skills level.⁵⁹

Figure 2.5 Percentage of individuals with ICT skills, by region, 2017



Source: ITU.

⁵⁹ ITU (2018) “Measuring the Information Society Report. Volume 1”. ITU Publications. <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>

In conclusion, it is evident that Europe, the Americas (but mainly Northern America) and CIS are the macro-regions with the highest levels of ICT development, followed by the Arab States, Asia and Pacific and Africa. Even though the countries included in these areas are still lagging behind in terms of devices penetration, skills level and ICT education, they are still making big improvements and slowly catching up with the others.

2.2.1 The causes and consequences of the Digital Divide

The causes for the Digital Divide depend on numerous socio-economic factors. First, income levels are a key factor in magnifying the Digital Divide. That is because low-income families in LDCs and developing countries prioritise the satisfaction of basic needs when spending their earnings, therefore purchases in technology take second place.

Another key element is education: as already mentioned, people with higher levels of education are more prone to using ICTs and the Internet compared to people with lower education. The education factor also includes digital literacy, which is described by Cornell University as the “*ability to find, evaluate, share, and create content using information technologies and the Internet.*”⁶⁰ Developed nations are characterised by higher levels of digital literacy, which contributes to widening the gap with developing nations and LDCs. Schools are tied in the ICTs usage development process, as students who attend schools with sufficient computers and learn the necessary digital skills have an upper advantage over students who are not exposed to ICTs at an early age.⁶¹

Other causes for the Digital Divide include:

- The lack of basic infrastructures (for LDCs, for instance, this includes standard telephone lines) or advanced infrastructure (broadband)⁶² and geographical restrictions that come with different levels of economic development. In-country geographical restrictions also contribute to broadening the Digital Divide between urban areas, which are more likely to have access to new technologies such as broadband, 4G, 5G and optic fibre, and rural areas.

⁶⁰ Heick, T. (2014, updated in July 2019) “The Definition of Digital Literacy” <https://www.teachthought.com/literacy/the-definition-of-digital-literacy/>

⁶¹ Steele, C. (2019) “What is the Digital Divide?”. Digital Divide Council. <http://www.digitaldividecouncil.com/what-is-the-digital-divide/>

⁶² “Divario Digitale” da Wikipedia.org https://it.wikipedia.org/wiki/Divario_digitale#Cause_e_conseguenze_del_divario_digitale

- Motivation and interest, computer anxiety, unattractiveness of the new technology.⁶³ A portion of the global population is still reluctant to adopt ICTs despite having the economic resources, education and digital literacy that are necessary to have access to them. Some people view it as a luxury, others think it is too complicated to understand.⁶⁴

The Digital Divide can exacerbate the already existing socio-economic inequalities and highly affect access to information. The gap may trigger a downwards spiral for LDCs that would lead them to further levels of impoverishment, as it would exclude them from the new forms of wealth production, which rely on immaterial information goods.⁶⁵

The Digital Divide can also have an impact on education, as access to ICT has been linked with academic success and excellent scientific research.⁶⁶ Success as both an individual and a society depends on keeping up with this sector, which provides a vast range of educational resources and platforms.

Society is another aspect influenced by the Digital Divide, as the gap contributes to the segregation of individuals on the basis of ethnicity, age, race, and gender. The growth and development of individuals are hindered by limited access to ICT.

In this sense, it is possible to make a distinction between different types of Digital Divide. Some of the main gaps include:

- Age divide: the use of ICTs in younger generations is much wider than in older generations.
- Gender divide: women lag behind men in ICT usage in developing countries. Men in low-income countries are 90% more likely than women to own a mobile phone. 184 million women do not have access to mobile connectivity and, even among female mobile phone owners, 1.2 billion in low and mid-income countries have no access to the Internet.⁶⁷

⁶³ Van Dijk, J. & Hacker, K. (2003) "The Digital Divide as a Complex and Dynamic Phenomenon". The Information Society, 19: 315-326. <https://doi.org/10.1080/01972240309487>

⁶⁴ Steele, C. (2019) "What is the Digital Divide?". Digital Divide Council. <http://www.digitaldividecouncil.com/what-is-the-digital-divide/>

⁶⁵ ⁶⁵ "Divario Digitale" da Wikipedia.org https://it.wikipedia.org/wiki/Divario_digitale#Cause_e_conseguenze_del_divario_digitale

⁶⁶ Steele, C. (2019) "What is the Digital Divide?". Digital Divide Council. <http://www.digitaldividecouncil.com/what-is-the-digital-divide/>

⁶⁷ *Ibidem*.

- Social divide: Internet usage has deepened social stratification, contributing to the exclusion of non-connected groups as they do not share the same benefits as connected groups.⁶⁸

Bridging the Digital Divide and ICT skills, usage and penetration gap is an essential requirement in order to lower inequalities between developed countries, developing countries and least developed countries. One of the key responsibilities of future society will be to prevent the amplification of structural inequalities in the skills and usage of ICTs. Further steps towards social inclusion and equal distribution of resources and chances must be made.⁶⁹ The gap in the devices penetration is slowly being bridged, thanks to the progress that markets are making in lowering the prices of devices.

Learning digital skills is fundamental as it constitutes the crucial factor preventing a further expansion of ICTs in developing and LDCs. This cannot only be done from an academic perspective, as practical skills are not sufficient to fully enter the information society. Practical skills, in fact, must be paired up with strategic skills, which consist in searching, selecting, processing and applying information from digital sources and to strategically use them to improve one's position in society.⁷⁰

2.3 DEFINING CHINESE RURAL AREAS, POVERTY-STRICKEN COUNTRIES AND THE CHINESE CITIES TIER SYSTEM

Due to its vast size, the Chinese territory is highly heterogeneous and presents a neat distinction between urban and rural areas that exists in several aspects: economic development, education opportunities and quality, technology penetration, and more.

Before moving on to give an insight on the Chinese in-country Digital Divide, it is necessary to identify what do we mean by rural areas, which are poverty-stricken counties, which regions are predominantly rural.

According to the China Statistical Yearbook 2019, in 2018 Chinese rural areas covered 40.4% of the territory.⁷¹

The Statistical Yearbook identifies rural population as “*the portion of population that does not live in towns or cities.*” Nowadays, rural population constitutes 40.42% of total population, and,

⁶⁸ *Ibidem.*

⁶⁹ Van Dijk, J. & Hacker, K. (2003) “The Digital Divide as a Complex and Dynamic Phenomenon”. *The Information Society*, 19: 315-326. <https://doi.org/10.1080/01972240309487>

⁷⁰ *Ibidem.*

⁷¹国家统计局编. (2019年) 中国统计年鉴 2019.

as statistics show, the trend is that rural population undergoes an annual decline (the proportion of rural population in 1949 was 89.34%, 80.61% in 1980, 73.52% in 1990, 63.78% in 2000, 50.05% in 2010⁷²). Between 2001 and 2018, average annual rural population growth rate was -2.0%.

Rural areas are typically characterised by lower levels of economic development. This is explicated by per capita disposable income (“*the income of households for the purpose of final expenditure and saving*”⁷³): in rural areas, it was 14,617.0 yuan in 2018, while it added up to 39,250.8 yuan in urban areas⁷⁴.

According to the State Council Leading Group Office of Poverty Alleviation and Development, in China there are 832 poverty-stricken counties⁷⁵, all of which are situated in rural areas and majorly concentrated in the following provinces: Yunnan (88), Tibet (74), Guizhou (66), Sichuan (66), Gansu (58), Shaanxi (56).⁷⁶

In 1986, 592 counties were designated as Key Counties for National Poverty Alleviation and Development, targeted to rural areas, with different rural income level as poverty lines for different kinds of counties: RMB 150 for farming counties, RMB 200 for pastoral counties, RMB 300 for counties in old revolutionary base areas. Poverty-stricken counties are present in the whole country territory, however, a higher concentration is registered in its southwestern region (Tibet, Guizhou, Yunnan). Other regions include Xinjiang, Qinghai, Hubei.⁷⁷

As for urban areas and cities, they are not homogeneous either and, for convenience, the Chinese city tier system was introduced. The system consists in a hierarchical classification of the cities based on a number of criteria such as GDP, size, population. As there is no official classification accepted by the Chinese Government, all tier lists are subject to variations based on the different criteria used for their classification. Some categorise the cities in three tiers, others in four, others in five and so on.

⁷²国家统计局编. (2019 年) 中国统计年鉴 2019

⁷³ *Ibidem*.

⁷⁴ *Ibidem*.

⁷⁵ World Bank; Alibaba Group. (2019). “E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

⁷⁶水利部办公厅(2016)832 个贫困县名单及水利扶贫统计报表 (试行)
<http://www.jsjg.com.cn/Index/Display.asp?NewsID=21072>

⁷⁷ World Bank; Alibaba Group. (2019). “E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

The classification proposed by the South China Morning Post divides the 613 Chinese cities into four tiers based on three factors – GDP, politics (administration) and population:

- a. Tier 1: cities in which GDP exceeds USD 300 billion, directly controlled by the Central Government, with a population of over 15 million people. Five cities belong to this tier: Beijing, Guangzhou, Shanghai, Tianjin, Chongqing.
- b. Tier 2: cities with a GDP ranging from USD 68 to USD 299 billion; they can either be directly controlled municipalities and capital provinces; their population counts between 3 and 15 million people. This tier counts 30 cities, including Changsha, Chengdu, Wuhan, Qingdao and more.
- c. Tier 3: cities with a GDP between USD 18 and USD 67 billion, provincial capital cities and prefecture-level cities, their population ranges from 150,000 to 3 million people. This tier is made up by 138 cities including Chengde, Guiyang, Guilin, Lanzhou, Urumqi, Hohhot, Lhasa, Wenzhou.
- d. Tier 4 cities: cities with a GDP below USD 17 billion, prefecture-level cities and county-level cities, with a population below 150,000 people. 480 cities make up this tier, including Chenzhou, Hulin, Linhai, Taixing and others.⁷⁸

Based on the classification by the South China Morning Post, most of the cities belonging to Tier 1 are located on the coast (Guangzhou, Shanghai) and in the North-east (Beijing, Tianjin), with the exception of Chongqing. This confirms the trend of coastal and eastern areas as the regions with the highest levels of economic wealth and development. The majority of central and western prefectures and cities belong to Tier 4. It is possible to state that this reflects the distribution of rural and urban areas in China, with the majority of rural areas located in Tibet, Xinjiang, Qinghai, Gansu, Guizhou, Yunnan, and Guangxi.

2.4 THE GAP IN ACCESS TO ICTS BETWEEN RURAL AND URBAN CHINA

2.4.1 Urban-rural income gap

China is characterised by a situation of internal disparity between urban and rural areas. The core of such disparity comes from economy. The gap is the result of a series of urban-oriented policies framed in the rush towards modernisation. Starting from 1978, such urban-biased policies, despite pushing towards the rapid expansion of the overall Chinese economy, left behind

⁷⁸ South China Morning Post. <https://multimedia.scmp.com/2016/cities/>

rural areas. This led to several inequalities on multiple dimensions: education, society, technology and more. The Chinese rural population has been excluded from urban economy and mostly engaged in semi-subsistence farming, with low available income.⁷⁹

The economic gap between urban and rural areas can be exemplified through the differences in income and expenditure. Even though the ratio between urban and rural levels has slowly decreased in the years, there is still a net difference between urban and rural households' income.

As the China Statistical Yearbook 2019 shows (figure 2.6), in 2018 the ratio between the levels of disposable income (“*the income of households for purpose of final expenditure and savings*”⁸⁰) of urban and rural households was about 2.6. The average per capita disposable income of urban households was RMB 39,250.8, with minimum and maximum disposable income of respectively RMB 14,386.8 and RMB 84,907.1. The average per capita disposable income of rural households, on the other hand, was RMB 14,617.0, oscillating between a minimum of RMB 3,666.2 and a maximum of RMB 34,042.6.⁸¹ The table shows a net disparity between rural and urban households income, as the average per capita disposable income of rural households corresponds to urban households low income quintile.

Figure 2.6 Per capita disposable income of households by income quintile

	<i>Rural household income (yuan)</i>	<i>Urban household income (yuan)</i>
Low income household	3,666.2	14,386.9
Lower middle income household	8,508.5	24,856.5
Middle income household	12,530.2	35,996.1
Upper middle income household	18,051.5	49,173.5
High income household	34,042.6	84,907.1

Source: National Bureau of Statistics of China.

In 2018, the provinces with the highest per capita disposable income were Shanghai (RMB 64,182.6), Beijing (62,361.2), Zhejiang (RMB 45,839.8), Tianjin (RMB 39,506.1) and Jiangsu (RMB 38,095.8). On the other side, the provinces with the lowest per-capita disposable income were Tibet (RMB 17,186.1), Gansu (RMB 17,488.4), Guizhou (RMB 18,430.2), Yunnan (RMB

⁷⁹ Fong, M. W. L. (2009) “Digital Divide between Urban and Rural regions in China”. The Electronic Journal on Information systems in Developing Countries

⁸⁰国家统计局编. (2019年) 中国统计年鉴 2019. <http://www.stats.gov.cn/tjsj/ndsj/2019/indexch.htm>

⁸¹ *Ibidem*.

20,084.2), Qinghai (RMB 20,757.3), Guangxi (RMB 21,485.0), and Xinjiang (RMB 21,500.2).⁸²

Households consumption expenditure follows the same trend. Consumption expenditure refers to “*all expenditure of households for living expenditure to satisfy family daily living. It includes expenditure in cash and in kind. It includes eight categories: food, tobacco and liquor; clothing; residence; household facilities, articles and services; transport and communications; education, cultural and recreational activities; health and care and medical services; and miscellaneous goods and services*”⁸³. Per capita consumption expenditure of urban households was RMB 26,112.3, while the one of rural households was RMB 12,124.3 (ratio: 2.15).⁸⁴

The inequality ratio has not always been so wide: in the reform years, when the focus was on agricultural development, the gap between urban and rural income was narrowed, but it later increased again when the focus of policies shifted towards urban and economic development.

Some changes were made starting from 2009, after years of pro-rural policies from the Central Government, started in 2004. The gap began to close, even though it is still present and still represents a challenge to social stability and sustainable development.

One of the causes of the urban-rural income gap could be traced back to the *hukou* system⁸⁵, as it limits the possibility for citizens to move from poor, rural areas to more productive and economically developed urban regions.

In addition, easy access to coastal areas for trade and jobs, as well as the country’s industrial policy, fostered rapid urbanisation in eastern China and enhanced local living standards.

The narrowing of the economic gap between urban and rural regions requires improving the communication for the commercialisation of rural food markets by rural farmers and increasing the interchange between rural and urban populations. By closing the economic gap, it will also be possible to close the Digital Divide, which will also contribute to improving the living standards and, overall, reduce inequalities.

2.4.2 The Urban-Rural gap in access to ICTs

ICTs is a term that includes all communication technologies like the Internet, wireless networks, mobile phones, computers, software, social networking and more. By analysing data from the

⁸² *Ibidem*.

⁸³ *Ibidem*.

⁸⁴ *Ibidem*.

⁸⁵ OECD Observer (2016) “China’s urban-rural divide” https://oecdobserver.org/news/fullstory.php/aid/5669/China_92s_urban-rural_divide.html

Statistical Reports on Internet Development in China issued by CNNIC, it is possible to get an insight on the disparity in the usage of the Internet and ICTs.

Considering that income disparity as one of the main causes of Digital Divide, it is understandable that rural Chinese areas are characterised by lower ICTs accessibility. Added to this is the disparity between urban and rural areas in terms of education, as pointed out in paragraph 1.4.2.

In 2010, the portion of rural Internet users was 27.4% of total Chinese netizens, rural users were over 115 million. In the following years, the percentage increased until 2014 (when it reached 28.2% with 178 million rural users), but it started declining the next years in spite of the growth in the number of users.⁸⁶ This might be due to the urbanisation that took place in recent years and to the decline in rural population; still, the number of rural users registered an increase. Until March 2020, the ratio of rural users was 28.2% of total Chinese Internet users.

In detail, the situation in the years between 2010 and 2020 was as follows (figure 2.7):

Figure 2.7 Evolution of Chinese rural Internet users

<i>Year</i>	<i>Percentage of rural users (out of total Internet users)</i>	<i>Number of rural users</i>
2010	27.4%	115 million
2011	27%	131 million
2012	data not available	146 million
2013	27.9%	165 million
2014	28.2%	178 million
2015	27.9%	186 million
2016	26.9%	191 million
2017	26.7%	201 million
2018	26.3%	211 million
2019	Data not available	Data not available
2020	28.2%	Data not available

Source: CNNIC.

⁸⁶ CNNIC

Internet penetration rate is growing in the entire Chinese territory. The penetration rate reached 64.5% in March 2020⁸⁷, 3.3 points higher than June 2019 (61.2%). The total number of netizens was 903 million 590 thousand.⁸⁸ Again, Internet penetration rate varies with different regions: in March 2020, Internet penetration rate in urban areas was 76.5%. On the other hand, it was 46.2% in rural areas. In spite of the prominent disparity that stills exists, statistics show that the gap is slowly narrowing as the growth of Internet penetration in rural areas is faster than that of urban areas. Compared to December 2018, Internet penetration rate in rural areas grew by 7.8 points, while it grew by 1.9 points in urban areas.

Until June 2019, people with no Internet access in China were 541 million. 37.2% of them were urban residents, and 62.8% was made up by rural citizens. Nevertheless, statistics show a positive trend as the ratio was already showing signs of change in March 2020: 496 million people were registered with no Internet access; however, 40.2% of them were urban residents, and 59.8% lived in rural regions.

The Digital Divide is not only linked with the Internet technologies. Before the development of the Internet, the Digital Divide existed because of the disparity in the diffusion of the pager, of fixed-line telephones and, later, of the computer and the Internet.⁸⁹

The growth of the per-capita income gap in the period between 1985 and 2006 seems to be closely correlated with telephone's adoption rate. The increase in the telephone's penetration rate was accompanied by a widening in the gap between rural and urban income in that period. The problem was, once again, due to urban-biased development policies: the installation of telephone lines primarily focused on major cities and coastal provinces, while the rural inland was left behind because of underdeveloped supporting infrastructures (such as inadequate supply of electricity, substandard power networks, inadequate road access).⁹⁰

Infrastructure lagging behind is another reason for Digital Divide. Throughout the years, there were several attempts by the Chinese Government to put rural infrastructures up to pair with the urban ones. One in particular needs mentioning: the Cuncun Tong Project (CT project).

The CT project is a systematic plan issued by the Central Government in 1998. It aimed at balancing the state of development of the urban-rural public infrastructure by connecting every

⁸⁷ CNNIC.

⁸⁸ CNNIC.

⁸⁹ Fong, M. W. L. "Digital Divide Between Urban and Rural China". EJISDC (2009) 36, 6, 1-12.

⁹⁰ *Ibidem*.

village with modern facilities and, thus, equalising urban-rural public infrastructures.⁹¹ The project consisted in three stages:

1. 1998 – 2004: after 117,000 villages had been connected with electricity, the plan provided them with radio and television.
2. 2005 – 2010: the aim of this phase was to connect every village with paved roads, tap water, electricity, telephone and postal service.
3. 2011 – 2015: the goals mainly focused on promoting the diffusion of the Internet.

The rapid diffusion of the Internet in China made it necessary to include the broadband Internet connection in the listing of the second and third stages of the project. The Government powerfully encouraged the introduction of broadband access points in administrative villages: as a result, all of administrative villages of Jiangsu province were connected by broadband Internet by 2007⁹². The next provinces to accomplish such a goal were Guangdong, Shanghai and Tianjin in 2008, and Zhejiang in 2009.⁹³

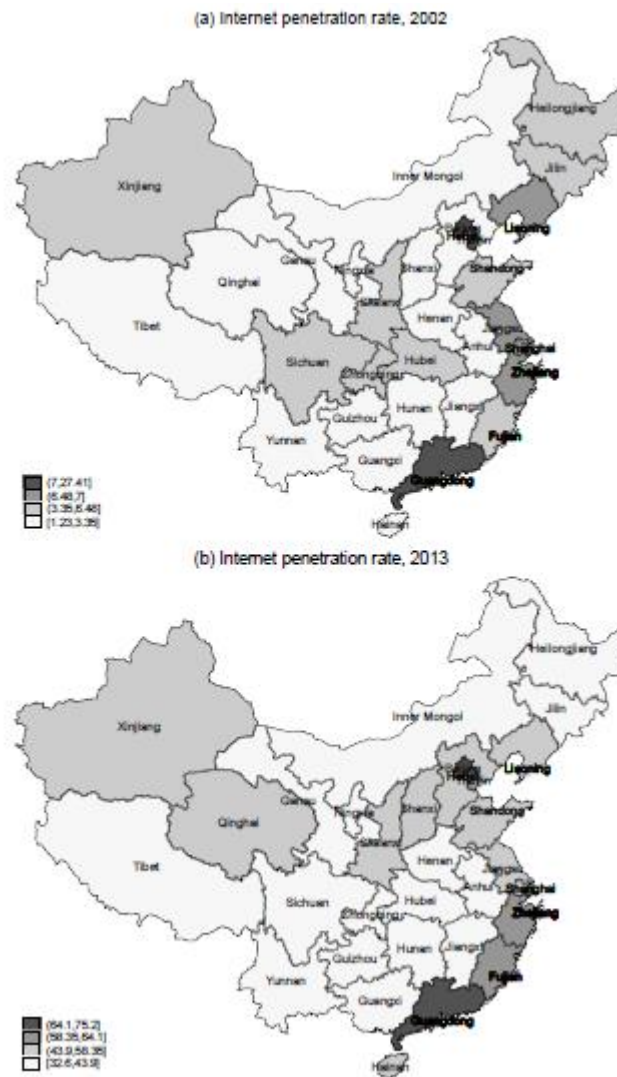
In spite of the great progress that was made in the field (by 2010, 99% of townships and over 80% of administrative villages had broadband access), broadband availability still differed greatly across provinces due to geographical and economic differences. The objective of the third stage of the CT project was to connect 95% of administrative villages and further extend broadband Internet to natural villages. The CT project played a crucial role in increasing the Internet penetration rate, as shown by figure 2.8.

⁹¹ Gao, Y.; Zang, L. & S, Jun. (2018) “Does Computer Penetration Increase Farmers’ Income? An Empirical Study from China” *Telecommunications Policy*, 42 (5).

⁹² *Ibidem*.

⁹³ *Ibidem*.

Figure 2.8 Change in Internet penetration rate, 2002 - 2013



Source: Gao, Y.; Zang, L. & Sun, J. “Does Computer Penetration Increase Farmers’ Income? And Empirical Study from China.

In 2006, computer penetration rate for urban households stood at 47.2%, while penetration rate in rural households was only 2.7%.⁹⁴ The Digital Gap was also intensified by the higher level of growth in computer installation in urban households.

Compared to other devices (such as the mobile phone), using a computer requires more sophisticated skills and knowledge, and it is used for various needs other than communication and entertainment. Given the high costs of computers, in the context of rural households purchasing one is more likely a real need for rural businesses and agricultural activities.

⁹⁴ Fong, M. W. L. “Digital Divide Between Urban and Rural China”. EJISDC (2009) 36, 6, 1-12.

Nevertheless, this did not imply a lack of interest by rural residents towards computers and the Internet. Data from the National Bureau of Statistics of China and the 2007 CNNIC report show that, in that year, 10.5% of the Chinese population had access to the Internet, and the penetration rate in urban areas was 21.6%. In the same year, Internet penetration rate in rural areas was 5.1%. Research carried out in July 2007 by the CNNIC on Internet usage in Chinese rural regions found that 53.9% of Internet rural users surfed online at Internet cafés, which was above the national average Internet café surfing rate (which stood at 37.2%). This proves that there have always been rural residents that were involved in the usage of the Internet despite infrastructural restrictions.⁹⁵ The same report shows that the Internet application level of rural users was less developed than urban users based on their online activities. Users in rural areas rarely engaged in online shopping, banking and stock trading activities, and used the Internet mainly for entertainment purposes. Besides, a survey dating back to January 2007 pointed out that 0.4% of total netizens were farmers or peasants, despite a modest amount of agriculture-related resources was present online.

An insight on the regional Internet Development situation year by year is given by CNNIC. The rural provinces taken into consideration for this work are Guizhou, Yunnan, Sichuan, Gansu, Qinghai, Heilongjiang, Tibet and Xinjiang. In 2007, the situation was as follows:

- Internet Penetration rate in Guizhou stood at 6.0%, and Guizhou users made up 1.1% of total Chinese netizens.
- In Yunnan, Internet penetration rate was 6.8%, Yunnan netizens were 1.4% of total Internet users.
- Gansu registered a penetration rate of 8.4% with 1.0% of total Chinese netizens.
- Internet penetration rate in Sichuan was 9.9%, with 3.9% of total users.
- The situation in Qinghai was slightly better, with an Internet penetration rate of 11.0%, but only 0.03% of total Chinese users.
- Penetration rate in Heilongjiang stood at 12.5%, which constituted 2.3% of total users.
- Xinjiang's Internet penetration rate was 17.7%, 1.7% of Chinese netizens.⁹⁶

Starting from that year, rural Internet users came to be an important component of Chinese netizens. The growth rate of rural netizens in 2007 exceeded 100%, reaching 127.7%⁹⁷, and the

⁹⁵ *Ibidem.*

⁹⁶ CNNIC (2008) 中国互联网络发展情况统计报告 (2008年1月).

⁹⁷ *Ibidem.*

number of rural users reached 52 million 620 thousand.⁹⁸ Out of the new 73 million Internet users, 29 million 170 thousand came from rural areas.

The following part will give an insight on the growth of Internet penetration rate in Guizhou (figure 2.10), Yunnan (figure 2.11), Gansu (figure 2.12), Sichuan (figure 2.13), Qinghai (figure 2.14), Heilongjiang (figure 2.15), Xinjiang (figure 2.15), Tibet (figure 2.16), Jiangxi (figure 2.17) and Anhui⁹⁹ (figure 2.18) provinces in the period between 2007 and 2015, compared to the one in the urban areas in Beijing (figure 2.19) and Shanghai (figure 2.20).

Figure 2.10 Internet users and Internet penetration rate in Guizhou province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	2,240,000	6.0%
2008	4,330,000	11.5%
2009	5,730,000	15.1%
2010	7,510,000	19.8%
2011	8,400,000	24.2%
2012	9,910,000	28.6%
2013	11,460,000	32.9%
2014	12,220,000	34.9%
2015	13,460,000	38.4%

Source: CNNIC.

Figure 2.11 Internet users and Internet penetration rate in Yunnan province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	3,030,000	6.8%
2008	5,480,000	12.1%
2009	8,440,000	18.6%
2010	10,210,000	22.3%
2011	11,400,000	24.8%
2012	13,210,000	28.5%
2013	15,280,000	32.8%
2014	16,430,000	35.1%
2015	17,610,000	37.4%

Source: CNNIC.

⁹⁸ *Ibidem.*

⁹⁹ Anhui province is listed here as it shows low levels of Internet penetration compared to other southeastern provinces.

Figure 2.11 Internet users and Internet penetration rate in Gansu province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	2,190,000	8.4%
2008	3,270,000	12.5%
2009	5,350,000	20.4%
2010	6,550,000	24.8%
2011	7,000,000	27.4%
2012	7,950,000	31.0%
2013	8,940,000	34.7%
2014	9,510,000	36.8%
2015	10,050,000	38.8%

Source: CNNIC.

Figure 2.12 Internet users and Internet penetration rate in Sichuan province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	8,090,000	9.9%
2008	11,030,000	13.6%
2009	16,350,000	20.1%
2010	19,980,000	24.4%
2011	22,290,000	27.7%
2012	25,620,000	31.8%
2013	28,350,000	35.1%
2014	30,220,000	37.3%
2015	32,600,000	40.0%

Source: CNNIC.

Figure 2.13 Internet users and Internet penetration rate in Qinghai province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	600,000	11.0%
2008	1,300,000	23.6%
2009	1,540,000	27.7%
2010	1,880,000	33.6%
2011	2,080,000	36.9%
2012	2,380,000	41.9%
2013	2,740,000	47.8%
2014	2,890,000	50.0%
2015	3,180,000	54.5%

Source: CNNIC.

Figure 2.14 Internet users and Internet penetration rate in Heilongjiang province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	4,760,000	12.5%
2008	6,200,000	16.2%
2009	9,120,000	23.9%
2010	11,270,000	29.5%
2011	12,060,000	31.5%
2012	13,290,000	34.7%
2013	15,140,000	39.4%
2014	15,990,000	41.7%
2015	17,070,000	44.5%

Source: CNNIC.

Figure 2.15 Internet users and Internet penetration rate in Xinjiang province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	3,630,000	17.7%
2008	6,250,000	27.1%
2009	6,320,000	27.5%
2010	8,190,000	37.9%
2011	8,820,000	40.4%
2012	9,620,000	43.6%
2013	10,940,000	49.0%
2014	11,390,000	50.3%
2015	12,690,000	54.9%

Source: CNNIC.

Figure 2.16 Internet users and Internet penetration rate in Tibet province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	360,000	12.7%
2008	470,000	16.4%
2009	530,000	18.6%
2010	810,000	27.9%
2011	900,000	29.9%
2012	1,010,000	33.3%
2013	1,150,000	37.4%
2014	1,230,000	39.4%
2015	1,420,000	44.6%

Source: CNNIC.

Figure 2.17 Internet users and Internet penetration rate in Jiangxi province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	5,110,000	11.8%
2008	6,100,000	14.8%
2009	7,900,000	18.0%
2010	9,500,000	21.4%
2011	10,880,000	24.4%
2012	12,670,000	28.5%
2013	14,680,000	32.6%
2014	15,430,000	34.1%
2015	17,590,000	38.7%

Source: CNNIC.

Figure 2.18 Internet users and Internet penetration rate in Anhui province, 2007 - 2015

<i>Year</i>	<i>Number of users (approx.)</i>	<i>Penetration rate</i>
2007	5,870,000	9.6%
2008	7,230,000	11.8%
2009	10,690,000	17.4%
2010	13,920,000	22.7%
2011	15,850,000	26.6%
2012	18,610,000	31.3%
2013	21,500,000	35.9%
2014	22,250,000	36.9%
2015	23,950,000	39.4%

Source: CNNIC.

Figure 2.19 Internet users and Internet penetration rate in Beijing, 2007 - 2015

Year	Number of users (approx.)	Penetration rate
2007	7,370,000	46.6%
2008	9,800,000	60.0%
2009	11,030,000	65.1%
2010	12,180,000	69.4%
2011	13,790,000	70.3%
2012	14,580,000	72.2%
2013	15,560,000	75.2%
2014	15,930,000	75.3%
2015	16,470,000	76.5%

Source: CNNIC.

Figure 2.20 Internet users and Internet penetration rate in Shanghai, 2007 - 2015

Year	Number of users (approx.)	Penetration rate
2007	8,300,000	45.8%
2008	11,100,000	59.7%
2009	11,710,000	62.0%
2010	12,390,000	64.5%
2011	15,250,000	66.2%
2012	16,060,000	68.4%
2013	16,830,000	70.7%
2014	17,160,000	71.1%
2015	17,730,000	73.1%

Source: CNNIC.

The data show that, for years, Guizhou has been the province with the lowest Internet penetration rate, alongside with Sichuan, Gansu, Anhui, Jiangxi and Yunnan. However, some of these regions present their own specificities.

Until 2015, Anhui appears to be one of the regions with the lowest Internet penetration rate, despite being situated the eastern region, which, typically, presents the highest levels of economic and infrastructural development. The low Internet penetration does clash with the province's overall development, considering that in 2019 it ranked 11th out of 31 in the list of Chinese provinces by GDP.¹⁰⁰

Internet penetration rate in Sichuan underwent a steady growth, also thanks to the urbanisation that took place in the province and the exponential growth of the Chengdu metropolitan area in recent years. Yunnan remains the province with the lowest rate (37.4%), lower than the one in Beijing in the first year of the period taken into analysis (46.6% in 2007). The same goes for Guizhou.

¹⁰⁰ Tian, Y. (2020) "31 省份 2019 年 GDP 出炉 各省份 GDP 之和低于全国总量" <http://news.cctv.com/2020/01/24/ARTIPsdHjai8UB1tOXFo5CAw200124.shtml>

Figures demonstrate that there are exceptions to the rule stating that with low income come low levels of Internet development. This is proven by Xinjiang and Qinghai provinces: despite being two of the provinces with the lowest GDP (respectively RMB 1359 billion 711 million and RMB 296 billion 595 million¹⁰¹), they both underwent a big growth in Internet penetration rate and managed to exceed 50% in 2014.

By comparing the growth of penetration rate in the afore mentioned regions between 2007 and 2015 with the ones in the same period in Beijing and Shanghai, which boast the country's highest levels of economic, social and technological development, the entity of Digital Divide is crystal clear.

The Chinese Digital Gap and the low adoption of ICTs by rural residents have been determined by many factors. Fong (2009) identifies the two main ones as affordability of technologies and educational level of residents.¹⁰²

As previously stated, the income gap between rural and urban residents is one of the key elements of the ICTs urban-rural adoption disparity.

The computer still remains a luxury for rural dwellers, and the purchase of such device in rural households is typically dictated by work necessities (rural e-business and agricultural online activities). Affordability, however, is not the only cause, as penetration rate has shown growth signs impoverished provinces as well (Qinghai and Xinjiang).

In the past, there have been several attempts to overcome the problem of ICTs' affordability and, thus, offer a solution to increase penetration rate in rural areas. Software and hardware manufacturers provided support and contributing resources to promote IT talents and usage in rural regions. Companies like Microsoft, Lenovo, Intel, Sichuan Sinomanic Technology and others made an effort to sponsor training programmes and to design low-cost computers that best fit rural residents' needs.¹⁰³

Compared to the first 2000s, there was a shift in the adoption of technologies. China is the country with the highest number of smartphone users in the world, with 851.2 million active users by the end of 2019.¹⁰⁴ Smartphone penetration rate stood at 59.9% in the same year.¹⁰⁵

¹⁰¹ *Ibidem*.

¹⁰² Fong, M. W. L. "Digital Divide Between Urban and Rural China". *EJISDC* (2009) 36, 6, 1-12.

¹⁰³ *Ibidem*.

¹⁰⁴ Newzoo Global Mobile Market Report 2019 – Light version <https://newzoo.com/insights/trend-reports/newzoo-global-mobile-market-report-2019-light-version/>

¹⁰⁵ *Ibidem*.

Nowadays, smartphones and mobile phones have reached a discrete penetration rate also in rural areas, but this was not the case for rural users in the years 2003/2004/2005.

It is necessary to make a distinction between smartphones and mobile phones. Smartphone ownership rapidly increased starting from 2015 and 2016. This was due to several factors:

- a. Smartphone market in major cities was saturated; however, in those years, citizens in low-tier cities and rural areas were starting to purchase their first smartphones, resulting in a vast potential market;
- b. This was a good opportunity for new emerging smartphone producers, like Oppo and Vivo, to start selling low-cost devices that could fit the needs of the impoverished areas market.

Smartphones managed to gain a reach that computers failed to, mainly because of their lower costs and the ease in their usage.

Besides the affordability issue, ICT literacy is the other key factor contributing to the widening of the Chinese urban-rural digital gap. Generally speaking, as already pointed out in previous paragraphs, the average educational level of rural dwellers is lower than the one of urban residents. This inevitably results in lower usage of ICTs and the Internet, as greater usage of the Internet has been linked with higher levels of education. In general, school attrition rate is significant in rural areas. The results of a survey by a group of university students on rural education show that 56.3% of schooling attrition was due to financial limitations, 37.5% was due to lack of interest, and 6.2% to the belief by parents that their children had received sufficient education for their livelihood (“Current rural”, 2006).¹⁰⁶

2.4.3 Effects of ICTs adoption on rural residents’ income

As extensive research on the topic has proven, ICTs adoption can help raise residents’ income, as well as improve life conditions, create job opportunities and improve health and education systems. Still, the benefits associated with ICTs usage vary from device to device, and the most significant effects are typically linked to computers and smartphones. Hence, this paragraph will present the benefits of ICTs on rural residents’ income by mainly taking into analysis smartphones and computers.

The nature of smartphones and mobile phones presents great differences and the two devices have different impacts on rural dwellers’ lifestyle and income.

¹⁰⁶ *Ibidem.*

On the one side, data from the 2010 CNNIC report show that rural residents mostly used mobile phones to make calls, send messages and download music. This leads to the conclusion that mobile phones have no or insignificant effect on rural residents' income and the increase in mobile phones ownership is the result of an increase in income.¹⁰⁷

Smartphones, on the other hand, do assist farmers in realising higher farm income, off-farm income and overall household income compared to farmers who do not use updated technology.¹⁰⁸ Research shows that the causal effect of smartphone use is to increase farmers' income by about 11%, and off-farm income by 10.91%.¹⁰⁹ This may have diversified reasons:

- Smartphones facilitate access to information, especially in rural areas where market-related information may be difficult to obtain.
- Smartphones improve communications between farmers and service providers, which contributes to increasing farmers' income.

Mobile ICT adoption affects farm production, market transactions, and household decisions relating to off-farm labour supply. These can have an impact on farm income and off-farm income.¹¹⁰ Mobile ICT can reduce transaction costs (as it facilitates communications between farmers and buyers), as well as online payment (through Alipay or Wechat) for products between farmers and input/output dealers, and the salaries for off-farm workers. This influences farm and off-farm income and reduce farmers' costs, for instance, by lowering the expenses linked to commuting.

Ma shows that farm income, off-farm income and variable transaction costs are affected by the usage of mobile ICT. Given this assumption, an optimal solution of households' utility maximisation problem can be expressed by the following equation:

$$H_i = \{Y_f(S_i, X_i) + Y_{of}(S_i, X_i) + Y_u - FTC - VTC(S_i, X_i)\}$$

¹⁰⁷ Gao, Y.; Zang, L. & Sun, J. (2018) "Does Computer Penetration Increase Farmers' Income? An Empirical Study from China". *Telecommunications Policy*, 42 (5), 345 – 360.

¹⁰⁸ Ma, W.; Renwick, A. et al. (2018) "Smartphone Use and Income Growth in Rural China: Empirical Results and Policy Implications". *Electronic Commerce Research*. https://www.researchgate.net/publication/328305670_Smartphone_Use_and_Income_Growth_in_Rural_China_Empirical_Results_and_Policy_Implications

¹⁰⁹ *Ibidem*.

¹¹⁰ *Ibidem*.

where (Y_f) refers to farm income, (Y_{of}) off-farm income, (VTC) to variable transaction costs. (S_i) Indexes the use of smartphones, (X_i) refers to a vector of exogenous variables, FTC to fixed transaction costs associated with agricultural production and marketing.

The equation shows that the usage of smartphones has an impact on farm income (Y_f) , off-farm income (Y_{of}) and variable transaction costs (VTC) and, as a result, total household income (H_i) .¹¹¹

A gender digital divide exists in rural China, as male are more likely to use a smartphone than women. This may be linked to the dominance of men on households decision-making, in particular about important asset purchase such as smartphones. This may result as a critical point, considering that it is commonly agreed that a gender divide in terms of mobile phone use can inhibit rural development. The consequences of such a gender divide have an impact on household income as well: male household heads who use smartphones tend to have higher farm income, off-farm income and household income, compared to female household heads who use smartphones as well.¹¹²

Computers as ICT devices follow a similar path in contributing to rural residents' income growth. Computers are more sophisticated devices than their cheaper counterpart, smartphones, which makes their diffusion slower and more complex.

This is due to both their requirements in terms of skills and their price. For a long time, rural dwellers have considered computers as a luxury rather than an actual need, and some of them still do. The consequence of this is that computers have a far lower reach than smartphones, even though smartphones were brought on the market only in recent times. The use of personal computers in rural areas is limited to those households that have a practical need for it, that is to say, those households that are not primarily based on farms and rely on E-business and agriculture.

The change in Internet penetration rate may be useful to determine the correlation between rural computer penetration and rural residents' income growth, particularly after the introduction of the CT project by the Chinese Government in 2004.

Research by Gao, Zang and Sun (2018) pointed out that the diffusion and adoption of the Internet and computers in rural areas represent an income growth opportunity for rural dwellers. The results of their empirical study show that a 10% increase in the number of computers owned by

¹¹¹ *Ibidem.*

¹¹² *Ibidem.*

100 rural households between 2002 and 2006 resulted in a 0.43% increase in rural residents' income. This amplified to 0.74% in the period between 2007 and 2013.¹¹³ The positive impact of computer penetration on rural residents' income, however, is constrained by four causes of the digital divide: lower computer penetration rate, higher illiteracy rate, lower urbanisation rate and agricultural public expenditures.¹¹⁴

In conclusion, computers present vast potentiality to boost rural residents' income: one way in which this has been done, especially in the last years, is by engaging in E-commerce, as Taobao villages residents do.

Research shows that gender, education, farm size and off-farm work participation are relevant elements that guide a household towards the adoption of updated mobile technology, such as smartphones and computers.¹¹⁵

The crucial role that ICTs adoption has been proven to play in raising rural dwellers' income highlights the importance of policies and rural development strategies that enhance the use of ICTs in rural areas. These must tackle the problems that are the underlying basis of the urban-rural Digital Divide: education, infrastructure, economic development.

In 2018, the State Council decided to improve Internet services and IT infrastructure through the "Internet Plus Agriculture Model". This will endorse integrated development of the primary, secondary and tertiary industries in rural areas and provide farmers with more business opportunities that help increase their income.¹¹⁶ Internet technologies will be broadly deployed to make agricultural production better targeted and effective and enable farmers to adjust to fluid market dynamics.

In recent years, the Internet Plus Agriculture model has made a big difference in farmers' income, according to the Premier of the State Council, Li Keqiang. As a matter of fact, statistics from the Ministry of Agriculture and Rural Affairs show that new forms of industry have flourished in rural areas thanks to a boom of local E-commerce.¹¹⁷ In 2017, the total online retail

¹¹³ Gao, Y.; Zang, L. & Sun, J. (2018) "Does Computer Penetration Increase Farmers' Income? An Empirical Study from China". *Telecommunications Policy*, 42 (5), 345 – 360.

¹¹⁴ *Ibidem*.

¹¹⁵ Ma, W.; Renwick, A. et al. (2018) "Smartphone Use and Income Growth in Rural China: Empirical Results and Policy Implications". *Electronic Commerce Research*. https://www.researchgate.net/publication/328305670_Smartphone_Use_and_Income_Growth_in_Rural_China_Empirical_Results_and_Policy_Implications

¹¹⁶ Xinhuanet. (2018) "Internet Plus Agriculture model to promote integrated rural development". http://www.xinhuanet.com/english/2018-06/27/c_137285120.htm

¹¹⁷ *Ibidem*.

sales in rural areas were RMB 1.25 trillion, and E-commerce created over 28 million jobs.¹¹⁸

Internet Plus Agriculture was launched with the following goals:

- Promoting the use of IT in the distribution of agricultural products.
- Improving Internet infrastructure in rural areas.
- Establishing agriculture-related public information and service platforms.
- Providing training on IT application.¹¹⁹

The emphasis placed on Internet Plus Agriculture confirms the now widely understood importance of bridging the Digital Divide in order to enhance social equality, social mobility (which refers to the upward movement in status of individuals or groups based on wealth, occupation, education or other variables), economic equality, economic growth and innovations and E-democracy.¹²⁰

2.5 BEYOND THE DIGITAL DIVIDE: *CONNECTIVITY DIVIDEND DIFFERENCE*

As shown by wide research about the development of ICTs, since the early 2000s the disparity in the diffusion of ICTs was centred on accessibility. Now that progress in infrastructure and policies has been made, the focus of attention is slowly moving towards the differences in ICTs usage.

Digital Divide itself underwent an evolution in its characteristics and reach. In the early days, the main issue was accessibility gap. Three factors contributed to reducing accessibility divide: infrastructural improvements, the growing convenience of Internet facilities and the growing utility of the Internet.¹²¹

With the narrowing of the accessibility divide came the usage divide, due to a new awareness in people about the diverse usages of the Internet. The use of the Internet to change one's socio-economic status, or the access to IT and the skills to use it, or the ability to retrieve and process information on the Internet have become the new variables to measure the gap between the "haves and have-nots".¹²² Differences in usage rise when access opportunities become more equal.

¹¹⁸ *Ibidem*.

¹¹⁹ *Ibidem*.

¹²⁰ Fong, M. W. L. "Digital Divide Between Urban and Rural China". EJISDC (2009) 36, 6, 1-12.

¹²¹ Qiu, Z.; Zhang, S. & Liu, S. (2019) "From the Digital Divide to the Connectivity Dividend Difference: A Connectivity Capital Perspective", Social Sciences in China.

¹²² *Ibidem*.

The direct outcome of differences in Internet usage is that some people are gaining socio-economic benefits, which has been defined as *connectivity dividend*¹²³. Qiu, Zhang and Liu (2019) describe the connectivity dividend as “*the surplus revenue generated by Internet use*”.¹²⁴

The development of China’s online commercial platforms clearly demonstrates the connectivity dividend produced by “Internet Plus”. In general, nowadays, it is possible to affirm that users enjoy a connectivity dividend if online usage brings better returns than traditional business models.

Despite the narrowing gap in access opportunities, not all people benefit equally from Internet usage. As a result, it is possible to identify a new stage in Digital Divide, that is, Connectivity Dividend Difference. This refers to “*the difference in the benefits obtained by different groups, regions and urban/rural dwellers from the connectivity dividend.*”¹²⁵

China presents both differences between industries and differences between regions in Connectivity Dividend. The industries that enjoy the biggest benefits are the creative industries, and the regions with the highest benefits are those located in the south-eastern coastal area. This reflects the state of ICTs accessibility and development, as shown by previous research. However, while the accessibility gap is being bridged, the Connectivity Dividend Difference is growing. This is proven by data contained in China Information Society Development Report issued by the State Information Centre in 2015: the average CAGRs of Information Society in eastern, central and western region from 2007 to 2015 were, respectively, 6.15%, 6.43% and 7.08%.¹²⁶ Nevertheless, in terms of absolute value, the gap between the eastern and western regions increased from 0.1248 to 0.1760 during the same period, and this gap is widening. A Connectivity Dividend Difference also exists between different groups and regions across the emerging Taobao Villages. This proves that the narrowing of the accessibility gap does not eliminate differences in usage across different groups, regions and urban/rural domicile.

The Dividend Gap is due to differences in connectivity capital and its usage among individuals, groups, regions and urban and rural dwellers.¹²⁷ Connectivity capital is described by Qiu *et al.* as “*any asset formed by past investments that has access to and can benefit from the Internet*

¹²³ *Ibidem.*

¹²⁴ *Ibidem.*

¹²⁵ *Ibidem.*

¹²⁶ 国家信息中心 (2015) 中国信息社会发展报告. http://www.xon-gju.com/data/haosme/info/book/file/2015/12/09/20151209232936_3984.pdf

¹²⁷ Qiu, Z.; Zhang, S. & Liu, S. (2019) “From the Digital Divide to the Connectivity Dividend Difference: A Connectivity Capital Perspective”, *Social Sciences in China*.

market".¹²⁸ Connectivity Capital differs from human capital and social capital, as present discussion about human and social capital places emphasis on possession, regarding industrialisation as the standard and without making a distinction between assets and capital. Connectivity Capital, for its part, has the following characteristics:

- a. It is a kind of capital market oriented towards development and has market access to social mechanisms.
- b. It comprehends a capitalisation mechanism, emphasising the capitalisation of different assets and their influence on development under highly connected conditions.
- c. It is a portfolio capital, which highlights asset portfolios and benefits deriving from Internet utilisation through the operation of Internet assets.¹²⁹

The regional numbers from the China Information Society Development Report 2015 on Information Society development are consistent with the overall ICTs development situation in China. Even though accessibility gap is getting less significant, substantial differences are still present on both interregional and intraregional levels, as shown by figure 2.21.

Information Society Index stood at 0.5489 in the eastern region, at 0.3880 in the central one and at 0.3729 in the western one. By looking at the provinces in detail, it is evident that Information Society Development follows the same paths as accessibility to ICTs, to a certain extent.

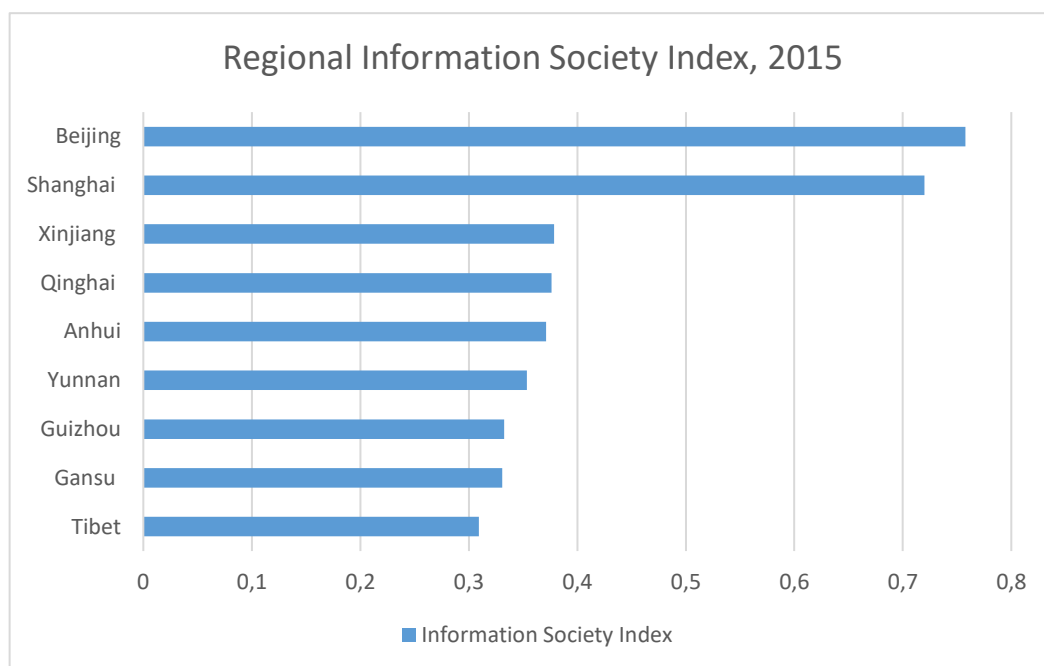
Beijing and Shanghai are the cities with the highest Information Society Development Index, respectively 0.7578 and 0.7198; at the same time, Tibet, Gansu, Guizhou and Yunnan are the provinces with the absolute lowest Information Society Development level.¹³⁰ Average national level stood at 0.4351.

¹²⁸ *Ibidem.*

¹²⁹ *Ibidem.*

¹³⁰ 国家信息中心 (2015) 中国信息社会发展报告. http://www.xon-gju.com/data/haosme/info/book/file/2015/12/09/20151209232936_3984.pdf.

Figure 2.21 Information Society Index in a selection of Chinese regions, 2015



Source: State Information Center, 2015.

The report shows that in 2015, Information Society Index exceeded 0.6 in 31 Chinese cities, including Shenzhen, Beijing, Guangzhou, Suzhou, Zhuhai among the others. Of such 31 cities, 24 are located in the eastern coastal areas, and mainly concentrate in Guangdong (six cities), Zhejiang (five cities) and Jiangsu (five cities). These numbers confirms the disparity in Information Society Development between the urban east and the rural central and western regions. However, some exceptions to this rule include Karamay in Xinjiang and Baotou, Alxa League and Ordos, in Inner Mongolia, which have entered the initial stage of Information Society.¹³¹

The Connectivity Dividend Difference has replaced the access divide of the first era of ICTs diffusion and has become the new source of Digital Divide. While access divide can be bridged through improvements in infrastructures, policies issuing and education, Connectivity Dividend Difference is determined by connectivity capital, which consists in a portfolio of assets formed by past investments that has access to the Internet market and benefits from it. It is difficult for users to have completely equivalent, homogeneous amounts of capital, which means that there is a connectivity capital divide between users and between different time-points for the same

¹³¹ *Ibidem.*

user.¹³² This leads to the conclusion that the connectivity capital divide plays a role in determining connectivity dividend difference.

In today's China, public policy should focus on how connectivity capital can give a positive contribution to the equitable development of connectivity capital, in order to allow Chinese society to benefit fairly from the connectivity dividend and to contribute to further economic development in rural areas, once the Internet benefits gain wider reach.

¹³² Qiu, Z.; Zhang, S. & Liu, S. (2019) "From the Digital Divide to the Connectivity Dividend Difference: A Connectivity Capital Perspective", *Social Sciences in China*.

3 E-COMMERCE IN RURAL CHINA

3.1 CHAPTER OVERVIEW

The term “rural E-commerce” refers to the usage of the Internet to purchase products from and sell goods to rural areas. E-commerce in rural China holds big potential, yet, its level of development continues to lag compared to urban areas.

This final chapter aims at presenting the current state of rural E-commerce in China. Thanks to a new vitality injected in the industry by government programmes and assistance by the private sector through initiatives and investments, Chinese rural E-commerce is undergoing a phase of significant development and numbers show vast potential for further growth. In 2019, national county-level online retail sales added up to RMB 3096.16 billion, the value of agriproducts sold online at the county-level was RMB 269.31 billion. Both numbers show a considerable growth compared to previous years and, even though E-commerce is a highly spatially-concentrated phenomenon at the county-level as well, with the east being the most developed region and the north and west lagging, data shows positive signs of growth for E-commerce in inland provinces.

The present chapter will also give a brief insight on the phenomenon of Taobao Villages. In 2019, 4,310 Taobao Villages were registered: the majority are situated in eastern provinces, but starting from 2017, the first Taobao Villages appeared in inland provinces as well (Sichuan, Chongqing, Guizhou, Yunnan, Xinjiang). Taobao Villages are a great opportunity for the development of local economy; on top of that, they are an important phenomenon on a social level, as they are an important tool for social empowerment, in particular for women empowerment. Taobao is a great source of employment for women in rural villages, the proportion of female Taobao stores owners is significantly higher than male owners, and women themselves provide employment to other women through their stores.

The final section of this character presents the new E-commerce models that emerged starting in 2019, social-commerce and live-commerce, which gave great contribution to further develop the E-commerce industry in rural China as their modalities are suited to the needs of rural dwellers. Along with the rise of new E-commerce models, a new E-commerce giant came to life: Pinduoduo, which made of rural areas and third- or lower-tier cities its primary market. By combining social-commerce, live-commerce and its innovative business model based on team purchases, the platform was able to leverage the rural market and gain a reputation as the primary platform for the sale of agriproducts. This was possible because of the de-layering it

executed on the logistical level, improving the connection between the “first kilometre” and “last kilometre” and allowing the produce to be shipped directly from the manufacturer.

Rural E-commerce still faces several challenges (lack of solid infrastructure, little knowledge, lack of local talent and more), yet, it undoubtedly represents a significant development opportunity for rural areas’ economy and society and, if leveraged, will contribute to bridging the urban-rural development gap.

3.2 RURAL E-COMMERCE

Physical establishments traditionally play a crucial role for retail businesses, and constitute the essential basis for development. This includes the need for a shopfront, payments authorisation by banks and their branches and so on. Such necessary preconditions generally left businesses located in rural areas in disadvantageous positions compared to those in urban areas.

E-commerce seems to offer a solution to such location-specific issues, as the absence of physical establishments translates as location-neutral business environment, and it only requires two fundamental preconditions: internet access and supporting infrastructure. Due to its intrinsic broader availability, E-commerce appears to be one of the main paths to follow for rural areas to catch up with urban levels of both social and economic development.

After years of great disparity compared to urban areas, which was both the cause and the effect of a predominant urban-rural income gap, the E-commerce industry and digital services underwent a rapid development in rural regions as well. This was the result of a series of policies aiming at bridging the gap in ICTs accessibility. Even though E-commerce development levels in rural areas still remains low compared to urban areas, in the last decade, its reach has increasingly expanded to the country’s poorest provinces and to low-income rural households, leading to growing wealth and novel job opportunities.

Over the last five years, E-commerce rapidly developed in poverty-stricken counties; however, disparities between counties are still present. Online sales are highly concentrated in specific areas, while other areas underwent a decline in online sales amount (by 21% in 2014, 25% in 2016) and in the number of packages sent (13% in 2014 and 21% in 2016) between 2014 and 2016.¹³³

¹³³ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

E-commerce in poverty-stricken counties, and online sales in particular, is a highly concentrated phenomenon: between 2013 and 2016, the top 25% of poverty-stricken counties accounted for 90% of the online sales amount and packages, as well as for 70% of online stores.¹³⁴

Online purchases are concentrated spatially as well, but to a lesser extent. Counties with a considerably high volume of online sales are situated in the southwest, such as Wanzhou district (Chongqing), Chengguan district (Lhasa, Tibet), Enshi city (Hubei), Xixiu district (Anshun, Guizhou), Nankang district (Ganzhou, Jiangxi) and Qixingguan district (Bijie, Guizhou).¹³⁵

In 2019, online retail sales value of agriproducts was RMB 269.31 billion. The growth in retail sales of non-physical goods was high (66.4%)¹³⁶; however, regional differences are still present. Eastern region's E-commerce is still the national leader, while the northwest and north-east are lagging behind.

At present, the county-level E-commerce public service system has significantly improved and E-commerce poverty alleviation has expanded its reach. New business formats and business models are emerging and rural residents' consumption has grown and become more sophisticated.¹³⁷

Besides, the digital transformation of rural industries has accelerated and county E-commerce is booming, but it is still facing several significant challenges:

- The development of county-level E-commerce is unbalanced;
- Brand awareness of agricultural products is weak;
- The level of agricultural and rural digitalisation is low;
- Lack of E-commerce talent in counties.

Following the first development phase of county-level E-commerce, improvements made in terms of support policies, national standards, specialised training and education, and brand building led to a quality-focused development phase.

Statistics by O&O Consulting show that in 2019 the national county-level online retail sales reached RMB 3096.16 billion, with a year-on-year increase of 23.5%. The increase is unbalanced when looking at the type of goods and services: the year-on-year growth of material

¹³⁴ *Ibidem.*

¹³⁵ *Ibidem.*

¹³⁶ 农业农村部信息中心，中国国际电子商务中心研究院（2020）2020全国县城数字农业农村电子商务发展报告

¹³⁷ *Ibidem.*

goods online sales was 20.4%. On the other hand, year-on-year increase in sales of immaterial goods and services was 66.4%.¹³⁸

According to O&O monitoring data, the top five categories of goods in county-level E-commerce in 2019 were home furniture (RMB 680.85 billion), clothes (RMB 667.24 billion), household appliances (RMB 313.4 billion), food and beverage (RMB 268.33 billion) and baby products (RMB 210.86 billion), accounting for 22%, 21.6%, 10.1%, 8.7% and 6.8% respectively.

The top three categories with the highest growth in online sales value were travel and transportation, medical health and virtual merchandise, with a year-on-year growth of 552.4%, 252.1% and 121.9% respectively.¹³⁹

With the continuous growth in Information Technologies Penetration, came the accelerated integration of county-level typical industries with E-commerce. At the same time, non-physical products such as travel and transportation, medical health and more underwent a period of rapid development.

Regional differences are still evident from 2019 O&O monitoring data. Online sales value of the eastern region added up to RMB 1871.04 billion, accounting for 60.4% of national total. This was possible thanks to solid E-commerce infrastructure, efficient supporting systems, and a good business environment. As a result, counties located in the eastern province are national leaders in the E-commerce sector. The southern region follows the eastern one, accounting for 18.6% of online sales value. On the contrary, as already shown by extant research, as well as previous chapters, the north-eastern, central and western regions were lagging, with 1.8% of online retail sales value.¹⁴⁰

Nevertheless, by looking at data from the growth perspective, it is evident that the counties located in the central and western regions are experiencing a fast growth in county-level E-commerce, while the ones located in the northwest and north registered a rapid growth in online retail sales value as well, with a year-on-year development of 47.3% and 45.6% respectively.

The growth rate of online retail sales value in the southwest and northwest regions was much higher than in other regions, increasing by 66.7% and 62.7% compared to the previous year.

¹³⁸ *Ibidem.*

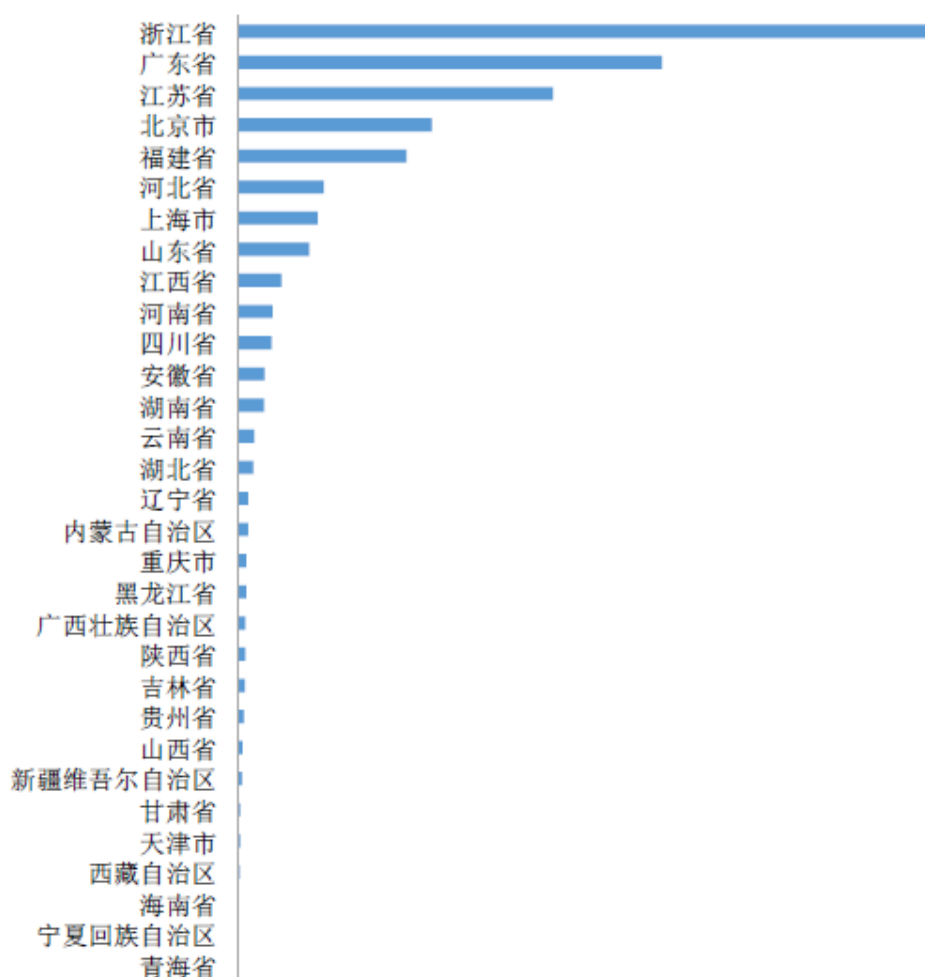
¹³⁹ *Ibidem.*

¹⁴⁰ *Ibidem.*

From a provincial perspective, due to the constraints of industrial structure, transportation and logistics, the development of the E-commerce industry in Hainan province, Ningxia Hui Autonomous region and Qinghai province lags behind, and their online retail sales value accounts for 0.13% of national total (figure 3.1).¹⁴¹

Figure 3.1 also confirms the overall situation of E-commerce development in China. As shown in the figure, other provinces lagging in online retail sales value are Tibet, Gansu, Xinjiang, Shanxi, Guizhou, Jilin and Shaanxi. Signs of improvement are shown by Sichuan and Yunnan provinces, yet, the disparity with national leaders (Zhejiang, Guangdong and Jiangsu provinces) is still extremely deep.

Figure 3.1 County-level online retail sales value for each province, 2019 (billion RMB)



Source: Ministry of Agriculture and Rural Affairs of the People's Republic of China Information Centre

¹⁴¹ *Ibidem.*

Nevertheless, new E-commerce models such as social E-commerce and content E-commerce have gained popularity in poverty-stricken counties as well and were able to give great contribution to the development of local economy.

O&O monitoring data shows that in 2019, the online retail sales value in the 832 poverty-stricken counties was RMB 107.61 billion and registered a year-on-year growth by 31.2%, showing great progress made by E-commerce Poverty Alleviation Programmes. Among them, a few examples are worth mentioning:

- Nankang district, Ganzhou city, in Jiangxi province, reached the highest online retail sales value out of all poverty-stricken counties, accounting for 15.5% of total poverty-stricken counties online sales value. Thanks to its furniture and clothes industry, the district managed to increase investments in E-commerce and combined the furniture industry with celebrity live-streaming to merge the traditional industry with E-commerce.
- Pingxiang county, Xingtai city, in Hebei province, accounts for 3.07% of poverty-stricken counties online retail sales value, relying on the sale of toys and musical instruments.
- Zhenping county, Nanyang city, in Henan province, accounts for 2.25% of poverty-stricken counties online retail sales value with the sale of jade stone.

Besides the afore mentioned counties, the 2020 National Counties Digital Agriculture and Rural E-commerce Development Report goes on ranking 17 more counties and provinces belonging to the top 20 impoverished counties based on online retail (figure 3.2).

Figure 3.2 Top 20 poverty-stricken counties by online retail sales percentage, 2019

Rank	Province	County	Percentage of online retail sales in poverty-stricken counties nationwide	Type of products sold
1	Jiangxi	Nankang district	15.50%	Clothes and furniture
2	Hebei	Pingxiang county	3.07%	Toys and musical instruments
3	Henan	Zhenping county	2.25%	Jade goods and ornaments
4	Tibet Autonomous Province	Duilongdeqing district	1.83%	Baijiu
5	Heilongjiang	Kedong county	1.83%	Infant milk powder
6	Hebei	Wuyi county	1.79%	Strongboxes

7	Anhui	Shucheng county	1.19%	Maternal and baby supplies
8	Sichuan	Gulin county	1.03%	Baijiu
9	Anhui	Dangshan county	1.01%	Fruit
10	Henan	Yucheng county	0.98%	Daily life goods
11	Jiangxi	Yudu county	0.94%	Hardware tools
12	Hebei	Wangdu county	0.87%	Leisure shoes
13	Jiangxi	Xiushui county	0.81%	Treadmills
14	Jiangxi	Xingguo county	0.79%	Gaming equipment
15	Henan	Gushi county	0.78%	Refrigerators
16	Henan	Fengqiu county	0.76%	Refrigerators
17	Yunnan	Wenshan county	0.75%	Pseudo-ginseng
18	Anhui	Lixin county	0.70%	Outdoor clothing
19	Chongqing	Xiushan Tujia and Miao Autonomous county	0.70%	Food seasoning
20	Hubei	Qichun county	0.70%	Healthcare products

Source: Ministry of Agriculture and Rural Affairs of the People's Republic of China Information Centre.

With further development of E-commerce, farmers cooperatives began to use it as a means to connect with the market, to broaden the sales channels of agricultural products and to help farmers increase their income. According to O&O monitoring data, the number of rural E-commerce cooperatives reached 2011 in 2019¹⁴². With 119 cooperatives, Jiangsu was the first province by rural cooperatives number, accounting for 21.4% of online retail sales.

The new “farmers + cooperative + E-commerce” development model on the one side fosters the circulation of resources in rural areas, realises resources integration and facilitates the transformation and upgrading of supply in the agricultural industry. On the other side, it improves the ability of farmers to connect production and marketing, and encourages county-level E-commerce to let farmers take advantage of profit potential.

The increasing penetration of E-commerce platforms gradually opened up upstream channels for impoverished areas' agriproducts, accelerated the establishment of supporting service systems, and fostered the development of local economy. The online sale of agriproducts plays an important role in rural E-commerce; however, selling agricultural products online can be challenging in terms of logistics, product standardisation and food sourcing: this issue is exacerbated in poverty-stricken counties. To this day, only a minor portion of agriproducts is sold online and a small minority of farmers engage in online sales.

¹⁴² *Ibidem*.

O&O monitoring data shows that in 2019 total retail sales value of agriproducts of 832 poverty-stricken counties was RMB 19.08 billion, a year-on-year growth of 23.9%.

From the perspective of online retail sales of agricultural products, four of the top five impoverished counties belong to the southwest region. Among them, Gulin County, in Luzhou (Sichuan), and Duilongdeqing county, in Lhasa (Tibet), ranked first and second in online retail sales of agricultural products, accounting for 5.5% and 4.7% respectively.

From the perspective of agricultural products categories, many are location specific. For Gulin County, in Luzhou City, the number one agricultural product is Baijiu, and the same goes for Duilongdeqing County, in Lhasa. Other most popular products include fruit, food seasoning, tea. The table in figure 3.3 shows the most popular products in online retail sales for the top 20 poverty stricken counties.

Figure 3.3 Top 20 online retail sales of agricultural products in impoverished counties, 2019

Rank	Province	County	Proportion in the online retail sales of agricultural products in poverty-stricken counties (%)	Most sold product
1	Sichuan	Gulin county	5.51%	Baijiu
2	Tibet Autonomous Region	Duilongdeqing district	4.68%	Baijiu
3	Anhui	Dangshan county	3.70%	Fruit
4	Yunnan	Menghai county	2.87%	Pu'er tea
5	Chongqing	Xiushan Miao and Tujia autonomous county	2.83%	Food seasoning
6	Hunan	Pingjiang county	2.81%	Dried meat
7	Yunnan	Wenshan county	2.75%	Pseudo-ginseng
8	Henan	Yucheng county	1.36%	Instant food
9	Anhui	Shucheng county	1.20%	Poultry and egg products
10	Jiangxi	Shicheng county	1.12%	Pig/beef/lamb meat
11	Hebei	Laishui county	1.09%	Miscellaneous grains
12	Shaanxi	Fuping county	1.05%	Snack food
13	Yunnan	Xuanwei county	1.04%	Fruit
14	Anhui	Taihu county	1.01%	Pig/beef/lamb meat
15	Henan	Zhaoyang district	1.00%	Fruit
16	Henan	Gushi county	0.97%	Milk
17	Hebei	Wanquan district	0.96%	Miscellaneous grains

18	Inner Mongolia Autonomous Region	Ogniud banner	0.95%	Dried meat
19	Inner Mongolia Autonomous Region	Horqin Left Rear banner	0.95%	Dried meat
20	Hunan	Luotian county	0.93%	Fruit

Source: Ministry of Agriculture and Rural Affairs of the People's Republic of China Information Centre.

Opportunities linked to E-commerce

Wide research in the field of E-commerce suggests that high numbers of people find employment in E-commerce. In 2018, 47 million people were employed in E-commerce.¹⁴³

As also pointed out by extant research, E-commerce in China can contribute to increasing employment both directly and indirectly, as it stimulates demand, enlarges existing industrial clusters and creates new ones, promotes online and offline integration, and diversifies preferences of consumption. According to the Ministry of Commerce, E-commerce has absorbed a discrete amount of surplus labour, returning migrants and veterans, and offers disabled people new opportunities for home-based work. Employment directly and indirectly driven by rural online stores reached more than 28 million in 2017.¹⁴⁴ Job opportunities in rural areas are not limited to the agricultural sector: studies on the topic have proven that E-commerce indirectly creates job positions such as tailors, carpenters, express delivery men, and photographers.

Farmers' E-commerce adoption, however, is not homogeneous and is affected by age, risk preference, remittance status and E-commerce training. Farmers' decision on using the Internet are driven by similar factors, including age, education, family labour, logistic service, and improved infrastructure.¹⁴⁵

The Suining County case

Several case studies confirm the opportunities that E-commerce can provide for rural development. An example is Suining County, Jiangsu province, which was one of the first counties to developed E-commerce in rural China. The first companies operating in the logistics sector

¹⁴³ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

¹⁴⁴ *Ibidem*.

¹⁴⁵ Ma, W.; Zhou, X. & Liu, M. (2019). What drives farmers' willingness to adopt e-commerce in rural china? The role of Internet use. *Agribusiness*.

settled in Dongfeng village (Suining County) in 2006, and since that year, the number of companies continuously grew. In 2014, there were 43 express delivery companies in the new E-commerce cluster. The development of E-commerce drew numerous providers of other services (including financial services, photography and photo processing, e-shop design, promotion, management consulting, legal services). At the same time, neighbouring villages were involved in the rapid development of E-commerce: with a growing number of county inhabitants engaged in E-commerce activities, the volume of e-shops and online sales doubled from 2014 to 2015 and again in 2016. E-commerce in the county provided employment to over 20,000 people in 2016, and by the end of 2017, Suining accounted for over 42,000 e-shops and RMB 21.6 trillion in online sales.

The development of E-commerce strongly affected local economy and gave great contribution to increasing GDP, household income and government revenue, as shown in figure 3.4.

Figure 3.4 Effects of E-commerce development in Suining County, Jiangsu

Indicator	2008	2015
GDP per capita	RMB 8,159	RMB 31,320
Annual per capita net income of rural households	RMB 5,452	RMB 10,686 (2013)
Local government revenue	RMB 522 million	RMB 4,368 million

Source: Worldbank, Alibaba Group. E-Commerce Development: Experience from China.

E-commerce as a means to bridge inequalities

The demographics of E-commerce merchants show peculiar characteristics. On the one side, traditional industries and sectors show that the majority of employees are adult males. On the other side, women and youth represent the biggest share of employment related to E-commerce.

Rural E-commerce has produced remarkable benefit to men and women who are still registered as rural residents in China. It is noteworthy that E-commerce seems to represent an opportunity to bridge inequalities in rural China: for example, research has linked E-commerce development with higher levels of women employment and empowerment.

Nowadays, rural men and women use digital platforms to expand their businesses, increase productivity and profitability, and improve their overall livelihood. E-commerce, in particular,

has increased employment opportunities for the “surplus” or “auxiliary” labour, such as rural women.¹⁴⁶ Many rural women have leveraged existing ICT resources to make strategic life choices and exercise their agency, despite the entrenched patriarchal power structure.

Extant literature on China’s rural E-commerce and Taobao Villages has linked ICT usage with community empowerment and social innovation; it has furthermore investigated on people’s engagement with E-commerce productive activities at the individual level for self-empowerment, social mobility and personal gratification.¹⁴⁷

For rural women residing in present-day Taobao villages, entering the traditionally man-dominated business environment was possible due to Taobao online business’ intrinsic properties: low start-up risks and costs; work flexibility; autonomy and control over time and labour.¹⁴⁸

Rural female E-commerce entrepreneurs are younger, more resourceful and independent compared to older generations female entrepreneurs operating in traditional industries. They are often the drivers in setting up family Taobao businesses and play an important role in encouraging other women to do the same. As a result, the previously man-dominated E-commerce businesses are now highly populated with young, dynamic and resourceful women who sell on the domestic market and aim at the international one.

Study on female, rural Taobao business owners by Haiqing Yu (2019) identifies a series of characteristics that can be found in all female entrepreneurs:

- The majority of them are in their mid to early 20s or early 30s;
- They are married into their husbands’ villages from outside;
- They have experience as migrant workers in cities and, as a result, they were able to bring experience, skills (including Mandarin Chinese to communicate via computer and the Internet) and knowledge of city life when returning to their husbands’ home villages to start their own Taobao stores.

Besides being the owners and in full charge of their Taobao stores, many women offer employment opportunities to other women as well by employing them as sub-contractors, tailors, manufacture workers.

¹⁴⁶ Yu, H. (2019) China’s E-commerce: Empowering Rural Women? https://www.researchgate.net/publication/330917453_China's_E-Commerce_Empowering_Rural_Women

¹⁴⁷ *Ibidem.*

¹⁴⁸ *Ibidem.*

Women engagement in E-commerce activities has proven to be an effective means to overcome female economic and social subordination in the traditionally patriarchal and patrilineal families and villages. Female E-commerce entrepreneurship has led to both improvement in economic status and family relationships, as well as a solution to social issues such as “*left-behind*” children. Nowadays, Taobao villages residents are proud to say there are no left-behinds, as owning Taobao stores gives rural women the possibility to commit to their children and does not preclude them from family life.

Even though political and cultural legitimisation is not directly linked to economic success, and village affairs are still dominated by men, rural women have made great progress in economic emancipation and are no longer passive-collaborators but active agents in establishing their own businesses, supported and encouraged by their husbands and local officers. There are many cases of female E-entrepreneurs who have been rewarded by local governments with titles (as role models), honours (media exposure and attendance at political or formal occasions) and CPP membership.¹⁴⁹

Further opportunities for rural E-commerce

The increasing penetration of new technologies and new industries in county areas has led to a rapid development of local economy, leading farmers to integrate into modern living standards. At the same time, consumption patterns are becoming Internet-centred and the county-level consumer market shows great vitality. The Government issued a series of policies in order to further fuel and optimise the county-level consumer market and stimulate the desire to buy in consumers.

With the continuous opening of county-level markets, a consumption upgrade trend - characterised by personalisation and quality - has gradually appeared in county areas. The consumption power of youth in county areas has increased, paralleled by new, more sophisticated taste trends: this translates as an outstanding demand for high-end brands operating in the beauty, clothing and home sectors. The willingness to use online shopping increased, and E-commerce companies are ushering in new growth opportunities.

Furthermore, cross-border E-commerce consumption upgrades have reached Chinese third and fourth tier cities as well as county areas. In 2018, 17 of the top 20 county level cities by import

¹⁴⁹ *Ibidem.*

amount had surpassed the average level of new first- and second-tier cities in per capita consumption worth.¹⁵⁰ The consumer market in third- to fifth-tier cities grew in the first half of 2019. At the end of 2018, the total economic volume in small and medium cities (including third- to fifth-tier cities and county-level cities), which account for 73.7% of the Country's total population, reached RMB 50,000 billion.¹⁵¹

The continuous increase in disposable income of county cities and tier 3 to 5 cities residents has stimulated their consumption demand. A general increase in incomes, poverty alleviation programmes, frequent tax cuts and lower living costs compared to first- and second-tier cities contribute to strengthening the consumption demand of rural and low-tier cities residents. With the income increase comes the increase in demand by low- and average-disposable income households. At the end of March 2019, Taobao TMall mobile users number reached 721 million, an increase of 104 million compared to the previous year, of which 77% are third- to fifth-tier cities and county-level cities residents.¹⁵²

Along with the expansion of Internet penetration rate in third- to fifth-tier cities and county-level cities, efficient and fast E-commerce and online retail are bound to reach a wider area and a higher number of consumers. E-commerce platforms and brand owners have great expansion opportunities in the growing market.

3.3 RURAL E-COMMERCE CHALLENGES

Digital Economy has vast potential for rural economic development. Digital countryside has been designated as a strategic path towards rural revitalisation and an important part of building a digital China. Data from the Ministry of Agriculture and Rural Affairs Information Centre shows that the overall level of digital agriculture and rural development in Chinese counties has already reached 33%,¹⁵³ and the integration of digital technologies in rural areas has accelerated.

However, the development of digital agriculture still faces many challenges:

- a. Compared to industries and services of urban areas, the digital development of rural areas is still lagging.

¹⁵⁰ <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/consumer-business/deloitte-cn-consumer-china-import-consumer-market-research-report-zh-191105.pdf>

¹⁵¹ *Ibidem*.

¹⁵² *Ibidem*.

¹⁵³ 农业农村部信息中心，中国国际电子商务中心研究院（2020）2020 全国县城数字农业农村电子商务发展报告。

- b.* The grass-roots level has inadequate knowledge about the construction of digital agriculture and rural areas, pays insufficient attention to the topic, and the degree of informatisation of rural dwellers is low.
- c.* The hardware infrastructure for informatization is still weak, and in light of the lack of various information resources in the countryside, the development and utilisation of agricultural information services and resources are still stagnant.
- d.* New technologies, such as Artificial Intelligence, Internet of Things, Big Data, Cloud Computing, Blockchain, and 5G, have not been popularised and applied yet. The utilisation rate of agricultural production data is low.

The digital transformation of agriculture and rural areas is still in its infancy, and this also reflects on rural E-commerce.

Besides the issues of infrastructural constraints and technology accessibility, which have been partially tackled, nowadays, one of the main challenges for county and rural E-commerce development is the shortage of talent.

There is still a large gap in county E-commerce talents, mainly due to the low level of industrialisation of rural areas. Service businesses linked to the E-commerce industrial chain, such as logistics and warehousing, network operations, design and photography, education and training, business incubation and other, have not yet been formed. As a result, it is not possible to attract migrant talent back to their hometowns to start new businesses.

Because of the backwards economic and cultural conditions in counties and rural areas, development opportunities are limited and talents are more willing to stay in urban areas seeking for development, thus exacerbating the drain brain. Furthermore, the training provided to E-commerce talents in counties and rural areas is inadequate and does not focus on practical development.

Other challenges are linked to the overall business environment:

- Low diversification of products without unique branding, which has led to fierce competition in prices among sellers.
- Low skills by E-commerce entrepreneurs, who are not able to create better web design or do searching engine optimisation.

- Lack of the ability to manage and retain a large amount of customers when businesses gain a wider reach.¹⁵⁴

As E-commerce continues to expand and evolve, so do the challenges it faces and the risks to which both sellers and buyers are exposed. The constant evolution of the nature of E-commerce must be paired up new institutional arrangements, from business registration to tax administration, and critical issues need to be tackled, such as how to regulate the platform providers to ensure a level playing field for comparable digital services, protect consumers, and ensure fairness between online and physical vendors.¹⁵⁵ Policies need to be oriented towards avoiding the displacement of offline businesses by E-commerce, as the former are the greatest contributors to local governments' revenues through taxes. Serving E-merchants needs to be harmonised with the support of cross-fertilisation with traditional businesses.

Tough competition between online businesses leads to low profit margins, which are a challenge for the survival of online shops, though it might produce efficiency benefits for the sector as a whole. Reduced information asymmetry – customers can instantly search for products and compare prices between different sellers at virtually zero cost – and fast delivery also represent a challenge for online businesses in terms of the optimum level of stock necessary to maximise profit and minimise risk.

Additional risks in which online sellers often incur are counterfeit products, as they reduce the value of products and the likelihood they will sell at all, as well as platform risks. On the one hand, opening an online shop has unparalleled convenience; on the other hand, however, it presents risks in terms of reliability of the platform as well as the terms and conditions set by the platform itself.

With the evolving challenges and risks, alongside with newly rising opportunities, a regulatory and policy framework is needed in order to foster the healthy development of the E-commerce ecosystem and provide a level playing field and protection to all the parties involved in online transactions: sellers, buyers and platform companies.

¹⁵⁴ The Bassiouni Group. (2018) “Rural Ecommerce in China: Opportunities and Challenges”. <https://bassiouni-group.com/rural-ecommerce-in-china-opportunities-and-challenges/#:~:text=Despite%20the%20opportunities%20for%20rural,competition%20in%20prices%20among%20sellers>.

¹⁵⁵ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

3.4 THE RISE OF TAOBAO VILLAGES

With increasing penetration of E-commerce in rural areas, “Taobao Villages” started to emerge. Taobao villages are a special phenomenon linked to E-commerce expansion in rural China. The term “Taobao villages” refers to “*areas where E-commerce is most developed or concentrated in rural areas, specifically, villages where at least 10 percent of households actively engage in E-commerce (or where there are at least 100 active E-shops) with annual online sales of at least 10 million yuan*”.¹⁵⁶

Taobao villages are the demonstration that E-commerce is not only relegated to urban areas with high income levels; with the right conditions, it can flourish in rural areas as well.

The number of Taobao villages underwent an exponential growth, starting from 2013 with merely 20 villages to 4,310 villages in 2018.¹⁵⁷ As the number of Taobao villages kept increasing, a new phenomenon rose: Taobao Towns, which refers to clusters of at least three Taobao Villages in the same town, township or street. As of 2018, in China there were 1,118 Taobao Towns.

Taobao Villages are a phenomenon that can be observed mainly in eastern China. Of the 4,310 Taobao Villages in 2019, 4,113 (95.4% of the total number of Taobao Villages) were located in the eastern region.¹⁵⁸ The table in figure 3.5 shows the concentration of Taobao Villages in China between 2009 and 2019. The figure shows that the provinces with the highest number of Taobao Villages are Zhejiang, Guangdong and Jiangsu, while, with a few exceptions, the presence of Taobao Villages in the rest of the country is nearly irrelevant, with Heilongjiang, Ningxia, Xinjiang and Yunnan with only one village each.

¹⁵⁶ Aliresearch, Nanjing University Space Planning Research Center, China Academy for Rural Development of Zhejiang University, Center for Information Study, China Academy of Social Sciences. (2019) “Digital Economy Revitalises Rural China. China Taobao Village Research Report (2009 ~ 2019)”. <http://www.aliresearch.com/en/Reports/Reportsdetails?articleCode=21855>

¹⁵⁷ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

¹⁵⁸ Aliresearch, Nanjing University Space Planning Research Center, China Academy for Rural Development of Zhejiang University, Center for Information Study, China Academy of Social Sciences. (2019) “Digital Economy Revitalises Rural China. China Taobao Village Research Report (2009 ~ 2019)”. <http://www.aliresearch.com/en/Reports/Reportsdetails?articleCode=21855>

Figure 3.5 The number of Taobao Villages in different provinces from 2014 to 2019

Province/Year	2009	2013	2014	2015	2016	2017	2018	2019
Zhejiang	1	6	62	280	506	779	1172	1573
Guangdong		2	54	157	262	411	614	798
Jiangsu	1	3	25	127	201	262	452	615
Shandong		4	13	63	108	243	367	450
Hebei	1	2	25	59	91	146	229	359
Fujian		2	28	71	107	187	233	318
Henan			1	4	13	34	50	75
Hubei			1	1	1	4	10	22
Jiangxi		1		3	4	8	12	19
Tianjin			1	3	5	9	11	14
Anhui					1	6	8	13
Beijing				1	1	3	11	11
Liaoning				1	4	7	9	11
Hunan				3	1	3	4	6
Sichuan			2	2	3	4	5	6
Jilin				1	1	3	4	4
Guangxi						1	1	3
Chongqing						1	3	3
Guizhou						1	1	2
Shanxi				1	1	2	2	2
Shaanxi						1	1	2
Xinjiang						1	1	1
Yunnan				2	1	1	1	1
Ningxia						1	1	1
Heilongjiang								1
Total	3	20	212	779	1311	2118	3202	4310

Source: AliResearch

Source: AliResearch.

In spite of a lower regional concentration, the number of Taobao Villages grew most quickly in the central regions. From 2014 to 2018, the number of Taobao Villages in the central region maintained a Compound Annual Growth Rate of 97%. In 2018, the central and western region had 156 villages, with Henan being the province with the highest number of Villages (75).¹⁵⁹

The northeast saw the rise of Taobao Villages starting in 2015, which increased from two in the first year to 13 in 2018.

The western region is the region with the lowest concentration of Taobao Villages. In 2019, there were 19 Villages in the whole region. Sichuan ranked first in the region in 2019 with five

¹⁵⁹ *Ibidem.*

Villages; the very first Taobao Villages Chongqing, Guangxi, Guizhou, Shaanxi, and Xinjiang emerged in 2017.

It is noteworthy that there was an increase in the number of Taobao Villages in poor counties as well. In 2019, more than 800 Taobao Villages were present in provincial-level impoverished counties; 63 Taobao Villages were located in national-level impoverished counties, compare to 45 in 2018.¹⁶⁰

The growth in the number of active online shops in Taobao Villages was sharp, from about 70,000 in 2014 to over 600,000 in 2018, a CAGR of 75%. Generally speaking, the number of active online shops in Taobao Village range between 100 and 300, with some exceptions that reach 1,000 or 10,000.

Total annual sales of online shops in Taobao Villages were RMB 700 billion in 2019, accounting for nearly 50% of China's rural online retail sales.¹⁶¹

The most often purchased products from Taobao Villages are household and personal goods, specifically, clothing, furniture and shoes were the top three items purchased. Other popular products include household applications, lamps, auto accessories, toys, hardware, luggage and leather goods and dinnerware.

Product types also show concentration patterns: Taobao Villages in coastal regions typically focus on labor-intensive manufactured goods, such as clothing, furniture, and shoes. Villages in the west are specialised in local products, such as matrimony wine in Ningxia, dried meat in Guizhou, and black bee honey in Xinjiang.¹⁶²

In order to overcome the afore mentioned product diversification problems, some Taobao Villages have made an effort to produce goods that combine unique characteristics and high quality. In doing so, they aim at creating their own brands to improve competitiveness.

An example of this trend can be observed in Xizhanggu village, Hebei province, where fashionable cashmeres appealing to young consumers are produced. Another example can be found in Daji town, where E-commerce retailers have their own design team that create clothes tailored to the market after conducting on-field surveys.¹⁶³

¹⁶⁰ *Ibidem.*

¹⁶¹ *Ibidem.*

¹⁶² World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

¹⁶³ *Ibidem.*

In some cases, product quality and, consequently, brand awareness are enhanced through the adoption of new technology and equipment. More often, agriproducts and specialty local handicrafts have become signature products in Taobao Villages. Some ethnic minority Taobao Villages use their cultural endowments to produce ethnic specialty products to sell online: for example, in Xinhua village, Dali, Yunnan, where many Bai live, 79% of households produce silver crafts that are typical of the ethnic minority. In doing so, the village managed to reach total sales of about RMB 3 billion in 2015, of which RMB 19 million was from online sales.¹⁶⁴

The rising of Taobao Villages was undoubtedly beneficial to local economy and to rural counties, but it did not come without new issues and risks. As rural E-commerce has a tendency to penetrate the economic and social aspects of villagers' lives, and thus to transform rural society to a great extent, the gradual dependency of rural E-commerce retailers and their households on a single listed IT conglomerate for economic and social benefits requires a great degree of caution. If rural economic activities become centred around network economy, Taobao could dominate the economic resources in Taobao Villages in the longer run and wield humongous power over them, thus overstepping rural dwellers' interests and taking advantage of Taobao Villages as an opportunity to maximise profits.¹⁶⁵

One of the main concerns linked to Taobao Villages regards the economic sustainability: studies conducted on Taobao Villages show that the rapid development of E-commerce activities in Taobao Villages led to the need for industrial upgrading, including recruiting talent from outside to improve the E-commerce ecology.¹⁶⁶ Besides, in some areas, road infrastructure is still inadequate and public utilities are still unreliable: this reduced the opportunities for Taobao Villages to flourish in less developed rural areas.

The rapid development of Taobao Village and overall rural E-commerce was supported by government policies and Alibaba itself. Further expansion in inland provinces may be hindered by infrastructural constraints, lack of talent, remoteness from traditional industrial hubs and low diversification. Nevertheless, they represent a great opportunity for the development of local economy, as well as a tool for social change and economical empowerment.

¹⁶⁴ *Ibidem*.

¹⁶⁵ Li, A. H. F. (2017) "E-commerce and Taobao Villages. A Promise for China's Rural Development?". China Perspectives. <http://journals.openedition.org/chinaperspectives/7423>

¹⁶⁶ *Ibidem*.

3.5 GOVERNMENT'S INVOLVEMENT IN E-COMMERCE DEVELOPMENT IN IMPOVERISHED AREAS

The Chinese Government and the Communist Party recognised the central role played by digital technologies in rural revitalisation in building a digital China. At the national level, policies related to the development of rural E-commerce can be traced back as far as 2001, with the State Council issuing the “Framework for the Technological Development of Agriculture (2001-2010)”, which emphasised the need to develop agricultural information technology.¹⁶⁷ The Framework was accompanied by the tenth Five-Year Plan (2001-05) issued by the Ministry of Agriculture. Consistently with the State Council’s framework, the plan emphasised the acceleration of the construction of rural economic information systems, the establishment of comprehensive information networks for agriculture and the further expansion and completion of information networks for the marketing of agricultural products.¹⁶⁸

Over the past five years, the importance of rural E-commerce has increasingly grown. In 2014, the expansion of E-commerce to rural areas was designated as a national priority to promote rural economic development, alleviate rural poverty and reduce rural-urban economic gap.

With the upgrading of technologies and the introduction of 4G in villages, according to the guidelines issued by the State Council jointly with the General Offices of the Communist Party of China Central Committee, 2025 will see a notable narrowing of the urban-digital gap, the rise of entrepreneurial and innovation centres in rural areas, and an intellectual rural logistics system.¹⁶⁹ Rural and agricultural modernisation is expected to be completely fulfilled by 2035, with urban and rural residents enjoying equal public services. These objectives will be reached through the construction of IT infrastructures in rural areas, and the upgrade of rural Internet facilities and information services.

The guidelines also emphasised the importance of improving Internet access in rural areas in poverty alleviation and called for enhanced information sharing to promote urban-rural integrated development.¹⁷⁰

The Chinese Government has issued a series of policies to support rural E-commerce development and expand employment opportunities, exploring the use of E-commerce as a tool for poverty alleviation and rural revitalisation.

¹⁶⁷ Tao Kong, S. (2019) “E-commerce development in rural China”. <https://www.jstor.org/stable/j.ctvp7d4j8.14>

¹⁶⁸ *Ibidem*.

¹⁶⁹ Mu, X. (2019) “China plans to boost rural development via digital technologies”. Xinhuanet. www.xinhua.com/english/2019-05/17/c_138064367.htm

¹⁷⁰ *Ibidem*.

E-commerce Poverty Alleviation Program

With the wider development of “Internet Plus”, E-commerce has become a powerful tool in China to fight against poverty. Through the improvement of Internet infrastructures and support to platforms construction in impoverished areas, as well as the integration of global resources and the strengthening of training provided to local talents, E-commerce poverty alleviation has boosted the overall development of rural areas in China.¹⁷¹

E-commerce Poverty Alleviation is a new poverty alleviation model. Through the usage of Internet technologies and reliance on the E-commerce business models, it aims at encouraging dwellers resident in impoverished areas to the sale of agriproducts, and to promote leisure agriculture and village tourism. The plan also aims at increasing the ability of poverty-stricken countries to lift from poverty by providing a series of services and information, technologies and funds, thus increasing impoverished areas residents’ income and bridging the urban-rural disparity.

By breaking geographical constraints, E-commerce was able to reduce the trade costs of agriproducts from impoverished areas, increase their market value and, at the same time, popularise products and brands in poor areas.

The main activities of E-commerce Poverty Alleviation include:

- Helping farmers residing in impoverished areas in production and sales. Through the integration of market agricultural supply and marketing information, impoverished farmers can autonomously determine their own production and sales behaviour based on market demand. This has positive effects on farmers income: it has been shown that online sales of agriproducts for low-income farmers are RMB 574.33 than those offline.¹⁷²
- Helping poor farmers reduce production and living costs. According to statistics, cooperatives reduce agricultural machinery operation costs, farming resources prices and land circulation costs. In total, the reduction in the costs of cultivating a *mu* (0.165 acres) was about RMB 200.¹⁷³
- Assist poverty-stricken areas realise “attention economy”. Through effective copywriting and hot marketing, E-commerce adds value to agriproducts, attracting the

¹⁷¹ 中共中央网络安全和信息化委员会办公室. (2020) 电商扶贫：农村脱贫攻坚中的中国智慧. http://www.cac.gov.cn/2020-07/09/c_1595852112180047.htm

¹⁷² 彭；安 (2019). 如何跨越电商扶贫的“数字鸿沟”.

¹⁷³ *Ibidem*.

attention of consumers and investors, thus providing a solution to the limitations in quality and resources that characterised rural market.¹⁷⁴

E-commerce poverty alleviation has injected new vitality in the overall rural development. Targeted poverty alleviation focuses on the combination of poverty alleviation with “aspiration” and “intelligence”, and has transformed from simply giving money and material to the combination of material poverty alleviation with technology and education. E-commerce poverty alleviation has mobilised the enthusiasm of poor households, stimulated endogenous motivation, cultivated millions of new farmers, attracted a large number of talents to return to their hometowns to start a new business and, overall, continuously injected new vitality into rural development.

China Rural E-commerce Demonstration Program

In 2014, the Ministry of Finance and Ministry of Commerce launched the Rural E-commerce Demonstration Program, with the goal of contributing to the reduction of rural poverty and modernising rural areas through the promotion of E-commerce. These objectives were to be accomplished by establishing and improving rural E-commerce public services, fostering rural E-commerce supply chain, promoting connectivity between agriculture and commerce, and enhancing training for E-commerce entrepreneurs.¹⁷⁵

The programme grew rapidly and, by 2018, it had supported 1,016 demonstration counties, of which 737 were poverty-stricken counties (89% of the total), including 137 counties with extreme poverty (41% of the total). The share of poverty-stricken counties among demonstration counties increased from 27% in 2014 to 45% in 2015 and 65% in 2016, while in 2017 and 2018, more than 90% were poverty-stricken counties, with the rest being underdeveloped.¹⁷⁶

The objective of the programme, as of 2018, is to make progress in online sales of rural products, to increase employment and income among poor households, and to grow online access to public services.¹⁷⁷ The original objective in 2014 was to promote E-commerce policies and systems in demonstration counties. In 2015, a new objective to promote

¹⁷⁴ *Ibidem*.

¹⁷⁵ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

¹⁷⁶ Luo, X. (2019) “E-commerce for poverty alleviation in rural China: from grassroots development to public-private partnerships”. East Asia & Pacific of the Rise. <https://blogs.worldbank.org/eastasiapacific/e-commerce-poverty-alleviation-rural-china-grassroots-development-public-private-partnerships>

¹⁷⁷ World Bank; Alibaba Group. (2019). E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group.

poverty alleviation was introduced. Two more objectives were added in 2016: to establish rural E-commerce public service systems and to promote online sales of agriproducts.

The programme had precise targets:

- At the beginning, the programme aimed at a 30% increase in trade volume of E-commerce in demonstration counties. This implied raising the share of total retail consumer goods sales, reducing costs linked to E-commerce logistics and modernising rural areas circulation.
- In 2017, the focus of the programme shifted from the county level to villages. At this stage, the programme targeted 50% coverage of E-commerce services in qualified registered poor villages. At the same time, additional goals were 20% growth of rural online retail sales and 30% growth in online sales of agriproducts. Furthermore, 3,000 people per year were to receive E-commerce related training.¹⁷⁸

Demonstration areas are designated on an annual basis by the Ministry of Finance, Ministry of Commerce, and State Council Leading Group Office of Poverty Alleviation and Development. Criteria for selection include: 1) economic development; 2) E-commerce basis; 3) regional balance of the provinces considered. The selection of demonstration counties has gradually shifted towards a focus on poorer areas. In 2014, each demonstration province was asked to choose seven or less demonstration counties, whereas in 2017 they were required to include in their selection poverty-stricken counties (which are defined at the national level) and underdeveloped counties. In 2018 criteria changed again and new demonstration counties were limited to poverty stricken and underdeveloped counties.¹⁷⁹

The programme activities include:

- a. *Online sales*: at least 50% of the programmes' funds (the total funding was RMB 3.9 billion in 2017) are devoted to supporting market connections for rural products; creating a diversified supply chain for rural E-commerce; strengthening the grading, packaging and marketing of agriproducts; accelerating the construction of processing and distribution infrastructures. In addition, the programme provides comprehensive service systems for rural products, such as standardisation, quality certification, brand cultivation and quality traceability, as well as the establishment of logistics and distribution systems to serve online sales at the county, township and village levels.

¹⁷⁸ *Ibidem.*

¹⁷⁹ *Ibidem.*

- b. *Public service systems*: less than 15% of funds supports the creation of E-commerce public service centres in counties and rural E-commerce service sites in villages, in addition to supporting other services such as authorised collection and payment, authorised purchase and sale, microfinance, training, poverty alleviation.
- c. *E-commerce training*: E-commerce training is provided to villagers from qualified poor households and is combined with support for rural innovation and entrepreneurship and poverty alleviation. At the same time, it aims at strengthening the skills linked to online product sales (packaging, design, promotion, marketing).
- d. *Logistics and distribution systems*: at least 30% of the programme's funds were used until 2017 to find a solution to the issues linked to logistical services, particularly at the "first kilometre" and "last kilometre". This activity involved the China Post, supply and marketing cooperatives, third-party logistics providers and local logistics providers.¹⁸⁰

By 2018, the programme had supported 1,016 demonstration counties, covering 737 poverty-stricken counties. By the end of 2016, the programme had created 120,000 jobs for poor households in impoverished areas: in Min County, Gansu Province, the growth of online sales of local traditional medicine products led to an increase in annual per capita income of 4,100 poor households by RMB 600¹⁸¹. Online sales of agriproducts in Liuhe County, Jilin Province, reached RMB 60 million, of which RMB 4 million was from 35 poor villages.¹⁸²

Opinions on accelerating development circulation and promoting commercial consumption

In order to stimulate the rural consumer market, in 2019 the State Council issued the "Opinions on accelerating development circulation and promoting commercial consumption".¹⁸³ The document states the need to promote the development of new business models and circulation models, to encourage the adoption of new IT such as cloud computing, big data, and mobile Internet. At the same time, it expresses the Government's will to make further progress in the improvement of infrastructure and channels.

In article six, the State Council affirms the need to accelerate the circulation of rural development: this will be done by reforming and improving rural circulation infrastructures and by

¹⁸⁰ *Ibidem*.

¹⁸¹ *Ibidem*.

¹⁸² China, The State Council Leading Group Office of Poverty Alleviation and. Development. (2018b). "Jilin: Unblocking the Poverty Alleviation Channel (吉林: 畅通脱贫攻坚血脉通道)". Jilin Daily, August 16. http://www.cpad.gov.cn/art/2018/8/16/art_5_87924.html

¹⁸³ http://www.gov.cn/zhengce/content/2019-08/27/content_5424989.htm. Document name translation by the author.

promoting the formation of a rural circulation service network centred on townships. The plan aims at 1) expanding rural E-commerce penetration, 2) optimising logistics services and Internet accessibility, 3) providing E-commerce training for local talents, 4) boosting the development level of rural E-commerce, 5) expanding rural consumption.

Other key focal points are improving and promoting touristic services in rural areas and encouraging specific regions to cultivate typically rural consumer markets such as leisure, tourism and sightseeing.

3.6 NEW E-COMMERCE BUSINESS MODELS: THE “PINDUODUO” CASE AND THE DEVELOPMENT OF NEW E-COMMERCE PLATFORMS IN IMPOVERISHED AREAS AND LOW-TIER CITIES

3.6.1 New E-commerce models

Social E-commerce has become a new starting point for counties economic development. At the same time, 2019 saw the birth of a new type of E-commerce based on live streaming. New E-business models and formats, such as live streaming of goods, micro-businesses, collective buying, and more, are booming in county areas. This has led to big changes in the rural E-business environment: with mobile phones becoming “*new agricultural tools*”, mobile and Internet traffic “*new rural capital*”, live streaming “*new farm work*”, rural E-commerce is gradually shifting from traditional E-business to new models of social E-commerce, driving the rapid development of counties economy.¹⁸⁴

1. *Social-commerce*

By definition, the term “social commerce” encompasses every activity of purchasing a product through the intermediary of a social media platform.¹⁸⁵ With Social Commerce, it is possible to buy the products directly from social networks with no need to go to another webpage.

At present, there are three categories of social-commerce platforms: content-sharing platforms, membership-based platforms, and team purchase platforms. They all share similar characteristics: they are online marketplaces that allow customers to look for product information and compare products, place orders, and also share their usage experience and recommendations.¹⁸⁶

¹⁸⁴ 农业农村部信息中心，中国国际电子商务中心研究院（2020）2020 全国县城数字农业农村电子商务发展报告。

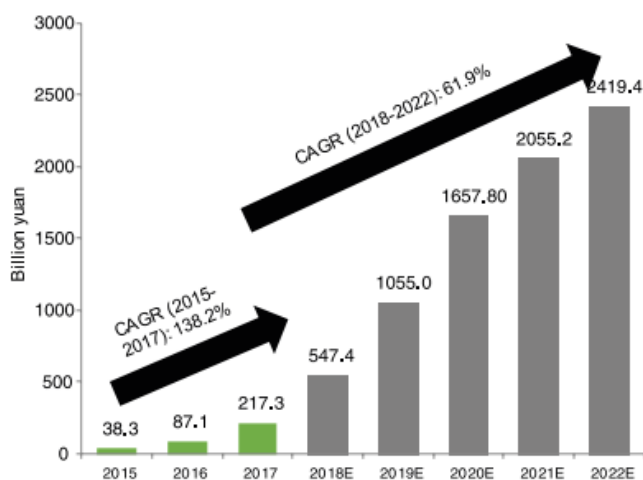
¹⁸⁵ The Xnode. (2016) “What is Social Commerce? How does it Work?” <http://www.thexnode.com/blog/what-do-you-know-about-social-commerce-in-china>

¹⁸⁶ Fung Business Intelligence. (2019) “Social Commerce: the new norm in China. The latest developments and implications for brands and retailers.” https://www.fbicgroup.com/sites/default/files/Social_commerce.pdf

In social-commerce, great emphasis is placed on user-generated content as a means to increase engagement and customer reach. Content that is highly relevant, straightforward, attractive yet easy to recall will be more likely to gain consumer engagement and boost brand affinity.

China’s social-commerce market grew at a CAGR of 138.2% from 2015 to 2017, and is expected to reach RMB 2,419.4 billion in 2022 (figure 3.5).¹⁸⁷

Figure 3.5 Market size of social-commerce in China, 2015 – 2022E



Source: iiMedia, compiled by Fung Business Intelligence

Source: Fung Business Intelligence.

2. Live-commerce

Live-streaming is a new immediate shopping experience where users engage with hosts marketing products in real time. Some hosts feature well-known luxury brands, but virtually anything can be purchased through live-streams. Live-stream shopping mixes entertainment with E-commerce. Viewers purchase products online from streamers who show off their latest finds in real-time videos. Hosts can give their fans discount coupons and flash deals in real time, while viewers can click to send their favourite stars virtual “gifts”, thus making the whole experience more interactive compared to traditional concepts like TV shopping.¹⁸⁸

Through new models such as “Internet celebrity live streaming” and “Field-to-field live streaming”, live streaming E-commerce allows to expand the reach of original rural products, to diversify consumers, to broaden the upstream channels for agricultural products and to simulate the development of counties economy.

¹⁸⁷ *Ibidem*.

¹⁸⁸ Toh, M. & Wang, S. (2020) “A Multibillion-dollar shopping obsession goes mainstream in China”. CNN Business. <https://edition.cnn.com/2020/09/06/business/china-livestream-shopping-spc-intl-hnk/index.html>

Live commerce, which combines live streaming with online sales, was born to fill the gap left by the lack of the social aspect of in-person shopping when shopping online.

Live streaming was able to raise the number of TMall International product online viewers from 8.55 million in 2018 to over 35 million in 2019¹⁸⁹; at the same time, people who purchased goods online grew from 445,000 in 2018 to 2.36 million in 2019. The payment amount showed explosive growth, with an increase from 61.59 million in 2018 to 470 million in 2019.¹⁹⁰ Among them, the growth in the beauty and healthcare sector was particularly significant.

O2O monitoring data reports that in 2019, Internet celebrity Wei Ya drove the online sale of agriculture products to RMB 490 million through live streaming, which means a year-on-year increase of 364 times.¹⁹¹

Li Ziqi is a blogger from Pingwu county, Mianyang, Sichuan, known on the Internet for her videos about rural life, food, and handicraft preparation videos in her rural hometown. In 2019, she used live content to attract traffic, and the online retail sales of her flagship store were RMB 220 million, showing a year-on-year increase of 429.8%.¹⁹²

Considering the potential of Live commerce to boost sales, Taobao plans to use live streaming to help rural dwellers. In 2018, Taobao drew over 400 million viewers to watch live streams featuring farmers and local government officials discussing challenges, delivering training on marketing techniques and helping to promote goods.¹⁹³ Now, the platform wants to expand the programme and intends to cooperate with over 1,000 farmers in low-income areas, located in 100 counties, in order to let them reach a monthly income of over RMB 10,000. The programme includes cooperation with local governments and celebrities to promote local interests.

The Taobao live streaming channel will reserve a daily two-hour slot for farmers dedicated videos, and proposes to work with other media outlets, such as China Central Television and Zhejiang TV, to produce professional live-streaming content about fresh produce and farms.

¹⁸⁹ 中国国际商会、德勤中国研究中心、阿里研究院。(2019) 中国进口消费市场研究报告。

<https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/consumer-business/deloitte-cn-consumer-china-import-consumer-market-research-report-zh-191105.pdf>

¹⁹⁰ *Ibidem*.

¹⁹¹ 农业农村部信息中心，中国国际电子商务中心研究院（2020）2020 全国县城数字农业农村电子商务发展报告。

¹⁹² *Ibidem*.

¹⁹³ Springwise.com. (2019) “Livestreaming platform expands training program for Chinese farmers”. <https://www.springwise.com/sustainability-innovation/agriculture-energy/taobao-marketplace-alibaba-help-farmers-china>

The goal of the programme is to stimulate farmers' autonomy in managing their own Live Commerce platforms and to boost business in rural, impoverished areas.

In 2019, the Ministry of Agriculture and Rural Affairs Information Centre and the interrelated Provincial Agricultural and Rural Information Centres, jointly with ByteDance, a Beijing-based Internet Technology company, jointly launched 110 Internet Poverty Alleviation innovation activities. They designated ten core demonstration counties, which then became 100, and focused on building brands and cultural tourism on typical rural products, including Teng Tea, produced in Laifeng County, Hubei; plums from Wushan district, Chongqing; apples from Yanyuan county, Sichuan; strawberries from Nujian county, Yunnan; apples from Li county, Gansu; qingke barley from Tibet; corn from Hebei; and others. Brand live streaming was viewed 30 million times, and new media talents trained nearly 10 thousand people. The innovative Internet Poverty Alleviation model contributed to the rise of agricultural brands, the increase in sales of agriproducts and the development of rural tourism.

In particular during the COVID-19 crisis, live streaming allowed platforms like Taobao, Pinduoduo and more to expand online sales channels and, thus, reduce the impact of the epidemic on rural dwellers' income.

In conclusion, live commerce has great potential to boost online sales in rural China. It is a means to educate consumers about the product, entertain them, build communities that push shoppers to interact with each other and increase sales by offering coupons and great deals.¹⁹⁴

3.6.2 An emerging market

The expansion of social-commerce is greatly due to the increasing involvement of Chinese consumers on social media platforms, as well as to the growth of peer-to-peer commerce and the rise of Key Opinion Leaders (KOLs), mainly Internet celebrities and influencers who share their product experience and tips, providing the foundation for the growth of KOL marketing.

The key of social-commerce success in China is the wider reach it managed to gain, not only in bigger cities but also in big parts of rural areas. This was possible thanks to the investments that some companies like Alibaba have made by creating low-cost smartphones, in order to increase Internet accessibility. Nowadays, low-tier cities are using more E-commerce platforms than high-tier cities.¹⁹⁵

¹⁹⁴ E-business institute. (2019, updated in September 2020) "Livestreaming: the latest trend in Ecommerce".

<https://ebusinessinstitute.com/livestreaming-the-latest-trend-in-ecommerce/#china-major>

¹⁹⁵ The Xnode. (2016) "What is Social Commerce? How does it Work?" <http://www.thexnode.com/blog/what-do-you-know-about-social-commerce-in-china>

Chinese consumer behaviour is shifting and consumption patterns are diversified. A segment of consumers in lower-tier cities continues spending money freely without worrying about cost or saving for the future. Other consumers, mainly located in expensive cities such as Beijing, Shanghai or Guangzhou, are adjusting their consumption patterns and their spending to the higher costs embedded in life in high-tier cities.¹⁹⁶

McKinsey's China Consumer Report 2020 identifies an important category of consumers who play an important role in keeping Chinese consumer spending grow: Young Free Spenders.¹⁹⁷

This category is composed of young digital natives, who reside mainly in tier 2, 3 or 4 cities, where living costs are lower. They are an appealing market segment as they have great spending power that derives from:

- Having disposable cash and being optimistic about the future, with little hesitation when it comes to spending money.
- Having more time on their hands compared to youth in larger metropolises. As a result, they have free time to eat out, follow trends and purchase products that will enhance their lifestyle and social status.
- The belief that with higher costs comes higher quality: they are not reluctant to spend money on more expensive products without concerning about saving for the future.

This market segment constitutes 25% of the population, but accounts for 60% of total spending growth (2018 over 2017).¹⁹⁸

Furthermore, in recent years, consumers in lower tier cities such as Mianyang, Yancheng and Zigong have gained important. The numbers of middle and upper-middle class consumers in smaller, tier 3 and 4 cities have grown rapidly.

The number of households with annual disposable income ranging from RMB 140,000 to RMB 300,000 in tier 3 and 4 cities increase at 38% CAGR from 2010 to 2018. These households account for over 34% of tier 3 and 4 cities population.

¹⁹⁶ Ho, J.; Poh, F.; Zhou, J. & Zipser, D. (December 2019). "China consumer report 2020". McKinsey&Company. <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/China/China%20consumer%20report%202020%20The%20many%20faces%20of%20the%20Chinese%20consumer/China-consumer-report-2020-vF.pdf>

¹⁹⁷ *Ibidem.*

¹⁹⁸ *Ibidem.*

The increased spending of Young Free Spenders in lower tier cities has partially being encouraged by E-commerce platforms such as Pinduoduo, which contributed to expanding the availability of branded products in such cities. Consumers account for anywhere between 10 and 30% of a category's sales on such platforms.¹⁹⁹

3.6.3 Pinduoduo: an unparalleled experience

With the strengthening of national support policies and the increase of Internet penetration rate in rural areas, E-commerce channels started falling into rural areas at a faster pace. Platforms like Alibaba, Jindong (JD), Pinduoduo and more have focused on county-level rural areas, developing a county-level E-commerce market while fostering overall development of agricultural and rural areas. In particular, Pinduoduo was able to fully leverage the potential of the growing marketing in lower-tier cities and in counties and rural areas to increase profit margin and outstand in the market.

Founded in 2015, Pinduoduo has become the fastest growing tech-company in the world. The founder, Colin Huang, had a vision of combining both the E-commerce and social/gaming aspect in his new platform. Pinduoduo's GMV surpassed RMB 100 billion in 2017²⁰⁰. In Q1 2020, Pinduoduo claimed over 600 million active buyers, up 42% compared to March 2019.²⁰¹ Its GMV reached RMB 1,157.2, a 108% year-on-year increase from RMB 557.4 billion in March 2019. The platform's total revenues were RMB 6,541.1 million, showing a 44% increase from RMB 4,545.2 million in Q1 2019, mainly due to an increase in revenues from online marketing services (RMB 5,492.3 million compared to RMB 3,948.4 million in Q1 2019, a 39% increase).²⁰²

A significant turning point for the company occurred in Q3 2017, when the weekly active rate, penetration rate and open rate of the Pinduoduo app all surpassed those of JD.

The key to Pinduoduo's success was integrating social components into the traditional online shopping process, described by the company as the "team purchase" model.²⁰³ Users have the possibility to share product information on social networks such as Wechat or QQ. In doing so, they can create shopping teams with their contacts to get lower prices for their purchases. Such

¹⁹⁹ *Ibidem*.

²⁰⁰ Lee, E. (2018) "The incredible rise of Pinduoduo, China's newest force in E-commerce". TechCrunch. <https://techcrunch.com/2018/07/26/the-incredible-rise-of-pinduoduo/>

²⁰¹ China Internet Watch. (2020) "Pinduoduo in Q1 2020; 600 million active buyers, up 42%." <https://www.chinainternetwatch.com/30619/pinduoduo-q1-2020/>

²⁰² *Ibidem*.

²⁰³ Lee, E. (2018) "The incredible rise of Pinduoduo, China's newest force in E-commerce". TechCrunch. <https://techcrunch.com/2018/07/26/the-incredible-rise-of-pinduoduo/>

mechanism maintains users' motivation high and keeps them hooked for a more dynamic and interactive shopping experience. Through this method, coupled with other incentives, including cash, coupon, lottery and free products, Pinduoduo manages to acquire users at a very low cost.

Pinduoduo was able to outstand in the market thanks to the innovative online shopping experience it proposed: it tried to mimic the offline shopping experience online by building communities through their team purchase models, driving engagement via interactive games and rewards, and offering personalised experiences and value via recommendations.²⁰⁴ Social shopping is essential for product categories for which consumers seek feedback or recommendation from friends: Pinduoduo was one of the first companies to successfully create a social shopping experience online, and has accelerated the transition of commerce from offline to online in China.

Another attractive feature of Pinduoduo are the extremely low prices of products. The discount a user can get is generally up to 90% on virtually any item. The most sold products are daily items at exceptionally low prices.

The company's bulk-selling model translates as big orders for the sellers and results in more margin for prices reduction. This is facilitated by the platform's app itself, as it is similar to a news feed and gives more exposure to a single product, thus easily creating viral items.

Team purchasing works as follows: for each item, the seller determines two prices – one for individual purchase and one for team purchase. If the user chooses to team-purchase that product, they can either initiate a team purchase, or join an existing team purchase. The user can encourage their contacts to join their purchase team or passively wait for other Pinduoduo users to join the purchase. A team needs to be formed within 24 hours to have the order confirmed. Once a team is formed, the purchase is confirmed and the product is shipped within 48 hours.

Pinduoduo's C2B model allows it to ship directly from manufacturers, thus eliminating layers of distribution. This reduces prices for buyers and raises the profit margin for manufacturers. This approach is particularly effective for the sales of perishable agricultural and fresh products, where it is essential to rapidly match demand and supply.

Lesser-known brands were chosen over famous brands to erase any premium coming from branding. Furthermore, users sharing products information on social media leads to a reduction in advertising and marketing costs. Through social sharing, buyers send the product information

²⁰⁴ Hariharan, A. & Dardenne, N. (2020) "Pinduoduo and the Rise of Social E-Commerce". <https://www.ycombinator.com/library/2z-pinduoduo-and-the-rise-of-social-e-commerce>

to friends and groups that belong to the same target market, increasing the likelihood of the product to be purchased by more people. This kind of viral marketing is an effective way to raise brand awareness for lesser-known brands on the platform.

To maximise the effects of group buying and getting discounts on necessary goods, Pinduoduo launched in the fruits and vegetables category. This was strategic because, on the one hand, competition was limited as competitors focused on non-perishable items; on the other hand, fruits and vegetables are lower order value, high frequency goods, which implies that users had a reason to use Pinduoduo regularly for their purchases.²⁰⁵

When potential buyers saw a great deal, they would forward it to their contacts via WeChat to create a team made up of more than ten buyers to purchase the product. In return, the group starter would get the product for free as they helped Pinduoduo acquire ten incremental users. Thanks to such dynamics, the platform managed to grow its user base very quickly. One month after the application launch, Pinduoduo had over 10 million customers. Four years later, it had grown to 585 million active buyers.

Daily check-in is an additional distinguishing feature of Pinduoduo that encourages users to log-in daily by rewarding them with points every time they check-in. Each time the user checks-in, they are given a small amount of money or credit, which accumulate over many months. To cash out in the form of a no minimum spend voucher, the user has to reach a certain minimum value.

Besides low prices and social features, spotting the rise user profile is the third crucial factor contributing to Pinduoduo's rise. Pinduoduo started targeting users that had been excluded from the dynamics of E-commerce by other giants such as Taobao or JD: that is, a gigantic portion of the Chinese population distributed in third- or lower-tier cities, mostly senior citizens.

Leveraging the rural market

Data shows that around 65% of Pinduoduo's total users are third- or lower-tier cities residents (22% users reside in third-tier cities, 24% in fourth-tier cities, and 11% in fifth- or lower-tier cities).²⁰⁶ In addition, women account for 70% of the total user base. They are in charge of

²⁰⁵ Hariharan, A. & Dardenne, N. (2020) "Pinduoduo and the Rise of Social E-Commerce". <https://www.ycombinator.com/library/2z-pinduoduo-and-the-rise-of-social-e-commerce>

²⁰⁶ Lee, E. (2018) "The incredible rise of Pinduoduo, China's newest force in E-commerce". TechCrunch. <https://techcrunch.com/2018/07/26/the-incredible-rise-of-pinduoduo/>

family purchases and are more price sensitive, which guarantees more active sharing and purchases.

Thanks to its innovative business model, Pinduoduo was able to penetrate deeply into mainly agricultural areas and the poverty-stricken areas of the “three districts and three regions” (which includes the Tibet Autonomous Region, the Tibetan ethnic areas in Sichuan, Yunnan, Gansu and Qinghai Provinces, Liangshan Prefecture of Sichuan province, Linxia Prefecture of Gansu province, and Nujiang Prefecture of Yunnan province, as well as the Hotan region, the Aksu region, the Kashgar region and the Kizilsu Kirzig Autonomous Prefecture located in southern Xinjiang²⁰⁷). The platform helped farmers catch up with the fast channels of E-commerce, boosted upstream services for agricultural products, and opened up the county-level E-commerce market.

Through the “Duo Duo Farm” model, Pinduoduo aims at reshaping the agricultural industry chain, improving the connection between the “first mile” - the farmer - and the “last mile” - the consumer, keeping the interests of farmers as the core while innovating poverty alleviation and agricultural assistance models.²⁰⁸

“Duo Duo Farm” is a programme issued by Pinduoduo in early 2019. Its goal is to provide necessary skill sets for farmers to sell directly on Pinduoduo without depending on the intermediaries of the traditional supply chain.

To assist farmers in selling directly on Pinduoduo, the Duo Duo farm programme launched Duo Duo University, which is a programme in rural Yunnan that provides training sessions to equip farmers with necessary skills to venture into online sales, such as understanding of E-commerce, finance, business operations and online marketing. Pinduoduo provides advice on how to receive capital support, as well as advice on in-app marketing resources and farming suggestions derived from its AI-driven capabilities.²⁰⁹ Such farming suggestions include predicted purchase patterns for fruits on Pinduoduo and delivery schedule: as more information is available, farmers can plan their planting schedule more efficiently and become E-tailers on Pinduoduo. At the

²⁰⁷ Baike Baidu.

<https://baike.baidu.com/item/%E4%B8%89%E5%8C%BA%E4%B8%89%E5%B7%9E/22451531>

²⁰⁸ 农业农村部信息中心，中国国际电子商务中心研究院（2020）2020 全国县城数字农业农村电子商务发展报告.

²⁰⁹ Pinduoduo’s AI-driven Duo Duo Farm empowers farmers, helping to alleviate poverty in rural areas. (2019) <https://investor.pinduoduo.com/corporate-blog/pinduoduos-ai-driven-duo-duo-farm-empowers-farmers-helping/>

same time, they can form cooperatives with neighbouring farmers to ensure more control over pricing and earn more from their harvest.²¹⁰

Duo Duo Farm is also contributing to attracting young talent back to rural areas. With the growing demand for fresh produce from rural communities, more jobs are created in farming, delivering and E-commerce store operations. If job opportunities in rural areas equal those in urban areas in terms of attractiveness and income, younger generations are able to return home to make a living. These people are significant resources for rural communities as they bring IT skills and E-commerce knowledge from urban areas, which leads to an increase in household income and, thus, contributes to raising the number of merchants from rural areas.²¹¹ These earning opportunities have triggered progress in helping to alleviate poverty in rural areas.

In the next five years, Pinduoduo aims at setting up 1,000 farms in eight provinces and autonomous regions, including Yunnan, Guizhou, Gansu, Tibet, Qinghai, Xinjiang, Hainan and Ningxia.²¹²

Baoshan Duo Duo Farm

One of the successful cases of the Duo Duo Farm project is Baoshan, a prefecture-level city in western Yunnan province. The city has a decade history of coffee cultivation, however, due to the low efficiency of local coffee cultivation, the lack of processing technology, the lack of marketing capabilities, and the lack of brand awareness, it has been difficult to guarantee the income of local farmers.

In the traditional coffee industry chain, from coffee bean planting to the final consumer, there are five major links: 1) the farmer planting; 2) local raw material dealers; 3) local wholesalers; 4) consumer wholesalers; 5) terminal retailers.²¹³ In this chain, farmers are the link with the lowest profit.

In 2019, Pinduoduo provided assistance to the Baoshan “coffee industry”, connecting 792 poor growers in the two poverty-stricken villages of Nankang and Conggang to the online distribution system operated by Pinduoduo. At the same time, it invested a significant amount of funds and resources in cooperation with the South Subtropical Crops Research Institute (SSCRI) of the Yunnan Academy of Tropical Agricultural Studies to select the coffee quality that best

²¹⁰ *Ibidem.*

²¹¹ *Ibidem.*

²¹² He, X. (2020) 多多农园，拼多多的一站式产业助农新路径.
<https://new.qq.com/omn/20200427/20200427A0SBWP00.html>

²¹³ *Ibidem.*

suiting local climate and conditions, as well as to develop standardised planting demonstration bases. The plan was to create a modern agricultural industrial chain integrating production, marketing, research and processing locally.

After one year of investigation, the Pinduoduo Agricultural Products team formulated a three-step strategy of earnings guidance, higher dimensional breakthroughs (in this case, exquisite planting) and brand success to solve the issues linked to the local coffee industry.

Six Pinduoduo merchants purchased over 42 tons of coffee beans from coffee bean growers in Conggang and Nankang villages. The merchants paid over RMB 407,600 for the yield.²¹⁴

Nujiang citrus Duo Duo Farm

Pinduoduo worked to introduce in Nujiang, Yunnan, mandarin orange and citron varieties that are suited to the high-altitude valley setting of Nujiang, deploying Israeli drip irrigation technology in the area for the first time and fertiliser inputs. In the village, 498 farmers became cooperative members.

Agronomic experts identified a variety of fruits suitable to the high-altitude climate. Such variety bears fruit between January and May, which is the “off-peak” season for citrus. Experts also demonstrated the correct way to plant the citrus and imparted better understanding of crop lifecycle and maintenance needs to maximise yield.

The orange trees grown under this pilot use 15% less fertiliser, 30% less labour and are expected to increase earning by RMB 800-1,500 per *mu* (0.165 acre).

Yunnan Duo Duo Farm project contributed greatly to local rural economy development:

- 32 million out of 80 million orders are agricultural produce (over 40%).
- Orders from national-level poverty-stricken counties located in Yunnan exceeded 8.4 million.
- Sales in poverty-stricken counties are c.RMB 170 million.
- In 2019, agricultural produce sales exceeded RMB 136 billion (year-on-year increase of 109%).
- For the first ten months of 2019, Yunnan agricultural produce orders have increased by 174% YoY.

²¹⁴ Duo Duo Farms connects local coffee growers to more than 418 million consumers. (2019) <https://investor.pinduoduo.com/corporate-blog/duo-duo-farms-connects-local-coffee-growers-more-418-million/>

The “Internet + Agriculture” initiative, that also includes Duo Duo Farm, was introduced by Pinduoduo in 2015, aiming at facilitating direct sales between small farmers and consumers. The “Internet + Agriculture” business model is based on recommendation and aggregation and works as follows: 1) making recommendations to the relevant consumers with attractive pricing and produce; 2) aggregating demand across different dates and varieties of fresh produce; 3) generating large volumes of orders for farmers; 4) local farmers ship directly to consumers. This results in higher supply chain efficiency, fresher and safer products at lower prices, and higher income and better production planning for farmers.

Thanks to the launch of programmes in the agricultural field, Pinduoduo has now become the largest online agriculture platform in China. In FY2019, agriculture GMV was RMB 136 billion, with a year-on-year growth of 109%. Active buyers were 240 million, 174% year-on-year growth, and active merchants were 586,000 (142% YoY growth). The sales of agriproducts in 2019 show exceptional results:

- Over 150% year-on-year growth for vegetable GMV and order volume.
- c.400% GMV year-on-year growth of rice, flour, grain and dry goods.
- Over 370% meat GMV and order volume year-on-year growth.
- 47% agriculture stock-keeping unit year-on-year growth.²¹⁵

Pinduoduo has undoubtedly given great contribution to poverty alleviation through its innovative Duo Duo Farm model. Innovation is pursued in several aspects: brand innovation (aiming at poverty-stricken households to create the innovative poverty-alleviating model); cooperative innovation (cross-sector cooperation for poverty alleviation); model innovation (team-purchase model to fully integrate production and sales); trading innovation (support the creation of *Pin* brands in agriculture); product innovation (alleviate poverty through multiple channels, increasing savings); perception innovation (combining anti-poverty charity efforts with E-commerce shopping festivals to mainstream helping the rural poor).

Thanks to the Duo Duo plan, over 12 million farmers were connected, RMB 15.9 billion market resources were created, RMB 2.9 billion cash subsidies were erogated and nine poverty alleviation projects were launched.²¹⁶

²¹⁵ Company internal data. https://olc.worldbank.org/system/files/PDD%20Webinar_WB_May%206%202020%20Final.pdf

²¹⁶ https://olc.worldbank.org/system/files/PDD%20Webinar_WB_May%206%202020%20Final.pdf

This new model of poverty alleviation and rural vitalisation is based on transforming impoverished farmers into new agriculture merchants and has three fundamental goals: shortening the agriculture supply chain, seamlessly connecting demand and supply through distributed AI and product flow, and providing resources with support and comprehensive merchant services.

CONCLUSIONS

The goal of the present dissertation was to provide an analysis on the urban-rural Digital Divide in China and on the E-commerce development state in Chinese rural areas, in order to investigate on the potential benefits to which further E-commerce development would lead in impoverished areas.

E-commerce gained a foothold in China starting in the late 90s, after the introduction of the Internet in the country. In the following years, the industry underwent numerous changes: the first platforms were mainly B2B or B2C and were active exclusively in urban areas. As shown in chapter 1, the rapid growth of E-commerce in China was due to two different sources: on the one hand, users quickly familiarised with the dynamics of online shopping and online transactions (in particular, digital payments). In this process, the growth of mobile penetration was crucial to expand the reach of E-commerce. On the other hand, support by the Government and the private sector in terms of improved infrastructures and logistics and related services was a determining factor for the consolidation of the industry as a significant part of Chinese economy.

Chapter 2 showed that decades of an urban-oriented policies framework in China resulted in a deep socio-economic disparity between urban and rural areas. The income gap between urban and rural population has exacerbated the Digital Divide between rural and urban China caused by underdeveloped or absent infrastructures, lack of IT talents in rural regions, distrust in technology and lack of knowledge on the topic. Finally, the chapter referenced the novel *Connectivity Dividend Difference* idea, where the accessibility gap issue shifts towards a new focus, that is the difference in the outcomes of diverse usages of ICTs due to education, knowledge, capabilities, external environment differences and more.

The diversified situation in terms of ICTs usage and accessibility had an inevitable impact on the development of E-commerce: on the one side, the industry underwent an unprecedented development in the whole country, with 710.23 million online shoppers as of March 2020 and a GMV of RMB 34.21 trillion in 2019²¹⁷. On the other side, these numbers reflect an urban-biased situation: rural Internet users constitute a mere 28.2% of total Chinese netizens, access to ICTs in rural areas is still limited and development opportunities face several constraints. In particular, impoverished provinces like Gansu, Yunnan, Guizhou, and Tibet are still lagging in terms of both ICTs accessibility and E-commerce development.

²¹⁷ Statista.com (2020) <https://www.statista.com/statistics/1129543/china-e-commerce-market-gross-merchandise-volume/>

Nevertheless, E-commerce holds great potential to stimulate rural economy, as already proven by the experience of Taobao Villages, presented in chapter 3. The phenomenon was able to speed up the economic development of over four thousand rural villages and exemplifies the usage of E-commerce as a tool to foster rural revitalisation and social mobility. Taobao Villages have been linked with higher income levels and with the empowerment of minorities that face limitations in the traditional business environment: women and youth. This phenomenon has stimulated the return of migrant talent to their home villages, thus causing a spill over effect regarding technology know-how and knowledge, and contributing to local development. Taobao Villages, however, are a highly spatially concentrated sensation that mainly embraces eastern provinces, which, traditionally, are also the ones with the highest levels of wealth and development. The number of Taobao Villages in inland, western provinces is still limited and their expansion is much slower.

This obstacle seems to be overcome by new business models and poverty alleviation programmes. The latter include several programmes by the Government that aim at boosting the development of E-commerce in national designated poverty-stricken counties (and include *E-commerce Poverty Alleviation Program*, *China Rural E-commerce Demonstration Program*, *Opinions on accelerating development circulation and promoting commercial consumption*). The results of such programmes are tangible and their effectiveness encourages a wider usage of E-commerce as a tool for poverty alleviation. Chapter 3 explored the extent to which they contributed to increasing farmers' income and reducing farming costs, establishing improved infrastructures and logistic services, educating rural population on the potential of E-commerce to boost agriproducts sales. Some counties, such as Nankang County (Jiangxi), Pingxiang County (Hebei) and Zhenping County (Henan) were able to establish a flourishing E-commerce industry based on regional specific products (clothes and furniture, toys, and jade jewels). Others, including Gulin County (Sichuan), Duilongdeqing District (Tibet) and Dengshan County (Yunnan), boosted local economy through online sales of specialty agriproducts.

The third chapter studied the rise of new E-commerce models – live-commerce and social-commerce – thanks to which new platforms were able to make a reputation for themselves as new E-commerce leaders in rural areas as well. In order to have practical evidence of the potential of E-commerce in rural China for both companies and local population, the last section of the chapter analysed the Pinduoduo case study: the platform was able to gain a major foothold in rural areas and third- or lower-tier cities thanks to great deals, team purchasing and logistic facilitation. By being a first mover in the field of agriproducts online sales, Pinduoduo has

become the major platform for the sale and purchase of agricultural products, overthrowing other E-commerce giants such as Alibaba. Furthermore, the platform leveraged the unexplored market of third- or lower-tier cities, which has become increasingly attractive thanks to a combination of two elements: first, these cities saw the rise of a new generation of citizens that are willing to spend without worrying about saving for the future, as a consequence of an overall increase in income and living standards. Second, this combines with the lower living costs of lower-tier cities, which raises the disposable income of households and free spenders.

As referenced in the chapter, through the *Duo Duo Farm* project Pinduoduo aims at backing the development of poverty-stricken counties' economy. This is done by assisting farmers in selling directly on Pinduoduo, educating them on online resources, providing them with farming suggestions on plating schedules and stock quantity, collaborating with scientific institutions to help local communities select the best products suitable for local climate conditions, investing in creating job opportunities to attract migrant talent back to their home villages. A key link in the process of fostering local economy is delayering the logistic network: Pinduoduo gave farmers the possibility to sell directly their own products and ship them by themselves, without relying on third-party logistic providers. This allowed to reduce costs for farmers and prices for buyers, maximising the profit margin.

In conclusion, E-commerce has proven to hold significant opportunities for the development of rural areas. It can be a means to empower minorities – thus leading to social changes and increased social mobility; to boost local economy; to lift rural dwellers from poverty and provide them with the necessary tools to engage in modern digital economy. Such results can only be achieved after permanently bridging the Digital Divide and the overall urban-rural gap: this implies levelling technology infrastructure, logistic networks, education systems and the job market to finally match the standards of urban areas. Only once the accessibility issue is enduringly resolved, and the *Connectivity Dividend Difference* levels are significantly lower, E-commerce will be able to gain full potential in rural China and replicate in impoverished areas the benefits to which it led in eastern, coastal provinces. Companies should take advantage of the unexplored market for a dual purpose: on the one hand, in doing so, it is possible to leverage an emerging market with significant profit opportunities. On the other hand, it allows to foster development and lift from poverty counties and provinces, resulting in positive consequences for the overall economy of the country.

REFERENCES

- Gao, Y.; Zang, L. & Sun, J. (2018). Does Computer Penetration Increase Farmers' Income? An Empirical Study from China. *Telecommunications Policy*, 42 (5), 345-360. 26/03/2020.
- International Trade Centre (2018). What Sells in E-Commerce: New Evidence from Asian LDCs. ITC, Geneva. 24/04/2020.
- Jan A.G.M. Van Dijk. (2019). The Digital Divide. Cambridge: Polity Press. 20/04/2020.
- Li, Yi. (2020). Internet Development and Structural Transformations: Evidence from China. *Journal of Applied Finance and Banking*. Vol. 10, No. 1, 153-172. 03/05/2020.
- Ma, W.; Zhou, X. & Liu, M. (2019). What drives farmers' willingness to adopt e-commerce in rural china? The role of Internet use. *Agribusiness*, 2020;36:159-163. 27/04/2020.
- OECD (2001-01-01). "Understanding the Digital Divide", OECD. *Digital Economy Papers*, No. 49. OECD Publishing, Paris. 09/03/2020.
- Qiang, C.Z.-W.; Bhavnani, A.; Hanna, N.K.; Kimura, K. & Sudan, R. (2009). Rural Informatization in China. Washington, DC: World Bank. 03/06/2020.
- Qiu, Z.; Zhang, S. & Liu, S. (2019). From the Digital Divide to the Connectivity Dividend Difference: A Connectivity Capital Perspective. *Social Sciences in China*, 40:1, 63-81, DOI: 10.1080/02529203.2019.1556475. 21/02/2020.
- Tang, W.; Zhu, J. (2020). Informality and rural industry: Rethinking the impacts of E-Commerce on rural development in China. *Journal of Rural Studies*. DOI: 10.1016/j.jrurstud.2020.02.010. 17/04/2020.
- Tao Yang, D., Fang, C. (2000). The Political Economy of China's Rural-Urban Divide, Working Paper no. 62. Stanford, Center for International Development. 20/04/2020.
- Turvey C. G.; Xiong, X. (2017). Financial inclusion, financial education and e-commerce in rural China. *Agribusiness*, 00, 1-7. DOI: 10.1002/agr.21503 17/04/2020.
- Yue, H. (2017). National Report on E-Commerce Development in China. Inclusive and Sustainable Industrial Development Working Paper Series WP17. United Nations Industrial Development Organization: Vienna, Austria.
- Zhang, H (2017) Opportunity or new poverty trap: Rural-urban education disparity and internal migration in China. *China Economic Review*, 44, 112-124.

Online resources

- “8 lesser-known e-Commerce platforms in China like Pinduoduo and Suning that foreign companies can leverage”. [Online]. Available from: <https://www.daxueconsulting.com/e-commerce-platforms-in-china-suning-pinduoduo/> 11/07/2020.
- Alibaba Group Holding Limited. (2020) Alibaba Fiscal Year 2020 Annual Report. [Online] Available from: <https://doc.irasia.com/listco/hk/alibabagroup/annual/2020/ar2020.pdf> 06/08/2020.
- Barrier, D. (2018). “Help your ecosystem and your ecosystem will help you, the lesson taught by the uncontrollable rise of PinDuoDuo”. [Online] Available from: <https://medium.com/cathay-innovation/help-yout-ecosystem-and-your-ecosystem-will-help-you-the-lesson-taught-by-the-irresistible-rise-of-b6e9ad2090ca> 10/07/2020.
- Barrier, D. (2018). “PinDuoDuo: how they became the fastest growing commerce company ever”. [Online]. Available from: <https://medium.com/cathay-innovation/pinduoduo-how-they-became-the-fastest-growing-commerce-company-ever.82bec36a2983> 10/07/2020.
- Bassanini, F. (2020) “Inserire i brand sul mercato cinese grazie a Xiaohongshu (Little Red Book)”. [Online] Available from: <http://www.east-media.net/xiaohongshu-louis-vuitton-digital/> 04/08/2020.
- China Family Panel Studies (2016). [Online] Available from: <http://open-data.pku.edu.cn/dataverse/CFPS?language=en>. 03/08/20.
- China Internet Watch. (2020) “Pinduoduo in Q1 2020; 600 million active buyers, up 42%.” [Online] Available from: <https://www.chinainternetwatch.com/30619/pinduoduo-q1-2020/> 22/09/2020.
- China, The State Council Leading Group Office of Poverty Alleviation and Development. (2018b). “Jilin: Unblocking the Poverty Alleviation Channel (吉林: 畅通脱贫攻坚血脉通道)”. Jilin Daily, August 16. http://www.cpad.gov.cn/art/2018/8/16/art_5_87924.html 21/09/2020.
- Duo Duo Farms connects local coffee growers to more than 418 million consumers. (2019). [Online] Available from: <https://investor.pinduoduo.com/corporate-blog/duo-duo-farms-connects-local-coffee-growers-more-418-million/> 23/09/2020.

- E-business Institute. (2019, updated in September 2020). “Livestreaming: the latest trend in E-commerce”. [Online] Available from: <https://ebusinessinstitute.com/livestreaming-the-latest-trend-in-ecommerce/#china-major> 17/09/2020.
- Fernandez Vidal, M.; Faz, X. (2020). “E-Commerce is Taking Off in Rural China: 3 Lessons for Other Countries”. [Online]. Available from: <https://www.cgap.org/blog/e-commerce-taking-rural-china-3-lessons-other-countries>. 20/06/2020.
- Fong, M. W. L. (2009) “Digital Divide Between Urban and Rural Regions in China”. The Electronic Journal on Information Systems in Developing Countries. 36, 6, 1-12. [Online] Available from: <https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/j.1681-4835.2009.tb00253.x?download=true> 19/08/20.
- Hariharan, A. & Dardenne, N. (2020) “Pinduoduo and the Rise of Social E-Commerce”. [Online] Available from: <https://www.ycombinator.com/library/2z-pinduoduo-and-the-rise-of-social-e-commerce>
- Ho, J.; Poh, F.; Zhou, J. & Zipser, D. (December 2019). “China consumer report 2020”. McKinsey&Company. [Online] Available from: <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/China/China%20consumer%20report%202020%20The%20many%20faces%20of%20the%20Chinese%20consumer/China-consumer-report-2020-vF.pdf> 11/07/2020.
- Internet World Stats (2020) <https://www.internetworldstats.com/stats.htm> 21/08/2020.
- International Telecommunication Union (2018) “Measuring the Information Society Report. Volume 1”. ITU Publications. [Online]. Available from: <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>
- International Telecommunication Union (2019) “The ICT Development Index (IDI). Methodology, indicators and definitions”. ITU Publications. [Online] Available from: https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/ITU_ICT%20Development%20Index.pdf
- Lee, E. (2018) “The incredible rise of Pinduoduo, China’s newest force in E-commerce”. TechCrunch. [Online] Available from: <https://techcrunch.com/2018/07/26/the-incredible-rise-of-pinduoduo/> 22/09/2020.
- Li, A. H. F. (2017) “E-commerce and Taobao Villages”. *China Perspectives*. [Online] Online since 01 September 2017, connection on 28 October 2019. Available from: <http://journals.openedition.org/chinaperspectives/7423> 03/08/2020.

- Ma, W.; Renwick, A. et al. (2018) “Smartphone Use and Income Growth in Rural China: Empirical Results and Policy Implications”. *Electronic Commerce Research*. DOI: 10.1007/s10660-018-9323-x [Online] Available from: [https://www.researchgate.net/publication/328305670 Smartphone Use and Income Growth in Rural China Empirical Results and Policy Implications](https://www.researchgate.net/publication/328305670_Smartphone_Use_and_Income_Growth_in_Rural_China_Empirical_Results_and_Policy_Implications) 02/09/2020.
- Mu, X. (2019). “China plans to boost rural development via digital technologies”. [Online] Available from: www.xinhua.com/english/2019-05/17/c_138064367.htm 20/04/2020.
- Newzoo Global Mobile Market Report 2019 – Light Version (2019) [Online] Available from: <https://newzoo.com/insights/trend-reports/newzoo-global-mobile-market-report-2019-light-version/> 02/09/2020.
- OECD (2016). “China’s urban-rural divide”. [Online]. Available from: https://oecdobserver.org/news/fullstory.php/aid/5669/China_92s_urban-rural_divide.html 20/04/2020.
- Pinduoduo’s AI-driven Duo Duo Farm empowers farmers, helping to alleviate poverty in rural areas. (2019) <https://investor.pinduoduo.com/corporate-blog/pinduoduos-ai-driven-duo-duo-farm-empowers-farmers-helping/> 23/09/2020.
- Pratap, A. (2019) “SWOT Analysis of Alibaba Group”. [Online] Available from: <https://notesmatic.com/2019/05/swot-analysis-of-alibaba-group/> 30/07/2020
- Springwise.com (2019) “Livestreaming Platform Expands Training Program for Chinese Farmers”. [Online] Available from: <https://www.springwise.com/sustainability-innovation/agriculture-energy/taobao-/marketplace-alibaba-help-farmers-china> 17/09/2020.
- Statista (2018). “Dossier: E-commerce in China”. [Online] Available from: http://automazione-plus.it/wp-content/uploads/sites/3/2019/01/study_e-commerce-in-china-statista-dossier.pdf
- Steele, C. (2019) “What is the Digital Divide?” Digital Divide Council. [Online] Available from <http://www.digitaldividecouncil.com/what-is-the-digital-divide/> 21/08/20
- Tao Kong, S. (2019). “E-commerce development in Rural China”. [Online] Available from: <https://www.jstor.org/stable/j.ctvp7d4j8.14> 19/04/2020.
- Toh, M. & Wang, S. (2020) “A Multibillion-dollar shopping obsession goes mainstream in China”. *CNN Business*. [Online] Available from: <https://edition.cnn.com/2020/09/06/business/china-livestream-shopping-spc-intl-hnk/index.html> 22/09/2020.

- The Bassiouni Group. (2018) “Rural Ecommerce in China: Opportunities and Challenges”. [Online] Available from: <https://bassiounigroup.com/rural-ecommerce-in-china-opportunities-and-challenges/#:~:text=Despite%20the%20opportunities%20for%20rural,competition%20in%20prices%20among%20sellers.> 18/09/2020.
- The Xnode. (2016) “What is Social Commerce? How does it Work?” [Online] Available from: <http://www.thexnode.com/blog/what-do-you-know-about-social-commerce-in-china> 19/09/20.
- Van Dijk, J. & Hacker, K. (2003) “The Digital Divide as a Complex and Dynamic Phenomenon”. *The Information Society*, 19: 315-326. [Online] Available from: <https://doi.org/10.1080/01972240309487> 28/08/2020.
- World Bank; Alibaba Group. (2019). “E-commerce development: Experience from China: Overview (English). Washington, DC: World Bank Group. [Online]. Available from: <http://documents.worldbank.org/curated/en/823771574361853775/Overview> 18/04/2020.
- Xinhuanet. (2018) “Internet Plus Agriculture model to promote integrated rural development.” [Online] Available from: http://www.xinhuanet.com/english/2018-06/27/c_137285120.htm 02/09/2020.
- Zhao, W.; Wang, A.; Chen, Y. (2019). “How to Maintain the Sustainable Development of a Business Platform: A Case Study of Pinduoduo Social Commerce Platform in China”. [Online]. Available from: <https://www.mdpi-com/2071-1050/11/22/6337#cite> 19/04/2020.
- Zocchi, P. (2003). “Il Digital Divide globale”. [Online] Available from: www.astrid-online.it>P-ZOPDF 07/05/2020.

Chinese resources

- Alisearch (2019). “阿里研究：2009-2019 年中国淘宝村研究报告” [Online]. Available from: www.199it.com/archives/935385.html 20/04/2020.
- 国家信息中心 (2020) “中国信息社会发展报告 2015. [Online] Available from: http://www.xon-gju.com/data/haosme/info/book/file/2015/12/09/20151209232936_3984.pdf 03/09/2020.
- 国务院办公厅。（2019）国务院办公厅关于加快发展流通促进商业消费的意见。 [Online] Available from: http://www.gov.cn/zhengce/content/2019-08/27/content_5424989.htm 16/09/2020.
- He, X. (2020) 多多农园，拼多多的一站式产业助农新路径 . <https://new.qq.com/omn/20200427/20200427A0SBWP00.html> 23/09/2020.
- 彭；安 (2019). 如何跨越电商扶贫的“数字鸿沟. 农业农村部农村经济研究中心，北京. 100810. DOI: 10.19625/j.cnki.cn44-1338/f.2019.0085. 25/02/2020.
- “十年的人，十年的货 – 中国淘宝村研究报告” (2019) [Online]. Available from: <https://www.iyiou.com/intelligence/insight117721.html> 20/04/2020.
- 水利部办公厅（2016）832 个贫困县名单及水利扶贫统计报表（试行） [Online] Available from: <http://www.jsgg.com.cn/Index/Display.asp?NewsID=21072> 08/09/2020.
- 田雨棣 (2020) “31 省份 2019 年 GDP 出炉 各省份 GDP 之和低于全国总量”. [Online] Available from: <http://news.cctv.com/2020/01/24/ARTIPsdHjai8UB1tO-XFo5CAw200124.shtml>
- 中共中央网络安全和信息化委员会办公室. (2020) 电商扶贫：农村脱贫攻坚中的中国智慧 . [Online] Available from: http://www.cac.gov.cn/2020-07/09/c_1595852112180047.htm 22/09/2020.
- 中国国际商会、德勤中国研究中心、阿里研究院。（2019）中国进口消费市场研究报告 . [Online] Available from: <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/consumer-business/deloitte-cn-consumer-china-import-consumer-market-research-report-zh-191105.pdf> 16/09/2020.
- 中国互联网络信息中心. (2007 - 2020). “第 21 次到第 45 次中国互联网络发展状况统计报告 ”. [Online] Available from: http://www.cac.gov.cn/2020-04/27/c_1589535470378587.htm 15/05/2020.

- 中国统计年鉴 2019. [Online] Available from:
<http://www.stats.gov.cn/tjsj/ndsj/2019/indexch.htm>