

Research on the Facilitation of E-commerce Technology Development on New-type Urbanization Construction in the Internet of Things Era

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¹Abstract

In the internet of things era, information technology is developing at a high speed while e-commerce technology is increasingly maturing, which builds a favorable platform for the further development of e-commerce industry. Nowadays, as a digitized business model, e-commerce has become one of the main development forms in modern commerce and trade circulation and held an important position in national economic growth by its distinct advantages, efficient, quick, easy and low-cost. On the other side, the development of commerce and trade circulation is a significant measure to promote the new-type urbanization construction. The urban construction and commercial circulation has a long-history relationship, the development of both sides are mutual precondition. The further improvement of e-commerce technologies will inevitably drive the strategic transformation and long-term development of the whole commercial circulation as well as facilitate the improvement of the entire e-commerce, yet the change will directly increase the pace of new-type urbanization construction, playing a positive role on new-type urbanization construction.

Keywords: *e-commerce technology, commercial and trade circulation, new-type urbanization*

1. Introduction

As the arrival of the internet of things-sensor the network times, human's daily life and shopping becomes more and more digitalized. The development of information technology brings increasing innovation of e-commerce technologies. The increasing improvement on technology and diversification on forms of modern logistics information technologies, information transmission media, network stepped-in terminal, data security, online payment methods, etc. In recent years, e-commerce industry in China has a very favorable momentum of development, in 2011, Chinese e-commerce market transactions amounted to 6 trillion yuan, having a year-on-year increase of 33%; in 2012, Chinese e-commerce market transaction scale amounted to 7.85 trillion yuan, having a year-on-year increase of 30.83%, and in accordance with this datum, e-commerce's proportion of GDP has reached 15% [1]. This fully shows that e-commerce has become an important part of modern commercial circulation and occupied an important position in national economy growth. The development of commercial circulation is an important measure to promote new urbanization and economic development has relations with commercial circulation for long, the developments of both are mutually conditioned. As one of the one of the main directions and forms of commercial circulation's future development, the development trend of e-commerce industry will definitely become an important factor for

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influencing the promotion of new urbanization, having significant impact on the future development pace and construction effect of new urbanization.

Therefore, on one hand, we should conduct analysis and summary of the development form of present e-commerce industry, find its form and mechanism of promoting new urbanization; on the other hand, we should base on the analysis and summary of e-commerce industry development's impact factors on the promotion of new urbanization to adjust its development strategy to make it further improved so as to better serve new urbanization while constantly promoting its own further development, achieving a win-win situation.

2. Internet of Things and Wireless Sensor Network

Internet of Things, short as IOT, is firstly raised in 1999 by the Auto-ID Center in MIT (Sundmaeker et al., 2010) . In Nov. 2005, International Telecommunication Union, short as ITU, published a report called ITU the Report of Internet 2005: the Internet of Things in which the definition of the Internet of Things was confirmed.

The report pointed out that the development of the internet of things relies in RFID, WSN, IET, MT and NT. The internet of things, a network of intelligent identification, location, track, monitor and management, realises the exchange of information between people and things as well as things and things through connecting different kinds of things with internet.

The hierarchical structure of the internet of things as picture 1:

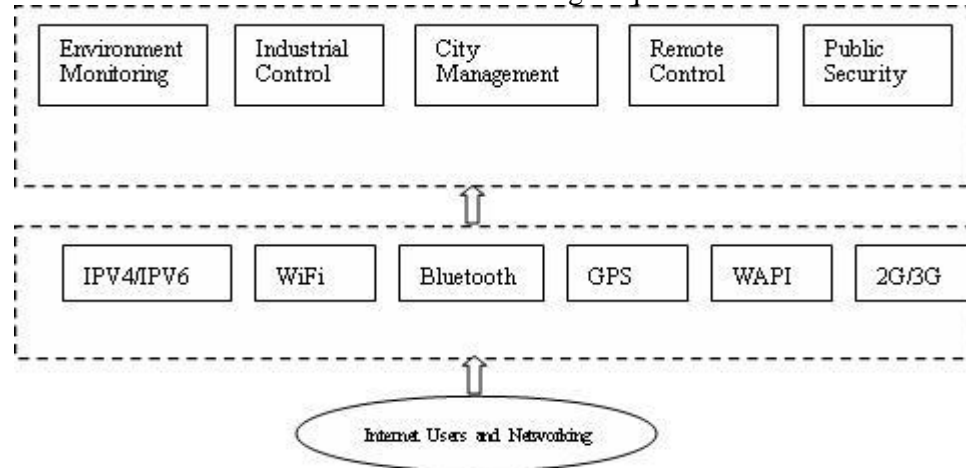


Figure 1. The Hierarchical Structure of the Internet of Things

3. E-commerce Industry and Commercial Circulation

3.1 Introduction of E-commerce

E-commerce, a commercial activity, utilizing microcomputer technology and network communication technology is a business model depending electronic equipment and network technique. As the high-speed development of e-commerce, the concept of it does not only include the main idea of shopping, but also incidental service like logistics distribution. E-commerce integrates the content of electronic currency exchange, supply chain management, electronic trading market, network marketing, on-line transaction processing, electronic data exchange, inventory management and automated data collection system together. The information techniques utilized include: internet, extranet, e-mail, database, electronic catalogue and mobile phones, etc. The logic schematic of system structure as shown in Figure 2:

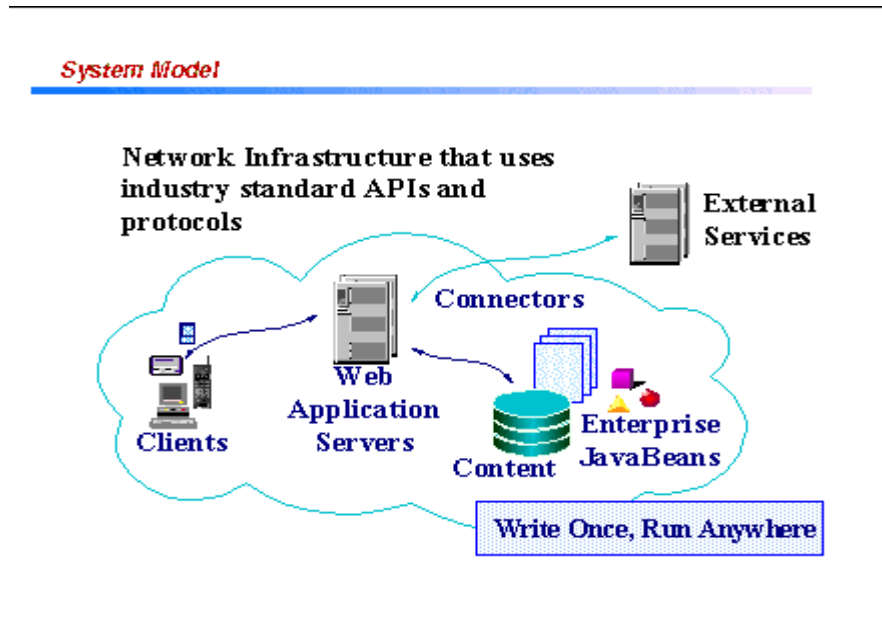


Figure 2. The Logic Schematic of E-commerce System Structure

E-commerce system structure, an organic combination of multiple e-commerce technologies has numerous advantages that traditional circulation pattern does not possess. It is highly integrated various content related with business activities together on a platform, which can realize efficient circulation of various commodities. So, e-commerce industry has become indispensably significant part in the whole commercial and trade circulation and the proportion which it holds will become higher and higher.

E-commerce system function structure chart as shown in Figure3:

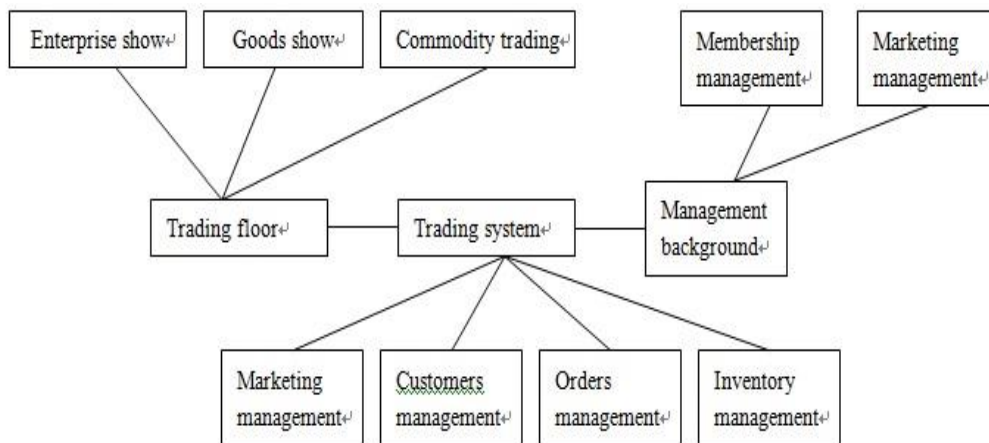


Figure 3. E-commerce System Function Structure Chart

3.2 Analysis on the Development Forms of E-commerce Industry

With the development of the Internet and gradually mature environment, e-commerce industry in China has entered into the era of rapid development with stable trend of market structure change and growing impact on economic and social life, becoming the new engine of Chinese economic development. The 2012-2013 China E-commerce Research Report issued by iResearch shows that in 2012, Chinese e-commerce market maintained rapid development as a whole with transaction scale exceeding 8.1 trillion

yuan. Different segments had various development paces: online shopping market had the fastest growing, reaching 66.1%; the growth rate of SME B2B market went down slightly to 26.5%; online travel booking market had a growth rate of 30%, and its penetration rose to 6.6 % [1]. The transaction scale trend of Chinese e-commerce market in 2009 to 2016 can be seen in Figure 4.



Figure 4. 2009-2016 Transaction Scale Trend of Chinese E-commerce Market²

3.3 Relations between E-commerce Industry and Trade Circulation

E-commerce usually refers to a new business model in which buyers and sellers do various business activities without seeing each other based on browser / server application mode in the open Internet environment among a wide range of commercial trade activities worldwide, achieving consumers' online shopping, merchants' online transactions and online electronic payment as well as various business activities, trading activities, financial activities and related integrated service activities. It is a kind of commercial activities using micro-computer technology and network communication technology^[2].

Commercial circulation refers to the circulation of commodities and industries providing services for the circulation of commodities, mainly including wholesale and retail trade, catering, and warehousing, and it involves the transportation industry and so on. Commercial circulation and commodity market are the intermediate links between production and consumption, the economic bridge and tie linking workers and peasants, urban and rural as well as different regions, the important part of socialized production, the guiding force determining the speed and efficiency of economic operation, the reflection of economic development and social prosperity, the barometer used for measuring overall national strength and people's living standard, and the reflection of the maturity of the market economy [3].

Consequently, e-commerce is an important manifestation of commercial circulation. With time and progress of computer technology, the proportion of e-commerce in commercial circulation will be bigger and bigger, becoming an important factor having impact on the development of commercial circulation.

² Source: Integrated corporate earnings & expert interviews, checked by iResearch statistics model. The green is E-commerce market transaction scale, the blue is growth rate.

4. The significant Effect of E-commerce Development on the Promotion of New Urbanization

4.1 Mechanism of Interaction between Commercial Circulation Development and Urbanization

There has been long-time relationship between circulation industry and urban economic development. Urban economy is an organic combination of “city” and “market”, and the developments of both are mutually conditioned. “City” is the form, and “market” is the content. Only by establishment on the basis of prosperous commercial exchange activities can a city has vitality and competitiveness [4]. The relationship between city and commerce is like a saying by Marx: “For urban industry itself, once separated from agriculture, its products will be commodities at the very start. Therefore, commerce is dependent on urban development and urban development needs commerce as condition”. The relationship between commercial circulation and urban construction is essentially the evolution of the relationship between production and circulation, this evolution has briefly undergone the phases in which production determines circulation, and production and circulation are both in parallel development; and currently the phase has entered into the one in which circulation determines production. Therefore, the current urbanization in the final analysis is the result of coordinated development of the first, second and tertiary industries, and commercial circulation’s service function to services for life of urban and rural residents and to the leading first and second industries should be particularly highlighted.

4.2 E-commerce Industry’s Promotion Effect on Regional Economic Development

With the continuous development of e-commerce industry and its rising industrial vitality, it has become an important part of commercial circulation, having greatly changed and gradually replaced some traditional forms of commodity circulation, and becoming the main force of promoting regional economic and social development.

4.2.1 E-Commerce Industry Promotes Enterprises and Farmers to Better Develop Marketing

E-commerce industry’s promotion to regional economic development takes effect through the first impact on enterprises and farmers’ production and operation behaviors and economic benefits. This impact is mainly reflected in expanding market, adjusting development strategies, better marketing and innovative management model, etc. E-commerce breaks through time and geographical constraints, supplies the convenience of fully understanding market information, and provides more opportunities for enterprises and farmers to understand market demand, price trends, and basic information competitors so as to conduct market segmentation and develop targeted marketing strategies.

4.2.2 E-commerce Industry promotes Regional Economic Development

Table 1 shows the e-commerce transaction amounts and their proportions of GDP in some demonstration cities. It can be concluded from analyzing Table 1 that first, e-commerce transaction amount is large and the proportion of GDP is large. From the e-commerce transaction amounts’ proportions of GDP in the demonstration cities, it can be seen that the e-commerce transaction amounts in 2010 have the average contribution ratio of 27.96% to regional GDP, indicating that e-commerce has great promotion effect on regional economic and social development; secondly, the scale of e-commerce transactions shows the development condition of enterprises' e-commerce.

providing a basis for improving the economic efficiency of enterprises; thirdly, regions with higher e-commerce transaction amount have more completed network infrastructure construction [5].

Table 1. E-Commerce Transaction Amounts' Proportion of Regional GDP in Some Demonstration Cities in 2010 Unit: 100 Million Yuan

Demonstration City	E-commerce Transaction Amount	GDP	Proportion (%)
Hang Zhou	4900	5945.82	82.41%
Nan Jing	2400	5010.36	47.90%
Bei Jing	4000	13777.94	29.03%
Ning Bo	1400	5125.80	27.31%
Shang Hai	4250	16874.42	25.19%
Har Bin	623	3665.90	17.00%
Qing Dao	600	5666.19	10.59%
Mean Value	2296.9	8216.42	27.96%

4.2.3 E-commerce Industry Increases Employment and Entrepreneurial Opportunities

The e-commerce industry's role of stimulating employment is reflected mainly in two levels: one is direct creation of jobs, and the other is increasing indirect employment of related industries. For e-commerce industry, each increased output value of 100 million yuan can provide 1,000 people for jobs and entrepreneurship. Internet Data Center (IDC) found from the research in 2010 that on average a direct employment could promote 2.85 indirect jobs. Taking Taobao for an example, by the end of 2009, the number of direct employment achieved by establishing Taobao online shops would be more than 800,000. Taobao would also help with indirect employment of about 2.28 million people [6]. By the end of 2010, 1.823 million people achieved direct employment through Taobao, helping with more than 5 million indirect jobs. IDC expected that in 2012 Taobao online shopping platform would bring the society with more than 3 million direct jobs and over 10 million indirect jobs.

4.2.4 E-commerce Industry Contributes to the Expansion of Consumption

Table 2 is the online shopping situation from 2004 to 2011: online shopping transaction amount has increased from 5.14 billion yuan to 773.56 billion yuan with an average annual increase of 104.7%; online shopping consumption expenditure per capita has increased from 230 yuan to 4,137 yuan with an average annual growth rate of 51.1 %, much higher than that of total consumption expenditure per capita (16.6%); for the online shopping consumption expenditure per capita's proportion of consumption expenditure, this indicator in China in this period has increased from 5.0% to 30.8% with an average annual increase of 29.5% [7]. The relationship between E-commerce transaction and traditional commodities trading is negatively related relations, competitiveness, and jointly promotion. Under the policy guidance, e-commerce's stimulation of expanding consumption is increasing[8].

Table 2. 2004-2011 Chinese Online Shopping & Online Consumption Expenditure Per Capita

Index	2004	2005	2006	2007	2008	2009	2010	2011	Average annual growth rate (%)
A. Transaction amount for shopping online (100 million yuan)	51.4	157	263.1	561	1281.8	2630	4610	7735.6	104.7
B. Consumption Expenditure Per Capita for online shopping (Yuan)	230	483	610	1020	1602	2413	3115	4137	51.1
C. Total Consumption Expenditure Per Capita	4577	5138	5813	6736	8169	9374	11525	13451	16.6
D = B/C	5.0	9.4	10.5	15.1	19.6	25.7	27.0	30.8	29.5

4.3 Regional Economic Growth is the Necessary Condition for the Promotion of New Urbanization

New urbanization is not only a new growth point of economic and social development in our city but also the starting point to expand domestic demand and improve livelihood projects. The requirements of implementing new urbanization mainly include:

First, achieve veritable changes from “agricultural to non-agricultural” status. Its essence is that migrant workers and migrants who work in cities for a long period change into urban resident status;

Secondly, people achieving “agricultural to non-agricultural” change have good living and working environment in cities. Good life requires commercial circulation to make adjustments based on the original development model, and good working environment means that “agricultural to non-agricultural” people have relatively stable work and income with favorable development trend.

Thirdly, urbanization should have support from relevant industrial projects. Industrial development is the basis for employment, livelihood and sustainable development of enterprises, having a fundamental role in urbanization. In other words, urbanization without industrial support lacks conditions for survival and development.

Fourthly, commercial circulation should play the leading role well in promoting the development of production and livelihood. As to service for life, the increase of urban population provides opportunities for the development of commercial circulation.

The above four requirements commonly reflect an inevitable way that is regional economic development and revitalization. It can be seen from this that new urbanization and regional economic growth are inseparably linked, and the latter is a necessary guarantee for the former.

4. Conclusion

Without prosperous economic growth, cities will be like water without source. In the promotion process of new urbanization, local economic growth is the necessary condition for smooth implementation of new urbanization project, providing necessary guarantee for solving food, shelter, and medical care, health, insurance and other aspects of urban resident population. In the process of economic and social development, commercial circulation is an important part as well as the only way to stimulate consumption, stimulate domestic demand, and improve GNP, and adjusting the development model (strategies) of commercial circulation is the requirement of deepening reform and “transfer model, adjust structure, stabilize development, and benefit people’s livelihood” in the new situation as well as the requirement of better playing a leading role, serving life, promoting production and new urbanization. On the other hand, with the continuous improvement of technology and information technology, e-commerce industry has deserved to become an important part and one of the main manifestations of commercial circulation. Therefore the development of e-commerce industry will directly affect new urbanization, and they both have interaction and promote each other. Effective adjustment of industrial development strategies and development models will positively promote new urbanization.

References

- [1] “IRResearch”, 2012-2013 China E-commerce Research Report, (2013), pp. 29-35.
- [2] G. Jiao, S. Hongbo and W. Chang, “WebGIS System Oriented E-Business Applications”, Computer Systems & Applications, (2011), vol. 20, no. 1, pp. 173-174.
- [3] L. Lei, “Research on the Relationship between Commercial Circulation Development and Economic Growth in Beijing”, Management & Technology of SME, (2013), pp. 98-99.
- [4] F. Aiqing, “Interpretation of “Suggestion on Deepening Circulation System Reform and Accelerating Circulation Industry Development” and “12th Five-year Development Plan for Domestic Trade”, Economic & Trade Reference, (2013), pp. 2-8.
- [5] S. Ze, “Research on China’s Commercial Circulation Service Strategic Issues”, Trade Economy, (2012), pp.3-7.
- [6] J. Linbo, “Circulation Efficiency and Circulation Innovation”, Economic and Trade Reference, (2013), pp.17-22.
- [7] W. Dezhang and S. Dejun, “An Empirical Study on the Contribution of Distribution Industry to City Economic Development”, Finance and Trade Economics, (2007), pp. 98-102.
- [8] L. Fei, H. Saiquan, Z. Zhengmao, “Formation Mechanism of Retail Channel Fee - Multi-type”, Multi-case Study Based on Chinese Market Situation, China Industrial Economics, (2013), pp. 34-38.

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