

The Effects of E-commerce on the Demand for Commercial Real Estate

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ABSTRACT

Shopping online as an alternative to in-store shopping could make traditional retail less attractive. There exists a relationship between e-commerce and the demand for commercial real estate that accommodates physical retail shops. Many evidences supported that the demand for physical shops has been affected by the rapid development of e-commerce in China. In order to better understand the sustainable development of the commercial real estate market within the context of rapidly developing e-commerce in China, this paper seeks to clarify the relationship between e-commerce and the demand for commercial real estate. The methods of inductive and comparative analysis are adopted in this paper. The findings show that from 2009 to 2013, the slowing growth rate of commercial property sales and the accelerating vacancy rate of commercial properties are closely related to the dramatic growth of e-commerce. We also found that different forms of commercial properties--supermarkets, department stores and shopping centers--are differently affected by e-commerce. However, due to the respective advantages and disadvantages associated with online and offline shopping, physical stores will not be completely replaced by virtual retail shops in the future.

Keywords

e-commerce; online shopping; physical stores; retailing; commercial real estate

RESEARCH PROBLEM

In reality,



Therefore, it arouses a **RESEARCH QUESTION**

What are the effects of e-commerce on the demand for commercial real estate?

MOTIVATION AND SIGNIFICANCE

1. Practical

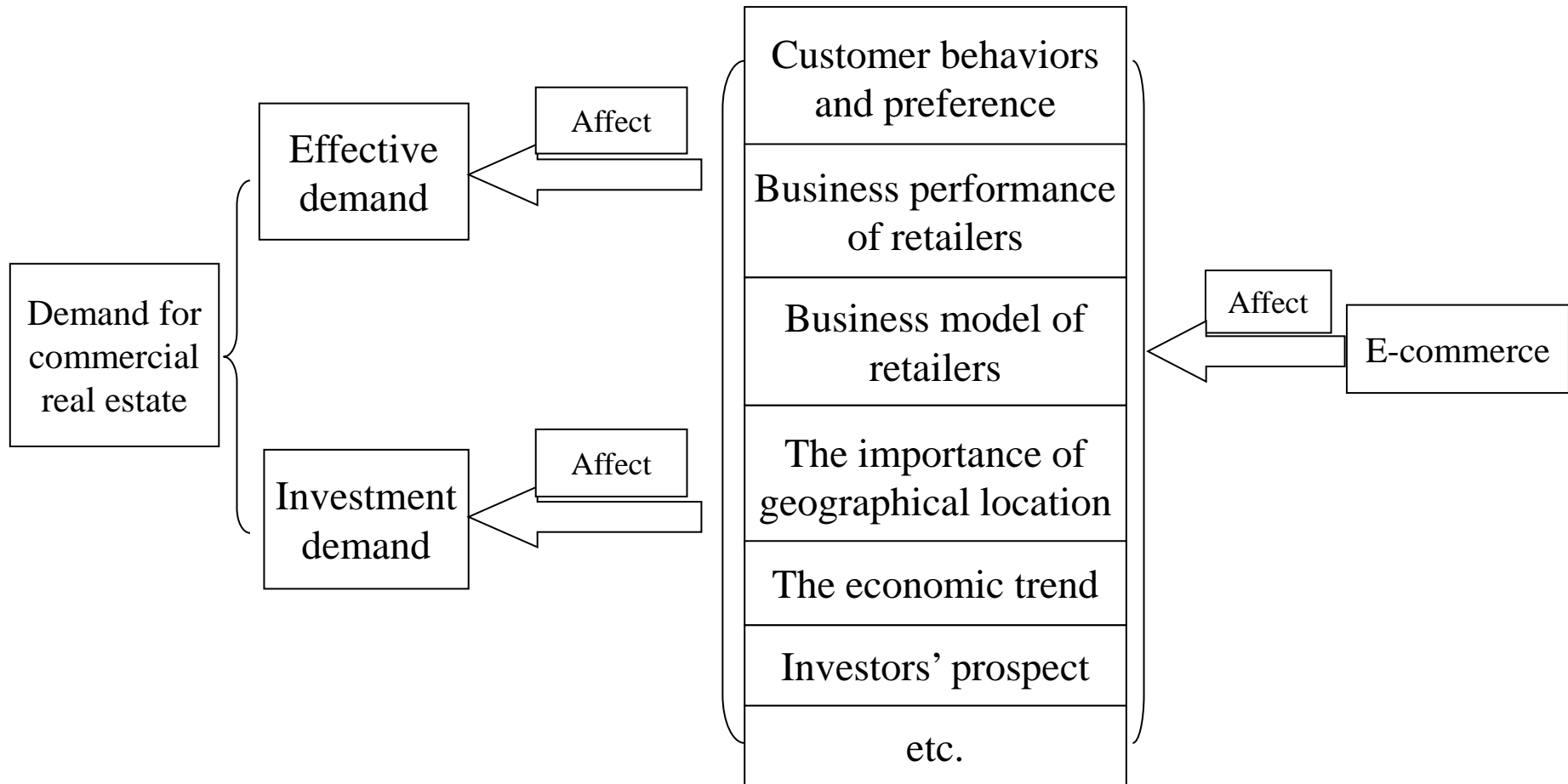
It is important to study the possible impacts of e-commerce on the demand for retail real estate in China, a country with a promising future of e-commerce, so that the future development of the commercial real estate market can be better facilitated by the **government and the developers**.

2. Theoretical

Previous studies on this topic have been conducted in several countries, while there has been **little** comprehensive and rigorous academic research conducted in China. And existing related studies in China are **not supported by** sufficient data and quantitative and/or qualitative analysis.

BACKGROUND

- Conceptual framework of the relationship between e-commerce and the demand for commercial real estate



BACKGROUND

●Current Situation in China

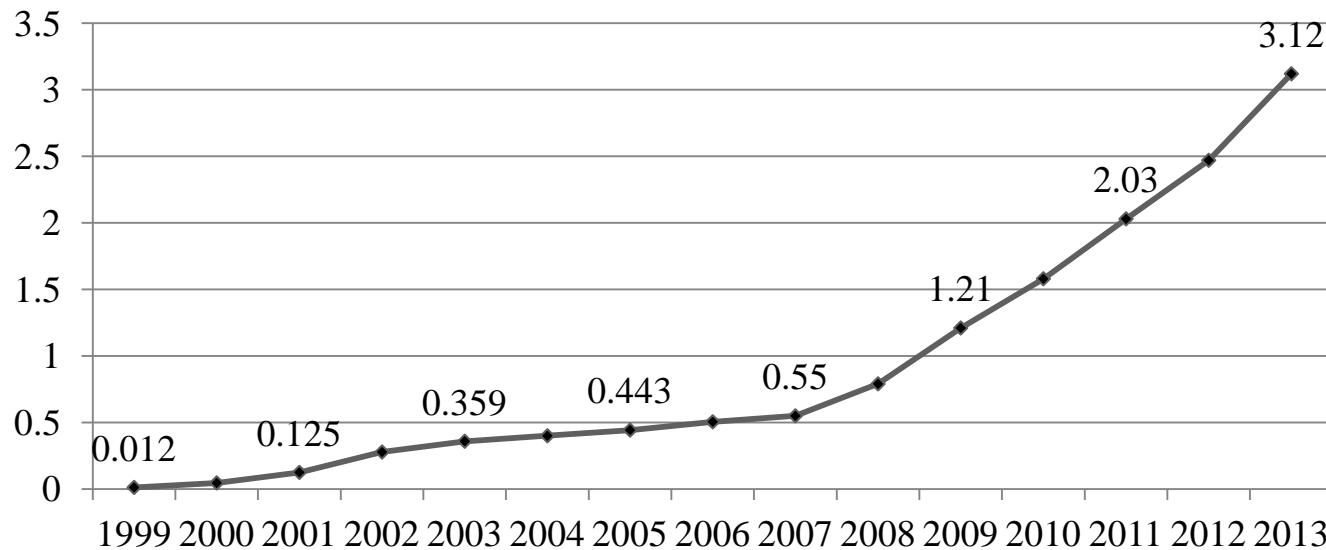


Figure 1 The number of online shoppers in China from 1999 to 2013 (hundred millions)

In China, consumers are increasingly shopping online and the growth rate has markedly accelerated since 2008.

BACKGROUND

●Current Situation in China

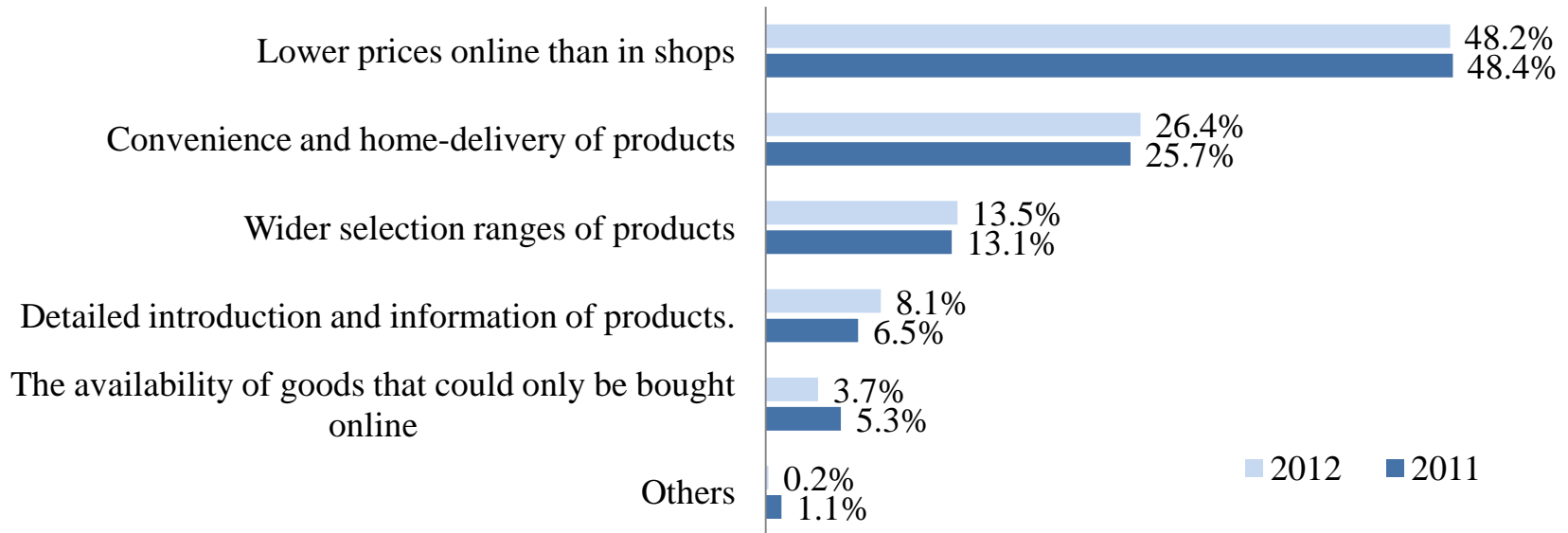


Figure 2 Main reasons to go shopping online for online shoppers in 2011 and 2012

According to a survey on Chinese online shoppers' behaviors in 2012-2013, the lower prices of products on the Internet is the most significant determinant for Chinese consumers to choose e-shopping .

BACKGROUND

●Current Situation in China

- Have self-owned shopping websites
- Rely on well-developed B2C websites
- Both have self-owned shopping websites and rely on B2C websites
- Don't have any online shops

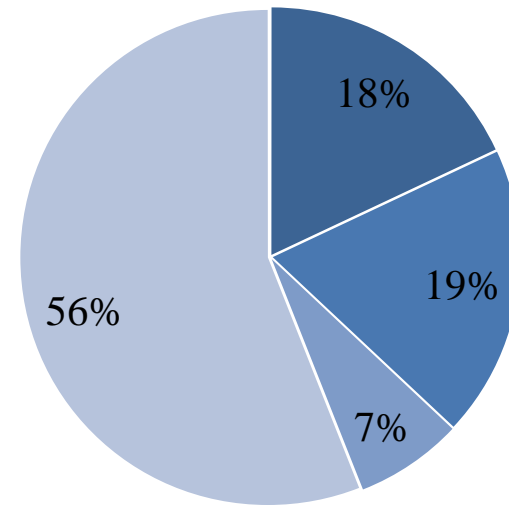


Figure 3 The situation of retailers' online shops in 2013

In the meanwhile, increasing numbers of retailers are engaging in online retailing--nearly 50% of retailers already started online businesses on their own websites or on well-developed B2C websites

BACKGROUND

●The relevance between the development of e-commerce and the demand for commercial property in China

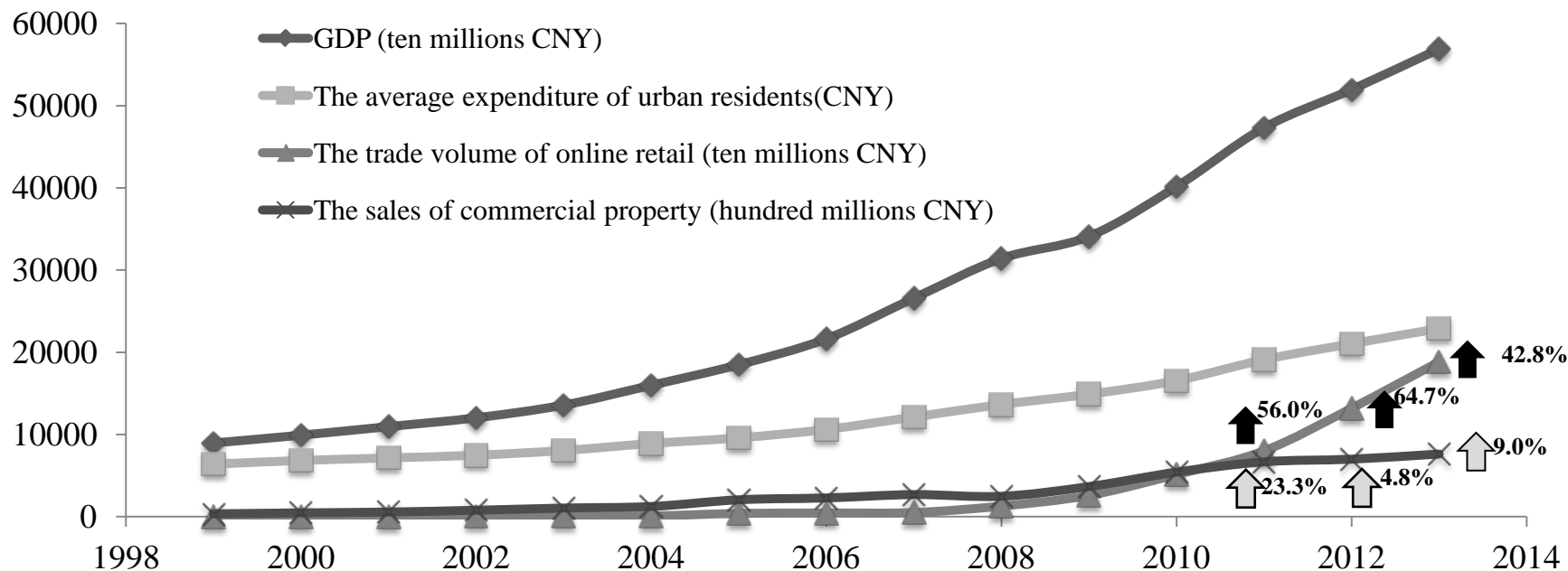


Figure 4 The comparisons among GDP, the average expenditure of urban residents, the trade volume of online retailing and the sales of commercial property from 1999 to 2013 in China

From 1999 to 2013, China has experienced rapid economic growth as GDP and the level of household consumption steadily increased. The increase in the state's overall economy and commercial real estate market resulted in the growth of the online retail market. Compared to the online retail market, the commercial real estate market grew much slower. The growth rate of commercial property sales decreased to below 10% after 2011, conceivably different from that of the trade volume of online retailing.

BACKGROUND

●The relevance between the development of e-commerce and the demand for commercial property in China

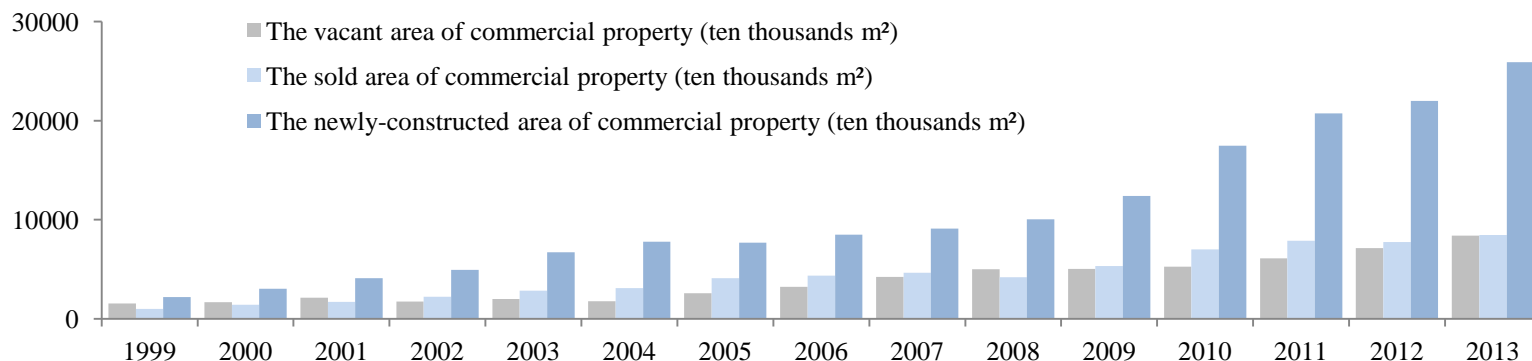


Figure 5 Comparisons between vacant area, sales area, newly construction area of commercial buildings

	2009	2010	2011	2012	2013
The vacant area of commercial property	0.5%	4.8%	15.7%	17.0%	17.6%
The sold area of commercial property	26.7%	31.3%	12.5%	-1.4%	9.15%
The newly constructed area of commercial property	23.6%	40.7%	18.6%	6.2%	17.7%

Table 1 Comparisons between growth rates of vacant area, sales area, newly construction area of commercial buildings from 2009-2013

The growth rates of newly-constructed and sold space of commercial property have both slowed down in the past 3 years. To the contrary, the vacant area increased markedly. These indicators show that generally the commercial real estate market has been growing in the past 15 years, but it underwent decreasing growth rates between 2010 and 2013.

BACKGROUND

- The relevance between the development of e-commerce and the demand for commercial property in China

	Macro-economic situation		E-commerce market	Commercial Real Estate Market	
	GDP	Average expenditure of urban residents	Trade volume of online retail	Sole area of commercial property	Vacant area of commercial property
2000	10.6%	6.9%	140.0%	39.5%	8.6%
2001	10.5%	4.5%	25.0%	21.2%	27.8%
2002	9.7%	4.5%	73.3%	30.8%	-19.0%
2003	12.9%	7.7%	192.3%	27.7%	15.7%
2004	17.7%	10.6%	42.1%	9.4%	-11.3%
2005	15.7%	7.6%	279.6%	31.6%	125.6%
2006	17.0%	10.7%	12.7%	6.3%	6.0%
2007	22.9%	14.2%	12.6%	7.1%	-0.3%
2008	18.1%	12.6%	150.0%	-9.4%	18.7%
2009	8.6%	9.2%	100.0%	26.7%	0.5%
2010	17.8%	11.0%	97.7%	31.3%	4.8%
2011	17.8%	15.5%	56.0%	12.5%	15.7%
2012	9.8%	10.1%	64.7%	-1.4%	17.0%
2013	9.5%	8.8%	42.8%	9.1%	17.6%

Table 2 The comparison among the growth rates of seven indicators from 1999 to 2013

BACKGROUND

- The relevance between the development of e-commerce and the demand for commercial property in China

According to Table 2, at the initial stage of e-commerce in China (2000-2008), no convincing evidence suggested a correlation between e-commerce and commercial real estate. Since 2008, the contrast between the 'explosive' expansion of e-commerce and the downturn in commercial real estate market reveals a possible negative correlation between e-commerce and commercial real estate. In 2010-2011 when China began recovery after an economic crisis in 2008, the GDP and average expenditure of urban residents kept growing fast. By contrast, the commercial real estate market experienced a considerable decline as the growth rate of the sold area decreased markedly from 31.3% in 2010 to 12.5% in 2011, while the growth rate of vacant area increased notably. This contradiction may be caused by rapid development of e-commerce as shown in figure 4. Affected by economic downturn between 2012 and 2013, the growth rate of e-commerce still remained at a dramatic rate. The situation of the commercial real estate market was even worse than before as the sold area of commercial real estate dropped more considerably to below 0 in 2012 and the vacant area kept rising at high speed in 2012 and 2013. Therefore, it is suggested that the development of e-commerce after 2009 were negatively correlated with the demand for commercial real estate.

BACKGROUND

- The relevance between the development of e-commerce and the demand for commercial property in China

Above all, based on the direct comparison between these figures, we can intuitively and basically conclude that apart from other factors, there is likely a negative correlation between the rapid growth of e-commerce and the downturn of commercial real estate after 2009 in China. During the past 15 years when e-commerce emerged and explosively expanded, it gradually affected the whole commercial real estate market after 2009, especially between 2011 and 2013, resulting in a drop of the growth rate in the demand for commercial space.

MAIN RESULTS

●E-commerce development and different retail properties **selling different commodities**

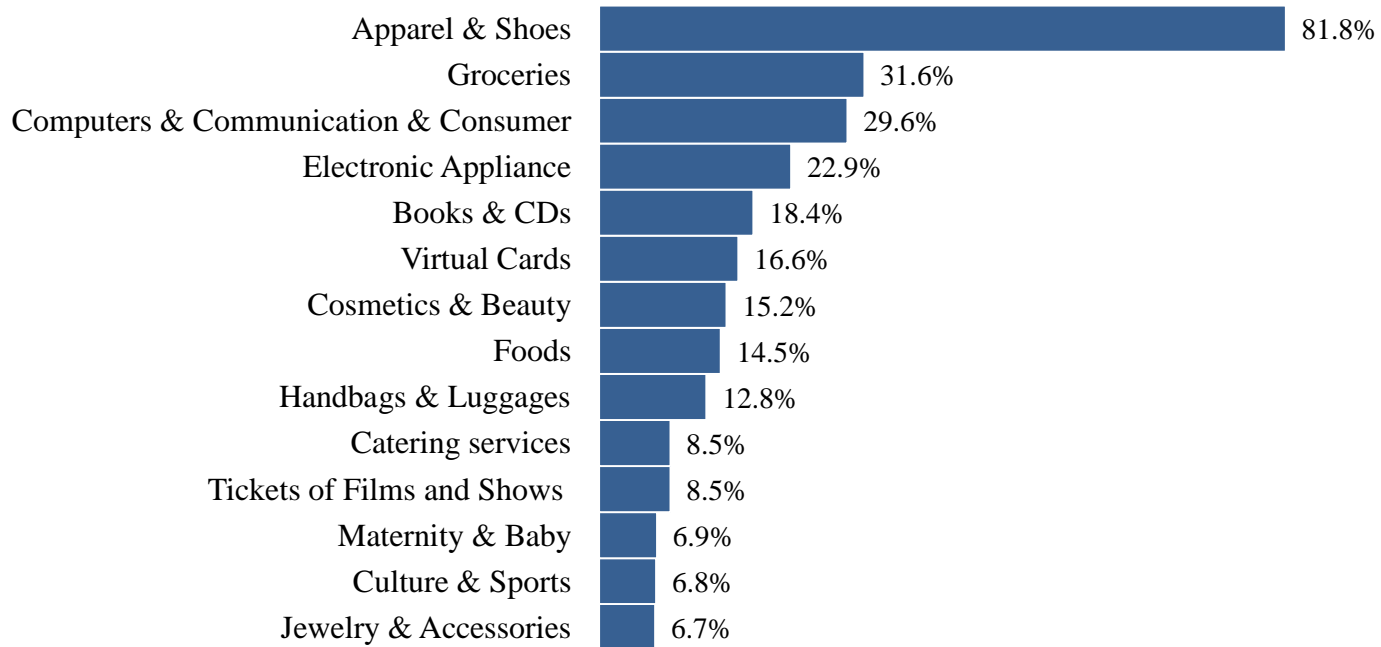


Figure 6 The popularity of goods in online shopping in 2012

The retail enterprises of the four most popular products (Apparel, Computers & Communication & Consumer, Electronic Appliance and Books) and of the two less popular products (Foods and Culture & Sports) are selected for comparison in the growth rates of year-end business area according to the survey result about the popularity of goods in online shopping in 2012 (Figure 6).

Apparel			Computers & Communication & Consumer		Electronic Appliance		Books	
		Growth rate		Growth rate		Growth rate		Growth rate
2012	613	-3.31%	119.13	-12.40%	1140	-14.61%	205	-24.63%
2011	634	-10.70%	136	-21.39%	1335	-14.91%	272	-19.29%
2010	710	14.33%	173	19.31%	1569	26.74%	337	-5.87%
2009	621	5.79%	145	-2.03%	1238	9.75%	358	3.77%
2008	587		148		1128		345	

Foods & Beverages		Growth rate	Stationery & Sports		Growth rate
2012	568	-1.56%	188	51.61%	
2011	577	30.25%	124	-13.89%	
2010	443	21.37%	144	24.14%	
2009	365	46.59%	116	9.43%	
2008	249		106		

Table 3 Business area (million m²) of retail enterprises above designated size by sector from 2008 to 2012

It is revealed that business areas of retail enterprises selling apparel, computers & communication & consumer, electronic appliance and books decreased to varying degrees from 2010-2012, while those of foods and culture & sports mostly continued growing. Therefore, we can conclude that online shopping is a factor that affects the business area of retail enterprises. Physical retailers which sales products that are popular online will likely be affected more severely—resulting in declining business area.

Generally, these well popular products are highly standardized and in stable demand. They could be easily and conveniently purchased at more competitive prices online where the product information will be more comprehensive. These products are mainly targeted at price-sensitive, mass consumers who are easily driven to switch from in-store shopping to online shopping. As e-retailers solve courier service problems and improve consumer experiences, they will be more advantageous in selling these mid-/low-end products than traditional retailers, take up larger market shares and threaten the physical stores and retailers of these products. However, these characteristics also reflect that the online retail market is weak in selling other types of products and high-end commodities. Consequently, the impacts from e-commerce on traditional retailing and commercial space are limited. Physical shops could sell high-end products and those products that are not competitive online, or offer more specialized offline services to better utilize their strengths.

MAIN RESULTS

●E-commerce development and Supermarkets

Table 4 The nationwide situation of the supermarkets in China between 2005 and 2012

	The number of stores	Growth rate	Year-end business area of retail (ten thousands m ²)	Growth rate	Retail sales (hundred billions CNY)	Growth rate
2012	42963	3.25%	4516.1	10.24%	5846.2	7.86%
2011	41611	5.71%	4096.7	14.07%	5420.1	20.16%
2010	39362	6.72%	3591.5	7.46%	4510.9	9.28%
2009	36883	10.27%	3342.3	0.17%	4127.7	5.68%
2008	33449	-2.98%	3336.6	16.67%	3905.7	23.46%
2007	34477	63.66%	2859.9	16.73%	3163.6	11.48%
2006	21066	11.32%	2450.1	19.70%	2837.7	7.95%
2005	18924		2046.9		2628.8	

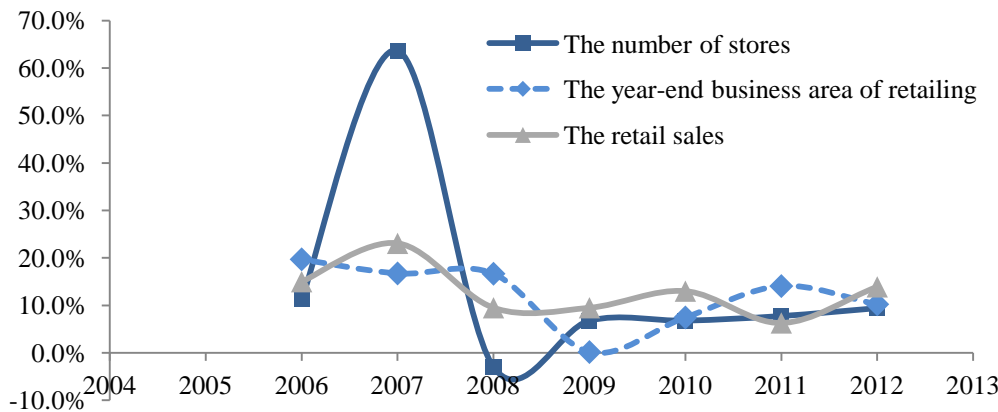


Figure 8 The growth rates of the number of stores, the year-end business area and the retail sales of supermarkets from 2005 to 2012

In 2005-2012, despite the drop in growth rates in 2011 and 2012, there was a steady increase in the number of physical stores business areas and trade volumes which illustrates that the development of supermarkets in China was still strong and the effects of online retailing on the demand for supermarkets are not obvious. Likely due to the types of goods offered in the supermarkets, which are daily necessities with relatively short consuming cycles that are less fit for online. Moreover, community supermarkets are considered much more convenient for ‘sticky’ consumers, which results in fewer impacts from e-commerce.

Table 5 The retail sales and store numbers of four typical chain supermarket enterprises in China during 2007-2013

	CR Vanguard				Wal-Mart Stores			
	Sales (millions CNY)	Growth rate	The number of stores	Growth rate	Sales (millions CNY)	Growth rate	The number of stores	Growth rate
2013	6654400	9%	2528	9%	7221464	25%	407	3%
2012	6094800	23%	2325	18%	5800000	35%	395	46%
2011	4969200	42%	1976	58%	4300000	8%	271	24%
2010	3497200	1%	1250	16%	4000000	18%	219	25%
2009	3476400	4%	1074	20%	3400000	22%	175	42%
2008	3344200	40%	896	15%	2782197	31%	123	21%
2007	2391979	54%	781	22%	2131500	42%	102	44%
	Carrefour				Xinyijia			
	Sales (millions CNY)	Growth rate	The number of stores	Growth rate	Sales (millions CNY)	Growth rate	The number of stores	Growth rate
2013	4670588	3%	236	8%	1800000	0%	116	0%
2012	4527386	0%	218	7%	1800000	3%	116	0%
2011	4519581	8%	203	12	1753400	1%	116	4%
2010	4200000	15%	182	17%	1741320	1%	112	3%
2009	3660000	8%	156	16%	1723600	-1%	109	4%
2008	3381912	14%	134	20%	1749260	4%	105	5%
2007	2960000	19%	112	18%	1675390	18%	100	1%

The comparison between the development of four representative supermarket enterprises, CR Vanguard, Wal-Mart Stores, Carrefour and Xinyijia, shows that threats do exist and tend to be more distinct. The growths of retail sales and store numbers in CR Vanguard, the largest domestic chain supermarket enterprise, have dramatically slowed down in the past two years. The 2nd largest supermarket enterprise, Wal-Mart Stores, experienced a notable increase in retail sales in 2012 and 2013, but its store number increased by only 3% in 2013, much less than previous years. According to the news, Wal-Mart would close 25 stores (5% of the total existing stores but only 2.5% of total retail sales) in China during 2014 to better realize centralized development. The expansion of Carrefour also decelerated after 2011 and its retail sales increased disproportionally. Xinyijia, a domestic private chain supermarket enterprise, suffered from no increase in both retail sales and store numbers in the past two years, mirroring that the smaller-scale chain supermarket enterprises tend to be more severely affected.

Reasons for the recession of supermarkets:

1. Groceries and non-fresh foods, the main products in traditional supermarkets, have become fit for online sales due to their standardization and improvement of courier services (Figure 7 also shows the great popularity of groceries & foods in online shopping).
2. Lower prices and full ranges of many products in virtual supermarkets attract mass consumers who can just click the mouse and then enjoy the convenience of non-expensive home-delivery services. These factors greatly reduce the consumers' product cost, time cost and transportation cost. Thus, traditional supermarkets are not as competitive in groceries and non-fresh food.
3. Online supermarkets developed very fast in the past 2 to 3 years and brought fierce competition to traditional supermarkets.
4. Due to the popularization of cold chain logistics, traditional supermarkets began to lose their advantages in fresh food which was formerly considered unfit for online sales.

Solutions adopted by traditional supermarkets:

1. Employ online businesses to compensate for the disadvantages of off-line business.
2. Pay attention to community supermarkets.
3. Emphasize on fresh food

Summary

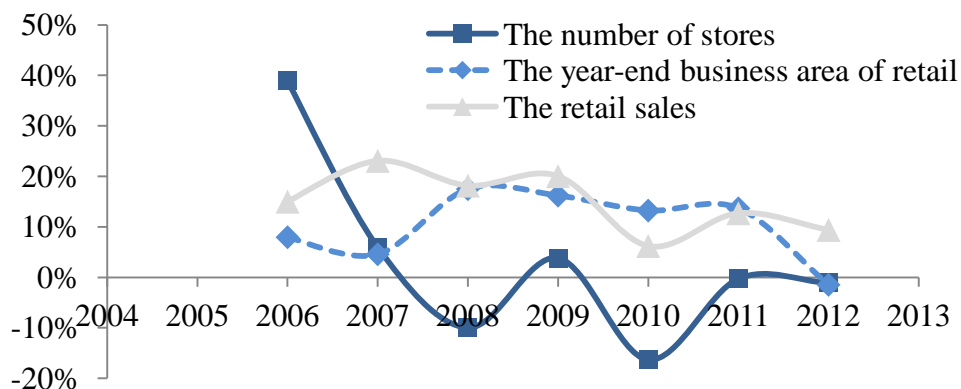
In the future, e-supermarkets cannot completely substitute brick-and-mortar supermarkets. Owing to improving people's living standards, the demand for physical supermarkets and their demand will keep growing.

MAIN RESULTS

●E-commerce development and Department Stores

Table 6 The nationwide situation of the department stores between 2005 and 2012 in China

	The number of stores	Growth rate	Year-end business area of retail (ten thousands m ²)	Growth rate	Retail sales (hundred billions CNY)	Growth rate
2012	4377	-1.11%	1696.7	-1.49%	2649.5	5.78%
2011	4426	-0.29%	1722.3	13.66%	2504.7	8.37%
2010	4439	-16.31%	1515.3	13.22%	2311.3	6.21%
2009	5304	3.82%	1338.4	16.18%	2176.2	20.05%
2008	5109	-9.96%	1152	22.46%	1812.8	18.17%
2007	5674	6.00%	940.7	0.30%	1534.1	23.06%
2006	5353	38.93%	937.9	7.94%	1246.6	14.99%
2005	3853		868.9		1084.1	



During 2008-2012, the number of department stores in China reduced steadily after 2010. While the business area kept rising, its growth rate constantly dropped after 2009, especially in 2012 when it became minus. The growth rate of retail sales also decreased dramatically after 2010. These figures to some extent suggest e-commerce is having an impact on the general recession of the department store market and the falling demand for department store space..

Figure 9 The growth rates of the store number, the year-end business area and the retail sales of department stores from 2005 to 2012 in China

Table 7 The retail sales and store numbers of four typical chain supermarket enterprises in China during 2007-2013

Beijing Wangfujing Department Store (Group) Company Limited					Intime Retail Group Company Limited			
	Sales (millions CNY)	Growth rate	The number of stores	Growth rate	Sales (millions CNY)	Growth rate	The number of stores	Growth rate
2013	2364353	10%	29	4%	1816510	11%	36	20%
2012	2157439	7%	28	12%	1620871	19%	30	3%
2011	2009393	21%	25	14%	1367318	14%	29	21%
2010	1660000	25%	22	16%	1196235	33%	24	9%
2009	1327000	11%	19	12%	901458	35%	22	22%
2008	1200000	13%	17	6%	857300	80%	18	125%
2007	1060000		16		476278		8	
New World Department Store China Limited					Guangzhou Grandbuy Company Limited			
	Sales (millions CNY)	Growth rate	The number of stores	Growth rate	Sales (millions CNY)	Growth rate	The number of stores	Growth rate
2013	1480000	-8%	41	5%	1141800	8%	29	-3%
2012	1600000	3%	39	0%	1056978	14%	30	3%
2011	1550000	-13%	39	5%	930900	37%	29	26%
2010	1790000	19%	37	9%	677596	5%	23	21%
2009	1500000	1%	34	3%	643690	10%	19	58%
2008	1480000	6%	33	7%	453420	17%	12	0%
2007	1396226		31		386366		12	

To better understand the situation of department stores in China, we compared four representative, different-scale chain department store enterprises from different districts of China- Beijing: Wangfujing Department Store (Group) Company Limited, Intime Retail Group Company Limited, New World Department Store China Limited and Guangzhou Grandbuy Company Limited. In Table 7, the growth rates of their retail sales fell to varying degrees in 2012 and 2013. Store numbers also slowed down notably in 2012 and 2013 except for Intime Retail Group Company Limited. These enterprise figures show the same trend of the whole department store market.

Reasons for the downturn of department stores in recent years can be attributed to changes in online and offline retail sales of the “**double eleven**” **online shopping festival** between 2010 and 2013. In 2010, the online sales on Nov.11 account for only 7% of the offline sales. In consecutive years, online sales increased exponentially and exceeded offline retail sales in 2013. In 2013, the daily turnover of Tmall.com (the largest B2C website in China) on Nov.11 reached CNY35 billion, nearly equivalent to the annual transaction volume of the 4th largest chain department store enterprise in China. That is an amazing circumstance and striking contrast. Additionally, the popular products that physical department stores commonly offer were purchased at the highest frequency online during the online shopping festival.

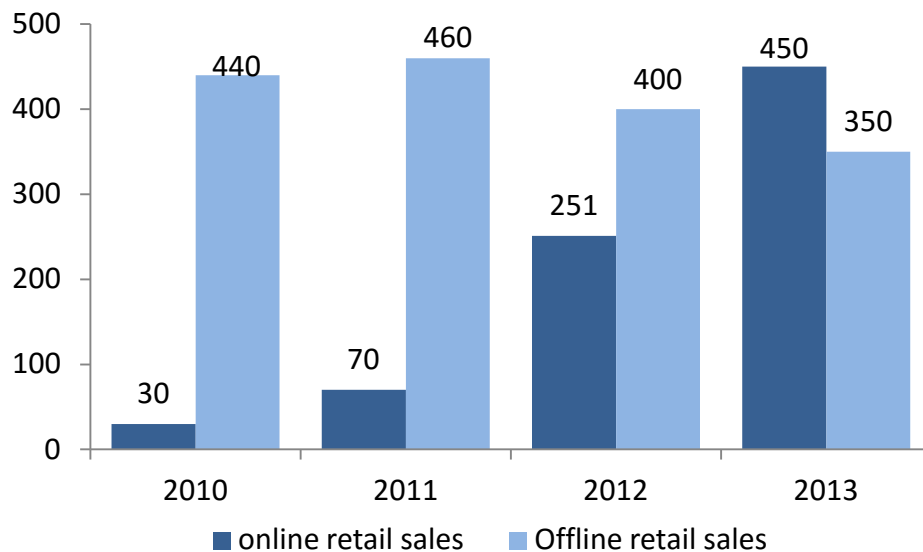


Figure 10 The comparison between the online and offline retail sales on Nov.11 from 2010-2013 (hundred millions CNY)

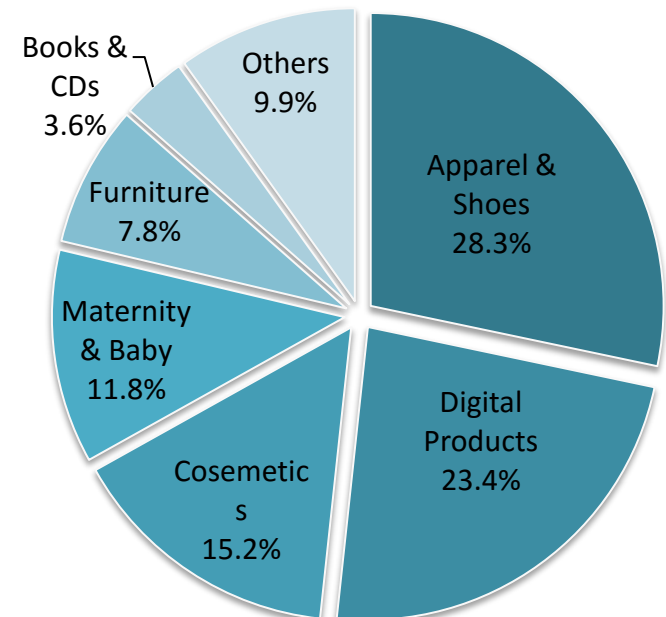


Figure 11 The percentage of different kinds of products sold on Nov 11, 2013

Solutions adopted by traditional department stores:

- 1 Established self-support online websites, or made use of existing B2C platforms, or both.
2. Incorporated the advantages of shopping malls through transformation in order to generate more traffic and prolong consumers' stay inside by enlarging volume, improving decoration, changing trade distribution, and adding leisure activities and catering services.

Summary

It is believed that department stores will revive and still be in demand if they can utilize online channels and exploit their strengths through transformations and upgrades. The cooperation between online and offline channels can boost offline retailing and increase the physical space of department.. After transformations and upgrades by enlarging volume, improving decoration, changing trade distribution and adding leisure activities and catering services, department stores can generate more traffic and prolong consumers' stay inside.

MAIN RESULTS

●E-commerce development and Shopping Malls

The current situation of shopping centers in China from nationwide dimension

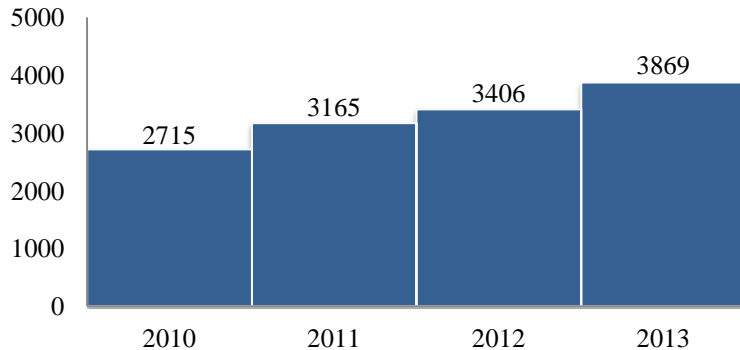


Figure 12 The numbers of the shopping malls in China from 2010 to 2013

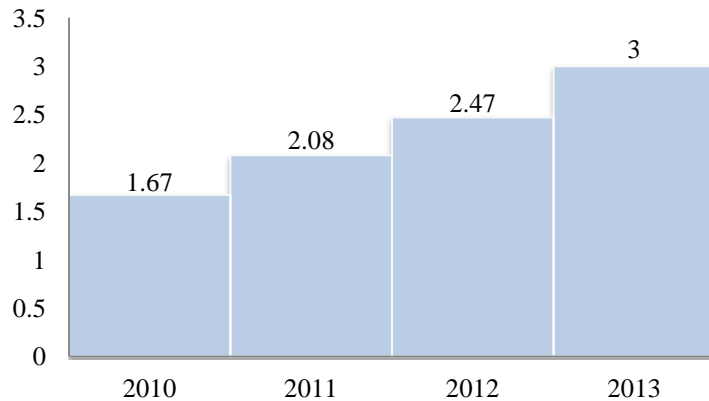


Figure 14 The total volume of the shopping malls in China (hundred millions m²)

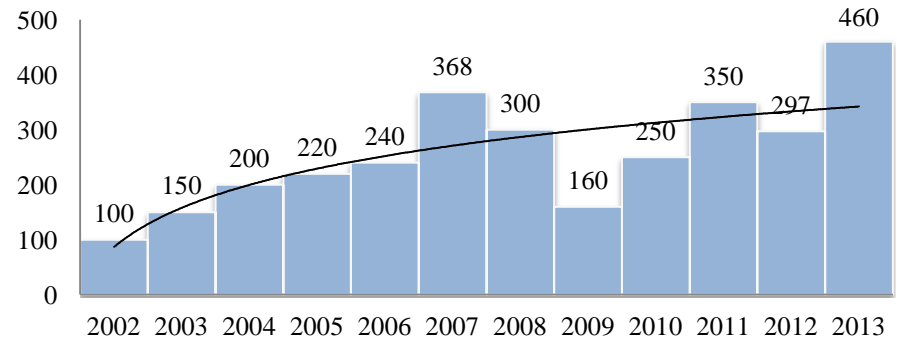


Figure 13 The numbers of the newly-opened shopping malls in 2002-2013

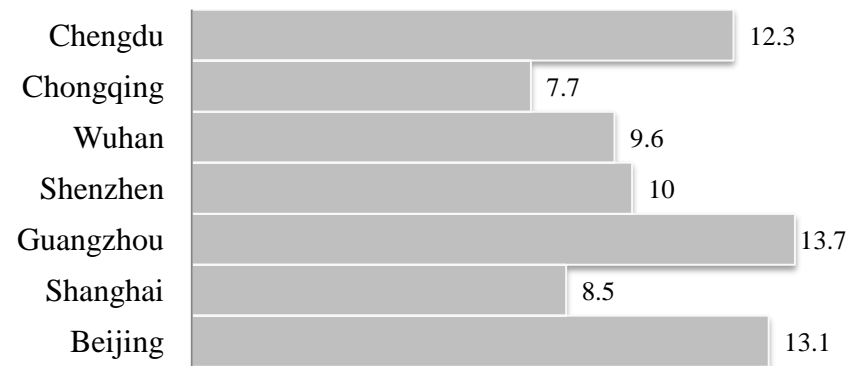


Figure 13 The numbers of the newly-opened shopping malls in 2002-2013

Currently, the construction scales of shopping malls in China ranks 1st in the world. Between 2010 and 2013, the gross volume of shopping malls and the number of newly constructed shopping malls continued to increase (see *Figure 12-14*) despite a slight recession in 2012 (see *Figure 15*).

MAIN RESULTS

● E-commerce development and Shopping Malls

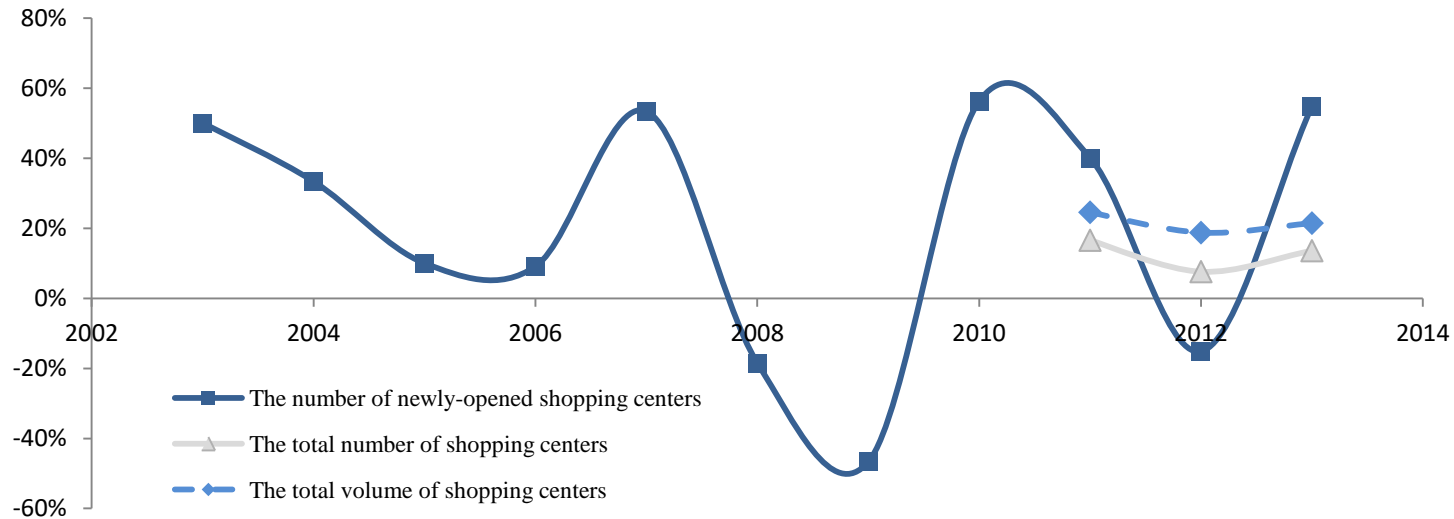


Figure 16 The comparison among the growth rates of the number of newly-opened shopping centers, the total number of shopping centers and the total volume of shopping centers

The average volume of shopping centers remained high in many major cities during 2013 as well (see *Figure 16*). In addition, the gross retail sales of 143 leading shopping malls in China still increased by 4.2% and only 35 experienced decrease in retail sales (see more at <http://www.linkshop.com.cn/club/archives/2014/571187.shtml>). These evidences reveal that in general, shopping malls are still in great demand and the overall performance of shopping centers remains good.

MAIN RESULTS

●E-commerce development and Shopping Malls

*The current situation of shopping centers in China from **urban** dimension*

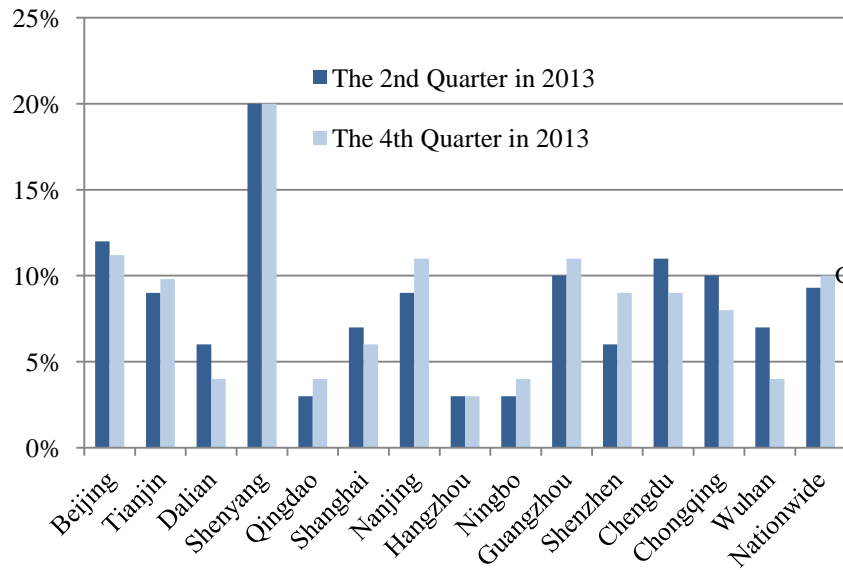


Figure 17 The vacancy rate of the trading areas in the major cities of China

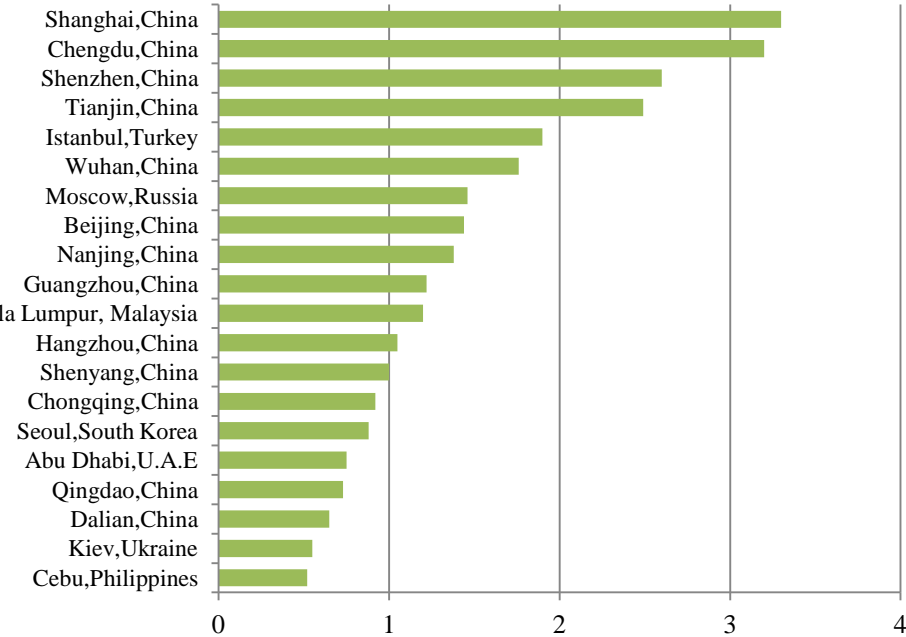


Figure 18 Shopping center spaces under construction in global cities

High Vacancy Rate V.S. High Supply

In the past years, many cities especially smaller cities suffered from the worrisome rising **vacancy rate**. In 2013, the vacancy rate in Beijing and Guangzhou exceeded 10% while that in Shenyang, a secondary city, already surpassed 20% (see *Figure 17*). The high vacancy rate largely resulted from the surprisingly high supply of shopping centers. In 2014, a half of top 20 most active cities for shopping center construction globally are located in China with Shanghai, Chengdu, Shenzhen and Tianjin standing out as the top four cities globally for new retail construction (see *Figure 18*).

MAIN RESULTS

●E-commerce development and Shopping Malls

The negative impacts of e-commerce on shopping centers

1. Affected by the competitiveness and threats from online shopping, many retail shops that **lose profit-making capacity** and ability to pay rent have no choice but to close their physical shops in shopping centers. As shopping centers find it more and more difficult to attract retailing tenants and rent out their shops, **the vacancy rate accordingly increases** which becomes a serious problem to investors and stakeholders
2. The percentage of **retailing reduced in the tenant mix** of shopping centers revealed by the removal of department stores and reduce in the proportion of apparel stores (see Figure 19, 20). These changes in shopping centers are illustrative of the declining demand for the retail store space in shopping malls.
3. The current oversupply and homogeneity problems of shopping centers was aggravated. More and more shopping malls tend to be similar in terms of design, positioning, tenant mix, brands, theme, and lack their own characteristics.

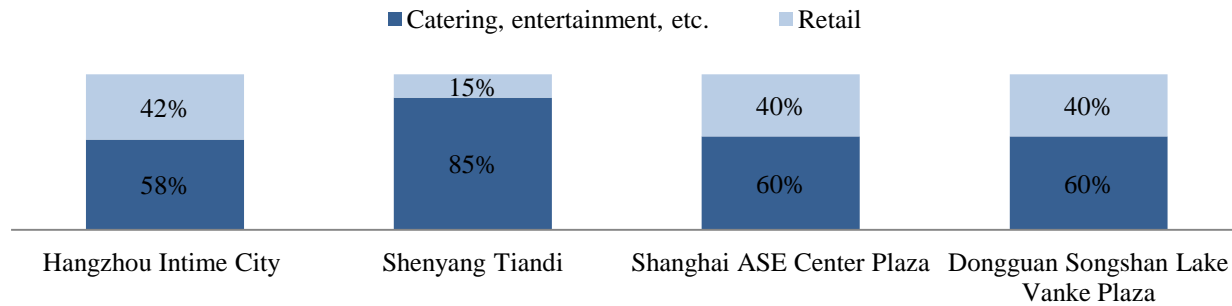


Figure 19 Tenant Mix of some newly-open shopping malls in 2013 in China

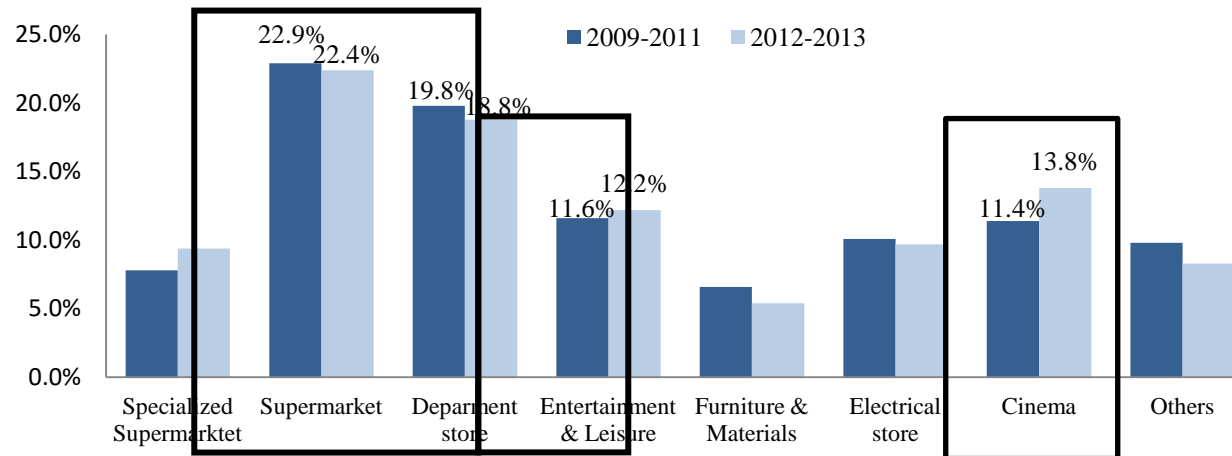


Figure 20 The distribution of anchor stores in shopping centers during the period of 2009-2011 and 2012-2013

MAIN RESULTS

●E-commerce development and Shopping Malls

The positive impacts of e-commerce on shopping centers

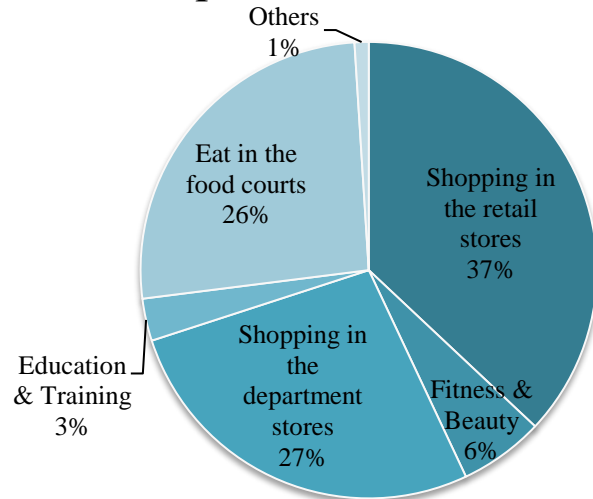


Figure 21 Main activities of interviewed customers in the shopping malls

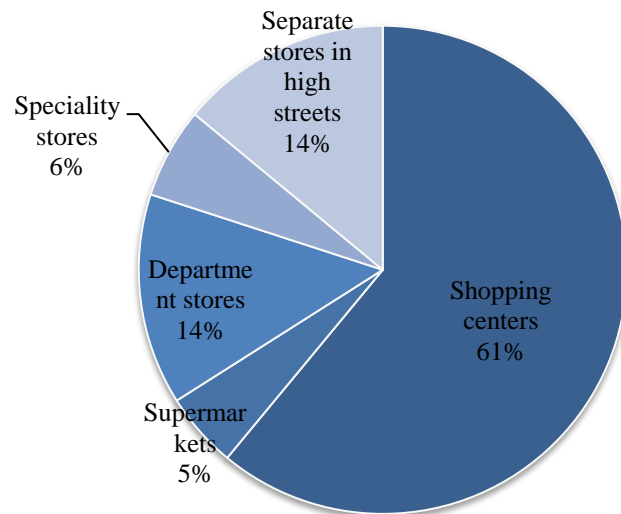


Figure 22 The choices of retailers on the locations where they open their shops

People go to shopping centers not only for shopping, but also for dining, entertainment and other reasons (see Figure 21). Shopping centers now function as a place for leisure, entertainment, experience, etc. apart from retail shopping. The huge volume of shopping centers is advantageous in developing a diverse tenant mix and housing a variety of businesses so that they can offer better one-stop shopping and services to consumers. According to a survey, shopping malls are very attractive to retailers and investors (see Figure 22 and 23). The future demand for shopping centers is promising.

MAIN RESULTS

●E-commerce development and Shopping Malls

The positive impacts of e-commerce on shopping centers

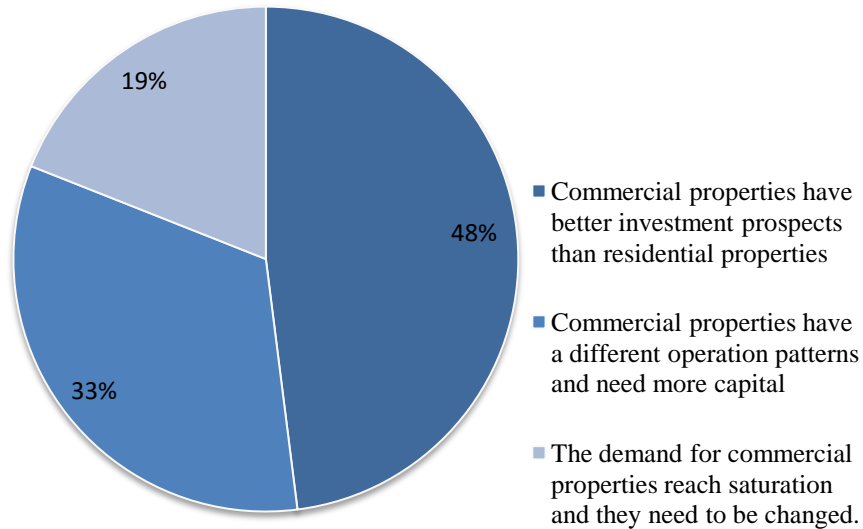


Figure 23 The prospects of developers

2. Shopping centers are pushed to employ e-commerce platform and incorporate online resources into offline stores as well. The retailers in shopping centers are also starting online business as a complementary channel for offline business. Besides, more and more developers and retailers adopt the multi-channel model of 'physical store +Internet +social media'. They develop mobile apps or use social network to do promotions, turning the Internet and social media into the main channels to interact with their consumers. The integration of online and offline business and resources could enhance the consumers' shopping experiences, increase their 'stickiness', and ultimately boost the total sales of shopping centers..

CONCLUSION

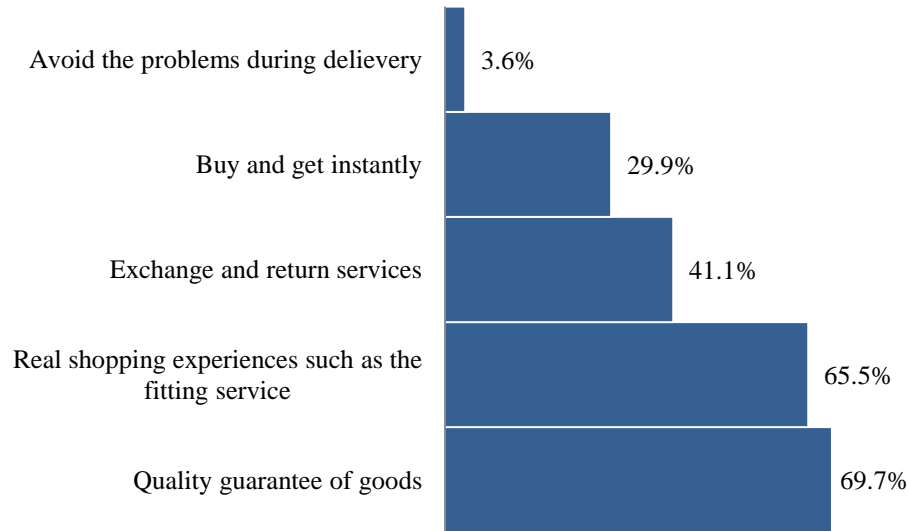


Figure 24 The strengths of physical shopping for consumers

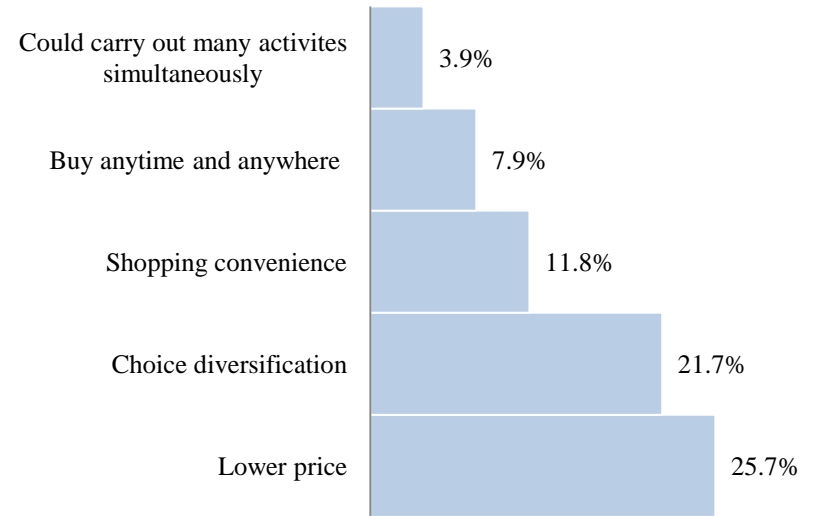


Figure 25 The advantages of virtual shopping for consumers

For consumers, offline and online shopping have their **respective strengths**: the advantages of offline shopping lie in the guarantee of goods quality, the provision of real shopping experiences such as the fitting services, and the provision of return and exchange services (see Figure 24), while the online shopping is superior in the low price of goods, diversified choices, and shopping convenience (see Figure 25). That's why physical shopping and e-shopping cannot be mutually substituted and the brick-and-mortar stores cannot be displaced. With the increasing living standard and purchasing power, there will be stable future demand for real shops.

CONCLUSION

In order to **revitalize** the commercial real estate market under the threats from e-commerce, we should first

1. **The sprawl and out-of-order development of commercial properties** should be **limited** in the cities to avoid the aggravating oversupply and homogeneity problems of commercial real estate. The numbers of department stores, supermarkets and shopping centers need to be **planned** on the basis of the actual market demand.
2. Commercial properties should **better cater to the consumers' needs** and make corresponding transformations. They should more emphasize on creating their special characteristics instead of mimicking. In this way, more specific and detailed market research need to be done for better improvements.

LIMITATION

This study found that the negative effects of e-commerce on commercial real estate are complicated, as suggested by our analyses on the overall condition and different types of commercial properties. But **the lack of data** has limited our capability to conduct any **empirical studies**. Moreover, this research only focused on the impact of e-commerce on the commercial real estate in terms of the demand for space. It is desirable for future studies to do a more comprehensive study based on large samples and study other aspects of the effects of e-commerce on commercial real estate.