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Joy City Mall: Big Data Analytics Drives Commercial Success

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DECEMBER 2019



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China's bricks-and-mortar shopping malls have come under significant pressure in recent years. Despite strong economic growth and rising consumer demand, China faces severe overcapacity of its physical retail space.¹ This is chiefly due to the growing popularity of e-commerce – as of 2018, nearly 33% of all sales in China took place online.² These debt-laden malls with shriveling foot traffic are adding to China's mounting corporate debt, which is larger than its GDP.³ As a result, mall owners have had to act creatively to bring in customers. The most popular strategy is to shift from a sales-centric business model to an experience-centric business model.

Joy City Property Holdings Limited is an example of a successful deployment of this strategy.⁴ By offering a range of integrated services within its portfolio of

real estate holdings, Joy City has been able to retain a customer base that is notoriously fickle, price-conscious, and lacking in brand loyalty. Joy City used big data

- ¹ "A China Twist? Why are Malls Closing if Consumption is Rising?" Reuters. Accessed September 18, 2019. <https://www.reuters.com/article/us-china-retail-idUSKCN0SJ0XD20151026>
- ² "E-Commerce Total Retail Sales in China, 2013-2019," Statista. Accessed May 28, 2019. <https://www.statista.com/statistics/379087/e-commerce-share-of-retail-sales-in-china/>
- ³ "A China Twist? Why are Malls Closing if Consumption is Rising?" Reuters. Accessed September 18, 2019. <https://www.reuters.com/article/us-china-retail-idUSKCN0SJ0XD20151026>
- ⁴ In early 2019, GRANDJOY Holding Group Company Limited was created. Formerly known as the COFCO Property Group Limited, it includes COFCO's acquisition of its Hong-Kong listed subsidiary Joy City Property Limited. As a result, the commercial and residential arms of the COFCO brand are no longer separate.

analytics to improve its customer retention rate, thereby paving the way for a new kind of retail experience and mall operations management in China.

Joy City Property is the Hong Kong-listed subsidiary of the Chinese state-owned COFCO Corporation. It is primarily engaged in the development, operations, sales, leasing, and management of mixed-use complexes under its flagship brand 'Joy City.' It has four business segments: investment properties, property development, hotel operations, and output management. As at June 30, 2018, Joy City Property had a presence in 14 cities with 11 mixed-use Joy City complexes, three Joy City management projects, three hotel projects and several commercial and residential property projects (see Exhibit 1).⁵ The company is especially well-known for its 'Joy City' malls, which have become landmark architectural highlights in China's major Tier 1 and Tier 2 cities (see Exhibit 2).

Exhibit 1: Joy City Malls and Other Commercial Holdings⁶



Exhibit 2: Buildings of Joy City Malls⁷



Joy City's business model consists of two parts. The first focuses on holding and selling properties while the second aims to curate young, fashionable, trendy, and high quality experiences for its customers.⁸ Joy City's strategic innovation, as such, rests not only on how it uses commercial spaces, but also on its ability to design purchasing funnels that keep customers coming back and spending more on each visit.

Joy City's ongoing challenge is to find a way to ensure that each mall visit promises a unique, customer-driven experience. For instance, Tianjin's Joy City mall has a 'super factory' in which customers can create items from wood, cloth, steel, and leather — or even baked goods as well as art.⁹ As such, mall visitors now 'shop' for an experience rather than for a specific product, and therefore trips to the same mall can be experienced differently each time.

To support positive spillovers in the form of retail and food consumption, Joy City needs data on customer preferences and spending capacity to ensure that it has the right mix and location of shops and eating establishments in a given mall. That's why Joy City launched a tiered membership program that tracks consumer preferences

5 Joy City Property Limited 2018 Interim Report. Accessed December 25, 2018. <http://en.joy-cityproperty.com/ir/financiareports/2018/>
6 Joy City Property Holdings Ltd. Company Webpage. Accessed May 28, 2019. <http://en.joy-cityproperty.com/about/>
7 Joy City Property Limited. 2017 Annual Report. Accessed May 31, 2019. <http://en.joy-cityproperty.com/ir/financiareports/2017/>
8 Joy City Property Limited. 2018 Annual Report. Accessed May 31, 2019. <http://en.joy-cityproperty.com/ir/financiareports/2018/>
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and spending habits, and rewards its best customers with exclusive opportunities.

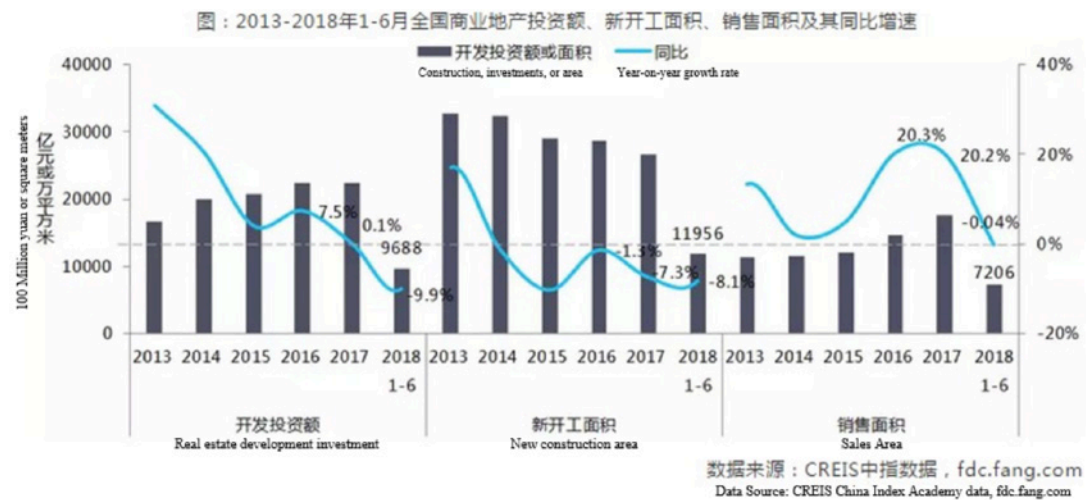
At the same time, Joy City has sought to expand its presence in urban China with an ambitious goal of creating 20 Joy City malls. A RMB 11.4 billion (US\$1.6 billion) fund has been set up with a group of institutional investors, including GIC and China Life, to look for potential acquisition targets within China and upgrade them into 'Joy City' shopping mall complexes. These new acquisitions, however, will follow an asset-light model, meaning that Joy City will assume responsibility for the management and operation of these malls, but the asset owners will carry the risk of the property investment.¹⁰

CHINA'S COMMERCIAL PROPERTY SECTOR: INDUSTRY OVERVIEW

Joy City's strategy is a reflection of China's changing commercial property sector, which has seen significant slowdown in recent years reflected in drastic declines in both new investments and construction (Exhibit 3).¹¹ McKinsey estimates that commercial property market growth in Tier 1 and Tier 2 cities will be no higher than 15% from 2018 onwards based on current pipeline data.¹²

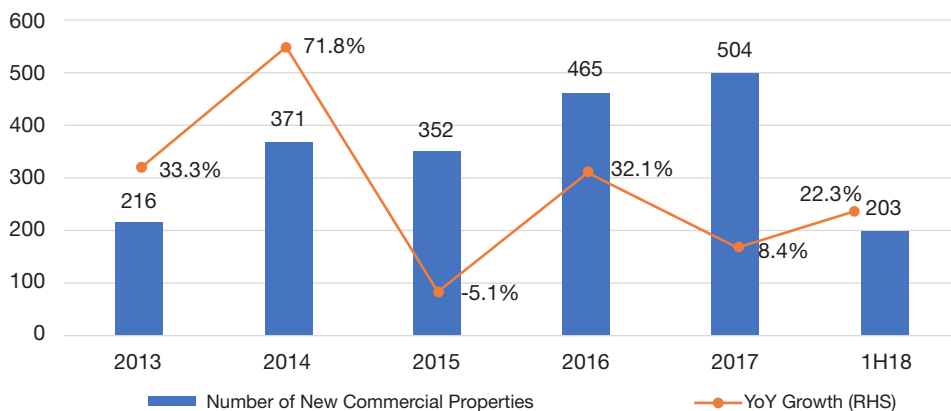
As China shifts toward an inventory-consuming phase within the commercial property sector, shopping mall developers have two choices: (1) seek growth

Exhibit 3: Commercial Property in China: Investment, New Construction, Sales Area and Growth (2013-1H18)



Source: China Commercial Real Estate Development White Paper p. 2 Figure 2.1.

Exhibit 4: Openings of New Commercial Properties in China (2013-1H18)



Source: Guangdong Winshang Data Service Company, 2018 Development Report of Commercial Real Estate in China, p. 3.

¹⁰ Tang, Shaokui. "Opportunities for Commercial Properties in the Inventory Era: Developers Exploring New Businesses and Expanding Funding Channels." March 10, 2018. Accessed December 25, 2018. <https://www.jiemian.com/article/1981423.html>.

¹¹ "2018 China Commercial Property Development White Paper." July 26, 2018. Accessed December 25, 2018. <http://fdc.fang.com/report/12024.htm>.

¹² Teng, Yingjun, Chen, Keyan. "Reflection and Breakthrough: Building New Capacity for Commercial Property." February 12, 2018. Accessed December 25, 2018. <https://www.mckinsey.com.cn/wp-content/uploads/2018/02/12.pdf>.

opportunities in Tier 3 or lower cities or (2) find some means to support and expand customer retention in Tier 1 and 2 cities. Tier 3 and lower cities accommodate 53% of the Chinese population, but represent only 16.5% of total shopping centers in operation. Typically, consumers in these locales lack the purchasing power to sustain large retail spaces.¹³ As such, shopping mall developers may only worsen overcapacity if demand forecasts are not realized. However, focusing on Tier 1 and 2 cities brings its own unique set of challenges.

With the rapid rise of e-commerce, shopping malls essentially have become showrooms. In China, consumers window-shop in malls but often buy non-luxury goods online and usually at lower prices. Moreover, malls have become increasingly seen as undifferentiated retail spaces. Mall owners have sought to address these challenges through ‘consumption upgrading’ and ‘consumption segmentation.’ Both tactics aim to further mall brand differentiation and ultimately deepen customer loyalty.¹⁴ The goal is to provide diversified, interactive, enjoyable and exciting shopping experiences, something that e-commerce largely cannot offer. By doing so, malls also acquire proprietary consumer data that can be used to serve shoppers better. This is the strategy that Joy City has pursued with great success.

JOY CITY MALL: HIGH QUALITY, DIFFERENTIATED EXPERIENCES

Joy City maintains a core set of best practices in all of its shopping malls, but each also offer unique local events, such as shows and exhibits, to attract foot traffic. For instance, Joy City Chaoyang in Beijing organized a Doraemon-themed event that yielded a 45% increase in traffic and a 30% sales boost year-on-year during China’s Labor Day weekend.¹⁵ The event was repeated in Shanghai.

In addition to such one-off experiences, Joy City created public spaces to support increased social interaction and repeat visits. For example, its Shanghai Joy City Mall features a Ferris wheel with dining, as well as 15 types of art-making workshops (Exhibit 5).¹⁶ The mall’s art district also contains elements of Taipei’s night markets and Osaka’s Rainbow Bridge, creating a unique indoor night atmosphere that lets Shanghai residents experience these places without leaving the city.¹⁷ In Chengdu,

where dog ownership has risen rapidly, Joy City created a ‘pet-friendly’ environment throughout the mall, including provision of pet strollers, water and waste cleaning stations (Exhibit 6).¹⁸ Other malls offer ice skating rinks and amusement-park-like areas where children can swim and play, as well as ice skating for adults.

Exhibit 5: Joy City ‘Sky Ring’ Mall



Exhibit 6: Chengdu Joy City’s Pet Friendly Mall



Joy City’s curation expands to the retail mix as well. While most commercial property developers are only responsible for managing public space and the overall image of the shopping center, Joy City plays an active role in building brands, selecting product portfolios and designing shop space. Specifically, 27% of its mall space is devoted to new concepts, including experiential activities and special events, with other space devoted

13 “2018 China Commercial Property Development Trend Research Report.” April 26, 2018. Accessed December 25, 2018. <http://eye.winshangdata.com/displayPDF.do?jsessionid=408A27543CFEB987AA75E361B65823C5?id=upload/2018-04-26/20180426060514.pdf>.

14 “2018 China Commercial Property Development White Paper.” July 26, 2018. Accessed December 25, 2018. <http://fdc.fang.com/report/12024.htm>.

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16 Kosuke Okame “Shanghai Mall lures visitors with Ferris Wheel, Workshops.” July 5, 2016. Accessed September 15, 2019. <https://asia.nikkei.com/Business/Shanghai-mall-lures-visitors-with-Ferris-wheel-workshops>

17 Unpublished E-House Report

18 Go Chengdu “Pet Friendly Malls in Chengdu.” March 17, 2017. Accessed September 15, 2019. <https://www.gochengdu.cn/life/useful-information/pet-friendly-shopping-malls-in-chengdu-a4571.html>

to 'online-to-offline' (O2O) influencer shops, and flagship brands. In Joy City Xidan, for instance, Issey Miyake, an upscale Japanese brand, launched a new water-themed concept store while Dior launched an experience center. In total, 120 brands in Joy City malls are new-to-market and another 130 used Joy City as their launch retail partners.¹⁹

ENSURING CUSTOMER RETENTION: THE ROLE OF BIG DATA

Despite these creative efforts, Joy City cannot rest on its laurels. Structural headwinds in the commercial property industry and similar operational strategies by other mall operators have made competition for foot traffic fierce. In response, Joy City has turned to big data.

Market Basket Analysis

A big data analytics method used by Joy City is the Market Basket Analysis. This methodology tracks consumer purchase behavior based on information in its shopping cart with the goal of identifying which products (or shops) should be located adjacent to each other. Increased sales is the benchmark of success under this method. The dataset also lets analysts sort brand and product category preferences by customer type and profile (Exhibit 7). For example, one analysis found that 2% of Joy City's members have made a purchase at the Moon Kee Desert shop, of which 37.2% also made a purchase at the GAP. The source of this data is Joy City's robust membership program.

RFM Analysis

RFM is another method used by Joy City to assess customer behavior. RFM refers to Recency (how recently did the customer purchase something?), Frequency (how often does the shopper make a purchase?) and Monetary (how much does a shopper spend?). This data is used to assess a customer's overall value, identify the best strategy for retaining consumers, and for target marketing efforts, leading to increased customer value.²⁰

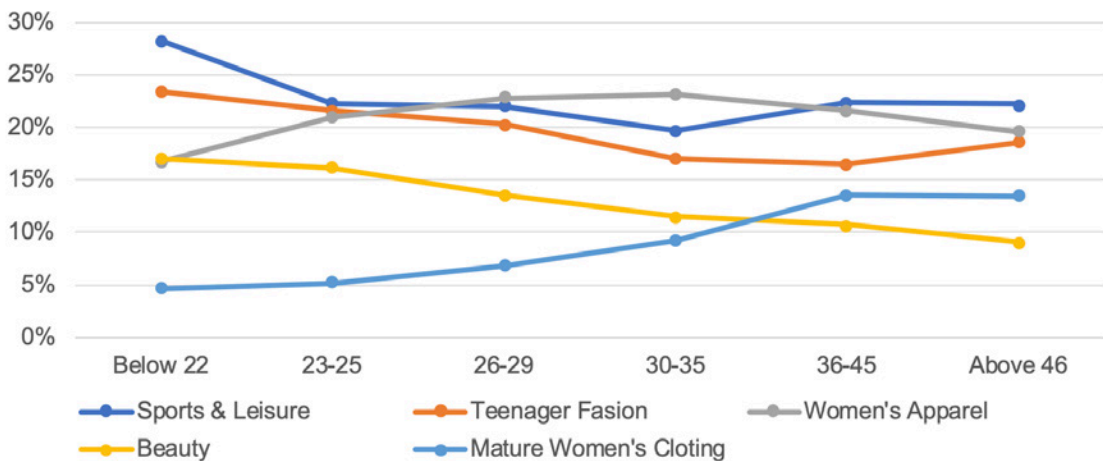
Exhibit 8: RFM Depiction of Customer Segmentation

Customer Type	R	F	M
Most valuable customer	High	High	High
Generally valuable customer	High	High	Low
Key customer to cultivate	High	Low	High
General customer to cultivate	High	Low	Low
Key customer to maintain	Low	High	High
General customer to maintain	Low	High	Low
Key customer to retain	Low	Low	High
General customer to retain	Low	Low	Low

Roland Berger Clientele Analysis

A third method favored by Joy City is the Roland Berger Brand-Values Profiler which assumes that consumers are most likely to purchase brands that align with their personal values. The Roland Berger Brand-Values Profiler assesses consumers along two axes: Emotional/Rational and Minimalist/Maximalist (Exhibit 9) to develop consumer archetypes.²¹

Exhibit 7: Merchandise Category Breakdown by Age Group



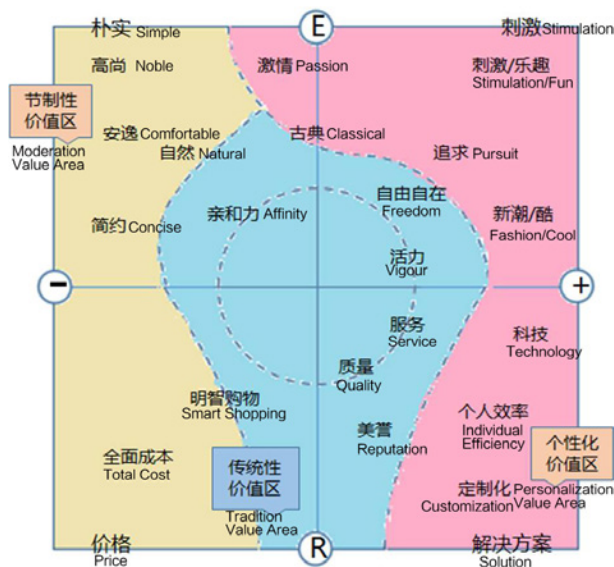
Source: Joy City.

¹⁹ Unpublished E-House Report

²⁰ Zhang, Liang. "How to Conduct Customer Segmentation for Targeted Marketing: Discussion on Application of RFM Model." December 12, 2016. Accessed August 6, 2018. <https://36kr.com/p/5058947.html>

²¹ "Roland Berger Toolkit - Customer Value Profiler." February 14, 2012. Accessed December 25, 2018. <https://wenku.baidu.com/view/6bcae426fff705cc170ae8.html>

Exhibit 9: The Roland Berger Brand-Values Profiler



The Roland Berger Profiler identifies consumer values through surveys that compile a consumer's opinions on a series of attitudinal questions. Based on these findings, the Profiler can predict consumer preferences. In the case of Joy City, cluster analysis of these preferences is a resource for identifying customer and shopping mall segmentation, something that aims to support continued profitability.

LOOKING AHEAD: IS BIG DATA ENOUGH?

Joy City has successfully used big data to acquire information on its customer segments and use it to adjust the tenant mix in its malls. No longer are all brands statically retained under a 2- to 3-year contract. Instead, Joy City allows for deliberate brand turnover to optimize consumer retention. The company has also begun to use data analytics for site selection purposes.

Other large commercial mall operators and property developers are doing the same. Wanda Group, for example, deploys data analytics to improve the overall asset valuation of its 235 shopping malls (or Wanda Plazas) located across China. Several areas that Wanda has highlighted for the development and use of data analytics include the following:

1. Digitalization of the tenant leasing process from the tenant moving in to moving out
2. Creating of records for all brands and classifying them based on consumer age group and purchasing power
3. Collection of all point-of-sale (POS) transactions

generated from tenants to include sales data for different time frames and locations, sorted by tenant business types

4. Monitoring of foot traffic across an entire plaza, in a region of Wanda Plaza and within each shop
5. Building a membership program to gather basic data

Longfor, a leading commercial property developer in China's Tier 1 and Tier 2 cities, has begun to use big data to enhance its operational efficiency. Its proprietary platform integrates data from leasing, marketing, operations, property management, engineering, procurement, and human resources across multiple regions to enhance and rationalize its resource utilization. Going forward, the company plans to use big data analytics to assess and understand its tenants and consumers better.

But technological challenges remain, even for companies with strong financial and tech capabilities and despite China's advanced e-commerce platforms. For instance, the shopping malls use Wi-Fi probe technology to track smart phones and monitor human traffic. However, industry-wide accuracy is below 70%. As such, it can introduce significant errors into big data analysis, which cannot be easily solved because most problems are introduced by the end-user rather than the system.

But big data also has its flaws. Joy City's system originates in 12 databases, which makes integration time-consuming and inefficient. Analytics driven by consumer profiles are also necessarily static and therefore may not capture the latest, most dynamic consumer preferences. There is also the risk of bias as well as the possibility of inaccurate findings in any large scale algorithm-centered analysis. Finally, the potential for backlash against shopping malls possessing and storing enormous amounts of personal data on their consumers is not out of the question in China. These are technical, social and political risks that Joy City must be prepared to face.