



2022 China Retail Digitalization Whitepaper

The next frontier of digital transformation in China's
retail industry

Executive summary

As China wrestles with macro-economic uncertainty amid persistent outbreaks of COVID-19, retailers are under increasing pressure to adapt to slowing sales growth and heightened competitive intensity.

McKinsey research conducted in partnership with the China Chain Store & Franchise Association suggests that, despite significant investment in omni-channel expansion, retailers are struggling to turn a strategic focus on digital into improved financial performance.

This white paper provides a compelling snapshot of China's retail market and essential guidance for executives seeking to navigate the next phase of growth by implementing digital transformations. Key takeaways include:

- A majority (85 percent) of retailers have not fully realized the benefits of investing in digital, and are caught between expanding online operations and implementing 'digital intelligence' initiatives.
 - Most retailers are focused on building front-end digital capacity. Digitalizing the mid and back-end of the value chain, or core business modules and back office infrastructure, remains a challenge.
 - Driving return on investment is proving problematic. While many retailers have invested heavily in digital transformation and appointed C-suite executives to lead the process, fewer than half expect to recoup their costs within three years.
 - Two-thirds of retailers believe that redesigning organizational structure and operating models to support digital transformation is one of three keys to successful digitalization.
- Implementing organizational change is difficult and slows down the process; more than half of retail executives lack a clear plan for what they are trying to achieve, not to mention the digital talent necessary to implement change.
 - Four trends are reshaping Chinese retail: The potential for digital transformation to improve efficiency is expanding as market growth slows; the era of the online 'traffic dividend' has ended, demanding greater effort to attract and retain customers; retailers are intently focused on merchandise quality to drive sales; and stores are embracing more diverse roles as they turn into experience and online fulfillment centers.
 - Each type of retail format, ranging from hypermarkets to supermarkets, convenience stores, shopping malls, and specialty stores, faces market challenges that can be addressed through targeted digital interventions. This paper provides a breakdown of the challenges in each segment and examples of digital initiatives that can best address them.
 - Successful retail digital transformations are united in requiring four key enablers to be implemented in tandem: a multifaceted 'middle office', a complete cultural, organizational, and mindset shift, the implementation of artificial intelligence at scale, and the deployment of affordable in-store technology that serves as a data source for new digital initiatives.

Preface

Over the past decade, China's retail industry has weathered seismic disruptions triggered by near ubiquitous smartphone ownership. Mobile commerce has surged, spurring the rise of the 'new retail' concept that blends offline and digital commerce. More recently, the onset of COVID-19 has accelerated the adoption of new retail technologies and online channels have flourished and fragmented.

Encouraged by the digital shift, China's Internet firms have stepped into retail and now vie for market share against offline incumbents. Retailers of both types recognize that the nature of their industry has changed forever, and are remolding their operations through digitalization – the reorganization of business activities around digital technologies.

But a narrow emphasis on omni-channel expansion has succeeded only in depressing retail profits without achieving significant earnings growth. The true benefits of digital transformation have yet to be realized. Awareness is growing among retail executives that successful digitalization is not merely about expanding online channels, but rather requires a fundamental transformation so that digital thinking and technology work in concert across business units.

Meanwhile, the latest indicators suggest that the global macro-economic environment is entering a period of deep turbulence, and China is no exception. Persistent outbreaks of COVID-19 continue to hold back China's GDP growth, weighing on consumption spending and retail

revenues, and shaping consumer behavior.

Market participants are racing to convert existing digital investments into top and bottom-line breakthroughs before commercial pressures take their toll. In our view, the uncertainty presents both a challenge and an opportunity for Chinese retailers intent on completing their digitalization journey.

This "2022 China Retail Digitalization White Paper", jointly published by McKinsey and the China Chain Store & Franchise Association (CCFA), aims to assist retail executives in putting digital at the heart of their corporate structure and culture, data collection and storage, operating principles, and technology.

We present new research on the current state of digitalization among China's retailers and an analysis of four major trends reshaping Chinese retail. We also provide a breakdown of the challenges affecting supermarkets, convenience stores, shopping malls, and specialty stores – and suggest digital solutions to overcome them. Finally, we conduct a deep-dive into the key enablers of a successful digital transformation: middle office development, digital organization, artificial intelligence (AI) at scale, and in-store technology. We focus on areas in which these changes can make the most impact – the essential elements of retail success: product strength, consumer experience, and supply chain efficiency.

The "2022 China Retail Digitalization Whitepaper" is jointly developed by McKinsey China and China Chain Store and Franchise Association (CCFA) for industry reference.

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Chapter 1

The status quo: Digital transformation in China's retail industry

We conducted in-depth interviews with business leaders from more than 20 retail companies and delivered questionnaires to C-suite executives at nearly 40 domestic retailers. Our research divided the digitalization process into four stages:

Digitalization 1.0: Informatization: This includes IT infrastructure upgrades and transformation, as well as business process systematization and informatization.

Digitalization 2.0: Online operations: Comprising online channel expansion to achieve omni-channel operations, and leveraging data insights to assist business decision making.

Digitalization 3.0: Digital intelligence: This refers to applying big data analysis to drive decision making across the business, automating processes and decisions, and

implementing cost reduction and efficiency improvements on a large scale.

Digitalization 4.0: Platform-based operations and ecosystem building: Covering the integration of industries or value chains, development of a digital business ecosystem, and the promotion and empowerment of data-driven new business models and industries.

Our research suggests that retailers are exploring online operations (Digitalization 2.0) and moving towards digital intelligence (Digitalization 3.0) in terms of their digital transformation journey. Interviews we conducted support this finding: 85 percent of Chinese retailers are poised somewhere between the online operations and digital intelligence stages of digitalization (Exhibit 1).

Exhibit 1

4 stages of digital transformation



Source: China Retail Digitalization CXO Survey, March – April 2022, n=33; McKinsey analysis

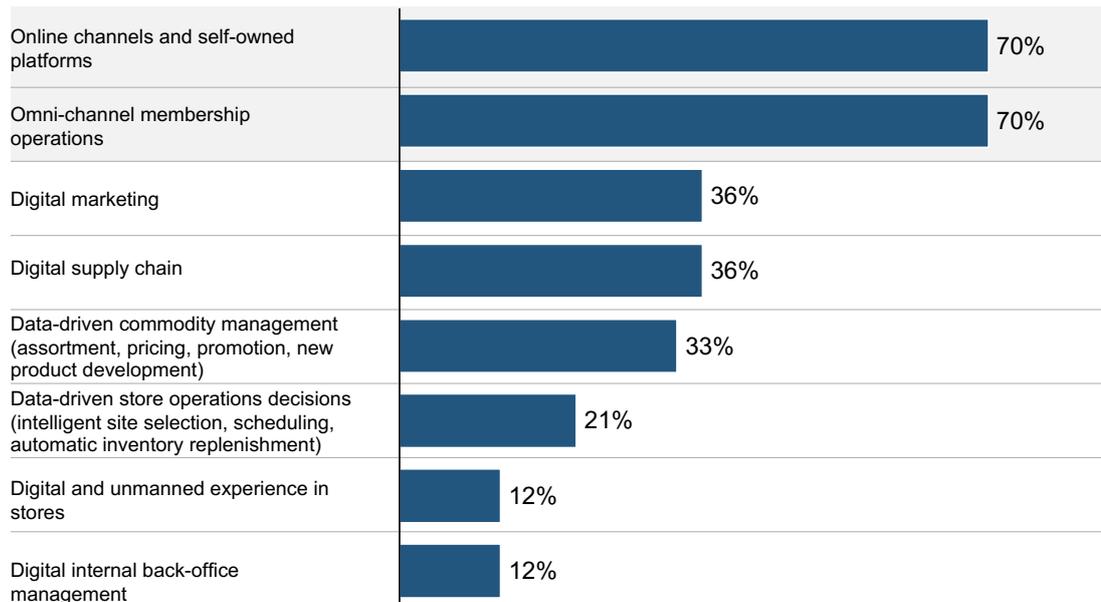
Most retailers are still focused on building out front-end digital capacity and traffic operations. Currently, retail enterprises remain intent on developing digital direct-to-consumer capabilities. Digitalizing the

mid and back-end of the value chain, or core business modules and back office infrastructure, remains a challenge, according to our research (Exhibit 2).

Exhibit 2

Most retailers still focus on front-end channels and traffic operations

Digital capability building focuses (multiple choice, ≤ 3)



Source: China Retail Digitalization CXO Survey, March – April 2022, n=33

Retailers have chosen digital transformation as a key strategic focus, and are investing heavily to achieve their aims. Our survey suggests the majority of retailers are adopting digital transformation as a key strategic direction for their future development, and are investing more than

3 percent of total revenue on digital. Some respondents indicated they are committing as much as 10 percent of revenue to their digitalization program. While they expect significant returns in terms of business performance, the return on that investment is not yet clear (Exhibits 3 and 4).

Exhibit 3

Retailers are making digital transformation a strategic focus and expect big returns in terms of growth and cost savings

94%

Include digitalization as one of their three most important strategic initiatives

79%

Expect digitalization to contribute at least 1/5 of **results growth** in the next three years

58%

Top leaders directly lead the digital transformation across the company, with responsibility for the planning and implementation of digitalization projects

76%

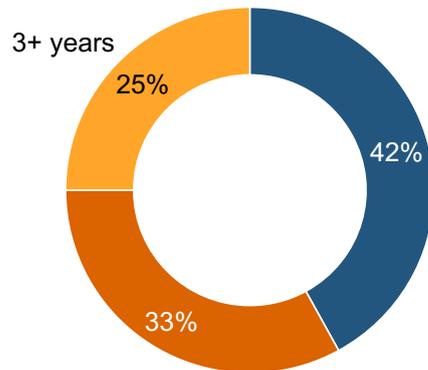
Expect digitalization to contribute at least 1/5 of **cost savings** in the next three years

Source: China Retail Digitalization CXO Survey, March – April 2022, n=33

Exhibit 4

...However, ROI remains a challenge

Time for digital investment to pay for itself given current business development



45%

Cost recovered in 3 years

Enterprises said one of the three toughest challenges in digital transformation is the highly uncertain ROI. Online channels/D2D business, for example, have difficulty achieving profit

Not yet recovered cost, hard to estimate

Source: China Retail Digitalization CXO Survey, March – April 2022, n=33

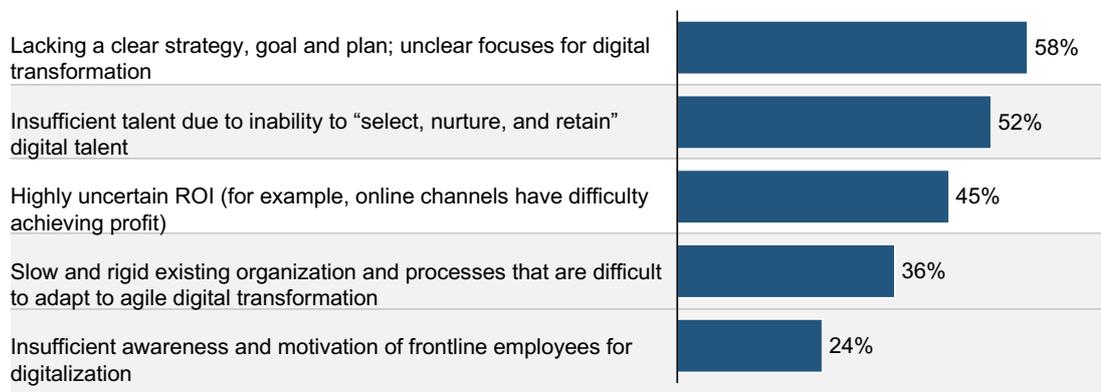
Retailers are also encountering difficulties redesigning their organizational structure and talent acquisition processes to drive digital transformation. Two-thirds of retailers believe that redesigning organizational structure and operational models to support digital transformation is one of

three keys to successfully implementing the process. In reality, advancing organizational change is difficult and slows down digital transformation; more than half lack a clear plan for what they are trying to achieve, not to mention the digital talent necessary to implement change (Exhibit 5).

Exhibit 5

Retailers are actively reforming organization and talent acquisition, but this process is beset with difficulties

Challenges in digital transformation



Source: China Retail Digitalization CXO Survey, March – April 2022, n=33

Clearly, Chinese retailers have a way to go to complete their digital transformation.

In the following sections, we analyze the digital transformation processes of supermarkets and hypermarkets, convenience stores (CVS), shopping malls,

and specialty stores, before extrapolating best practices and sharing insights into how China’s retail players can best advance the digitalization process.

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Chapter 2

Four trends reshaping Chinese retail

Deep-dive research across multiple regions and channels unearthed four trends that are redefining China's retail market. Based on these trends, we identify four main insights for retail enterprises:

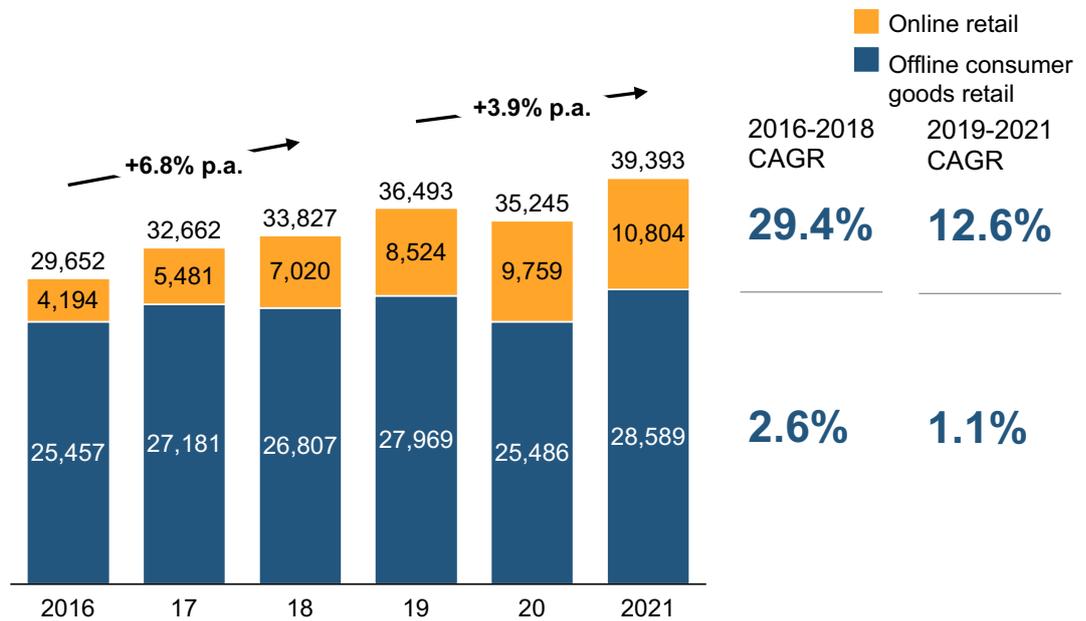
1. The scope of digital transformation is widening as market growth slows

As retail growth eases and profits decline (Exhibit 6), digital transformation is evolving beyond channel expansion to encompass leaner store operations across both merchandise and the supply chain to reduce costs and improve efficiency.

Exhibit 6

Total retail sales of consumer goods and growth rate (2016-2021)

RMB billions



Source: National Bureau of Statistics of China

Supermarkets and hypermarkets' profits have significantly declined amid a surge in store closures in the past year, placing them at a survival inflection point. In 2021, most listed supermarkets and hypermarkets saw year-on-year revenues and profits decrease.

2. The 'traffic dividend' era has concluded

Early digital adopters no longer benefit from the shift of consumer traffic to

online channels, and it is no longer sustainable to issue discounts to lock-in long-term customers. With the migration to online now fully complete, retailers are turning their attention to improving core competitiveness in order to retain existing customers and attract new ones. Refining omni-channel and user operations is now essential for retail enterprises to monetize traffic.

As traffic dividends disappear, online platforms are competing for users with increasing intensity. According to

the China Internet Network Information Center (CNNIC), Internet penetration hit 72 percent in 2021, approaching saturation when viewed in light of a national urbanization level of 64 percent. Acquiring public domain traffic is increasingly expensive, which has elevated Internet-based platforms' user operation costs. For example, Alibaba's e-commerce user operation costs increased by nearly 88 percent from 2017 to 2020.

Brick-and-mortar store traffic is trending downward under the impact of COVID-19 and traffic diversion to e-commerce and door-to-door (D2D) services. Previous McKinsey research shows that foot traffic in retail stores had not recovered to pre-COVID levels two months after the peak of the pandemic in 2020, with supermarkets and CVS experiencing a 20 percent and 12 percent drop, respectively. COVID-19 flare-ups in multiple provinces and cities since the beginning of 2022 have continued to hit offline stores.

Customer touchpoints and shopping channels have fragmented both online and offline, making it more complicated for retailers to manage traffic domains. Retailers need to not only manage online communities, WeChat official accounts, and WeChat enterprise accounts in private domains, but also create strategies for social platforms (such as Xiaohongshu) and short video livestreaming platforms (e.g. Douyin and Kuaishou).

User growth has plateaued, making the management of existing users more important. Retail enterprises should build an omni-channel and refined user management system. According to McKinsey's China consumer survey, conducted in mid-2022, more than 89

percent of consumers changed their shopping habits in the past year, by trying new shopping apps and social e-commerce channels, or changing the stores where they normally shop. As consumers become less loyal, retailers are having to widen their channel offerings and go to greater lengths to retain customers.

3. Retailers are refocusing on merchandise and doubling-down on quality

As consumers make more rational and individualized choices, retailers need to emphasize product strengths to meet their needs. McKinsey's 2022 Global Consumer Sentiment Survey shows that consumption upgrades and downgrades are happening concurrently in the Chinese grocery market. Retailers thus face both a challenge and an opportunity around the need to accurately match customer needs with merchandise at the individual level.

Merchandise competitiveness depends on whether retailers can work out detailed assortment and pricing strategies for different customer groups. On the other hand, competitiveness also relies on their ability to innovate and differentiate merchandise by developing own-brand products, while keeping abreast of market trends and iterating products.

4. Retail stores are embracing multiple roles

Retail outlets are no longer just shopping channels but instead serve as venues for user experiences and operations. Such customer-centric operations, including content creation and delivery, campaign organization, and lead retention and conversion, are crucial to deepening the bond between a brand and its customers.

Stores also serve as sources of instant delivery and as fulfillment centers. Retailers urgently need to upgrade the management of stores and frontline personnel through digital transformation in order to cater to the following fast-evolving roles:

i. Hosting consumer experiences:

According to McKinsey research, 85 percent of consumers prefer to make a purchase decision in offline stores. No matter whether they choose to experience and evaluate goods at stores before buying elsewhere, or they buy directly in stores, their preference attests to the importance of creating a good shopping experience at offline stores.

ii. Omni-channel user operations:

Stores can foster a sense of community that will increase the visit frequency and loyalty of customers by providing convenient and user-friendly services and facilities. For example, CVS can offer eating areas, collection and delivery of parcels and group purchases, as well as bill-payment services.

iii. 'Last mile' delivery: A favorable layout, front- and back-warehouse planning, as well as order-pickup area design, can play a key role in improving the efficiency and reducing the costs of 'last mile' delivery.

iv. Delivering value-added services:

Shop-floor staff not only serve as the human point of connection between the enterprise and consumers, but are also vital for additional service delivery. For shopping malls and specialty stores (cosmetics, pharmacies, and mother and baby stores), frontline workers and shopping assistants play a crucial role in driving uptake of additional services.

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Chapter 3

Market challenges and digitalization

3.1 Hypermarkets and supermarkets: Omni-channel answers to a triple threat

In the following section, we identify threats facing hypermarkets and supermarkets¹ and present thoughts on how to leverage digital to address them.

I. Consumer fragmentation, low profitability, and rising costs are major challenges

For traditional hypermarkets and supermarkets in China, disruptive transformation is imperative amid flatlining growth: In 2021, China's hypermarket and supermarket footprint totaled RMB 3 trillion, but the market recorded sluggish growth overall.

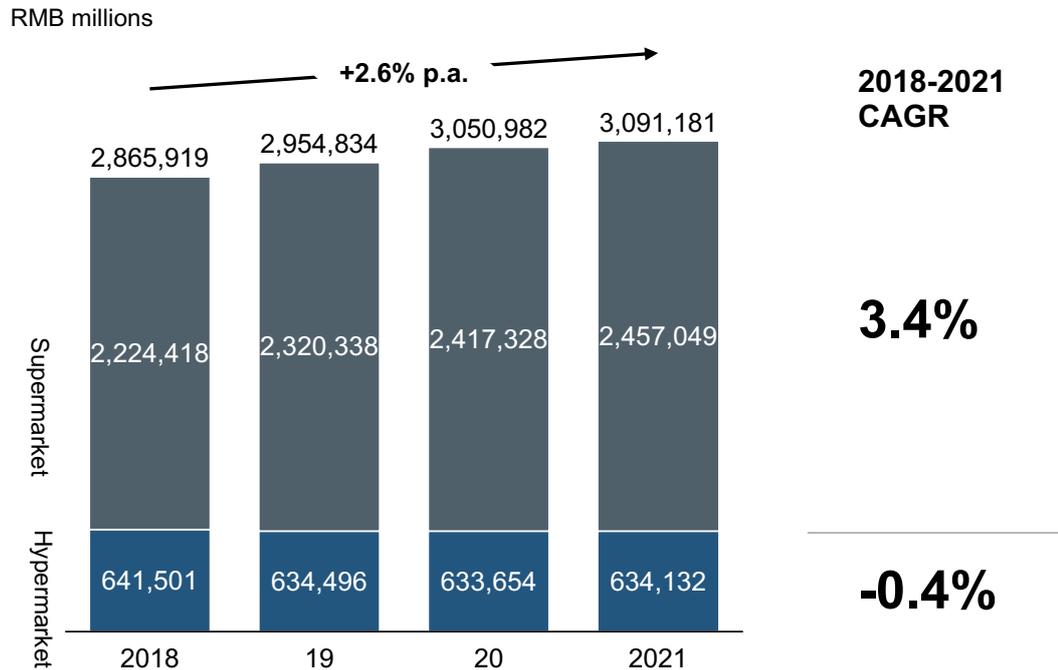
Hypermarkets experienced flat growth in the past year, while supermarkets experienced pressure on both revenues and profits (Exhibit 7).

Moreover, these topline numbers obscure a pernicious threat to traditional supermarkets revealed by recent McKinsey surveys in China, namely that they are struggling to address the triple challenges of consumer base fragmentation, profitability issues in their online business, and rising operating costs. Below we explore solutions for each of the three challenges in turn:

¹ Hypermarkets in China are retail outlets with a commercial space of over 5,000sqm that primarily sell food, beverages, tobacco, and other groceries. Hypermarkets also sell a range of non-grocery merchandise and typically have upwards of 10,000 stock keeping units (SKUs). Supermarkets are smaller, defined as selling groceries in a selling space of between 400-3000sqm, excluding discounters, CVS and independent grocery stores. They primarily sell food groceries and carry about 8-10,000 SKUs.

Exhibit 7

China hypermarket and supermarket market size and CAGR (2018-2021)



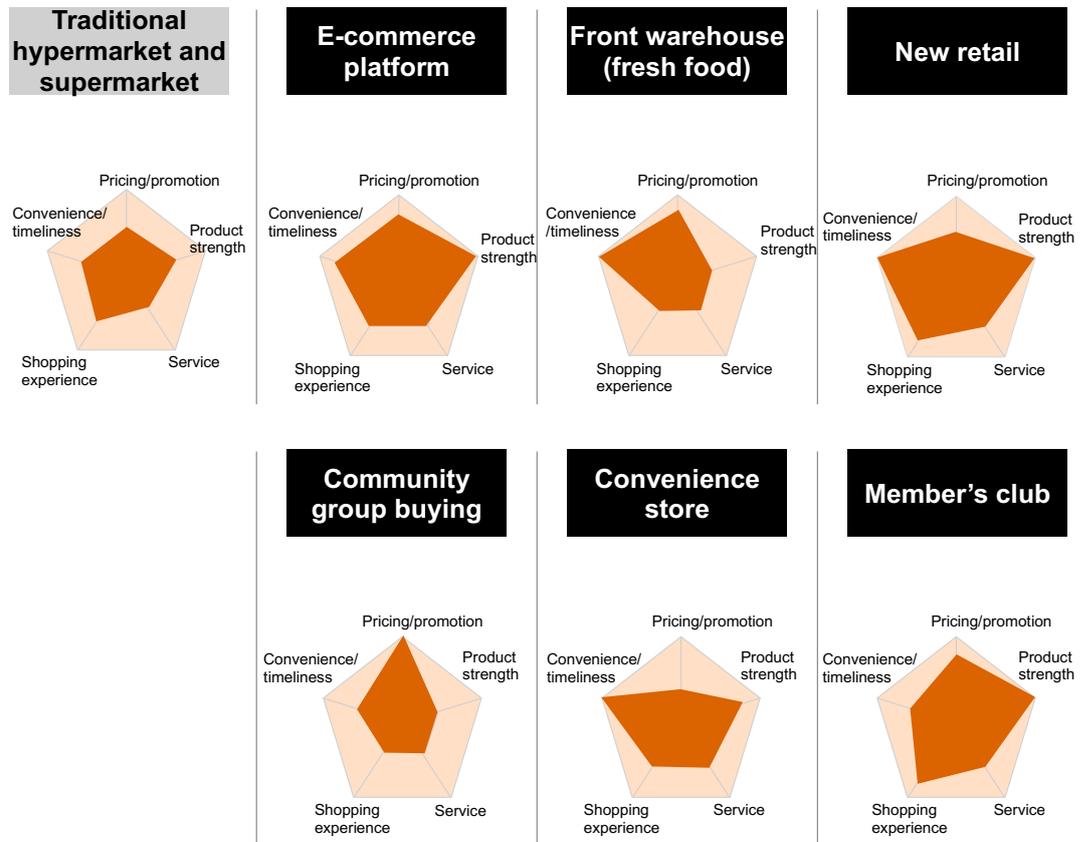
Source: Euromonitor; McKinsey analysis

1: The consumer base is fragmenting amid weak value propositions and a plethora of alternatives

The grocery market is among the most complicated and fast-growing in China in terms of the competitive landscape and pace of innovation. On the demand side, the market is trending towards polarized consumption where trading up and down is commonplace, hyper-convenience, and an

expanding number of purchasing scenarios. On the supply side, the challenges revolve around responding to group buying and e-commerce platforms' cost and quality advantages, as well as a failure to upgrade brick-and-mortar stores' stock-keeping arrangements and layouts (Exhibit 8).

Fragmented grocery formats and channels present multiple challenges



Source: McKinsey analysis

On the demand side, hypermarkets and supermarkets are struggling to respond to three seismic shifts in consumer preferences and market competition:

Polarized consumption: On the one hand, consumers are increasingly seeking the most cost-efficient daily necessities; on the other hand, they are prepared to pay a high premium for products with which they have a strong emotional connection or that command a brand premium. For example, 14 percent of Chinese consumers are trading up when buying alcohol and beauty products, whereas 17 percent of consumers are trading down for daily necessities and white goods.

Heightened demand for hyper-

convenience: Previously, consumers would walk or take a half-hour bus ride to hypermarkets, but now they prefer to shop nearby, or buy online for home delivery.

Diversified purchasing occasions:

Like the wider retail market, grocery consumption has splintered across multiple purchase scenarios, covering one-stop stockpiling, spur of the moment purchasing in-store and via home delivery, and routine shopping. This places greater pressure on hypermarkets and supermarkets to adapt by engaging consumers through omni-channel.

On the supply side, hypermarket and supermarkets' value proposition has become unclear, making it difficult to survive competition with other businesses that outperform them in several areas, including:

Convenience and timeliness: Traditional hypermarkets and supermarkets mostly serve 'planned' in-store purchases. Thus, it is difficult to withstand competition from new retail enterprises that are better equipped to respond to rising consumer demand for flexibility and speed in terms of purchasing products.

Cost performance: Traditional hypermarkets and supermarkets struggle to compete with community-based group buying and integrated e-commerce platforms in terms of online order fulfillment costs. Mainstream integrated e-commerce platforms have also had a considerable impact on offline supermarkets by offering lower prices in standard categories like packaged snacks, mother and baby products, toiletries, and household cleaning products. Fresh products, an important source of foot traffic in supermarkets, have been disrupted by group buying – for some products, the group buying price is 15-25 percent lower compared with supermarkets.

Product strengths: Although hypermarkets and supermarkets are positioned to provide a full range of products, their product range and quality are inferior when compared with integrated e-commerce platforms. Outdated assortments and mediocre product selection are increasingly prominent problems.

Service and experience: Some regional hypermarkets and supermarkets in lower-tier cities still depend heavily on manual cash registers, resulting in long waiting times and a poor experience. Some stores' spatial arrangement, traffic flow planning,

and shelf allocation are not consumer-friendly, which also weakens the shopping experience.

2: Omni-channel expansion is accelerating, but D2D business profitability is a concern

Door-to-door (D2D) service, an important omni-channel business for fresh products, currently relies on subsidies for growth. Even leading traditional hypermarkets are operating at a loss or earning low profits due to high fulfillment costs. Indeed, for traditional hypermarkets and supermarkets, D2D business contributes to growth rather than to profits, with many participants reporting that the more products they sell, the more money they lose. Even for industry leaders, new stores (open for less than six months) are suffering a loss in earnings before interest and tax (EBIT) of 10-15 percent. Therefore, D2D order growth actually lowers hypermarket and supermarket profitability.

3: Operating costs continue to rise

Supermarkets and hypermarkets' single-store sales are on the decline, while single-store costs such as those for rent, renovations, labor, and utilities keep rising. This further depresses profit margins. According to statistics from Chinese economic data source CEIC, the average salary in China's wholesale and retail industry increased by 30 percent in 2020 compared with 2017. Furthermore, spending on protective and disinfectant supplies for employees and stores amid COVID-19 outbreaks increased the cost burden on supermarkets and hypermarkets. Finally, these stores previously possessed an advantage in attracting foot traffic, and could obtain favorable rental terms from commercial property companies, which viewed their presence as a boon for their overall portfolio. However, a rise in rental

costs appears inevitable as store leases expire, and as foot traffic has declined amid the proliferation of alternative purchasing models.

II. Digital transformation for hypermarkets and supermarkets: 5 initiatives for successful omni-channel growth

The points above illustrate a challenging status quo for traditional supermarkets. In the following section, we explore five ways in which hypermarkets and supermarkets can tap various digitalization benefits to address these issues, and turn their omni-channel expansion from a cost center into a profit driver.

1: Differentiate online and offline business value propositions to stand out from the market

We have seen various players transform and revitalize their value propositions with positive results, and believe that a mature value proposition should be differentiated in at least one dimension. Here are some key points to consider when reevaluating value propositions:

Improving timeliness and convenience through omni-channel fulfillment is essential. Hypermarkets and supermarkets should provide flexible delivery options to meet consumers' needs, such as 30-minute delivery, as well as next-day deliveries in a designated time slot, and deliveries several days later.

Smaller store formats and refined SKUs improve product strength and experience. As a legacy of their role catering for one-stop shoppers, traditional hypermarkets and supermarkets cover a huge area and have a large number of SKUs. As a result, these retailers struggle to afford high rents when foot traffic decreases. Simplified, narrower SKUs applicable to

smaller stores allow for improved cost control across procurement, warehousing, logistics, store operation, and rents.

Developing multiple formats and banners: By pursuing multi-brand and multi-format development, grocers can create differentiated value propositions to meet divergent consumer demands.

2: Deploy user operations across all channels to maximize customer value

The first step to grow sales and profits is to increase average transaction value (ATV) and units per transaction (UPT) through deploying omni-channel, and refining user operations. Companies should aim to complete transformation in these areas before optimizing costs, because the value of omni-channel users is significantly higher than that of single-channel users in terms of ATV and purchase frequency. According to the D2D business data of leading chain supermarkets in China, the average annual spending of omni-channel users is 30 percent higher than that of single-channel users. Supermarkets should improve user operations capabilities through digital operations to help achieve the following aims:

i. Deliver a tailored, data-driven and segmented operations strategy: For example, a leading new retailer divides its customers into several tiers based on purchase frequency and monitors daily expenditure allocation and conversion in each tier. This allows the retailer to map out user operations strategies targeting customers in each segment, such as offering coupons to regular customers who refer new ones to offline stores.

ii. Achieve the following user operations-enabled goals:

Attract new customers: For traditional hypermarkets and supermarkets, leveraging offline store traffic is conducive to rapidly growing D2D business in the initial stage. However, given the traffic growth bottleneck this strategy entails, retailers still need to place ads on new media and social platforms to drive additional referral traffic.

Increase ATV: Hypermarkets and supermarkets can utilize large consumption data sets to analyze customer behavior and recommend suitable products, points redemption ideas at checkout, price-break discounts or gifts, and ways to get free shipping when customers make a purchasing decision, thereby elevating ATV and transaction volume.

Stimulate repurchases and improve customer loyalty: Social media-based community operations, especially WeChat groups, are an effective means for hypermarkets and supermarkets to establish a customer community, develop loyal customers, and form a closed loop of traffic.

3: Elevate the appeal of stores and products

Powerful merchandising is a natural weapon in the battle to attract new customers and improve customer loyalty, especially for popular fresh products. It is not sustainable for hypermarkets and supermarkets to drive customer growth solely by issuing shopping subsidies; customer retention ultimately depends on the competitive edge of their merchandise. Hypermarkets and supermarkets can strengthen their merchandise management capabilities through digital transformation initiatives by doing the following:

Enhance upstream control along the fresh product supply chain, and explore key product categories in depth:

Supermarkets can enhance upstream control by moving into direct procurement and setting up warehouses and processing centers at product source in order to build differentiated and exclusive advantages in supply.

Tap into private-brand value through consumer insights: Leading new retailers are able to leverage massive real-time consumption data to quickly understand consumer demand and support the development of private-brand products. After launching new products, they collect consumer feedback and retain only the most suitable seasonal products, while optimizing staples. Meanwhile, they can observe and respond to dynamic consumer trends, opening potential to deliver bestselling private-brand products.

Adopt data-driven intelligent product selection: Currently, the intelligent product selection model combines manual operations and algorithms. An experienced product selection team makes an algorithm model and refines it based on customer insights and store data, thereby determining the product portfolio. In future, algorithm models will likely surpass human decision-making, further improving product selection and decision-making quality and responsiveness.

4: Reduce store operating costs in key business areas

Hypermarkets and supermarkets should aim to leverage digitalization to markedly lower store operating costs, aiming to address the following areas as a priority:

i. Refining fresh product operations to reduce losses

Consumers frequently purchase fresh food and this drives foot traffic to hypermarkets and supermarkets. However, fresh food is burdened by low gross profit margins, short expiry dates, as well as high handling losses, all of which weigh on profitability. As such, hypermarkets and supermarkets should prioritize refining operations in the segment through digital transformation across the stocking, sales, and storage process, so as to increase shelf sales and reduce losses. Some examples include:

Sales volume forecasts and order

suggestions: These leverage algorithmic data on store locations and surrounding populations to measure the ‘penetration rate’ of each category (such as the number of surrounding customer groups that need to buy green leafy vegetables), and generate ordering suggestions. In this way, store sales volume can be predicted more accurately, and at the same time, stockouts and the capital occupation and waste caused by overordering can be avoided.

Digitalized product ratings and quality

management: Each store evaluates product quality via a store clerk app when receiving goods. Fresh products can be graded so as to carry out subsequent pricing and assortment operations, and products can be discounted immediately to accelerate turnover. This ensures that consumers’ shopping experience is maintained, while avoiding slow-sale losses. Over the longer term, persistent product quality problems can be referred back to the

purchasing team to intervene on quality control.

Sales progress monitoring: The system automatically analyzes fresh food sales. If progress is too slow, it will arrange limited promotions to reduce the stock of unsold goods left over after peak sales periods.

Promotion optimization: Algorithms select which items to put in the promotion area (such as on the end shelf), to maximize the efficient use of space, speed up product turnover, reduce losses, and improve capital utilization. The algorithm covers indicators such as whether the product is in season, past customer coverage and acceptance (products that are too niche are not suitable for promotion), consumer price sensitivity, and other indicators. It then deploys a multi-dimensional scoring system that allows for a one-vote veto of key factors such as low gross profit and insufficient inventory. Finally, the algorithm automatically pushes the product promotion adjustment task notification to employees via an app.

Intelligent loss identification and stocktaking, and efficient inventory

management: AI image recognition identifies and automatically reports damage to goods, improving the accuracy of loss identification and management efficiency. The system monitors and identifies products with abnormal turnover rates and notifies shop assistants to take inventory, enabling the more efficient utilization of staff.

ii. Reducing fulfillment costs for D2D business

Hypermarkets and supermarkets should choose the best D2D business fulfillment model, which in our experience means adopting an integrated store-warehouse model. Some regional players can

strategically establish a 'dark store' – a community-based transit warehouse that fulfills online orders – but it is difficult for a standalone warehouse to be profitable. Here are the key elements of each model:

Integrated store-warehouse: This is a store-based D2D delivery model that can effectively redirect in-store traffic online, and unifies online-and-offline inventory management to accelerate inventory turnover and reduce losses. One disadvantage is that regions without an offline store footprint are excluded.

A hybrid, integrated store-warehouse and dark store model: This holds the advantage of covering a wider area, and can expand to non-core areas in cities where it is difficult to open new stores. The disadvantage lies in that single warehouses are not profitable below a certain order quantity. Insufficient orders are likely to cause losses and negatively affect corporate cash flows.

In any case, hypermarkets and supermarkets should conduct unified inventory management across all channels to accelerate inventory turnover and reduce inventory costs. Under the integrated store-warehouse model, there are two inventory management methods available:

Fully unified management: Under this model, the front shop and back warehouse seamlessly fulfill online and offline orders. Inventory for each SKU is consistent across the online app/applet and store.

Exclusive inventory for online bestsellers: SKUs with strong online demand and quick turnover can command an exclusive area devoted to online delivery in the back warehouse.

iii. Reduce in-store labor costs

Reducing labor costs is the key to achieving single-store profitability as they constitute

a high proportion of total expenditures. For example, labor accounts for 15 percent-plus of a traditional supermarket's total costs. Use cases show that traditional supermarkets can reduce labor costs by around 10 percent through digitalized labor management. Two examples are:

Using algorithmic insights to dynamically schedule store labor:

Some leading companies use algorithms to intelligently schedule store employees, and bring in dynamic labor to reduce costs and improve labor efficiency. BetterLife, a grocery chain based in Hunan Province, for example, has developed a dynamic employment platform, including an order-taking system that charges by the hour, which connects with external personnel recruitment platforms to increase stores' per capita efficiency by more than 30 percent. Meanwhile, leading new retail companies are adopting intelligent shift scheduling models, using algorithms to predict peak hours, and sending dynamic instructions to store employees to direct them to key tasks at different times. In this way, the average number of employees in the store can be reduced by nearly half.

Using algorithmic insights to increase order-picking efficiency:

A leading new retail enterprise leverages an algorithm to recommend the inventory placement of each single product SKU (front store or back warehouse). At the same time, the algorithm automatically assigns picking orders to the corresponding employees' personal digital assistants (PDAs) based on product display locations, order quantities, and labor data, helping in-store employees complete picking with the highest efficiency.

5: Improve supply chain efficiency

Hypermarkets and supermarkets can improve the efficiency of their supply chains by introducing the following automated and digital systems:

i. An integrated and differentiated omni-channel supply chain system

Online and offline integrated warehousing and distribution significantly lowers costs. In some supermarkets, online-to-offline, cross-channel and cross-model warehousing, and logistics systems are siloed. Take a supermarket as an example: Its offline stores and integrated e-commerce business (such as its flagship store on Tmall) use two separate warehousing and distribution systems, with stores covered by a central/regional distribution center (CDC/RDC), and e-commerce business supported by an independent warehouse. The two systems are disconnected, and lack a mechanism to share and coordinate tasks and inventory. If the online and offline logistics systems were integrated—if the CDC covered demand from the RDC, offline store, and e-commerce warehousing via unified omni-channel management, for example—costs could be substantially reduced.

Differentiated supply chain design can enhance customer response capability. For products that favor quick-turnover promotions, hypermarkets and supermarkets can set up a warehouse near the store and set aside stock to frequently replenish inventory in small amounts. For long-tail products, and in cities and stores that are less strategically important, a different, lower frequency CDC or supplier can save costs and ease pressure on the overall stockout rate.

ii. Advanced analytics and supply chain automation technology

Leading players automate warehousing and production in processing centers and fresh food factories. Take Liqun as an example: Its warehouse and logistics system has been fully automated with a robotic palletizer, and automated systems for storage and retrieval (ASRS), guided vehicles (AGV), and sortation. The fresh food factory and central kitchen have also introduced automated equipment for data-based production scheduling.

iii. Cross-department decision-making mechanisms

As front-end channels and businesses diversify and supply chains become more complicated, hypermarkets and supermarkets are demanding more cross-department collaboration. Consider establishing a cross-functional supply chain operations room and a real-time KPI board to ensure efficient communication. This should aid timely decision making in key areas, including managing exceptional and problem cases, and supply-demand coordination.

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3.2 Convenience stores: Seizing digital opportunities to win the next phase

In this section, we address how digitally enabled convenience stores² (CVS) can weather oncoming market challenges:

I. Strong overall growth masks an increasingly fragmented and lopsided market

Strong consumer demand and policy guidance are driving steady growth amid huge market potential. Over the past five years, the CVS market has registered a compound annual growth rate (CAGR) of 12 percent, and the sector has scaled up steadily (Exhibit 9). While new retail is developing rapidly and negatively impacting traditional supermarkets, CVS have sustained remarkable sales growth through

inherent their advantages of convenience and timeliness.

Meanwhile, lower-tier market expansion is occurring rapidly amid extremely unbalanced development.

CVS competitive dynamics, including the rate at which some are converting to chain stores, is incredibly uneven across Chinese cities of different sizes. In tier-one cities, where the market grew rapidly and matured early on, competition is intense. In contrast, large market gaps exist in lower-tier cities (Exhibit 10).

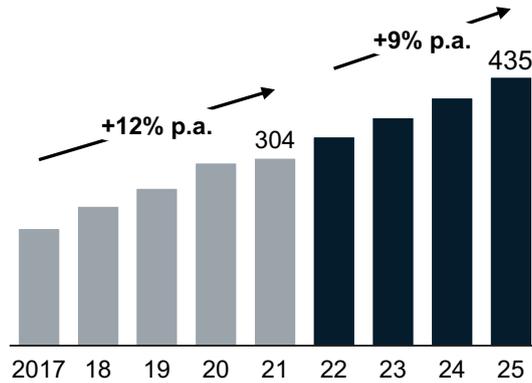
² CVS are a small grocery format that usually covers less than 400sqm and carry 1,500-2,000 SKUs.

Exhibit 9

China's convenience store sector has enjoyed double-digit growth

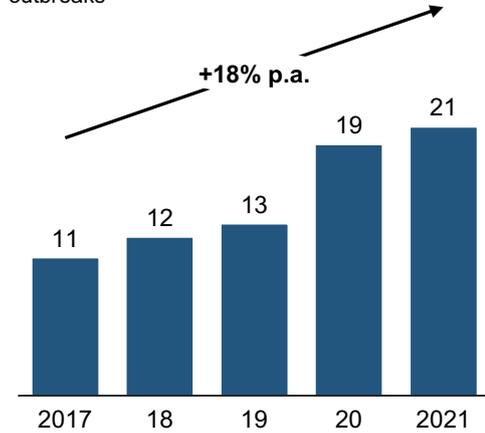
Industry size¹ (RMB billions)

China's convenience store market has grown at a double-digit CAGR (+12%) since 2017, representing a steady expansion of business scale



Number of convenience stores over the years (10,000s)

China's convenience store market has sustained double-digit growth (+18%) since 2017; growth in the number of stores has slowed down due to COVID-19 outbreaks



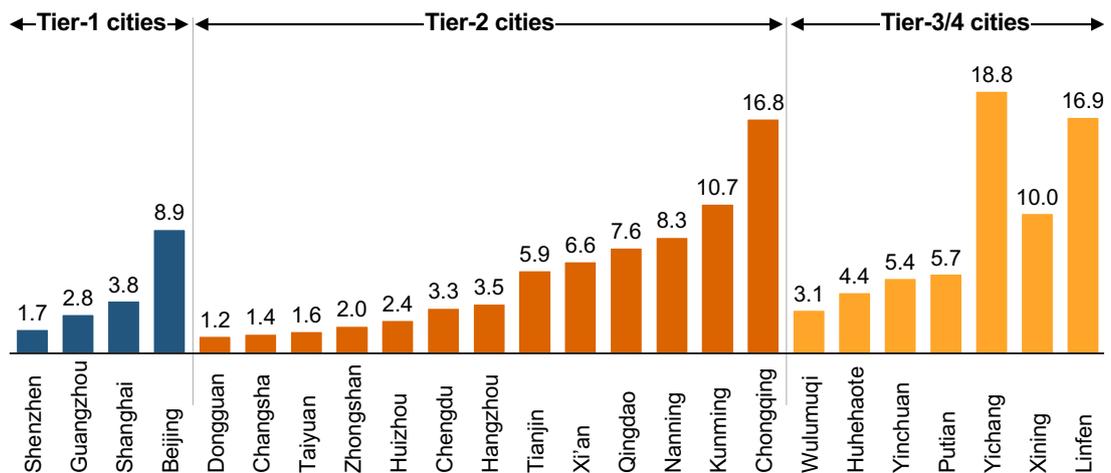
1. Includes traditional convenience stores, platform-enabled convenience stores, and quasi-convenience stores; traditional convenience stores include regular chain stores, franchised stores, and gas station-type stores; platform-enabled convenience stores refer to non-traditional chain stores that are empowered by Internet companies or their platforms; quasi-convenience stores refer to small retail stores, fresh food stores, fruit stores, and drug stores that provide similar categories and services as convenience stores.

Source: *Development Report of China's Convenience Stores in 2021* jointly issued by CCFA and KPMG; Euromonitor

Exhibit 10

Lower-tier market expansion is a trend amid extremely unbalanced development of China's convenience stores

Population covered by a single convenience store 1,000s



Source: *Development Report of China's Convenience Stores in 2021* jointly issued by CCFA and KPMG

A 'tripartite' competitive landscape is taking shape amid accelerated market integration. Unlike Japan, where the top three local CVS brands share more than 80 percent of the market, the Chinese market is characterized by multiple players, low concentration, and distinct regionalization. Typical market players include the following three types (excluding forecourt/gas-station-based CVS):

i. Premium CVS, exemplified by Japanese stores in tier-one cities: Such stores present two major benefits that favor fast expansion: one is standardized, high-quality services; the other is high gross profits, driven by differentiated products with a high proportion of fresh food and high-quality private-brand assortments.

ii. Local community grocery stores: Local CVS' penetration and characteristics depend on the regional market. They exist on a spectrum from tobacco shops or mom-and-pop stores, scaling up to chain stores, and then those established by department stores, supermarkets, and other retail enterprises to extend market penetration. The latter have local market advantages in terms of store layout, brand recognition, and supply chain fundamentals. Traditional grocery stores rely heavily on sales of tobacco, alcohol, and beverages, while providing a smaller assortment of fresh food and private-brand products. As a result, they report gross profit margins (GPM) of about 25 percent, lower than the ~35 percent GPM of premium CVS. Moreover, their operations management systems and franchise support mechanisms remain immature and in need of standardization.

iii. New digital-enabled stores rooted in technology, algorithms, and efficiency: For example, Bianlifeng, a fast-growing

CVS chain, is actively developing stores that lean heavily on data-driven technology and capabilities. The company aims for a more standardized, automated, and data-driven operation along the value chain of traditional CVS, including merchandising, logistics, store operation, and marketing.

II. Facing the future: 3 major challenges loom

Although the CVS industry boasts remarkable growth potential, market players are encountering three primary challenges:

i. Slowing customer traffic growth amid a squeeze on daily store sales and profitability: Industry leaders are rushing to claim market share, especially in first-tier cities, increasing store density and competition. As fewer locations can generate additional customer traffic, new stores no longer enjoy traffic dividends. Meanwhile, the popularity of instant retail and food delivery is also depressing offline CVS traffic.

ii. High reliance on manual labor, operations management difficulties, and variable single-store daily sales and cost controls: CVS' performance is directly related to store managers and supervisors' performance, but it takes a long time to train a qualified store manager and their churn rate is high. This makes it difficult to find competent store managers and supervisors to drive at-scale expansion. The standardization of services, which drives overall efficiency, also takes a long time to mature. Moreover, at-scale expansion of CVS is highly dependent on the franchise model. Large CVS brands often oversee numerous franchisees with vastly different levels of efficiency

and operations management ability. As a result, the performance of different stores under the same CVS brands can range from very profitable to heavily lossmaking.

iii. Diverse regional and customer characteristics demand refined management: Chain CVS operate under a single brand but serve customer groups in different locations with unique consumption and shopping scenario demands, and product preferences. A single model for thousands of stores cannot meet the individual needs of local customer groups. Instead, scaled-up CVS must refine or adapt their store formats and management to suit particular regions or customer groups.

III. Digital-enabled CVS reduce costs and increase efficiency

Digitalization is assisting leading CVS in improving efficiency across site selection, operations, merchandising, and the supply chain, maximizing consumer conversion and ATV. In the following section, we delve into four major advantages of the digital approach:

i. Precise site selection ensures ample footfall

Digital tools and processes can help CVS to collect and analyze customer traffic data, develop profiles of potential consumers, and incorporate location features into a model that recommends a store site. For example, Meiyijia, a leading CVS player with a presence across China, analyzes data such as local consumer habits, the composition of residents and commuters, the characteristics of the location itself (such as the presence of hospitals, communities, commercial centers and other surrounding formats), the competitive situation, and the

proximity of public transport, to calculate a score and inform site selection decisions.

ii. Data-driven merchandising management improves store ATV and GPM

Under an extensive merchandising management model, stores mainly focus on the site and the goods within the store, but have a more passive attitude toward consumers' needs and experiences. However, the refined management model that digital CVS embrace prioritizes people, designing and planning stores in a customer-centric way. Stores select more suitable products, better allocate shelf space, and conduct pricing and marketing in a more targeted manner, in order to increase sales while improving GPM.

For example, a leading CVS has adopted a product selection strategy based on store type. When determining what products to put on shelves, it first divides products into daily necessities, specialty categories, and other categories, and then groups stores based on the surrounding environment, including whether there are hospitals, schools, and transportation hubs in the area. This helps generate accurate consumer profiles and cross-matching of product and store categories. A scorecard for each SKU based on historical sales and consumer loyalty determines final selection and product mix.

iii. Intelligent demand forecasting and automatic inventory replenishment reduces wastage and stockouts

A leading convenience store has established a digital demand forecast model based on basic store elements, weather conditions, cyclical sales characteristics, and other factors (such

as holidays), and translated the forecast results into SKU purchase guidelines. At the same time, a CDC-linked automatic replenishment system has cut chain-wide inventory days—or the average number of days SKUs are warehoused—by 20 days, without increasing the stockout rate.

iv. Digital store management empowers staff, supervisors, and operations personnel to improve efficiency

Algorithmic store workloads enable CVS managers to optimize labor arrangements and task plans, so as to minimize work hours without affecting store service quality and experience. Even if employees encounter unexpected conditions, the system can quickly adjust to ensure normal store operations. Once staff scheduling is confirmed, the system automatically issues task orders to efficiently guide staff work arrangements.

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3.3 Shopping malls: Embracing breakthrough digitalization

Shopping malls come in a variety of sizes in China but are united in controlling large commercial premises with multiple retail tenants. In this section, we suggest that while recent market conditions have been buoyant, there are several imminent challenges that will require shopping malls to embrace digital transformation in order to achieve sustainable performance:

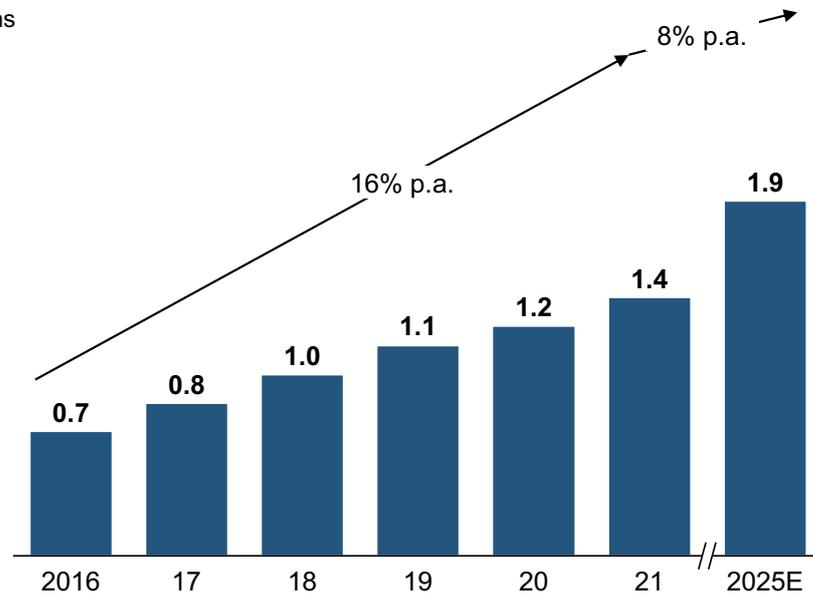
I. Upbeat growth presents opportunities despite the wider foot traffic crisis

Solid growth momentum has created a safe harbor for offline retail in this segment. In 2021, the market size of

China's shopping malls reached RMB 1.4 trillion after five years of double-digit growth (Exhibit 11). Despite e-commerce competition and recurring COVID-19 outbreaks, they evolved and strengthened compound advantages of large scale, multiple channels, and retail experience. Looking ahead, shopping malls should continue to expand and capture secondary growth opportunities around consumption upgrading and improved shopping experience.

Market size and growth forecasts for China's shopping malls

Market size¹ and growth forecasts for China's shopping malls,
RMB trillions



1. Market size calculated using retail terminal sales of commercial properties; small-sized community-based supermarkets and outlets are not included

Source: Euromonitor; desk research; McKinsey analysis

In an era of plateauing traffic growth and heightened focus on managing existing customers, challenges and opportunities coexist for shopping malls. Although the segment as a whole is stable and improving, it is facing increasingly serious structural problems. The commercial property market is entering an era defined by competition for an existing customer base characterized by excess supply and low quality.

China's shopping mall market also shows an obvious '80-20' distribution, quality operators are scarce, and the long-tail is prominent. The profitability of about 80 percent of projects is lower than the average.

Shopping malls face 5 major challenges:

- i. Property developers have slowed their expansion as asset-heavy operating models have become unsustainable amid strained cashflows. Asset securitization and light-asset operations have become a trend as developers seek to streamline their operations.
- ii. The government's requirements for corporate ESG (Environmental, Social and Governance) disclosures continue to escalate, making green and sustainable development imperative.
- iii. Given high homogenization, shopping malls face pressure to differentiate operations and innovate on content marketing.

- iv. Merchants' value proposition is weak. Shopping malls need to consider how to pivot from passive to active management, and implement digital-enabled lean operations for merchants.
- v. The regional resurgence of COVID-19 adds uncertainty to the recovery of offline traffic.

In the following section, we summarize three core initiatives that should help shopping malls accelerate their digital transformation and win in the new era of retail competition.

II. Digital initiatives that can drive sustainable shopping mall success

The organic traffic dividend in which newly built shopping malls attracted large customer flows is a thing of the past – shopping malls are experiencing slowing sales. These enterprises thus need to leverage digital to improve operational capabilities, raise profitability, and achieve sustainable growth. As a first step, shopping malls should launch an IT infrastructure transformation – connecting the siloed and legacy operations systems used in the traditional retail industry through standard operating procedures and a digital management system.

Subsequently, by introducing advanced data analysis and Internet-of-Things (IoT) systems, shopping malls can promote digital intelligence-based business decision making, boost revenue growth, and reduce operating costs and energy consumption. Two example initiatives include:

Intelligent rental pricing and tenant mix management: Leveraging advanced data analytics, operators of shopping malls can effectively and dynamically predict the traffic and sales of different floors and locations in the mall, and then adjust tenant composition and rental management accordingly.

Smart building and green energy

consumption solutions: In order to meet fast-evolving regulatory demands on ESG and carbon neutrality, commercial property enterprises should review their original development model and use digital management tools to incorporate environmental responsibility into all aspects of investment and operations.

A new era in which the market focuses on managing existing customers

has dawned. Shopping malls should return to the essence of retail, and leverage consumer insights to develop a differentiated, customer-centric positioning. Constant optimization of products and service experience is necessary to carve a niche, amid increasingly homogeneous competition in top-tier cities, where saturation is pinching market share. Below, we detail three ways that leading players are innovating to reshape content and develop a unique positioning:

i. Investing in independent, tailored, and differentiated business operations:

A leading shopping center is targeting the Shanghai middle class and consumers with high disposable income. With this customer group in mind, the shopping center integrated retail and art in an independent installation, offering a cultural experience around the theme of environmental protection, and sparking a trend of similarly differentiated business operations in China.

ii. Developing new consumer businesses:

SCPG Longbai Capital New Chain Business Fund is supporting SCPG (Vanke), a leading commercial property platform, to invest in data-driven, innovative consumer businesses. SCPG then integrates the enterprises' business and resources within its ecosystem, promoting rapid growth, and ultimately

forming a new and differentiated commercial property and consumer business ecosystem.

iii. Exploring multi-channel integration that reinvents service experience:

Hangzhou-based Yintai Retail Group, which has a portfolio of department stores, shopping malls, and an ecommerce business, is developing their omni-channel capabilities to improve their collection of consumption data and explore value-added and after-sale services. For example, when consumers buy shoes and bags, their system offers consumers shoe and bag care, cleaning, and after-sales services, which help improve the shopping experience and enhance consumer stickiness.

Meanwhile, digital intelligence can help merchants to operate more efficiently, and shopping malls to explore ecological value co-creation. Leading shopping malls have transformed from being mere lessors of space to 'mentors', providing merchants with diversified solutions and digitally empowering them across consumption scenarios. Some are now actively probing new commercial property innovations, such as offline 'intelligent operations' empowerment platforms, which provide merchants with tools such as precision marketing and operations diagnostics.

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3.4 Specialty stores: Advancing the value chain amid accelerating digitalization

Specialty stores specialize in the sale of specific types of products – a narrow range but long product lines provide consumers with richer options. They also often provide more comprehensive services, such as consulting, delivery, and after-sales services. Typical formats include 3C electrical stores, pharmacies, cosmetics stores, mother and baby stores, glasses stores, and specialty food stores. In this section, we suggest that specialty stores should focus on leveraging digital to improve value chain efficiency and customer experience:

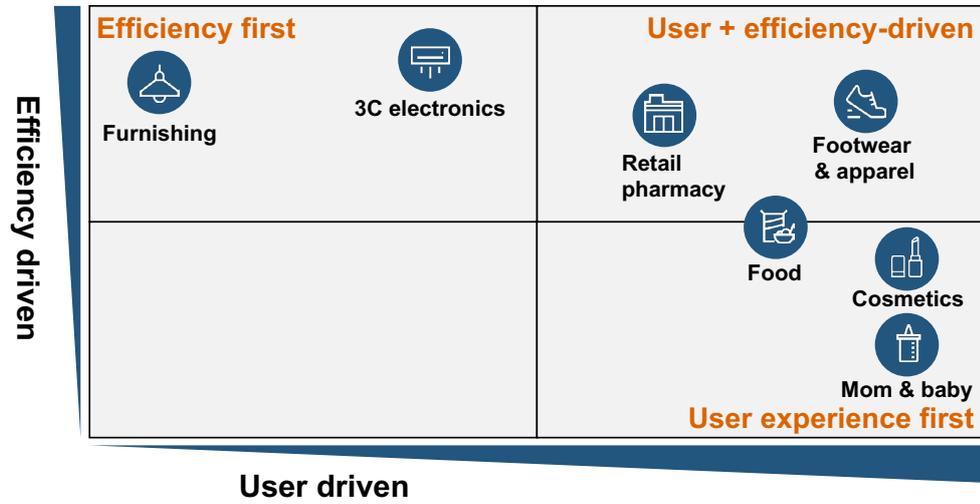
1. Efficiency and user experience drive value creation

The rise of specialty stores is a result of ‘consumption upgrading’, a trend that describes how Chinese consumers are demanding higher quality goods and services. This has led to segmented demand and retail specialization. Compared with large, integrated retail businesses, specialty stores

focus on specialty products and exceptional service to shape the value chain, providing higher-quality and more distinctive products as well as broader and better services.

Building a competitive edge in this segment means refining operations along each specific link in the value chain, while adopting a dual focus on front-end and back-end operations. The emphasis at the front-end should be providing a rich consumer experience across all touchpoints. At the back-end, elevating operational efficiency, especially supply chain management, is key. Enterprises should also concentrate on improving customer lifetime value (CLV). A value chain coordination matrix, with efficiency and the user as the two axes, can help companies define their position in relation to competitive factors in their vertical (Exhibit 12).

Specialty retail value creation is driven by efficiency and user experience



Source: McKinsey analysis

Below, we flesh out scenarios under which various specialty store types can focus on different aspects of the value matrix to improve performance:

3C electronics stores should prioritize efficiency to gain competitive advantage:

3C electronics products are relatively high value, so it is crucial to have efficient circulation and cost control at the middle and back end of the supply chain. Moreover, as typical 3C electronics retailers operate a large and complicated distribution system, channel inventory turnover and management transparency are often bottlenecks. Therefore, retailers should focus on lean franchise management, for example reducing the number of distributors and streamlining their networks, if they want to establish a competitive advantage and expand business scale.

For beauty and mother and baby stores, increasing CLV drives breakthroughs. Specialty stores sell goods with a shorter

lifecycle and a more direct purchase-decision chain. Impulse buying is more common, so it is necessary to develop comprehensive user operations based on consumer insights to elevate customer experience. Delivering exceptional targeted content marketing and service experience can drive customer loyalty and thus raise CLV.

Footwear and apparel stores, and retail pharmacies, can focus on both value chains and users to drive operational efficiency. For example, retail pharmacies are competing intensely for existing customers, so lean franchise management plus an efficient product supply system will play an important role in accelerating at-scale integration. Consumers' health awareness is also increasing, driving higher requirements among pharmaceutical care providers. At the same time, product categories sold at pharmacies are expected to become more consumption-oriented,

ensuring consumer insights and operations will be critical to differentiating from the competition. Accordingly, retail pharmacies need to broaden their imagination when it comes to launching value-added services, and deciding product assortment.

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Chapter 4

Four digital enablers that are key to digital transformation

4.1 The middle office: Improving operational efficiency to enable diversified expansion

CXOs now view middle-office (middle platform) capacity building as key to increasing the operational efficiency of chain retail while supporting multi-channel business development. Alibaba pioneered the “middle office” concept in 2015, spurring other Internet enterprises to follow suit and construct their own middle-office architecture. According to our research, about two-thirds of retail enterprises have announced their intention to build a middle office, while the remainder are factoring this into their near-term planning.

For retail enterprises, there are three primary reasons to build a middle office:

- i. To develop common, reusable business capabilities and avoid creating information silos across business units, systems, and data platforms, so as to reduce costs and improve efficiency;

- ii. To help expand new channels, regions, and customer sources, and incubate new and fast-growing businesses by providing consistent and shareable front-office capabilities;
- iii. To reduce labor costs, standardize operations, and improve efficiency—middle offices reduce reliance on senior store managers for rapid store expansion by divesting the responsibility for sharing knowledge and experience from stores while unifying operational decision making.

Explainer: Digital middle offices in the retail industry

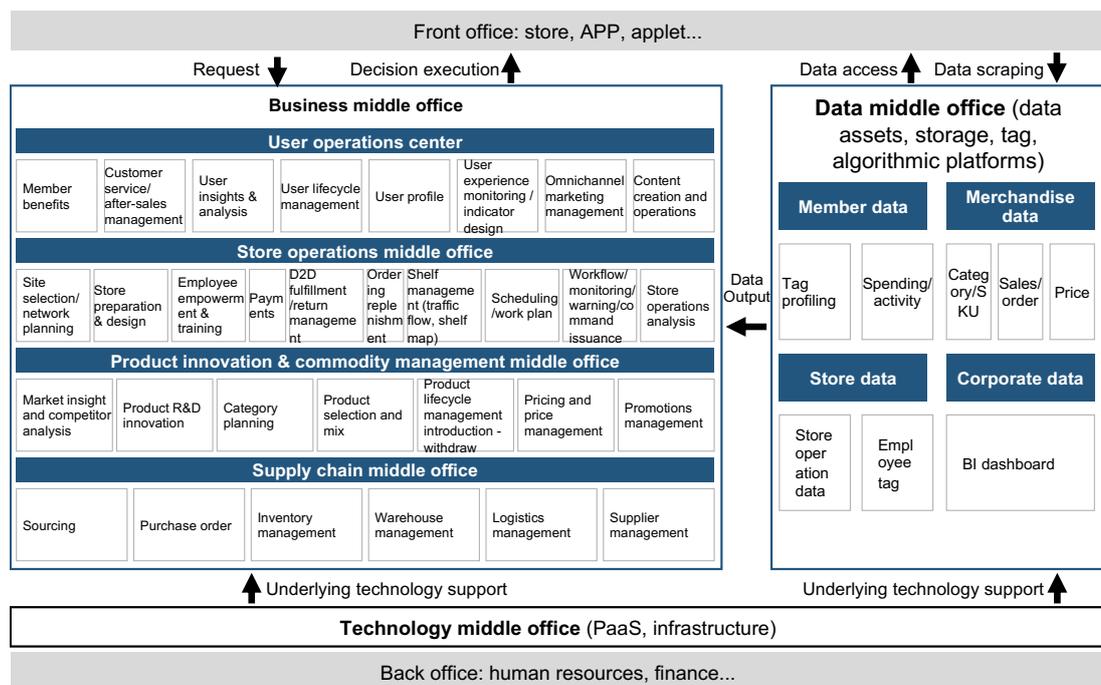
A complete middle office architecture is usually composed of the business middle office, data middle office, and technology middle office, and requires multi-dimensional support across business units and the wider organizational structure, underpinned by technology and data.

In the retail industry, the front office usually refers to channel touchpoints, such as stores, apps, and applets that interface directly with consumers. The middle office serves as the operations center, providing replicable, plug-and-play business operations support or technical solutions for front offices, such as those for supply chain and product management. The back office is a company's long-term stable infrastructure and shared services platform, with finance and human resources serving as two primary examples.

For retail enterprises, the business middle office is the main bearer of enterprise-level reusable capabilities. The data middle office serves the data needs of the business middle office and front office through the collection, storage, processing, and product-oriented use of large-scale data. The technology middle office facilitates the rapid build out of the business middle office and data middle office through a unified and convenient infrastructure and interface (Exhibit 13).

Exhibit 13

Examples of retail middle office architecture



Source: McKinsey analysis

The business middle office: The linchpin of digital enterprises' operational efficiency

The business middle office is crucial to improving operational efficiency and carries the core competencies of the retail value chain. A thorough middle office strategy requires retailers to shift away from an operating model in which front offices shoulder a heavy operational burden, instead centralizing some front-end operations capabilities in the business middle office, thereby creating a lighter operating model that makes regions and stores more agile.

Notably, there is no prevailing definition of middle office functions, and their scope may vary across different types of businesses, and even across different enterprises in the same industry. Taking hypermarkets, supermarkets, CVS, and other grocery retailers as examples, the business middle office can be broadly divided into the following types:

User operations middle office: These aim to increase the number of users, ARPU, and CLV, as well as customer retention and satisfaction rates. Regular modules incorporated include loyalty program and membership benefits, consumer insights and segmentation, customer life cycle management, customer service and after-sales management, user experience monitoring and index design, and omni-channel marketing management.

Store operations middle office: These improve single-store sales and inventory turnover, and reduce store labor and product shrinkage. Regular modules covered include store location and network planning, store preparation and design, staff empowerment and training, order replenishment, display management,

planogram (visualization of optimal store layouts) staff scheduling and work plans, operation process monitoring and order issuance, payment, home delivery and return management, and store operation analysis.

Merchandising middle office: These focus on improving product gross profit and single-store sales, while reducing product operating costs. Regular modules covered comprise category planning, assortment, product life cycle management (from introduction to removal), pricing and price management, promotion management, and other functions.

Supply chain middle office: Such offices centralize procurement to reduce costs, and leverage large scale to establish stable cooperative relationships with upstream suppliers, and secure supply advantages across differentiated and novel products. Meanwhile, intensive and intelligent warehouse management reduces supply chain costs while optimizing inventory to reduce capital occupation and inventory depletion. Regular modules covered include procurement sourcing, purchase orders, inventory management, warehouse management, logistics management, supplier management, and other functions.

Key considerations for retailers when building a business middle office

The business middle office is not a shared service center, but is jointly responsible for business metrics with front offices. Compared with a traditional shared service center, the middle office is defined by business needs and changes with the evolution of the business. Unlike the shared service center as a cost center, which often only assesses “business response/satisfaction” KPIs, the middle office undertakes KPI objectives in tandem with supported front offices. For example, the user operations center should be responsible for the number of active members of a retailer’s CRM, as well as ARPU, while the store operations center should be responsible for stores’ gross profit and sales.

The middle office not only supports front offices but also plays a supervisory and coaching role. For example, the user operations middle office is geared to develop enterprise-level user experience-related indicators, monitor and review the user experience KPIs of different front-office business departments and channels/stores, and make suggestions for improvement.

Clarifying responsibilities and areas for collaboration between the business middle office and front office is key. The division of responsibilities between front and middle offices should be determined on a case-by-case basis according to

functions such as procurement, pricing, and promotion, and in line with the individual business. The extent to which the middle office is given the power to coordinate, or whether the front office is given decision-making flexibility, should be considered from three main aspects:

- i. The degree to which the business scenario is close to the consumer, where a quick response to market changes is required;
- ii. Whether the business scenario or product attributes are highly regional/localized and less standardized;
- iii. Scenario complexity: For example, in terms of product selection and portfolio, the middle office of supermarkets and hypermarkets can employ weak control to grant certain decision-making power to stores; whereas CVS can conduct strong control after the data foundation is mature and the selection model is tested and iterated, with the middle office making unified, pan-franchise decisions on product selection.

Building the middle office is a long-term, complex and modular project that cannot be accomplished in one move. There is no standard solution for a business middle office and each should be built in phases that align with the individual business, taking the maturity of its capabilities into consideration during each phase.

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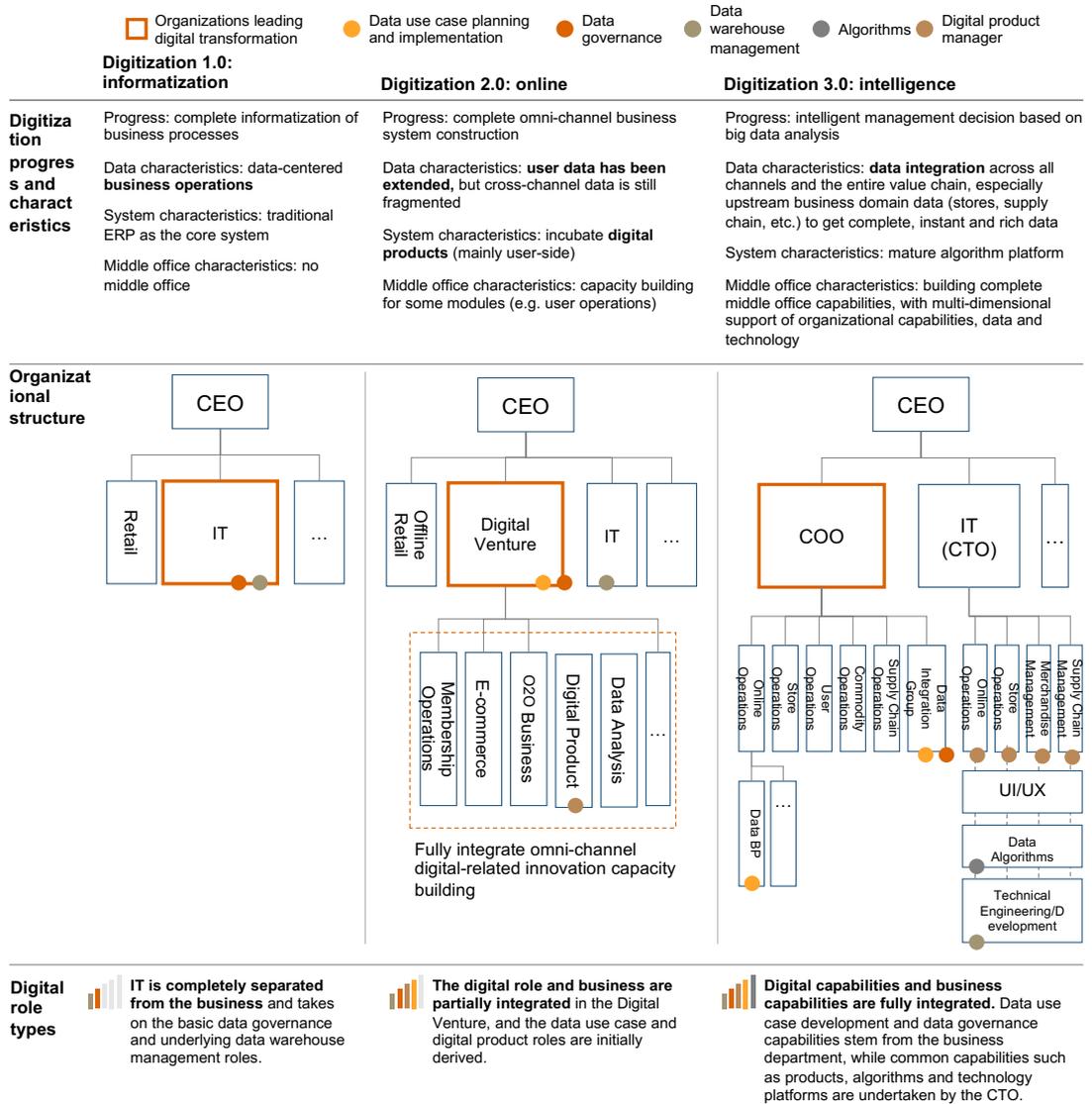


4.2 Organizational transformation: Embracing agile and reshaping culture

To make the most of digitalization, retail enterprises need a compatible organizational structure. Internal hurdles must be removed to unleash the full value of business innovation and transformation when reinventing business models and value chains. Organizational structure thus needs to evolve in step with the major stages of retail digitalization (Exhibit 14).

When retail enterprises proceed towards a later stage of Digitalization 3.0, digital intelligence capabilities should be deeply integrated with operations and product teams, creating a versatile middle office while promoting omni-channel transformation and upgrades across the value chain.

Digital organizations mature across multiple stages



Source: McKinsey analysis

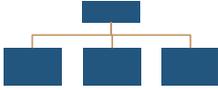
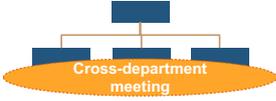
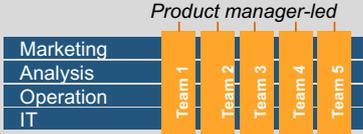
Embracing agile work

As retailers accelerate digital transformation, adopting agile ways of working is essential. Organizations in the digital era should be ‘hard and soft’ – a hard organizational structure provides the frame for a ‘soft’ and agile working culture – in order to adapt to a fast-changing

retail environment and increasingly blurred business boundaries. For traditional retail enterprises, agile transformation cannot be achieved overnight, but requires differentiated working methods tailored to different business scenarios and organizational structures (Exhibit 15).

Exhibit 15

Agile working models evolve according to application/ business scenario

	No agile model	Project-based virtual team	Agile model's endgame for retailers Fully agile – Cross-functional “agile team”
Agile working model			
Description	Organizational structure is divided by traditional functional lines, with clear hierarchy and vertical management	The business is still managed through the functional line-based organizational structure, with the help of virtual agile teams ; cross business meetings are held weekly.	<ul style="list-style-type: none"> Determine the make-up of cross-functional teams, clearly define power, responsibilities, and the reporting mechanism, and take full responsibility for the development and operations of specific innovative products and businesses
Applicable areas	Routine work involving a single department , such as operations	Internal and innovative business/product demand in traditional business functions	<ul style="list-style-type: none"> Expand innovative new business with high cross-departmental collaboration needs, such as digital innovation business and emerging business

Source: McKinsey analysis

Reshaping corporate culture

Digital transformation requires a comprehensive change in corporate culture to fully rejuvenate the company and regenerate growth momentum. Below we list three key changes that are important for organizations to implement so that working culture moves in step with organizational change:

- i. **Embracing a management mindset shift from top-down leadership towards an inclusive model:**

While industry changes may bring unpredictable challenges, reshaping and enhancing management team leadership provides a backstop or failsafe for retailers during digital transformation. The adjustment helps leaders effectively balance active and passive roles, so that they can lead by example while delegating powers to employees, and ensuring that the latter feel comfortable communicating problems and suggesting solutions along the way.

ii. Empowering employees: Leaders are a catalyst for action. They should guide the team to figure out the value, content, and business impact of their actions rather than excessively interfering in the working process. A servant-leadership model fully empowers employees to take responsibility for their work and career development, helping the business optimally deploy staffing resources.

iii. Adopting a hands-on approach and a 'can do' attitude: Leaders also need to deeply understand the business frontline, keep an open mind, and learn and experiment with employees. They are expected to encourage an open and transparent working environment by taking the initiative to share experiences and express their thoughts, before inviting others to do the same.

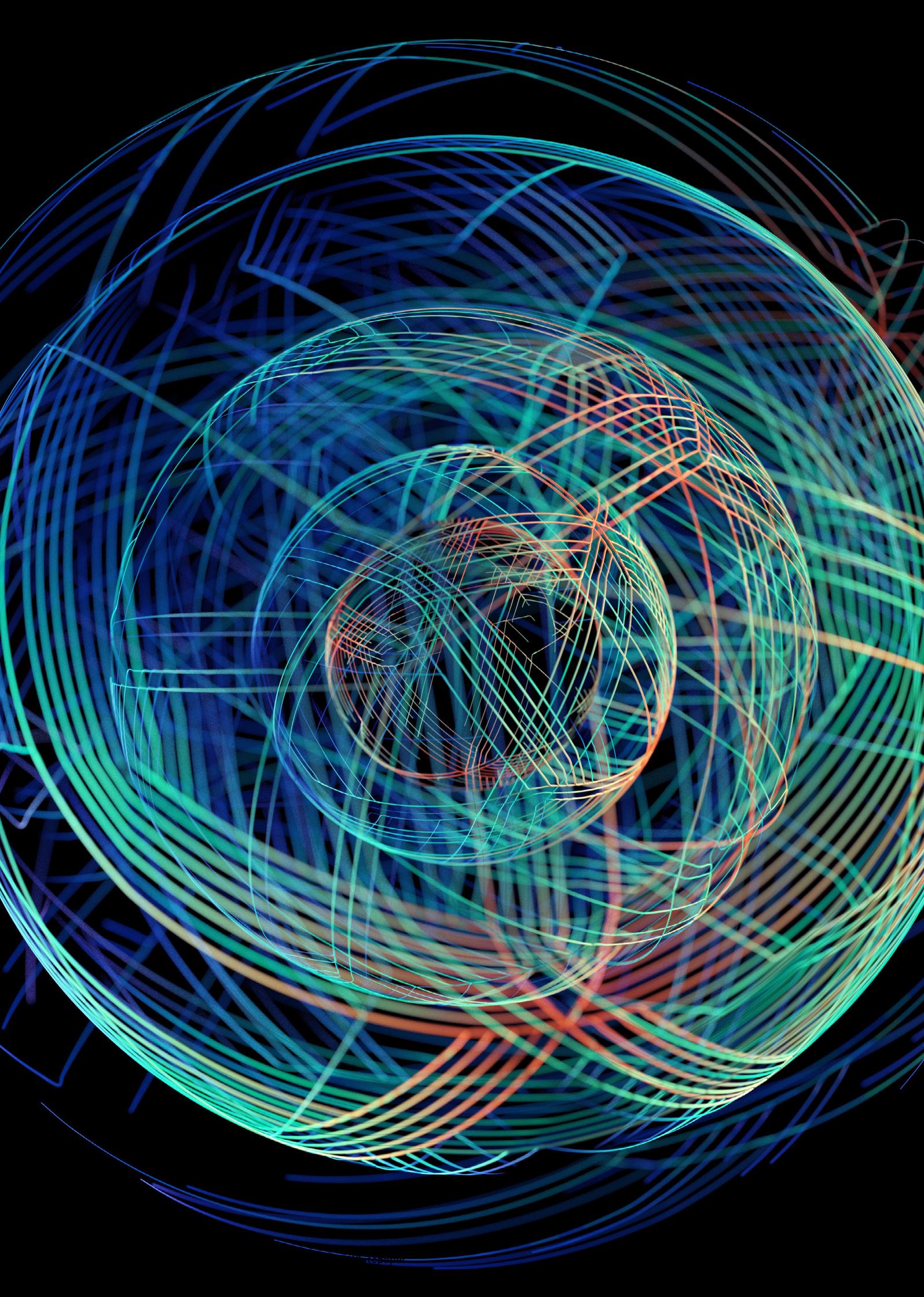
Managing organizational change

Achieving digital organizational change for retail enterprises is a long and arduous journey. Apart from a clear vision, retailers also have to clarify the path of change and align related businesses so they progress as one. It usually takes 18-24 months to truly internalize organizational change and achieve comprehensive digital transformation.

Finally, digital organizational change is intimately linked to talent and capability development. To build a digital talent team, improving the recruitment process for key roles in digital transformation, particularly for the director of the digital innovation center and the chief procurement officer, is a priority. A talent-to-value approach can effectively guide retailers to accurately identify and match digitalization talent. Our research suggests 2 percent of staff positions can contribute 80 percent of value creation for future digital transformation initiatives.

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4.3 AI at scale: Making rapid impact across business domains

Deploying AI at scale is a key enabler of the benefits of digital transformation, and a core element of the various initiatives and business scenarios discussed in the previous sections. However, in our experience, many companies have not yet figured out how to fully capture the promise of AI, and struggle with implementing the technology in a manner that generates immediate and significant impact. In the following section, we suggest several steps that retailers can take to scale AI successfully.³

1. Set the strategy first

It is important to start with a plan, including deciding which business domain to start with, selecting the right people to drive things forward, and choosing the data and technology that will underpin success. Different domains along the value chain can improve either the company's bottom line or customer or employee experiences.

Start with the domain that has the biggest potential impact. One retailer determined that it had nine main business domains that could benefit from digitalization: revenue management, e-commerce, customer experience, store format, store footprint, sales force, operations, logistics, and talent.

There are two main criteria for picking the best domain to begin with from this comprehensive list – the quality and composition of the team and the reusability of data and technology. In the first case, it is important to have an internal business champion responsible for the entire value chain. Senior business executives can then act as 'product owners' (people responsible for solution delivery), translators (who bridge the analytics and business realms), and 'change leads' (responsible for change management efforts). In addition, a team of AI practitioners, such as data science and engineering experts, designers, business analysts, and a scrum master (all of whom

³ See "Getting AI to Scale"; Fountaine, McCarthy, and Saleh; Harvard Business Review (May-June 2021)

may also be drawn from a central team in the organization) is required. From an implementation point of view, a cross-functional team with representation from the sales force, marketing, and category managers should be responsible for day-to-day activities.

For the data and technology aspect, companies usually have components in place that can be used by different domains. Mapping the data and technology and planning on how to reuse aspects where they overlap can dramatically reduce development time and cost; data and technology act as enablers, not obstacles, of progress. It is unnecessary to have the perfect data and technical backbone in place before testing and implementing use cases. On the contrary, starting with the business use case – or the problem you want to solve or improvement you want to make – and working backwards will hone understanding of the data and digital tools that are required, and avoid costly and time-consuming mistakes.

2. Reimagine business as usual

Getting the most from AI requires reinventing business models, roles and responsibilities, and operational processes, and using new ways of thinking and working. The ultimate goal is to make AI part of business as usual. It is not enough to just to try an enhance an existing process using AI. Companies need to rethink the entire process itself to maximize the benefit of new analytical techniques.

A good example is how retailers allow their store managers to manage assortment dynamically. Today, retailers operate national and international chains with customers who are demographically diverse, and constantly changing their

channel affinities. This means it is important to know what customers want, what kind of products to put in the store, and how to allocate shelf space across massive-scale SKUs.

The legacy approach was plagued by store manager guesswork as they tried to estimate customer preferences, with inaccurate forecasting leading to stockouts of popular products and requiring the use of open-to-buy (OTB) dollars to replenish stock. Over-ordering was also commonplace, increasing waste. At the same time, they also struggled to test new products as there was no space on the shelves, or they could not predict customer preferences.

In one company, store managers identified and understood the issues with the existing processes before mapping out what an ideal alternative might look like. They identified problems to solve and improvements they wanted to see. The company then built an AI prototype dashboard by compiling data from point-of-sale (POS) systems, loyalty programs, and syndicated data sources to indicate which SKUs were driving each category. Managers were given the opportunity and power to rapidly choose assortments that more precisely aligned with customer needs, as well as access to intuitive dashboards that visualize how many and which products should be offered in each category. They can view information showing how adding or removing an SKU would change category sales. Integrated feedback loops enable the AI systems to refine, update, and make product recommendations based on what works, rather than relying on intuition or personal experience.

3. Adapt to an agile way of working

In most cases, significant organizational change is needed to adapt to the interdisciplinary collaboration and the agile working methods required to scale AI successfully. Leaders like the CEO and domain managers need to act as role models, reaching across organizational boundaries to make the new behavior sustainable. Moving to a sound agile operating model requires leadership to transform from ‘masterminds’ who delegate tasks and instructions in a top-down manner, to ‘catalysts and collaborators’ who meet with the team on a daily basis and ensure the delivery of impact.

The traditional technology/IT delivery model, with heavy upfront planning and little flexibility, should install agile feedback loops that enable a test-and-learn approach, with constant reiterations refining output. Organizations can then transition from a focus on scheduling and protocols to one that concentrates on producing better products and business models. As a result, businesses need interdisciplinary teams that own a specific product or customer journey, and take full responsibility for building the right pathways.⁴

4. Leverage Machine Learning Operations to industrialize AI capabilities

Once we have the AI prototype and process in place and pilots have proven impact, the next important step is to industrialize the AI capability. To build, deploy, and manage analytics/AI applications with speed and efficiency at scale, a rapidly expanding stack of technologies and services is required. This enables teams to move from a manual and development-focused approach to one that’s more automated, modular, and fit to address the entire AI lifecycle.

This best-in-class working framework, often called MLOps (Machine Learning Operations), enables organizations to take advantage of these advances and create a standard, company-wide AI ‘factory’ capable of achieving scale. It ensures your AI modeling and implementation withstands the test of time, and that the performance of your AI solutions does not degrade to the point of inutility. MLOps is relatively new and still evolving, and encompasses the entire AI lifecycle – data management, model development, and deployment, and live model operations.

Building an MLOps capability will materially shift how data scientists, engineers, and technologists work as they move from bespoke builds to a more industrialized production approach. The business impact of MLOps is not just about productivity and speed, but also improving reliability and reducing risk while refining talent acquisition and retention.

5. Scale to other business domains

Once the business sees proof of impact and the organization becomes familiar with the new agile way of working, the company is ready to scale AI to other domains. Ideally, these are domains in which either data or assets can be reused, such as expanding a supply chain across multiple business units, or else where similar customer journey mapping can be applied to another area of the business. A good example of the latter are typical customer value management levers like next-product-to-buy or churn forecasting.

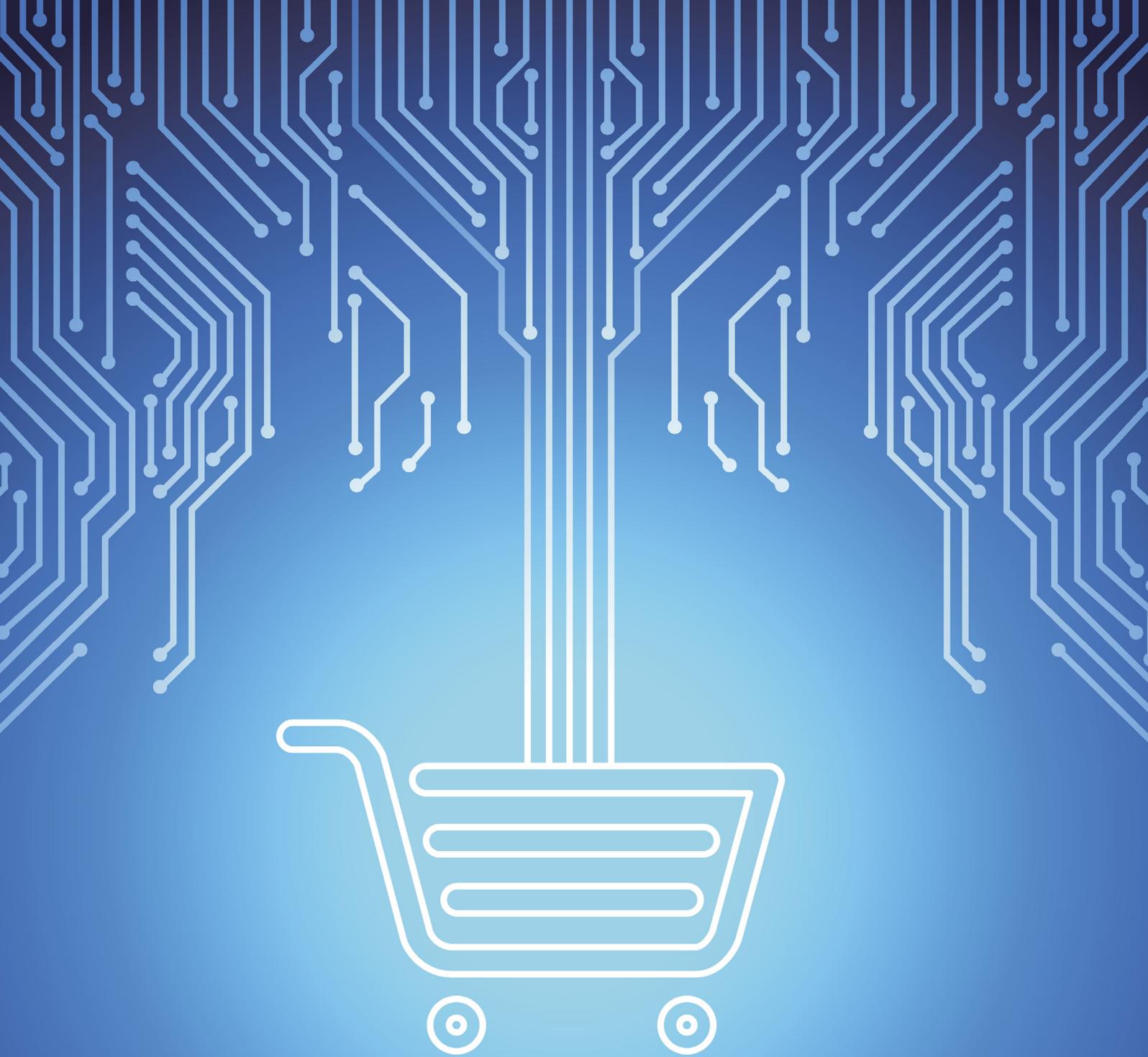
Successful implementation typically also means fostering a team of ‘advanced analytics’ practitioners, which comes with its own potential pitfalls. Depending on the starting point, it can be hard to hire and

⁴ See ‘Why an agile transformation office is your ticket to real and lasting impact’; Anand, Kaur, Narula and Vazquez-McCall; McKinsey.com (June 30, 2021)

develop the right talent and capabilities internally. We suggest that analytics translators, or the people who determine corporate problems that can be solved through analytics solutions and work to implement them, be hired or fostered internally. Analytical modeling for initial use cases can be outsourced to specialized vendors, to speed up delivery and impact. In parallel, companies can hire their own analytics talent and build an internal team in tandem with implementing more use cases, gradually scaling existing models and developing new AI applications. This tends to work better than a “big bang” approach of acquiring a boutique AI firm, where valuations tend to be outsized and integration issues are myriad.

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4.4 In-store technology: Reimagining future stores

Labor costs and labor shortages are a top concern for CVS, especially in tier-one Chinese cities. The average monthly salary in Shanghai rose to over 11,000 RMB in 2021, up ~10 percent compared with the previous year. Such labor cost pressure is likely to only further intensify as competition ripples out to lower tier cities, too.

Adopting digital and automation solutions can alleviate this pressure by improving operational efficiency while elevating shopping experience. Over the past year, we have been working with retail partners to explore future-store possibilities, and have identified several key areas where automation and analytics technology can bring value to retailers:

i. Improving efficiency and precision in-store operations

Automated store operations and extended opening hours: About half of the activities in retail can be automated,

according to McKinsey research. In the store of the future, non-value-added work will be rapidly digitalized and automated, including cashiering, replacing shelf labels, labor scheduling, and ordering, among other functions. Automation of in-store operations also enables stores to extend their opening hours to 24/7 without additional labor costs.

Standardized store operations and precision store management: Store operations activities that cannot be automated will be standardized in the form of tasks with defined procedures and protocols. IoT equipment (including cameras and sensors) facilitate the automatic generation and assignment of tasks to staff using real-time in-store data (for example, on-shelf product availability, cleanliness issues, products close to expiration date). At the same time, store and field managers will be equipped with remote-management tools to track performance in a more convenient and accurate manner.

Digitalized store operations and impact quantification: Retailers can use each store's unique data to create a 'digital twin' store to digitalize its operations and quantify their impact. For example, advanced 3D depth-sensing cameras camera with hand tracking and gesture recognition technologies can track detailed customer shopping behaviors (such as browsing, or pick-up and return), enabling online conversion funnel analysis in offline stores. The conversion rate at each stage of the customer journey can be calculated, from walk-in, to stop-by, to pick-up, and final purchase. Moreover, operations impact can be measured, for example, how many more customers are attracted by new on-shelf signage.

ii. Providing a seamless and personalized customer shopping experience

Seamless checkout: About 37 percent of shoppers find waiting in lines to be their top frustration when shopping offline, our research suggests. In future, friction across key customer journeys will be reduced. Consumers empowered by "grab-and-go" technology will no longer have to wait in line, and can instead complete a purchase in less than a minute.

Personalized assortment and promotions: Data collected by IoT devices in store allows retailers to better understand consumer preferences based on their shopping behaviors. The application of AI will help retailers tailor assortments to consumer needs and personalize recommendations for future purchases. With better demand forecasting, stockouts will also be reduced.

Consumer-centric store layout: Retailers can derive insights from customer traffic flows and visit duration to optimize store layout design. Consumers should be able to

find what they are looking for more easily, and at the same time will be more likely to spend extra time and money on other products.

The economic argument for automated stores

Automated stores can improve economic performance, providing an uplift of the store operating margin by 3-5 percent. Value is predominantly derived from labor cost reductions as well as operational improvements, such as:

Using autonomous checkout technology:

About 25 percent of store staff work can be released and reallocated (typically ~5 percent cost reduction on a CVS' profit and loss). Additionally, store operations can be expanded to 24/7 without elevating labor costs.

Operational improvements driven by data and analytics: High-impact use cases include membership and loyalty programs, personalized promotions, pricing optimization, assortment and merchandising, planogram optimization, stockout replenishment, and precision store management.

As technologies mature, the store of the future has become more affordable. Over the past five years, the cost of in-store technology solutions has fallen rapidly – to just a few hundred thousand RMB for a 100m² CVS (compared with over \$1 million for an Amazon Go store in the United States).

With reduced investment costs driving improved returns, a typical new store is expected to recoup the incremental investment within 2-3 years (on par with the average 2-3-year breakeven time for opening a traditional CVS store).

Automating offline stores: 4 factors essential for success

To implement next-generation in-store technology smoothly and at-scale, retailers should take into consideration the following elements: CEO-backed change management, customer-centricity, the necessary level of supporting investment, and pragmatic implementation:

CEO/CDO backing: The CEO/CDO needs to drive change management across the entire organization. Implementing new technology is not simply a matter of ‘plug-and-play’, but requires tailored operational change, and adaptation to new operating models across different functions, demanding buy-in from store associates and supervisors, as well as regional managers.

Customer-centricity: Customer-facing use cases should guide the technological foundation in the knowledge that there is no single formula for success. Companies can prioritize two or three high-value use cases that are tailored to customers’ needs, easy to implement, and able to carve out strong near-term differentiation.

Sufficient investment: Despite the advantages technology can bring, retailers are still heavily underinvesting in IT and digital. Traditional CVS retailers typically spend 0.2-0.6 percent of their revenues on IT, compared with 5 percent in business

and professional services, and 7 percent in banking, according to McKinsey research. Substantially more investment is required to succeed and deliver a complete transformation.

Pragmatic implementation: Developing the store of the future requires a pragmatic process of piloting and continuous iteration. It is common to start with a small pilot with a cross-functional agile team, and establish a dynamic loop that allows for feedback and improvements. Successful models are then scaled up in batches and rolled out gradually.

Conclusion

Clearly, the aforementioned digital enablers of a middle office, at-scale AI, digital organization, and in-store technology, are all essential elements of a successful digital transformation. They are also closely intertwined. For example, AI-enabled in-store technology is redundant if a retailer lacks the organizational structure and middle office capabilities to make the most out of the insights IoT devices can derive. Retailers and stores of the future should seek to deploy the enablers in synchronized fashion to drive optimum performance and address the multifarious challenges present in China’s retail market.

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