Vertical Market Outlook Series

Retail

EQUIPMENT LEASING & FINANCE FOUNDATION
Your Eye on the Future

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Established in 1989, the Equipment Leasing & Finance Foundation is a 501c3 non-profit organization dedicated to inspiring thoughtful innovation and contributing to the betterment of the equipment leasing and finance industry. The Foundation accomplishes its mission through development of future-focused studies and reports identifying critical issues that could impact the industry.

Foundation research is independent, predictive, and peer-reviewed by industry experts. It is funded solely through contributions. Contributions to the Foundation are tax-deductible. Support the Foundation by making a 100% tax-deductible gift today at www.LeaseFoundation.org.

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Purpose of This Study

The Equipment Leasing & Finance Foundation (Foundation) commissioned this forward-looking report on the U.S. Retail sector. Engine Group was selected to conduct the research. This, the sixth in a series of reports on vertical equipment markets, provides an outlook on the retail sector in the U.S., demographic and spending trends, and key developments impacting this sector over the next one to two years.

In preparing this report, Engine Group utilized its pre-existing expertise, coupled with inputs from several outside industry experts and consultants, in analyzing and examining trends in retail in the U.S.

In addition, broad knowledge of the U.S. macroeconomic environment and the retail sector provided a foundation for the report.

How to Use This Report

This report is intended to provoke thought, conversation, and offer high-level insight for equipment finance professionals to reference in strategic planning. There are many subcategories within retail. This report focuses on those most relevant to the equipment finance sector, as determined by a Foundation-led Steering Committee of industry professionals.

The Evolving Retail Landscape

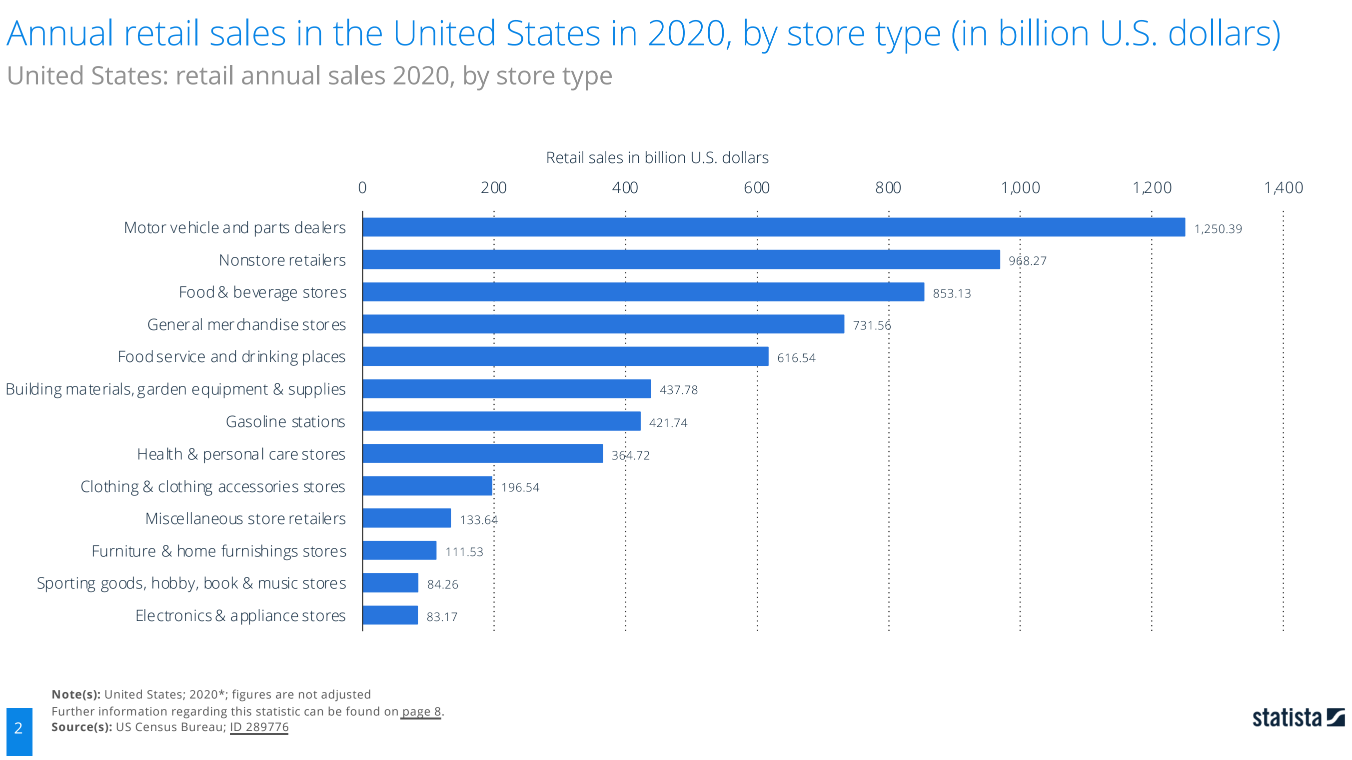
The US retail sector (valued at over $4.4 trillion according to the National Retail Federation) is currently being shaped by numerous external forces such as COVID-driven challenges, technology innovations, and consumer desire for both experiences and convenience in their shopping. Retailers will need to adapt by utilizing data to gather customer insights and manage inventory; as well as by innovating in terms of the use of property and capital assets.

Definition and Composition

The retail sector can be defined and measured in a variety of ways.

By Category

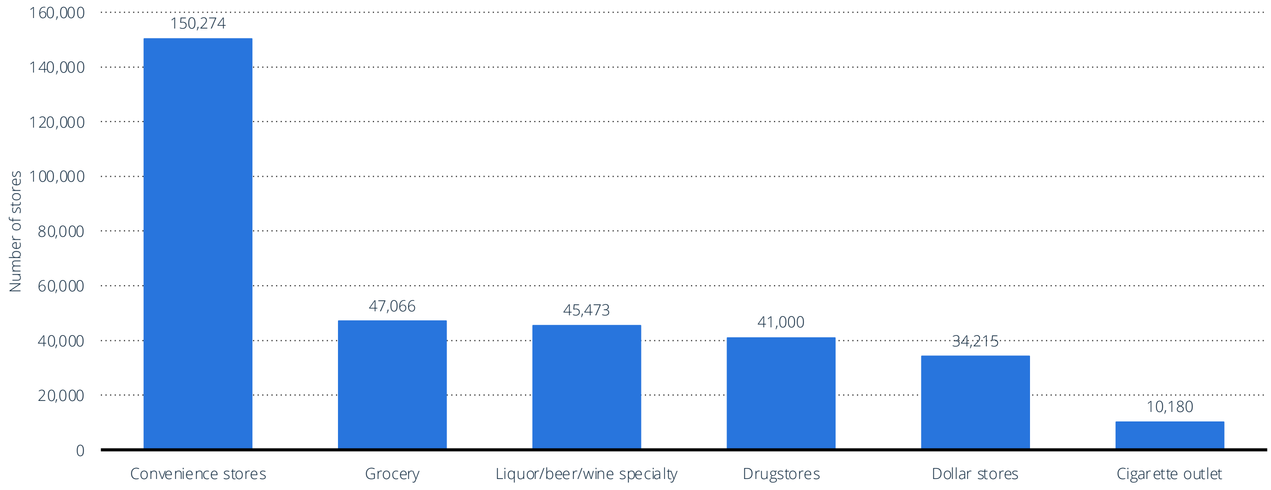
Looking at 2020 U.S. retail sales by type of store, motor vehicle and part dealers led all store types with non-store retailers and food and beverage as the next largest sectors.



In terms of category mix, based on the size of the US brick-and-mortar retail landscape, convenience is the largest retail segment by store count, followed by grocery, liquor, drug, and dollar stores.

Number of brick-and-mortar retail stores in the United States in 2020, by trade channel

United States: brick-and-mortar store count 2020, by trade channel



Note(s): United States; 2020
Further information regarding this statistic can be found on page 8.
Source(s): Nielsen; Chain Store Age ; NACS; ID 887112

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statista

US Retail Ecommerce Sales, by Product Category, 2021

billions, % change, % of total retail ecommerce sales and % of total retail sales

	Retail ecommerce sales	% change	% of total retail ecommerce sales	% of total retail sales
Computer and consumer electronics	$194.94	9.1%	21.5%	53.2%
Apparel and accessories	$183.52	18.9%	20.2%	37.9%
Furniture and home furnishings	$105.93	12.3%	11.7%	31.3%
Health and personal care and beauty	$85.67	16.1%	9.4%	14.9%
—Pet products	$16.28	7.1%	1.8%	30.1%
—Cosmetics and beauty	$12.98	9.7%	1.4%	17.8%
Toys and hobby	$64.74	13.1%	7.1%	45.4%
Auto and parts	$62.73	13.5%	6.9%	4.8%
Books/music/video	$53.85	12.5%	5.9%	69.1%
Food and beverage	$53.42	18.1%	5.9%	4.8%
Office equipment and supplies	$18.53	8.5%	2.0%	39.9%
Other	$85.42	13.4%	9.4%	6.1%
Total	**$908.73**	**13.7%**	**100.0%**	**15.5%**

Note: includes products or services ordered using the internet via any device, regardless of the method of payment or fulfillment; excludes travel and event tickets, payments (such as bill pay, taxes, or money transfers), food services and drinking place sales, gambling and other vice goods sales
Source: eMarketer, Feb 2021

264718 eMarketer | InsiderIntelligence.com

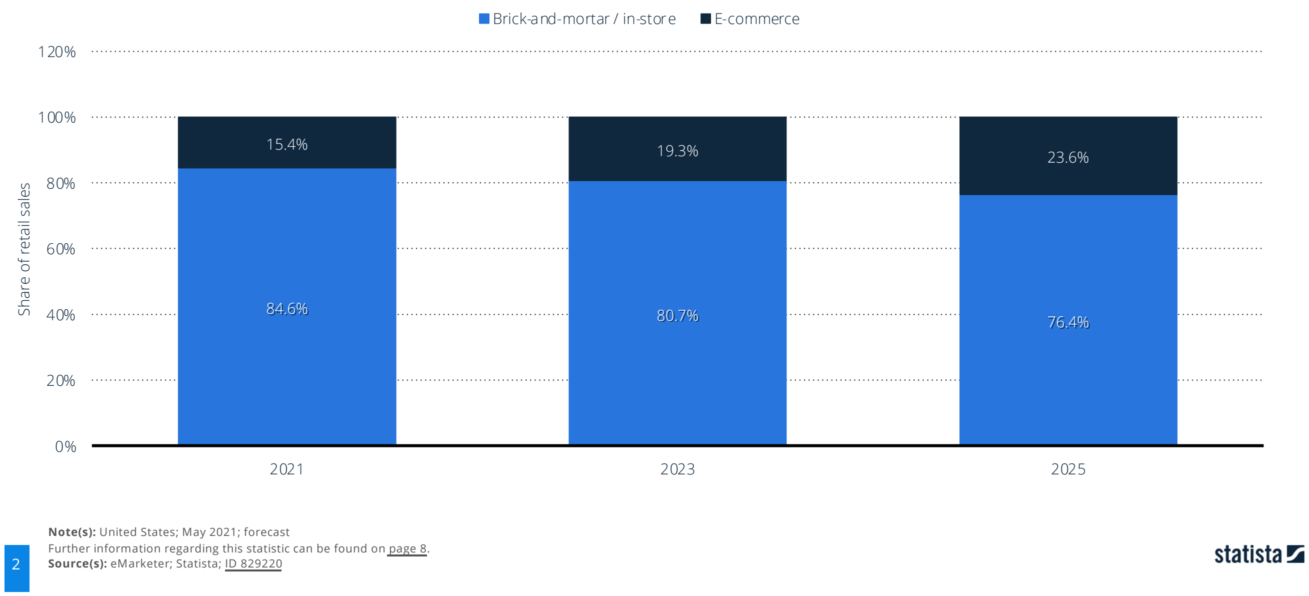
Looking specifically at e-commerce, "in 2021, two categories will generate the majority of sales through e-commerce: books/music/video (69.1%) and computer/consumer electronics (53.2%), both of which became e-commerce-majority categories in 2020". eMarketer expects that toys/hobbies may be the next growth category. Additionally, eMarketer feels that the adoption of digital grocery will continue to propel growth for food/beverage (18.1%) and health/personal care/beauty (16.1%).[1]

By Operational Structure

In 2021, the in-store or brick-and-mortar retail channel was projected to account for 84.6 % of total retail sales in the United States. By 2025, e-commerce is expected to make up for nearly 24 % of all retail sales.

In-store and e-commerce retail sales share in the United States between 2021 and 2025

Retail sales channel share in the United States 2021-2025



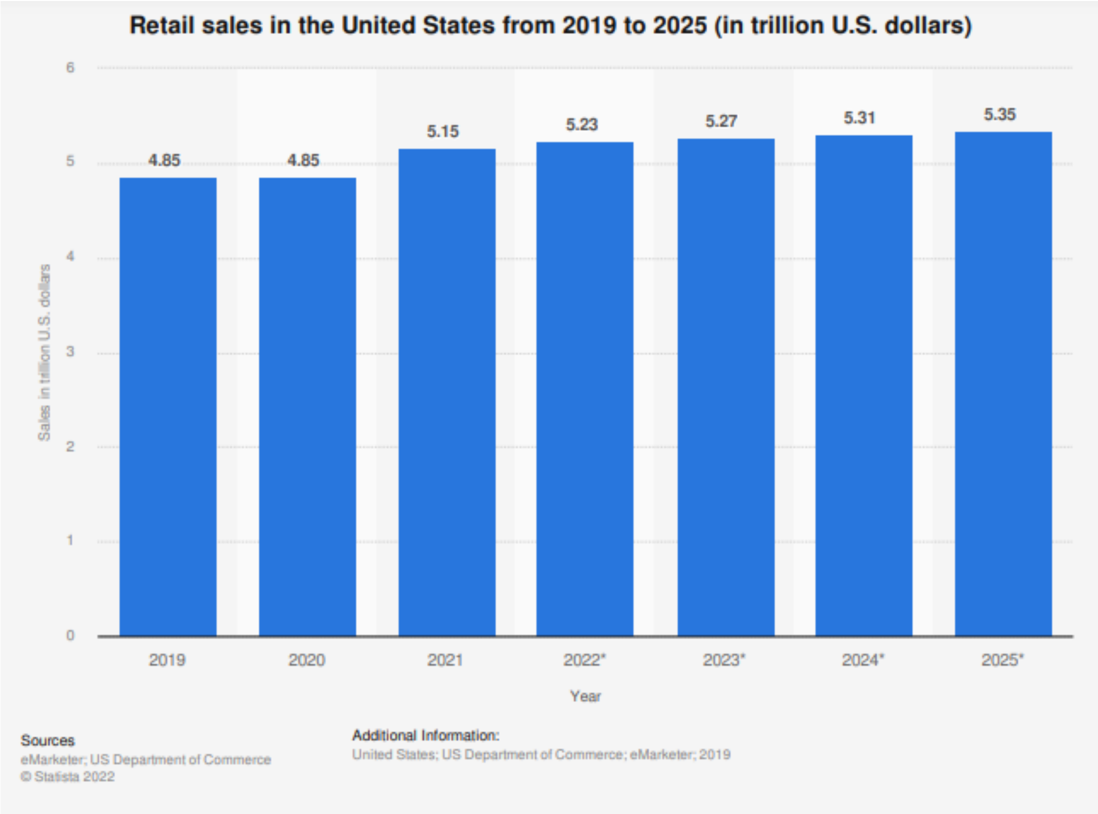
Retail Market: Size and Future Growth

The National Retail Federation (NRF) forecasted 2021 retail sales to exceed $4.4 trillion, with growth in the 10.5-13.5% range. These estimates took into account an accelerating economy.

> "The economy and consumer spending have proven to be much more resilient than initially forecasted," NRF President and CEO Matthew Shay said. "The combination of vaccine distribution, fiscal stimulus, and private-sector ingenuity has put millions of Americans back to work. While there are downside risks related to worker shortages, an overheating economy, tax increases, and over-regulation, overall households are healthier, and consumers are demonstrating their ability and willingness to spend. The pandemic was a reminder of how essential small, mid-size and large retailers are to the everyday lives of Americans in communities nationwide."[2]

In addition, NRF projects full-year GDP growth to approach 7 %, compared with the 4.4 % and 5 % forecasted earlier this year.[3]

According to *eMarketer*, US retail sales are projected to be $5.35 trillion in 2025.



Source: eMarketer, as reported in Statista

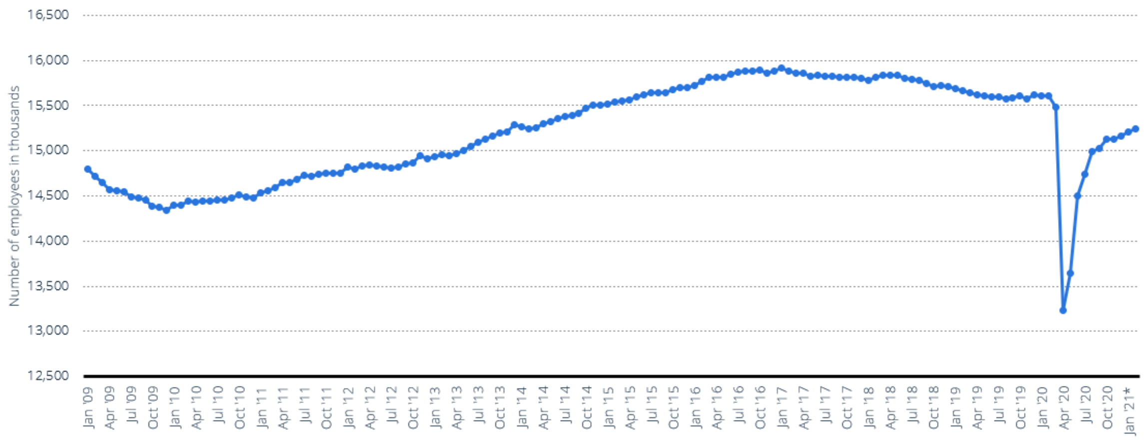
Macroeconomic Environment

Labor/Employment/Unemployment

In December 2020, there were nearly 15.16 million people employed in the retail industry in the United States, down from 15.62 million employed in the same period a year earlier.

Monthly employment in the retail industry in the United States from 2009 to 2021 (in 1,000)

United States: number of employees in the retail sector 2009-2021, by month



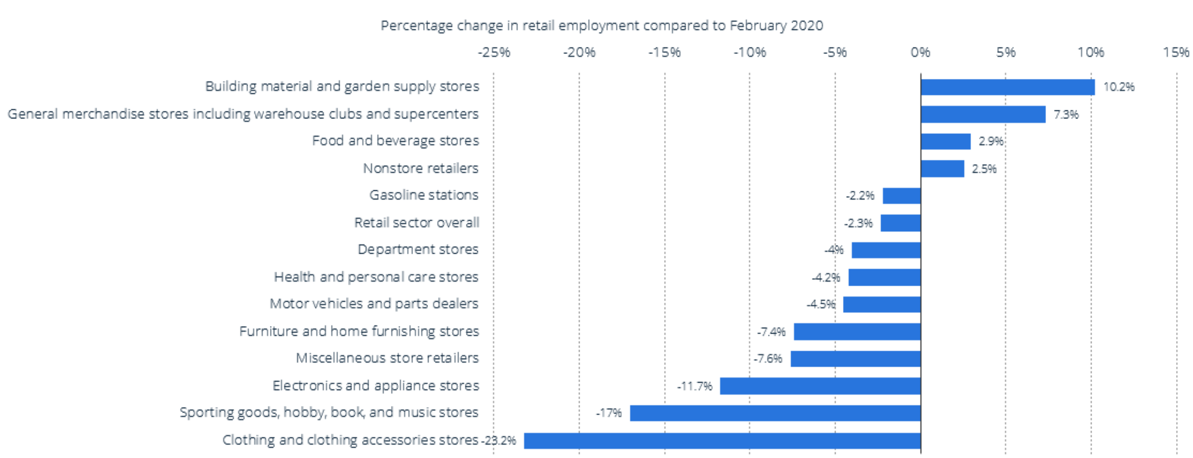
Note(s): United States; 2009 to 2021; figures are seasonally adjusted
Source(s): Bureau of Labor Statistics; ID 1081368

Retail employment statista

According to Statista, in February 2021, the net change in retail trade employment was in the minus, at 362,600 compared over the 12-month period. Compared to the previous month (January 2021), the change in employment was positive at 41,100 thousand. During the observed period, the most drastic changes in employment were observed in clothing and clothing accessories stores.

Year-on-year percentage change in employment in the retail sector in the United States (U.S.) in February 2021, by industry

Retail job loss in the United States in February 2021, by sector



Note(s): United States; February 2020 to February 2021
Source(s): Bureau of Labor Statistics; ID 1208596

Retail employment statista

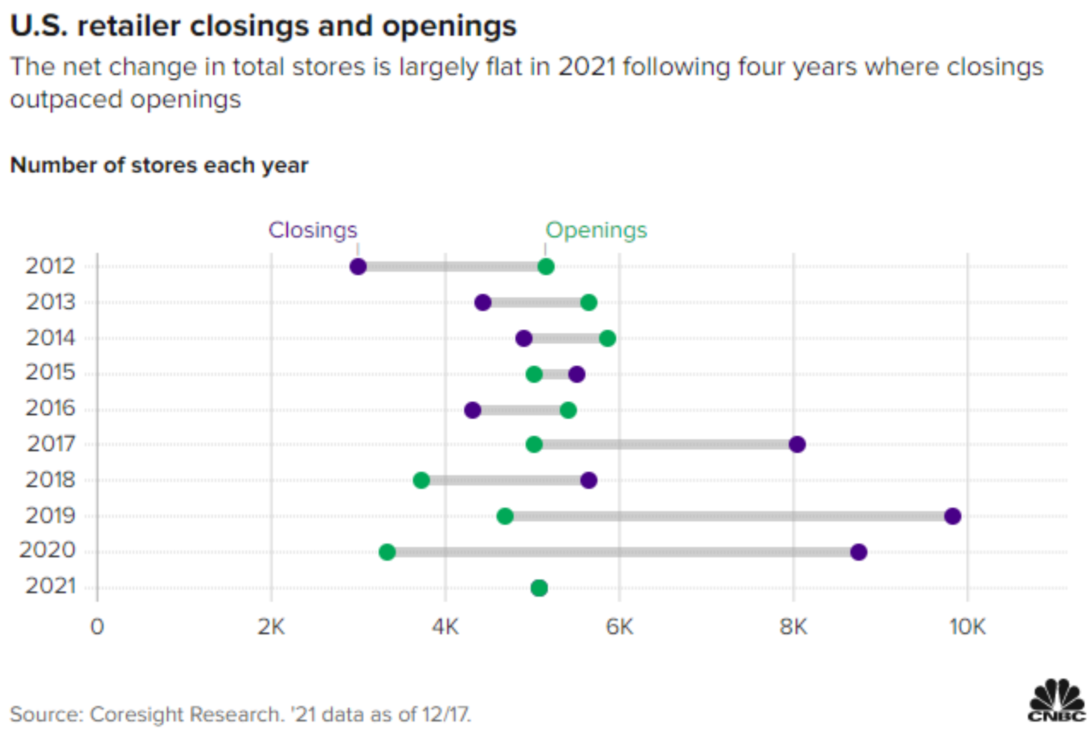
More recently, according to the Bureau of Labor Statistics, retail trade employment rose by 61,000 in January (2022). Job growth occurred in general merchandise stores (+29,000); health and personal care stores (+11,000); sporting goods, hobby, book, and music stores (+7,000); and building material and garden supply stores (+6,000). Retail trade employment is 61,000 above its level in February 2020.[4]

To address staffing shortages, some retailers are turning to automation, according to Forbes. They cited some examples: DSW announced plans around self-checkout, and Amazon convinced its Whole Foods business into embracing its "Just Walk Out" technology, but noted that not every retailer is suited for automation at check-out.[5]

Impact of COVID on Retail/eCommerce

During 2020, especially as the COVID-19 crisis was just beginning, mass closures and stay-at-home orders created chaos for retailers as the world tried to understand what precautions to take. Much of the year was purely survival mode, as some retailers drew down cash to stay afloat and others teetering on the edge were tipped into bankruptcy by the sudden blow to sales and liquidity.

After a wave of bankruptcies in 2020, 2021 was calmer in that regard. Instead of bankruptcies, the year was marked by acquisitions, IPOs, and other transactions as the industry stabilized slightly. The set of challenges retailers faced as a result of the pandemic was different: Instead of mass temporary closures, retailers spent the year battling supply chain bottlenecks as demand came surging back from 2020 and introducing new perks to try and entice workers during a shortage.[6]



Source: https://www.cnbc.com/2021/12/23/store-closures-slowed-in-2021-as-retailers-got-creative-seized-cheaper-rents.html

Mixed Bag for Retailers – More Store Openings but Closings/Bankruptcies Continue

"For the first time in five years, store openings may top announced store closings, according to tracking by Coresight Research. In mid-December 2021, Coresight counted 5,083 openings announced by retailers this year, and 5,079 closures — the fewest in five years". Another positive indicator, approximately 41,000 leases for retail space in the U.S. have been signed-in the first half of 2021, representing 121 million square feet, according to JLL (a commercial real estate services business).[7]

Further, more retailers are going public with IPOs. In 2021, Retail Dive has tracked 17 major retailers that have filed for initial public offerings or direct listings.[8]

However, not all the retail news is positive, "with 2020 proving to be a record year for retail bankruptcies". There was improvement in 2021. According to Axios, citing research by S&P Global Market Intelligence, there were 21 retail bankruptcies in 2021 (as compared to 52 in 2020). It was noted that the 2021 total matched the lowest number in the past 10 years, achieved in both 2013 and 2014. Some of the biggest retail bankruptcies in 2021 include Belk, Paper Source, Alex & Ani, L'Occitane, Christopher Banks and Loves Furniture".[9]

Demise/Repurposing of Shopping Malls

Data compiled by Coresight Research (reported in 2021) shows that about a quarter of U.S. malls could close over the next three to five years accelerating a trend that began pre-Covid.[10] "The general viewpoint now is that malls are on the decline. In many ways, this is true, but it would be better to describe it as a reformation". According to JLL data released in December 2021:

> …freestanding retail has a vacancy rate of 2.9%. In comparison, mall vacancy continues to rise and currently sits at 7.2%, up 155 basis points from Q1 2018. Amongst malls, it's essential to compare the difference in Class performance*. Class A malls sit at 4.8%, Class B at 7.1%, and Class C at 12.4%.[11]

(* "A mall's "class" is generally a function of its smaller tenants' sales per square foot".)

According to Forbes, shoppers still see a purpose for malls, potentially with more technology. A consumer survey (594 U.S. adults) conducted by Placewise, a retail real estate property technology company, found that "60% of shoppers would be "extremely interested" or "interested" if their local mall was able to offer all products at the mall for purchase online, where they could shop with multiple retailers at the mall, make one payment for all purchases, and have the items delivered to them, or be able to pick them up at a central location within the mall".[12]

Technology and Access Highlight Urban vs. Rural Differences

There are some clear differences between urban and rural shoppers most notably in the areas of technology and access to brick-and-mortar locations.

A 2019 survey of more than 1,000 shoppers in four main U.S. regions found that shoppers in all areas want technology to make their experiences more pleasant. However, when it comes to their willingness to use those technologies urban and rural Americans differ.

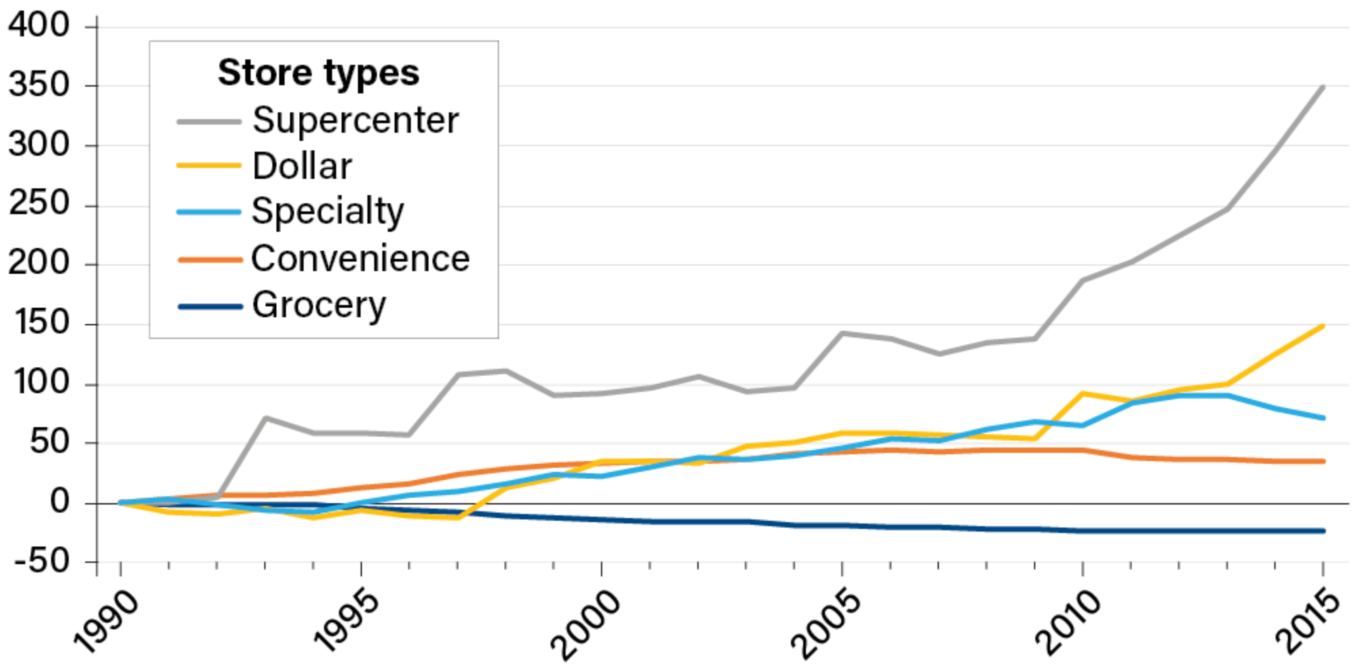
One of the study's clearest findings: urban shoppers are the most connected.

> "In all regions, shoppers in metropolitan areas had the greatest affinity for using digital technologies (46%, compared to 38% of suburban shoppers and 34% of rural shoppers). Urbanites were also more likely to own devices like smartwatches and smart speakers. But rather than coastal city-dwellers leading this digital charge, the survey found urbanites in the Midwest were most likely to report they love using digital technology, followed by those in the West and South."[13]

According to Amber Waves (the U.S. Dept. of Agriculture's newsletter), more and more rural areas have decreased access to food retail locations, prompting larger supercenters and low-price retail food companies to move in.[14]

Dollar stores and supercenters had the greatest percentage growth in rural nonmetro counties from 1990 to 2015

Annual percent change in share of stores



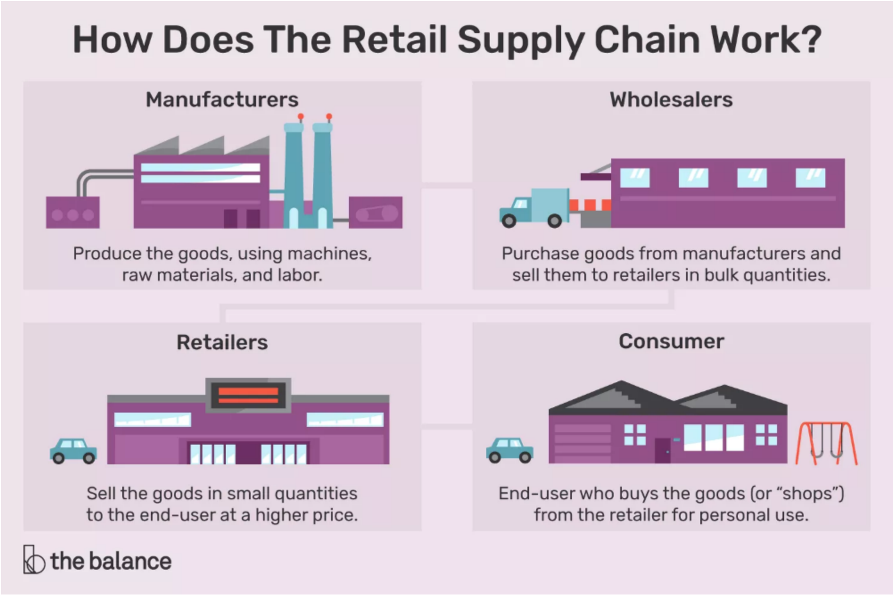
Source: USDA, Economic Research Service using data from National Establishment Time Series from 1990 to 2015.

One example of a retailer expanding into rural areas is Dollar Tree, which may be looking at as 3,000 locations for rural concept stores combining the Dollar Tree and Family Dollar banners. These would be targeted to rural communities of 3,000 to 4,000 people.[15]

Trends in Retail Operations

COVID-Created Fulfillment Challenges Will Accelerate Supply Chain Innovation

Simply put, the retail supply chain consists of manufacturers, wholesalers, retailers, and the consumer (end-user). The wholesaler is directly connected to the manufacturer, while the retailer is connected to the wholesaler. There are exceptions to this traditional supply chain. For example, larger retailers may deal directly with manufacturers without the need for a wholesaler in the middle of the transaction, because they have their own shipping and storage facilities. There may also be differences along category lines.[16]



Covid has severely challenged the retail supply chain. Traditional retailer strategy has been to "find the cheapest price, then they strike a deal" with suppliers noted Simon Geale (executive vice president of procurement at Proxima, a supply-chain consultancy) in a Forbes interview. "This is especially prominent for high-volume, low-cost goods that are shipped on containers," he continued. Switching sourcing from China to other markets added another "glitch" as many of these markets do not have the infrastructure that China has.

Shutdowns and illness during the pandemic highlighted the weakness of the traditional supply chain model. Containers unable to be unloaded and a shortage of truck drivers are just some examples.

Forbes notes that while some large retailers have been able to ride this out to some extent with efforts such as chartering their own ships, many retailers have continued to struggle.

There has been a "slow transition to a digital operating model" According to Simon Geale:

> "Most legacy retailers have built an online business on the side of their physical business, but these are fundamentally different operating models. If you switch capacity and demand from one to the other, which accelerated last year, you've changed your underlying business model relative to your margins. It puts a drag on a retailer's P&L… Retailers need to look at the products they need, where they can get them from and then assess those locations and suppliers based on things like speed, quality, price, and risk."

The article noted that the uncovering of weakness in the global supply chain could be a blessing in disguise.

> "We're about to see an age of collaboration between all these entities in the supply chain. It's not necessarily that the model is wrong, but the management of the model has been shown up. Retailers need transparency and traceability in the supply chain. It's going to take a combination of the best brains working at the fastest speed with the best tools to get that visibility. A retailer won't be able to do it all by themselves;" concluded Geale.[17]

Only 28% of retailers feel their supply chain is agile enough, according to a Capgemini Research Institute report.[18] The need for supply chain change is echoed in retailers' own strategies. 66% of consumer products and retail (CP&R) organizations said "their supply chain strategies will change significantly in the next three years" with three areas of focus:

Demand sensing

68% of CP&R organizations surveyed faced difficulties in demand planning due to a lack of accurate and up-to-date information on fluctuating customer demand during the pandemic. Two-thirds plan to segment supply chains according to demand patterns, product value, and regional dimensions post-pandemic, while 54% will use analytics/AI machine learning for demand forecasting.

Visibility becomes critical

Facing difficulties quickly increasing or decreasing production capacity, 58% of retailers and 61% of consumer product organizations are planning to increase investments in digitization of supply chains to improve visibility. 47% are planning to invest in automation, 42% in robotics, and 42% in artificial intelligence. 64% and 63% of organizations are also planning to make extensive use of artificial intelligence and machine learning across transportation and pricing optimization respectively.

From globalization to localization

72% of consumer product organizations and 58% of retailers are actively investing in regionalizing or localizing their manufacturing base or nearshoring production to prevent future disruption."[19]

New Store Formats

Store formats are evolving to meet consumer dual expectations of convenience and experience. The bridge connecting the two is technology, all channels should connect seamlessly; knowledge of the individual customer should be reflected in-store, online, in social media, and other messaging According to Euromonitor, "retailers will leverage tech to remove the hassles of shopping for mundane items while tapping into the innate desire and curiosity to experience specific products."[20]

McKinsey projects that we are moving towards the "phygital" where there is not a physical world or digital world in retail, but rather a completely connected one. Customers want to see the marriage of digital and physical in personalization, experiences, technology, and convenience.[21]

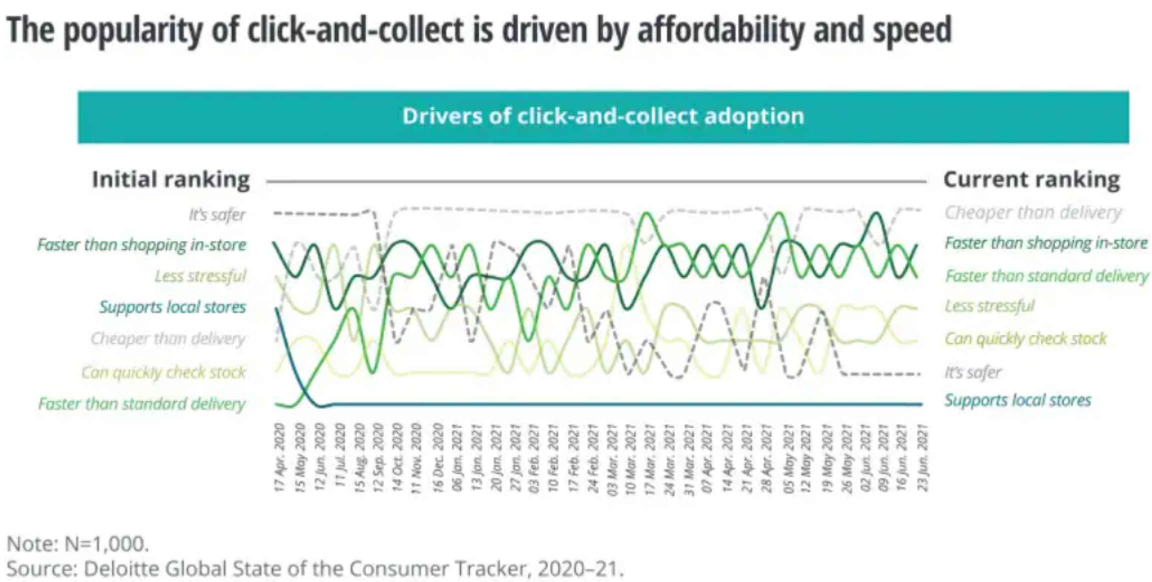
Traditional brick and mortar locations may shift to become experiential centers:

- Experiences such as experiential ticket entry can create unique branded experiences and generate new revenue streams (Euromonitor)
- A store can be a link to the community
- A store can be a venue for learning
- A store can be a location for co-creation
- A store can reflect and expand on a brand's values

An example of this is an IKEA store in Shanghai that was redesigned to incorporate a communal space, a sustainable restaurant, and an area where shoppers can repair items.[22]

E-commerce Continues to Influence & Expand Delivery Models

Consumer use of digital click and collect platforms such as buy online, pick up in-store (BOPIS), buy online, pick up in locker (BOPIL), and curbside pickup has greatly increased. "Concern over health and safety during the pandemic drove people of all generations to try these services. As consumers adapted to pandemic life, the catalyst for these specific shopping methods shifted away from safety concerns to perceived affordability and speed (see figure below). Given that convenience is a growing purchase driver for consumers, we see this preference sticking even after the pandemic subsides".[23]



An Oracle/MIT report called out the evolution of delivery models. Using curbside pickup as an example, the report highlighted the progress and future needs of these:

> "Most retail organizations developed an e-commerce presence a long time ago, but recent events drove them to consider new delivery systems. For instance, 2020 became the year of curbside pickup, says Robinson. "All of a sudden, it became the adoptable fulfillment solution." The curbside process was crude, to begin with, but has become more elegant over time—and more innovations are likely on the way. Take produce, for example, "one of those really personal choices." If a shopper wants an avocado delivered—when the fruit will be eaten often determines how ripe it should be. "Finding a way to get you the avocado the way that you want it, I think that's a massive breakthrough," Mike Robinson (Head, Retail Operations, The Eighth Notch) says. "It becomes another point of intersection with the customer." That adds to data-collection considerations and learning how to use that data. How can retailers have an ongoing conversation with curbside customers?"[24]

B&M Stores as Fulfillment Centers

Many sources highlight the need for bricks & mortar stores to become more involved in fulfillment, a practice jump-started in COVID. "Now, every point of selling must also be a point of fulfillment. One example is how some retailers have turned their physical stores into de facto fulfillment centers during the pandemic. They often employ store associates, who may already have relationships in the community, to fulfill local online orders via BOPIS or last-mile delivery."[25] Some examples of fulfillment innovations are presented here.

- **Dark Stores**

  Retailers must adapt to market forces quickly and many of those adaptations will come with a price tag. For retailers to maximize revenues and profits, they much consider implementing changes that have the lowest price tag for the greatest financial reward. One concept that is receiving quite a bit of attention are dark stores. Urban- or market-fulfillment-center strategies, such as dark stores and dedicated fulfillment locations, have emerged across retail networks.

  > "These are typically smaller-format operations—often less than 50,000 square feet, but sometimes smaller than 10,000 square feet. The capital costs are generally $5 million to $15 million, a fraction of the cost of standing up a new distribution center. Despite higher rent and labor costs for these locations, these costs are often offset by reduced costs of last-mile delivery, which can be substantial at up to 20 %. Such approaches are already being explored across segments including grocery, home improvement, apparel, and consumer electronics. Faster and lower-cost shipments aren't the only ways retailers can create value—in our experience, providing rapid in-market replenishment for nearby stores has allowed reductions in inventory of up to 20 % by consolidating the forward supply of stock spread across stores."[26]

- **Micro-fulfillment Centers**

  According to a Forbes article, micro-fulfillment centers (MFC) are mechanical systems that hold grocery inventory and automate the process for fulfilling online orders using robotics and automation. "MFCs can be valuable to retailers, as they can reduce the cost of fulfilling online orders because minimal human labor is required".[27] B&M stores (or portions) of them are being repurposed as fulfillment/ micro-fulfillment centers.

Major Shifts in Retail Finance Payment Options

Buy Now Pay Later (BNPL) has quickly become a finance tool embraced by retailers and consumers alike. According to Payments Journal, "Solutions like Affirm, Klarna, and others have dramatically expanded the ability for consumers to finance purchases – approaching 80% eligibility. Some other metrics:

- It is estimated that 29 million consumers — 11% of the U.S. total — have used BNPL as payment in the last 12 months. A March 2021 survey also found the highest growth in BNPL use among both the youngest and the oldest user demographics, with surges of 62% in 18- to 24-year-old consumers and 98% in consumers that are 55 and older.[28]
- A September 2021 PYMNTS survey of 2,719 small to mid-sized businesses (SMBs) found that 63% of firms in the retail trade sector said BNPL programs have been vital to their recovery from the pandemic.[29]
- Many US retailers have embraced buy now, pay later (BNPL) options offered by companies like Affirm, Afterpay, and Klarna. RBC Capital Markets estimates these point-of-sale loans increase retail conversion rates 20% to 30% and lift the average ticket size between 30% and 50%.[30]
- BNPL is an essential retailer business strategy, with recent surveys indicating that this payment method may play a crucial role in the economic recovery of retail.[31]

Increasing Roles for Technology

Technology can help retailers up their game. "Technology adoption—the creation of a synergistic pathway—can tackle the conflicts that have historically troubled traditional 20th-century organizational structures: the conflicts between time and money, people and machines, standardization and flexibility, for product and process, and functions and systems," said Michael Forhez (Global Managing Director, Consumer Markets, Industry Strategy Group, Oracle).[32]

According to a CIO article, "juxtaposing augmented reality, virtual reality, IoT, robotics, and extended reality, retailers are crafting new design elements into their stores that provide unique, interactive experiences. Navigation apps, electronic shelf beacons, AI-powered voice recognition, or robotic shop assistants will soon become prevalent".[33]

As just one example of the focus, retailers are putting on technological expansion, CVS EVP/CFO Shawn Guertin stated in their Q4 earnings call that the company plans to spend up to $3 billion on "digital enhancements to improve the consumer experience as well as our community locations".[34]

Following are a few key ways to demonstrate how various technologies are being applied in the retail sector.

Instore Operations - Digital Technology is a Key Differentiator in Success

According to Forbes, retail shoppers have expectations of "convenience and instant gratification".[35] An article in *MIT Sloan Management Review* noted that to stay competitive, traditional retailers need to consider how adopting digital technology can improve the in-store customer experience, provide access to more data on customer preferences and habits, and potentially improve omnichannel operations.

> "The so-called frictionless store has become the new gold standard in the retail world. However, the term is a bit of a misnomer. The goal is to use digital technology to meet consumer expectations of flexibility, instant gratification, convenience, immersive shopping, safety, and speed. But early adopters aren't removing all points of friction. Rather, their strategies vary substantially depending on which friction points they want to remove."

Retailers can deploy digital technologies to improve customer experience, allow greater and faster analysis of data, such as customer preferences or behaviors. And finally, help those retailers make better use of their human capital by automating routine work like stocking shelves.

Frictionless retail is poised to become more widespread. According to e-marketers, frictionless commerce "leverages technology to improve the retail experience by saving people time and hassle". Contactless checkout and click and collect pickup are examples of innovations that reduce shopper "friction".[36] CB Insights recently reported that funding for in-store technology quadrupled from the first quarter of 2020 to the first quarter of 2021, reaching $2.2 billion.[37]

Indoor positioning and AR navigation are areas that can help improve the shopping experience according to Mobidev (a technology company offering solutions in such innovations as artificial reality). They provided some detail:

- Indoor positioning systems (IPS) have been a trend of interest for a few years now for helping users navigate indoor areas where GPS is not available or not accurate enough. However, there are many more applications for this technology than first meet the eye.

- The challenge comes from implementing in-store navigation solutions for your business. The first step is hardware. Having the right infrastructure in place is essential, whether it be Bluetooth beacons, Wi-Fi RTT, or ultra-wideband (UWB).
- IPS systems have much more potential than just helping guests shop. Having data on where guests shop in the store has three beneficial implications: targeted suggestions, tracking customer traffic, and item tracking.
- … AR technologies can enrich the experiences of customers and workers even further. Augmented reality-based indoor navigation technology can help shoppers find the items that they need in-store just by following directions on their phone's screen… AR navigation can help retail workers too.[38]

Retail Dive echoed the importance of technology, reporting that "71% of customers favor speed of service and checkout ease when deciding whether to continue shopping with a retailer. This preference makes a compelling case for implementing mobile checkout and self-service tools at physical stores, creating a similarly streamlined online shopping experience. Going one step further, retailers can equip their store associates with customer data and trends, empowering them to deliver similarly engaging, personalized recommendations to returning shoppers".[39]

Additionally, Retail Dive made an interesting forward-looking point:

> "In the future, perhaps the store also returns to a familiar role: that of an educational and personal experience unique to each brand but leveled up with relevant technology. Retailers can empower associates with data-based insights on customer preferences and fulfillment options. They can utilize digital back-end tools to optimize inventory management between stores and personalized sales and marketing offers".[40]

Robotics Continue to Automate Distribution

Another way that retailers are adapting is by automating their stores and distribution centers. "Robotics and automated systems in distribution centers and stores can improve the speed and accuracy of omnichannel order fulfillment processes. The rapid growth of sophisticated solution integrators and "co-botic" solutions (robots that collaborate with humans) continue to accelerate, with numerous at-scale implementations emerging in the market. Moreover, many robotic and fulfillment solution providers have innovated different economic models, such as robotics as a service (RaaS), that reduce the upfront capital burden and allow more scalable, variable cost models to grow with the business. This can be equally attractive for companies with limited automation budgets and larger enterprises needing solutions that seasonally scale."[41]

Mobidev summarized some of the applications of robots and automation in a retail environment:

- AUTONOMOUS DELIVERY – delivery by robots, drones, and autonomous carts is being explored; The Safeway cart, developed by Tortoise, was introduced in 2020
- CUSTOMER SERVICE ROBOTICS – as an example. "Hyundai introduced a robot called DAL-e that would aid in automotive showrooms. The robot can greet customers and help them find the vehicle that meets their needs. The robot also uses facial recognition and AI to detect if the customer is wearing a mask and advise them appropriately about masking rules"

- ROBOTIC INVENTORY MANAGEMENT – "Special hardware can sometimes aid with inventory management where ceiling and shelf-mounted cameras cannot. Machines like SmartSight can automate the process of identifying misplaced items on shelves and sales floor quantities and alert workers when certain items are running low"[42]

Data Management Optimizes Both Shopping & Inventory

Data management and analysis can play an important role in both improving the shopper experience and in controlling and optimizing inventory.

Forbes suggests that retailers:

- look to data to accurately staff retail locations, anticipate customer service needs and toggle BOPIS options. Look for patterns in occupancy, spikes in sales, and other factors that will allow you to maximize staffing needs
- train staff to analyze patient profiles prior to the start of customer appointments and generate relevant advice prior to the customer's arrival. This "clienteling experience" will not only streamline the appointment but will also leave staff feeling prepared and confident.
- connect in-person shopping experiences with digital and BOPIS data and customer loyalty for a comprehensive, 360-degree view of each client. This will provide the most complex and rich view of client preferences, behaviors, desires, and needs.[43]

"Supply chain disruption means smart inventory management in retail is crucial, plus the move to omnichannel puts big data center stage". A Supply Chain article presented comments from some industry experts regarding the importance of data in inventory management:

- Miguel Duarte (a consumer health leader with EY)," feels that the shift to e-commerce is something of a "data dream" for retailers". He noted, "Online, inventory can answer business questions at the most specific level – transactions and stock-keeping unit numbers, for example. Data can also be collected at multiple moments in the journey, and at different times of the day."
- Joelle Dove (director of business development with brand innovation specialist, Daymon Worldwide) "feels online inventory data is valuable only if retailers' systems are up to scratch. "What may have worked a few years ago may not be working as efficiently in today's purchasing environment," she says. "The ability of a retailer to accurately report that inventory will dictate the trust consumers have with that retailer."
- "Duarte agrees, saying the key is whether retailers are ready to invest in leading-edge inventory capabilities. "This is the big question right now. Companies have a unique opportunity to transform inventory planning with a customer-back approach."[44]

Impact on Small-to-Mid-Size Retailers

The largest retailers (i.e., Amazon, and Walmart) are at the forefront of the implementation of newer technologies. However, there will be pressures on retailers of all sizes, perhaps more so on smaller retailers, to adopt "customer-facing innovations" and advance their digital transformation through some combination of these technologies.

Forbes noted:

> "Customers expect brands and retailers to not only keep up change but also enhance customer experiences. Those that don't, will pay the ultimate prices. Most shoppers (80%) said that they will abandon a retailer after three bad experiences".[45]

Looking at grocery as just one example of what retailers are doing, Storewise, a software company focusing on independent grocers, has identified some examples of technology that can be, and is being, used by small to medium independent groceries:

- Grocery automation software (replaces most manual spreadsheets)
- Updated POS & back-office software
- Mobile grocery apps (for customer orders)
- Kiosk ordering (at the checkout, for example)
- Self-checkout lanes (expected to increase by 2021, with an estimated 50% of all retail locations having them by 2021)[46]

Many of the technologies and processes being called out may be achievable and scalable for smaller and mid-level retailers. These include self-checkout, digital signage, and micro-warehouses for order fulfillment.

Case Studies: Supermarkets and Automotive Dealers

Retail encompasses so many different sectors and certainly, the trends, issues, and solutions will have a great deal of variation depending on the sector. To provide some context, the following are two-sector profiles highlighting how some of the trends discussed above are impacting each.

Supermarkets Need Technology to Address the Shift to Online

eMarketer data showed that "at the height of the pandemic in 2020, many consumers ordered their groceries online — which resulted in 63.9% growth in e-commerce grocery sales that year. In 2021, the report estimates that e-commerce sales accounted for 10% of all grocery sales".

Supermarkets may be challenged by this increase in online orders. Forbes (citing Bain & Co) reported that retailers could see negative margins for most grocery home delivery models even after delivery fees. Online ordering will reduce the number of shoppers in the store. Grocery retailers invest significant amounts of money into building and operating their stores and in purchasing inventory to stock their shelves noted the article. All this could negatively impact profitability and the ability of supermarkets to cover their costs.

Another challenge created by the growth of online ordering is the entry into the market of rapid delivery companies. These companies "are generally able to achieve fast delivery speeds by opening manually operated micro-fulfillment centers and stocking a low number of products inside each fulfillment center. Employees fulfill orders and couriers use transportation like bicycles or motorized scooters to make the deliveries". Supermarkets instituting their own micro-fulfillment centers (MFC) could be a solution:

> "Grocery retailers can install an MFC in a building attached to a store; they can install an MFC in a building located at an off-site location (often referred to as a "dark store," as no customers can shop inside the store and the retailer only uses the store to fulfill orders); or they can install an MFC inside a grocery store. The latter is the strategy I recommend.
>
> … MFCs can provide retailers with the ability to change their business models. For example, grocery retailers can leverage MFCs to fulfill rapid grocery delivery orders in addition to fulfilling online and even curbside pickup orders. MFCs can maximize the value of stores by leveraging the real estate and location to fulfill orders close to customers".[47]

In addition to improving their online fulfillment, supermarkets need innovative ways to bring customers into the store. "Potential options include increasing the number of products customers can purchase in bulk, installing zero-waste refilling stations where customers can refill bottles of detergent, shampoo, and other liquids, or opening cafes".[48]

Faster check-out methods are another way to encourage in-store shopping. As an example, Amazon, although not a traditional grocery retailer, has built checkout-free technology into their prototype food stores. Amazon's Fresh store (opened in 2021 in Westmont, Illinois) utilizes their "Just Walk Out" technology. Customers with an Amazon account and a linked credit card can fill their cart and "an electronic trellis of suspended cameras and sensors that document every purchase". Other Amazon food stores use shopping carts to record purchases. Consumers can also shop via a check-out line. "The option would be required for anybody who doesn't register the visit with an Amazon account. You enter the store either with a QR code obtained on the Amazon app or through a gate marked "traditional shopping."[49]

Digitization in Automotive Retail in 2021 and Beyond

The car buying process is changing and automotive dealers will need to adapt. Cox Auto reported in December that Just over 13% of all transactions currently take place online and all require some level of sales support. "As the mismatch between consumer demand and availability of eCommerce at dealerships equalizes, up to 25% of global auto sales are expected to be online by 2025 and continue to grow through 2030 and beyond".[50]

Consumers report spending less time researching and shopping for a car online during the pandemic. A total of 86% said they shopped online to save time at the dealership during the pandemic, citing this as the No.1 benefit of virtual car shopping.[51]

Shoppers are also shifting to online purchasing for both new and used cars. Cox reported the following metrics drawn from a variety of sources:

- Consumer satisfaction with car buying has increased with digitization, reaching an all-time high of 72% in 2020, up from 60% in 2019.
- Today, 80% of consumers say that they want to do at least part of their vehicle purchase online.

- 64% of car buyers want to handle more of their purchases online compared to the last time they purchased a vehicle.
- In 2021, 25% of consumers stated they would purchase entirely online.
- New form (online only) retailers are realizing greater than 100% annual revenue growth.[52]

Wards Auto notes that augmented reality (AR) is one of the most valuable tools that can be used moving forward. Consumers experience a digitally rich shopping experience in many retail categories and “standard images or basic videos are no longer going to cut it” in their car buying process, Wards continues. “Dealers and OEMs should look to update their websites to include refreshed assets that include AR. This technology provides realistic, 3D views of a vehicle that allows shoppers to truly get a sense of a vehicle’s interior and exterior as they conduct research”.[53]

According to Automotive News,“Fixed ops also may benefit from improved technology, said Rick Ricart, president of Columbus, Ohio-based Ricart Automotive Group. One area that could be top of mind? Streamlining appointment scheduling tools with other customer-facing components of the service department, such as helping customers understand what needs to be repaired and allowing them to electronically pay for the work”.[54]

Car companies and dealers are starting to introduce some initiatives to compete with such online-based disruptors:

> “General Motors this month announced the launch of CarBravo, an online used-vehicle shopping platform for dealers to list GM and non-GM vehicles. The automaker will also offer company-owned vehicles and lease returns that dealers didn’t purchase.
>
> It’s a step in the right direction that’s both respectful to dealers’ businesses and fair to customers with transparent pricing.
>
> CarBravo and other automaker programs, such as Ford Blue Advantage and Nissan@Home, can help ensure that more vehicles are kept within the dealership network rather than sent to auctions for Carvana, Vroom, CarMax Inc. and the like”.[55]

Technology is going to play a larger role in automotive purchasing in the future, especially with traditional automotive new car dealers. Ward’s Auto commented that “the pandemic has accelerated virtual car shopping in many ways. Dealers and automakers need to start adopting new practices and technologies, including augmented reality, to keep customers happy and continue making sales in meaningful ways”.[56]

In Conclusion

It is apparent that so much is changing in the retail environment. Consumers are demanding not only convenience but are wanting their in-person store experience to be more than just shopping. Forrester's research noted that "customers want the flexibility of determining what they want, when they want it, and how they want it delivered or even returned … Omnichannel fulfillment capabilities – including 'buy online, pick up in store' (BOPIS), ship-from-store, ship-to-store, endless aisle, and 'buy online, return to store' – are now table stakes for midsize to enterprise retailers".[57]

Macro factors such as staffing and supply chain continue to create challenges. Technology applications are evolving rapidly and will require retailers to implement many innovations, both in the front and back end. "As technological advancements thrive in the retail industry, legacy technologies like older PoS systems, inventory management solutions, etc are being replaced".[58] Retailers will need to pay close attention and implement what works best for them and their customers.

According to Forbes, "retailers face a common, onerous challenge. They must iterate and innovate in real-time while navigating legacy technology systems and processes, many of which were already outdated prior to the pandemic. Today, retailers are managing an average of 44 disparate front-end technology systems".[59]

Going forward, retailers of all sizes will need to make decisions as to what equipment and technology they will commit to. The smaller the retailer, the more challenged they may be in terms of the economics of funding what is needed to capture the consumer and allow them to succeed in the rapidly changing environment they operate in. Strategies such as increasing warehousing, repurposing existing stores and incorporating new technologies, to name just a few, all present opportunities for leasing and other financing solutions.

About the Researcher

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