

IBM 2017 Customer Experience Index (CEI) Study

Customer expectations outstrip brands' capabilities to deliver the optimal shopping experience

IBM Institute for Business Value

Executive Report Retail and Consumer Products

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Retailers on the defensive

The IBM® 2017 Customer Experience Index (CEI) Study found that brands need to work harder to meet consumer expectations. To avoid being marginalised to commodity status or, worse, disappearing from the landscape altogether, brands must adapt to and capitalise on disruptive forces impacting the consumer industry. Specifically, they should focus on meeting consumers where and how they want to engage, adapting business models to limit the disruptive impact of new market players and embracing technology that enables experience innovation. Leading brands will move beyond the old-fashioned 'fast follower' mentality to survive in today's 'lead or lag, win or lose' world.

Executive summary

Our fifth annual IBM CEI Study identifies which brands are providing leading shopping experiences and how they're doing it. To achieve this, we undertook a global assessment of retail and consumer products brands' customer experience (CX) capabilities from a consumer's perspective at key touchpoints along the in-store, online and mobile shopping journey using a common set of criteria and a universal scoring system.

The study generated almost 30,000 individual data points about more than 500 brands in 25 countries across the world, as well as an extensive library of observed leading practices, giving us the ability to analyse CX capabilities at a region, country, sector and/or individual company level. Further, we can use this information, along with our vast industry experience, to develop strategies for brands seeking to improve their CX capabilities.

The 2017 CEI results indicate that brands have significant room for improvement in terms of satisfying customer expectations: On a scale from 0 to 100, the average CEI score is 33. Digital-only brands score higher than their store and digital counterparts, with an index score of 39 versus 32, but this doesn't tell the entire story. When comparing digital-only brands against store and digital brands on a common set of digital criteria, the difference in CEI scores is much less pronounced: 39 versus 37, respectively. However, the store and digital brands also have to manage their in-store experiences and it's across these physical criteria, which have an aggregate index score of just 22, where the biggest challenges exist.

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On a scale of zero to 100, the 33 average CEI score is 33.

39%

3%

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Only three percent of brands are classed as Leading Edge, while 39 percent are Falling Behind or Lagging Behind.

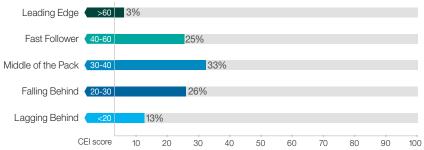
highest and lowest performers.

Figure 1 CEI scores range from four to 85, a span of 81 points separating the

We created five groups based on CEI performance, dubbing those with the highest scores 'Leading Edge' and those with the lowest 'Lagging Behind' (see Figure 1). Just three percent of retailers are classified as Leading Edge; the majority fall into either the Fast Followers (25 percent) or Middle of the Pack (33 percent) categories. Thirty-nine percent are Falling Behind or Lagging Behind. With seemingly so few brands pushing the boundaries of customer experience, there is a real danger that the majority of retailers will lag behind consumer expectations - expectations that are increasingly set by industries outside of retail.



CEI performance bell curve



The challenge for most brands is that the capabilities through which they can most differentiate themselves are the same ones with which they struggle (see Figure 2). These include store experience (with an index score of 20), personalisation (30) and mobile experience (31). While still important, categories like supply chain (53) and digital experience (44) are more foundational. A retailer is less likely to truly *delight* customers through better supply chain capabilities. That being said, disappointing performance in these areas can have an exaggerated impact on overall brand perception (and financial performance). Store experience, specifically bringing digital capabilities in-store, should be a top priority for retailers looking to improve their customer experience.

Figure 2

Scores by experience category



Global CX capability levels are more consistent

The United Kingdom is the highest performing country - and somewhat of an outlier - with an average CEI score of 44. The United States is the second highest performer, with a score of 36, followed by Brazil at 35. And there is a span of only 7 index points between the next 10 highest performing countries (of those that had more than 15 brands included in the study).

North America is the highest scoring region with

a CEI index of 35. Europe and Latin America are second, both with 33, while Asia Pacific scores 31.

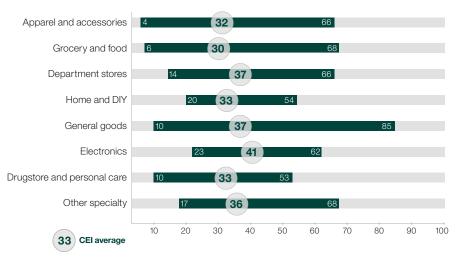
Mature markets had an average CEI score of

34, while growth markets scored 33, which suggest a leveling of the playing field globally. The performance lead previously enjoyed by mature markets has eroded in the digital era as CX innovations emerge and rapidly spread to various industries and regions across the globe. Average CEI scores are consistent across all eight market sectors included in the survey, ranging between 30 and 41 (see Figure 3). However, there is a significant spread between the high and low scores, both across the CEI Study as a whole and within each individual sector; spans of between 34 and 75 points separate the highest and lowest sector performers.

Innovative leaders will continue to push the experience bar higher and pull further ahead of the pack, making it harder for those on the other end of the scale to catch up. A maxim of the CEI Study is that if you're not leading, you're falling behind.

Figure 3

Average CEI scores and performance spans by market sector



Measuring moments of truth

The CEI Study focuses on seven category areas, which were developed based on feedback from more than 35,000 consumers surveyed as part of a previous IBV study: 'Shoppers disrupted: Retailing through the noise.'' Consumers were questioned to determine which CX factors were most influential when choosing one brand over another. Below are the headline findings for each category area.

Store experience

The digitally integrated store will be a key battleground as brands seek to differentiate their customer experience.

The sophistication of the digitally integrated in-store experience is rated adequate or worse for the vast majority (91 percent) of brands. Only two percent are rated very good or excellent, with cutting-edge capabilities such as augmented reality and robotics. Brands fail to meet expectations in many in-store services. For example, 88 percent do not have the ability to acknowledge customers as they enter the physical store. At the shelf edge, 67 percent do not support product comparisons, while 49 percent do not enable access to additional product data. Seventy-nine percent of brands either do not have mobile-enabled associates or do not provide their associates with mobile access to customer information.

Time-poor consumers want efficient, timely payment processes. Unfortunately, we found that 84 percent of brands rely solely on opening additional checkout lanes for queue busting and 67 percent provide only traditional payment methods at the checkout. These results signal a lack of innovative solutions to speed customers through the payment process. Further evidence is the mere 11 percent of brands that offer mobile payment solutions.

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Fifty-three percent of brands provide a click and collect experience rated good or better, with facilities such as geolocation to alert store teams to a customer's arrival or automated lockers to speed the 'buy online, pickup in-store' (BOPIS) process. Sixty-nine percent were rated good or better for returns and exchanges.

Each brand has a unique set of opportunities and solutions to improve the in-store shopping experience for its customers. The common thread that runs across all of them, though, is using new tools and technologies to capture data regarding people, products and store facilities - and leveraging that information to provide a more expansive, personalised and effective experience than consumers could achieve shopping at home on their own devices.

Digital experience

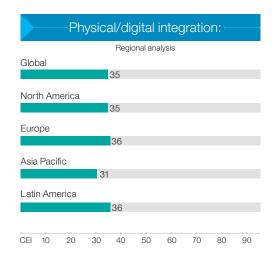
Sophistication of the customer experience in digital channels, particularly the online store, is crucial.

As consumers migrate more of their shopping-related activities online, the digital experience needs to move beyond simply offering an effective purchasing channel. It should become the central element of a brand's CX efforts and a key enabler of a seamless online-to-offline shopping experience.

Although 50 percent of brands provide very good or excellent online shopping functionality, with enhanced functionality to manage orders, create wish lists and access reviews and videos, the digital experience for consumers is inconsistent, especially in search and product comparison capabilities. Eighty-nine percent of brands provide no ability to compare products side by side, forcing customers to toggle between screens. Also only 53 percent have search functions that offer advanced auto completion and filtering, while 42 percent do not provide content-relevant responses to questions with spelling mistakes.

Similar inconsistencies exist in customer service capabilities. Customers expect issues to be resolved quickly and correctly, but 61 percent of brands do not provide online chat options. This can frustrate customers and increase operating costs as inquiries must be routed through telephone or e-mail systems instead.

As customers still trust the opinions of other customers more than information from brands, access to customer reviews is critical to driving conversion and incremental sales. However, 35 percent of brands do not offer access to customer reviews in any channel, and less than half (47 percent) offer reviews in two channels or more. On a positive note, 60 percent of brands allow customers to easily share product information on social media, some even going so far as to enable customers to create their own social media sales channel, where they can earn commission through sales to family and friends.



Physical and digital integration

Consumers expect a seamless, digitally integrated shopping experience across every channel, including the physical store and contact centre.

While BOPIS is sharply gaining in popularity, 39 percent of brands do not offer a click and collect service and only 26 percent are able to provide BOPIS within a half day after purchase.

Fifty-two percent of retailers provide a home delivery experience deemed very good or excellent. Leading brands are leveraging Internet of Things (IoT) technology to facilitate automated deliveries based on consumption rates. However, 64 percent of brands do not enable customers to choose their delivery day or timeslot. In addition, 44 percent do not offer express home delivery service and 31 percent can't guarantee next-day delivery from an online order. We also found that 63 percent of brands do not offer customers an online option to book service appointments, either in-home or in-store. This facility is vitally important for market sectors like home and DIY, where virtual reality tools can help improve the accuracy of the design planning process and the efficiency of the final installation in the customer's home.

Understanding that comprehensive order status information can improve customer convenience and satisfaction, 62 percent of brands offer order status on two or three different channels. Only 12 percent provide no delivery information in any channel.

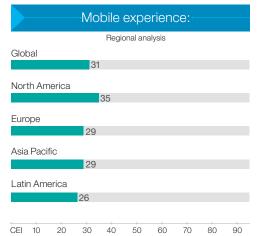
Brands offer consumers limited capabilities that support online-to-offline integration. Only 28 percent provide responsive help options 24/7 and even fewer (23 percent) enable customers to switch between channels on the same service request. There are also opportunities to better leverage the contact centre staff as fully fledged sales/service associates for non-store shoppers. Thirty-nine percent of contact centre agents would not take orders or try to up-sell to mystery shoppers and 21 percent are unable to access customer account details, limiting the capability to personalise the consumer experience.

Mobile experience

Mobile is becoming the primary tool for interaction between customers and brands. It is the device that links the online and offline worlds.

With a projected 5 billion mobile phone users worldwide by 2019, mobile is quickly becoming the 'first screen' for many brands.² However, 37 percent of brands from the CEI Study provide either a poor mobile experience for consumers or no mobile offering at all.

And beyond being a channel on its own, mobile is a critical element of enhancing the in-store experience, offering consumers access to localised pricing, product and inventory information, as well as personalised, contextually relevant marketing. Yet brands have been slow to adopt these types of capabilities. Only 21 percent provide location-based services to drive in-context, proximity-sensitive messaging.





Brands should further leverage mobile-specific capabilities, such as the camera or Global Positioning System (GPS), to offer 'on-the-go' services for customers. For example, customers who use the camera to take pictures of items they wish to purchase could then engage a mobile app that links directly to the product page. Brands can also leverage GPS capabilities to help customers find the closest stores. However, 58 percent of brands either do not have a GPS-enabled store finder or make customers work out routes to the stores themselves. Brands are just beginning to experiment with mobile devices other than phones (for example, spectacles and digital monitors); only nine percent provide functionality for smartwatches or other wearables.

Personalisation

Understand and interact with individual customers in highly personalised ways, at scale.

The CEI Study found that brands are not meeting consumer expectations in terms of crosschannel personalisation or self-service customisation. Just four percent of brands enable consumers to customise their online digital experience, while 71 percent only offer generic marketing messages to their customers, falling short of contextual expectations. And among brands that offer loyalty programs, 70 percent do not permit customers to choose their preferred form of reward.

Brands have made significant efforts to engage consumers across many different touchpoints but struggle to leverage this information to personalise the experience in the ways customers want. Nearly four in ten brands (39 percent) do not have any meaningful personalisation capabilities online and 74 percent do not offer any personalisation of the mobile app.

Most customers want a more rewarding, personalised shopping experience. However, 70 percent of CEI brands limit their customers' abilities to manage personal data. Similarly, personalised recommendations could help boost customer conversion and spend, but just 17 percent of brands leverage customer preference data when making recommendations. Fifty-four percent only offer recommendations based on previous purchase history or other shoppers' behaviour. Twenty-six percent offer no personal recommendations at all.

Social media

Social media enables brands to play a wider role in the lives of their customers, going beyond the transaction to deliver more personalised value.

Social media can enhance brand perception and foster advocacy and loyalty. Brands recognise this: The CEI Study found that 77 percent offer a social media experience rated good or better, with facilities such as gamification and co-creation. Seventy-three percent are active in four or more social media channels. Social media responsiveness, however, is a larger challenge. Eighteen percent of brands either don't respond to customer inquiries posed via social media or take more than 48 hours to do so.

Social shopping - purchasing goods and services via social media channels - is a growing phenomenon. It is estimated that 2016 saw USD 50 billion of sales generated through social networks, an increase of USD 20 billion from the previous year.³ However, 38 percent of brands do not offer customers the opportunity to shop via social media and another 53 percent only redirect customers to the online product page.



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Offering entrepreneurial customers the opportunity to provide input and contribute ideas is a great way to turn them into brand advocates. However, only 32 percent of brands provide customers with opportunities to co-create and collaborate, for example by providing input and feedback on new products or by offering one-of-a-kind individualisation of items using 3D printing or modular design.

Omnichannel supply chain

Providing consistent, reliable inventory data across all channels and satisfying omnichannel fulfillment require transparency, speed and agility.

Many brands have optimised supply chain efficiency by stripping out redundancy and extracting costs. However, the growth of cross-channel shopping requires a new approach to supply chain optimisation. This includes the use of emerging technologies - hyperlocal demand planning and forecasting, internet of things (IoT) technology and radio frequency identification (RFID)-enabled product tracking - to better predict demand patterns and provide more consistent inventory data.

Consumers expect anytime, anywhere shopping and fast, convenient fulfillment. When shopping online, customers expect an on-time, complete home delivery of their order if it is listed as 'in stock.' We found, however, that 19 percent of brands do not meet their own stated delivery times/windows.

Further, the CEI Study results suggest that consumers do not have, or cannot rely on, cross-channel inventory data to help make buying decisions. Thirty percent of brands offer inconsistent or no supply chain data at all. A further 17 percent are unable to guarantee against missing inventory data across channels. However, 36 percent of brands can offer consumers consistent, though basic, inventory data. Gaps in these fundamental capabilities represent a significant barrier to meeting omnichannel supply chain expectations.

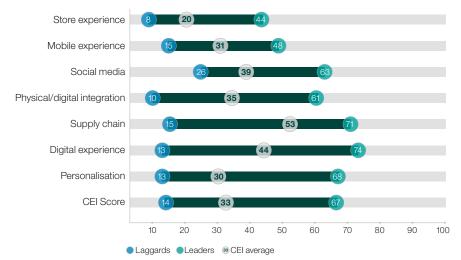
What do Leaders do differently?

Analysing individual CEI capabilities enables us to identify what Leaders (those with CEI scores of 60 or more) do more effectively than Laggards (those with CEI scores of 20 or less).

Unsurprisingly, Leaders outperform Laggards by the largest amounts in the areas that are the most differentiating to customers (see Figure 4): Store experience (5.5 times), personalisation (5.2 times), physical/digital integration (6.1 times) and digital experience (5.7 times). The spread between Leaders and Laggards is closest in social media, with Leaders outperforming by a factor of only 2.4.

Figure 4

Analysis of CEI scores: Leaders and Laggards



Customer engagement: Leaders are better at knowing their customers and offering them an authentic digitally integrated shopping experience. Leaders harvest, analyse and apply insights from consumer data more effectively to enhance the customer's shopping experience. The Leaders' average score for providing relevant and timely content that generates a meaningful brand interaction is 3.8 times higher than that of Laggards. Leaders base product recommendations on previously purchased products as well as on the customer's prior behaviors and preferences, averaging a score of 75 in this area, while Laggards only score nine. Eighty percent of Leaders provide customer-generated recommendations in three or more channels, while 83 percent of Laggards offer no customer recommendations.

Customisable experience: Seventy-six percent of Leaders allow customers to tailor the brand's mobile app to reflect their preferences, compared to just 6 percent of Laggards. Ninety-six percent of Leaders allow customers to access and manage their personal data and preferences via the mobile app compared to only 11 percent of Laggards. Leaders enable customers to manage a much greater range of information using the app, achieving a score of 84 for this facility. Leaders also enable customers to maintain the integrity and accuracy of a wide range of data in the customer preference center. Leaders' scores are 6.6 times higher than Laggards' scores in this capability.

Fulfilment flexibility and convenience: Leaders provide more accurate inventory data in the online shop, with scores 5.1 times higher than those of Laggards. Leaders' scores are 8.2 times higher than Laggards' when it comes to providing accurate inventory data across channels. Combined, this greater level of inventory visibility gives customers confidence that the products they are looking for are going to be in-stock when and where they expect.

Home delivery is another area where Leaders outperform, with 96 percent achieving a very good or excellent score compared to only 9 percent of Laggards. This difference is driven by customers being able to select their preferred delivery day and timeslot, offering more convenience for busy customers. In addition, 84 percent of Leaders offer order status on at least three channels, performing well above the Laggards, 25 percent of whom only show order status on a single channel.

Customer to customer (C2C) communities: Consumers trust other customers. Sixty-four percent of Leaders allow customers to view ratings, reviews and/or other consumer-generated content in three channels, whereas only four percent of Laggards provide access in just two channels. Ninety-two percent of Leaders enable customers to share product details with family and friends directly via social media channels, outperforming Laggards by a factor of 5.4.

Getting the basics right: Omnichannel supply chain and social media are two foundational capabilities in which Leaders excel, outscoring Laggards by factors of 4.9 and 2.5, respectively. Mistakes made in these disciplines can have an overly detrimental impact on brand perception. Ninety-six percent of Leaders guarantee the availability to promise and ship orders to customers according to published home delivery schedules, while only 19 percent of Laggards do so. Similarly, 96 percent of Leaders offer a social media experience, optimised for mobile, rated as very good or better, with capabilities such as real-time support center 24/7 coverage, showcasing of new products and initiatives, competitions and social as a sales channel. Only 21 percent of Laggards achieve this standard.

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So, what does this mean? Recommendations for brands

The CEI Study reveals three fundamental customer experience imperatives. The first is to **engage with consumers**. In a world where the last best experience drives the minimum expectations for every future experience, brands must employ a 'customer first' strategy that focuses on identifying and engaging with their target customers and determining what they most desire from the brand relationship.

- Leverage cognitive analytics tools to identify emerging shopping trends and evolving consumer wants, needs and desires. Focus the entire organisation around addressing the highest priority expectations of target customers
- Enable consumers to share and co-create ideas for new products and services, either formally or on a more ad hoc basis. Maintain an active social media presence and engage consumers beyond the transaction, collaborating in new ecosystems with other consumers and business partners
- Provide in-context shopping experiences tuned to customers' life stages and lifestyles and, using cloud computing and customer relationship management facilities, leverage insights gleaned from all touchpoints to personalise their experiences and influence their paths to purchase.

The second imperative is to provide a *consistent experience across all touchpoints.* Consumers do not recognise channels; they only see the brand. An inconsistent, frustrating experience could cause customers to shop elsewhere, resulting in significant declines in sales and profits.

- Design the digital experience around the evolving expectations of the omnipresent (any-channel, always-on) customer. Omnichannel shoppers spend between 50 and 300 percent more than single channel shoppers.⁴ Mobile is key to seamlessly integrating experiences across channels and should be a focal point of future CX capabilities
- Elevate the in-store experience through enhanced digital capabilities such as augmented reality, digital signage and in-store location-based solutions. Provide a personalised, mobile-enabled experience in the reinvented digital store environment
- Foster an excellent brand experience by enabling customers to interact and engage on their own terms. Frontline associates are the new brand ambassadors; provide them with mobile access to reliable data and leverage advanced analytics features to enable better interactions with consumers, for example, by using engagement advisor capabilities.

The third imperative is to make the shopping journey easier and more rewarding by leveraging *innovative, value-add technologies.*

- Be *best* at those solutions that have the greatest impact on customers and associates. Customers want more control over their shopping journey; provide easy-to-use tools and self-service customisation capabilities so each can optimise his or her individual user experience
- Redesign the supply chain to be agile, responsive and transparent to better anticipate and react to changing customer and market dynamics. Leverage weather and location data to optimise fulfilment. Enhance sell-through and margins by applying advanced analytics to reduce inventory redundancy
- Adopt cognitive computing to provide one-to-one experiences at scale across the organisation. Explore (and be prepared to move quickly on) emerging technologies such as robotics and wearables to stay ahead of both competition and customer expectations.

How can the 2017 CEI Study help you?

The IBM 2017 CEI Study can help you evaluate and answer the following questions:

- How does your organisation perform overall on customer experience and in each of the seven experience categories?
- How does your performance compare to that of your competitors and/or CX leaders?
- How can you improve your organisation's capabilities? How can your organisation be more agile to better respond to market and competitive changes and disruptions?
- What does your CEI transformational roadmap look like? Is your strategy ambitious enough to deal with the reality of disruption?

Methodology

The CEI Study is an assessment of brands' customer experience capabilities. In total, we examined 507 brands across eight retail sectors in 25 countries around the world. Customer experience capabilities were evaluated from a consumer's perspective in seven areas: store experience, digital experience, physical/digital integration, mobile experience, omnichannel supply chain, personalisation and social media.

2017 has been a watershed year for the CEI Study. Leveraging secondary research and input from retail subject matter experts, we revisited and updated all criteria to reflect consumers' evolving expectations. A new scoring system was also developed to facilitate analysis of the survey's results.

Using the revised set of 59 criteria, as well as open-end qualitative responses, IBMers around the world measured each brand's CX capabilities. To help ensure the reliability and consistency of the CEI results, we conducted the survey, unbeknownst to brands, using a mystery shopper approach. The survey teams of IBMers acted as real customers, making real purchases.

Figure 4

CEI by the numbers



Brands by market sector



For more information

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Notes and sources

- 1 Klena, Kali and Danny Edsall. 'Shoppers disrupted: Retailing through the noise.' IBM Institute for Business Value. May 2015. ibm.com/business/value/shoppersdisrupted
- 2 'Mobile phone user penetration as percentage of the population worldwide from 2013 to 2019.' Statista (accessed March 9, 2017). https://www.statista.com/statistics/470018/ mobile-phone-user-penetration-worldwide/
- 3 'The future of e-commerce is social; here's why.' The Financial Express. March 7, 2017. http://www.financialexpress.com/industry/banking-finance/ the-future-of-ecommerce-is-social-heres-why/577632/
- 4 'The Store of the Future and the Role of Omni-channel Payments in Driving Business Growth.' Worldpay. 2015. https://www.worldpay.com/sites/default/files/WPUK-Omnichannel-payments-store-of-the-future.pdf

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