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The State of Cross-Device Commerce.

The challenge ahead

Closing the gap across devices

A new paradigm. Marketing personalization starts with understanding cross-device behavior – allowing marketers to use multiple signals to understand consumers' buying processes and to enhance their overall experience.

A new focus. To reflect an increasingly cross-device, user-centric eCommerce environment, we've changed the title of this report from State of Mobile Commerce to State of Cross-Device Commerce.

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What's inside?

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Key findings

Cross-device is here to stay

Again this year, nearly half of online retail transactions involved two or more devices.

Old models fall short

Retailers using conventional device-focused analytics do so at their peril, undervaluing consumer engagement and missing the opportunity to optimize advertising spend.

No vertical is exempt

Cross-device buying is the new norm across all retail categories.

Forget "browse on smartphone, buy on desktop."

As smartphones extend their role from browsing to purchasing, retailers must ensure the user experience is consistent, synchronized and seamless not only for mobile, but across all devices and platforms.

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Cross-Device
Commerce Trends .

The new path demands a new view

Consumers use multiple devices in the purchase journey – from searching and browsing to buying.

Device-centric: Traditional analytics tools look at activities on a single device, providing only a partial and distorted view of a multi-device journey.
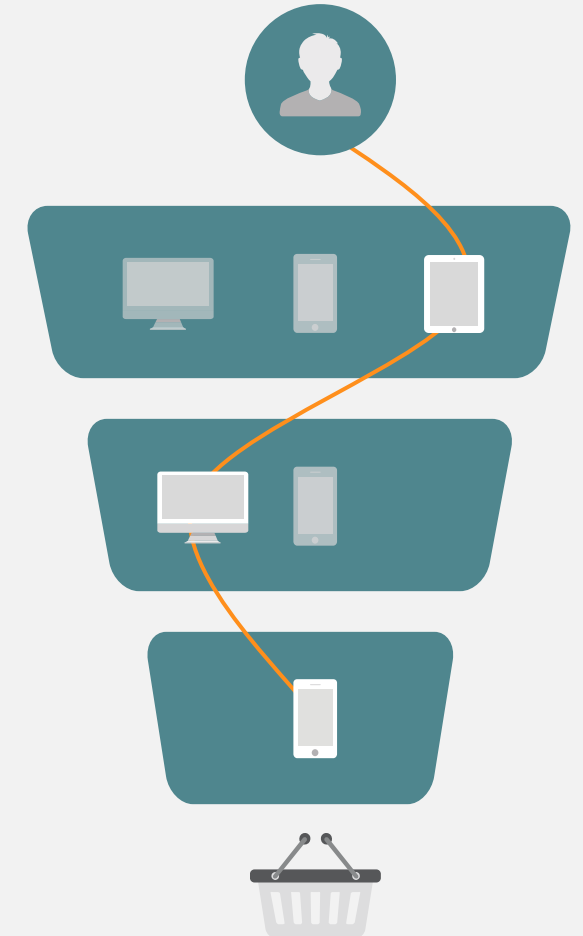
User-centric: Only advanced cross-device measurement can accurately identify the buyer across devices and capture full-journey behavior and intent.

The Path to Purchase

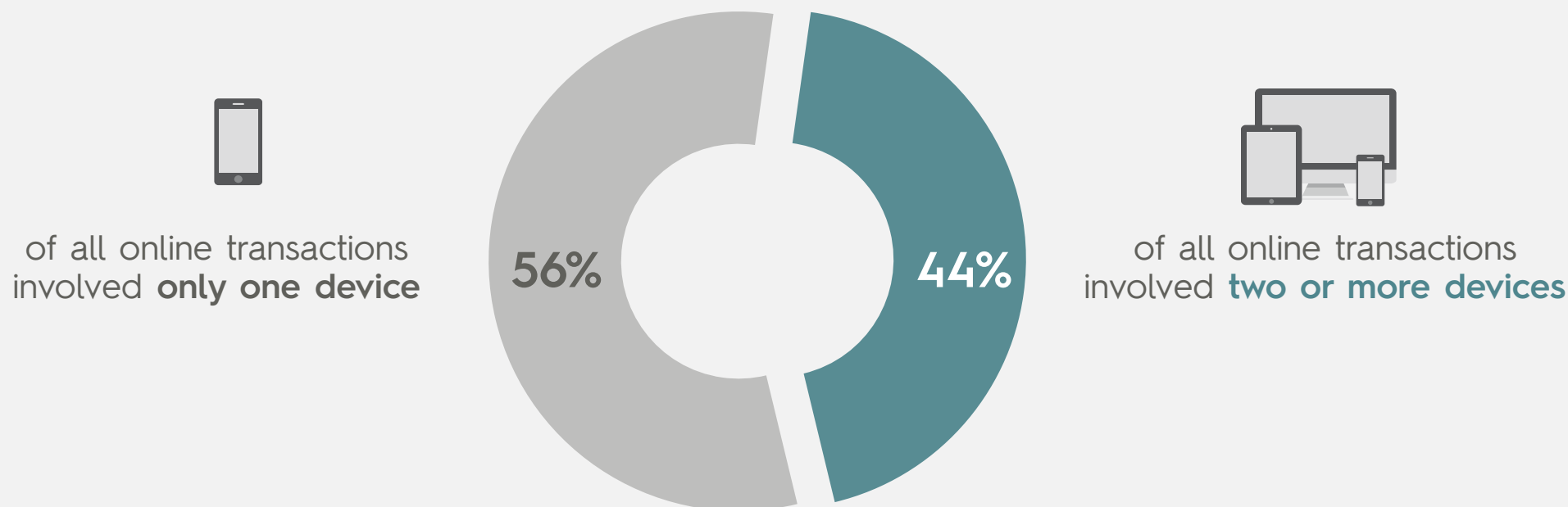DEVICE-CENTRIC VIEW   USER-CENTRIC VIEW

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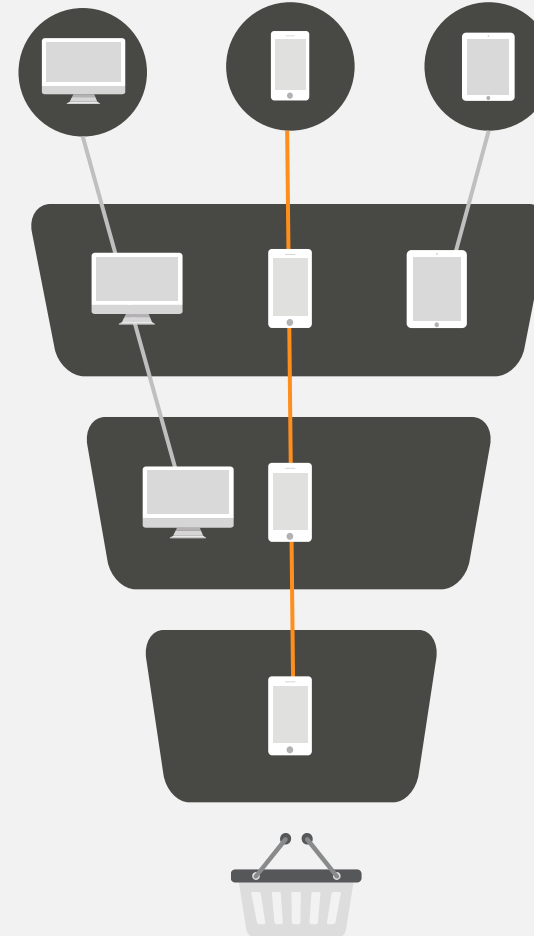
You can't afford to misunderstand 44% of buyers

Nearly half of all transactions involved two or more devices from the first website visit to the point of purchase.*

Without cross-device measurement, marketers risk miscalculating key metrics and ROI for nearly one in two transactions.

Share of Transactions in the Netherlands by Number of Devices Used, Q4 2016

Number of devices used from first website visit to purchase*

of all online transactions involved **only one device**

56%

44%

of all online transactions involved **two or more devices**

Source: Criteo dataset Q4 2016, Netherlands, all categories, excluding apps
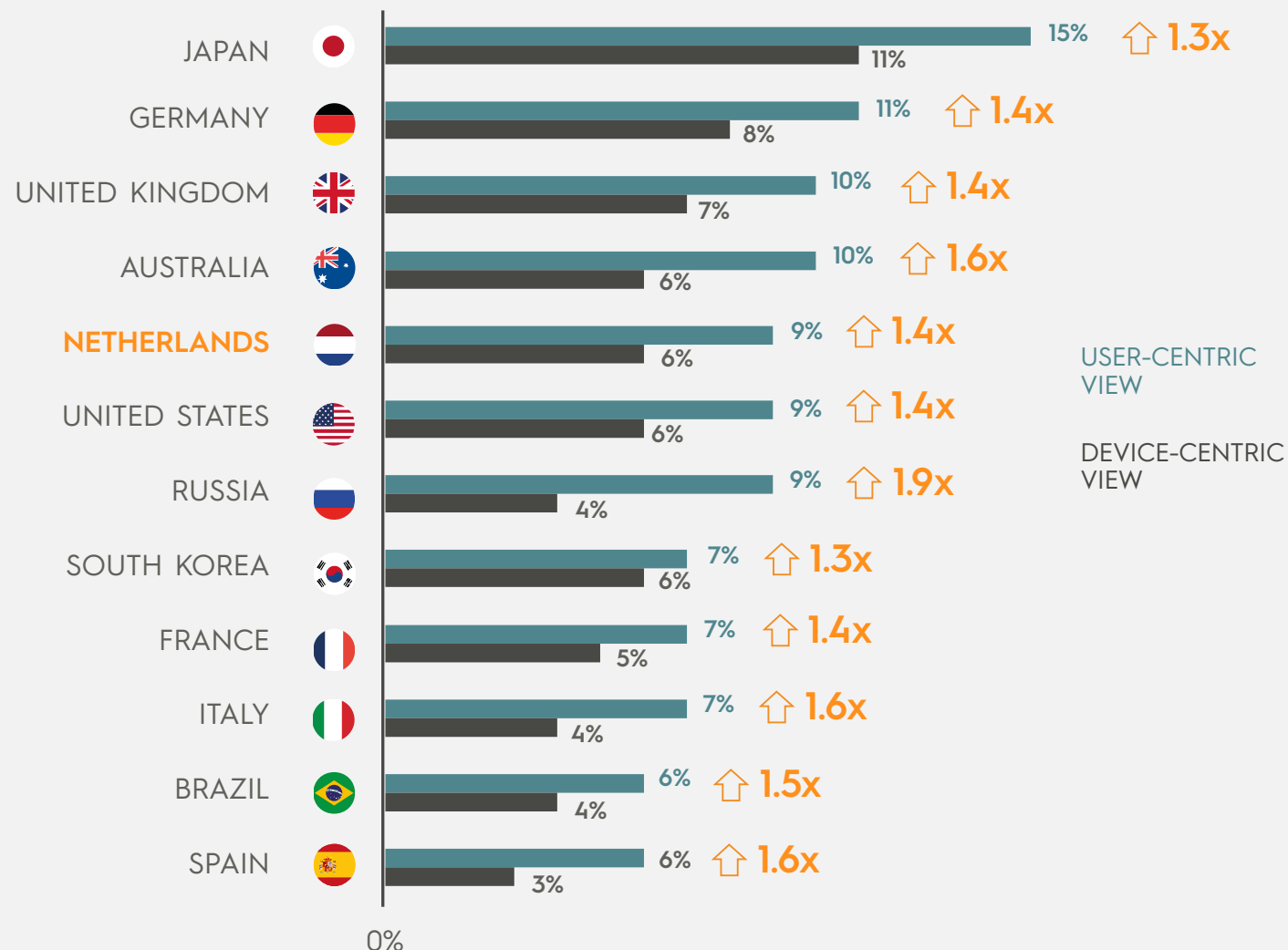*Given a 30-day period

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Don't undervalue your users – know how to measure

In the Netherlands, a user-centric view through cross-device measurement shows that conversion rates are 1.4x higher than what is seen through a device-centric approach.

Without an accurate cross-device measurement, retailers undervalue and underinvest in users.

Conversion Rate by Country
Device-Centric vs. User-Centric Analysis, Q4 2016

Country	User-Centric View	Device-Centric View	Multiplier
JAPAN	15%	11%	1.3x
GERMANY	11%	8%	1.4x
UNITED KINGDOM	10%	7%	1.4x
AUSTRALIA	10%	6%	1.6x
NETHERLANDS	9%	6%	1.4x
UNITED STATES	9%	6%	1.4x
RUSSIA	9%	4%	1.9x
SOUTH KOREA	7%	6%	1.3x
FRANCE	7%	5%	1.4x
ITALY	7%	4%	1.6x
BRAZIL	6%	4%	1.5x
SPAIN	6%	3%	1.6x

0%

USER-CENTRIC VIEW

DEVICE-CENTRIC VIEW

Source: Criteo dataset Q4 2016, all categories, excluding apps
Definition: Conversion rate = share of product page visitors who made a purchase
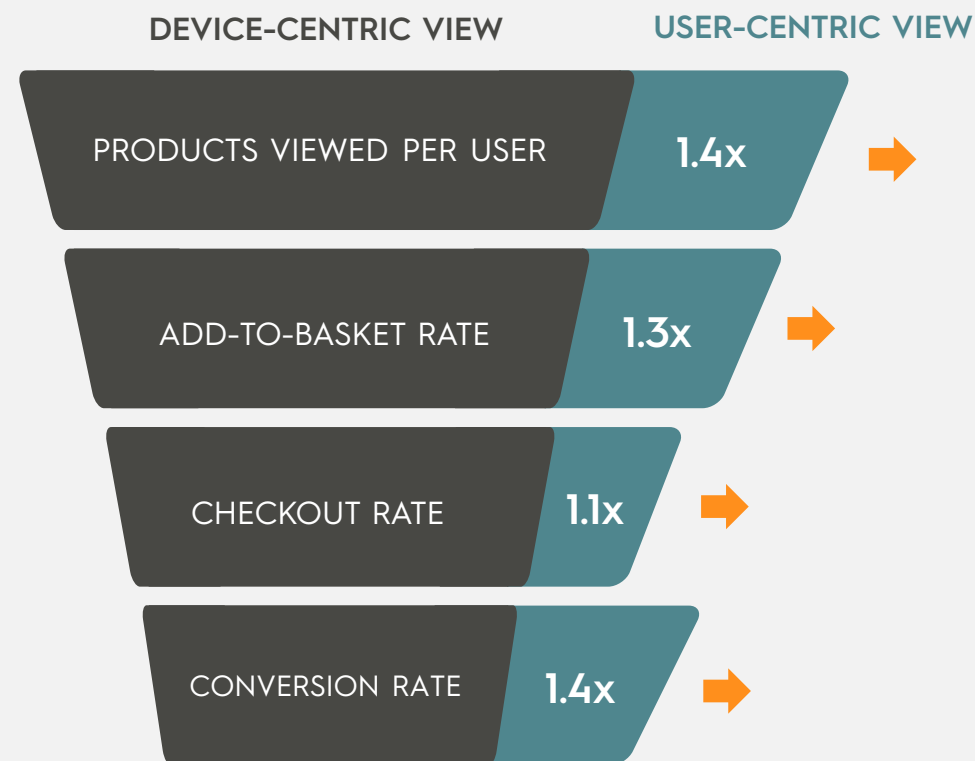
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Improve accuracy at every step

Cross-device measurement not only shows that consumers convert more but also:

1. view more products than traditional analytics tools suggest

2. are more likely to place items in the shopping cart and complete the transaction

Cross-device measurement enables retailers to accurately identify where bottlenecks lie and optimize consumer experience and marketing spend accordingly.

Retail Conversion Funnel in the Netherlands
Device-Centric vs. User-Centric Analysis, Q4 2016

DEVICE-CENTRIC VIEW　　　**USER-CENTRIC VIEW**

PRODUCTS VIEWED PER USER	1.4x
ADD-TO-BASKET RATE	1.3x
CHECKOUT RATE	1.1x
CONVERSION RATE	1.4x

Source: Criteo dataset Q4 2016, Netherlands, all categories, excluding apps

Definitions:
Add-to-basket rate = share of product page visitors who added a product to basket
Checkout rate = share of add-to-basket visitors who made a purchase
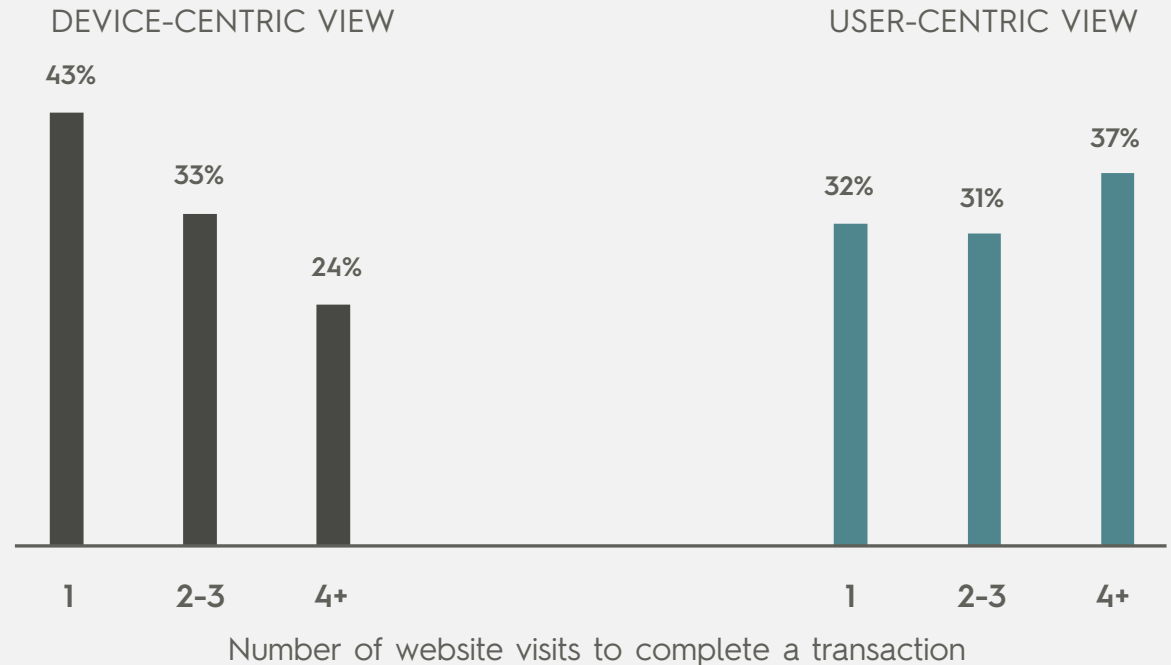Conversion rate = share of product page visitors who made a purchase

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The 41% Difference

Device-centric measurement can be deceiving, recording as single-visit purchases what are actually visits by the same user on another device.

Applying proper cross-device measurement reveals that buyer journeys are 41% longer than partial-view models indicate, enabling marketers to:

- Optimize offers and user experience at every step

- Increase the likelihood of conversion on every visit on any device

US Share of Retail eCommerce Transactions by Number of Visits
Device-Centric vs. User-Centric Analysis, Q4 2016

DEVICE-CENTRIC VIEW

USER-CENTRIC VIEW

43%	33%	24%
1	2-3	4+

32%	31%	37%
1	2-3	4+

Number of website visits to complete a transaction

2.9 AVERAGE VISITS

+41%

4.1 AVERAGE VISITS

Source: Criteo dataset Q4 2016, US, all categories, excluding apps
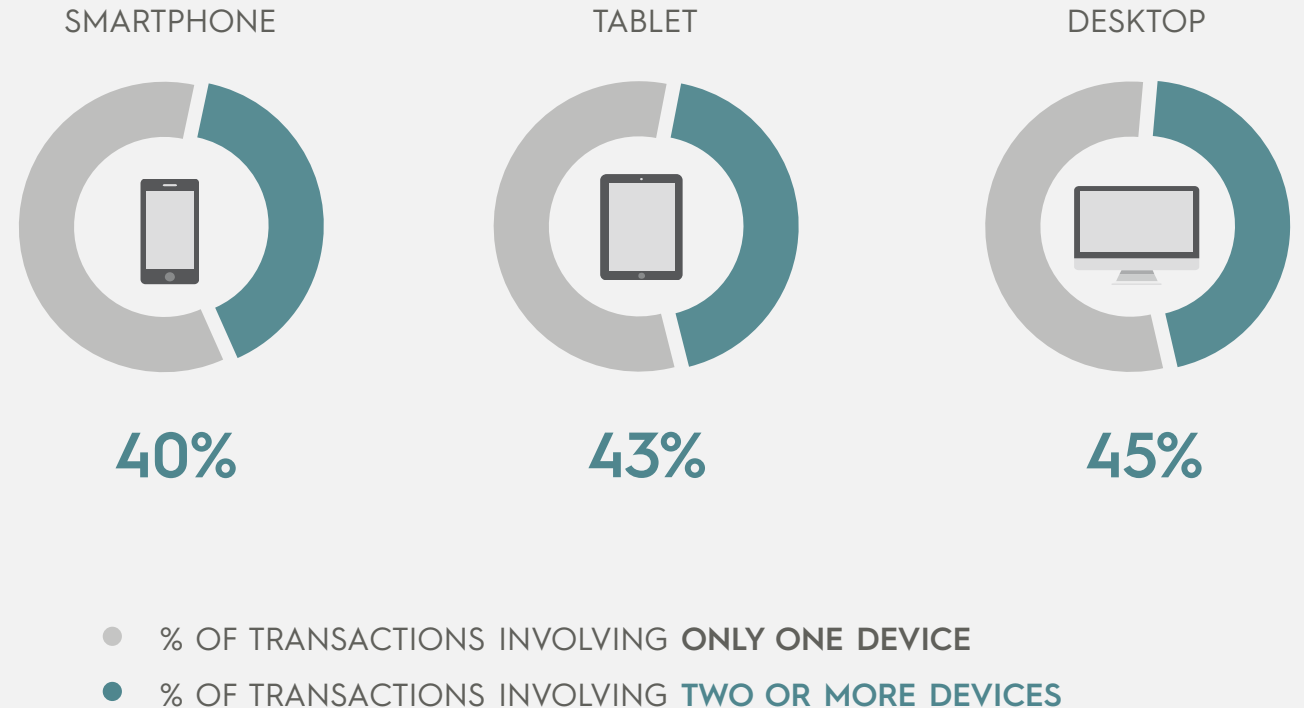
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Cross-device shopping conquers all devices

Cross-device buyers are fairly evenly represented across the three purchase devices.

This makes a seamless user experience vital across all devices to capture purchases wherever they take place.

Cross-Device* Share of eCommerce Transactions in the Netherlands by Device, Q4 2016

SMARTPHONE

TABLET

DESKTOP

40%

43%

45%

- % OF TRANSACTIONS INVOLVING **ONLY ONE DEVICE**
- % OF TRANSACTIONS INVOLVING **TWO OR MORE DEVICES**

Source: Criteo dataset Q4 2016, Netherlands, all categories, excluding apps
*Transactions that involved two or more devices from first visit on the retailer's website up to purchase given a 30-day period

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Smartphones are present from start to finish

Forget the conventional wisdom "browse on smartphone, buy on desktop." Consumers now reach for their smartphones for both searching and purchasing.

20% of all cross-device transactions completed on a desktop started on a smartphone, and 40% of those completed on a smartphone started on a desktop. And regardless of purchase device, about one in four cross-device transactions starts with a smartphone.

Retailers must ensure a synchronized experience across desktop and mobile.

Devices Used in Path to Purchase in the Netherlands, First and Last Touchpoint, Q4 2016

FIRST DEVICE USED TO BROWSE

FINAL DEVICE USED TO PURCHASE

60%

26%

14%

ANY DEVICE

20% of cross-device desktop transactions **started on smartphone**

40% of cross-device smartphone transactions **started on desktop**

Source: Criteo dataset Q4 2016, Netherlands, all categories, excluding apps
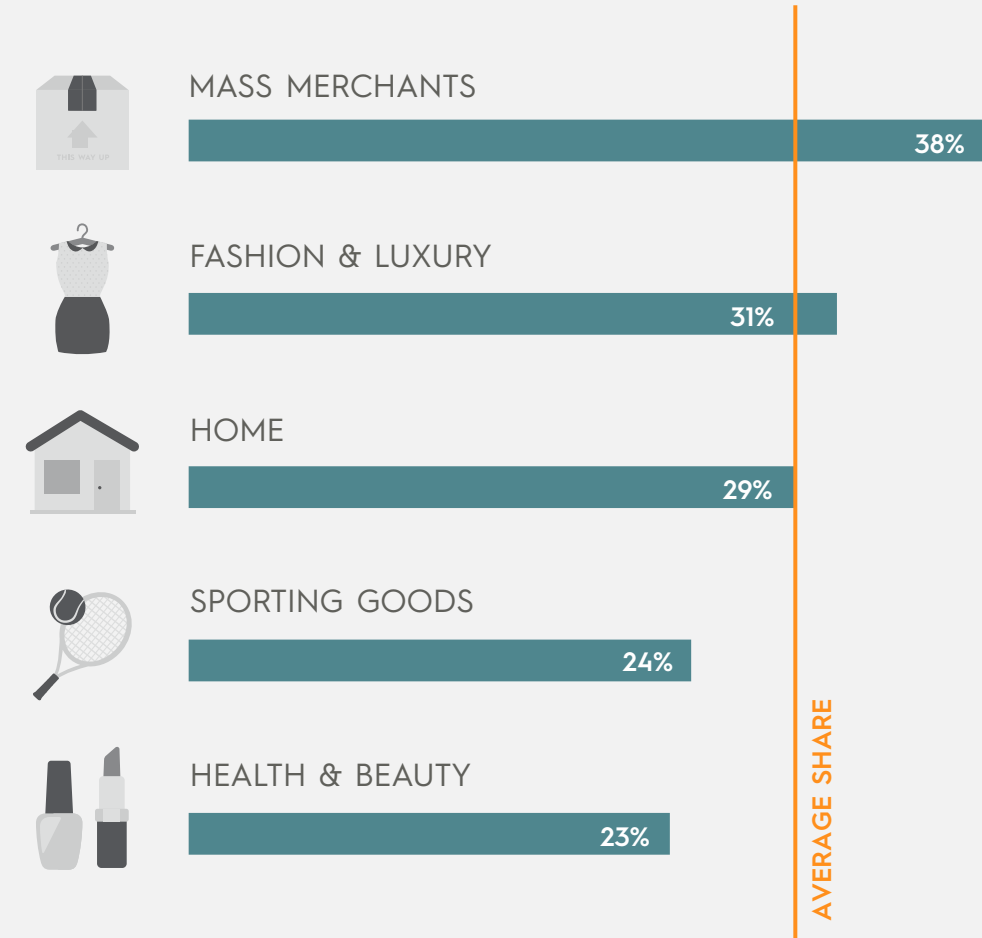
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No retail sector is exempt

In the US, cross-device shopping is seen in all retail categories, with at least 23% of transactions involving multiple devices.

All retailers should be implementing cross-device measurement to accurately assess buyer behavior and intent across devices and maximize ROI.

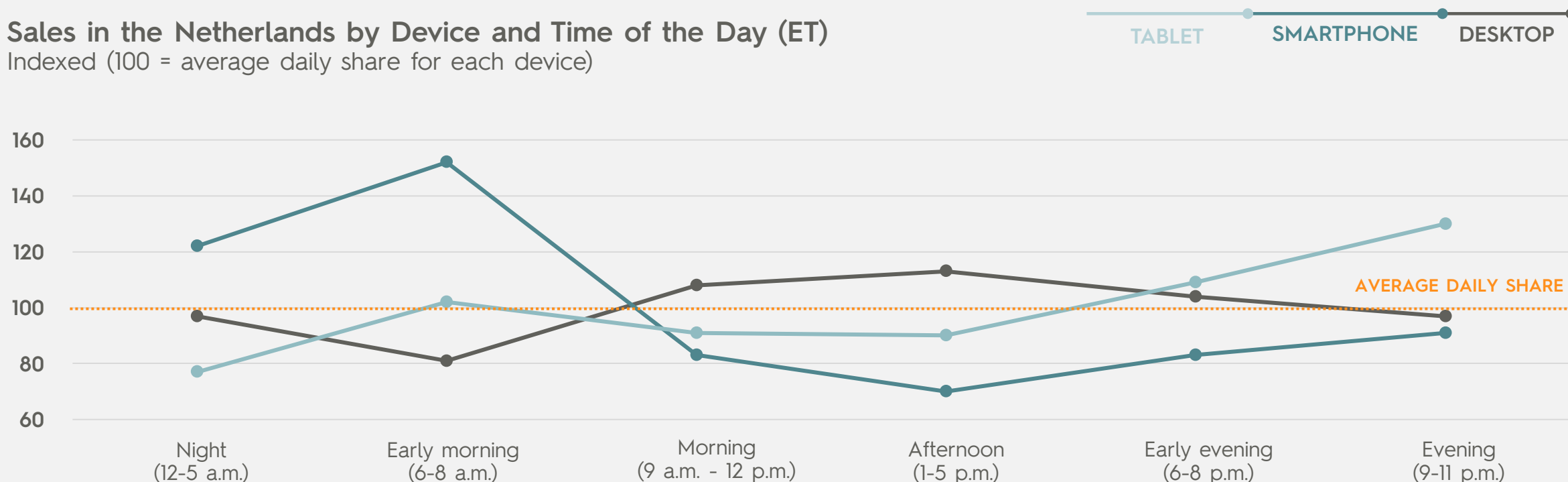## US Cross-Device Mobile Share of Retail eCommerce Transactions by Sub-Vertical, Q4 2016

MASS MERCHANTS — 38%

FASHION & LUXURY — 31%

HOME — 29%

SPORTING GOODS — 24%

HEALTH & BEAUTY — 23%

AVERAGE SHARE

Source: Criteo dataset Q4 2016, US, all categories, excluding apps

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Device preferences vary throughout the day

In the Netherlands, desktop purchases peak during work hours, while smartphones dominate very early in the morning and tablets in the evening.

To maximize impact, understand your consumers' buying cycle across devices and adapt your campaign strategy to reach users on their preferred device throughout the day.

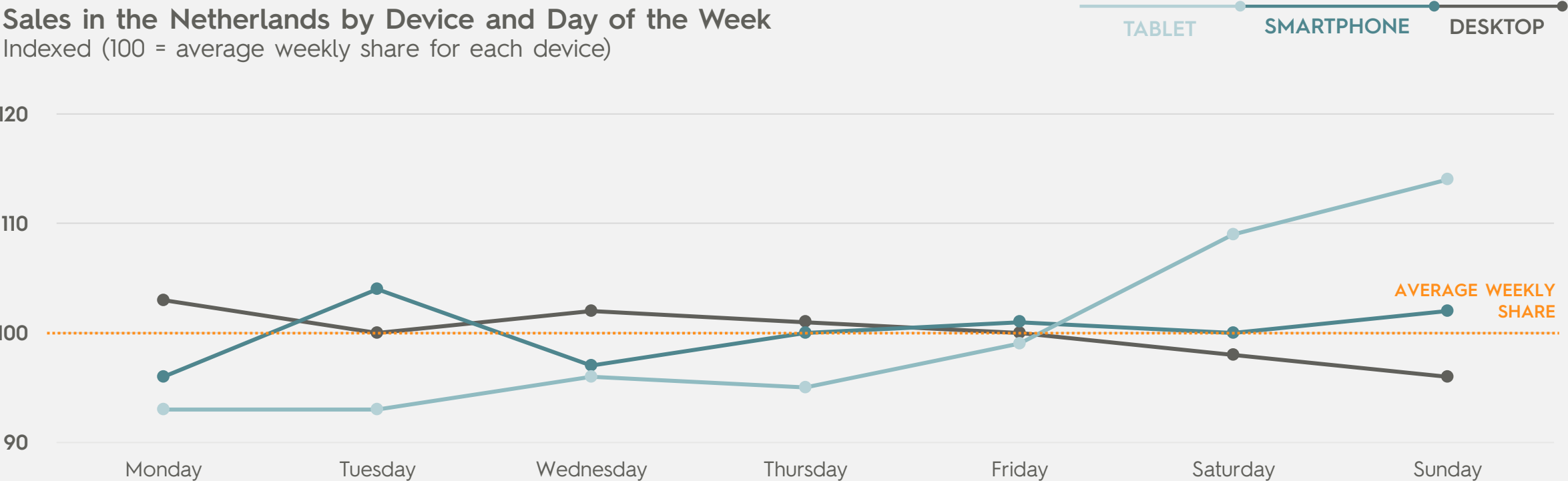## Sales in the Netherlands by Device and Time of the Day (ET)
Indexed (100 = average daily share for each device)

TABLET   SMARTPHONE   DESKTOP

AVERAGE DAILY SHARE

160
140
120
100
80
60

| Night (12-5 a.m.) | Early morning (6-8 a.m.) | Morning (9 a.m. - 12 p.m.) | Afternoon (1-5 p.m.) | Early evening (6-8 p.m.) | Evening (9-11 p.m.) |

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Mobile sales peak over the weekend

In the Netherlands, tablet sales increase on the weekends.

Sales in the Netherlands by Device and Day of the Week
Indexed (100 = average weekly share for each device)

TABLET   SMARTPHONE   DESKTOP

AVERAGE WEEKLY SHARE
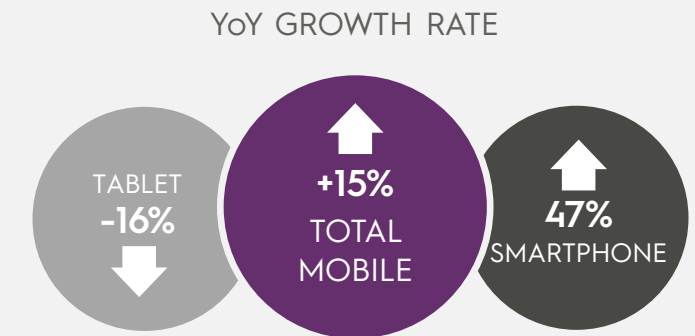
Source: Criteo dataset Q4 2016, Netherlands, all categories, excluding apps
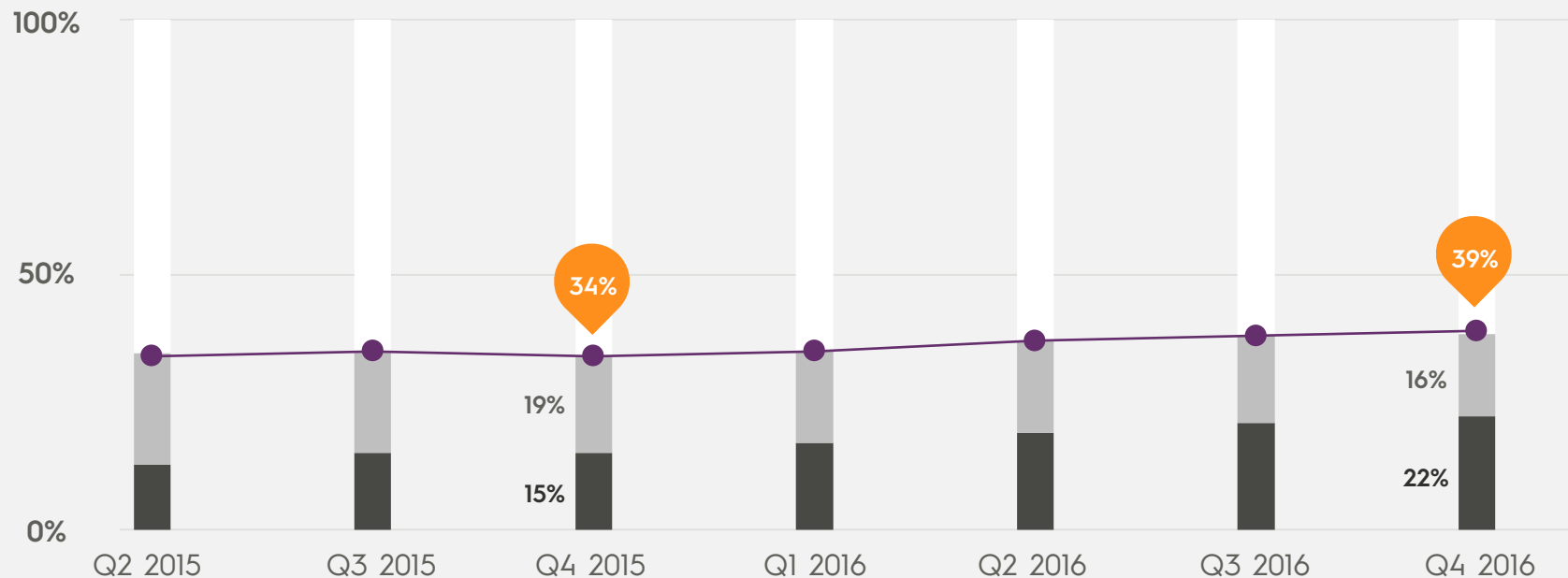
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Mobile Retail Commerce Trends in the Netherlands.

Smartphones grow, tablets slow

Nearly two in five online purchases in the Netherlands are completed on mobile, a year-over-year (YoY) increase of 15%.

Smartphones now account for almost a quarter of all online retail sales in the Netherlands, showing a YoY increase of 47%, whereas tablets continue to decline.

Mobile Share of Retail eCommerce Transactions in the Netherlands, Q2 2015 to Q4 2016

YoY GROWTH RATE

TABLET -16%

+15% TOTAL MOBILE

47% SMARTPHONE

Source: Criteo dataset Q2 2015 to Q4 2016, Netherlands, all categories, excluding apps (percentages may not sum up because of rounding)
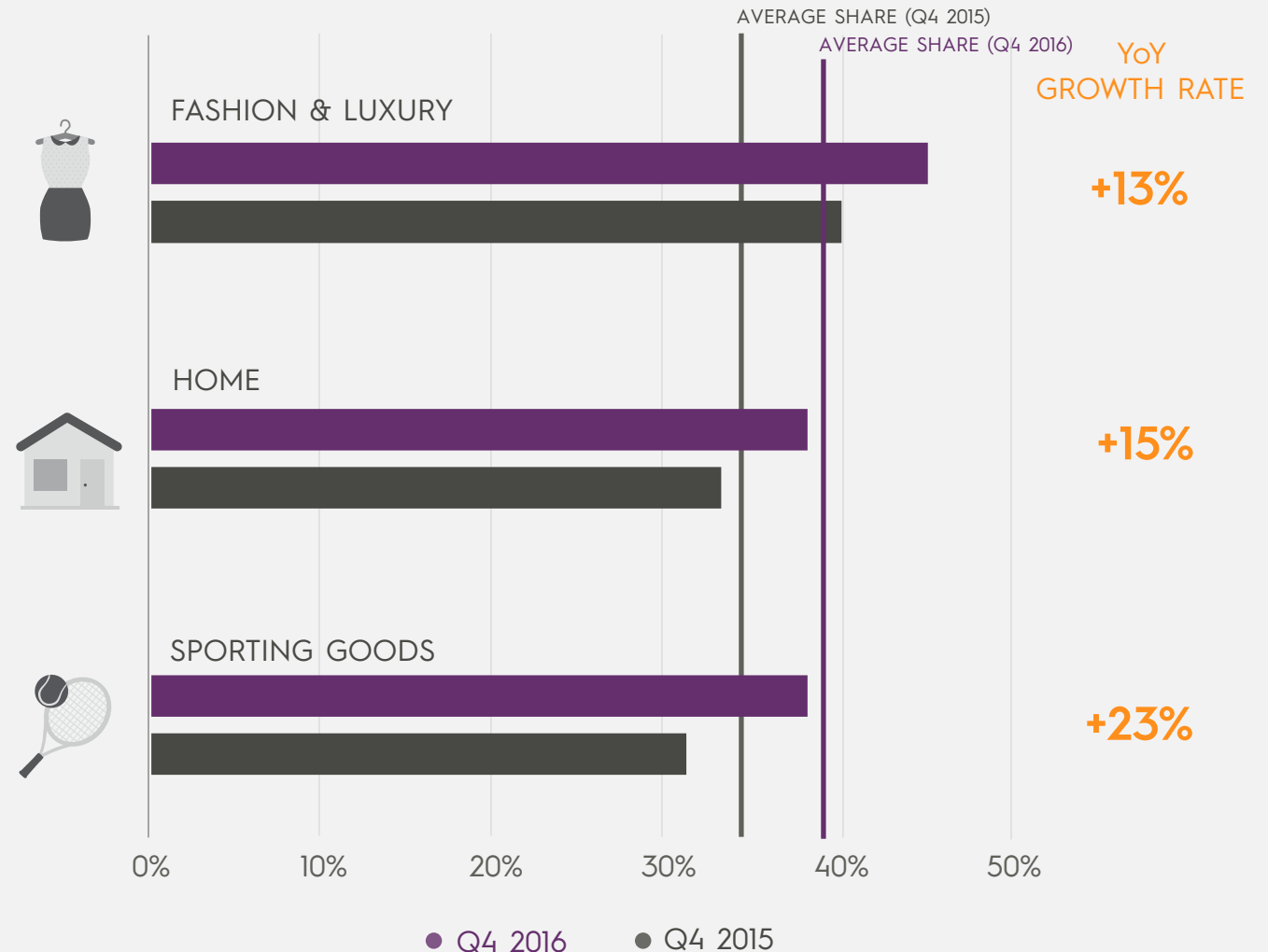
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Fashion leads, but for how long?

Fashion & Luxury retains the biggest share of mobile transactions.

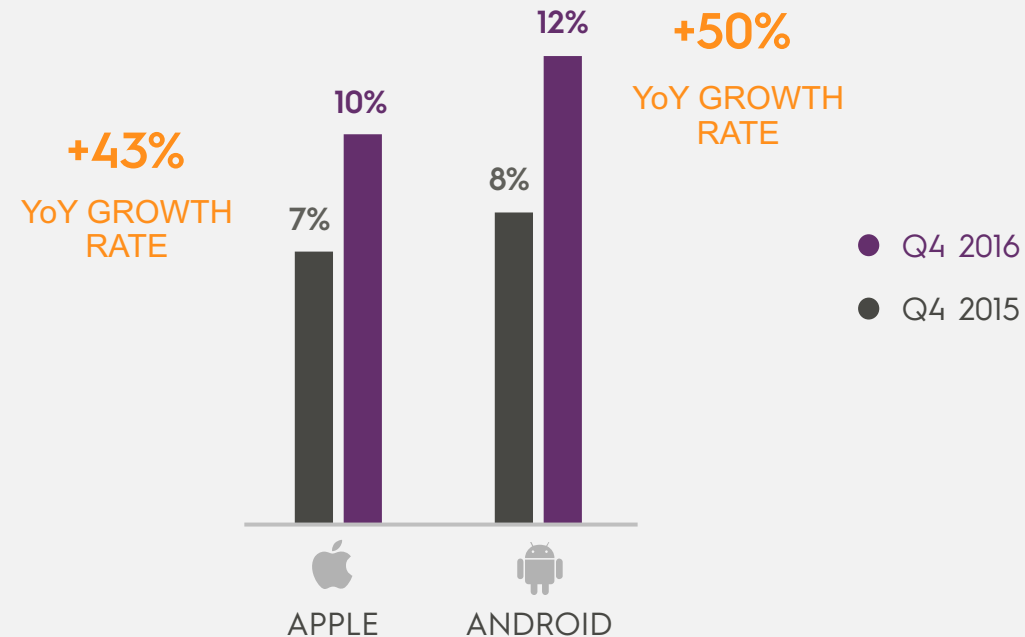Home and Sporting Goods showed a stronger growth of 15% and 23% YoY, respectively.

Mobile Share of Retail eCommerce Transactions in the Netherlands by Sub-Vertical, Q4 2016 vs. Q4 2015

AVERAGE SHARE (Q4 2015)
AVERAGE SHARE (Q4 2016)

YoY GROWTH RATE

FASHION & LUXURY
+13%

HOME
+15%

SPORTING GOODS
+23%

0% 10% 20% 30% 40% 50%

● Q4 2016   ● Q4 2015

Source: Criteo dataset Q4 2015 and Q4 2016, Netherlands, excluding apps

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iPhone regains ground on Android

Android-based transactions increased 50% YoY while iPhone catches up fast at a growth rate of 43% YoY.

Share of Transactions in the Netherlands by Smartphone OS, Q4 2016 vs. Q4 2015

+43%
YoY GROWTH RATE

+50%
YoY GROWTH RATE

7% 10% 8% 12%

● Q4 2016
● Q4 2015

APPLE   ANDROID

Source: Criteo dataset Q4 2015 and Q4 2016, Netherlands, all categories, excluding apps

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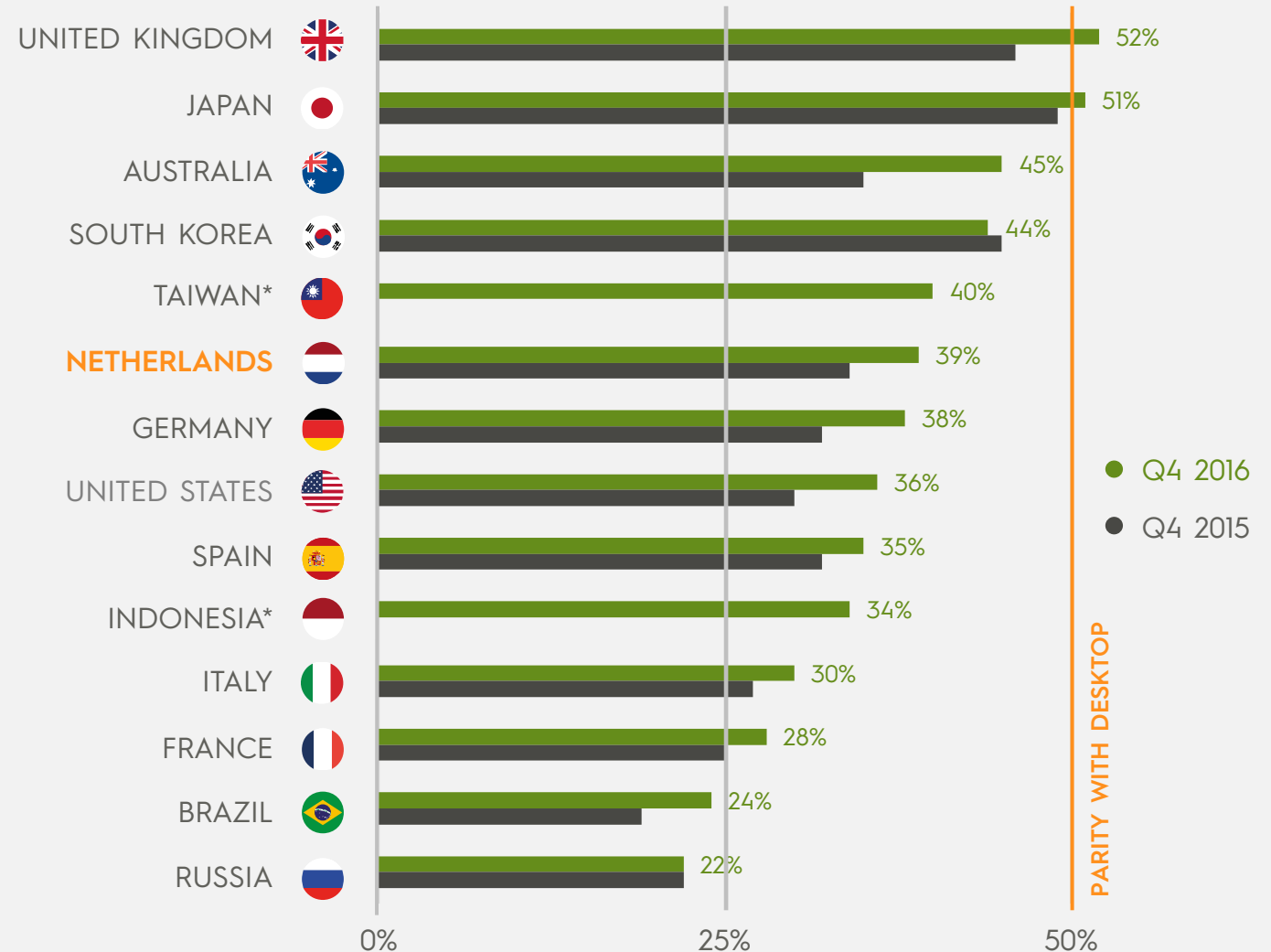# Global Mobile Retail Commerce Trends

A new world order

The UK leapfrogged Japan to take the top spot in mobile share of transactions, with both countries selling more on mobile than desktop.

Australia took the third spot from South Korea and showed the strongest YoY growth. The Netherlands remains in the middle of the pack.

Countries to watch? Brazil and the US, both with big YoY gains.

Mobile Share of Retail eCommerce Transactions by Country, Q4 2016 vs. Q4 2015

Country	Q4 2016
UNITED KINGDOM	52%
JAPAN	51%
AUSTRALIA	45%
SOUTH KOREA	44%
TAIWAN*	40%
NETHERLANDS	39%
GERMANY	38%
UNITED STATES	36%
SPAIN	35%
INDONESIA*	34%
ITALY	30%
FRANCE	28%
BRAZIL	24%
RUSSIA	22%

● Q4 2016
● Q4 2015

PARITY WITH DESKTOP

0%   25%   50%

Source: Criteo dataset Q4 2015 and Q4 2016, all categories, excluding apps
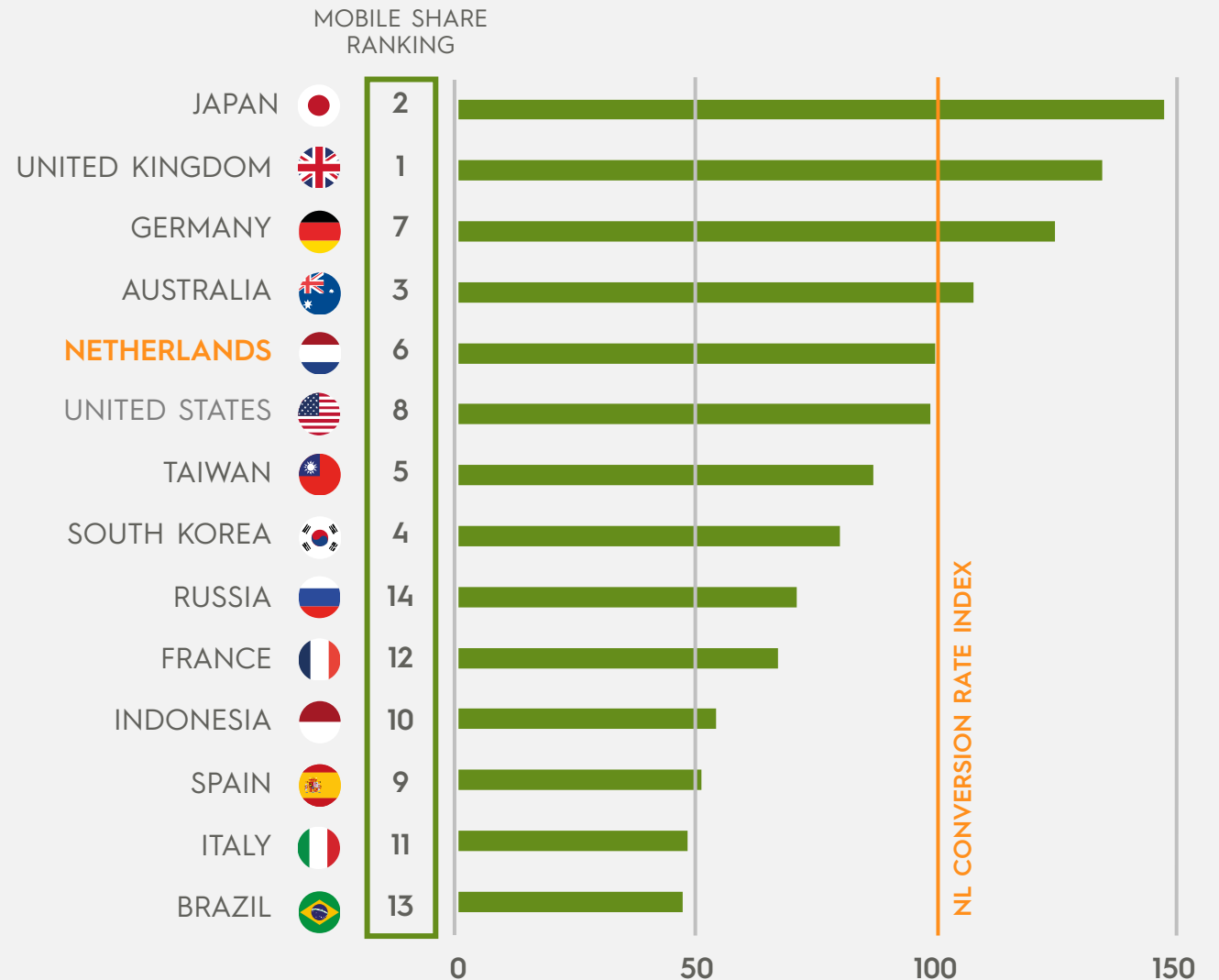* Base too small in Q4 2015

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The UK and Japan also lead in mobile conversions

Interestingly, Germany is #7 in mobile share but ranks #3 in mobile conversion rate.

The Netherlands is the fifth highest in conversion rate.

Global Retail Mobile Conversion Rate Index, Q4 2016 (vs. the Netherlands)

	MOBILE SHARE RANKING
JAPAN	2
UNITED KINGDOM	1
GERMANY	7
AUSTRALIA	3
NETHERLANDS	6
UNITED STATES	8
TAIWAN	5
SOUTH KOREA	4
RUSSIA	14
FRANCE	12
INDONESIA	10
SPAIN	9
ITALY	11
BRAZIL	13

NL CONVERSION RATE INDEX

0   50   100   150

Source: Criteo dataset Q4 2016, all categories, excluding apps
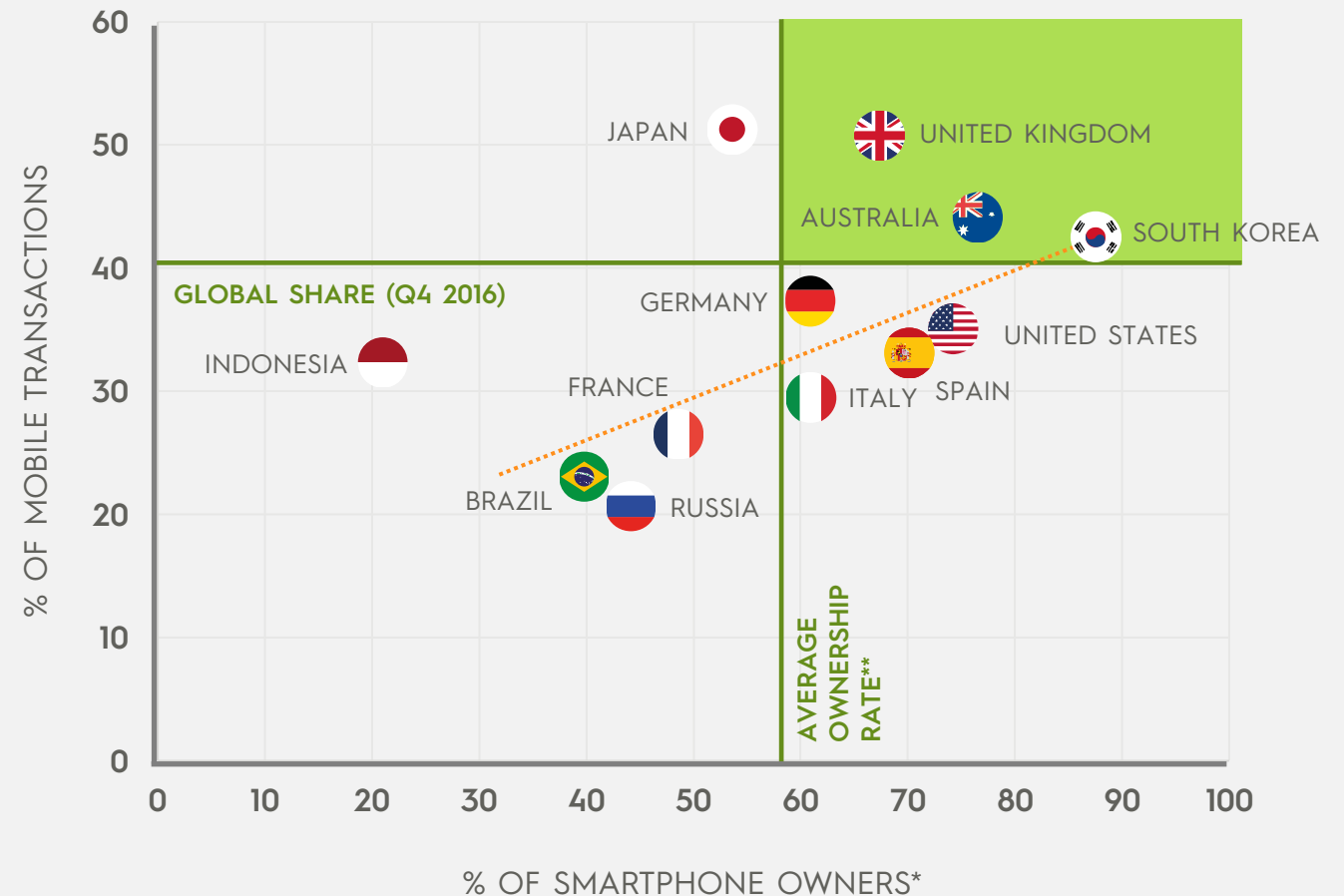
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More access equals more buying

Mobile commerce transactions correlate strongly with smartphone ownership for most markets.

This trend is clear in South Korea, Australia and the UK where ownership rate and transaction share are both high.

Indonesia appears to be an exception to the rule.

Mobile Share of Retail eCommerce Transactions Q4 2016 vs. Smartphone Ownership per Country

% OF MOBILE TRANSACTIONS

GLOBAL SHARE (Q4 2016)

JAPAN · UNITED KINGDOM · AUSTRALIA · SOUTH KOREA · GERMANY · UNITED STATES · INDONESIA · FRANCE · ITALY · SPAIN · BRAZIL · RUSSIA

AVERAGE OWNERSHIP RATE**

% OF SMARTPHONE OWNERS*

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iPhones dominate in top mobile markets, lag elsewhere

In Australia, the UK and Japan, markets that ranked highest in mobile share of retail eCommerce transactions, up to about two-thirds of online transactions are made on iPhones. US consumers also prefer to buy on iPhone.

Android devices have a clear lead in all other markets.

Share of Retail Smartphone Transactions by OS, Q4 2016

APPLE ANDROID

AUSTRALIA | UNITED KINGDOM | UNITED STATES | JAPAN | NETHERLANDS | FRANCE | RUSSIA | GERMANY | ITALY | TAIWAN | SPAIN | SOUTH KOREA | BRAZIL | INDONESIA

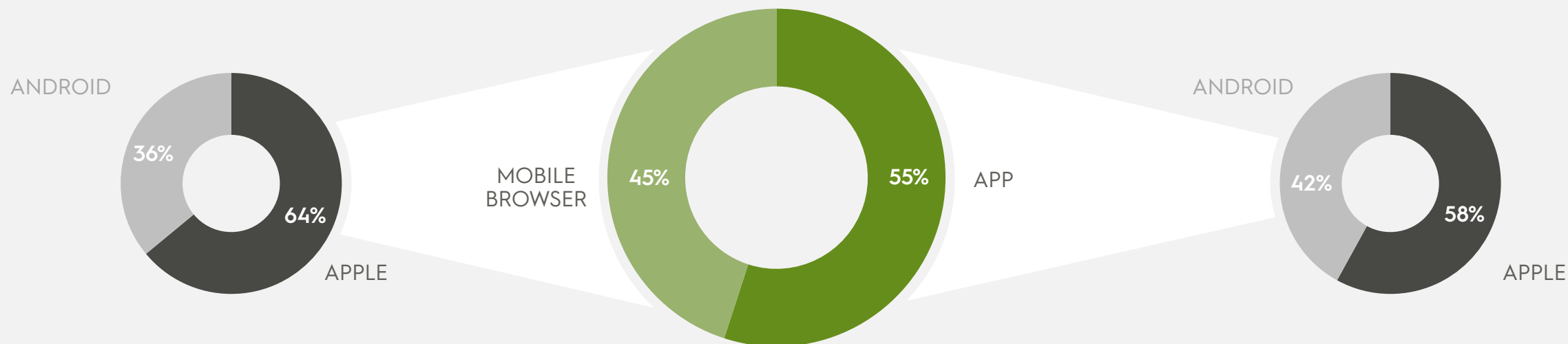Source: Criteo dataset Q4 2016, all categories, excluding apps

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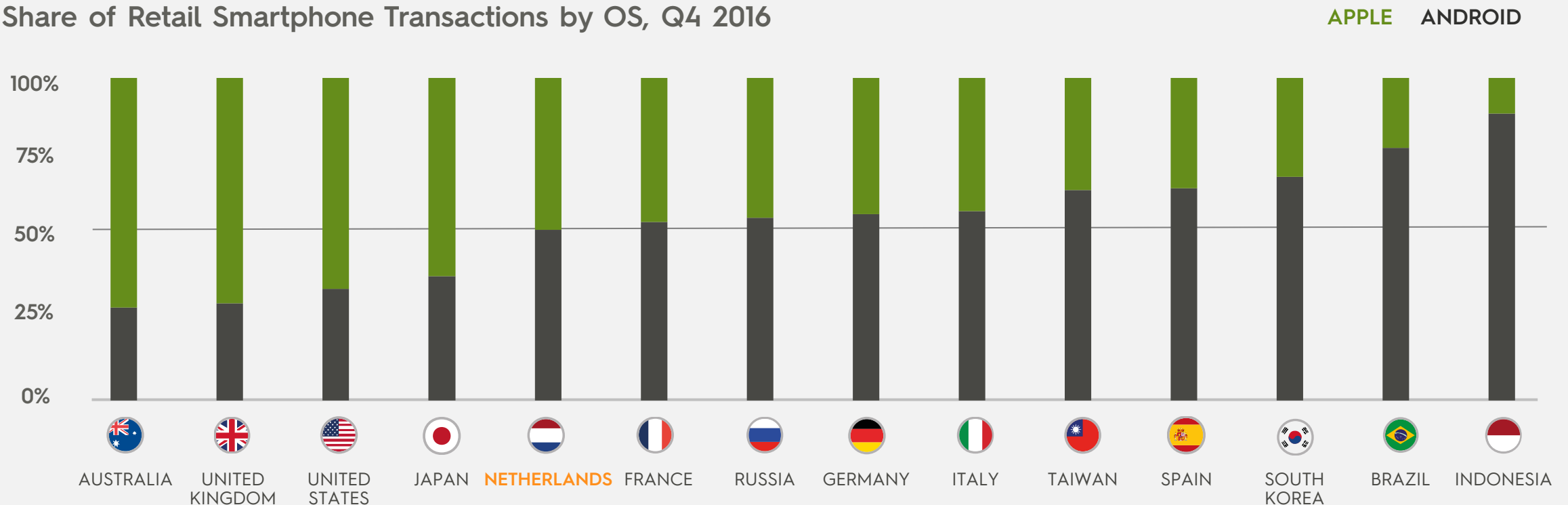
Apps outperform mobile browsers for retailers who invest*

Committed retailers capture more transactions on apps than on mobile browsers.

In both platforms, iOS devices capture the majority of these retailers' transactions.

Global App Share of Retail Mobile Transactions, Q4 2016

ANDROID 36%

APPLE 64%

MOBILE BROWSER 45%

APP 55%

ANDROID 42%

APPLE 58%

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A Look Ahead.

The cross-device opportunity

Cross-device measurement is non-negotiable

Retailers who lack a cross-device perspective will have a distorted view on up to 44% of their transactions.

Differentiate your experience

Retailers that deliver a seamless and personalized user experience across devices will stand out from the crowd.

Be ready for what's next

The common identifier that enables cross-device tracking is also the link necessary to merge online and offline customer data – the next frontier for retailers.

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Appendix

Methodology

Individual transaction data analyzed:

Over **3,300** online retail businesses globally

1.7 billion transactions per year across desktop and mobile sites

$720 billion in annual sales

How can marketers use this data?

Benchmark your performance on relevant KPIs for your mobile browser, mobile app and cross-device channels

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Definition of metrics

METRIC	DEFINITION	FORMULA
SHARE OF TRANSACTIONS	The percentage of transactions that occurs by device, operating system and environment during the total period.	device transactions/total transactions
CONVERSION RATE	The share of product page visitors who have made a purchase within a given time period.	buyers/product page visitors
PRODUCTS VIEWED PER USER	The average number of products viewed by each visitor within a given time period.	total number of products viewed/visitors
ADD-TO-BASKET RATE	The share of product page visitors who have added products to basket within a given time period.	add-to-basket users/product page visitors
CHECKOUT RATE	The share of visitors who have finalized a transaction after having added products to basket.	buyers/add-to-basket users

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About Criteo

Criteo (NASDAQ: CRTO) delivers personalized performance marketing on an extensive scale. Measuring return on post-click sales, Criteo makes ROI transparent and easy to measure. Criteo has 2,200 employees in 31 offices across the Americas, Europe and Asia Pacific, serving 13,000 advertisers worldwide with direct relationships with 17,500 publishers.

Criteo ads reach over 1.2 billion unique internet users (comScore, January 2016).

This and future reports may be found at www.criteo.com/resources

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