White Paper

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India: Mid-Tier Smartphone Segment to Grow 4x in Next Five Years

Executive Summary:

India is the world's second largest mobile phone market by volume. However, handset prices have been skewed to the low end of the market. This is likely to change fast. We expect that mid-range smartphones, those with wholesale prices in the range of US$200-US$400, will grow 20% YoY in 2018 and by almost four times during the next five years to make it one of the most important smartphone segments.

The sales volume sweet spot is moving from sub-US$150 segment towards mid-tier as many features and capabilities common among flagship models, progressively diffuse through to these lower price bands. Features such as full-screen displays, dual-cameras, biometric security and support for artificial intelligence are beginning to make in-roads to the mid-range. They will become widespread over the next few years.

Many of these advanced features will be enabled and enhanced through the evolution of the underlying System-on-Chip (SoCs) and other components. These features will help OEMs to differentiate their offerings in the mid-tier segment at a time when overall smartphone innovation is perceived to have plateaued.

India: Industry Trends

India is the second largest smartphone market in the world after China. It has just surpassed 400 million smartphone users. However, this accounts for just 44% of the potential total addressable market for smartphones; India is underpenetrated relative to many other markets. Part of this lack of development can be attributed to the poor relative development of data-capable mobile networks and high data pricing. Upstart operator, Reliance Jio, has catalysed a rapid shift toward 4G LTE, together with much more accessible data pricing. This has coincided with the broader availability of attractive and capable smartphones from a wide variety of competing mobile handset brands.

As a result, the market is registering strong double-digit growth (+13% YoY in 2017) as users migrate from feature phones to smartphones and from entry-level smartphones to more sophisticated products. Counterpoint Research estimates that more than a billion smartphones will be sold in India over the next five years. This will drive the number of smartphone users to surpass 700 million by 2022.

In addition to the disruptive influence of Reliance Jio and the competitive response from other mobile operators, there are several other factors that have contributed to the recent strong smartphone growth:
- The rise of e-commerce platforms as the key channel to distribute smartphones cost effectively.
- The entry and proliferation of Chinese handset makers, leading to hyper-competition among multiple players.
- The strong competition has driven rapid feature innovation, including biometrics, dual-SIM-VoLTE, dual-cameras, advanced memory configurations, fast charging, full-screen 18:9 displays and AI.
- These features have acted as a catalyst for consumers; they have quickly jumped from entry-level devices to products from the mid-tier, thereby boosting the overall Average Selling Price (ASP) of the market. India smartphone ASP (wholesale) is expected to reach $165 by the end of CY 2018 growing 21% annually.
- Rising disposable income of the middle class, together with initiatives such as, "Digital India", from the government, are making smartphones central to day-to-day consumer use, from content to communication to commerce.

We have seen volume growth across all price bands due to the steady diffusion of users towards higher price points as they become more sophisticated and demanding. Mid to upper-mid segment ($200-$400) grew faster than the overall smartphone market (+18%) in CY 2017 and captured 13% of the total smartphone sales by volume and 25% by value. With competition in mid to upper-mid segment growing in India, brands are looking to keep a balance between flagship level features and pricing to drive profitability and it will likely continue to be the 'sweet-spot' segment for the next two years.

Mid Segment ($200-$400) Growth and Competition

The mid-tier smartphone segment, which is one of the fastest growing market segments in India, likely becomes more competitive during 2018. The growth of the segment will be driven by 'affordable flagship' smartphone launches that attract second or third-time smartphone buyers – typically from the rapidly rising per-capita-income and middle-class consumers. In India, GDP per capita is forecast to increase from around US$1980 in 2017 to US$3300 by 2023 as per IMF. Consumers are therefore likely to spend more on personal computing devices, including smartphones, in coming years.

In addition to a growing affordable population, competition among distribution channels is driving down the cost of ownership through a range of attractive offers. These are lowering the barriers to buy higher ASP devices. Typical channel incentives include trade-ins and buybacks, monthly 0% EMI (monthly instalment plans) and instant cashbacks.

According to our channel checks, almost half the smartphones in the mid-segment had 'No Cost EMI' offers on them in the first-half of 2018. Further, device trade-in or exchange offers were available for almost a quarter of mid-segment smartphone models. These offers strongly appeal to large sections of the population, especially younger segments *(65% of India's population is under 35 yrs. of age)* that are gaining their footing financially and growing into power smartphone users. This segment will be one of the most important in future.

Exhibit 1: Mid Segment ($200-$400) Smartphone Shipments & Share to Total in India

Mid Segment Smartphone Shipments (Millions of Units) & % Share of Total
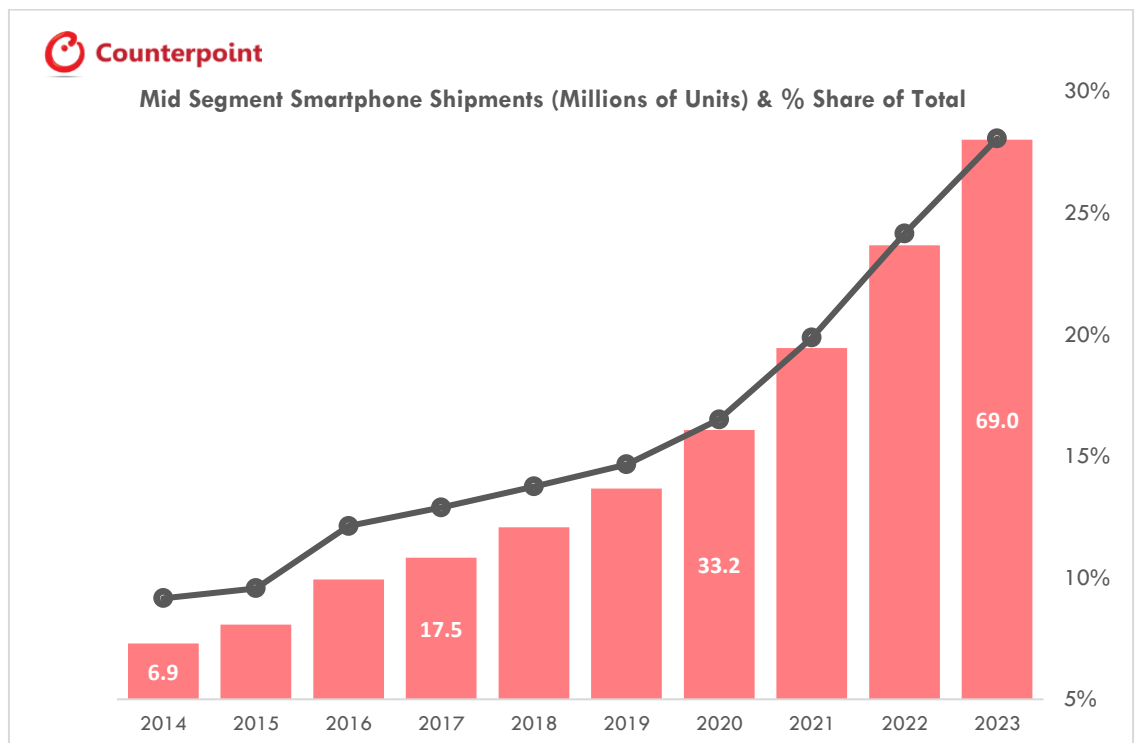
Looking at the competitive environment from an OEMs perspective, the top five brands contributed to 92% share of the mid-tier segment in India. Samsung, Vivo, Apple, OPPO and Huawei were the leading brands in 1H 2018. However, we expect competition to increase in the segment as more brands enter including: Xiaomi, Asus, Nokia HMD and others. Currently there are 12 OEMs competing in the mid to upper-mid segment and the number is expected to reach 20 by the end of 2018 as OEMs look to cash-in on this fast-growing smartphone segment.

Exhibit 2: OEM Market Share in Mid Segment in India
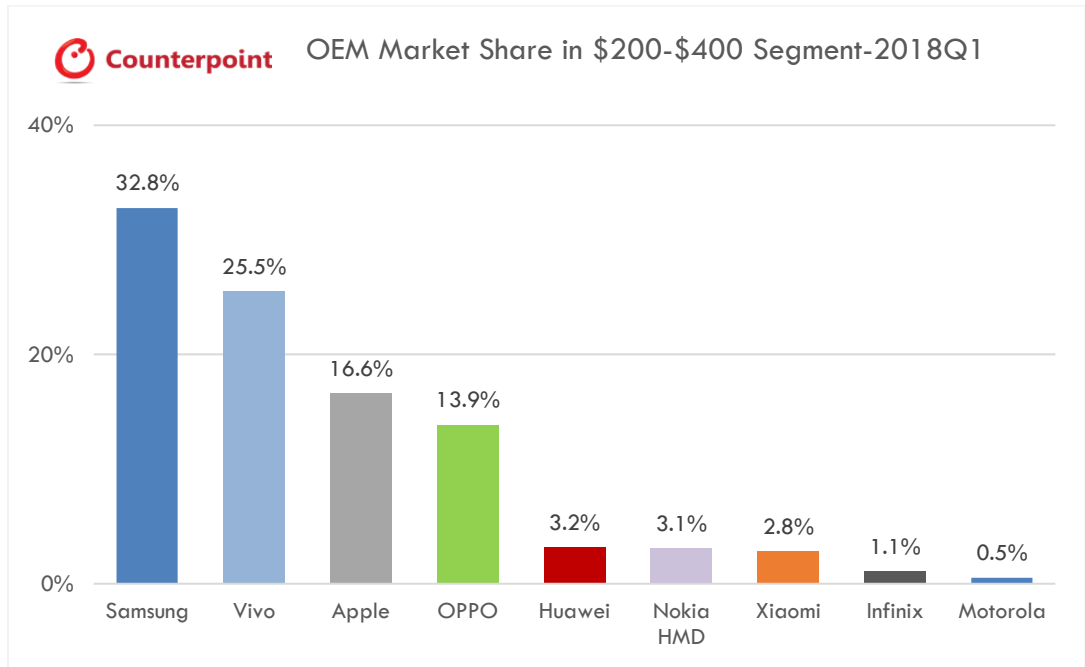
The offline channel remains dominant for this mid-segment thanks to strong market share among brands that are traditionally strong in offline channels such as Samsung, OPPO and Vivo. However, due to the rapid growth of e-commerce channels, brands that have traditionally prioritised offline channels are seeking to expand into multi-channel retail – despite the potential for channel conflict. For example, one in five smartphones in this $200-$400 segment was sold via e-commerce channels in Q1 2018, and this is up from one in ten just a year ago. This will also help e-commerce-dominant players such as Xiaomi, Huawei and now Apple, to grow their share in this segment.

## System on Chip (SoC) – Market Share Trend

SoC players also view the mid-to-premium segment as an important focus. This is because handset makers launching their devices in mid segment want to position their devices as an alternative to premium smartphones. As a result, in the past few quarters we have seen flagship features filtering down to the mid-tier segment faster than ever before and driving overall consumer expectations.

OEMs too are positioning the attractive features of the flagship devices to expand in the mid-tier segment. For example, it took less than six months for some of the key flagship features of 2018 to trickle down to the mid-tier segment. This includes QHD full-display, dual-front cameras, notch design, facial unlock and Artificial Intelligence (AI) capabilities. Samsung has recently introduced dual-rear cameras and full-screen displays in its mid-range J and A series. Vivo and OPPO have introduced notch displays in their mid-tier flagships. Huawei, through its Honor brand, is pushing dual-rear cameras, powered by Artificial Intelligence (AI), to differentiate its mid-tier offerings.

According to Counterpoint Research's Consumer Research Survey 2017, the application processor or SoC is among the top five features that consumers care about when considering which smartphone to buy. In such a scenario, both OEMs and consumers are aware of the embedded chipset brand and capabilities in their phones. These are clear signs of increasing consumer sophistication. During 1Q 2018, Qualcomm led the SoC segment with 44% market share followed by MediaTek and Samsung with 22% and 17% share respectively.

Exhibit 4: India Smartphone SoC Shipments Share by Brand

Overall Smartphone SoC Shipments Share (%) in India
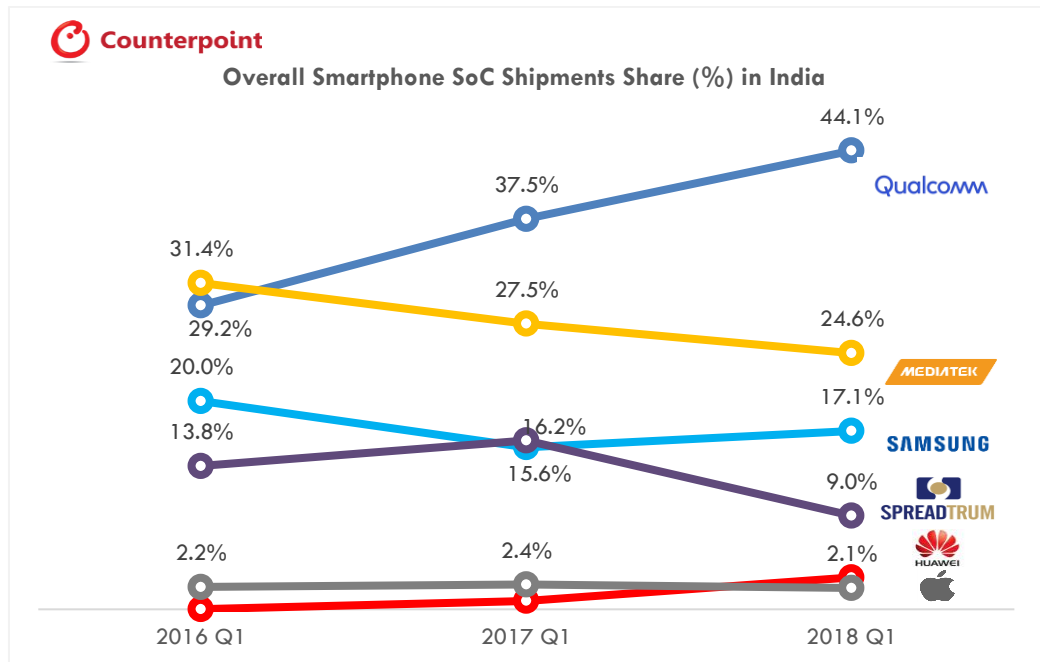
The growth of Qualcomm can be attributed to the strong growth of Chinese brands such as Xiaomi and Vivo, and their more advanced solutions across price-tiers. MediaTek has been struggling due to the rise of Qualcomm. Samsung's handset share has been steady, which has not helped MediaTek. However, Samsung is using more of its in-house chipsets – further denting MediaTek's position.

In terms of price-tiers, Qualcomm commanded more than 50% market share in multiple segments during Q1 2018. However, Samsung's Exynos and MediaTek's Helio series are holding strong in the US$200-$299 segment due to Samsung and OPPO's strong positions in this segment.

Exhibit 5: India Smartphone SoC Shipments Share by Brand by Price Band

Overall SoC Shipments share by Brand by Price Band- 2018Q1
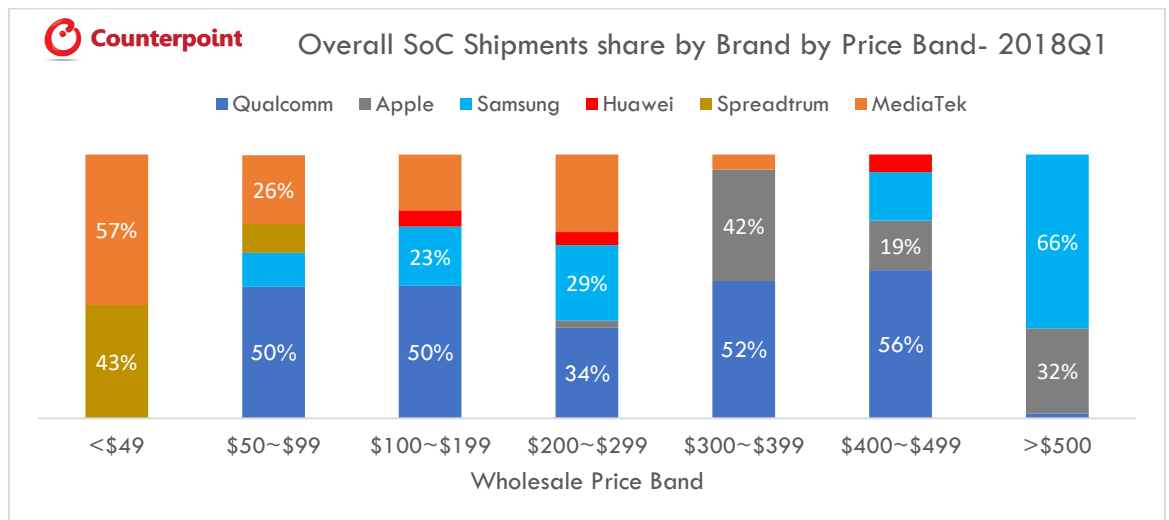
Five of the top-ten best-selling smartphones in India during 1Q 2018 were powered by Qualcomm, followed by Samsung, which had three of the top ten. In

terms of chipset models, Qualcomm's Snapdragon 425 powered models captured 41% of the $50-$99 segment, with Xiaomi's Redmi 5A, 4A and Y1 Lite being the top sellers. The Snapdragon 425 was also the most popular smartphone chipset in India capturing 17% share. The high-volume $100-$199 segment was also dominated by Qualcomm with the Snapdragon 625 the most popular SoC.

In $200-$299 segment, Samsung's Exynos 7-powered J7 Prime 2 was the bestseller in Q1 2018 driving share for Samsung, followed by the Snapdragon 450 in the Vivo V7 series. In $300-$399 segment, the Snapdragon 626 was the most popular SoC model in Vivo's V9.

OnePlus, Xiaomi, Motorola and Nokia HMD were the only brands in India that had flagship models powered by the top-end Snapdragon 835. However, in 2Q 2018, with the launch of OnePlus 6, Qualcomm should regain significant share in premium segment.

Exhibit 6: India Top Selling Smartphone SoC by Price Band (Wholesale)
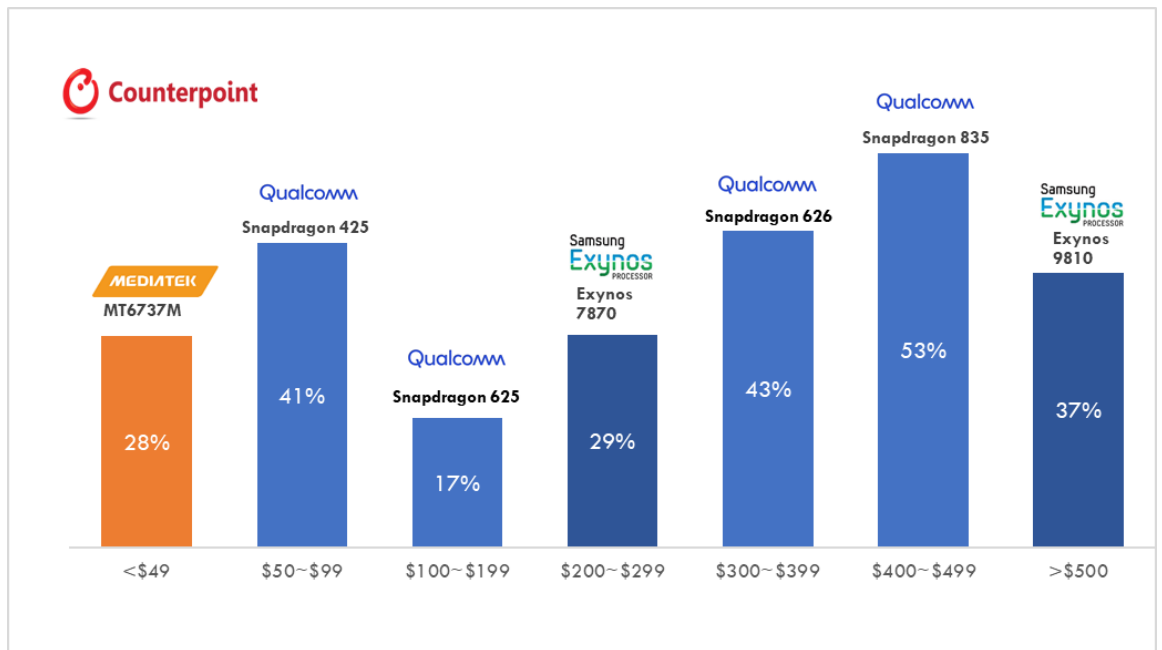
Over the next twelve months, the following SoCs will be critical for battle in the fast-growing mid-tier segment, enabling new capabilities that will help it grow further.

	Performance	Connectivity	Camera	Multimedia	AI
Qualcomm Snapdragon 660	CPU: octa core, **14nm** GPU: Adreno 512	Download speed of **600 Mbps** Upload speed of 150 Mbps **Bluetooth 5.0** 2x2 MU-MIMO	Up to 25 MP single Up to 16 MP dual ISP	4K Ultra HD video playback **(2560 x 1200) Full HD**	Multi-core Qualcomm AI Engine
MediaTek Helio P60	CPU: octa core, **12nm** GPU: ARM Mali G72 MP3	Download speed of **300 Mbps** Upload speed of 150 Mbps **Bluetooth 4.2**	Up to 32 MP single Up to 16+24 MP dual camera	4K HDR video playback 2400x1800 (Full HD+)	MediaTek NeuroPilot AI platform, Multi-core AI processing unit (Mobile APU)

In terms of SoC capabilities, Qualcomm is leveraging its early start and momentum provided by its 600 series, which has helped it to gain share in the mid-tier segments. However, as the competition catches up, Qualcomm's latest Snapdragon 710, which is based on a 10nm process node, has further raised the performance bar in the mid-tier segment. This will likely help Qualcomm to increase mind share and market share going forward

	Performance	Connectivity	Camera	Multimedia	AI
Qualcomm Snapdragon 710	CPU: octa core, **10nm** GPU: Adreno 616	Download speed of **800 Mbps** Upload speed of 150 Mbps **Bluetooth 5.0** 4x4 MIMO	Up to 32 MP single Up to 20 MP dual ISP	4K HDR video playback **(3200 x 1800) Quad HD+**	Multi-core Qualcomm AI Engine

The Snapdragon 710 has been built on the same 10nm process node as the Snapdragon 845, bringing the power efficiency of the 800 series to lower price points. Apart from the support for some high-end features in the 800 series, like Ultra HD premium video, peak download speeds of 1.2 Gbps, camera features were never utilized to their full capacity. The Snapdragon 710 will allow OEMs to retain specific premium-tier features at lower price-points and make their offerings more future-proof.

Another key differentiator for 710 is its multi-core AI Engine and neural network processing capabilities. With AI being the future and a differentiator among next generation smartphones, OEMs are pushing more and more AI-related features into their handsets, leveraging the AI-capable chipsets in mid-tier products. Both Qualcomm and its competitors MediaTek and Huawei are stepping-up their efforts to add AI capabilities in their mid-tier chipsets.

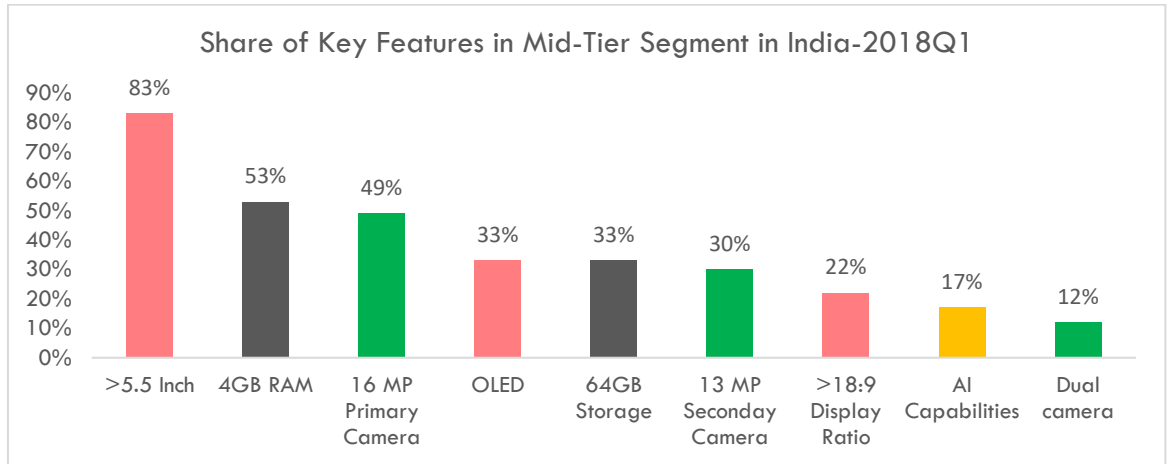## Key Features of Mid-Tier Segment Devices

During Q1 2018, mid-tier segment brands have been differentiating their devices aggressively in a bid to attract the upgrading users. Memory, display and camera capabilities are some of the top features that consumers pay more attention and that are inherently driven by the underlying System-on-Chip (SoC):

- ✓ **Memory:** There has been a drastic increase in content consumption in India following the arrival of Reliance Jio. The trend of capturing and sharing high-resolution images and high-definition video by mid-tier smartphone users, is likely to accelerate, thus leading to demand for higher RAM and storage in mid end segment. Almost half the devices in the mid-segment have 4GB RAM, while one third have 64GB internal storage. With both memory and storage doubling YoY in India, we expect that 4GB RAM and 64GB storage will account for almost two-thirds of total mid-segment smartphones by the end of 2018.

- ✓ **Display:** Smartphone displays with slim bezels and aspect ratios of 18:9 and above is one of the key differentiating features for users. By the end of 1Q 2018, almost 20% of mid-segment smartphones sported an 18:9 aspect ratio display. We estimate that almost half of the smartphones sold in this segment will include a full-display, minimum-bezel by the end of 2018. The biggest advantage of 18:9 and above aspect ratio displays for consumers is that the user can experience a bigger screen while retaining compact device dimensions. Hence, a screen of at least 5.5 inches is likely to become a standard screen size for mid-tier smartphones. The underlying SoC will also need to efficiently support this trend.

- ✓ **Camera:** Imaging is one of the most popular applications for smartphones. OEMs in the mid-segment continue to aggressively market their camera capabilities for both front and rear cameras. The dual-camera trend is well-established in the mid-segment with almost 12% of the mid-tier smartphones having dual rear cameras. This proportion is likely to reach 33% by the end of 2018. 16MP is the primary sensor size in the rear-facing dual camera, while front-facing cameras are typically 13MP. This combination is expected to account for around two-thirds of the smartphones sold in mid-segment by the end of 2018. Nevertheless, the camera is a feature where a lot of innovation happens beyond the basic megapixel race. For example, features such as bokeh portrait mode, High Dynamic Range (HDR), wide aperture, image stabilization, AI-driven scene recognition, filters and telephoto lenses are key to enabling a wide-range of image capture capability. This becomes important for SoC players to drive these features into the solutions which will power these mid-tier smartphones.

- ✓ **Artificial Intelligence:** [According to Counterpoint Research](link), at least one in three smartphones to be shipped in 2020 will natively embed machine learning and artificial intelligence (AI) capabilities at the chipset level, globally. With advanced SoC-level AI capabilities, smartphones will be able to perform a variety of tasks such as processing natural languages, including real-time translation; helping users take better photos by intelligently identifying objects and adjusting camera settings to capture the photos in the best possible way. They can also learn a user's typical pattern of use and optimise the device efficiency accordingly.

  During Q1 2018, 17% of the mid-tier smartphones sold in India had SoC-level AI capabilities that enhanced the overall experience by overcoming hardware constraints through software-level adjustments. We estimate that by the end of 2018, one third of smartphones sold in this segment will have native AI capabilities. All leading SoC vendors are looking to bring AI capabilities to mid-tier phones, though it will also be up to the OEMs on how

they implement and leverage this functionality in terms of price points and feature sets.

Exhibit 3: Share of Key Features in Mid End Segment in India

Share of Key Features in Mid-Tier Segment in India-2018Q1

- >5.5 Inch: 83%
- 4GB RAM: 53%
- 16 MP Primary Camera: 49%
- OLED: 33%
- 64GB Storage: 33%
- 13 MP Seconday Camera: 30%
- >18:9 Display Ratio: 22%
- AI Capabilities: 17%
- Dual camera: 12%

To summarize, we believe that the features discussed will likely penetrate the mid-tier segment faster in the latter part of 2018 and into 2019 and will have an impact on device processing capabilities and battery life.

In addition, features such as Dual-SIM VoLTE will also be important for the India market in the mid-segment from a SoC support perspective.

Qualcomm, in such a scenario, has been successful in introducing features to its mid-tier SoC, thereby bringing a significant upgrade to camera capabilities, battery consumption and display resolution support. This is driving overall user experience in the mid-tier segment and helping OEMs to differentiate. For example, the Snapdragon 636 processor powers one of the best-selling models in India, Xiaomi's Redmi Note 5 Pro. The SoC has 40% higher performance compared to the Snapdragon 630. Additionally, the support for 18:9 aspect ratio displays, and the inclusion of the Spectra 160 image processor brings imaging features that seeing growing demand in the mid-tier.

Outlook and Conclusion

As the mid to upper-mid-segments are expected to grow 20% in 2018, there is an opportunity for every player in the value chain, from handset makers, to component vendors, to channels, to benefit from delivering flagship-grade features to lower-price points.

The premium-tier flagship smartphone models powered by processors such as Qualcomm's Snapdragon 845, Apple's A11, Samsung's Exynos 9810, or Huawei's HiSilicon Kirin 970, help OEMs bring the latest innovative features to the market and set industry standards for performance. However, as the rest of the smartphone market is being commoditized there is a latent need to push some flagship features down to the mid-tier to scale newer technologies (e.g. AI, high-resolution full-display, 4G, etc) that helps OEMs attract the broadest potential market. It will also help other ecosystem players such as application developers and content owners that can take advantage of the enlarged addressable market.

The role of SoC players is critical to unlocking the potential of the mid-tier market segments. If done successfully, we believe the mid-tier segments will grow almost four times in volume over the next five years in India. To enable this growth, cutting-edge solutions such as Qualcomm's Snapdragon 710 are required on a broad scale. Qualcomm already has a strong presence in key brands in the mid-tier. The Snapdragon 710 can further strengthen Qualcomm's share within key brands in the mid-tier segments as it has in the $100-$200 lower-tier segment.