

## IT Hardware

### NB demand beat expectations in 2Q24; smartphones & AI servers to be focus in 3Q24F

#### Key message

1. 2Q24 NB shipments largely beat. Firms with sales that beat our estimates or guidance were NB and server supply firms.
2. 3Q24F NB demand growth to moderate QoQ, while AI server sales growth will accelerate.
3. Foldable smartphones & new iPhone models to be key sales drivers in 3Q24F. We expect related companies to benefit, which is our key investment theme.

#### Event

Following June sales results, most IT hardware companies' sales beat our forecasts. We expect the main 3Q24F sales drivers to be AI servers and smartphones, with several new models launching in the quarter, including foldable smartphones and the iPhone 16 series.

#### Impact

**Most IT hardware firms' 2Q24 sales beat.** Among the IT hardware supply chain, most firms' 2Q24 sales beat our forecasts and consensus (Figure 1). NB ODMs' sales arrived largely ahead of our forecasts on strong NB pull-in demand and solid AI server sales, with improving GPU supply. Most ODMs' 2Q24 sales grew 10-20% QoQ and over 15% YoY, with NB shipment growth of 10-15% QoQ, but down 1-2% YoY, which indicates an increase in server sales. Thermal plays' 2Q24 sales also largely beat our forecasts and guidance, with AI server 3D VC, cooling fan and liquid cooling sales growth. In addition to rising AI server demand, general server demand recovered well in 2Q24, thus causing rail kit producers, CPU socket suppliers, and assemblers' 2Q24 sales to grow 10-30% QoQ and over 15% YoY. PC brands benefited from increased NB demand in 2Q24, with double-digit QoQ and YoY sales growth, while motherboard and graphics card shipments fell QoQ, due to low seasonality. All in all, hardware companies with double-digit YoY growth mostly benefited from server business, while companies with higher exposure to NB PC and consumer electronics products suffered from sales YoY declines.

**NB shipment growth to be limited in 3Q24F, but accelerate in 4Q24F; AI servers to fuel sales growth in 3Q-4Q24F.** Taiwan's top-5 ODMs saw NB shipments grow 7% MoM but fall 7% YoY in June, stronger than we had expected, driven by quarter-end pull-in demand. 2Q24 NB shipments were up 13% QoQ but fell by 1-2% YoY to 32.4mn units, beating their guidance on stronger-than-expected demand. Most NB ODMs guide 3Q24 NB shipments to grow 0-5% QoQ, below the historical pattern due to a high 2Q24 base, and because AI PC models will likely debut in late-3Q24F. AI PCs with AMD (US) Ryzen AI 300 CPUs will be available in July, while models with Intel (US) CPUs will go on sale in September-October. Despite a weak 3Q24F outlook, we expect new AI PC models to drive sales in 4Q24F, with stronger demand in 2025F. AI server shipments will ramp-up in 2H24F, and fuel related companies' sales significantly, and assemblers' QoQ and YoY sales growth will be strong in both 3Q24F and 4Q24F.

**Focus on foldable smartphones & iPhone supply chain in 3Q24F.** Several brands will launch new smartphone models in 3Q24F, including Samsung (KR), Motorola (US), and Huawei (CN). Huawei may launch a Nova-series clamshell model in August, and a tri-fold model in 3Q24. Hinge suppliers Fositek (6805 TT, NT\$767, OP) and Jarllytec (3548 TT, NT\$187, NR) both supply hinges for Huawei's clamshell smartphone models, and Fositek is the sole supplier for its tri-fold model. Fositek will thus be a key beneficiary of the foldable smartphone trend, and server rail kit will be another sales driver. In addition, Apple (US) will launch the Gen-AI iPhone 16 series in late 3Q24F, with key upgrades including the A18 chip, cameras, and batteries. We forecast iPhone 16 shipments will grow slightly YoY, to 85-90mn units for the component supply chain, and to 90-100mn units for TSMC (2330 TT, NT\$1,045, NR) in 2H24F, as an iPhone replacement cycle will commence in 2024-25F due to Gen-AI functionality. Key beneficiaries will be TSMC, Hon Hai (2317 TT, NT\$223.5, OP), Largan Precision (3008 TT, NT\$3,110, OP), Compeq Manufacturing (2313 TT, NT\$86, OP), and Zhen Ding Technology (4958 TT, NT\$148.5, N). We expect Largan Precision and TSMC to offer positive 2H24F guidance on a robust smartphone business outlook at their upcoming analyst meetings on July 11 and 18, respectively.

#### Stocks for Action

We suggest investors focus on the smartphone supply chain in 3Q24F, especially foldable smartphone hinge plays and Apple suppliers. Our top picks are Fositek, Hon Hai, Largan Precision, Compeq Manufacturing, and Zhen Ding Technology.

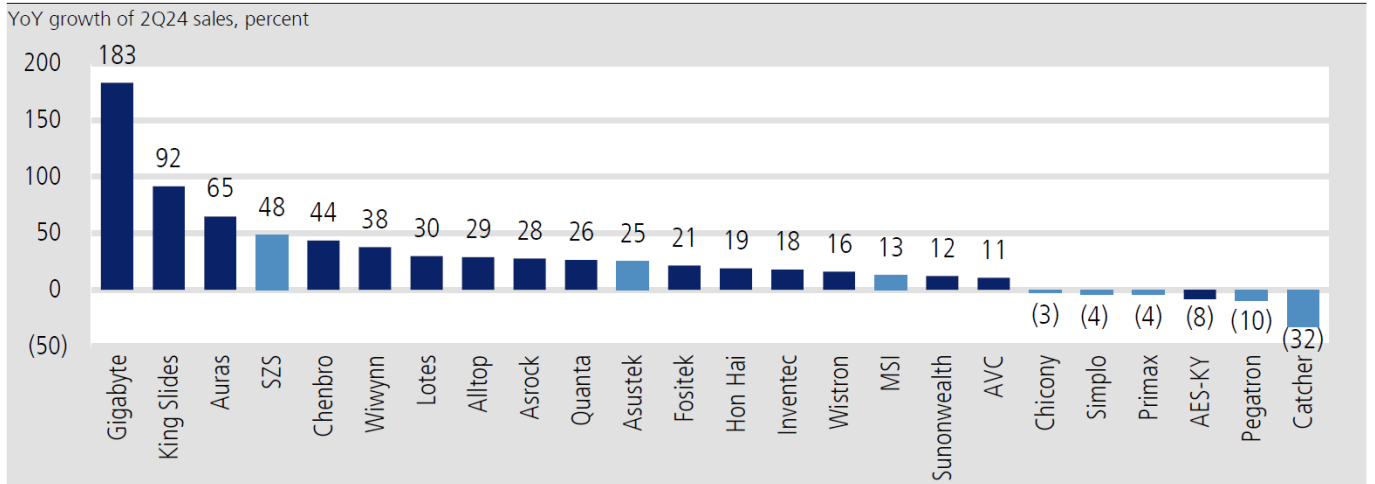
#### Risks

Weak consumer demand for PCs and smartphones; AI server GPU supply constraints.

**Figure 1: Strong 2Q24 sales for downstream tech firms**

Sector	Ticker	Company	June sales	MoM (%)	YoY (%)	2Q24 sales	QoQ (%)	YoY (%)	KGIe	Diff (%)	Consensus	Diff (%)
ODM	2317 TT	Hon Hai	490,725	(11)	16	1,551,779	17	19	1,438,998	8	1,484,168	5
	2356 TT	Inventec	50,930	(2)	7	154,159	18	18	138,336	11	141,144	9
	2382 TT	Quanta	111,318	10	23	309,954	20	26	292,601	6	299,535	3
	3231 TT	Wistron	88,787	12	9	240,931	1	16	227,359	6	232,912	3
	4938 TT	Pegatron	70,928	(24)	(14)	253,708	1	(10)	252,904	0	265,732	(5)
	6669 TT	Wiwynn	30,758	24	36	77,481	11	38	76,591	1	77,046	1
Motherboard & Graphic cards	2357 TT	Asustek	58,412	30	21	144,859	19	25	131,433	10	131,264	10
	2376 TT	Gigabyte	22,932	2	138	73,933	34	183	70,610	5	66,163	12
	2377 TT	MSI	14,709	(5)	3	46,672	(2)	13	47,627	(2)	48,139	(3)
	3515 TT	Asrock	1,717	(6)	10	5,218	5	28	5,176	1	5,185	1
Thermal	3324 TT	Auras	1,692	23	99	4,283	36	65	3,401	26	3,827	12
	3017 TT	AVC	6,012	14	19	16,484	8	11	15,768	5	16,187	2
	2421 TT	Sunonwealth	1,187	(6)	14	3,677	20	12	3,519	4	3,565	3
Components	2059 TT	King Slides	854	(2)	101	2,517	30	92	2,190	15	2,315	9
	3533 TT	Lotes	2,328	(9)	19	7,427	17	30	7,617	(2)	7,174	4
	3526 TT	Alltop	250	(10)	5	769	31	29	688	12	688	12
	6781 TT	AES-KY	718	1	(5)	2,175	(6)	(8)	2,376	(8)	2,393	(9)
	8210 TT	Chenbro	1,326	6	60	3,607	30	44	3,577	1	3,448	5
	3376 TT	SZS	1,143	(3)	44	3,480	19	48	3,108	12	3,127	11
	6805 TT	Fositek	612	22	27	1,719	0	21	1,831	(6)	1,776	(3)
	2385 TT	Chicony	8,361	(2)	(7)	24,674	8	(3)	24,902	(1)	24,743	(0)
	2474 TT	Catcher	1,566	(4)	(26)	4,672	28	(32)	4,500	4	4,376	7
	4915 TT	Primax	5,226	2	(5)	15,368	13	(4)	14,741	4	14,682	5
	6121 TT	Simplo	6,118	(10)	(7)	19,000	8	(4)	18,989	0	19,018	(0)

Note: Difference marks in red means better than expected, green means lower than expected  
 Source: Company data; Bloomberg; KGI Research estimates

**Figure 2: PC components firms witnessed sales YoY declines in 2Q24**


Note: Dark blue represents companies with a higher proportion of server revenue, while light blue represents companies with a high proportion of PC/NB revenue  
 Source: TEJ; KGI Research

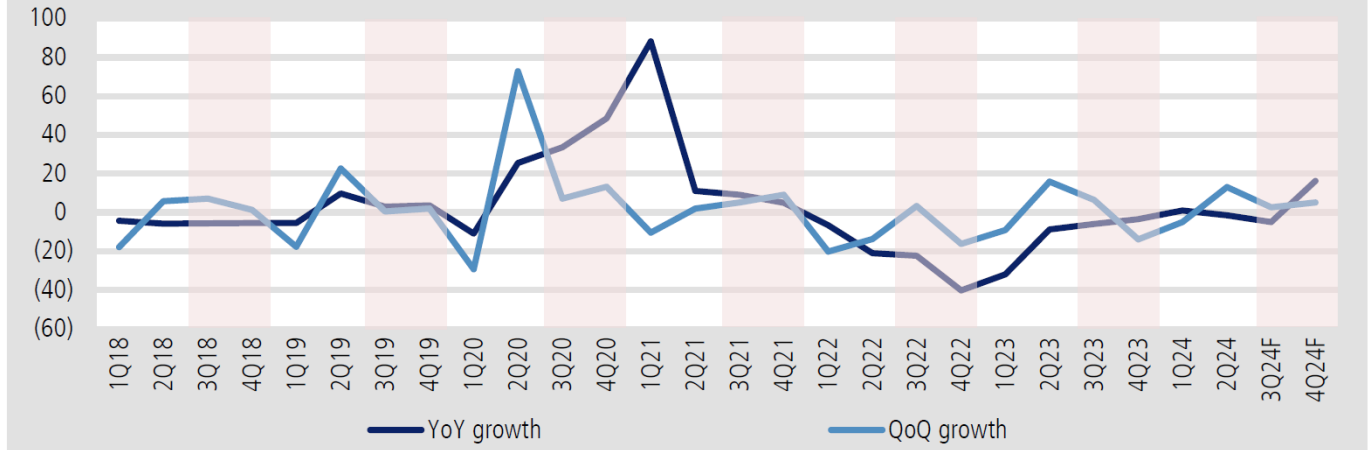
**Figure 3: Most ODMs' 2Q24 NB shipments beat our forecasts**

NB shipments (mn units)					MoM (%)	YoY (%)	2Q24	YoY (%)	QoQ (%)	KGI forecast	Diff. (%)
Company	Ticker	Apr-24	May-24	Jun-24	(%)	(%)		(%)	(%)	2Q24F	(%)
Compal	2324 TT	2.80	2.90	3.00	3	(9)	8.70	0.0	16.0	8.50	2
Inventec	2356 TT	1.50	1.70	1.70	0	0	4.90	0.0	8.9	4.90	0
Quanta	2382 TT	3.20	4.00	4.50	13	(12)	11.70	(7.1)	11.4	11.50	2
Wistron	3231 TT	1.60	1.70	1.80	6	6	5.10	10.9	10.9	5.10	0
Pegatron	4938 TT	0.52	0.72	0.77	6	(7)	2.01	(3.4)	29.4	1.86	8
Top-5 NB ODM shipments		9.62	11.02	11.77	7	(7)	32.41	(1.4)	13.1	31.86	2

Source: Company data; KGI Research estimates

**Figure 4: QoQ growth of NB shipments in 3Q24F to be weaker than historical pattern**

YoY &amp; QoQ growth of top-5 NB ODM shipments, percent



Source: Company data; KGI Research estimates

**Figure 5: Top five NB ODM shipments' beat our forecasts in 2Q24, & will grow by single-digits QoQ in 3Q24F**

NB shipment (mn units)		1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24F	2020	2021	2022	2023	2024F
2382 TT	Quanta	19.0	19.0	17.4	19.9	16.9	12.4	15.6	12.8	10.8	12.6	13.1	10.4	10.5	11.7	12.0	59.8	75.3	57.7	46.9	46.9
2324 TT	Compal	13.1	13.0	15.3	16.1	11.8	10.4	9.3	7.8	7.6	8.7	9.3	8.3	7.5	8.7	9.0	47.8	57.5	39.3	33.9	34.5
3231 TT	Wistron	5.4	6.1	6.6	7.5	5.6	5.8	5.2	4.6	3.9	4.6	5.2	5.3	4.6	5.1	5.2	20.4	25.6	21.2	19.1	20.5
2356 TT	Inventec	4.8	5.0	5.9	5.6	5.0	5.4	5.0	4.4	4.4	4.9	4.9	4.5	4.5	4.9	5.0	20.0	21.3	19.8	18.7	19.5
4938 TT	Pegatron	2.3	2.4	2.7	3.1	2.4	2.0	2.1	1.6	1.7	2.1	2.5	1.7	1.6	2.0	2.1	10.2	10.4	8.0	8.0	8.0
<b>Top-5 NB ODM</b>		<b>44.6</b>	<b>45.5</b>	<b>47.9</b>	<b>52.2</b>	<b>41.7</b>	<b>36.0</b>	<b>37.2</b>	<b>31.2</b>	<b>28.4</b>	<b>32.9</b>	<b>35.0</b>	<b>30.2</b>	<b>28.7</b>	<b>32.4</b>	<b>33.3</b>	<b>158.1</b>	<b>190.1</b>	<b>146.0</b>	<b>126.6</b>	<b>129.4</b>
<b>YoY (%)</b>																					
2382 TT	Quanta	160.3	31.0	(4.9)	1.0	(11.1)	(34.7)	(10.3)	(35.7)	(36.1)	1.6	(16.0)	(18.8)	(2.8)	(7.1)	(8.4)	70.4	25.9	(23.4)	(18.7)	0.0
2324 TT	Compal	65.8	4.0	31.9	2.1	(9.9)	(20.0)	(39.2)	(51.6)	(35.6)	(16.3)	0.0	6.4	(1.3)	0.0	(3.2)	8.8	20.4	(31.7)	(13.7)	1.8
3231 TT	Wistron	52.1	17.3	26.9	17.2	3.7	(4.9)	(21.2)	(38.7)	(30.4)	(20.7)	0.0	15.2	17.9	10.9	0.0	16.3	25.8	(17.2)	(9.9)	7.3
2356 TT	Inventec	41.2	(12.3)	3.5	7.7	4.2	8.0	(15.3)	(21.4)	(12.0)	(9.3)	(2.0)	2.3	2.3	0.0	2.0	6.1	6.5	(7.0)	(5.6)	4.3
4938 TT	Pegatron	48.8	(20.7)	(13.1)	19.2	4.2	(17.3)	(21.3)	(48.4)	(28.7)	4.5	19.9	3.1	(7.5)	(3.4)	(15.8)	1.3	2.1	(22.9)	(0.2)	0.0
<b>Top-5 NB ODM</b>		<b>88.3</b>	<b>11.2</b>	<b>9.1</b>	<b>5.1</b>	<b>(6.5)</b>	<b>(20.9)</b>	<b>(22.3)</b>	<b>(40.2)</b>	<b>(31.9)</b>	<b>(8.6)</b>	<b>(5.9)</b>	<b>(3.4)</b>	<b>1.0</b>	<b>(1.4)</b>	<b>(4.8)</b>	<b>26.1</b>	<b>20.2</b>	<b>(23.2)</b>	<b>(13.3)</b>	<b>2.2</b>
<b>QoQ (%)</b>																					
2382 TT	Quanta	(3.6)	0.0	(8.4)	14.4	(15.1)	(26.6)	25.8	(17.9)	(15.6)	16.7	4.0	(20.6)	1.0	11.4	2.6					
2324 TT	Compal	(16.9)	(0.8)	17.7	5.2	(26.7)	(11.9)	(10.6)	(16.1)	(2.6)	14.5	6.9	(10.8)	(9.6)	16.0	3.4					
3231 TT	Wistron	(15.6)	13.0	8.2	13.6	(25.3)	3.6	(10.3)	(11.5)	(15.2)	17.9	13.0	1.9	(13.2)	10.9	2.0					
2356 TT	Inventec	(7.7)	4.2	18.0	(5.1)	(10.7)	8.0	(7.4)	(12.0)	0.0	11.4	0.0	(8.2)	0.0	8.9	2.0					
4938 TT	Pegatron	(13.3)	6.4	10.4	17.0	(24.2)	(15.5)	5.0	(23.3)	4.7	23.9	20.5	(34.0)	(6.1)	29.4	5.0					
<b>Top-5 NB ODM</b>		<b>(10.3)</b>	<b>2.1</b>	<b>5.2</b>	<b>9.1</b>	<b>(20.2)</b>	<b>(13.6)</b>	<b>3.3</b>	<b>(16.1)</b>	<b>(9.1)</b>	<b>15.9</b>	<b>6.5</b>	<b>(13.9)</b>	<b>(5.0)</b>	<b>13.1</b>	<b>2.8</b>					

Source: Company data; KGI Research estimates

**Figure 6: Top 20 FINI stocks bought & sold over last three months; FINI increased positions in Hon Hai & Quanta Computer**

Previous Month						Previous Quarter					
Net Bought			Net Sold			Net Bought			Net Sold		
Company	Ticker	NT\$m	Company	Ticker	NT\$m	Company	Ticker	NT\$m	Company	Ticker	NT\$m
1 Quanta Computer	2382	21,791	1 Taiwan Semiconductor	2330	(13,811)	1 Quanta Computer	2382	31,945	1 Novatek Microelectronics	3034	(35,610)
2 Hon Hai	2317	18,358	2 Evergreen Marine	2603	(10,002)	2 Hon Hai	2317	28,445	2 Taiwan Semiconductor	2330	(27,398)
3 Delta Electronics	2308	14,509	3 Novatek Microelectronics	3034	(9,687)	3 Realtek Semiconductor	2379	24,206	3 CTBC Financial	2891	(26,950)
4 Realtek Semiconductor	2379	14,321	4 Far EasTone	4904	(8,790)	4 Delta Electronics	2308	17,942	4 Alchip Technologies	3661	(23,981)
5 Cathay Financial	2882	10,319	5 Chailease Holding	5871	(8,769)	5 Mediatek Inc.	2454	15,278	5 Wistron Corporation	3231	(23,525)
6 Nanya Technology	2408	7,829	6 Lite-On Technology	2301	(8,471)	6 Cathay Financial	2882	14,863	6 Chailease Holding	5871	(11,058)
7 Fubon Financial	2881	7,487	7 CTBC Financial	2891	(7,978)	7 Yang Ming	2609	13,114	7 Acer Incorporated	2353	(9,389)
8 King Yuan	2449	6,764	8 Taiwan Mobile	3045	(7,525)	8 Winyynn Corporation	6669	11,872	8 EVA Airways	2618	(9,381)
9 Mediatek Inc.	2454	6,138	9 Asia Vital Components	3017	(7,272)	9 Yageo Corporation	2327	10,125	9 China Steel	2002	(8,508)
10 Zhen Ding	4958	5,511	10 Unimicron Technology	3037	(6,096)	10 China Airlines	2610	8,609	10 Far EasTone	4904	(8,359)
11 United Microelectronics	2303	5,467	11 Asmedia Technology	5269	(6,078)	11 Fubon Financial	2881	8,515	11 Asmedia Technology	5269	(8,178)
12 Compeq Manufacturing	2313	5,395	12 Wistron Corporation	3231	(5,900)	12 Asped Technology	5274	8,415	12 Formosa Plastics	1301	(8,023)
13 Highwealth Construction	2542	5,307	13 L&K Engineering	6139	(5,895)	13 Synnex Technology	2347	7,850	13 ChungHwa Telecom	2412	(7,840)
14 Yageo Corporation	2327	5,041	14 Alchip Technologies	3661	(5,774)	14 Chung-Hsin Electric	1513	6,912	14 Taiwan Mobile	3045	(7,338)
15 Asped Technology	5274	4,569	15 China Steel	2002	(5,142)	15 Tripod Technology	3044	6,649	15 Phison Electronics	8299	(7,231)
16 AUO Corporation	2409	4,469	16 Acer Incorporated	2353	(5,046)	16 International Games	3293	6,292	16 Vanguard International	5347	(7,176)
17 Largan Precision	3008	4,406	17 Shihlin Electric	1503	(4,915)	17 China Development	2883	6,123	17 Innolux Corporation	3481	(7,152)
18 Genius Electronic	3406	4,301	18 Asustek Computer	2357	(4,060)	18 Lotes Co.	3533	6,056	18 WT Microelectronics	3036	(7,049)
19 E Ink	8069	4,116	19 Nan Ya	1303	(3,969)	19 Zhen Ding	4958	5,942	19 Unimicron Technology	3037	(6,692)
20 Faraday Technology	3035	3,990	20 Asia Cement	1102	(3,843)	20 Genius Electronic	3406	5,654	20 L&K Engineering	6139	(6,085)

Note: Data ended on July 9

Source: TEJ; KGI Research

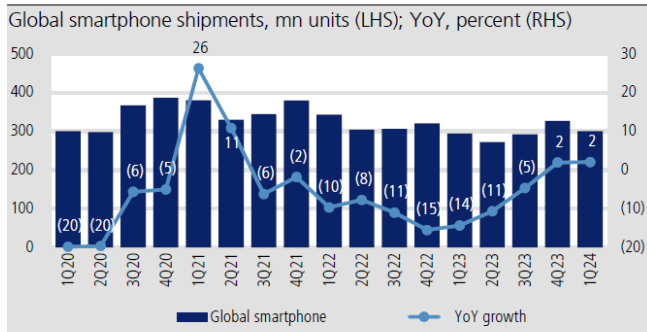
**Figure 7: Top 20 investment trust stocks bought & sold over last three months; investment trusts cut positions in high-yield plays after dividend payouts**

Previous Month						Previous Quarter					
Net Bought			Net Sold			Net Bought			Net Sold		
Company	Ticker	NT\$m	Company	Ticker	NT\$m	Company	Ticker	NT\$m	Company	Ticker	NT\$m
1 Taiwan Mobile	3045	16,940	1 Hon Hai	2317	(15,458)	1 Novatek Microelectronics	3034	37,482	1 Realtek Semiconductor	2379	(27,120)
2 Far EasTone	4904	14,836	2 Realtek Semiconductor	2379	(15,011)	2 EVA Airways	2618	30,318	2 Evergreen Marine	2603	(17,871)
3 Vanguard International	5347	11,933	3 Evergreen Marine	2603	(10,916)	3 United Microelectronics	2303	28,120	3 Hon Hai	2317	(15,814)
4 United Microelectronics	2303	11,236	4 Alchip Technologies	3661	(6,780)	4 Vanguard International	5347	25,748	4 International Games	3293	(11,957)
5 Novatek Microelectronics	3034	10,484	5 Zhen Ding	4958	(6,452)	5 Taiwan Mobile	3045	22,251	5 Synnex Technology	2347	(10,193)
6 EVA Airways	2618	10,189	6 AUO Corporation	2409	(5,551)	6 CTBC Financial	2891	20,790	6 Wistron Corporation	3231	(8,346)
7 Mega Financial	2886	6,201	7 Compeq Manufacturing	2313	(5,386)	7 Far EasTone	4904	16,598	7 Chicony Electronics	2385	(5,964)
8 Lite-On Technology	2301	5,858	8 Chicony Electronics	2385	(4,286)	8 Chunghwa Telecom	2412	12,369	8 Qisda Corporation	2352	(5,649)
9 Largan Precision	3008	5,641	9 Qisda Corporation	2352	(4,157)	9 E.SUN Financial	2884	10,457	9 AUO Corporation	2409	(5,389)
10 Elite Material	2383	5,452	10 Highwealth Construction	2542	(4,097)	10 Cheng Shin	2105	9,010	10 Zhen Ding	4958	(5,376)
11 Asia Cement	1102	4,661	11 Nan Ya	8046	(3,995)	11 King's Town	2809	8,414	11 United Integrated	2404	(5,181)
12 Chailase Holding	5871	4,562	12 ASE Technology	3711	(3,518)	12 Goldsun Building	2504	6,729	12 Wiwynn Corporation	6669	(4,987)
13 Taiwan Semiconductor	2330	4,479	13 Macronix International	2337	(3,325)	13 Taiwan Surface	6278	5,324	13 Giga-Byte Technology	2376	(4,708)
14 Hua Nan	2880	4,295	14 Giga-Byte Technology	2376	(3,025)	14 Chailase Holding	5871	5,162	14 Asustek Computer	2357	(4,635)
15 Far Eastern	1402	4,069	15 Formosa Plastics	1301	(2,890)	15 Pegatron Corporation	4938	4,833	15 Chipbond Technology	6147	(4,570)
16 Getac Holdings	3005	3,826	16 Primax Electronics	4915	(2,747)	16 First Financial	2892	4,826	16 Nan Ya	1303	(4,407)
17 Catcher Technology	2474	3,671	17 Kinsus Interconnect	3189	(2,746)	17 Far Eastern	1402	4,682	17 Highwealth Construction	2542	(4,213)
18 Delta Electronics	2308	3,179	18 Unimicron Technology	3037	(2,629)	18 Asia Cement	1102	4,648	18 Phison Electronics	8299	(4,200)
19 Taiwan Surface	6278	3,004	19 Compal Electronics,	2324	(2,360)	19 Global Unichip	3443	4,578	19 Tripod Technology	3044	(4,190)
20 CTBC Financial	2891	2,704	20 Coretronic Corporation	5371	(2,323)	20 Huaku Development	2548	4,559	20 King Yuan	2449	(3,779)

Note: Data ended on July 9  
 Source: TEJ; KGI Research

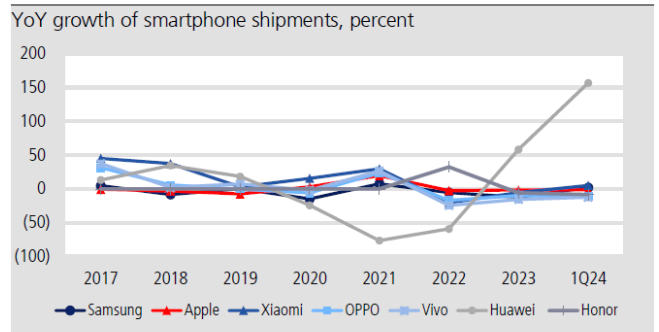
Smartphones

**Figure 8: 1Q24 global smartphone shipments grew 2% YoY**



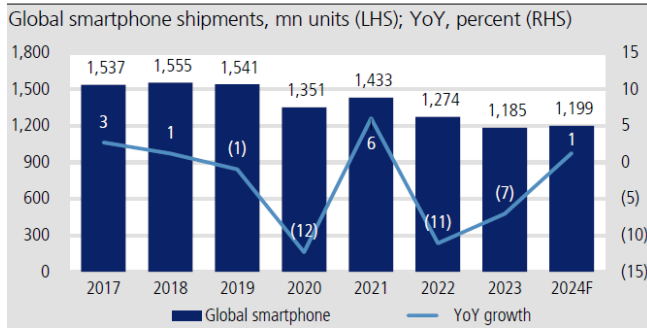
Source: Gartner, KGI Research

**Figure 9: Huawei's smartphone shipments outgrew peers in 1Q24, on a low base**



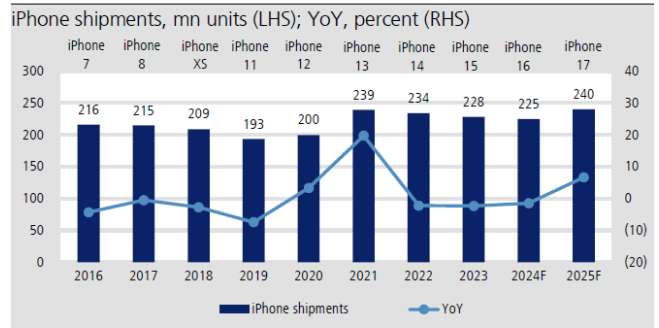
Source: Gartner, KGI Research

**Figure 10: Weak global smartphone demand in 2023, but will return to YoY sales growth in 2024F**



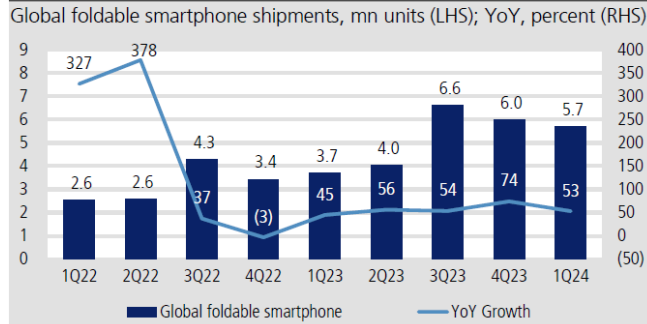
Source: Gartner, KGI Research estimates

**Figure 11: iPhone shipments could drop by 2% this year but may resume growth in 2025F**



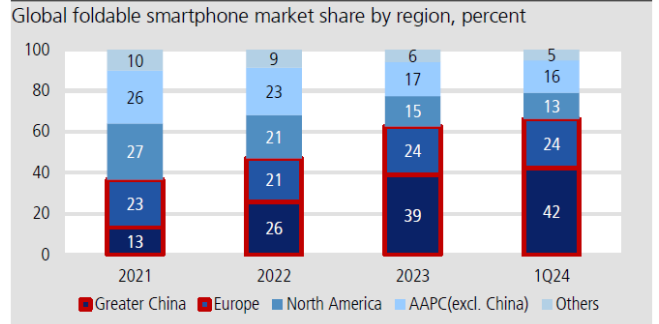
Source: Gartner, KGI Research estimates

**Figure 12: Global foldable smartphone shipments have been growing rapidly since 1Q23**



Source: Gartner, KGI Research

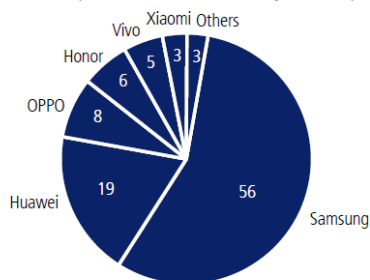
**Figure 13: Greater China & Europe are major foldable smartphone markets**



Source: Gartner, KGI Research

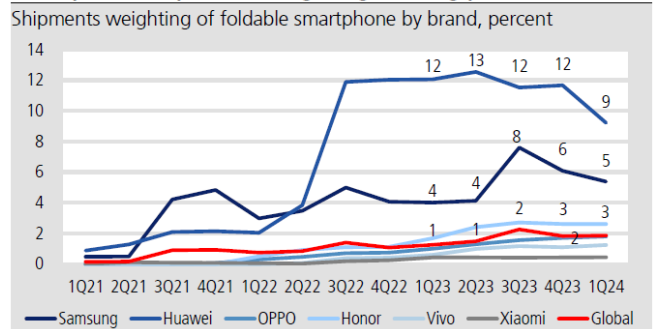
**Figure 14: Samsung dominated the foldable smartphone market in 1Q24**

Foldable smartphone shipments market share by brand, percent



Source: Gartner, KGI Research

**Figure 15: Huawei & Samsung have highest foldable smartphone shipments weightings among peers**



Source: Gartner, KGI Research



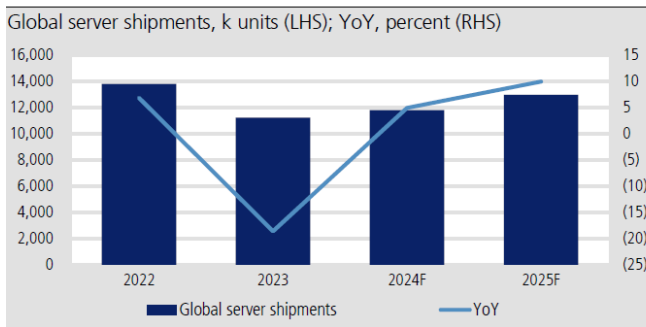
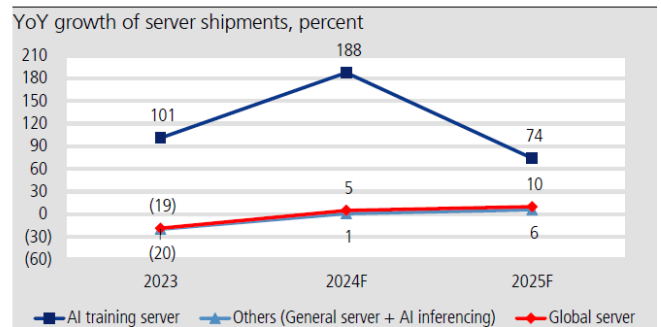
Figure 19: Global foldable smartphone shipments by brand

Vendor	Global foldable smartphone shipments											
	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2022	2023	
Samsung	2.2	2.1	3.2	2.3	2.4	2.2	4.4	3.4	3.2	9.9	12.4	
Huawei	0.1	0.1	0.5	0.5	0.5	0.8	0.8	1.2	1.1	1.3	3.4	
OPPO	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.6	1.4	
Honor	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.5	1.3	
Vivo	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.8	
Xiaomi	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.6	
Lenovo	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	
Google	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.2	
Tecno Telecom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<b>Total</b>	<b>2.6</b>	<b>2.6</b>	<b>4.3</b>	<b>3.4</b>	<b>3.7</b>	<b>4.0</b>	<b>6.6</b>	<b>6.0</b>	<b>5.7</b>	<b>12.9</b>	<b>20.3</b>	
	<b>YoY (%)</b>											
Samsung	N.A.	N.A.	N.A.	N.A.	7.4	3.4	36.0	45.8	32.4	N.A.	24.8	
Huawei	N.A.	N.A.	N.A.	N.A.	399.1	432.4	58.5	124.4	106.6	N.A.	152.7	
OPPO	N.A.	N.A.	N.A.	N.A.	192.3	154.3	127.2	100.7	62.3	N.A.	133.4	
Honor	N.A.	N.A.	N.A.	N.A.	189.8	122.4	151.1	141.9	67.3	N.A.	146.3	
Vivo	N.A.	N.A.	N.A.	N.A.	N.A.	1,026.5	164.6	131.4	112.2	N.A.	286.9	
Xiaomi	N.A.	N.A.	N.A.	N.A.	510.6	1,042.0	123.0	101.2	36.2	N.A.	214.5	
Lenovo	N.A.	N.A.	N.A.	N.A.	20.8	192.7	277.7	317.4	275.2	N.A.	209.9	
Google	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
Tecno Telecom	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
Other	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	(100.0)	
<b>Total</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>N.A.</b>	<b>44.8</b>	<b>56.1</b>	<b>53.7</b>	<b>74.2</b>	<b>53.3</b>	<b>N.A.</b>	<b>57.9</b>	
	<b>QoQ (%)</b>											
Samsung	N.A.	(4.6)	51.4	(29.1)	5.0	(8.2)	99.1	(24.1)	(4.6)			
Huawei	N.A.	38.1	270.9	3.3	(5.7)	47.4	10.4	46.2	(13.2)			
OPPO	N.A.	36.7	43.9	16.7	27.3	18.9	28.5	3.1	2.9			
Honor	N.A.	83.0	11.6	8.1	31.3	40.4	26.0	4.2	(9.2)			
Vivo	N.A.	N.A.	392.5	12.0	30.6	56.4	15.6	(2.1)	19.8			
Xiaomi	N.A.	(42.3)	514.8	11.7	54.1	7.9	20.0	0.8	4.3			
Lenovo	N.A.	(28.4)	47.1	14.9	(0.1)	73.4	89.8	27.0	(10.2)			
Google	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	21.4	3.0	(16.0)			
Tecno Telecom	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	156.6	70.6			
Other	N.A.	(26.3)	(22.1)	4.6	(100.0)	N.A.	N.A.	N.A.	N.A.			
<b>Total</b>	<b>N.A.</b>	<b>1.3</b>	<b>65.7</b>	<b>(20.0)</b>	<b>7.9</b>	<b>9.2</b>	<b>63.2</b>	<b>(9.4)</b>	<b>(5.1)</b>			
	<b>Global market share (%)</b>											
Samsung	87.8	82.7	75.5	66.9	65.1	54.8	66.8	56.0	56.3	77.1	60.9	
Huawei	4.0	5.5	12.4	16.0	14.0	18.8	12.7	20.6	18.8	10.3	16.5	
OPPO	3.6	4.9	4.3	6.2	7.3	8.0	6.3	7.2	7.8	4.8	7.1	
Honor	2.8	5.1	3.5	4.7	5.7	7.3	5.7	6.5	6.2	4.0	6.2	
Vivo	0.0	0.7	2.2	3.0	3.7	5.3	3.7	4.0	5.1	1.7	4.1	
Xiaomi	0.8	0.5	1.8	2.5	3.5	3.5	2.6	2.9	3.1	1.5	3.0	
Lenovo	0.8	0.6	0.5	0.7	0.7	1.1	1.2	1.7	1.6	0.6	1.2	
Google	0.0	0.0	0.0	0.0	0.0	1.3	1.0	1.1	1.0	0.0	0.9	
Tecno Telecom	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	

Source: Gartner; KGI Research

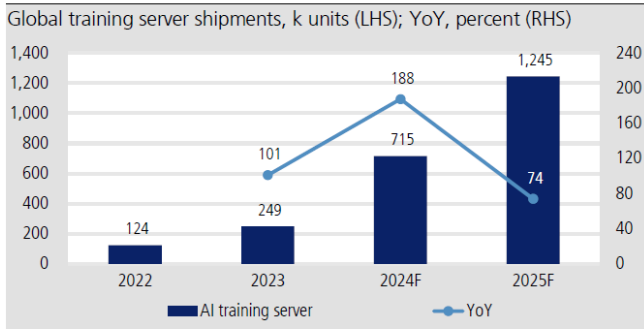
**Servers**
**Figure 20: AI GPU & AI server shipment forecasts in 2024-25F**

Nvidia's training GPU units (k units)	2024F	2025F
Total Nvidia GPU	4,005	4,760
H100/ A100 shipments	3,605	1,190
Blackwell shipments (B100/B200/GB200)	401	3,570
B100/B200	200	1,474
GB200	200	2,096
Training GPU weighting (%)	2024F	2025F
H100/ A100 shipments	90	25
Blackwell shipments (B100/B200/GB200)	10	75
B100/B200	50	41
GB200	50	59
Nvidia's AI training server shipments (k units)	2024F	2025F
H100 /A100 (8 GPU per server)	451	149
B100/B200 (8 GPU per server)	25	184
GB200 (4 GPU per server)	50	524
<b>Nvidia's total AI training server</b>	<b>526</b>	<b>857</b>
AI training GPU shipments (k units)	2024F	2025F
Nvidia (H/B-series)	4,005	4,760
AMD (MI300X/350)	420	768
Intel (Gaudi 2/3)	232	450
Subtotal	4,657	5,978
ASIC (Google TPU/AWS Trainium)	864	1,888
Total training GPU	5,521	7,866
AI training server shipments (k units)	2024F	2025F
Nvidia (H/B-series)	526	857
AMD (MI300X/350)	53	96
Intel (Gaudi 2/3)	29	56
Subtotal	607	1,009
ASIC (Google TPU/AWS Trainium)	108	236
<b>Total AI training server shipments</b>	<b>715</b>	<b>1,245</b>
Server shipments (k units)	2024F	2025F
AI training server	715	1,245
Others (General server + AI inferencing)	11,106	11,759
Total server	11,822	13,004
YoY (%)	2024F	2025F
AI training server	188	74
Others (General server + AI inferencing)	1	6
Total server	5	10
Weighting (%)	2024F	2025F
AI training server	6	10
Others (General server + AI inferencing)	94	90
Total server	100	100

*Source: KGI Research estimates*
**Figure 21: Global server shipments to grow 5% YoY in 2024F & 10% YoY in 2025F**

*Source: Gartner; KGI Research estimates*
**Figure 22: AI server sales will outgrow general server sales in 2023-25F**

*Source: Gartner; KGI Research estimates*

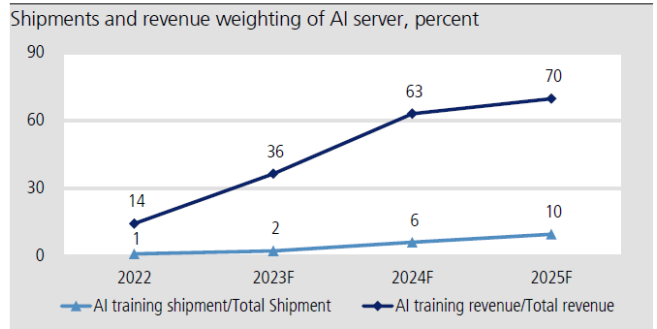


**Figure 23: Training server shipments to grow from 715k units in 2024F to 1245k in 2025F**



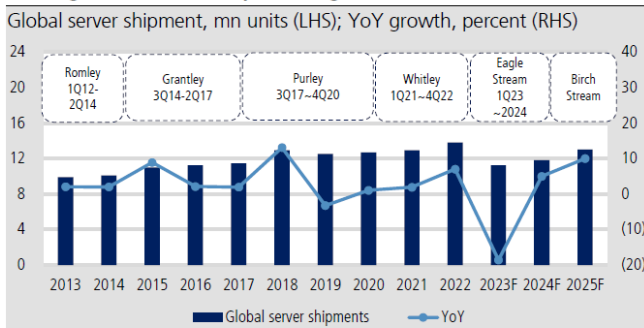
Source: Gartner, KGI Research estimates

**Figure 24: AI servers will account for 63% of the global server market value in 2024F, and 70% in 2025F**



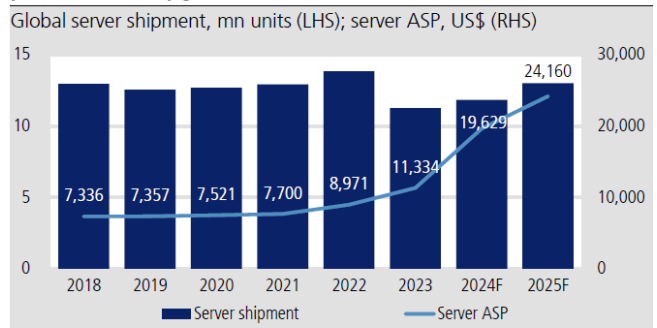
Source: Gartner, KGI Research estimates

**Figure 25: AI servers & new CPU platform launches will drive global server shipments growth in 2024-25F**



Source: Gartner, KGI Research estimates

**Figure 26: Server ASP trending up on computing performance upgrades & AI server demand**



Source: Gartner, KGI Research estimates

**Figure 27: Intel to see Eagle Stream market share increase in 1H24; new Birch Stream to launch in 2H24F**

Platform	Intel Whitley	Intel Eagle Stream	Intel Eagle Stream	Intel Birch Stream	Intel Birch Stream	Intel Birch Stream	Intel Oak Stream
Time of launch	2Q21	1Q23	4Q23	2H24F	2H24F	1H25F	2H25F
CPU	Ice Lake	Sapphire Rapids (Intel 7)	Emerald Rapids (Intel 7)	Sierra Forest (Intel 3, E-core)	Granite Rapids (Intel 3, P-core)	Cleanwater Forest (Intel TBA, E-core)	Diamond Rapids (Intel 20A, P-core)
Process	10nm	10nm	10nm++	3nm (equivalent to TSMC's 5nm node)	3nm (equivalent to TSMC's 5nm node)	1.8nm (equivalent to TSMC's 2nm node)	2nm (equivalent to TSMC's 3nm node)
CPU sockets	LGA 4189	LGA 4677	LGA 4677	LGA 7529	LGA 7529	LGA 7529	TBA
CPU cores	26	60	64	288	136	288	TBA
DRAM	8-channel DDR4	8-channel DDR5	DDR5	DDR5	DDR5	TBA	TBA
PCIe	PCIe 4.0	PCIe 5.0	PCIe 5.0	PCIe 5.0	PCIe 5.0	TBA	TBA
CPU TDP	up to 270W	up to 350W	350-400W	up to 500W	up to 500W	TBA	TBA

Source: Company data; KGI Research

**Figure 28: AMD to see Genoa & Bergamo CPU market share increase in 1H24; new Turin CPU to launch in 2H24F**

Platform	AMD Zen 3	AMD Zen 4	AMD Zen 4c	AMD Zen 4	AMD Zen 5	AMD Zen 6
Time of launch	1Q21	4Q22	1H23	3Q23	2H24F	2H25F
CPU	Milan	Genoa	Bergamo	Siena	Turin	Venice
Process	7nm+	5nm	5nm	5nm	3nm	3nm
CPU sockets	FC LGA 4094	FC LGA 6096	FC LGA 6096	FC LGA 4844	FC LGA 6096	TBA
CPU cores	64	96	128	64	256	TBA
DRAM	8-channel DDR4	12-channel DDR5	DDR5	DDR5	TBA	TBA
PCIe	PCIe 4.0	PCIe 5.0	PCIe 5.0	PCIe 5.0	TBA	TBA
CPU TDP	225-280W	320-400W	320-400W	70-225W	480-600W	TBA

Source: Company data; KGI Research

**Figure 29: Capex of top-four US CSPs fell 2% YoY in 2023, but will grow 38% YoY in 2024F**

Capex (US\$m)	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2019	2020	2021	2022	2023	2024F	2025F
Meta (Facebook)	5,441	7,572	9,375	9,043	6,842	6,216	6,543	7,665	6,400	15,102	15,115	18,567	31,431	27,266	37,444	41,481
Amazon	14,951	15,724	16,378	11,268	14,207	11,455	12,479	14,588	14,925	16,861	35,044	55,396	58,321	48,133	63,271	68,070
Microsoft	5,340	6,871	6,283	6,274	6,607	8,943	9,917	9,735	10,952	13,546	17,592	23,216	24,768	35,202	50,446	57,107
Google	9,786	6,828	7,276	7,595	6,289	6,888	8,055	11,019	12,012	23,548	22,281	24,640	31,485	32,251	46,817	48,241
<b>US hyperscale subtotal</b>	<b>35,518</b>	<b>36,995</b>	<b>39,312</b>	<b>34,180</b>	<b>33,945</b>	<b>33,502</b>	<b>36,994</b>	<b>43,007</b>	<b>44,289</b>	<b>69,057</b>	<b>90,032</b>	<b>121,819</b>	<b>146,005</b>	<b>142,852</b>	<b>197,978</b>	<b>214,899</b>
YoY (%)	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2019	2020	2021	2022	2023	2024F	2025F
Meta (Facebook)	27.4	64.2	117.4	68.4	25.7	(17.9)	(30.2)	(15.2)	(6.5)	8.0	0.1	22.8	69.3	(13.3)	37.3	10.8
Amazon	23.7	10.1	4.0	(40.5)	(5.0)	(27.1)	(23.8)	29.5	5.1	25.6	107.8	58.1	5.3	(17.5)	31.5	7.6
Microsoft	4.9	6.5	8.1	7.0	23.7	30.2	57.8	55.2	65.8	(4.8)	29.9	32.0	6.7	42.1	43.3	13.2
Google	64.7	24.2	6.7	19.0	(35.7)	0.9	10.7	45.1	91.0	(6.3)	(5.4)	10.6	27.8	2.4	45.2	3.0
<b>US Hyperscale subtotal</b>	<b>29.7</b>	<b>19.9</b>	<b>20.3</b>	<b>(6.5)</b>	<b>(4.4)</b>	<b>(9.4)</b>	<b>(5.9)</b>	<b>25.8</b>	<b>30.5</b>	<b>3.4</b>	<b>30.4</b>	<b>35.3</b>	<b>19.9</b>	<b>(2.2)</b>	<b>38.6</b>	<b>8.5</b>
QoQ (%)	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2019	2020	2021	2022	2023	2024F	2025F
Meta (Facebook)	1.3	39.2	23.8	(3.5)	(24.3)	(9.1)	5.3	17.1	(16.5)							
Amazon	(21.0)	5.2	4.2	(31.2)	26.1	(19.4)	8.9	16.9	2.3							
Microsoft	(9.0)	28.7	(8.6)	(0.1)	5.3	35.4	10.9	(1.8)	12.5							
Google	53.3	(30.2)	6.6	4.4	(17.2)	9.5	16.9	36.8	9.0							
<b>US Hyperscale subtotal</b>	<b>(2.8)</b>	<b>4.2</b>	<b>6.3</b>	<b>(13.1)</b>	<b>(0.7)</b>	<b>(1.3)</b>	<b>10.4</b>	<b>16.3</b>	<b>3.0</b>							

Source: Company data; Bloomberg; KGI Research

**Figure 30: Consensus expects CSP capex to grow by over 30% YoY in 2024F**

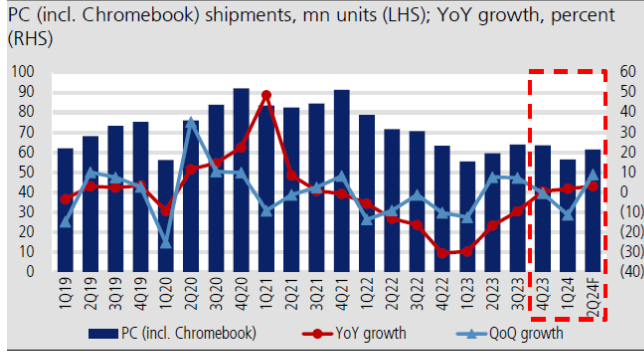
Capex, US\$m	2019	2020	2021	2022	2023	2024F	2025F
Meta	15,102	15,115	18,567	31,431	27,266	37,444	41,481
Amazon	16,861	35,044	55,396	58,321	48,133	63,271	68,070
Microsoft	13,546	17,592	23,216	24,768	35,202	50,446	57,107
Google	23,548	22,281	24,640	31,485	32,251	46,817	48,241
Baidu	931	738	1,689	1,586	1,580	1,783	1,806
Alibaba	6,517	6,379	8,311	5,014	4,084	5,130	5,794
Tencent	3,927	5,719	4,808	4,611	3,017	6,474	6,591
<b>Hyperscale subtotal</b>	<b>80,432</b>	<b>102,867</b>	<b>136,627</b>	<b>157,216</b>	<b>151,533</b>	<b>211,366</b>	<b>229,090</b>
Apple	9,247	8,702	10,388	11,692	9,564	10,712	11,736
IBM	2,286	2,618	2,062	1,346	1,245	1,717	1,817
Oracle	1,591	1,833	3,118	6,678	6,935	10,870	13,792
Paypal	704	866	908	706	759	799	947
eBay	508	463	444	420	456	500	504
Salesforce	643	710	717	798	813	739	821
Netflix	253	498	525	408	349	426	462
Uber	588	616	298	252	238	291	325
<b>Enterprise subtotal</b>	<b>15,820</b>	<b>16,306</b>	<b>18,460</b>	<b>22,300</b>	<b>20,359</b>	<b>26,054</b>	<b>30,404</b>
<b>Total</b>	<b>96,793</b>	<b>119,173</b>	<b>155,086</b>	<b>179,516</b>	<b>171,892</b>	<b>237,420</b>	<b>259,494</b>
YoY growth, percent	2019	2020	2021	2022	2023	2024F	2025F
Meta	8.5	0.1	22.8	69.3	(13.3)	37.3	10.8
Amazon	25.6	107.8	58.1	5.3	(17.5)	31.5	7.6
Microsoft	6.0	29.9	32.0	6.7	42.1	43.3	13.2
Google	(6.3)	(5.4)	10.6	27.8	2.4	45.2	3.0
Baidu	(29.9)	(20.7)	129.1	(6.1)	(0.4)	12.8	1.3
Alibaba	(11.9)	(2.1)	30.3	(39.7)	(18.5)	25.6	12.9
Tencent	17.0	45.6	(15.9)	(4.1)	(34.6)	114.6	1.8
<b>Hyperscale subtotal</b>	<b>4.0</b>	<b>27.9</b>	<b>32.8</b>	<b>15.1</b>	<b>(3.6)</b>	<b>39.5</b>	<b>8.4</b>
Apple	(26.7)	(5.9)	19.4	12.6	(18.2)	12.0	9.6
IBM	(32.7)	14.5	(21.2)	(34.7)	(7.5)	37.9	5.9
Oracle	8.4	15.2	70.1	114.2	3.8	56.7	26.9
Paypal	(14.5)	23.0	4.8	(22.2)	7.6	5.3	18.4
eBay	(22.0)	(8.9)	(4.1)	(5.3)	8.5	9.7	0.8
Salesforce	8.1	10.4	1.0	11.3	1.8	(9.0)	11.1
Netflix	45.5	96.8	5.4	(22.3)	(14.5)	22.3	8.5
Uber	5.4	4.8	(51.6)	(15.4)	(5.6)	22.1	11.7
<b>Enterprise subtotal</b>	<b>(22.0)</b>	<b>3.1</b>	<b>13.2</b>	<b>20.8</b>	<b>(8.7)</b>	<b>28.0</b>	<b>16.7</b>
<b>Total</b>	<b>(1.3)</b>	<b>23.1</b>	<b>30.1</b>	<b>15.8</b>	<b>(4.2)</b>	<b>38.1</b>	<b>9.3</b>

Source: Company data; Bloomberg; KGI Research



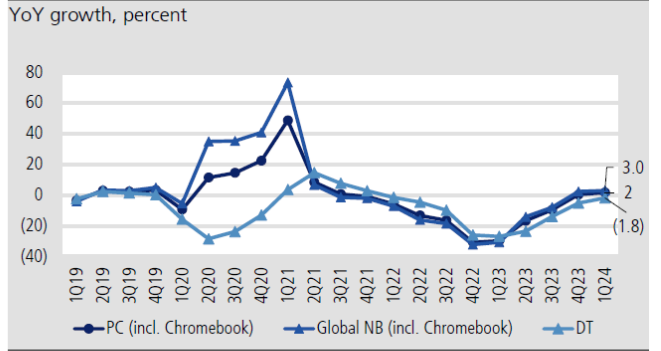
PC

**Figure 32: Global PC (incl. Chromebook) shipments fell by 11% QoQ, but grew 2% YoY in 1Q24, and 3% YoY in 2Q24**



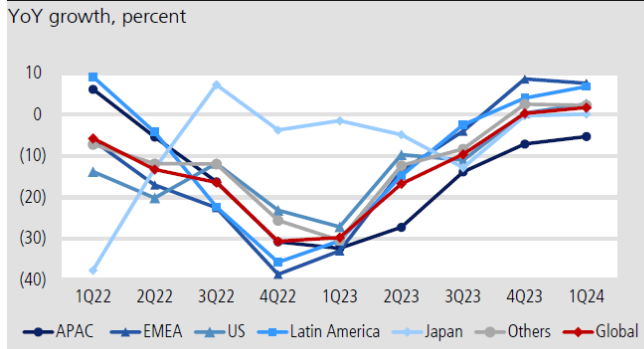
Source: Gartner, IDC, KGI Research

**Figure 33: 1Q24 global NB shipments rose 3% YoY; global DT shipments dropped by 2% YoY**



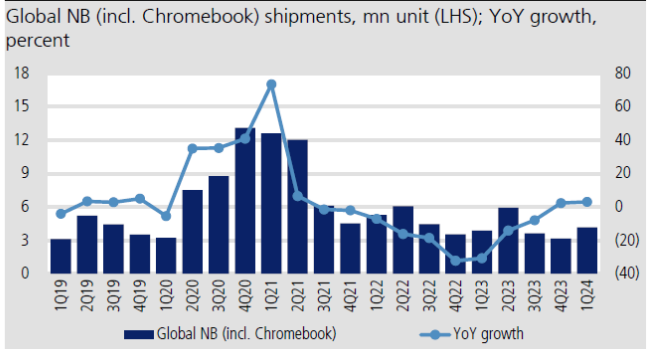
Source: Gartner, KGI Research

**Figure 34: Most regions' NB demand recovered YoY in 1Q24, except APAC**



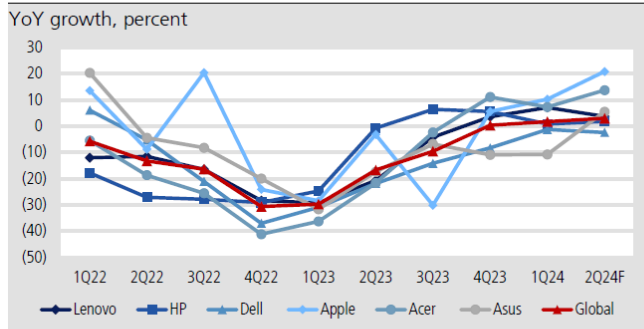
Source: Gartner, KGI Research

**Figure 35: Global quarterly NB (incl. Chromebook) shipments have grown YoY since 4Q23**



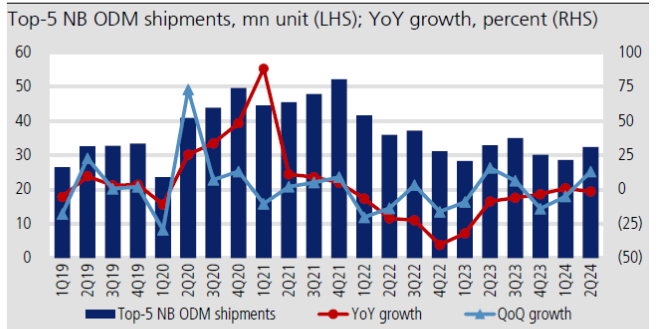
Source: Gartner, KGI Research

**Figure 36: Apple & Acer's PC shipments outgrew peers in 1H24**



Source: Gartner, IDC, KGI Research

**Figure 37: Taiwan's Top-5 NB ODM shipments fell 1% QoQ but rose 13% YoY in 2Q24**

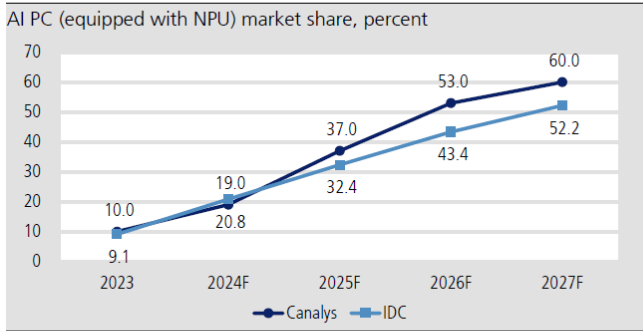


Source: Company data, KGI Research

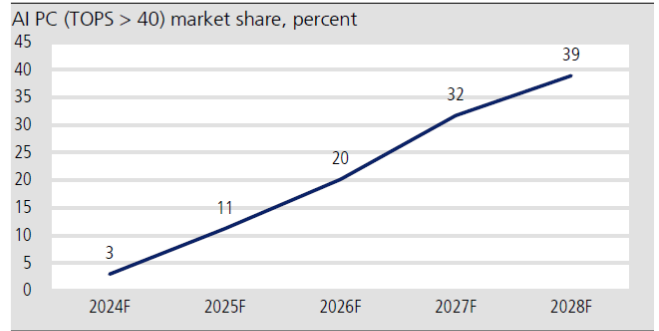
**Figure 38: AI PCs to be aggressively marketed by CPU & NPU giants**

Platform	Intel Meteor Lake	Intel Lunar Lake	Intel Arrow Lake	Intel Panther Lake	AMD 7040 Phoenix	AMD 8040 Hawk Point	AMD AI300 Strix Point	AMD 9000 Strix Halo	Qualcomm Snapdragon X Elite
Microarchitecture	Redwood cove	Lion cove	Lion cove	Cougar cove	Zen 4	Zen 4	Zen 5	Zen5	Oryon
Launch Date	4Q23	2H24F	2H24F	2025F	2Q23	1Q24	2H24F	2025F	2Q24
Process	Intel 4	Intel 18A	Intel 20A	Intel 18A	TSMC N4	TSMC N4	TSMC N4	TSMC N4	TSMC N4
AI architecture	Movidius VPU	TBD	TBD	TBD	Ryzen AI	Ryzen AI	Ryzen AI	Ryzen AI	Hexagon
TOPS	34 TOPS	120 TOPS	TBD	TBD	33 TOPS	39 TOPS	TBD	>70 TOPS	45 TOPS
NPU	11 TOPS	48 TOPS	50 TOPS	120 TOPS	10 TOPS	16 TOPS	50 TOPS	50-60 TOPS	45 TOPS
CPU	5 TOPS	5 TOPS							
GPU	18 TOPS	67 TOPS							

Source: Company data, KGI Research

**Figure 39: Canals & IDC forecasts AI PC (equipped with NPU) market share of over 50% by 2027F**


Source: Canals; IDC; KGI Research

**Figure 40: AI PC (TOPS > 40) market share to reach double digits in 2025F**


Source: IDC; Bloomberg; KGI Research

**Figure 41: Intel & AMD desktop CPU roadmap**

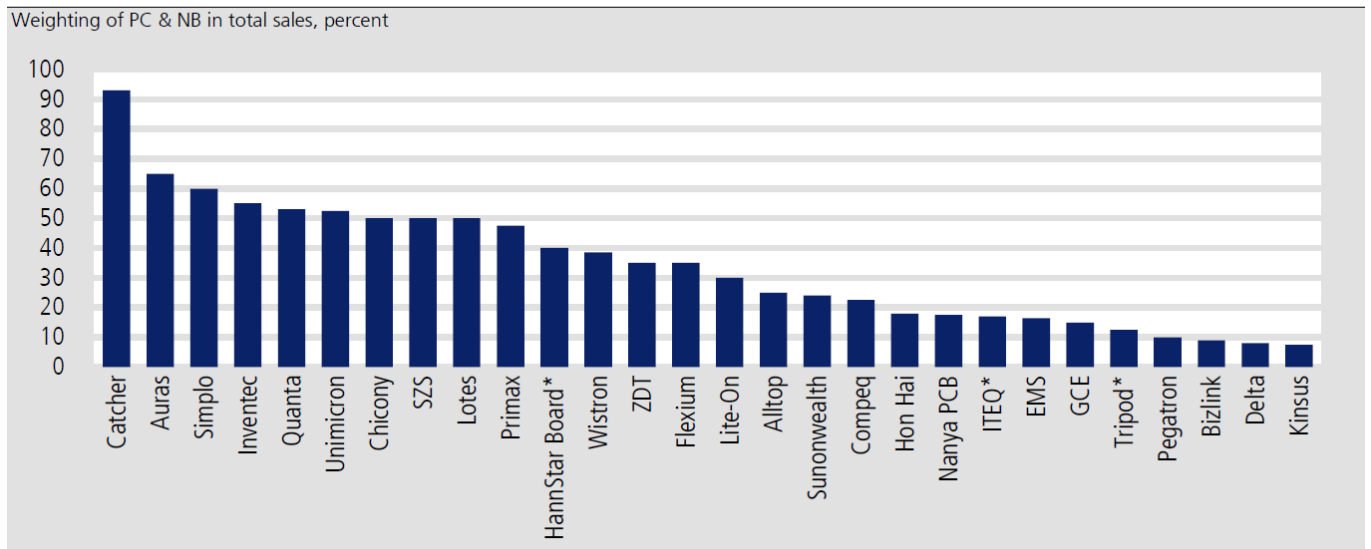
	Intel					AMD			
	Raptor Lake	Raptor Lake refresh	Meteor Lake	Arrow Lake	Panther Lake	Ryzen 4000 (Renoir)	Ryzen 5000 (Vermeer)	Ryzen 7000 (Raphael)	Ryzen 9000 (Granite Ridge)
Time for launch	4Q22	3Q23	4Q24F	2024F	2025F	1Q20	4Q20	3Q22	2Q24
Process (node)	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	TSMC N7	TSMC N7+	TSMC N5	TSMC N3
Microarchitecture (P-Core)	Raptor Cove	Raptor Cove	Redwood Cove	Lion Cove	Cougar Cove	Zen 2	Zen 3	Zen 4	Zen 5
CPU sockets (desktop)	LGA 1700	LGA 1700	LGA 1851	LGA 1851	LGA 1851	AM4 (LGA 1331)	AM4 (LGA 1331)	AM5 (LGA 1718)	AM5 (LGA 1718)
DRAM	DDR4 / DDR5	DDR4 / DDR5	DDR5 LPDDR5X	DDR5	DDR5	DDR4	DDR4	DDR5	DDR5
PCIe	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 4	Gen 3	Gen 5	Gen 5

Source: Company data; KGI Research

**Figure 42: Intel & AMD NB CPU roadmaps**

	Intel						AMD				
	Alder Lake	Raptor Lake	Meteor Lake	Arrow Lake	Lunar Lake	Panther Lake	Ryzen 6000 (Rembrandt)	Ryzen 7000 (Phoenix)	Ryzen 8040 (Hawk Point)	Ryzen AI300 (Strix Point)	Ryzen 9000 (Strix Halo)
Time for launch	1H22	1H23	4Q23	2024F	2H24F	2025F	1Q22	1Q23	4Q23	3Q24F	2025F
Process (node)	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	Intel 18A	TSMC N6	TSMC N4	TSMC N4	TSMC N4	TSMC N4
Microarchitecture (P-Core)	Golden Cove	Raptor Cove	Redwood Cove	Lion Cove	Lion Cove	Cougar Cove	Zen 3+	Zen 4	Zen 5	Zen 5	Zen 5
DRAM	DDR4 / DDR5	DDR4 / DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5
PCIe	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 4	Gen 5	Gen 5	Gen 5	Gen 5

Source: Company data; KGI Research

**Figure 43: Keyboard, hinge, power adapter, & PCB plays will benefit from a PC demand recovery in 2024F**


Source: TEJ; Bloomberg; KGI Research

**Figure 44: Global PC shipments by brand**

Vendor	PC (incl. Chromebook) shipments (mn units)																		
	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2018	2019	2020	2021	2022	2023
Lenovo	20.9	20.4	20.2	21.9	18.4	18.1	16.9	15.7	13.0	14.3	16.2	16.3	13.9	59.9	65.6	75.1	83.4	69.0	59.8
HP Inc.	19.3	18.6	17.6	18.6	15.9	13.6	12.7	13.2	11.9	13.5	13.5	14.0	12.1	60.7	62.8	68.2	74.2	55.4	52.9
Dell	13.0	14.0	15.2	17.3	13.8	13.3	12.0	10.9	9.5	10.4	10.3	10.0	9.4	44.3	46.7	50.7	59.6	50.0	40.2
Apple	6.4	5.8	6.9	7.8	7.3	5.3	8.3	5.9	5.2	5.1	5.8	6.3	5.8	18.5	18.3	22.0	26.9	26.8	22.4
Acer Group	5.9	6.3	6.0	6.1	5.5	5.1	4.5	3.6	3.5	4.0	4.4	4.0	3.8	19.8	18.4	22.5	24.3	18.7	15.9
Asus	4.6	4.9	6.0	6.1	5.6	4.7	5.5	4.9	3.8	3.9	5.1	4.3	3.4	15.9	15.2	17.9	21.6	20.7	17.2
Microsoft	1.4	1.3	1.2	2.0	1.4	1.4	1.3	1.3	1.1	1.2	1.0	1.1	0.9	5.1	5.5	6.4	5.9	5.4	4.4
Sharp	0.5	0.5	0.5	0.5	0.5	0.3	0.4	0.3	0.4	0.3	0.3	0.4	0.4	0.3	1.7	1.9	2.0	1.7	1.4
MSI	0.6	0.6	0.8	0.9	0.9	0.6	0.7	0.6	0.6	0.7	0.7	0.7	0.6	1.4	1.4	2.2	3.0	2.8	2.7
Samsung	1.2	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.7	0.6	0.7	0.7	2.2	3.8	4.0	4.2	3.9	2.9
Others	9.7	8.9	9.0	9.0	8.4	8.0	7.4	6.0	5.5	5.5	5.8	5.8	5.3	46.6	38.9	37.2	36.7	29.7	22.6
Top-10	73.8	73.5	75.4	82.2	70.4	63.5	63.2	57.4	49.9	54.1	58.0	57.7	51.0	228.1	239.6	271.0	305.1	254.4	219.7
Total	83.5	82.4	84.4	91.3	78.8	71.5	70.6	63.3	55.3	59.6	63.8	63.5	56.3	274.7	278.5	308.2	341.7	284.2	242.3
	<b>YoY (%)</b>																		
Lenovo	59.4	12.0	0.3	(7.2)	(12.0)	(11.5)	(16.5)	(28.4)	(29.2)	(20.7)	(4.2)	3.6	7.1	7.4	9.5	14.5	11.1	(17.3)	(13.4)
HP Inc.	63.6	2.2	(5.9)	(4.2)	(17.8)	(27.1)	(27.9)	(29.1)	(24.7)	(0.8)	6.4	5.6	0.9	2.4	3.5	8.5	8.8	(25.4)	(4.4)
Dell	23.0	15.3	26.4	8.4	6.1	(5.2)	(21.1)	(37.0)	(30.9)	(21.8)	(14.2)	(8.3)	(1.3)	5.6	5.4	8.6	17.4	(16.0)	(19.5)
Apple	71.9	14.5	2.1	21.1	13.6	(8.8)	20.4	(24.1)	(28.4)	(3.2)	(30.2)	5.6	10.2	(2.3)	(1.0)	20.0	22.4	(0.4)	(16.5)
Acer Group	56.2	12.0	(4.6)	(10.2)	(5.5)	(18.7)	(25.6)	(41.2)	(36.3)	(21.7)	(2.4)	11.1	7.3	(3.6)	(7.0)	22.1	8.0	(22.9)	(15.1)
Asus	62.2	25.2	5.0	13.4	20.3	(4.4)	(8.2)	(20.0)	(31.7)	(17.4)	(6.8)	(10.9)	(10.8)	(13.0)	(4.5)	17.3	21.1	(4.5)	(16.9)
Microsoft	14.7	(24.5)	(26.6)	6.5	2.2	10.5	5.9	(35.6)	(24.2)	(17.8)	(21.4)	(10.6)	(14.7)	21.2	8.3	16.6	(8.8)	(7.9)	(18.6)
Sharp	53.6	5.7	8.9	(28.5)	4.1	(26.6)	(6.2)	(33.5)	(33.1)	(9.4)	(24.7)	2.6	17.5	N.M.	527.5	10.5	2.0	(15.5)	(18.6)
MSI	88.5	24.5	14.4	36.8	53.7	(0.9)	(16.8)	(33.0)	(38.9)	14.8	4.2	12.4	9.5	(4.5)	0.9	57.5	34.6	(4.2)	(5.7)
Samsung	25.3	0.2	4.3	(8.2)	(17.0)	(3.1)	(2.5)	(4.2)	(23.2)	(33.8)	(32.2)	(19.6)	(15.2)	(11.6)	73.9	5.5	5.0	(7.2)	(27.3)
Others	28.5	(1.8)	(13.8)	(10.9)	(13.4)	(9.9)	(18.3)	(34.2)	(34.4)	(31.8)	(20.6)	(2.7)	(3.0)	(11.3)	(16.5)	(4.3)	(1.5)	(18.9)	(23.9)
Top-10	51.8	9.8	2.7	0.4	(4.7)	(13.7)	(16.2)	(30.2)	(29.2)	(14.8)	(8.3)	0.7	2.3	2.3	5.0	13.1	12.6	(16.6)	(13.7)
Total	48.7	8.5	0.7	(0.9)	(5.7)	(13.3)	(16.4)	(30.6)	(29.7)	(16.7)	(9.6)	0.3	1.7	(0.3)	1.4	10.7	10.9	(16.8)	(14.7)
	<b>QoQ (%)</b>																		
Lenovo	(11.6)	(2.2)	(1.0)	8.5	(16.2)	(1.6)	(6.6)	(6.9)	(17.2)	10.2	12.9	0.6	(14.4)						
HP Inc.	(0.8)	(3.5)	(5.3)	5.8	(14.9)	(14.5)	(6.3)	4.0	(9.6)	12.7	0.5	3.2	(13.7)						
Dell	(18.4)	7.9	8.5	13.4	(20.1)	(3.7)	(9.6)	(9.5)	(12.3)	8.9	(0.7)	(3.3)	(5.6)						
Apple	0.0	(9.7)	17.9	13.7	(6.2)	(27.5)	55.7	(28.3)	(11.5)	(2.0)	12.3	8.3	(7.6)						
Acer Group	(14.0)	7.1	(3.6)	1.1	(9.4)	(7.9)	(11.8)	(20.1)	(1.8)	13.2	10.0	(9.1)	(5.2)						
Asus	(13.4)	5.8	22.4	1.2	(8.1)	(16.0)	17.5	(11.7)	(21.5)	1.5	32.6	(15.6)	(21.4)						
Microsoft	(25.7)	(6.3)	(4.9)	60.9	(28.7)	1.4	(8.9)	(2.1)	(16.1)	9.9	(12.9)	11.2	(20.0)						
Sharp	(28.1)	(10.5)	(0.3)	11.5	4.7	(36.9)	27.4	(21.0)	5.2	(14.5)	5.9	7.7	20.5						
MSI	(12.1)	4.2	24.6	19.9	(1.3)	(32.8)	4.6	(3.5)	(9.9)	26.3	(5.1)	4.1	(12.3)						
Samsung	15.5	(12.0)	(8.8)	(0.9)	4.5	2.6	(8.3)	(2.6)	(16.3)	(11.5)	(6.1)	15.5	(11.7)						
Others	(4.7)	(7.8)	1.1	0.4	(7.4)	(4.0)	(8.4)	(19.1)	(7.7)	(0.2)	6.5	(0.9)	(8.0)						
Top-10	(9.9)	(0.4)	2.6	9.0	(14.4)	(9.8)	(0.4)	(9.3)	(13.1)	8.5	7.3	(0.4)	(11.7)						
Total	(9.3)	(1.3)	2.4	8.1	(13.7)	(9.2)	(1.3)	(10.3)	(12.6)	7.6	7.2	(0.5)	(11.4)						
	<b>Global market share (%)</b>																		
Lenovo	25.0	24.8	23.9	24.0	23.3	25.3	23.9	24.8	23.5	24.1	25.3	25.6	24.7	21.8	23.6	24.4	24.4	24.3	24.7
HP Inc.	23.1	22.6	20.9	20.4	20.1	19.0	18.0	20.9	21.6	22.6	21.2	22.0	21.4	22.1	22.6	22.1	21.7	19.5	21.8
Dell	15.6	17.0	18.0	18.9	17.5	18.6	17.0	17.2	17.2	17.5	16.2	15.7	16.7	16.1	16.8	16.5	17.4	17.6	16.6
Apple	7.7	7.1	8.1	8.6	9.3	7.4	11.7	9.4	9.5	8.6	9.0	9.8	10.3	6.7	6.6	7.1	7.9	9.4	9.2
Acer Group	7.0	7.6	7.1	6.7	7.0	7.1	6.4	5.7	6.4	6.7	6.9	6.3	6.7	7.2	6.6	7.3	7.1	6.6	6.6
Asus	5.6	6.0	7.1	6.7	7.1	6.6	7.8	7.7	6.9	6.5	8.0	6.8	6.0	5.8	5.5	5.8	6.3	7.3	7.1
Microsoft	1.6	1.6	1.4	2.2	1.8	2.0	1.8	2.0	1.9	2.0	1.6	1.8	1.6	1.9	2.0	2.1	1.7	1.9	1.8
Sharp	0.6	0.6	0.5	0.6	0.7	0.5	0.6	0.5	0.7	0.5	0.5	0.6	0.8	0.1	0.6	0.6	0.6	0.6	0.6
MSI	0.7	0.8	0.9	1.0	1.2	0.9	0.9	1.0	1.0	1.2	1.1	1.1	1.1	0.5	0.5	0.7	0.9	1.0	1.1
Samsung	1.5	1.3	1.2	1.1	1.3	1.5	1.4	1.5	1.4	1.2	1.0	1.2	1.2	0.8	1.4	1.3	1.2	1.4	1.2
Others	11.6	10.8	10.7	9.9	10.6	11.2	10.4	9.4	9.9	9.2	9.2	9.1	9.5	17.0	14.0	12.1	10.7	10.5	9.3
Top-10	88.4	89.2	89.3	90.1	89.4	88.8	89.6	90.6	90.1	90.8	90.8	90.9	90.5	83.0	86.0	87.9	89.3	89.5	90.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Gartner, KGI Research

