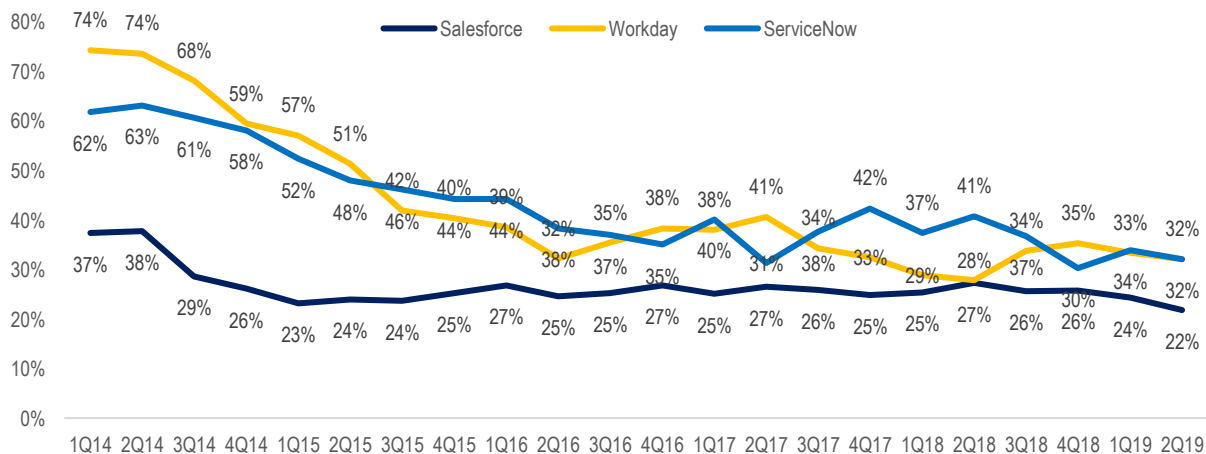




The main characteristics of cloud native SaaS companies – RPO, margins, and FCF

Figure 1: Major cloud native SaaS companies' quarterly revenue growth, YoY



Source: Company data, AMTD Research

*Note: 1) Salesforce and Workday's fiscal Q1, Q2, Q3, and Q4 end at Apr, Jul, Oct, and Jan next year, respectively; 2) ServiceNow's fiscal Q1, Q2, Q3, and Q4 end at Mar, Jun, Sept, and Dec

In this issue, we will discuss the main characteristics of cloud native SaaS companies. AMTD views: it is no surprise that along with expanding business scale, the revenue growth of major cloud native SaaS companies, Salesforce, Workday, and ServiceNow, is all slowing down; however, in terms of these characteristics, they are in different business cycle stages today. Salesforce has entered matured stage with expanding margins, growing unit economics, and is seeking growth through M&A; Workday is still in high growth stage with revenue growth above 30%, improving margins and realizing unit economics in S&M; ServiceNow is in high growth stage as well, realizing unit economics in cost of sales, but still relies heavily on S&M for expanding. In addition, given the nature of inherent annuity streams, we think FCF is a better way to value SaaS business.

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The main characteristics of SaaS companies

Remaining Performance Obligation (RPO) is the leading indicator

A new accounting standard under GAAP – ASC 606 revenue recognition went into effect in 2018 for public entities. And now most of SaaS companies have been disclosing Remaining Performance Obligation (RPO). For succinct definition, RPO equals backlog plus Deferred Revenue. Deferred Revenue exists as a liability on the balance sheet, representing money collected or at least invoiced. Backlog, an off-balance sheet item, is the future performance obligations, which haven't been invoiced, and represents the commitment of a customer with the company and will be translated into revenue in the coming quarters. Thus, RPO is good leading indicator of the company's future topline performance.

- For Salesforce, its RPO growth was 20.5% YoY vs revenue growth of 21.8% YoY in 2QFY20, and it was sitting on a RPO of US\$25.3bn, 6.3x of this quarter revenue
- For Workday, its RPO growth was 26.8% YoY vs revenue growth of 32.2% YoY in 2QFY20, and it was sitting on a RPO of US\$7.0bn, 7.9x of this quarter revenue
- For ServiceNow, its RPO growth was 35.0% YoY vs revenue growth of 32.1% YoY in 2Q19, and it was sitting on a RPO of US\$5.4bn, 6.5x of this quarter revenue

When revenue growth is slowing down, margins could be improved

The reason why SaaS companies are very attractive to investors is the nature of their inherent annuity streams. Given that contracts are normally annual or multi-year subscriptions, because sometimes the customers are facing increasing opportunity costs of switching vendors, SaaS companies often manage to farm the customers over the long run. In general, there's a trade-off between growth rate and margins because a recurring revenue company loses money on all new business due to the upfront costs. When business becomes matured and revenue growth slows down, operating leverage is realized and the company can improve the margin over the long run.

- For Salesforce, its revenue growth stayed around 25% over the past few years, and its gross margin was relatively stable around 76% over the past few years, while operating margin was climbing slowly to over 20% in 2QFY20 (excl. one-time expenses)
- For Workday, its revenue growth decelerated from high growth of 74% in 1QFY15 to 32% in 2QFY20, while over the same period, its gross margin was lifted nearly by 9ppts to 75.0%, and its operating margin rose substantially by 27.3ppts to 13.2%
- For ServiceNow, its revenue growth decelerated from high growth of 62% in 1Q14 to 32% in 2Q19, while over the same period, its gross margin was up nearly by 15ppts to 80.5%, and its operating margin rose to 18.3%

High renewal rate amplifies the leverage and saves S&M expenses

In addition, a high renewal rate can amplify the leverage. Thus, a successful SaaS company with high customer retention rate and high subscription renewal rate will improve the margin steadily over the long run. Sales & marketing function is often the most important department for software company, as it helps development team to understand customers and to ensure delivery of high-quality products and services. For SaaS companies, the sales & marketing expenses (S&M) become more exaggerated because costs are recognized up front while revenue is deferred over multiple periods. Therefore, the operating leverage of SaaS company comes primarily from sales & marketing.

- For Salesforce, the attrition rate was less than 10% as end of 2QFY20, and the ratio of S&M to revenue declined significantly over the past five years
- For Workday, its net retention was once again over 100% in 2QFY20, and the ratio of S&M to revenue declined significantly over the past five years

- For ServiceNow, its renewal rate was strong at 98% in 2Q19, however, the ratio of S&M to revenue stayed stable over the past five years; we believe the company invested heavily in S&M to drive the growth

Non-cash SBC smooths non-GAAP operating income and boosts cash flow

Stock based compensation (SBC) is a common practice for many tech companies. It can create an incentive for employees to stay at the company for longer and align the interests of employees and shareholders. Obviously, SBC is very meaningful for those companies that are young and in a very early stage of its business, because SBC is a non-cash cost and expense and can alleviate the pressure of operating cash flow. In addition, for non-GAAP, companies can also strategically grant SBC to deal with operating income fluctuations. However, SBC represents a cost to existing equity owners.

- For Salesforce, the proportion of SBC as % of total revenue was trending down as GAAP operating income improved
- For Workday, the proportion of SBC as % of total revenue was rising as GAAP operating income has yet break even
- For ServiceNow, the proportion of SBC as % of total revenue was trending down as GAAP operating income loss was narrowing

Capex supports future organic growth

For SaaS companies, capital expenditure (Capex) includes spend for fixed assets, such as office space, computer equipment, telecommunications equipment, etc. and capitalized software development costs. Capex provides a view into where a company may be in its growth lifecycle.

- For Salesforce, which was in a matured stage, its Capex approximately equaled depreciation and was seeking growth through M&A
- For Workday, which was in a high growth stage, its Capex was almost twice of depreciation, indicating an active business expanding
- For ServiceNow, which was in a high growth stage, its Capex was about 1.7x of depreciation, indicating an active business expanding as well

Free Cash Flow (FCF) is a better way to value SaaS business

As mentioned above, SaaS business is very attractive because of the nature of their inherent annuity streams. From the cash flow point of view, Free Cash Flow (FCF) is important to the financial performance of the company, as it captures every aspect of the company operation, including renewal rate, contracts length, and cash collection policy. In addition, by deducting Capex from operating cash flow, it does measures a company's ability to create sustainable value for its shareholders.

- For Salesforce, the TTM FCF growth was 26.4% YoY in 2QFY20, and was expected to grow by 20.5% in full year of FY20 by consensus; its stock was trading around 39.8x FY20E FCF, implying 1.9x EV/FCF/FY20 YoY growth
- For Workday, the TTM FCF growth was 47.8% YoY in 2QFY20, and was expected to grow by 101.5% in full year of FY20 by consensus; its stock was trading around 88.2x FY20E FCF, implying 0.87x EV/FCF/FY20 YoY growth
- For ServiceNow, the TTM FCF growth was 51.5% YoY in 2Q19, and was expected to grow by 67.0% in full year of FY19 by consensus; its stock was trading around 50.3x FY19E FCF, implying 0.75x EV/FCF/FY19 YoY growth

Cloud/SaaS

Salesforce

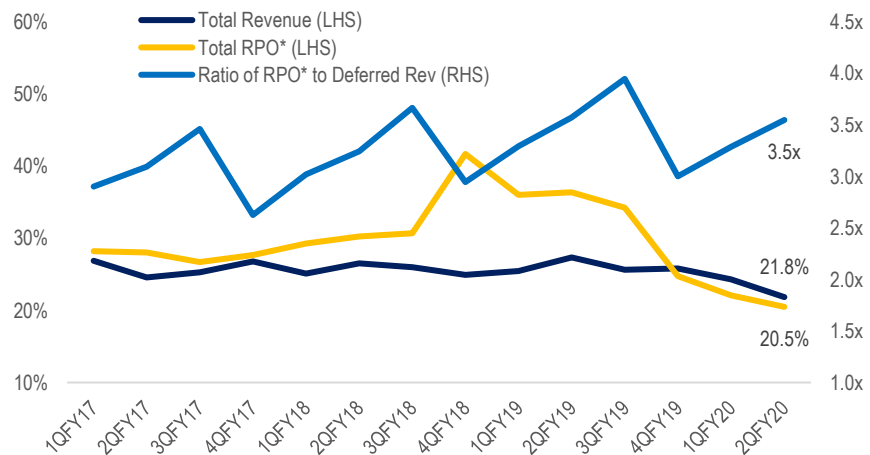
Salesforce – has entered matured stage with stable growth, expanding margin and growing unit economics

Salesforce (CRM) is a leading enterprise cloud computing solution company with a strong focus on customer relationship management. Founded in 1999, Salesforce introduced first CRM solution via internet in Feb 2000. And in 2018, it led global CRM market with 16.8% share, named #1 CRM provider for sixth consecutive year, according to IDC. Salesforce now has four cloud platforms, namely Sales Cloud, Service Cloud, Salesforce Platform & Other, and Marketing Cloud & Commerce Cloud, providing over 40 different SaaS products.

LT growth still looks healthy despite RPO growth deceleration

After several years of high growth, Salesforce's RPO growth decelerated to 20.5% YoY and its current RPO reported 25% YoY on a constant currency (cc) basis in 2QFY20. We expect the RPO growth can still sustain Salesforce's revenue growth above 20% in the near term. By deducting cyclical effects, the ratio of RPO to deferred revenue was expanding, so its long-term growth looked still healthy.

Figure 2: Growth (YoY) trends of Total Revenue and Total RPO, and Ratio of RPO to Deferred Revenue by quarter



Source: Company data, AMTD Research

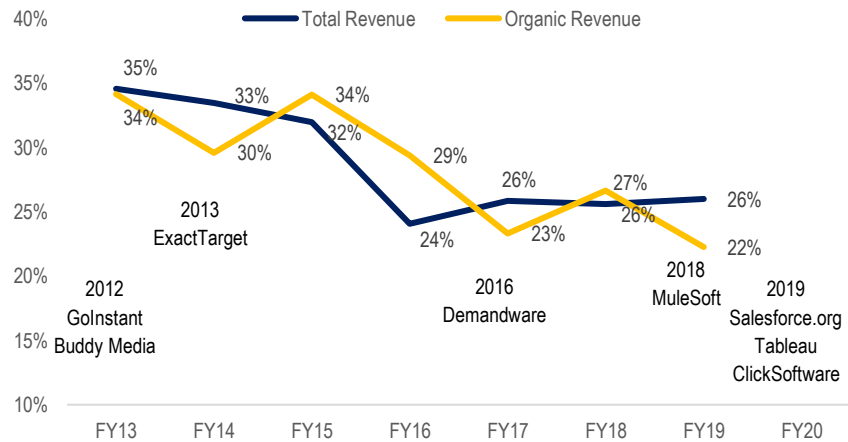
*Note: Remaining Performance Obligation (RPO) is a new disclosure effective Q1 FY19

Salesforce is seeking growth through acquisitions

Salesforce organic revenue growth has been slowing down from over 30% YoY in FY13 to 22% YoY in FY19. We think that the deceleration is largely because Salesforce is competing in a more matured CRM segment, and facing intensified competitions from the big giants, such as Microsoft and SAP. It is no surprise that M&A is a better choice to expand revenue and asset quickly against increased competition and it can also realize cost synergies to boost margin and acquire new technology for entering new market.

Over the past few years, Salesforce has made a few of appropriate M&A when organic growth decreased. In particular, in 2019, Salesforce acquired Tableau to add data analytics and visualization capabilities; bought ClickSoftware to expand its reach in the fast-growing field service management (FSM); and merged with Salesforce.org to scale its philanthropic arm. With the strong M&A pipelines, management raised the FY20 revenue growth guidance to 26%-27% in 2QFY20 from 21%-22% in 1QFY20.

Figure 3: Growth (YoY) trends of Total Revenue and Organic Revenue, and Acquisition events

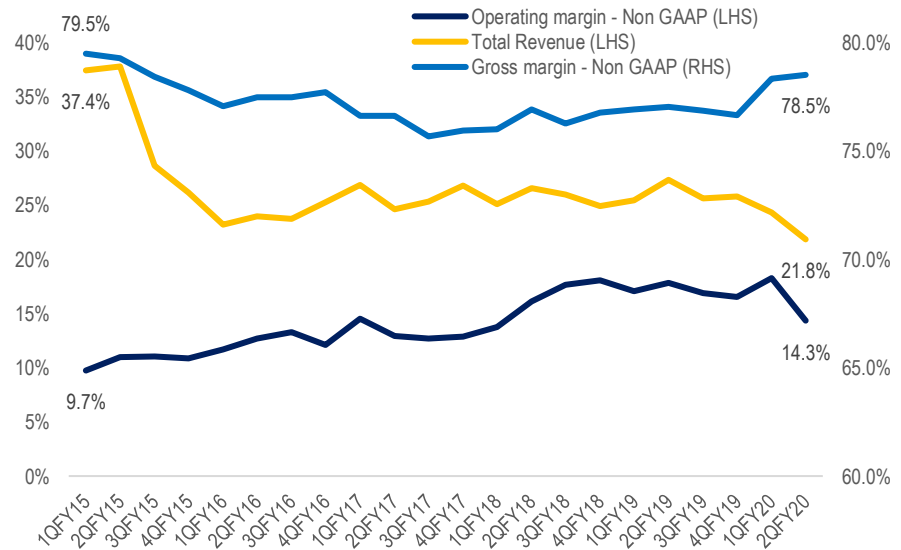


Source: Company data, AMTD Research estimates

Revenue growth rate slowed down but margins improved mainly due to S&M

Total Revenue growth rate declined from 37.4% in 1QFY15 to 21.8% in 2QFY20, however, attrition rate, including the Marketing Cloud service offering but excluding its Commerce Cloud and Integration Cloud service offerings, was less than 10% as of July 31, 2019. In addition, high renewal rate boosted the leverage as we can see its operating margin (Non-GAAP) kept growing, reaching 18.2% in 1QFY20. However, the sharp margin decline in 2QFY20 was due to US\$166mn on-time costs associated with merging of Salesforce.org.

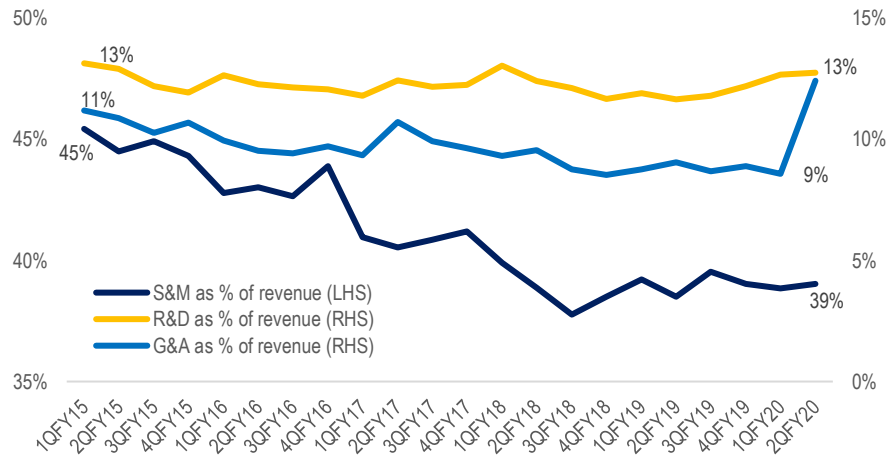
Figure 4: Quarterly gross margin, operating margin (Non-GAAP) and total revenue growth rate, YoY



Source: Company data, AMTD Research

For expenses, S&M accounted for 39% of total revenue in 2QFY20, down significantly by 6ppts from 45% in 1QFY15, while general and administrative expenses (G&A, US\$166mn on-time costs booked in 2QFY20) only declined by 2ppts and, research & development expenses (R&D) was flat during the same period.

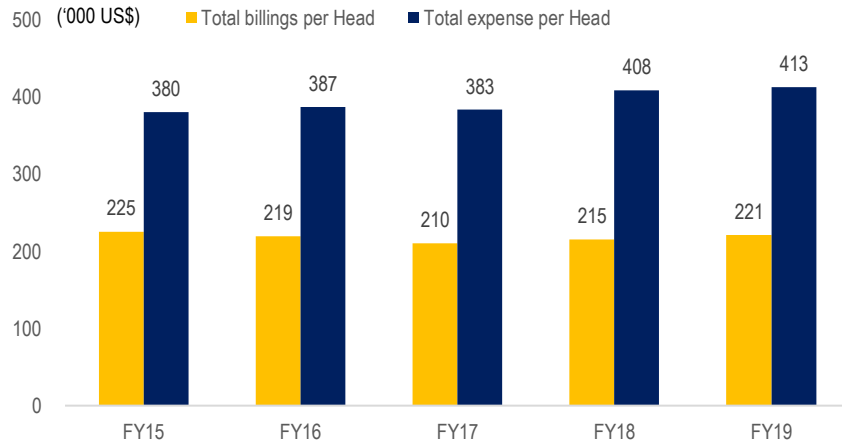
Figure 5: Trends of S&M, R&D, and G&A as % of revenue



Source: Company data, AMTD Research

On the other hands, unlike manufacturing companies, the productivity of software company comes mainly from its human resources. For Salesforce, total expense per head stayed stable and total billings per head kept rising in recent years, which indicated that Salesforce has done well in balancing between human resource output and corresponding costs.

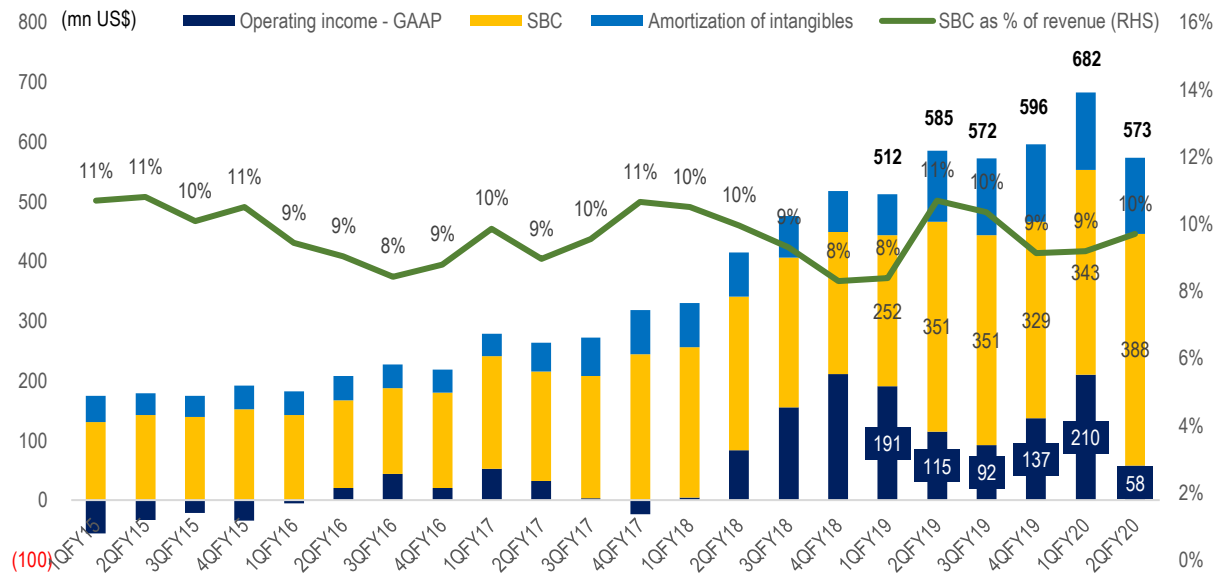
Figure 6: Trends of total billings per Head and total expense per Head



Source: Company data, AMTD Research
 Note: billings = revenue + changes of deferred revenue

SBC as % of total rev was trending down and smoothed Non-GAAP operating income
 For stock-based compensation (SBC), as the business entered matured stage, the proportion of SBC as % of total revenue was trending down, but when the GAAP operating income fluctuated, SBC was also adjusted to ensure the steady growth of Non-GAAP operating income. In addition, non-cash SBC accounted for a considerable proportion of Non-GAAP operating income.

Figure 7: Operating income (Non-GAAP) breakdown and SBC as % of total revenue

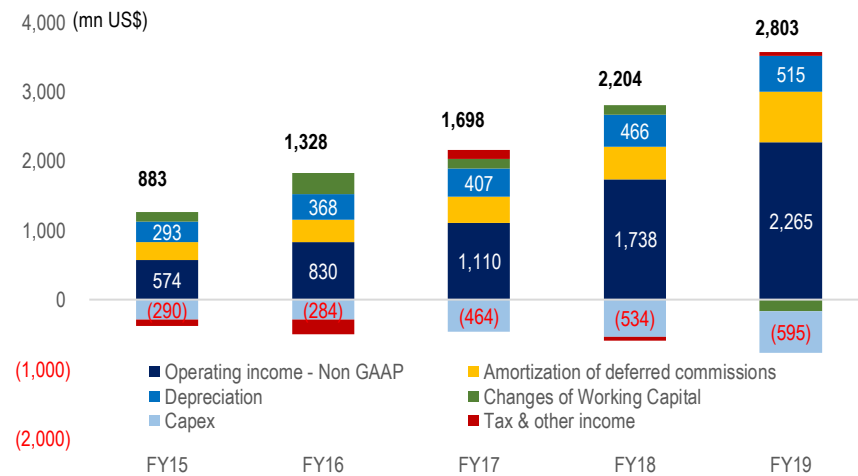


Source: Company data, AMTD Research

Capex matched depreciation indicating organic growth slowed down

For Salesforce, we found its Capex roughly equaled depreciation each year, indicating that Salesforce was not in a stage of rapid expansion anymore but in a stage of stable growth. On the other hand, its TTM FCF growth was 26.4% YoY in 2QFY20, and was expected to grow by 20.5% in full year of FY20 by consensus. Salesforce stock was now trading around 39.8x FY20E FCF, implying 1.9x EV/FCF/FY20 YoY growth, as of 18 Sept.

Figure 8: FCF breakdown



Source: Company data, AMTD Research

*Note: Amortization of intangibles was included in Operating income – Non GAAP

Cloud/SaaS

Workday

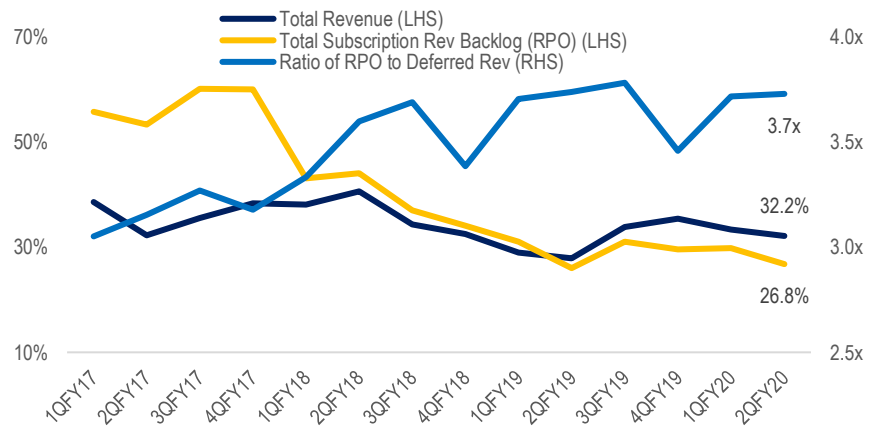
Workday – is still in high growth stage with improving margins and realizing unit economics in S&M

Workday is a leading SaaS vendor of enterprise cloud applications for finance and human resources. Its products and solutions include human capital management, payroll, financial management, procurement and employee expense management solution. Founded in 2005, Workday releases a major update every 6 month. Workday adopted the IBM Cloud as its primary development and testing platform to accelerate its worldwide expansion.

RPO growth was driven by high net retention

Workday reported the subscription revenue backlog (RPO) of US\$7.03bn in 2QFY20, up 27% YoY. Growth was driven by solid results across net new bookings, add-on business and net retention, which was once again over 100%. The ratio of RPO to deferred revenue was above 3.5x despite cyclical effects, which we believe can support the revenue growth around 30% going forward. In addition, management indicated continued momentum in its Financial Management business as Workday acquired a Fortune 100 insurance company in 2QFY20 as a customer for its financial management product, indicating its growing momentum in larger enterprises segment.

Figure 9: Growth (YoY) trends of Total Revenue and Total RPO, and Ratio of RPO to Deferred Revenue by quarter



Source: Company data, AMTD Research

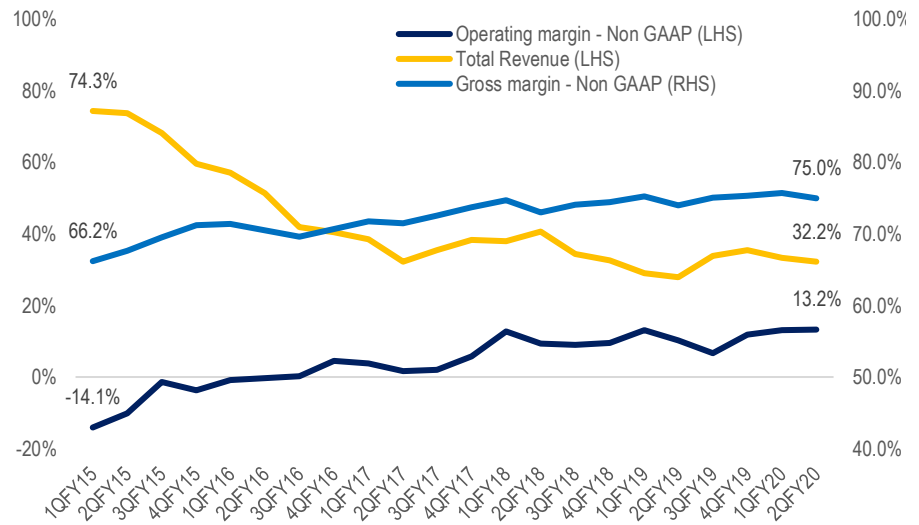
Organic growth was still the main driver of the company

Workday announced acquisition of Adaptive Insights in Jun 2018. Adaptive Insights is an industry leader with its Business Planning Cloud platform, and together with Workday, the partnership will help customers accelerate their finance transformation in the cloud. On the other hand, the most recent acquisition did create financial value for Workday by bringing in around US\$130mn revenue in past 12 months, which only accounted for 4% of Workday's total revenue. Given the relative small scale of M&A, organic growth will still be the main driver of Workday in the near future, in our view.

Margin continued to expand thanks to improving operating leverage

Workday non-GAAP operating income for the second quarter was US\$118mn with a non-GAAP operating margin of 13.2%. It was helped by a combination of strong performance of and the shifting of some expenses from 2Q to the second half of the year. For non-GAAP operating margins, management estimated 3Q to be approximately 10.5% and 12.3% for the full year, respectively.

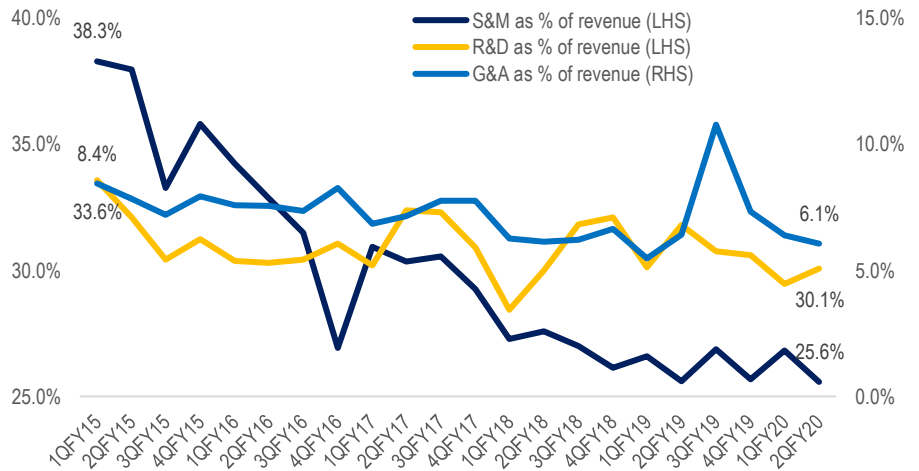
Figure 10: Quarterly gross margin, operating margin (Non-GAAP) and total revenue growth rate, YoY



Source: Company data, AMTD Research

For the expenses, S&M accounted for 26% of total revenue in 2QFY20, down significantly by 12.2ppts from 38% in 1QFY15, while general and administrative expenses (G&A) only declined by 2.3ppts and, research & development expenses (R&D) was down 3.5ppts during the same period.

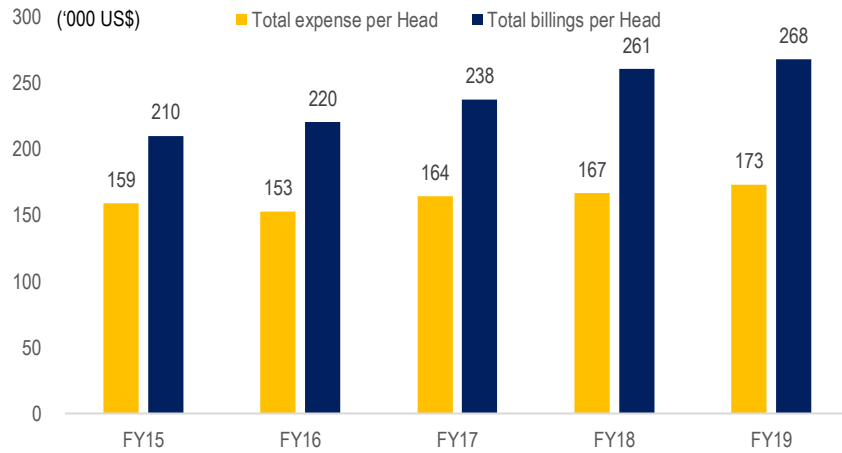
Figure 11: Trends of S&M, R&D, and G&A as % of revenue



Source: Company data, AMTD Research

For headcount, both total expense per head and total billings per head were rising in recent year given its high growth. And the dollar value of gap between them was widening, indicating rising efficiency as well.

Figure 12: Trends of total billings per Head and total expense per Head

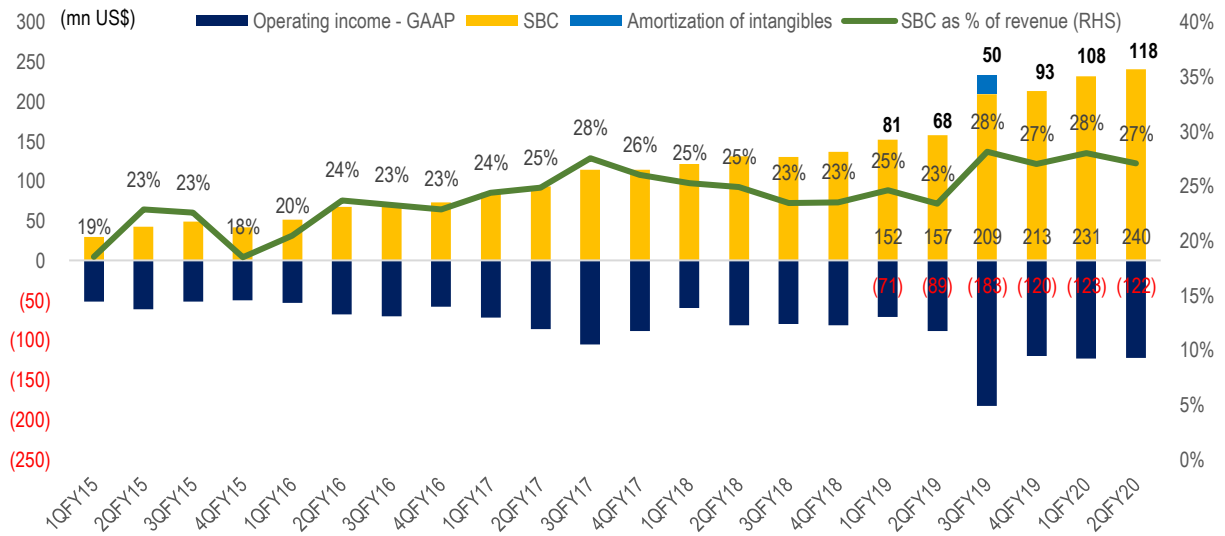


Source: Company data, AMTD Research
 Note: billings = revenue + changes of deferred revenue

SBC as % of total rev was rising and smoothed Non-GAAP operating income

For stock-based compensation (SBC), as the business is still in high growth stage, the proportion of SBC as % of total revenue is rising as well. In addition, SBC was also used to make up the losses of GAAP operating income. In other words, SBC generates the Non-GAAP operating income.

Figure 13: Operating income (Non-GAAP) breakdown and SBC as % of total revenue

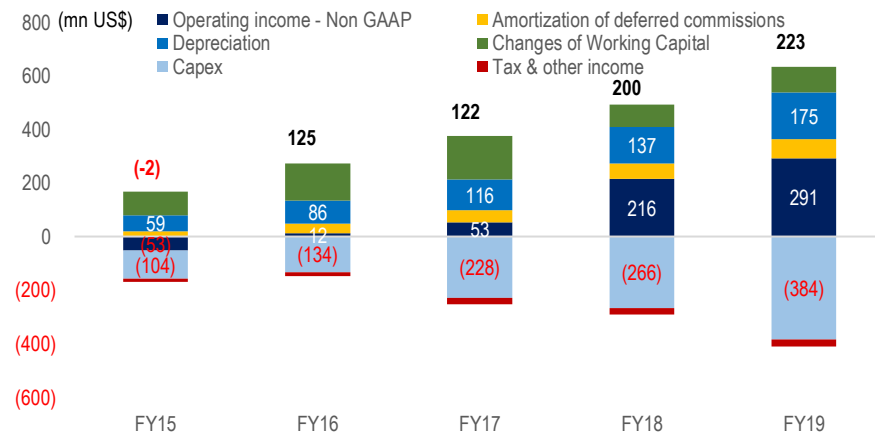


Source: Company data, AMTD Research

Capex exceeded depreciation to support business growing

Workday opened its new headquarters in Pleasanton, Calif the second quarter this year. The new 410,000-square-foot, six-story building was designed to accommodate 2,200 employees as well as Workday's new customer center. According to management, the company continued to expect the full-year capital outlay for its owned real estate projects to be approximately US\$130mn, of which US\$95mn relates to the development center in Pleasanton. The Capex target of US\$280mn in FY2020 was unchanged to support its customer growth and continued business expansion. Workday's TTM FCF growth was 47.8% YoY in 2QFY20, and was expected to grow by 101.5% in full year of FY20 by consensus. Its stock was trading around 88.2x FY20E FCF, implying 0.87x EV/FCF/FY20 YoY growth, as of 18 Sept.

Figure 14: FCF breakdown



Source: Company data, AMTD Research

*Note: Amortization of intangibles was included in Operating income – Non GAAP

Cloud/SaaS

ServiceNow

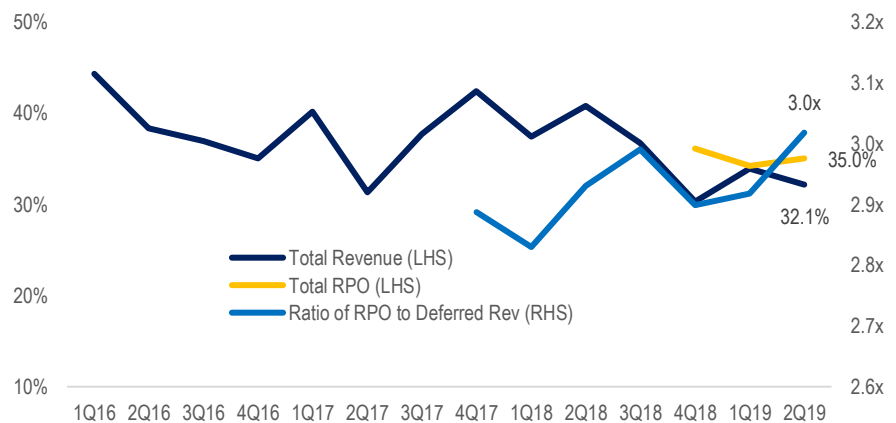
ServiceNow – is in high growth stage, realizing unit economics in cost of sales, but still relies heavily on S&M for expanding

ServiceNow is a leading SaaS vendor of automate enterprise information technology operations. Founded in 2004, ServiceNow stepped foot in the ITSM (Information Technology Service Management) field in 2012 and competed with to established players like IBM and HP. Now ServiceNow has diversified into 5 major services including IT, Security, HR Service Delivery, Customer Service and Business Applications.

RPO growth rate was higher than revenue growth rate

ServiceNow's RPO was approximately US\$5.4bn in 2Q19, up 35% YoY, including US\$53mn of foreign exchange headwind. Current RPO was approximately US\$2.7bn, up 37% YoY, including US\$26mn of foreign exchange headwind. According to management, ServiceNow closed 39 deals with ACV (annual contract value) greater than US\$1mn. The company now has 766 customers doing more than US\$1mn and a renewal rate for the second quarter continue to be strong at 98%

Figure 15: Growth (YoY) trends of Total Revenue and Total RPO, and Ratio of RPO to Deferred Revenue by quarter



Source: Company data, AMTD Research

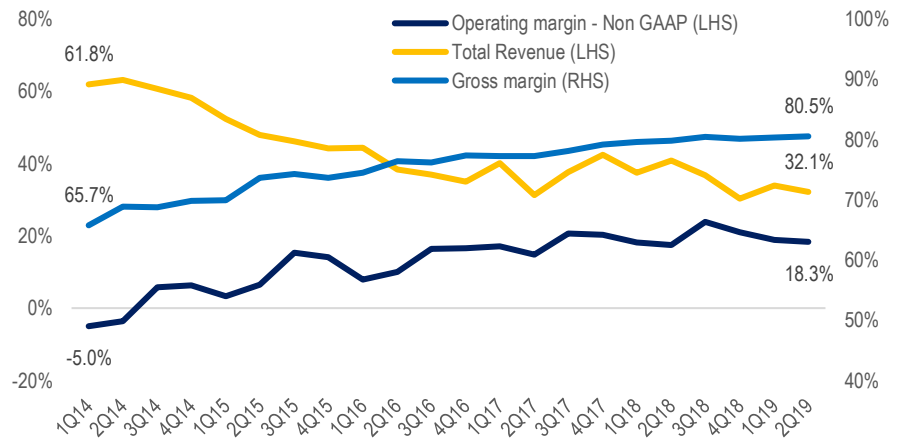
Acquisitions was complementary to business growth

Over the past five years, ServiceNow has acquired 13 companies, ranging from AI to data management. As ServiceNow has a single platform with a single code base and data model across all of its products, every time it rebuilt the acquired technology into the code to be integrated into its own platform. According to management, most of its organic growth will be on the current platform, but in the future, ServiceNow could add another platform or two through M&A in a very complementary way.

Operating leverage benefited gross margin

Compared to Salesforce, ServiceNow has smaller scale and younger business. At this early stage, business is expanding very fast and operating leverage mainly comes from cost of sales. ServiceNow's gross margin increased significantly by 15ppts from 66% in 1Q14 to 81% in 2Q19.

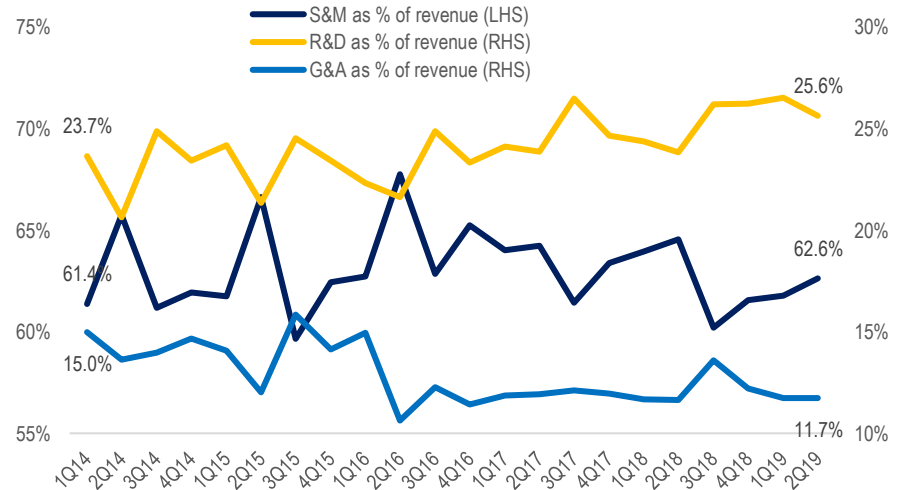
Figure 16: Quarterly operating margin (Non-GAAP) and total revenue growth rate, YoY



Source: Company data, AMTD Research

On the other hand, non-GAAP operating income for 2Q19 was US\$153mn with a non-GAAP operating margin of 18%, supported by a shift of expenses that will be realized in 3Q. Management maintained full-year 2019 operating margin at 21%. ServiceNow invested heavily in S&M to expand its business. For the expenses, S&M accounted for 63% of total revenue in 2Q19, up 1.2ppts from 61% in 1Q14, while general and administrative expenses (G&A) declined by 3.3ppts and, research & development expenses (R&D) was up 1.9ppts during the same period.

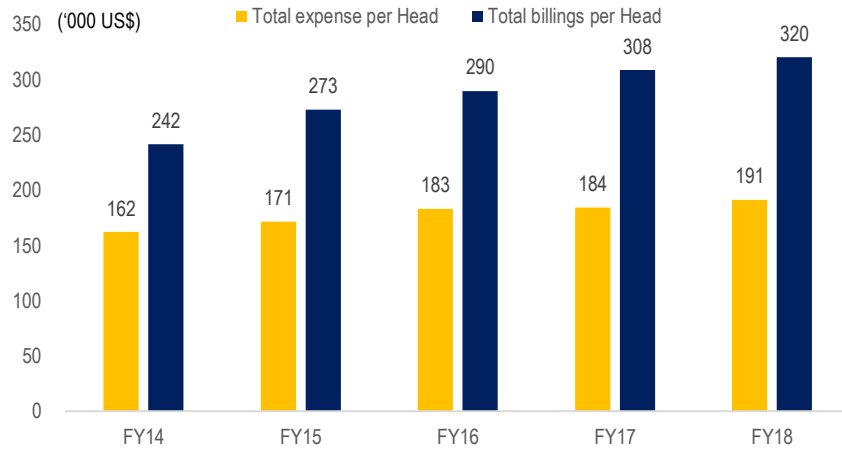
Figure 17: Trends of S&M, R&D, and G&A as % of revenue



Source: Company data, AMTD Research

With talent being a top company priority, ServiceNow continues to invest in people and attract top talent. In 2Q19, the company successfully on-boarded a record 700+ net new employees. From headcount perspective, both total expense per head and total billings per head were rising in recent year given its high growth of business. And the dollar value of gap between them was widening, indicating rising efficiency as well.

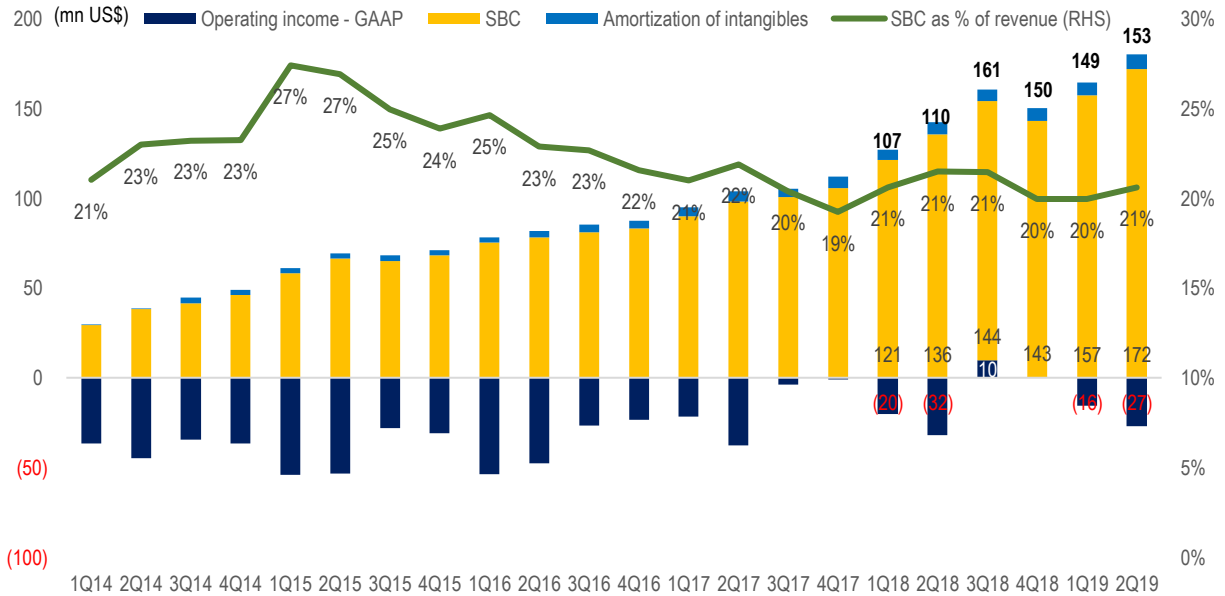
Figure 18: Trends of total billings per Head and total expense per Head



Source: Company data, AMTD Research
 Note: billings = revenue + changes of deferred revenue

GAAP operating income loss was narrowing, and SBC as % of rev was trending down
 As mentioned above, ServiceNow's gross margin rose substantially over the past few years thanks to improving unit economics. As a result, its GAAP operating income loss was narrowing, and SBC as % of revenue was trending down as well.

Figure 19: Operating income (Non-GAAP) breakdown and SBC as % of total revenue

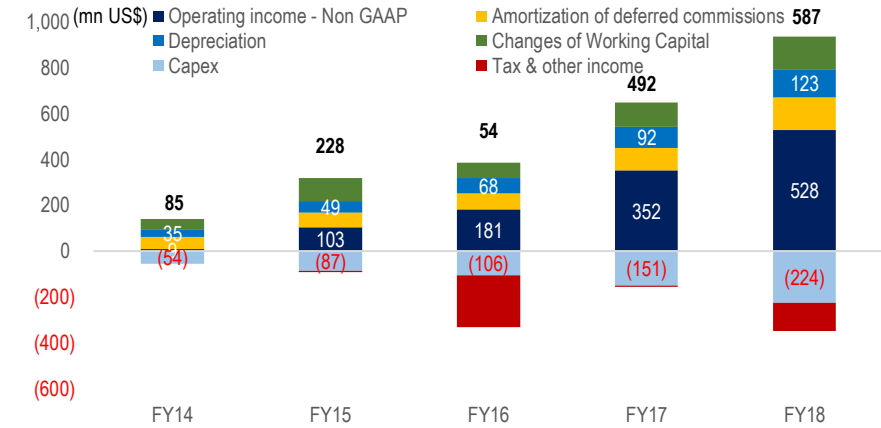


Source: Company data, AMTD Research

Capex was higher than depreciation indicating an expanding business

ServiceNow's Capex was about 1.7x of its depreciation. At the same time, ServiceNow is actively looking for acquire new technology used for its current platform. Its TTM FCF growth was 51.5% YoY in 2Q19, and was expected to grow by 67.0% in full year of FY19 by consensus. Its stock was trading around 50.3x FY19E FCF, implying 0.75x EV/FCF/FY19 YoY growth, as of 18 Sept.

Figure 20: FCF breakdown



Source: Company data, AMTD Research

*Note: Amortization of intangibles was included in Operating income – Non GAAP

News updates

15 Sept 2019

Semiconductor

Huawei/HiSilicon

Huawei HiSilicon unveiled the first 8K AVS3 end-to-end solution

Huawei HiSilicon introduced an end-to-end 8K AVS3 solution at IBC2019 with Arcvideo Tech. The solution consists of an 8K AVS3 encoder powered by Arcvideo, and 8K AVS3 decoder powered by Hi3796CV300 and an 8K display. According to the company, Hi3796CV300 is the world's 1st smart home product that supports 8K@120fps HEVC, AVS3 video decoding, 4TOPS NPU and 4K UI capabilities. It enables natural and smooth interactions and enhanced AI experience. (Source: [Hisilicon](#))

13 Sept 2019

Cloud

Microsoft/Disney

Microsoft and Disney collaborated to develop 'scene-to-screen' cloud editing

Microsoft and the Walt Disney Studios announced a 5-year innovation partnership. They will move key parts of Disney's movie-making and postproduction processes to the Microsoft Azure cloud platform. The two companies will deliver cloud-based solutions to help accelerate innovation at Walt Disney Studios from scene-to-screen. Cloud-based editing will allow Disney to collaborate more easily across multiple locations. The audiences may see first movie edited in the cloud on the big screen in 12-18 months. (Source: [Microsoft](#))

11 Sept 2019

Smartphone

Huawei

Leaked Huawei Mate 30 Pro revealed a waterfall display

The upcoming Huawei Mate 30 Pro is said to have a 6.6"-6.8" FHD+ waterfall AMOLED display. The phone will be equipped with an under-display earpiece speaker and an in-screen optical fingerprint scanner, but will support Huawei Face ID 2.0 simultaneously. It will feature the latest HiSilicon Kirin 990 5G, quad rear cameras consisting of an ultra-wide lens, regular lens, telephoto lens and a 3D ToF lens. The physical volume button is removed. (Source: [Techradar](#))

10 Sept 2019

Smartphone

Apple

Apple announced new iPhone 11 series and other new products and services

Apple has unveiled its new iPhone 11 lineup: iPhone 11, iPhone 11 Pro and iPhone 11 Pro Max. The phones have an array of new color options, and a longer battery life thanks to the new A13 Bionic chip's debut. The Pro series feature rear triple cameras for the first time. They will start at US\$699, \$999 and \$1,099 with preorders from Sept 13 and arrive in-store on Sept 20. Apple also released the entry-level 9.7"/10.2" iPads with and A10 processor, Apple Watch 5 with always-on display, Apple TV+ services and game streaming service Apple Arcade on the same event. (Source: [Apple](#))

10 Sept 2019

Smartphone

Xiaomi

Xiaomi announced world's fastest wireless phone charge

Xiaomi released the new Mi Charge Turbo that has a maximum capacity of 30W. The technology can charge a 4,000mAh battery wirelessly up to 50% in just 25 minutes and up to 100% in 69 minutes, fastest in the world. It also supports fast reverse wireless charging to accessories like smartwatches, headphones and even other smartphones. The Mi Charge Turbo 30W will first be available on the upcoming 5G flagship Mi 9 Pro 5G. (Source: [NikkeiAsianReview](#))

10 Sept 2019

Semiconductor

TSMC

TSMC sales up 25.2% MoM in August

TSMC posted August sales of NT\$106.12bn, up 25.2% MoM/16.5% YoY. Total sales for the eight months ended August 31 totaled NT\$650.58bn, up 0.6% YoY. TSMC forecasted the growth to continue in September as well as the fourth quarter, because the robust demand for 5G and 7nm chips may further pull in orders from AMD, Apple and other companies. (Source: [TSMC](#))

10 Sept 2019

Cloud

Google

Google launched alpha of Cloud Dataproc to Kubernetes

Google announced the alpha availability of Cloud Dataproc for Kubernetes to increase data-processing efficiency across platforms. Cloud Dataproc is based on Hadoop and Spark open source big data software. This new version targeted enterprises who are working with hybrid systems of private and public clouds, plus legacy infrastructure. The launch will help users manage Apache Spark jobs on Kubernetes Engine easier. Google hopes to simplify the transition to containers for enterprises. (Source: [Google](#))

9 Sept 2019

Module

Sunny Optical

Sunny Optical handset lens shipment up 46.5% YoY in August

Sunny Optical announced its August shipment data. Handset lens shipment reached 132.8mn units, up 22.1% MoM/46.5% YoY, while spherical glass lenses shipment down 12.7% MoM/23.2% YoY. For optoelectronic products, CCM shipment rose by 16.4% MoM/22.3% YoY to 56.1mn units; other optoelectronic reported a jump of 259.8% YoY to 3.9mn units, mainly due to the production ramp-up of structured light and ToF. For optical instruments, microscopic instruments shipment grew by +16.7%MoM/+0.8% YoY. (Source: [Sunny Optical](#))

6 Sept 2019

Semiconductor

Huawei

Huawei unveiled flagship Kirin 990 processor with built-in 5G modem

Huawei unveiled its new Kirin 990 flagship chipset, including a version with a built-in 5G modem. The 5G version is the world's first 5G integrated SoC. The chipset will first be used in the upcoming high-end Mate 30 smartphones. The processor is based on 7nm EUV technology, and supports NSA/SA architectures as well as TDD/FDD full-frequency bands. It delivers 10% higher single-core and 9% higher multi-core performance than the Snapdragon 855, and is 36% smaller than Samsung's Exynos 9820. (Source: [Huawei](#))

5 Sept 2019

Module

Apple

Apple to develop in-display fingerprint sensor for 2020 iPhones

Apple is developing in-screen fingerprint scanner for future iPhones, according to Bloomberg. It is currently under test. Suppliers have succeeded in integrating the technology into iPhones but have not been able to mass production. If testing successful, the sensor will be released in 2020, and is more likely to be built in the 2021 iPhones. Apple will then offer both Face ID and Touch ID. (Source: [Bloomberg](#))

5 Sept 2019

Smartphone

Samsung

Samsung officially relaunched Galaxy Fold

Samsung officially relaunched its Galaxy Fold in Korea on Sept 6, followed by France, Singapore, U.S. and more regions. The foldable phone has a 5G option in some countries. It is equipped with a 7.3" Infinity Flex Display and a 4.6" Super AMOLED panel on the outside. It features 7nm octa-core Snapdragon 855 processor, and has triple rear cameras, dual front cameras as well as a 10MP cover camera. Samsung provides a Fold Advantage+ program that promises to cover 70% of display repair costs, once within a year. (Source: [Samsung](#))

4 Sept 2019

Smartphone

Apple

Apple to launch new low-cost iPhone with 4.7-inch display in 2020

Apple is planning a new 4.7-inch iPhone with low price in spring 2020, according to Nikkei. It is an iPhone SE successor and may be priced at around US\$400. Apple expects the cheaper handset to help retake market share in China from Huawei and Samsung, and gain ground in emerging markets. The phone would feature an LCD display to cut cost but advanced internals like the new A13 chip used in iPhone 11, and probably adopt the Touch ID system. (Source: [NikkiAsianReview](#))

4 Sept 2019

Semiconductor/5G

Samsung

Samsung announced its first 5G mobile processor Exynos 980

Samsung announced its first AI mobile processor Exynos 980 with an integrated 5G modem. Based on 8nm FinFET process technology, Exynos 980 provides up to 2.55Gbps download speeds in sub-6GHz. Its NPU features elevated performances of up to 2.7 times compared to its predecessor, thus delivers enhanced on-device AI experiences. The Exynos 980 is expected to start mass production by the end of this year. (Source: [Samsung](#))

4 Sept 2019

Cloud

Microsoft

Microsoft acquired cloud migration startup Movere to help Azure transition

Microsoft acquired cloud migration provider Movere. Movere will help Microsoft clients migrate existing applications and infrastructure to Azure public cloud, including tools, processes and programs. Movere's customers contain AT&T and IBM. The two companies target large businesses and government agencies who are offloading large workloads and data storage to the cloud for better utilization. (Source: [Microsoft](#))

3 Sept 2019

Smartphone

Google

Google officially released Android 10

Google has officially released Android 10 for Pixel phones, and will roll it out to other devices later this year. The new operating system features gesture navigation that enables users seamlessly swipe between apps and the home screen. Other features include dark theme, Focus Mode, Live Captions, etc. Google has also tightened controls over privacy. Android 10 is Google's first operating system not using a dessert-themed name. (Source: [Google](#))

3 Sept 2019

5G/Services

China Mobile

China Mobile to rollout large-scale 5G services in June 2020

China Mobile is set to realize 5G commercialization at scale in June 2020. It will be based on SA architecture and target all kinds of users. China Mobile has started large-scale trials in 5 cities covering about 500 base stations since last December, and will conduct usability testing soon. China Mobile is promoting the construction of a one-stop cloud-integrated Internet platform. (Source: [Sina](#))

1 Sept 2019

Software

Microsoft

Microsoft Windows 10 gaining ground with market share hitting 50%

Microsoft's Windows 10 has gradually gained its ground, with its market share expanding to 50.99% in August, four years after its launch, according to Netmarketshare. Win 10 took place of Win 7 to become the market dominator in last December. Win 7 is nearing end of support, but maintains a market share of 30.44%. Microsoft needs to put more efforts in making those users upgrade to Win 10. (Source: [Mspower](#))

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