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PRODUCTIVITY SUITE SURVEY: GOOG TO DRIVE SHARE GAINS; MAPPING OUT THE COPILOT OPPORTUNITY

NOVEMBER 21, 2023

Our survey of 622 US respondents underscores MSFT's leading ~80% share of the \$50b+ productivity market, though GOOG (~20% share) is set to drive modest share gains.

Bundling Suites with IaaS & Business Software is on the rise for both MSFT & GOOG, which is helping drive both revenue scale and competitive advantage.

Generative AI adoption remains in the early stages, though this survey uncovered strong purchase intent for Copilot & Duet AI over the next 12 to 18 months.

We introduce a bottom-up analysis of the MSFT Copilot revenue opportunity, which we expect to generate ~\$16.5b of revenue by FY28 in our upside base case.

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INDUSTRY UPDATE

PRODUCTIVITY SUITE SURVEY: MSFT & GOOG - AHEAD OF THE CURVE**THE TD COWEN INSIGHT**

Our 2nd report on the MSFT/GOOG Productivity Suite market shows continued minor share gains by Workspace but high satisfaction levels for both vendors, leading to strong IaaS bundling momentum, continued SKU upgrade trends, high initial interest in AI copilots, and favorable UCaaS/Security consolidation dynamics. We lay out a new MSFT Copilot scenario analysis & GCP Workspace forecast breakout.

Our Thesis

In our 2nd annual Productivity Suite report, we surveyed IT purchase decision-makers in order to gain insight into the ~\$50b+ Productivity Suite market, which is dominated by both MSFT & GOOG. Our work helps investors better understand: 1) changing market share dynamics between M365 and Google Workspace; 2) customer satisfaction trends & propensity to upgrade SKUs; 3) early GenAI/copilot adoption trends; 4) the effectiveness of bundling other products with Productivity offerings; and 5) MSFT & GOOG's threat to incumbent UCaaS & Security point solutions.

Based on our survey, we see GOOG continuing to capture share gains against MSFT MS Office (especially at the SMB level), though more companies are pivoting to using both suites within their enterprise, and satisfaction with M365 remains high, so we see little displacement risk. Second, upgrade rates remain high for both vendors (though moderated Y/Y for MSFT, likely due to maturity in Teams/EMS), which should continue to drive ARPU higher for both vendors. Third, interest in bundling Suites with IaaS & Business Software is rising for both vendors, which we believe can help drive share gains vs. AWS as well as compete against SaaS/PaaS vendors. And fourth, GenAI adoption remains early in evaluation criteria of IT budget holders, but we were encouraged that 60% of M365 respondents, and 76% of Workspace respondents, are interested buyers over the next 12-18 months. We see this as a positive trend for both MSFT & GOOG's AI SKUs (Copilot; Duet AI), and think that GenAI adoption within the Productivity Suite base can provide a meaningful incremental revenue opportunity for both vendors in the coming years. We introduce new scenario analysis on this below.

What Is Proprietary

The findings of our Productivity Suite report are based on a survey of 622 IT professionals and provide key customer insights on MS365 & Google Workspace, including customer adoption, drivers of future growth, GenAI, & potential disruption of adjacent markets. We forecast collective GenAI revs growing from \$1.6b in CY24 to \$17.8b in CY28. For MSFT, we introduce a new Copilot forecast based on our proprietary O365 seat model, which we forecast could lift the O365 5-year CAGR by ~4% in our base case scenario. For GOOG, we updated our Google Cloud P&L model, breaking out estimates for Google Cloud Platform (GCP) and Workspace '19-'28.

Financial and Industry Model Implications

The global Cloud market (IaaS, PaaS, SaaS) should reach \$494b in 2023 per Gartner, and is expected to rise to \$1,085b in '27 driven by AWS, Azure & GCP, among others. Within the broader Cloud forecast, we estimate the Productivity Suite segment is a \$53b market in 2023, with multiple levers for growth over time, driven by MSFT's M365 & Office and Google Workspace.

We build off our detailed bottom-up model for MSFT Office 365 Commercial that we created last year in order to forecast potential GenAI revenues from O365 Copilot which went GA on 11/1. Our current conservative forecast is that Copilot builds to \$4.0b in incremental revenue by FY28, reaching ~2.5% penetration of total subscribers and leading to a ~14% 5-year CAGR for O365 Commercial. But our base case upside assumption is that Copilot drives \$16.5b in revenue uplift by FY28, reaching ~10% penetration and representing an ~18% O365 Commercial CAGR. Our high-end bull case is that Copilot generates \$63.4b in revenue in FY28, hitting nearly ~40% subscriber adoption and generating a ~28% CAGR for O365 Commercial revenue.

For GOOG, we updated our cloud model, breaking out GCP and Google Workspace, in part given inputs from our survey. We estimate that GCP will generate revenue of nearly \$25.3BN in '23, or about 23% of total Google Cloud revenue, down from 24.5% in '22 as GCP outpaces Workspace growth.

What To Watch

Microsoft O365 is the clear leader, but their survey shows that Google Workspace is likely to continue to gain wallet share over time. Our survey shows that 79% of respondents use MSFT for their primary Productivity Suite (including 60% who use MS365 and 19% who use MSFT Office). Meanwhile, Google Workspace trails with 20% of respondents (but up from 16% last year), while 1% use other services. MSFT over-indexes among large enterprises (~89% of respondents), while Workspace over-indexes among SMB (26%) & Mid-Market (23%). Education (K-12), Construction, & Professional Services are the strongest verticals for Workspace, while MS365 was strongest in Government, Healthcare, Higher Education, Financial Services, Tech, & Manufacturing.

We expect Workspace's share to grow over time given (i) growing Workspace penetration in '23 vs. our '22 survey, driven in part by companies adopting multiple productivity suites; (ii) strong performance among SMBs and mid-market companies; (iii) over-indexing among younger companies, including 34% of respondents at companies less than 10 years old (vs 20% of overall respondents); (iv) Workspace should benefit as K-12 students age into the workforce over time; and (v) customer uptake of GOOG's Gen AI solutions, including Duet AI.

Stock Conclusions

The survey data in this report make us incrementally more comfortable with our revenue and earnings forecast for GOOG and MSFT. For MSFT, while upgrade & bundling trends remain compelling, we turn more focus on new growth drivers starting to emerge from Copilot. For GOOG, incremental Workspace penetration indicates growing share in the Productivity market. In addition, there could be some risk to market share for popular UCaaS offerings given the large % of both MS365 (56%) and Workspace (75%) customers who stated they view their productivity suite as a potential replacement for UCaaS. Popular UCaaS products include Zoom, RingCentral, 8x8, Cisco, among others.

Primary Company Implications: Microsoft (MSFT), Alphabet (GOOG)

Microsoft (Wood):

MSFT dominates the \$53b Productivity Suite market with ~80% customer market share (higher in dollar share), and while we believe Google is likely to take share over time as it garners more usage from the younger generation, MSFT enjoys high customer satisfaction up & down market (~97% very/somewhat satisfied), a strong foothold in the enterprise, an effective bundling strategy, and lots of incentives to drive upgrades. Key compelling survey insights for MSFT include 1) substantial revenue opportunities ahead from Copilot, MSFT's new GenAI tool for its M365 suite; 2) lots of room to increase Azure + MS365 bundling and gain IaaS share; 3) SKU upgrade momentum remains high though slightly moderated Y/Y;

4) continued interest in replacing UCaaS point tools with Teams; 5) continued interest in replacing Endpoint Security point tools with Defender; and 6) breadth of products continuing to favor MSFT. Below we list our top three takeaways from the survey.

1) Bundling With IaaS is Increasingly Popular, Advantaging Azure

The share of respondents bundling productivity suites with both IaaS and Business Software increased by ~3-4x for both MSFT & GOOG vs. 2022, driven largely by increased adoption of IaaS. Two respondents noted that MSFT has a strong ability to cross-sell products given its improved integration between Azure & MS365, as well as very attractive TCO terms when bundling multiple products with its Productivity Suite offering. Given MSFT Azure's status as the #2 hyperscale cloud vendor (and that #1 AWS does not have a Productivity Suite), we think this is a significant advantage for MSFT to continue to gain IaaS share over time.

2) Copilot Interest is Strong, our Analysis Suggests ~\$16.5b Revenue Uplift by FY28

60% of respondents using MSFT 365 noted that they plan to adopt Copilot in the next 12-18 months, with primary use-cases across Word, PowerPoint and Excel. Our base case upside scenario of Copilot revenue assumes a fairly modest adoption curve (1% in FY24 and 5% Y/Y growth in attach rate of the current addressable base through FY28), which would drive a 5-year O365 Commercial CAGR of ~18%, ~500bps above our core O365 CAGR assumptions (ex Copilot) of ~13% CAGR, which assumes Copilot reaches \$16.5b in revenue in FY28. This essentially implies that O365 Commercial growth will sustain the same ~18% cc growth it generated in FY23 over the course of the next 5 years. At an assumed 55% operating margin, this leads to ~\$9b of additional operating income in FY28 vs. our ex-Copilot assumptions. We outline our analysis further on page 19 of this report.

3) Upgrade Rates Remain High, Highest Tier Shows the Greatest Propensity & Shows a Big Up-Tick vs. Last Year

74% of respondents using MS365 are likely to upgrade their suite in the next 12-18 months (vs. 83% in 2022). For MS365, the Best, Better, and Base tiers showed the greatest upgrade rate potential, with 82% of Best customers indicating they are very/somewhat likely to upgrade (up significantly from 47% last year), 77% of Better (vs. 85% last year), and 76% of Base (vs. 89% last year). We are encouraged by the strong upgrade propensity from the highest-tier (E5) customers, which we think demonstrates a high level of interest from this cohort to adopt the new \$30/user/month (list) Copilot service on top of the \$57/user/month (list) price for E5. We estimate there are 23m subscribers on E5 and we think they are the most prime candidates to purchase Copilot.

Alphabet (Blackledge):

Alongside positive trends in our proprietary survey, and given strong secular tailwinds driving growth in Public Cloud, (as we wrote in our [9/26 deep dive report](#)) we estimate Google Cloud revenue CAGR of 21.5% for '23E-'28E, with Google Workspace revenue growing 21.5% over that same period. We forecast that the segment will grow operating income to \$18.2BN, up from an estimated \$1.3BN in '23, after first turning positive in 1Q23. Our DCF-based price target is unchanged at \$155; reiterate Outperform. Below we list positive signals from our '23 survey which drive increasing confidence in our GOOG forecast:

1) Increasing Workspace Penetration Among Survey Respondents

Survey respondents indicated rising use of Google Workspace, as 62% of respondents are using Workspace, an increase vs 51% who said the same in our 2022 survey. Of note, 13% more respondents are using both Workspace and Office 365 in '23 vs. '22; we view this as a positive for Google, as the emerging productivity player; current MS365 users may be increasingly likely to add GOOG as an additional productivity suite. Additionally, younger and smaller size companies over index as GOOG Workspace users, with penetration among SMBs, Mid-Market, & Small Enterprise firms each outpacing Large Enterprise penetration by 26-30%, which should drive GOOG revenue over time if these smaller companies grow.

2) GOOG Poised to Drive Incremental Revenue Through Gen AI Features

The vast majority of respondents expressed plans to adopt GenAI tools as part of their productivity suites; 76% of current Workspace users are likely to budget and adopt a Workspace Gen AI solution, such as Duet AI, over the next 12-18 months (a higher %

compared to 63% of overall respondents, as younger and smaller companies appear more likely to adopt GenAI). While GenAI capabilities were not listed as a top purchasing criteria for respondents, we'd note that GOOG just recently announced their Duet AI tool in August '23. As such, it remains early stages for organizations looking to broadly uptake GenAI tools. Looking forward, GOOG's Duet AI tool should drive average spend per client higher (the tool is currently offered to Workspace customers at an additional \$30/user/month).

3) Satisfaction and Upgrade Likelihood are High Among Workspace Users

Per our survey, 75% of overall respondents are very satisfied with their productivity software, and 79% are very or somewhat likely to upgrade their current offering. Namely for GOOG, 78% of Google Workspace users stated that they are very satisfied with the productivity suite, up from 65% of users in our 2022 survey, while 89% said that they are likely to upgrade their suite in the next 12-18 months. We expect that this increased propensity to upgrade could act as an additional driver of avg. spend per client alongside emerging Gen AI features for GOOG in the coming years.

Secondary Company Implications: Cybersecurity (Eyal)

The prioritization of security among Productivity Suite users revealed in our survey is positive for the independent cybersecurity vendors in our coverage. Most of our names address multiple attack vectors relevant to Productivity Suite protection, resulting in significant domain overlap. The following list highlights some relevant offerings within select solutions categories.

- VRNS: Enhances productivity suites by securing data assets across various locations including on premises, in the Cloud, on the network, or within applications. The company's performance benefits from deployments related to Microsoft 365 and Google Workspace as well as deployments related to other major platforms, e.g. AWS, Salesforce, GitHub.

ISVs enhancing productivity suites by providing security capabilities related to Networks, Cloud resources, and/or Security Operations Centers include: PANW, FTNT, NET, ZS, and CHKP.

ISVs enhancing productivity suites by providing security capabilities related to Endpoints, and Cloud resources, and/or Security Operations Centers include: CRWD, S, and TENB.

ISVs enhancing productivity suites by providing security capabilities related to Identity and Access Management include: CYBR, and OKTA.

Productivity Suite Vendor Relationship: Microsoft

Members of the Microsoft Intelligent Security Association include: CHKP, CYBR, VRNS, FTNT, NET, PANW, TENB, and ZS. Members of the Microsoft Active Protections Program include: CHKP, CRWD, FTNT PANW, S, TENB, and ZS. All the vendors above deliver solutions that integrate with Microsoft offerings.

Productivity Suite Vendor Relationship: Google

All the vendors above are Google Technology partners. Google Security Partner ecosystem members include: CHKP, CRWD, FTNT, OKTA, PANW, TENB and ZS. All vendors deliver solutions that integrate with Google.

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Top 10 Highlights

- GOOG continues to gain modest share over MSFT in the SMB.** 79% of respondents are using MSFT as their Primary Productivity Suite vendor, down ~400bps from 83% last year. Meanwhile, 20% are using GOOG, up ~400bps from 16% last year. GOOG is mainly taking share from on-premise MS Office, which saw usage decline ~400bps Y/Y, from 23% in '22 to 19% in '23. Importantly, MS365 retained share of 60%, unchanged Y/Y. GOOG's share gains against MS365 are predominately happening in the SMB market, where 29% of respondents are using Workspace, higher than any other cohort. GOOG's stronghold verticals include Education, Professional Services & Construction. MSFT's foothold remains strongest in the enterprise.
- Companies are increasingly using both GOOG and MSFT.** 49% of respondents using both Suites, up from 36% last year. There seems to be a trend of companies deploying GOOG inside MSFT accounts at certain departmental levels. Further evidence of this is that 34% of respondents indicated they plan to add another Productivity Suite over the next 12 months, up from 24% last year. The data suggests GOOG is positioned to gain wallet share within MSFT accounts, but GOOG's increase in usage is not shrinking MS365's presence in any material way. Moreover, users are less interested in replacing MSFT as their Primary Productivity vs. year ago levels, as 26% of respondents are somewhat/very likely to replace MSFT, down from 38% last year.
- GenAI interest is high but not yet deemed mission critical.** 60% of MS365 respondents are somewhat/very likely to budget for and adopt MSFT Copilot over the next 12-18 months, while 76% of Workspace respondents intend to budget for and adopt Duet. The greatest perceived value is for users of Word Processing, Presentations & Spreadsheets, suggesting power users in back office or operations functions are likely to be the early adopters. GenAI features are currently ranked low in purchasing criteria, suggesting that buyers still perceive GenAI as nice-to-have or too immature to consider.
- Bundling Productivity Suites with IaaS and Business Software is increasingly popular.** 78% of MS365 respondents purchased their Productivity Suite with some form of bundling, up from 68% last year, while 78% of Workspace respondents purchased in bundles, up from 75% last year. Bundling of Suites with IaaS and Business Software increased the most, up ~3x Y/Y for MSFT and ~4x Y/Y for GOOG. Not only does this bundling ability help MSFT/GOOG to better compete against IaaS vendors (namely AWS), but also against SaaS/PaaS vendors.
- Likelihood to upgrade remains high but moderated for MSFT.** 89% of Workspace respondents are somewhat/very likely to upgrade SKUs over the next 12-18 months (up from 83% last year) and 74% of MS365 users planning to do the same (down from 83% last year). MSFT's Y/Y down-tick may signal that upgrade motions are becoming a bit more mature (i.e. Teams and EMS adoption is now fairly high), though we think the survey results are still robust. And the larger the company, the more likely they are to upgrade SKUs.
- Product breadth in the broader Productivity market still favors MSFT over GOOG.** MSFT maintains a lead in driving a greater amount of Productivity apps to be purchased within the MSFT stack. Only 44% of MS365 users are somewhat/very likely to purchase a substitute Productivity app from a 3rd party vendor over the next 12-18 months, while a higher 60% of Workspace

users plan to purchase a 3rd party app. This suggests that MSFT has a more complete product portfolio.

7. **UCaaS replacement opportunity remains compelling and consolidation trends are likely to continue.** 62% of respondents view their Primary Productivity Suite vendor as a replacement to a 3rd party UCaaS app, down from 68% last year. While down-ticking Y/Y, this year's survey had a larger pool of respondents indicating they do not have an existing 3rd party UCaaS app, which may validate that this consolidation trend is happening. UCaaS is a \$45b TAM for MSFT (Teams) and GOOG (Meet) to gain share from, and the most widely deployed 3rd party vendors surrounding the Productivity ecosystem include ZM, CRM/Slack, CSCO/Webex and DBX.
8. **Security replacement opportunity is also compelling, but not as high as UCaaS.** The level of interest in consolidating away from 3rd party Security tools to the Productivity Suite vendor is generally not as high as UCaaS, though the TAM to target is larger at \$68b. The areas that carry the most interest are in Email Protection and IAM. The mostly commonly used vendors in these markets include CSCO/CHKP/FTNT in Email Protection and PANW/CRWD in IAM.
9. **Overall, satisfaction levels are trending well Y/Y for both MSFT and GOOG.** Satisfaction levels for both MS365 and Workspace trended higher, including 74% of MS365 users very satisfied (up from 69% last year) and 78% of Workspace users very satisfied (up from 65% last year). We think this reinforces positive trends around increased bundling activity, continued SKU upgrades, and 3rd party consolidation onto their respective platforms.
10. **Our proprietary analysis outlines upside potential from MSFT Copilot.** We estimate the Productivity Suite market is sized at ~\$53b in 2023, and we forecast a ~15% 5-year CAGR, reaching ~\$107b in 2028, excluding GenAI. We see substantial potential uplift in spend from GenAI services. Our current MSFT O365 model assumes a very conservative 0.5%/year increase in attach against MSFT's total base, which drives Copilot revenue to \$4b in FY28. We walk through various scenarios, including ~2.5%/year adoption (resulting in \$16.5b in Copilot revenue in FY28), ~5%/year adoption (\$32b in Copilot revs) and ~10%/year adoption (\$63b in Copilot revs). These scenarios result in a O365 5-year CAGR range of ~14% at the low-end and ~28% at the high-end.

Key Takeaways from the Survey

Microsoft is the 800lb Gorilla in the \$50b+ Productivity Suite Market, While Google Workspace is Modestly Gaining Share

Our proprietary survey of >600 IT decision-makers shows the breakdown of respondents who use either Microsoft 365 (MS365), Microsoft Office (MS Office) or Google Workspace as their Primary Productivity Suite. As illustrated in Figure 1, 79% of respondents use MSFT (down from 83% last year), including 60% using MS365 (flat Y/Y) and 19% using MS Office (vs. 23% last year). Meanwhile, 20% use Workspace (up from 16% last year) and 1% use Apple iWork (flat Y/Y). This suggests that GOOG is gaining share in the market, mainly at the expense of winning business away from the on-premise MS Office offering. GOOG's share gains were most notable down-market in the SMB and mid-market cohorts. MS Office saw usage contraction across the board, with some converting to MS365 and some converting to Workspace. MS365 gained share in all areas except SMB, while MSFT's foothold remains strongest at the enterprise level.

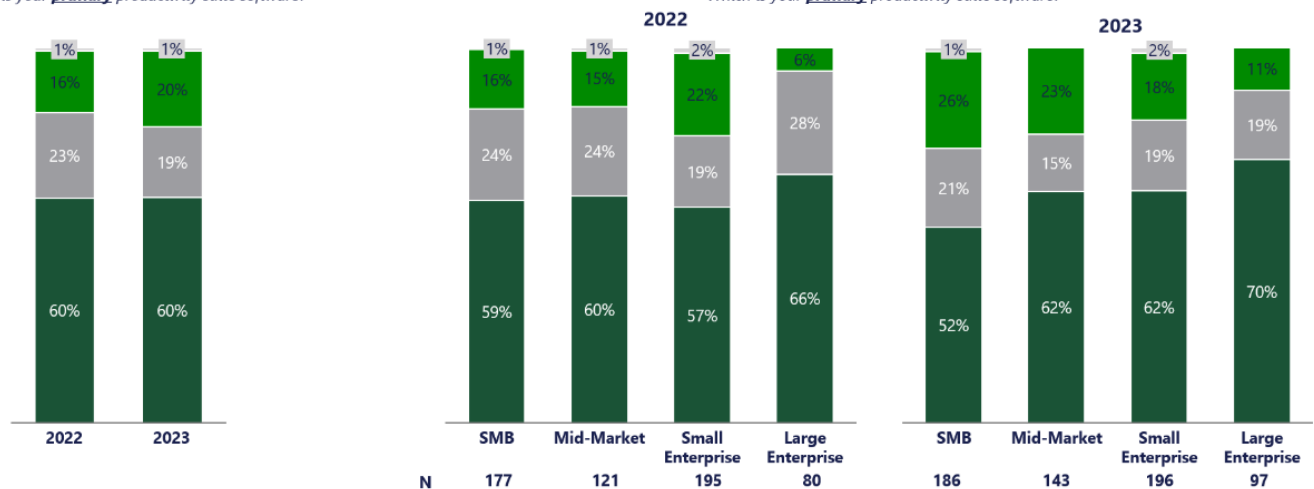
Figure 1 : Primary Productivity Suite

% of respondents by primary productivity suite, 2022 N=573, 2023 N=622

MS365 MS Office GW iWork

"Which is your **primary** productivity suite software?"

"Which is your **primary** productivity suite software?"



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Excludes ITDMs using multiple suites who only have MS365 + Office. Excludes ITDMs who have 2+ suites due to M&A activity

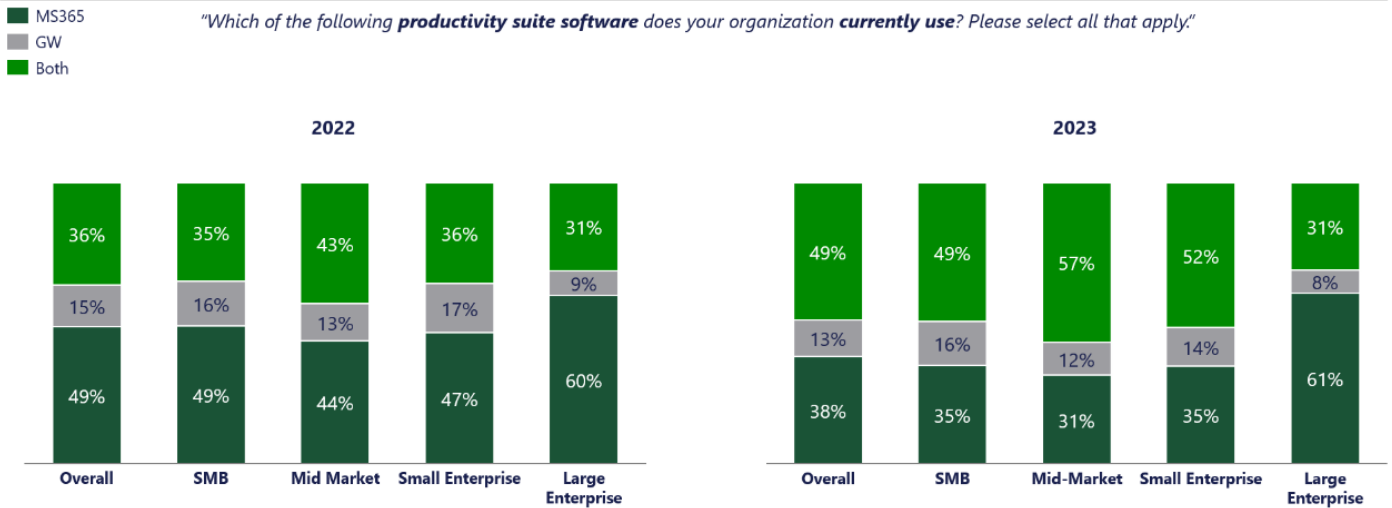
Companies are Increasingly Using Both Microsoft and Google

Figure 2 shows that companies are increasingly using both MS365 and Workspace inside the same organization. Overall, 49% of respondents are using both offerings, up from 36% in our survey last year, which is a trend that favors GOOG to gain wallet share. This multi-vendor usage trend is more prevalent across SMB, mid-market and small enterprises, while large enterprise mix was relatively unchanged vs. last year. This trend can also be seen in Figure 34, with 34% of respondents indicating they plan to add another Productivity Suite over the next 12 months, up from 24% in last year's survey. Importantly, as seen in Figure 31, Workspace's increase in usage is not shrinking M365's presence in any material way, but it is likely competing more for incremental wallet share across different workgroups. Aside from stronger traction down-market and with

younger companies, Workspace remains highly adopted in the Education vertical and it has seen strengthened adoption in the Professional Services and Construction verticals (as seen in Figure 33).

Figure 2 : % of Respondents using both MS365 and Workspace by Business Size

% of respondents using both productivity suites by business size, 2022N=573, 2023N=622



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

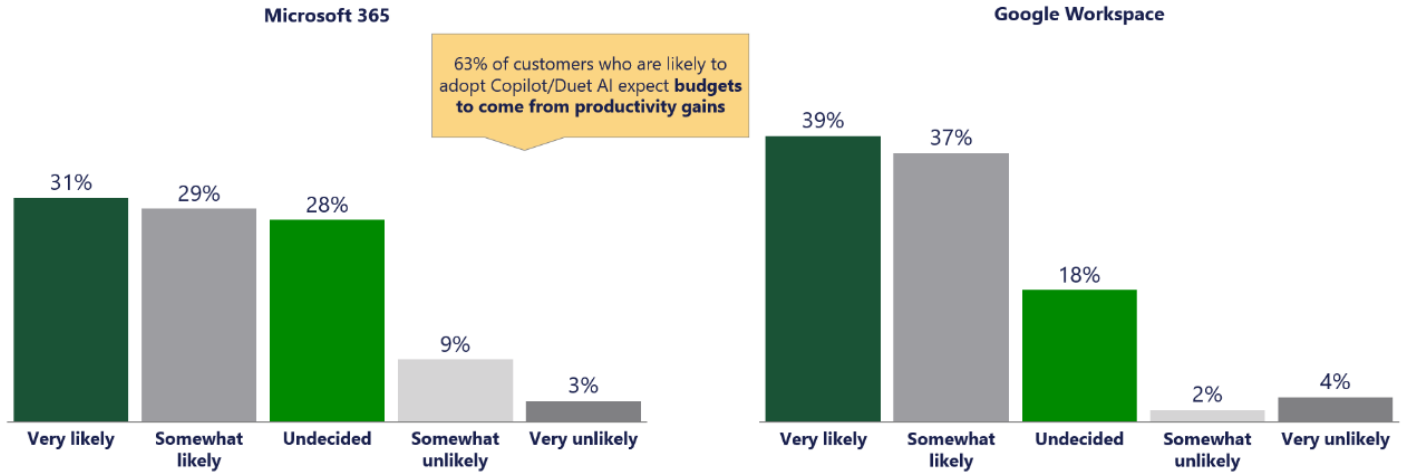
Generative AI Interest is High but Not Yet Deemed Mission Critical

Figure 3 shows that 60% of MS365 respondents are somewhat or very likely to budget for and adopt GenAI services over the next 12-18 months, and an even higher 76% of Workspace respondents indicated they plan to do so. This being said, it seems that GenAI tech is viewed as nice-to-have or too early to be seriously considered today, as demonstrated by Figure 36 showing that GenAI features are low-ranked in purchase criteria. We note this survey was conducted before any GenAI products had gone GA.

Figure 3 : Copilot & Duet AI Adoption Likelihood – 12-18 Months

% of Respondents by productivity suite 2023N=622

"Considering a price of \$30 / user / month, how likely are you to **budget for and adopt** a **Generative AI** assistant/collaborator (like Copilot or Duet AI) over the next 12-18 months?"

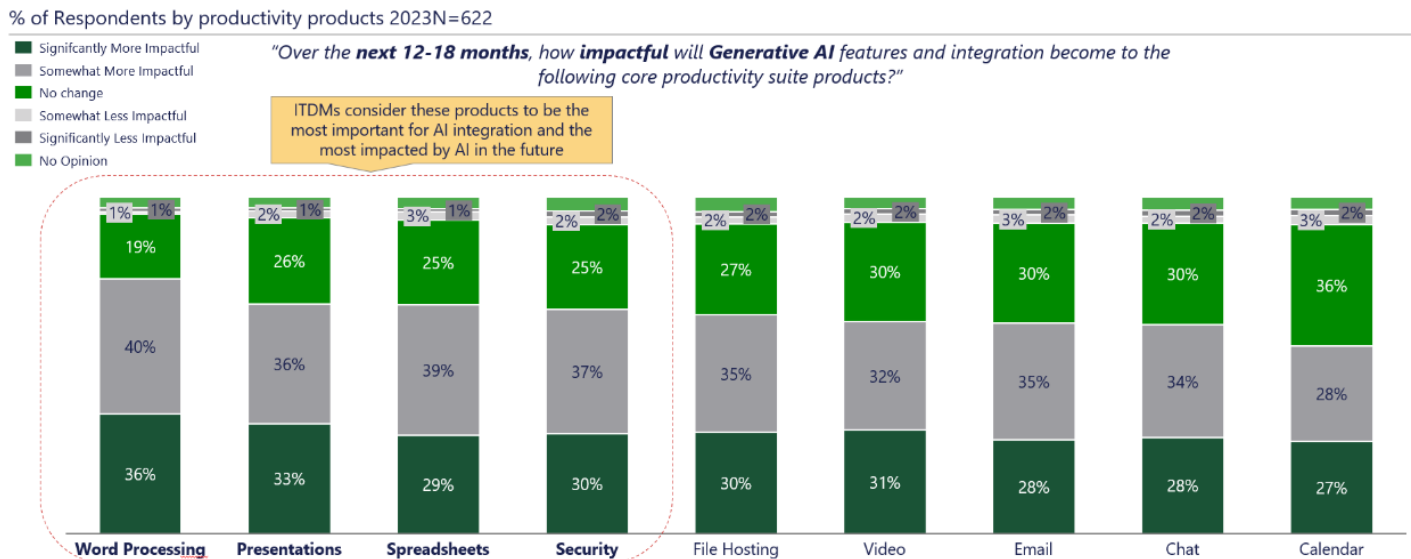


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

GenAI Adoption Likely to Start with Power Users

When asked about what areas of the Productivity Suite will see the greatest value enhancement from GenAI, Word Processing, Presentations and Spreadsheets ranked highest, as shown in Figure 4. Email, Chat and Calendar ranked lowest. Given the top-ranked areas are where power users spend most of their time, we suspect that companies will look to adopt Copilot services with these types of heavy users first - those that are more operations and/or back-office oriented, while perhaps lighter users that spend more time in email and chat are less likely to be early adopters given the perception of less value-enhancement to their tasks.

Figure 4 : Generative AI Impact by Product – Next 12-18 months



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Early Feedback Suggests Copilot and Duet AI are Viewed as Competitive

When asked “which is the stronger GenAI product?” between MSFT Copilot and GOOG Duet AI, we had 8 qualitative responses. These responses suggest that early perception of product differentiation is mixed, and that both offerings will be competitive. Two respondents suggested that Copilot is ahead of Duet AI today, though they expect Google to match Copilot’s functionality with the release of Duet AI. We highlight a few of the responses below.

- “It’s the expectation today that Copilot’s impact will be better. But when Duet AI is released, I think both will be very competitive.” – *Chief of Technology, IT Decision Maker*
- “Copilot is ahead of Duet AI due to the breadth of applications enhanced by GenAI. It’s still early though, so Google, AWS, and Apple could certainly catch up.” – *Chief of Information, IT Decision Maker*
- “There is a perception amongst startups that they don’t need to switch over to Microsoft because Google’s AI will be stronger within 6 months.” – *Chief Technology Officer, Productivity Provider*
- “My understanding is that Copilot is better because Microsoft is more experienced in integrating solutions, but it’s so early so it’s hard to say.” – *Product Marketing, Productivity Provider*
- “In my opinion they’re trying to get at the same items, so broadly the two will probably be similar because of that.” – *Chief of Information, IT Decision Maker*

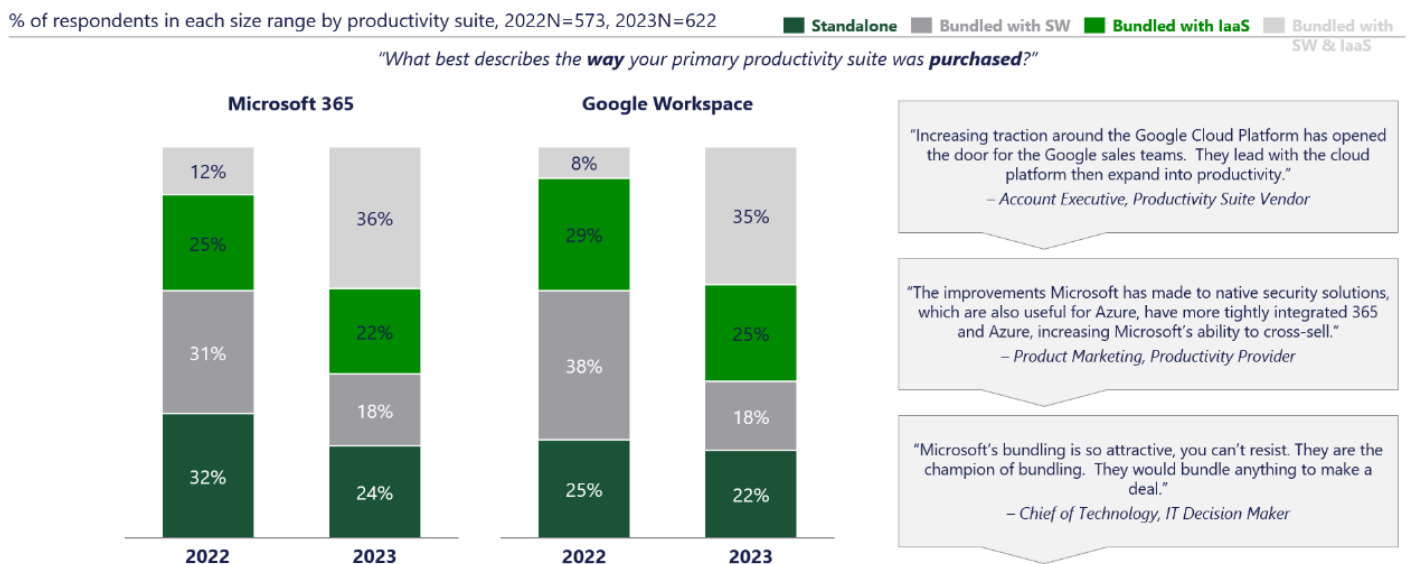
Perception on GenAI is still mixed, with one respondent saying, “GenAI is not yet vital to business, people are still figuring out how to use it. It’s not as important as security, where a wrong decision could cost someone their job.” Indeed, Figure 36 illustrates that key purchasing criteria of Productivity Suites remain: Security as #1, followed by Ease

of Use, and Integration with Other Apps, the same ranking as last year's survey. Breadth of Products up ticked the most, ranking 4th (vs. 7th last year), which we think is an advantage to MSFT. But GenAI features (a new addition to the survey) ranked last, which somewhat contradicts the survey responses on high buying intentions over the next 12-18 months. We suspect this is because purchasing criteria for core IT buyers are likely slow to change, and because as of this survey GenAI offerings were not even GA in the market yet.

Bundling Productivity Suites with IaaS and SaaS/PaaS is Increasingly Popular

Figure 5 shows that 76% of MS365 respondents purchased their Productivity Suite through some form of bundling (up from 68% last year), while 78% of Workspace respondents purchased with bundles (up from 75% last year). In fact, the share of respondents bundling Productivity Suites with both IaaS and Business Software increased by ~3x for MSFT and ~4x for GOOG vs. 2022. More specifically, MS365 bundled with IaaS and Business Software (i.e., CRM, ERP, Collaboration, Security, Low-Code/PaaS, Analytics) increased from 12% last year to 36% this year, while Workspace increased from 8% to 35%. We believe these bundling capabilities help position MSFT and GOOG to continue gaining share in the IaaS market, giving them an advantage over AWS. As seen in Figure 67, bundling is most prevalent with small enterprise and large enterprise customers, while bundling is less prevalent with SMB. MSFT does do a better job bundling at the upper end of the market while GOOG is more effective than MSFT in bundling with SMB companies. Two respondents noted that MSFT has a strong ability to cross-sell products given its improved integration between Azure & MS365, as well as very attractive TCO terms when bundling multiple products with its productivity suite offering.

Figure 5 : Software Suite Bundling by Primary Suite



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

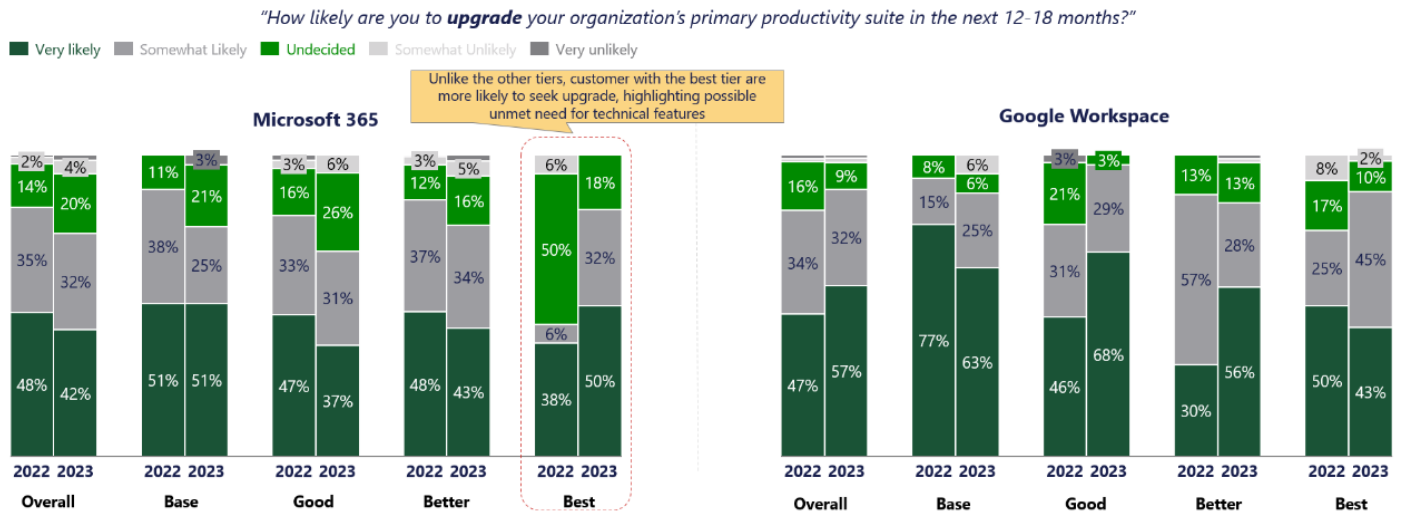
Likelihood To Upgrade Remains High but Moderated for Microsoft

User propensity to upgrade their Suite SKUs over the next 12-18 months remains high, according to Figure 6. This includes 89% of Workspace respondents that are somewhat or very likely to upgrade in this timeframe (up from 83% in last year's survey) and 74% of MS365 planning to upgrade (down from 83% last year). MSFT's Y/Y down-tick may signal that upgrade motions are becoming a bit more mature (i.e., Teams and EMS adoption is now high), though we think the survey results are still robust. Of note, the MSFT cohort that saw the highest Y/Y improvement in upgrade intentions was from customers on the Best offering (i.e. E5, which we estimate at 23m subscribers today), which suggests to us they are the most likely group to be looking to adopt Copilot.

Key reasons for customers to upgrade are 1) receive enhanced services/features (>60% said they could benefit); 2) get additional products (>50%); 3) grow the organization (~50%); and 4) the vendor offers strong incentives to upgrade (~40%). As seen in Figure 38, the larger the company, the more likely they are to be upgrading to a higher tier.

Figure 6 : Primary Productivity Suite Upgrade Likelihood

% of respondents' likelihood to upgrade by subscription level, 2022N=555¹, 2023N= 611¹



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) ITDMs who do not know the suite tier are taken out (2022N=18, 2023N=11)

Product Breadth Still Favors MSFT

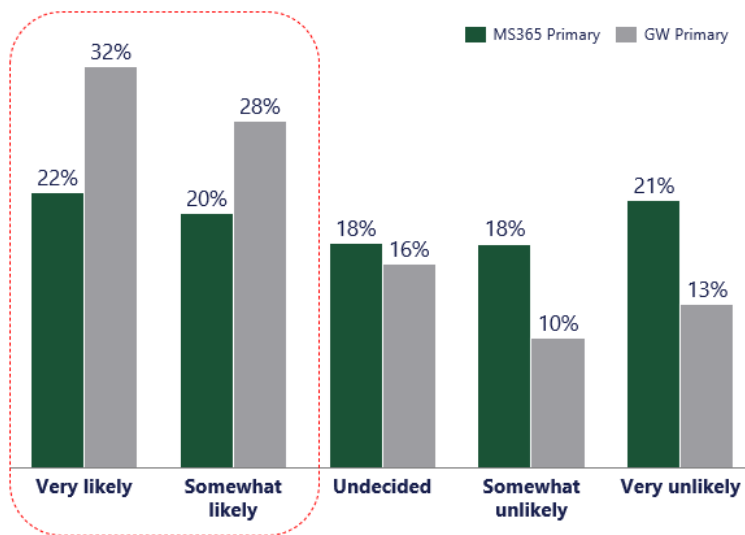
Figure 7 illustrates that MSFT maintains a lead in driving more Productivity ecosystem app purchases within the MSFT Suite. Only 44% of MS365 users are somewhat or very likely to purchase a substitute Productivity app from a 3rd party vendor over the next 12-18 months, while a higher 60% of Workspace users plan to purchase a 3rd party app. This suggests that MSFT remains better positioned to capture broader wallet share around the Productivity ecosystem.

Figure 7 : ISV Usage by Productivity Suite Over the Next 12-18 Months

ISV Usage by Productivity Suite Next 12-18 Months

% Respondent, by productivity suite 2023N=592¹

"How likely are you to **purchase a substitute productivity app** from an (ISV) in the next 12-18 months?"



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

UCaaS Replacement Opportunity Remains High Though Intent Softened Y/Y

As seen in Figure 8, 62% of respondents view their organizations' primary Productivity Suite vendor as a replacement to a 3rd party UCaaS app, slightly down from 68% last year. While down-ticking Y/Y, we note that this year's survey had a larger pool of respondents indicating they do not have an existing 3rd party UCaaS app (14% vs. 9% last year), and that this dynamic validates a consolidation trend is already taking place. Respondents using Workspace (75%) were more inclined to view their Suite as a replacement to 3rd party UCaaS than respondents using MS365 (56%), but we think reflects the greater success MSFT has had with Teams penetration to date and the more greenfield opportunity ahead for GOOG.

To the extent that customers are currently using a UCaaS product from another vendor and would consider replacing it with a service from the Productivity Suite vendor, this would help MSFT (Teams) and GOOG (Meet) gain share from pure plays. As seen in Figure 76, the most common ISVs deployed alongside a Productivity Suite (and the top pure-play vendors used for Videoconferencing, Chat & File Sharing) include Zoom, Salesforce/Slack, Cisco/Webex and Dropbox.

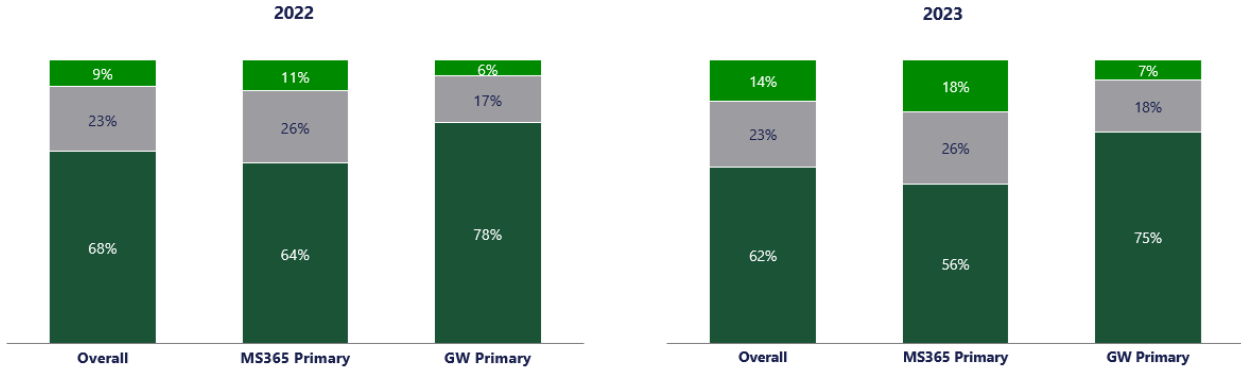
Figure 8 : UCaaS Replacement by Primary Productivity Suite

UCaaS Replacement By Primary Productivity Suite

% of respondents, by primary productivity suite, 2022N=573, 2023N=622

“Do you see an application within your organization’s primary productivity suite that combines voice, chat, and videoconferencing as a replacement to UCaaS (unified communications as a service)?”

■ Yes ■ No ■ We don’t have a UCaaS Solution

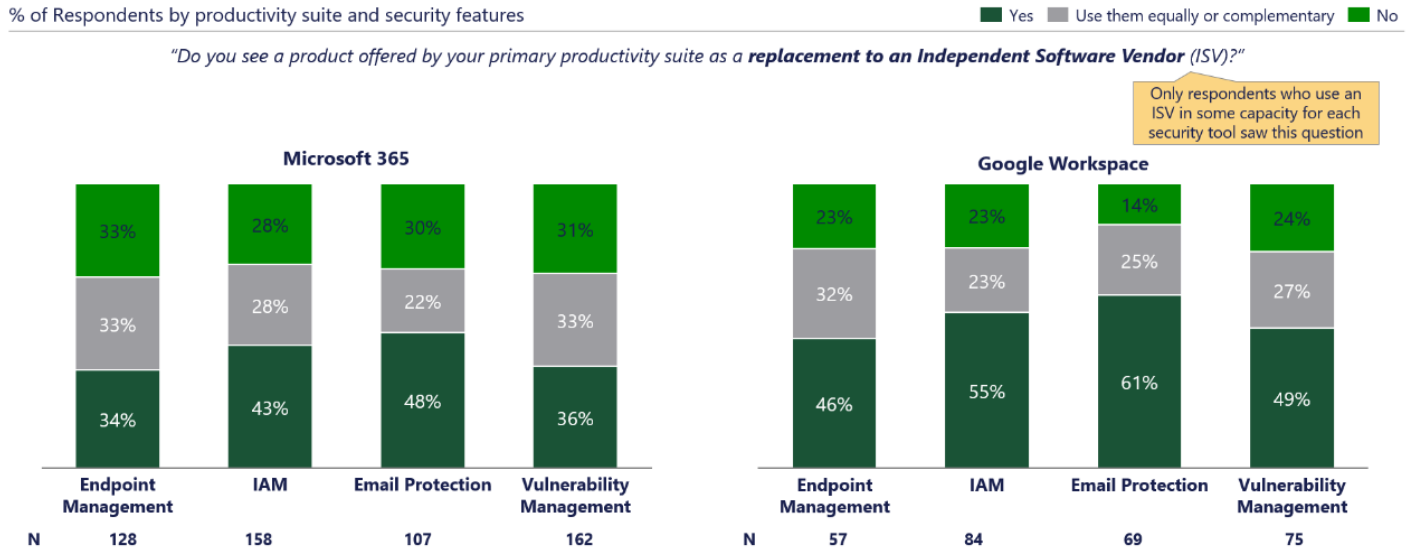


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Security Replacement Opportunity Is Highest in Email Protection and IAM

As seen in Figure 9, respondents indicated that Email Protection and IAM (Identity Access Mgmt) were the two areas of Security that boast the highest interest in consolidating away from 3rd party point tools to the Productivity Suite offering. In Email Protection, 61% of Workspace respondents and 48% of MS365 respondents view the Suite as a potential replacement. In IAM, 55% of Workspace respondents and 43% of MS365 respondents view the Suite as a potential replacement. Workspace users carry a higher propensity to switch across the board. Vulnerability Management and Endpoint Management ranked lower in interest. As seen in Figure 75, the most used 3rd party vendors in Email Protection include Cisco, Checkpoint and Fortinet; and the most commonly used 3rd party vendors in IAM include Palo Alto, Crowdstrike and Duo.

Figure 9 : Replacement of ISV with Native Security



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Overall, it is Encouraging to See Satisfaction Levels Trending Well for Both Microsoft and Google

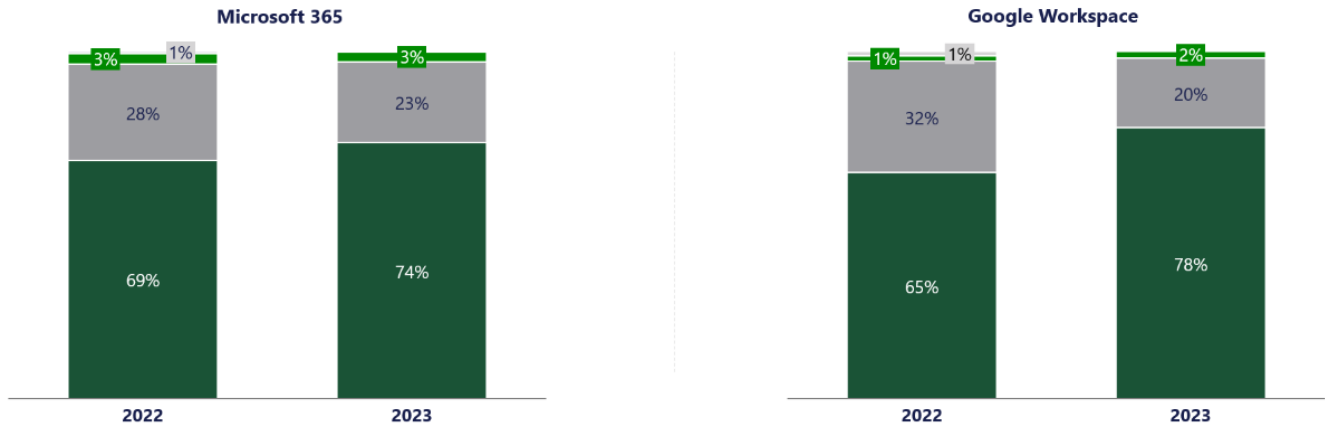
Figure 10 shows that satisfaction levels for both MS365 and Workspace trended higher Y/Y, including 74% of MS365 users very satisfied (up from 69% last year) and 78% of Workspace users very satisfied (up from 65% last year). Workspace’s outsized improvement in satisfaction is notable and perhaps demonstrates why it is gaining share in the market. This being said, Figure 49 shows that only 26% of MS365 Primary Productivity Suite users are very likely or somewhat likely to replace their deployment (down from 40% last year), thus rising satisfaction levels for MS365 are helping MSFT as well, and while Workspace is gaining share, risk of outright displacement of MS365 are decreasing in likelihood.

Figure 10 : Productivity Suite Satisfaction

% of respondents by satisfaction levels, 2022N=573, 2023N=622

*"How **satisfied** is your organization with primary productivity suite?"*

Very Satisfied Somewhat Satisfied Neutral Somewhat Unsatisfied Very Unsatisfied



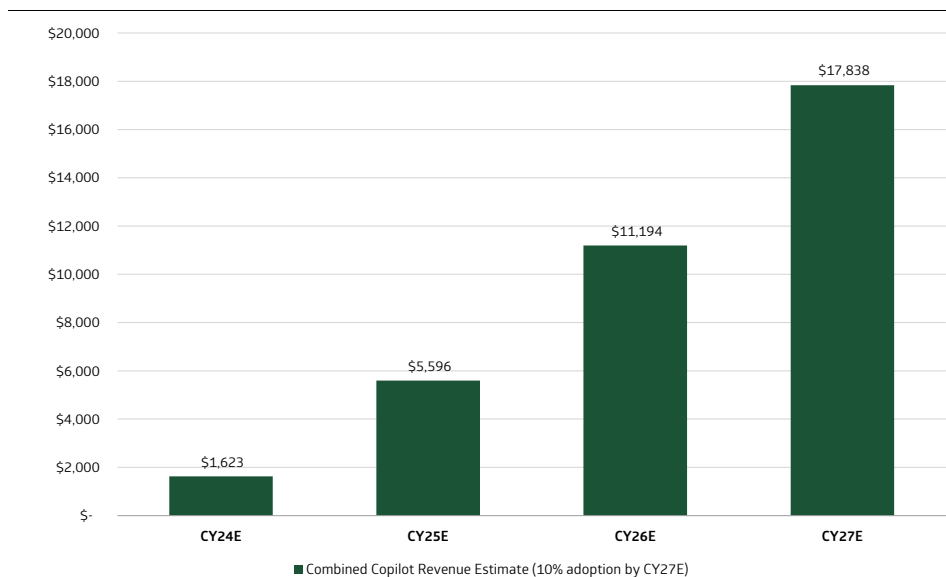
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Model Analysis: Productivity Market Drivers and Generative AI Potential

We estimate that the Productivity Suite market is sized at ~\$53b in 2023, with MSFT holding 79% customer share (vs. 83% in 2022) and GOOG holding 20% customer share (vs. 16% in 2022), though we note that revenue share skews higher for MSFT given its higher penetration with enterprise customers. We expect the market to grow at a ~15% CAGR in CY23-CY27, reaching >\$100b excluding the benefit from GenAI offerings. Key drivers of core growth for the Productivity Suite market include 1) expanding wallet share via SKU upgrades and cross-selling additional services; 2) natural employee and CPI growth; 3) adding new customers (front-line workers remain a greenfield market opportunity); 4) 3rd party UCaaS replacement opportunity noting UCaaS is a \$45bn market (per Gartner); and 5) 3rd party Security replacement opportunity, noting Security is a \$68b market (per Gartner).

On top of this base growth rate, we estimate GenAI offerings, such as MSFT Copilot and GOOG Duet AI, will drive incremental growth within the Productivity Suite market. While the adoption curve is still very nascent (MSFT just released its Copilot services into GA at the beginning of November), we are encouraged by our survey findings with 60% of respondents intending to purchase or budget for MSFT's Copilot in the next 12-18 months, and 76% of Workspace users for the same. Using our analysis of MSFT's MS365 revenue uplift from its Copilot offering as a proxy for the market (and noting both Copilot and Duet offerings are currently priced at \$30/user/month), we come up with a Generative AI market spend forecast on MSFT/GOOG rising from ~\$1.5b in CY24 to ~\$18b in CY27, representing a ~120% CAGR. This assumes that 10% of the subscriber base of MSFT/GOOG adopt Copilot services by the end of 2027, 4 years from now.

Figure 11 : MSFT + GOOG Combined Copilot Revenue Forecast (CY24E-CY27E, in \$m)



Source: TD Cowen, Company Filings

Per our MSFT analysis, which we illustrate in Figures 12 & 13, in our current model we are forecasting a ~1% attach rate per year of currently eligible Copilot users (Business Standard, Business Premium, E3, E5). In this “bare minimum” framework, this brings O365 Commercial revenue from \$39.5b in FY23 (ending June) to \$77.2b in FY28,

representing a 5-year CAGR of ~14.3%. This assumes Copilot revenue builds to \$4.0b in FY28 and lifts MSFT's core CAGR by ~1.2%.

However, if we were to assume an upside scenario of 1% adoption in year 1 and ~5% attach rate per year of currently eligible Copilot users, this would drive FY28 O365 Commercial revenue to \$89.6b, representing a ~17.8% CAGR and generating \$16.5b in Copilot revenue by FY28.

In a more bullish scenario, if we were to assume 10% adoption per year in year 2 & beyond against the current addressable base, this would drive FY28 O365 revenue to \$105b, representing a ~22% CAGR and generating roughly \$32b in Copilot revenue by FY28. This would assume that by FY28, ~20% of all subscribers (and ~40% of the current addressable base) will have adopted Copilot.

In a very bullish scenario, if we were to assume 20% adoption per year in year 2 & beyond against the current addressable base, this would drive FY28 O365 revenue to \$137b, representing a ~28% CAGR and generating \$63b in Copilot revenue by FY28, implying that ~40% of the total install base will have adopted Copilot.

Figure 12 : M365 Copilot Adoption – Scenario Analysis (\$m)

	FY22A	FY23A	FY24E	FY25E	FY26E	FY27E	FY28E
Office 365 Commercial Business - Copilot Adoption Scenarios							
O365 Commerical Revenue (excluding Copilot)	\$34,957	\$39,492	\$46,137	\$52,570	\$59,060	\$66,067	\$73,144
Y/Y Growth	17%	13%	17%	14%	12%	12%	11%
Y/Y Growth (cc)	18%	18%	17%	14%	12%	12%	11%
O365 Commerical Revs (incl. Copilot, 1% adoption of addressable base per year)	\$34,957	\$39,492	\$46,299	\$53,612	\$60,957	\$68,953	\$77,155
Y/Y Growth	17%	13%	17%	16%	14%	13%	12%
Y/Y Growth (cc)	18%	18%	17%	16%	14%	13%	12%
Copilot Adoption % of Total Seats			0.4%	0.9%	1.4%	1.9%	2.4%
O365 Commerical Revs (incl. Copilot, 1% year 1, then 5% adoption of addressable base per year)	\$34,957	\$39,492	\$46,299	\$55,047	\$65,537	\$77,218	\$89,648
Y/Y Growth	17%	13%	17%	19%	19%	18%	16%
Y/Y Growth (cc)	18%	18%	17%	19%	19%	18%	16%
Copilot Adoption % of Total Seats			0.4%	2.7%	5.1%	7.5%	10.1%
O365 Commerical Revs (incl. Copilot, 1% year 1, then 10% adoption of addressable base per year)	\$34,957	\$39,492	\$46,299	\$56,840	\$71,262	\$87,550	\$105,265
Y/Y Growth	17%	13%	17%	23%	25%	23%	20%
Y/Y Growth (cc)	18%	18%	17%	23%	25%	23%	20%
Copilot Adoption % of Total Seats			0.4%	5.0%	9.7%	14.6%	19.7%
O365 Commerical Revs (incl. Copilot, 1% year 1, then 20% adoption of addressable base per year)	\$34,957	\$39,492	\$46,299	\$60,428	\$82,711	\$108,213	\$136,500
Y/Y Growth	17%	13%	17%	31%	37%	31%	26%
Y/Y Growth (cc)	18%	18%	17%	31%	37%	31%	26%
Copilot Adoption % of Total Seats			0.4%	9.6%	19.0%	28.8%	38.8%
Revenue Delta - Copilot Adoption Scenarios							
Delta vs. No Copilot (~2.5% adoption of total base by year 5)			\$162	\$1,042	\$1,897	\$2,886	\$4,011
Delta vs. No Copilot (~10% adoption of total base by year 5)			\$162	\$2,477	\$6,477	\$11,151	\$16,505
Delta vs. No Copilot (~20% adoption of total base by year 5)			\$162	\$4,270	\$12,202	\$21,483	\$32,122
Delta vs. No Copilot (~40% adoption of total base by year 5)			\$162	\$7,858	\$23,651	\$42,146	\$63,356

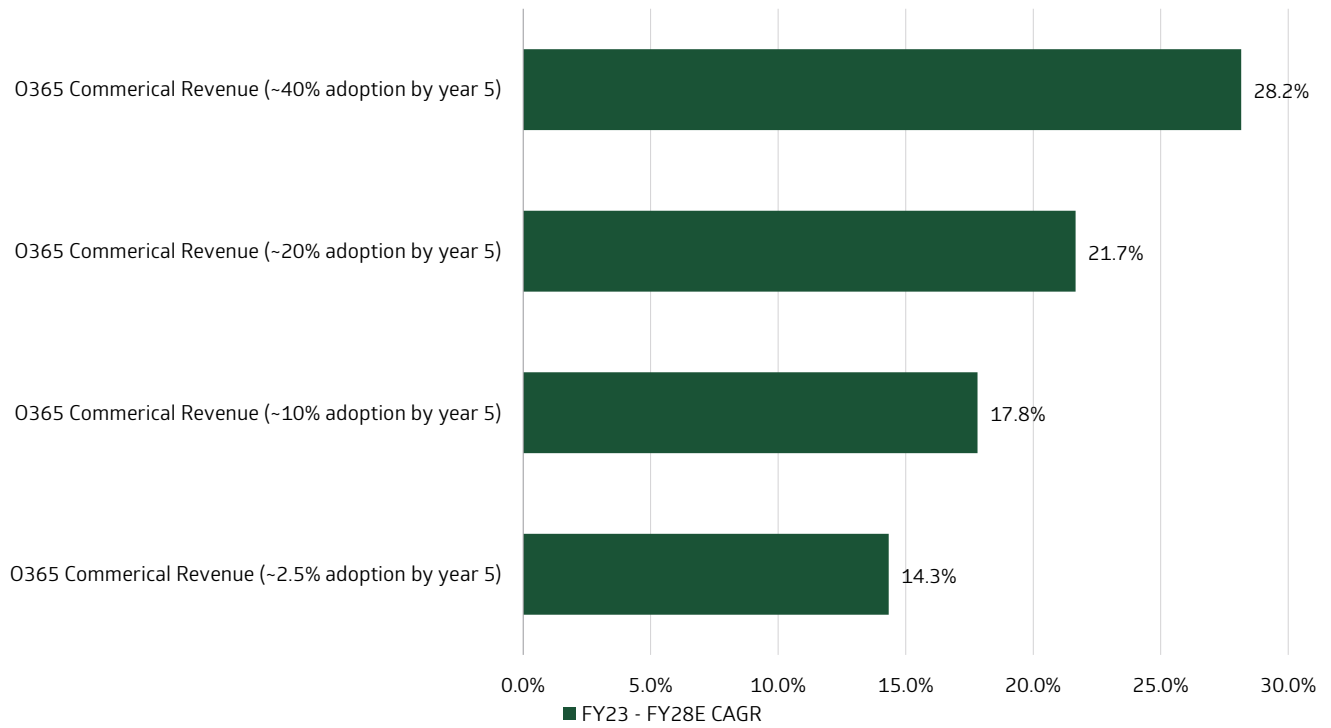
Source: TD Cowen, Company Filings

Figure 13 : M365 Copilot Adoption – Bottom-Up Analysis for 10% Copilot Adoption by FY28 (\$m)

	FY22A	FY23A	FY24E	FY25E	FY26E	FY27E	FY28E
Number of Addressable Seats (mm)							
Business Standard	65	68	73	76	79	81	83
Business Premium	28	33	39	45	52	59	67
E3	34	37	40	43	45	47	49
E5	18	23	29	35	42	49	57
Total Addressable Seats	145	161	180	199	218	237	256
Y/Y Growth	16%	11%	12%	11%	10%	9%	8%
Copilot Assumptions							
Copilot Price			\$30	\$30	\$30	\$30	\$30
Attach Rate on Addressable Seats			1%	6%	11%	16%	21%
Number of Copilot Seats			2	12	24	38	54
Monthly Copilot Revenue Run Rate (1% attach per year)			\$54	\$359	\$721	\$1,138	\$1,613
Revenue (\$ mm)							
Business Standard	\$6,998	\$7,383	\$7,844	\$8,240	\$8,556	\$8,778	\$8,938
Business Premium	\$4,332	\$4,897	\$5,787	\$6,754	\$7,785	\$9,222	\$10,427
E3	\$4,957	\$6,296	\$7,735	\$8,749	\$9,767	\$10,763	\$11,766
E5	\$5,172	\$7,118	\$9,626	\$12,211	\$15,143	\$18,397	\$22,039
Core Revenue (Business Standard/Premium, E3/E5)		\$25,694	\$30,991	\$35,954	\$41,250	\$47,160	\$53,170
Y/Y Growth		20%	21%	16%	15%	14%	13%
Y/Y Growth (cc)		25%	21%	16%	15%	14%	13%
Copilot Revenue		\$0	\$162	\$2,477	\$6,477	\$11,151	\$16,505
Addressable Business							
Addressable Seats	145	161	180	199	218	237	256
Y/Y Growth	16%	11%	12%	11%	10%	9%	8%
ARPU	\$12.34	\$13.27	\$14.41	\$16.07	\$18.21	\$20.50	\$22.68
Y/Y Growth	8%	8%	9%	12%	13%	13%	11%
Addressable Revenue	\$21,460	\$25,694	\$31,153	\$38,431	\$47,727	\$58,311	\$69,675
Y/Y Growth	26%	20%	21%	23%	24%	22%	19%
Y/Y Growth (cc)	27%	25%	21%	23%	24%	22%	19%
Non-Addressable Business							
Non-Addressable Seats	190	206	222	238	253	266	278
Y/Y Growth	12%	8%	8%	7%	6%	5%	5%
ARPU	\$5.92	\$5.59	\$5.67	\$5.81	\$5.87	\$5.93	\$5.99
Y/Y Growth	-3%	-6%	2%	2%	1%	1%	1%
Non-Addressable Revenue	\$13,497	\$13,798	\$15,146	\$16,616	\$17,810	\$18,907	\$19,974
Y/Y Growth	8%	2%	10%	10%	7%	6%	6%
Y/Y Growth (cc)	9%	7%	10%	10%	7%	6%	6%
Total Office 365 Business							
Total Seats	335	367	403	438	471	503	534
Y/Y Growth	14%	10%	9.7%	8.7%	7.7%	6.7%	6.2%
ARPU	\$8.70	\$8.97	\$9.58	\$10.48	\$11.59	\$12.80	\$13.99
Y/Y Growth	4%	3%	7%	9%	11%	10%	9%
Total Office 365 Commercial Revenue	\$34,957	\$39,492	\$46,299	\$55,047	\$65,537	\$77,218	\$89,648
Y/Y Growth	19%	13%	17%	19%	19%	18%	16%
Y/Y Growth (cc)	20%	18%	17%	19%	19%	18%	16%

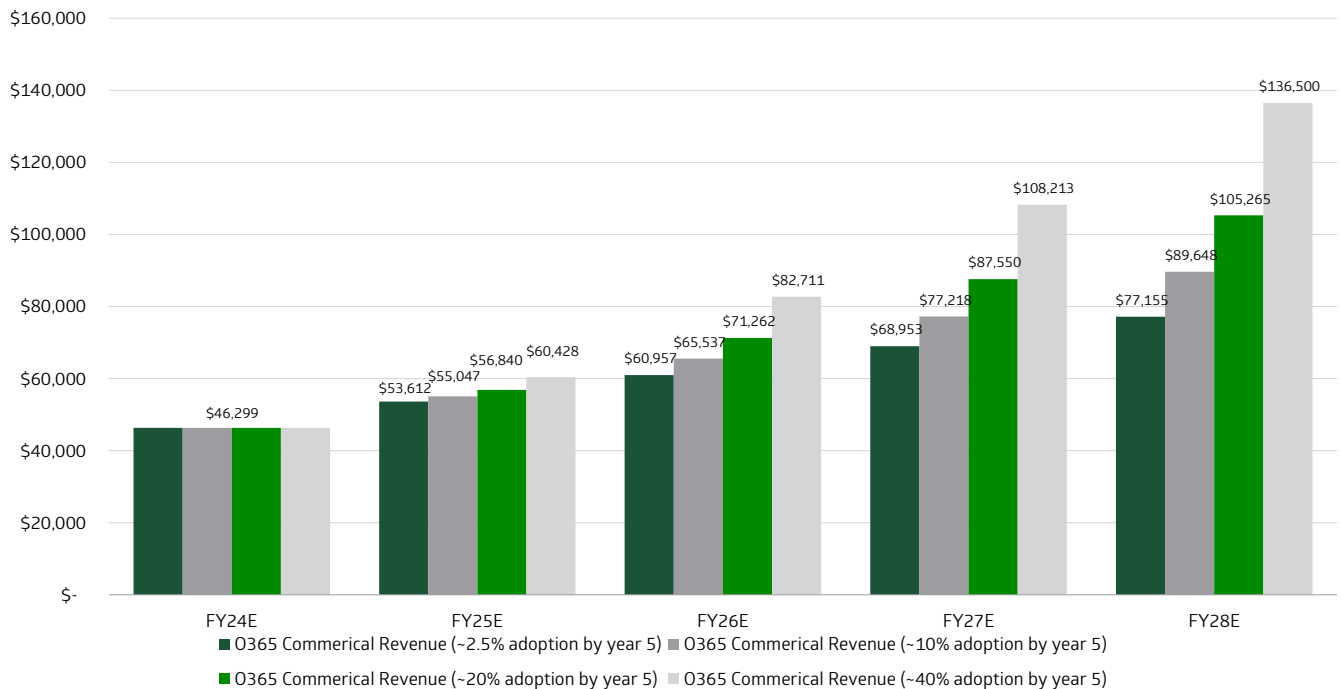
Source: TD Cowen, Company Filings

Figure 14 : M365 Copilot Adoption – Office Commercial 365 CAGR Scenario Analysis (FY23-FY28)



Source: TD Cowen, Company Filings

Figure 15 : M365 Copilot Adoption – Office Commercial 365 Revenue Scenario Analysis (FY24-FY28, in \$m)



Source: TD Cowen, Company Filings

Google Cloud Model (John Blackledge)

Below we break out Google Cloud's business between GCP and Google Workspace. For Workspace, we assume a 14%-15% market share of the Productivity suite market. In turn, we estimate Workspace '23 revenue of \$7.5BN, or roughly 23% of total Google Cloud revenue. We estimate GCP '23 revenue of \$25.3BN, up 27% y/y and tracking above our estimated total Google Cloud revenue growth of 25% y/y, in line with recent management comments.

In terms of margins, we assume Workspace gross margins of around 81% and GCP gross margins in the high 70% area; overall, we estimate Google Cloud gross margins of 72.4% in '23. We estimate total Google Cloud operating income of \$1.3BN in '23, after first turning positive in 1Q23, growing to \$12.5BN in '27.

Figure 16 : GOOG: Google Cloud Model, '19-'28E (\$m)

	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
Google Cloud Revenue										
GCP	\$5,039	\$8,292	\$13,540	\$19,841	\$25,270	\$31,633	\$39,306	\$48,242	\$58,473	\$70,278
Google Workspace/Other	\$3,879	\$4,767	\$5,666	\$6,439	\$7,548	\$8,922	\$10,606	\$12,440	\$14,391	\$16,485
Total Google Cloud Revenue	\$8,918	\$13,059	\$19,206	\$26,280	\$32,818	\$40,555	\$49,913	\$60,682	\$72,864	\$86,763
Google Cloud COGS										
GCP	\$2,015	\$3,110	\$4,739	\$6,448	\$7,581	\$8,699	\$10,809	\$13,267	\$16,080	\$19,326
Google Workspace/Other	\$970	\$1,072	\$1,133	\$1,288	\$1,472	\$1,695	\$1,962	\$2,239	\$2,518	\$2,802
Total COGS	\$2,985	\$4,182	\$5,872	\$7,736	\$9,053	\$10,394	\$12,771	\$15,506	\$18,598	\$22,129
Google Cloud Gross Profit										
GCP	\$3,023	\$5,183	\$8,801	\$13,393	\$17,689	\$22,934	\$28,497	\$34,975	\$42,393	\$50,951
Google Workspace/Other	\$2,909	\$3,694	\$4,533	\$5,151	\$6,076	\$7,227	\$8,644	\$10,201	\$11,872	\$13,682
Total Gross Profit	\$5,933	\$8,877	\$13,334	\$18,544	\$23,765	\$30,161	\$37,141	\$45,176	\$54,265	\$64,634
Google Cloud Operating Expenses										
GCP	\$5,976	\$9,197	\$10,353	\$13,717	\$15,115	\$19,901	\$24,500	\$28,409	\$32,192	\$36,294
Google Workspace/Other	\$4,601	\$5,287	\$6,080	\$6,748	\$7,356	\$7,907	\$8,421	\$8,969	\$9,552	\$10,173
Total Opex	\$10,578	\$14,484	\$16,433	\$20,466	\$22,471	\$27,808	\$32,921	\$37,378	\$41,744	\$46,467
Google Cloud Operating Income										
GCP	(\$2,953)	(\$4,014)	(\$1,552)	(\$325)	\$2,574	\$3,033	\$3,997	\$6,566	\$10,201	\$14,657
Google Workspace/Other	(\$1,692)	(\$1,593)	(\$1,547)	(\$1,597)	(\$1,279)	(\$681)	\$223	\$1,232	\$2,321	\$3,510
Total Operating Income	(\$4,645)	(\$5,607)	(\$3,099)	(\$1,922)	\$1,294	\$2,352	\$4,220	\$7,798	\$12,521	\$18,167
Y/Y % Change										
Revenue										
GCP	62.8%	64.6%	63.3%	46.5%	27.4%	25.2%	24.3%	22.7%	21.2%	20.2%
Google Workspace/Other	41.4%	22.9%	18.9%	13.6%	17.2%	18.2%	18.9%	17.3%	15.7%	14.6%
Total Google Cloud Revenue	52.8%	46.4%	47.1%	36.8%	24.9%	23.6%	23.1%	21.6%	20.1%	19.1%
Opex										
GCP	40.3%	53.9%	12.6%	32.5%	10.2%	31.7%	23.1%	16.0%	13.3%	12.7%
Google Workspace/Other	21.8%	14.9%	15.0%	11.0%	9.0%	7.5%	6.5%	6.5%	6.5%	6.5%
Total Google Cloud Opex	31.6%	36.9%	13.5%	24.5%	9.8%	23.8%	18.4%	13.5%	11.7%	11.3%
Gross Margins										
GCP	60.0%	62.5%	65.0%	67.5%	70.0%	72.5%	72.5%	72.5%	72.5%	72.5%
Google Workspace/Other	75.0%	77.5%	80.0%	80.0%	80.5%	81.0%	81.5%	82.0%	82.5%	83.0%
Total Google Cloud Gross Margin	66.5%	68.0%	69.4%	70.6%	72.4%	74.4%	74.4%	74.4%	74.5%	74.5%
Operating Margins										
GCP	(58.6)%	(48.4)%	(11.5)%	(1.6)%	10.2%	9.6%	10.2%	13.6%	17.4%	20.9%
Google Workspace/Other	(43.6)%	(33.4)%	(27.3)%	(24.8)%	(17.0)%	(7.6)%	2.1%	9.9%	16.1%	21.3%
Total Google Cloud Operating Margin	(52.1)%	(42.9)%	(16.1)%	(7.3)%	3.9%	5.8%	8.5%	12.9%	17.2%	20.9%
Incremental Margins										
Google Cloud: Gross Margin	72.8%	71.1%	72.5%	73.7%	79.9%	82.7%	74.6%	74.6%	74.6%	74.6%
Google Cloud: Operating Income	(9.6)%	(23.2)%	40.8%	16.6%	49.2%	13.7%	20.0%	33.2%	38.8%	40.6%

Source: TD Cowen, Company Reports

Proprietary Analysis: Comparing AWS to GCP at Similar Revenue Scale

Given our new breakout of Google Cloud, below we compare Google Cloud Platform (GCP), when the business was at a similar revenue scale per our estimates to Amazon AWS. Several conclusions:

- i) **GCP's biz today is approx. 5 years behind AWS from a revenue scale perspective.**
We estimate GCP rev of \$25.3BN in '23E, which most closely aligns with AWS rev in 2018. Of note, Google Cloud started on 4/7/08, >2 years after AWS started on 3/3/06.
- ii) **GCP revenue trajectory from '19-'23E tracks fairly closely with AWS revenue trajectory from '14-'18**, per our est's; this could imply upside if GCP rev in '24-'28E can mirror AWS trajectory from '19-23E. In '21, AWS rev growth re-accelerated

from '20 levels, reaching +37% y/y in '21 and +29% in '22; by contrast, our GCP model does not assume that rev growth re-accelerates (we est. +27% y/y in '23E, with rev growth slowing through '28E). However, if GCP rev should re-accelerate, our est's could prove overly conservative, and there could be considerable upside for Google Cloud in coming years. Conversely, if macro headwinds persist, this could be disruptive to broader Cloud growth & market leaders, including AWS, Azure, GCP and others. [See our 2023 Public Cloud deep dive report from 9/25.](#)

Figure 17 : TD Cowen Analysis - Comparison: GCP '21-'28E vs. AWS '16-'23 (\$m)

	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
GCP Revenue '19-28E	\$13,540	\$19,841	\$25,270	\$31,633	\$39,306	\$48,242	\$58,473	\$70,278
Opex	\$15,092	\$20,166	\$22,696	\$28,600	\$35,309	\$41,676	\$48,272	\$55,621
GCP Operating Income	(\$1,552)	(\$325)	\$2,574	\$3,033	\$3,997	\$6,566	\$10,201	\$14,657
Y/Y % Change								
GCP Revenue	63.3%	46.5%	27.4%	25.2%	24.3%	22.7%	21.2%	20.2%
Opex	22.6%	33.6%	12.5%	26.0%	23.5%	18.0%	15.8%	15.2%
GCP Operating Income	(61.3%)	(79.1%)	(893.1%)	17.8%	31.8%	64.3%	55.4%	43.7%
	2016	2017	2018	2019	2020	2021	2022	2023E
AWS Revenue '14-23E	\$12,219	\$17,458	\$25,656	\$35,026	\$45,370	\$62,202	\$80,096	\$90,715
Opex	\$9,111	\$13,127	\$18,360	\$25,825	\$31,839	\$43,670	\$57,255	\$66,194
AWS Operating Income	\$3,108	\$4,331	\$7,296	\$9,201	\$13,531	\$18,532	\$22,841	\$24,521
Y/Y % Change								
AWS Revenue	55.1%	42.9%	47.0%	36.5%	29.5%	37.1%	28.8%	13.3%
Opex	43.0%	44.1%	39.9%	40.7%	23.3%	37.2%	31.1%	15.6%
AWS Operating Income	106.2%	39.4%	68.5%	26.1%	47.1%	37.0%	23.3%	7.4%
Revenue Diff: GCP vs. AWS	\$1,321	\$2,383	(\$386)	(\$3,393)	(\$6,064)	(\$13,960)	(\$21,623)	(\$20,438)
Opex Diff: GCP vs. AWS	\$5,981	\$7,039	\$4,336	\$2,775	\$3,470	(\$1,994)	(\$8,983)	(\$10,573)
Op Income Diff: GCP vs. AWS	(\$4,660)	(\$4,656)	(\$4,722)	(\$6,168)	(\$9,534)	(\$11,966)	(\$12,640)	(\$9,864)

Source: TD Cowen, Company Reports

Productivity Suite Security Is Mission Critical (Shaul Eyal)

Productivity Suite Users and Vendors Recognize Security Is Mission Critical

For Productivity Suite buyers, cybersecurity is the most frequently cited purchase criterion. By some measures, given their extensive security offerings, productivity suite juggernauts, MSFT and GOOG, are the world's largest cybersecurity vendors, and multi-billion-dollar investment commitments establish them as the largest investors in security technology among cybersecurity vendors.

MSFT and GOOG Dedicate Significant Capital to Cybersecurity

On 8/25/23, following a cybersecurity-focused Whitehouse meeting, MSFT committed to spending \$20B on cybersecurity over 5 years, and Google committed to spending \$10B over 5 years. In September 2022, Google completed its \$5.4B acquisition of Mandiant, a cybersecurity provider. In January 2023, Microsoft announced that for 2022, its cybersecurity business generated \$20B in revenue, up 33% from \$15B in 2021, and doubling from \$10B in 2020.

Functionality Alone Is Not Enough; Customers Need Secure Functionality

Secure functionality is now a fundamental, mandatory requirement and ranks as the dominant criterion for Productivity Suite selection. Suite vendors will continue expanding native incorporation of security features. They are also likely to continue integrating with independent cybersecurity vendors to access best-in-class capabilities and to expand customers' security options.

Productivity Suite Vendors Retain Significant Leverage

Productivity Suite vendors control critical suite decisions such as roadmap or supported integrations, and these can have significant impact on independent security vendors. Customers typically prefer to manage fewer security vendors, and suite vendors are frequently tightly integrated into customers' operations, providing native security vendors with an incumbency advantage.

Vendor Consolidation, Capital Availability, & Platform Ownership Favor Suite Vendors

For customers, fewer security vendors may reduce the number of required integrations, reducing integration-exposed vulnerabilities, and simplifying solution deployment and management. Fewer vendors also enable clearer lines of responsibility (and clearer assignment of blame in the event of a security failure).

Furthermore, by commanding greater capital and controlling product roadmaps, suite vendors can determine which cybersecurity capabilities to develop internally and which capabilities to leave to third parties.

Securing Productivity Suites: An Opportunity for Independent Cybersecurity Vendors

Protecting Productivity Suites enables independent cybersecurity vendors to target a large customer group with well-defined needs. Independent cybersecurity vendors may position offerings as "best-in-class" solutions for customers requiring security higher than levels offered natively. Depending on the specific resource at risk, a "good enough" approach to security may drive selection of a less expensive independent solution. Increasingly, however, potential damage from intra-network, lateral infiltration argues against a "good enough" approach.

Independent Cybersecurity Solutions Augment or Replace Native Solutions

Independent solutions may augment or replace native solutions. Because independent cybersecurity vendors—platform or point providers—typically operate with a more limited operational focus than suite vendors, they tend to be more agile, and this agility supports faster development and leading-edge solutions. End customers may deploy independent cybersecurity solutions to access best-in-class capabilities.

How Independent Cybersecurity Vendors Sustain Relevance

Though our survey revealed that suite buyers rely primarily on native security, ISVs can maintain relevance by executing co-existence strategies, for example by augmenting or replacing of native cybersecurity with best-in-class functionality or by providing superior ease-of-use. ISVs can enhance protection by leading the development of emerging threat countermeasures or by advancing the evolution of security technologies to keep pace with the evolution of Productivity Suite technologies.

Survey Results: Security Tops Purchase Criteria Rankings

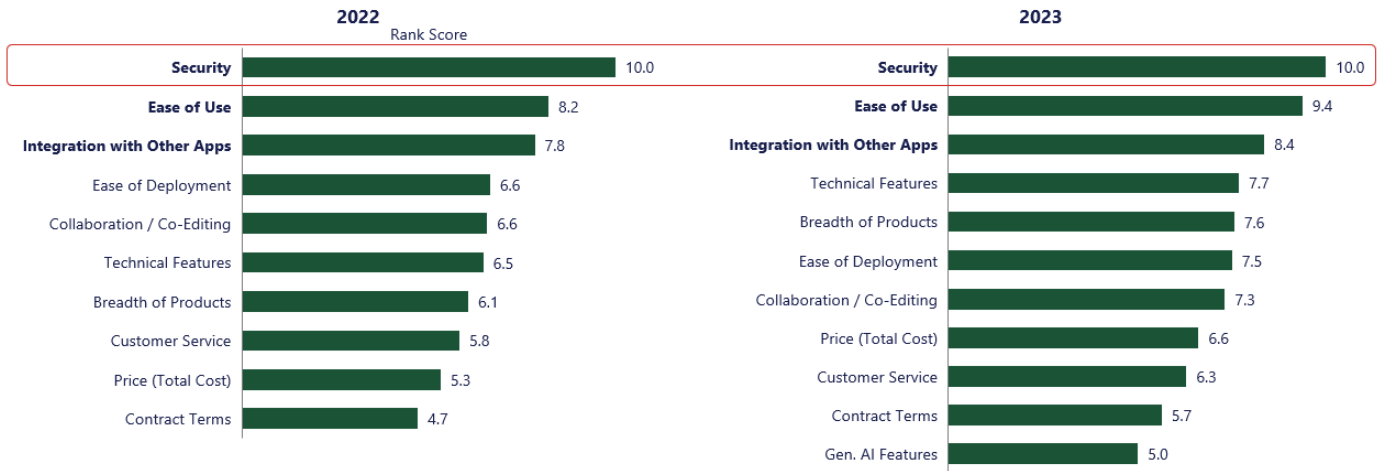
Recognizing that cybersecurity failures pose significant risks (potentially existential risks), ITDM's ranked Security as the highest purchasing criterion driving Productivity Suite purchases for both 2022 and 2023.

Figure 18 : Key Purchasing Criteria

Key Purchasing Criteria

Most cited key purchasing criteria, consolidated importance ranking, 2022N=573 2023N=622

"Please rank the following key purchasing criteria from most to least important when evaluating a productivity suite software."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

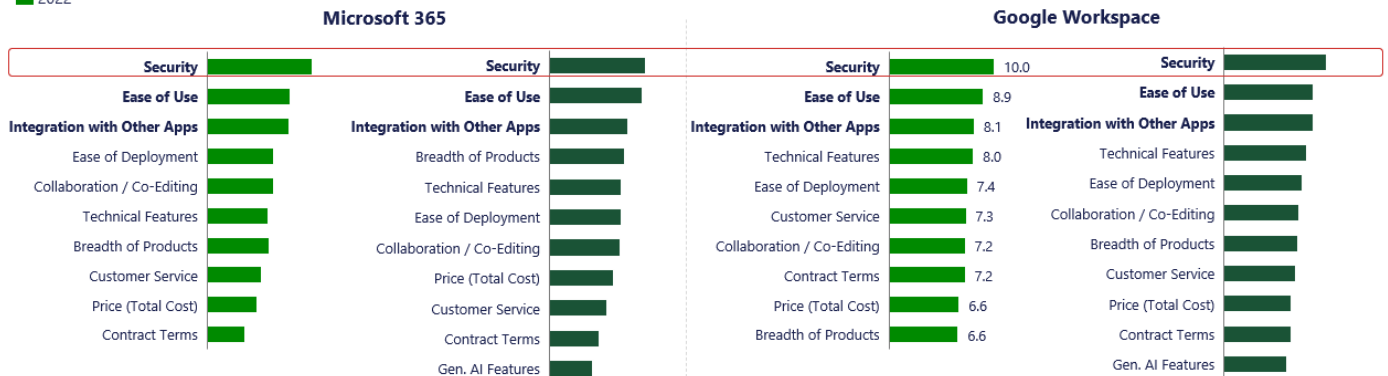
For both Microsoft 365 and Google Workspace, security is the highest ranked purchase criterion.

Figure 19 : Regardless Of Platform, Security Is Critical

Key Purchasing Criteria By Productivity Suite

Most cited key purchasing criteria by productivity suite, consolidated importance ranking, 2022N=573, 2023N=622

Legend: 2023 (dark green), 2022 (light green). *"Please rank the following key purchasing criteria from most to least important when evaluating a productivity suite software."*



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

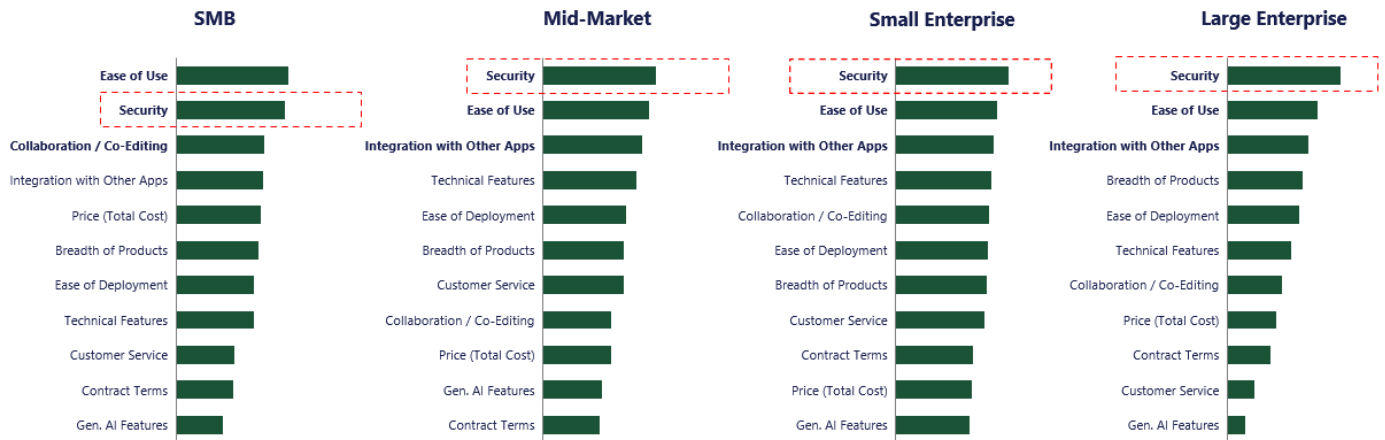
SMB was the only cohort where Ease of Use outranked Security, possibly because many SMB's (possessing fewer resources) contract-out security to Managed Services Providers or Managed Security Services Providers, resulting in greater familiarity with ease-of-use features and comparatively less experience with cybersecurity intricacies.

Figure 20 : Security Ranks Highly Across All Business Sizes

Key Purchasing Criteria By Business Size

Most cited key purchasing criteria by company size, consolidated importance ranking, 2023N=622

"Please rank the following key purchasing criteria from most to least important when evaluating a productivity suite software."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Generative AI: Highly Suited to Cybersecurity Applications

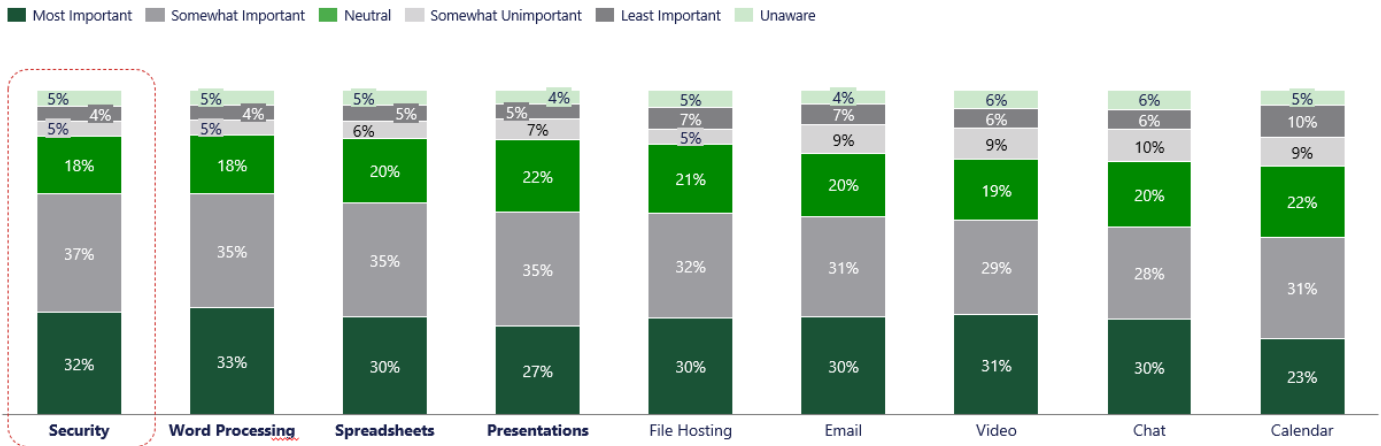
Generative AI, AI, ML, and automation are technologies well-suited to the management of the massive volume and velocity of signals collected and analyzed by cybersecurity solutions. These technologies, particularly Generative AI, are particularly suited to dealing with the current global shortage of cybersecurity professionals. At least 69% of respondents believe Generative AI driven features and integration are important for cybersecurity.

Figure 21 : Generative AI: Already Impacting Cybersecurity

Generative AI Importance by Product - Today

% of Respondents by productivity products 2023N=622

"How important are Generative AI-driven features and integration to the following core productivity suite products?"



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

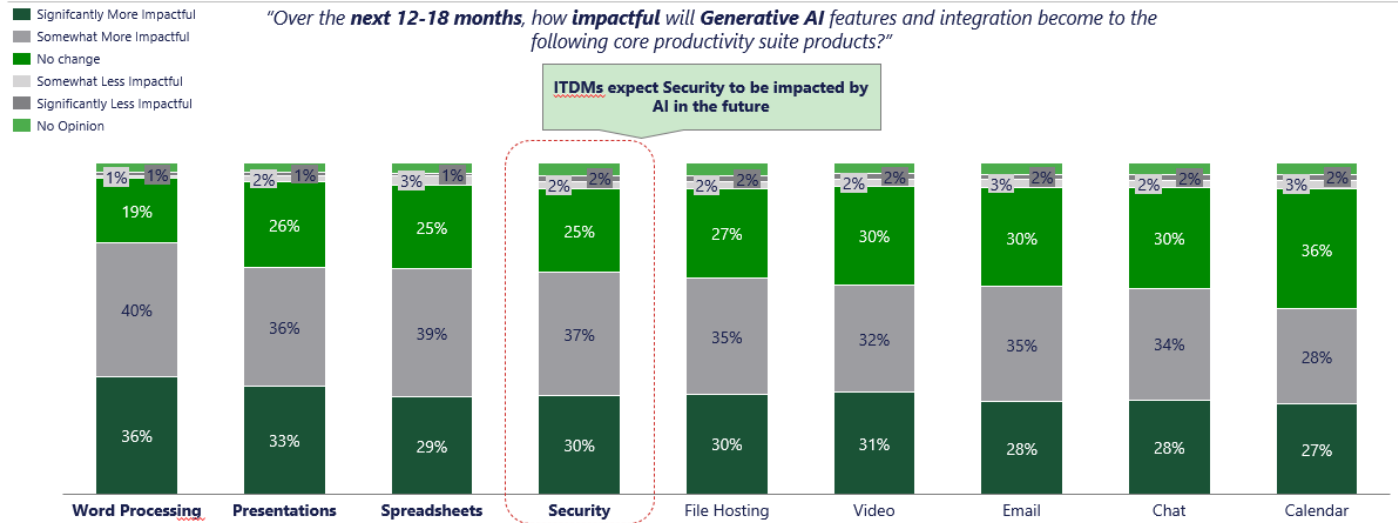
Generative AI Set to Transform Cybersecurity

At least 67% of respondents expect Generative AI to be impactful to security. Some cybersecurity vendors are currently introducing Generative AI-powered offerings, though in some cases, issues such as pricing or monetization have not been finalized.

Figure 22 : A Majority of Respondents Expect Generative AI To Be Impactful for Cybersecurity

Generative AI Impact by Product – Next 12-18 months

% of Respondents by productivity products 2023N=622



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Independent Cybersecurity Vendors Have Room to Grow Within the Productivity Suite Opportunity

Approximately 20% of Google Workspace customers augment security with independent solutions, higher than the ~14% of Microsoft 365 customers that augment with independent solutions.

Figure 23 : Google Workspace Customers More Likely to Leverage Independent Software

ISV Usage by Primary Productivity Suite - Current

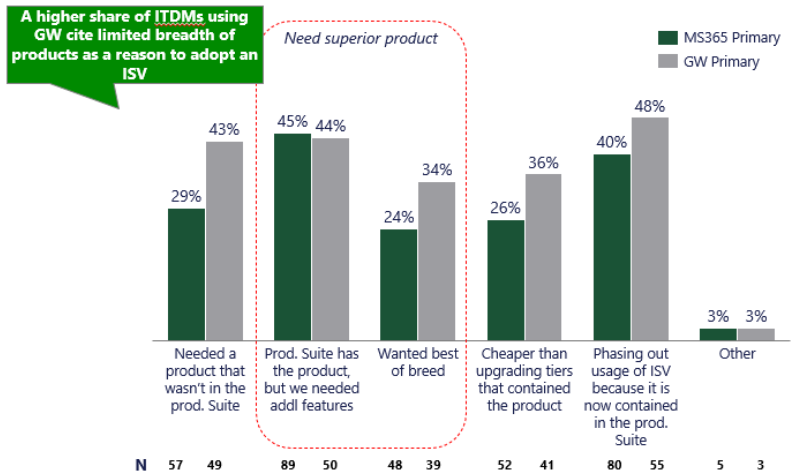
Respondents who use an ISV as a % of total users, by suite



Reasons for using ISVs - Current

% Respondent, by productivity suite 2023N=313

"Why do you use productivity product(s) from an Independent Software Vendor (ISV)? Select all that apply."



Notes: Familiarity and comfort with a product are frequently cited "other" reasons

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Across suite products, primary reasons for supplementing native solutions with independent solutions were (1) to gain additional features and (2) to acquire best-in-class solutions. These rationales, applicable to the broader set of capabilities surveyed, also motivate the deployment of independent security solutions to augment native security capabilities.

Native Protection Dominates Across All Surveyed Cybersecurity Categories

Our survey examined usage patterns for Endpoint Management, Identity & Access Management (IAM), Email Protection, and Vulnerability Management. For both Microsoft 365 and Google Workspace, a minority of respondents reported using only independent solutions.

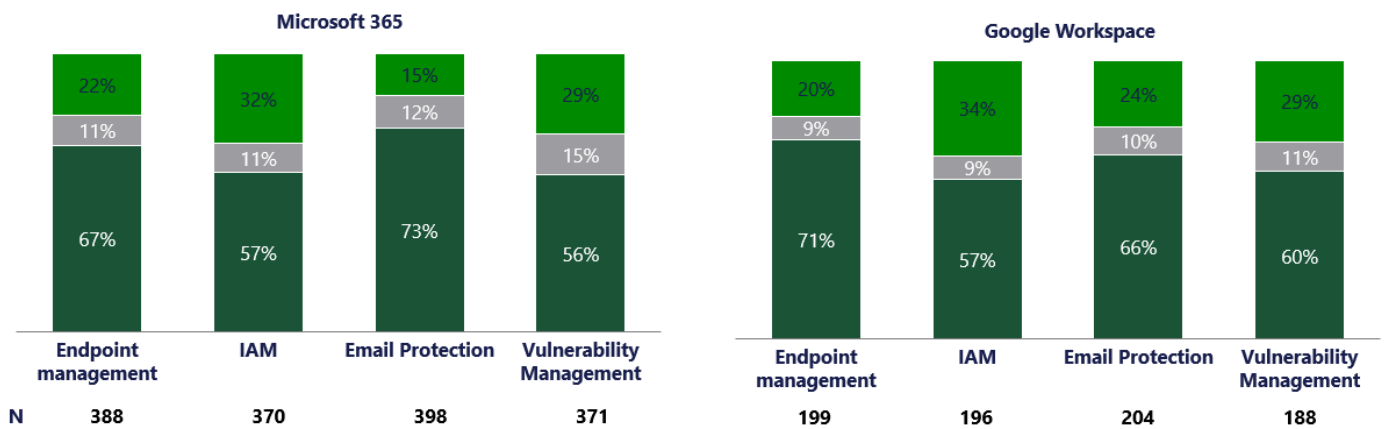
Figure 24 : Across Security Solution Types, IAM and Vulnerability Management Most Likely to Displace Native Solutions

Native vs ISV Security Feature Usage

% Respondents, By Primary Productivity Suite 2023N=Various¹

■ Through Productivity Suite ■ Through both ISV and Productivity Suite ■ Through ISV

"Please indicate if your organization uses the following security features."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

For both Suites, across all surveyed security categories, a majority (ranging from 56% to 73%) used only native tools, and another 9 to 15% supplemented native tools with independent solutions. Native security constituted part of the deployed solution for 66% to 85% of respondents. For both Suites, Identity & Access Management and Vulnerability Management were the solutions most likely to be sole sourced from independent vendors.

Respondents See Native Security as Safely Enconced, Perhaps Augmented By Independent Security

Comparing native security solutions with independent solutions, momentum is on the side of native solutions. For both Microsoft 365 and Google Workspace, most respondents (ranging from 67% to 86% across solutions categories) viewed native security as either displacing or augmenting independent solutions.

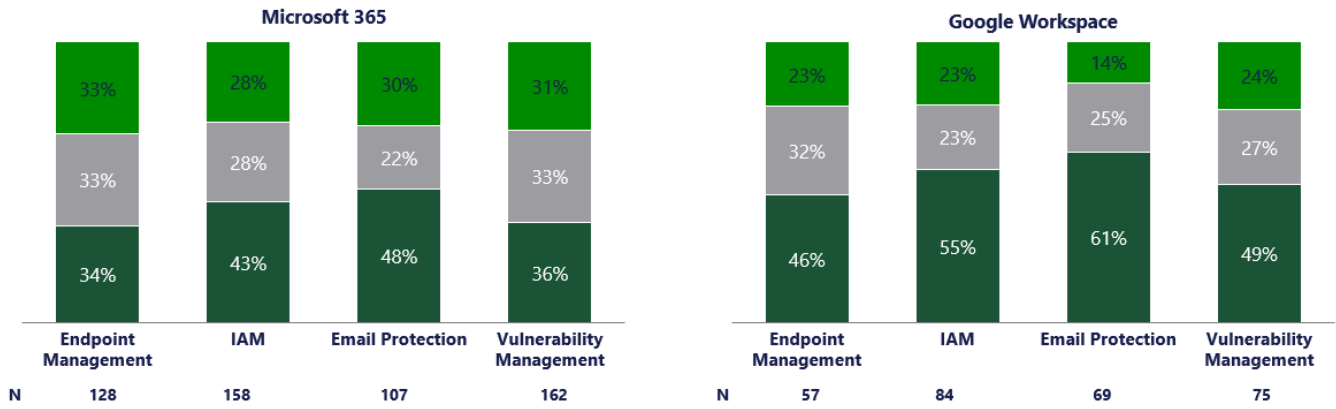
Figure 25 : Majorities Expect to Maintain Reliance on Native Solutions

Replacement of ISV with Native Security

% of Respondents by productivity suite and security features

■ Yes ■ Use them equally or complementary ■ No

“Do you see a product offered by your primary productivity suite as a **replacement to an Independent Software Vendor (ISV)?**”



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Google Workspace Native Security Comparatively More Likely to Replace Independents

Native solutions from Google Workspace appear to have comparatively more displacement momentum against independent software vendors. For Google Workspace, most respondents (76% to 86%) viewed native security as displacing or augmenting independent solutions.

Microsoft 365 Native Security Comparatively Less Likely to Replace Independents

Native solutions from Microsoft 365 appear to have comparatively lower displacement momentum against independent software vendors. For Microsoft’s 365, most respondents (ranging from 67% to 71% across solution categories) view native security as displacing or augmenting independent solutions.

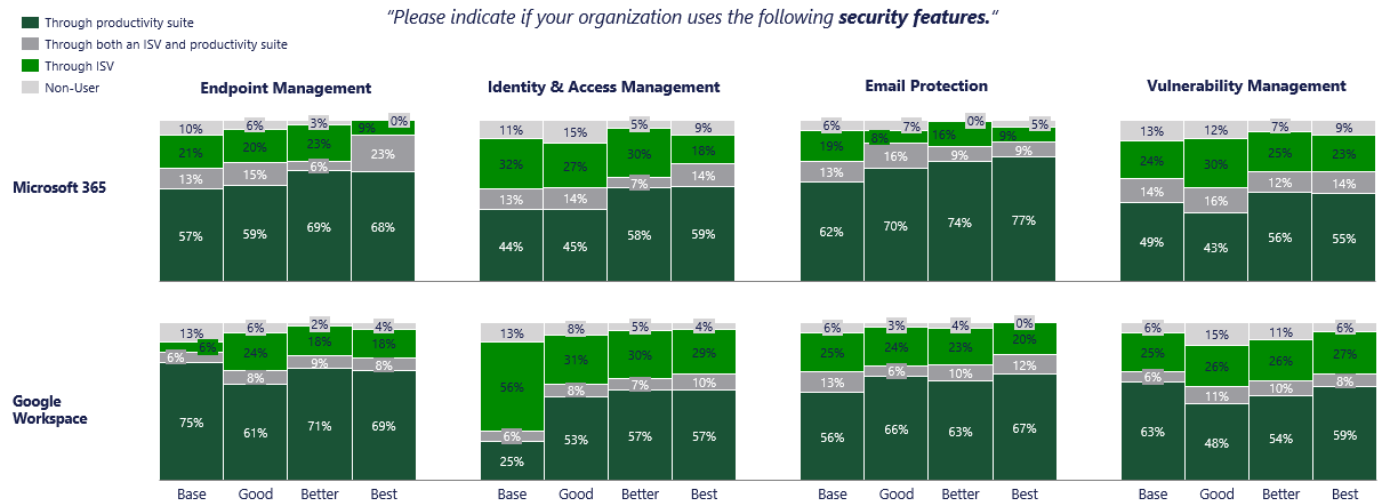
Use of Independent Cybersecurity Solutions: By Tiering Level

For both Email Protection and IAM, for both suites, as the solutions tier increased, the more likely the security deployment incorporated the native solution. Google Workspace’s IAM base tier was a standout, with only 31% incorporating native IAM.

Figure 26 : For Both Suites, As Tier Level Increases, Reliance on Native IAM and Native Email Increases

Security ISV Usage by Provider by Subscription Tier Level

% Respondents, By Primary Productivity Suite and Security Features 2023N=611¹



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Use of Independent Cybersecurity Solutions: By Respondent Size

Differentiating by size of respondent organization, responses were ambiguous. However, for email security, across all size cohorts, a lower percentage of Microsoft 365 users relied solely upon independent software vendor email solutions (compared against Google Workspace users).

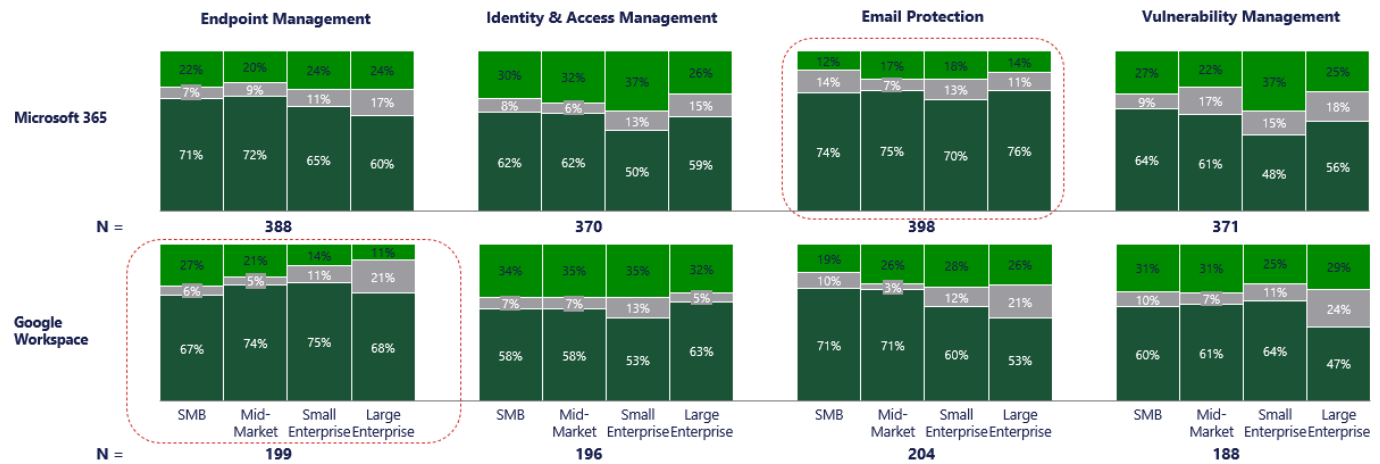
Figure 27 : For Microsoft 365, Fewer Respondents Relied Solely Upon Independent Email Security Compared to Google Workspace

Security ISV Usage by Respondent Size

% Respondents, By Primary Productivity Suite and Security Features 2023N=Various¹

■ Through productivity suite ■ Through ISV and productivity suite ■ Through ISV

"Please indicate if your organization uses the following security features."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Among Google Workspace users, for endpoint management solutions, as the size of the respondent organization increased, the likelihood that the security deployment.

Survey Description

Our 2nd annual Productivity Survey provides a view into a number of topics, including: i) current and planned usage of Microsoft 365 and Google Workspace by US businesses; ii) key purchasing criteria companies use to evaluate these productivity suites; iii) stickiness of each platform; iv) customer's propensity to use their suite for UCaaS / Security; v) macroeconomic pricing pressure; vi) Cloud marketplace incentives from productivity suite providers; and vii) GenAI adoption likelihood and key purchasing criteria.

The results are based on a survey of 622 IT purchasing decision-makers, and survey respondents are limited to US users of either Microsoft 365 (MS365) or Google Workspace. The sample set was split among SMB, Mid-Market, Small Enterprise, and Large Enterprise customers and weighted roughly across firm sizes. We worked with Altman Solon, a TMT-focused strategy consulting firm, to conduct the survey.

Figure 28 : Survey Description

We surveyed 622 IT decision-makers across business sizes and industries to compare Microsoft 365 and Google Workspace

Survey Description

Background	<p>This survey is the 2nd we have run on the productivity software space. The first was done in 2022</p> <p>This survey validated 2022 findings (~80% of questions)</p> <ul style="list-style-type: none"> Productivity suite usage and key purchasing criteria Loyalty and satisfaction of productivity suite customers Native app usage, with special focus on UCaaS / Security <p>The survey also focused on new concepts (~20% of questions)</p> <ul style="list-style-type: none"> GenAI as a key purchasing criteria and adoption likelihood Pricing Pressure given macroeconomic headwinds Deeper dive into native app vs independent software vendor security Cloud marketplace incentivization
Target Audience	<ul style="list-style-type: none"> Productivity suite buyers / decision-makers
Screening Criteria	<ul style="list-style-type: none"> US Based respondents > 10 employees at company > \$100K in annual revenue Full Time employees Involved in productivity suite purchasing decisions Uses Microsoft 365¹ or Google Workspace or both
Sample Size	<ul style="list-style-type: none"> Targeted 600 distributed across business sizes, business ages, and industries, though total qualified completes was 622

Respondent Detail

	2023	2022
Release Date (Full Launch)	7/26/23	8/12/22
Completion Date	7/31/23	8/18/22
# of Completes (Soft Launch)	33	51
# of Completes (Full Launch)	665	679
# Qualified	622	591
Median Completion Time	11.5 mins.	7.0 mins.

Firmographics

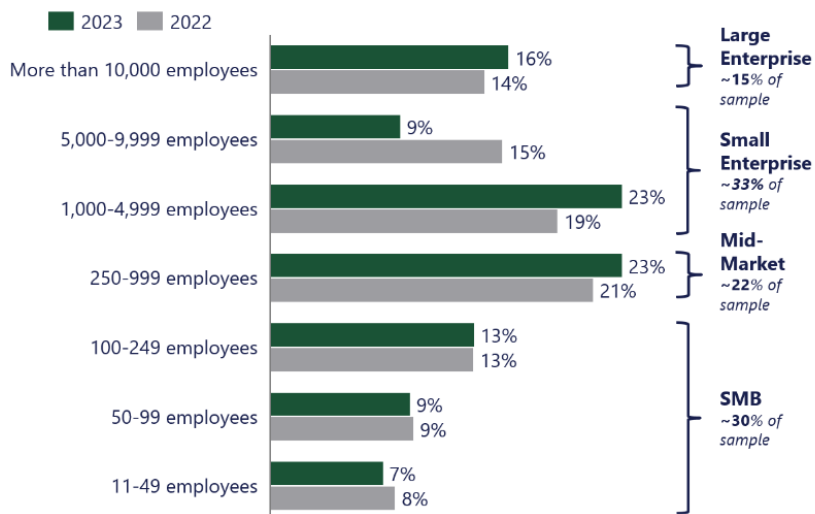
- Roughly similar distribution across firm sizes
 - ~29% SMB, ~23% Mid-Market, ~32% Small Enterprise, ~16% Large Enterprise²
- 100% of respondents are responsible for productivity suite purchasing decisions

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note: 1) Excludes respondents that *only* use Microsoft Office licenses 2) Size defined by # of employees: SMB: 11-249, Mid-Market: 250-999, Small Enterprise: 1,000-9,999, Large Enterprise: 10,000+

Survey Data – Appendix

Figure 29 : Survey Respondent Firm Size Distribution and Firm Revenue and Age

YoY Firm Size Distribution (% of total sample)



2023 Firm Revenue and Age

2023 Average Firm Revenue	2023 Average Age
>\$18 B	> 30 years
~\$4 B	~23 years
~\$900 M	~18 years
~\$400 M	~16 years

Notes: 1) Size defined by # of employees: SMB: 11-249, Mid-Market: 250-999, Small Enterprise: 1,000-9,999, Large Enterprise: 10,000+
Sources: 2023 Productivity Suite Survey; Altman Solon Research & Analysis

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

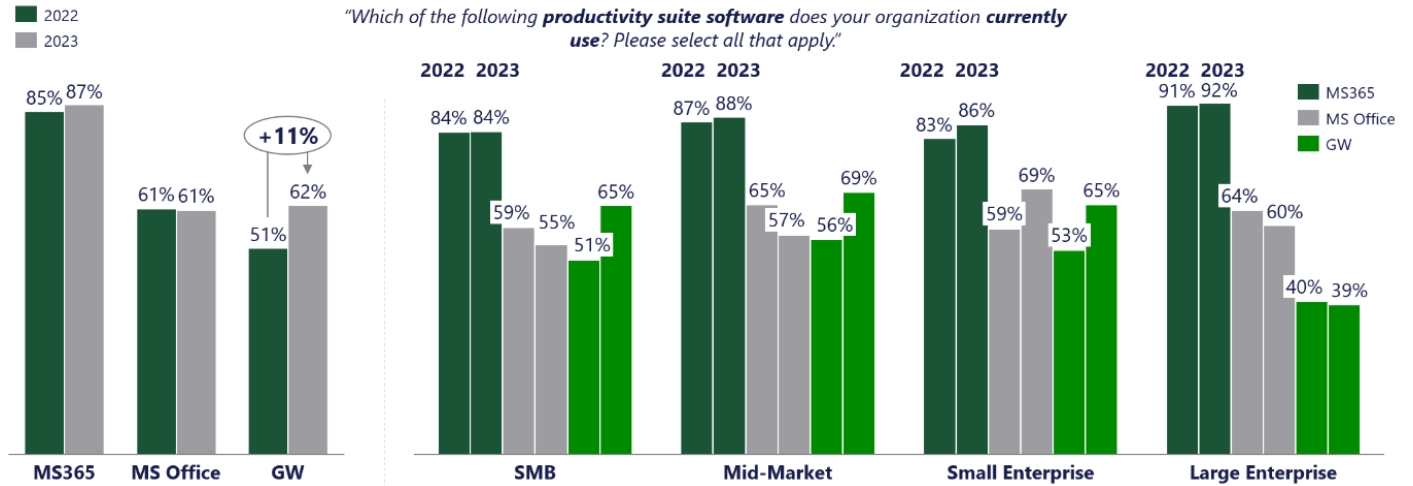
Figure 30 : Productivity Suite Apps and ISVs

Feature	Microsoft 365	Google Workspace	Independent Software Vendor (ISVs)
Word Processing	Word	Docs	Apple Pages, Grammarly
Spreadsheets	Excel	Sheets	Apple Numbers, Zoho Sheet, Quip
Presentations	PowerPoint	Slides	Apple Keynote, Zoho Show, Prezi
Email	Outlook	Gmail	Apple Mail, Zoho Mail, Front
Calendar	Outlook	Calendar	Apple Calendar, Zoho Calendar, Fantastical 2
Group Chat	Teams	Chat	Zoom, Slack, Discord
Video Conferencing	Teams	Meets	Zoom, WebEx, Skype
Enterprise Software Security	Intune	Endpoint (Admin)	McAfee, Cisco, CrowdStrike, Checkpoint
File Hosting	OneDrive, SharePoint	Drive	Dropbox, Box, Cirix ShareFile
Generative AI	Copilot	Duet AI	ChatGPT

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 31 : Productivity Suite Penetration

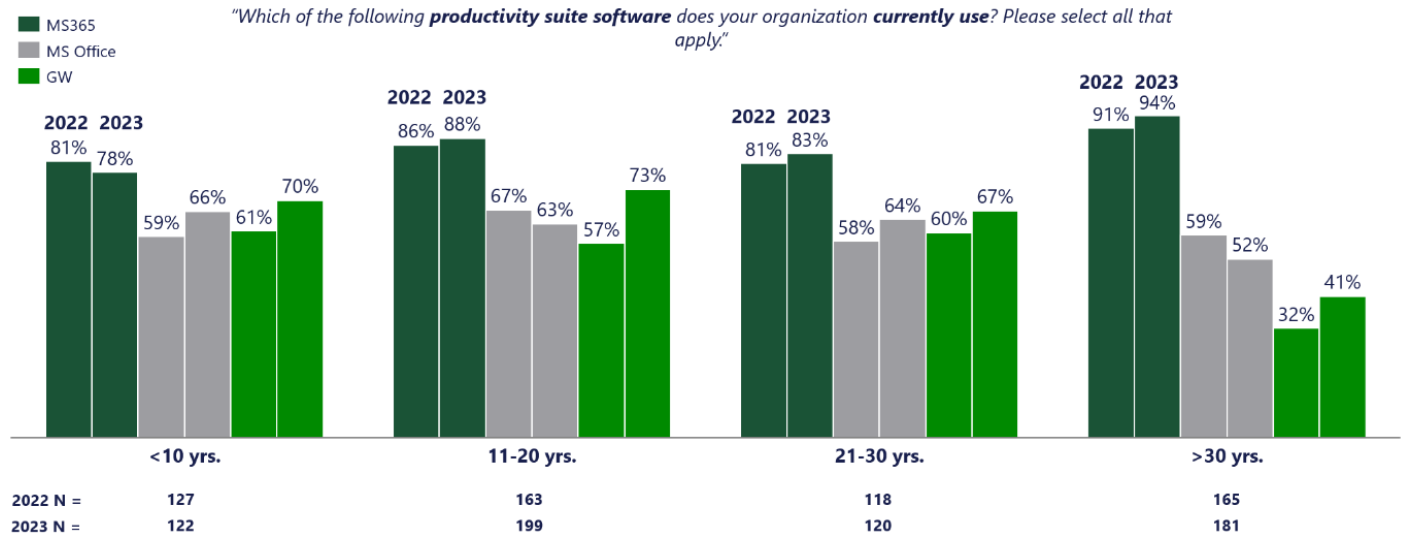
% of respondents using each productivity suite, 2022 N=573, 2023 N=622



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note: 1) Excludes Respondents using multiple suites who only have MS365 + Office. Excludes Respondents who have 2+ suites due to M&A activity

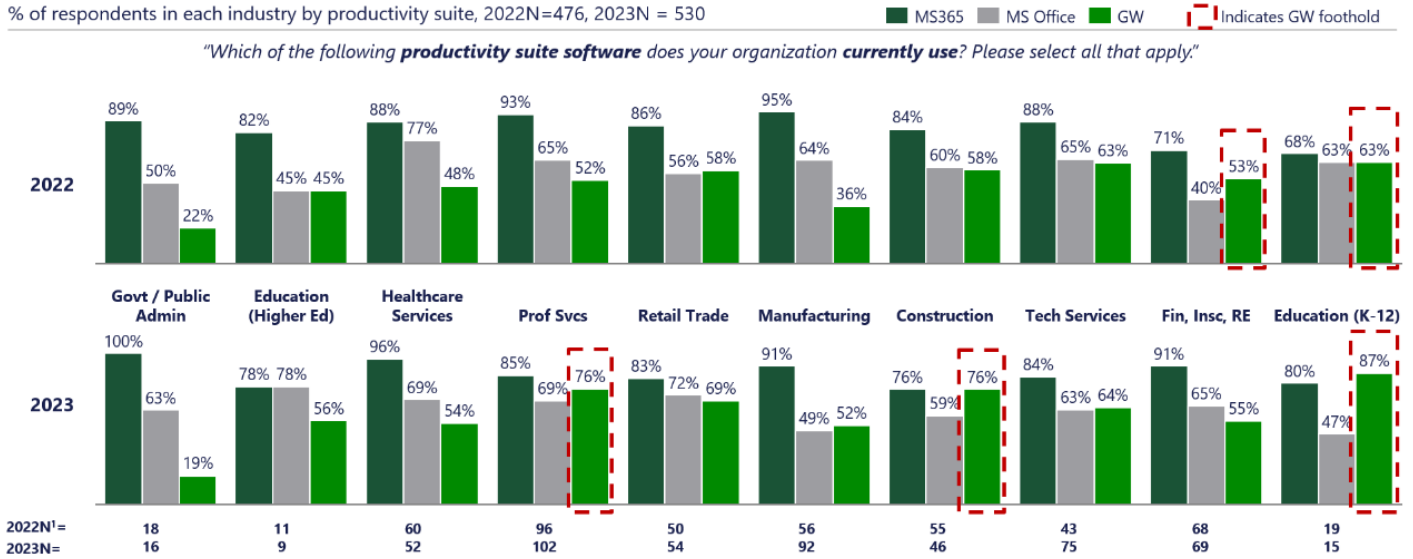
Figure 32 : Productivity Suite Penetration by Business Age

% of respondents in each age group by productivity suite, 2022N=573, 2023N=622



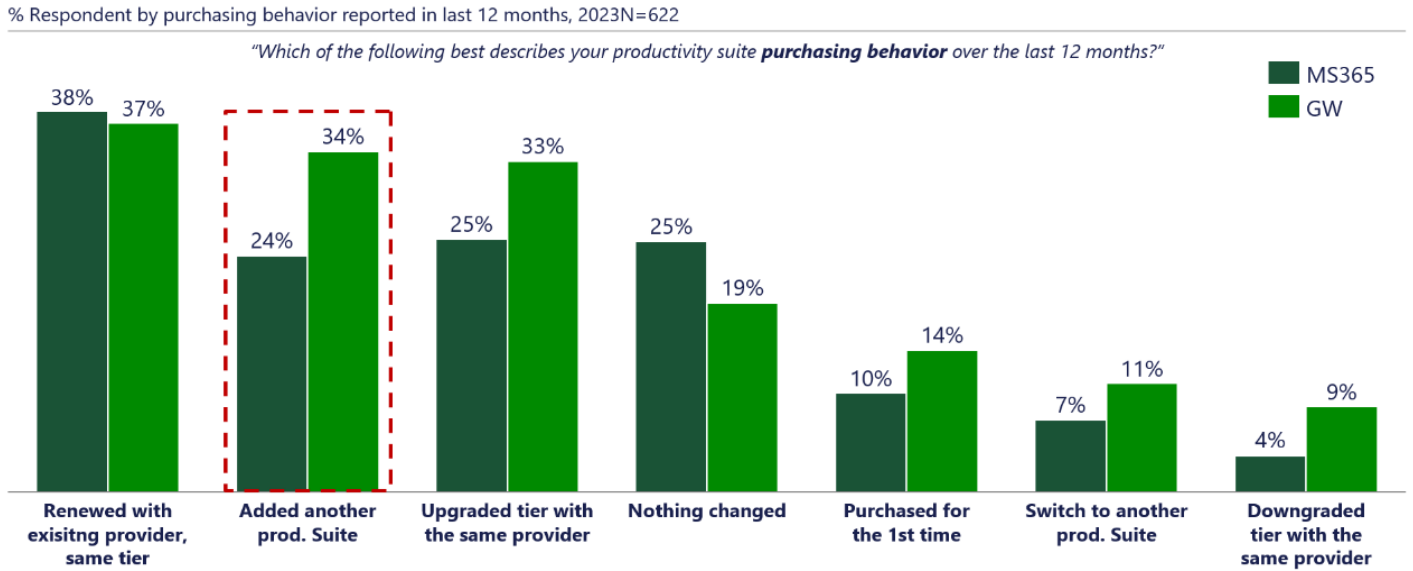
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 33 : Productivity Suite Penetration by Industry



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Given low sample for certain industries, directional interpretation is appropriate

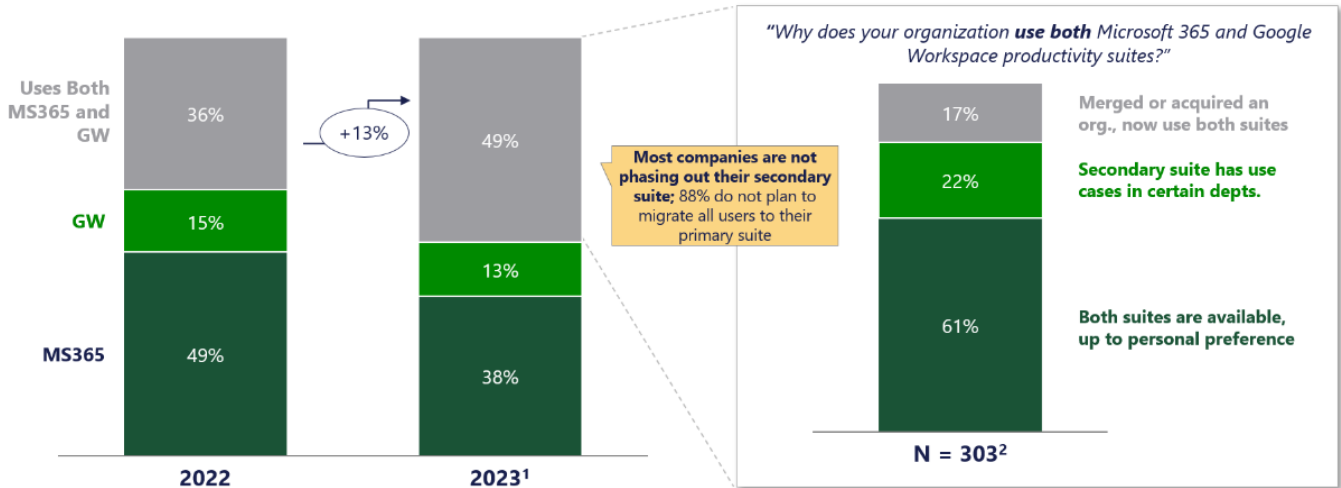
Figure 34 : Purchasing Behavior by Primary Productivity Suite



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 35 : Reasons why respondents use both MS365 and Workspace

% of respondents reasoning for using both productivity suites, 2022N=573, 2023N=622

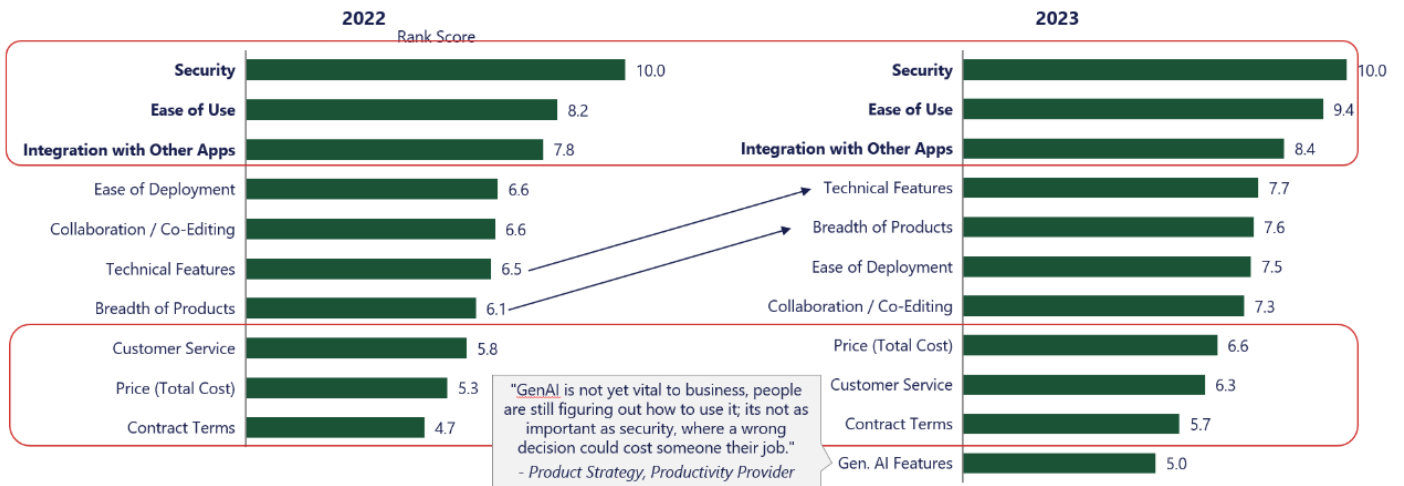


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) MS365 and Workspace %s in this chart represent users that use MS365 not Workspace, and Workspace not MS365. Criteria for this survey is that you use either Workspace or MS365, therefore every respondent only falls into 1 of these 3 buckets. 2) Respondents who indicated "Other" reason are removed from this chart (N=1)

Figure 36 : Key Purchasing Criteria

Most cited key purchasing criteria, consolidated importance ranking, 2022N=573 2023N=622

"Please rank the following key purchasing criteria from most to least important when evaluating a productivity suite software."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 37 : Key Purchasing Criteria by Productivity Suite

Most cited key purchasing criteria by productivity suite, consolidated importance ranking, 2022N=573, 2023N=622



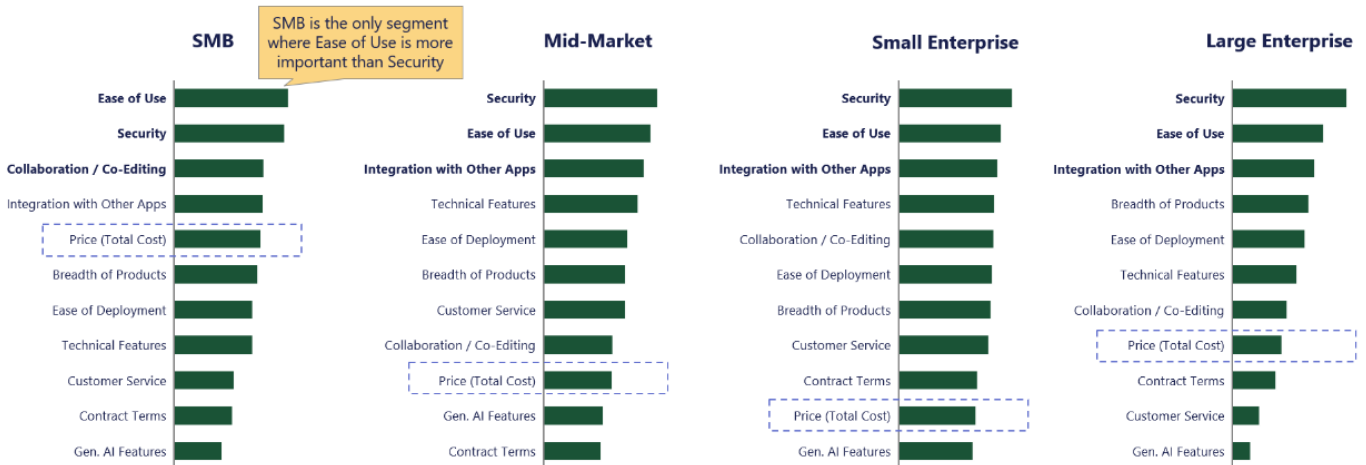
- (A) Microsoft365 has made improvements to Teams and many of its security tools, making a broader breadth of products "good enough" to use on their own. As such, Microsoft is increasingly touting the total cost of ownership for a Microsoft suite with a multitude of native products to a narrower suite with numerous 3rd party point products.
- (B) Technical features continues to rank as a more important purchasing criteria for ITDMS that use Google workspace, possibly because some GW products are perceived to be **less** feature-rich compared to Microsoft products, and therefore require additional scrutiny (e.g., Sheets vs Excel)

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 38 : Key Purchasing Criteria by Business Size

Most cited key purchasing criteria by company size, consolidated importance ranking, 2023N=622

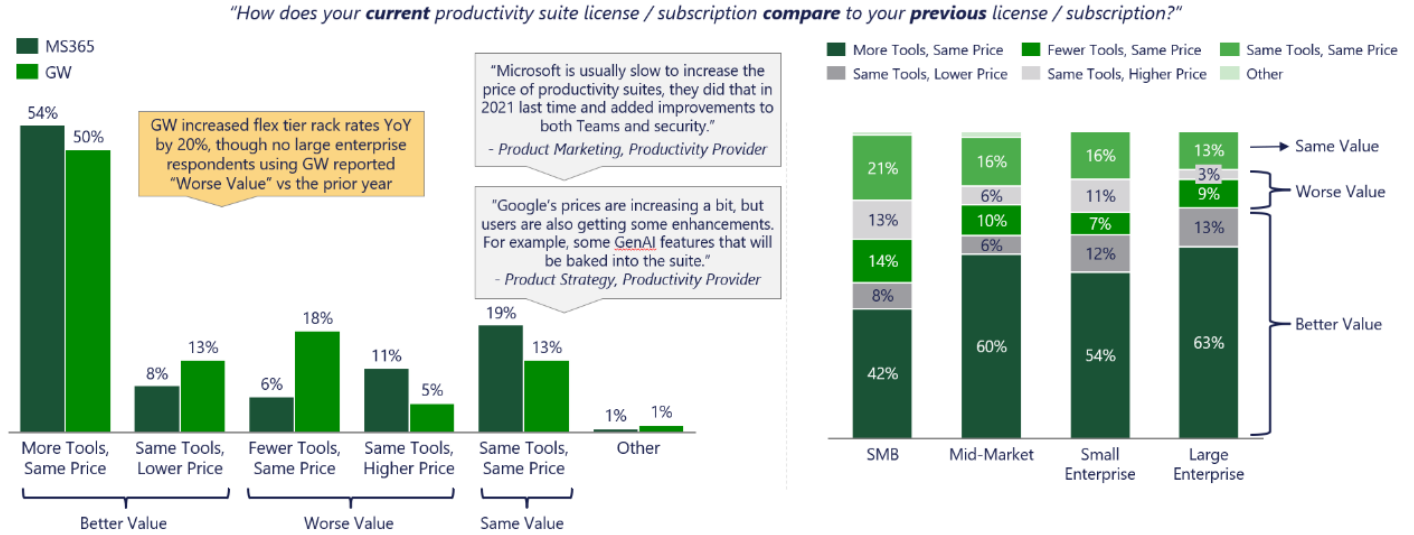
"Please rank the following key purchasing criteria from most to least important when evaluating a productivity suite software."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 39 : Primary Productivity License / Subscription Renewal

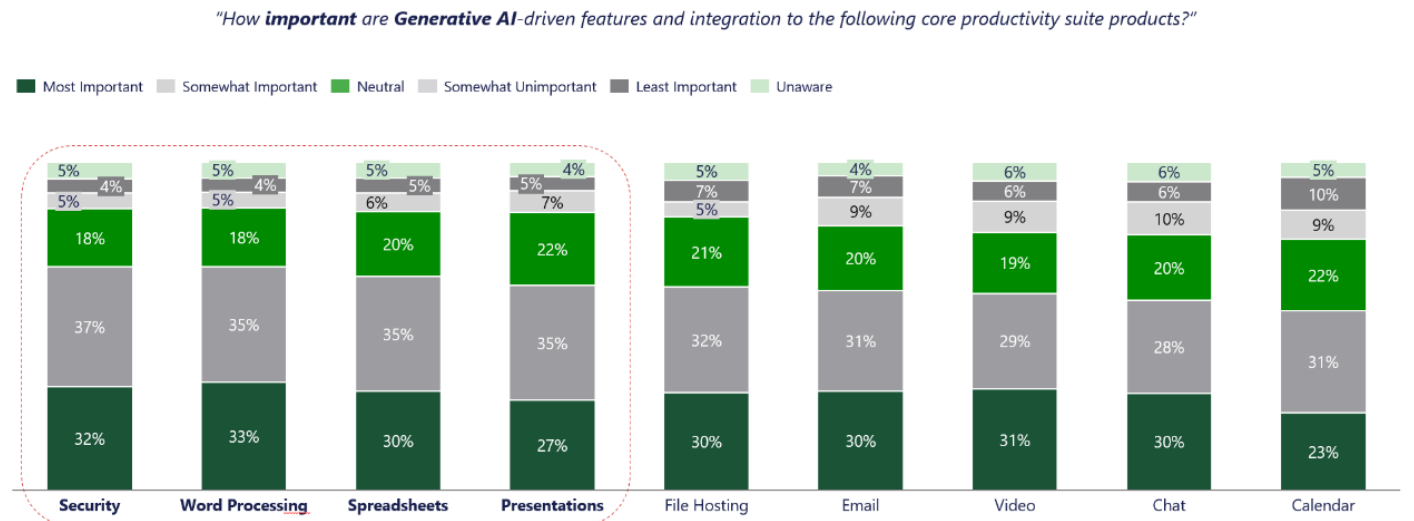
% respondent by license / subscription renewal, 2023N=236



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

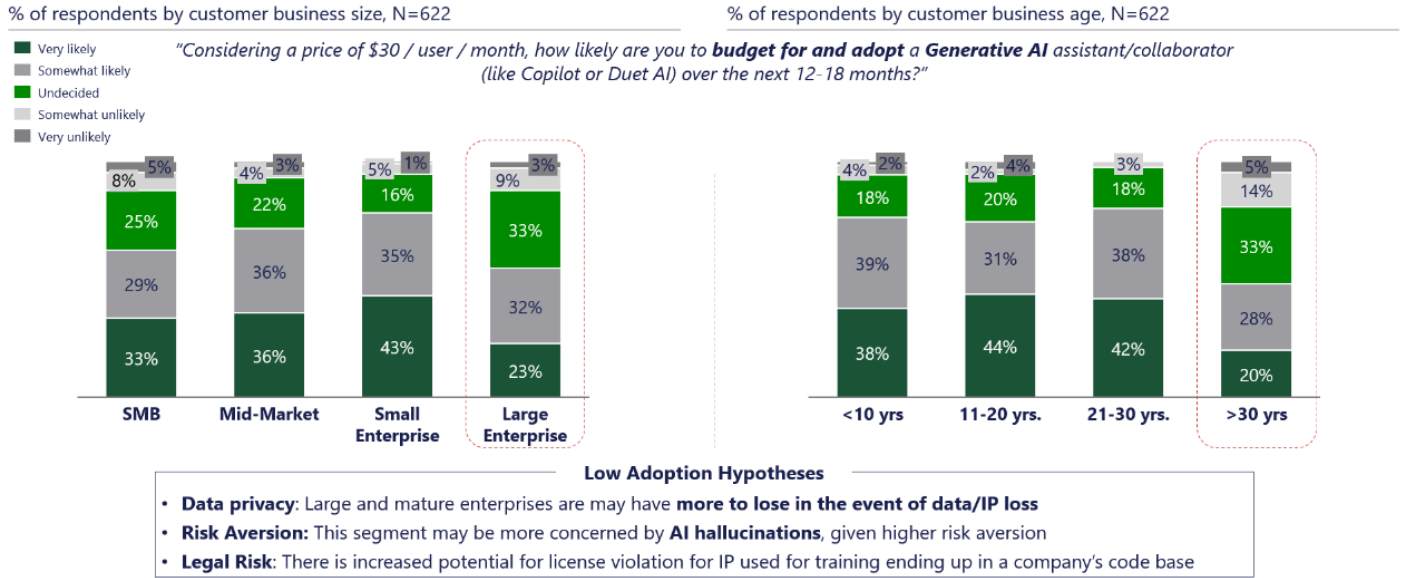
Figure 40 : Generative AI Importance by Product - Today

% of Respondents by productivity products 2023N=622



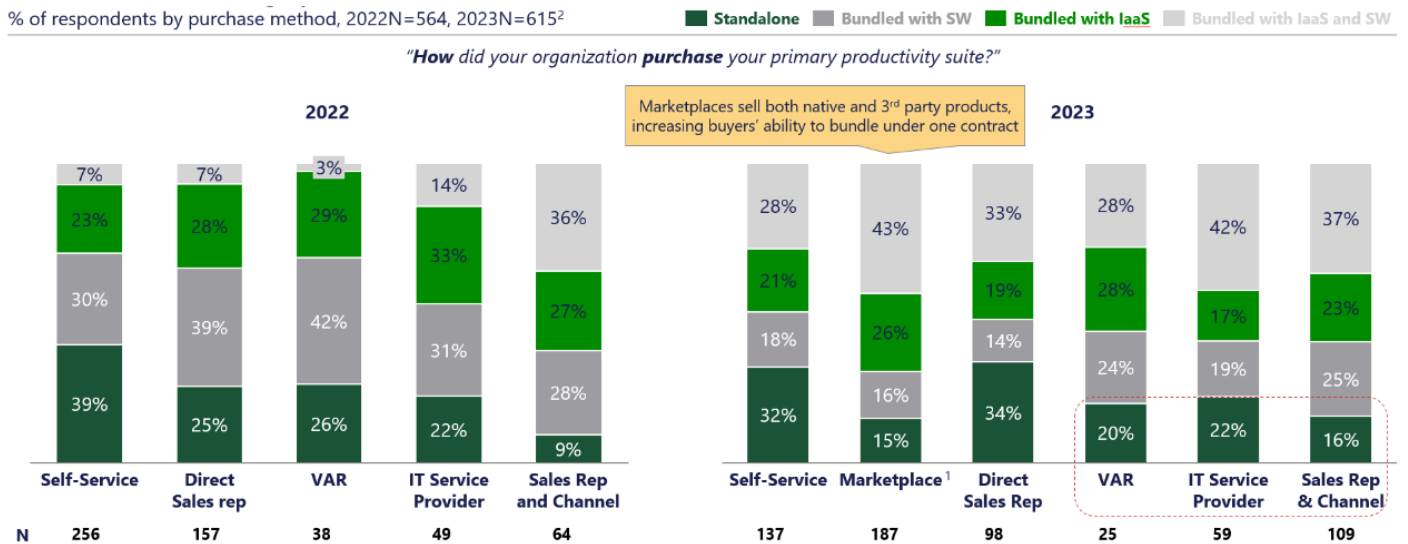
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 41 : Adoption Likelihood by Business Size & Business Age



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

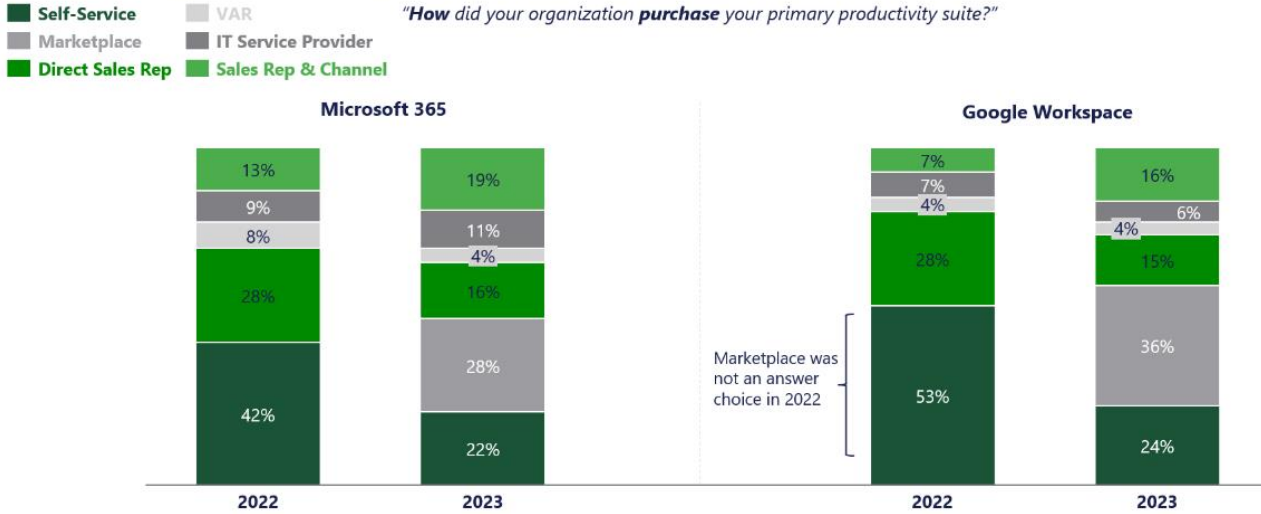
Figure 42 : Software Suite Bundling by Purchase Method



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Marketplace was a new answer choice in 2023 2) Respondents who are not sure of their suite purchase method are removed (2022N=7, 2023N=7)

Figure 43 : Software Suite Purchase Method by Primary Productivity Suite

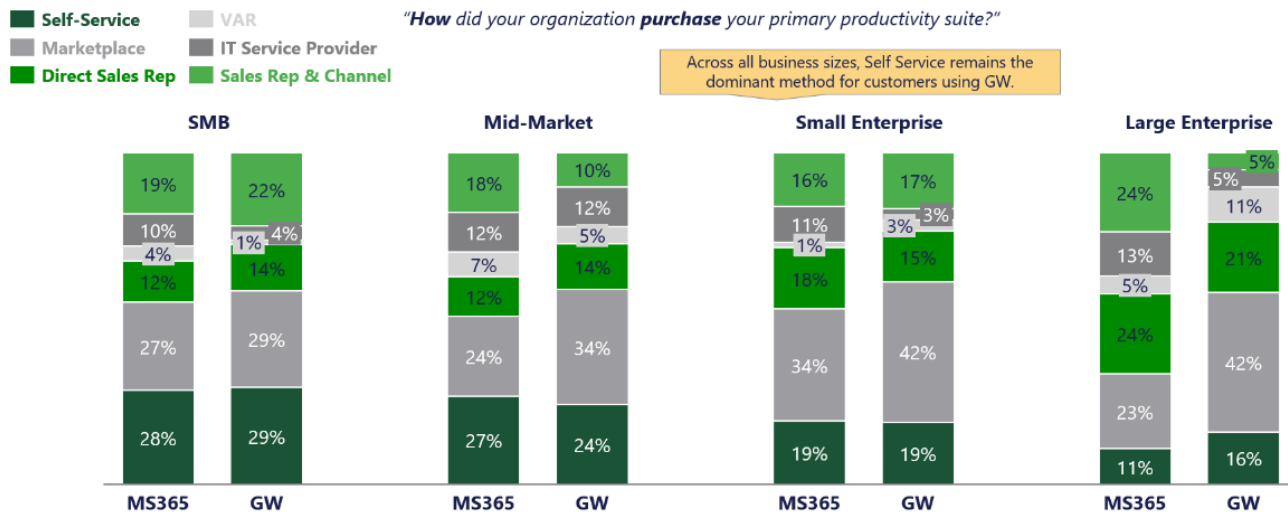
% of respondents by purchase method and productivity suite, 2022N=564¹, 2023N=615¹



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Marketplace was a new answer choice in 2023 2) Respondents who are not sure of their suite purchase method are removed (2022N=7, 2023N=7)

Figure 44 : Software Suite Purchase Method by Business Size

% of respondents that subscribe to each productivity suite by company size, N=615¹

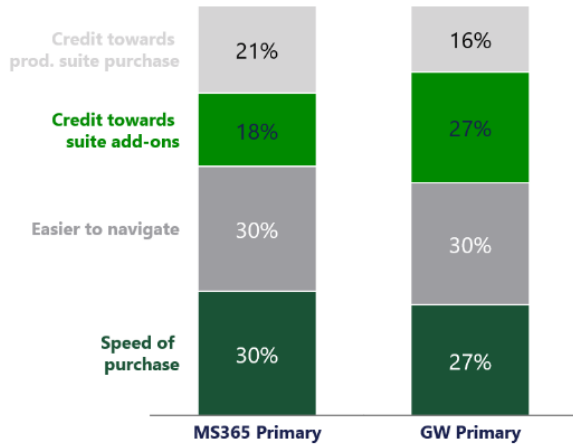


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) ITDMs who do not know the suite purchase method are taken out (N=7)

Figure 45 : Market Incentives

% of respondents by reason for purchasing via a marketplace, 2023N = 186

"Why did you purchase your primary productivity suite through your provider's cloud online marketplace?"



Cloud Marketplace Context

- Microsoft and Google **sell add-ins/enhancements** to their cloud products via proprietary marketplaces
- How marketplace incentivization works:
 - **Customers commit to a spend quota** to receive upfront pricing discounts on their productivity suite and other products
 - **Spending in the marketplace** counts towards retiring credits, though not on a dollar-for-dollar basis
- **Microsoft's marketplace is more established, yet Google offers more incentives** (i.e., more credits per dollar spent in the marketplace)
- Marketplaces are **not seen as a threat by the channel**

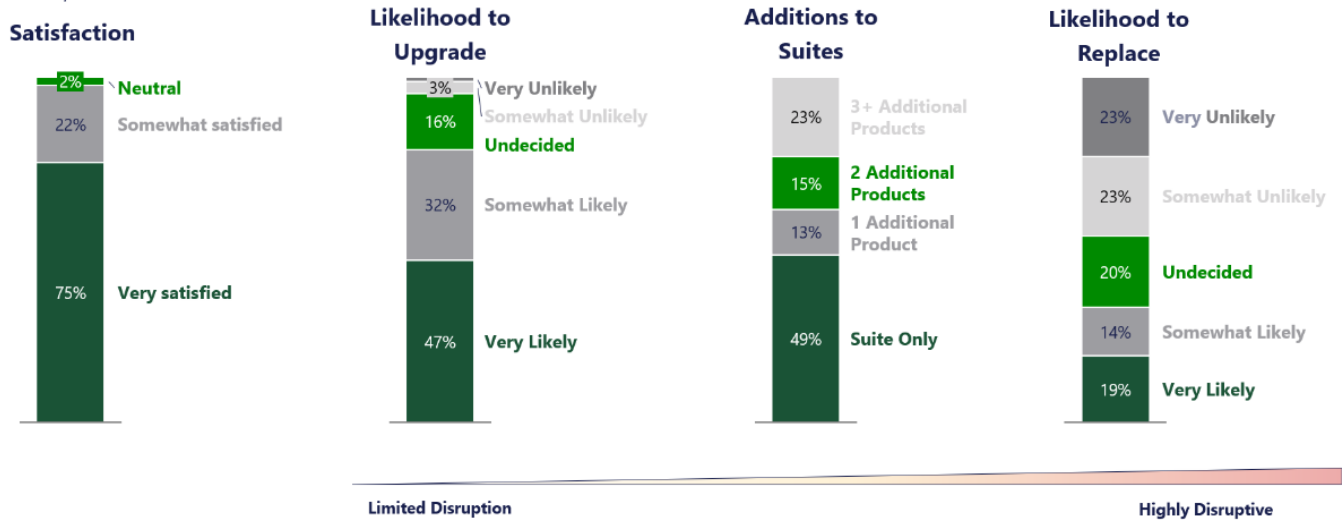
"Marketplaces aren't a competitor for me. They're actually a tool I use to capture lines of business I typically wouldn't get access to because my customers can purchase them through the marketplace to retire credits towards their contract with me."
– Account Executive, Productivity Suite Vendor

Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 46 : Productivity Suite Satisfaction, Likelihood to Upgrade, Additions to Suites, and Likelihood to Replace

While organizations are **mostly satisfied** with their productivity suite provider...

...there is still an **interest in enhancing** their productivity suite via **upgrades, additions, or replacement**...



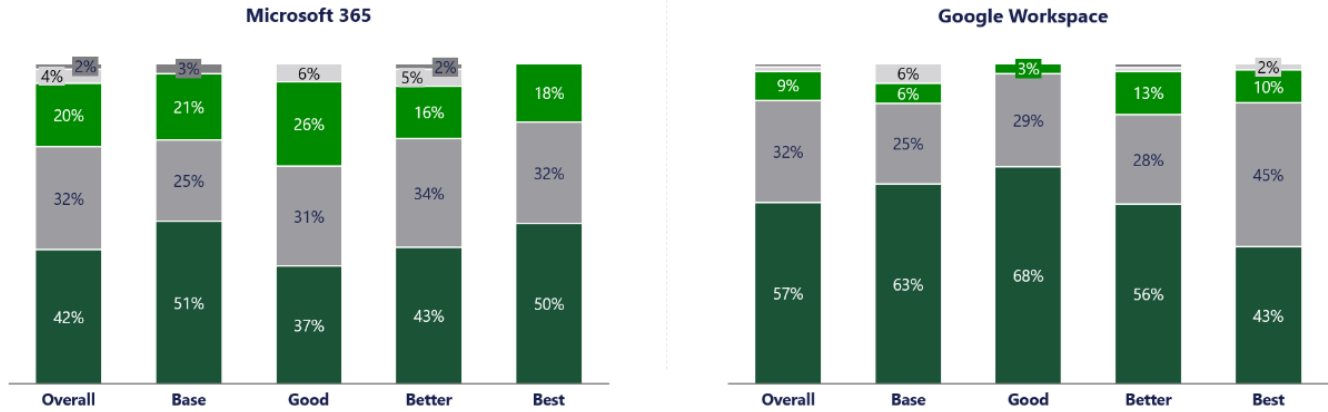
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 47 : Upgrade Likelihood by Subscription Level

% of respondents' likelihood to upgrade by subscription level, N=611¹

"How likely are you to **upgrade** your organization's primary productivity suite in the next 12-18 months?"

Very likely Somewhat Likely Undecided Somewhat Unlikely Very unlikely



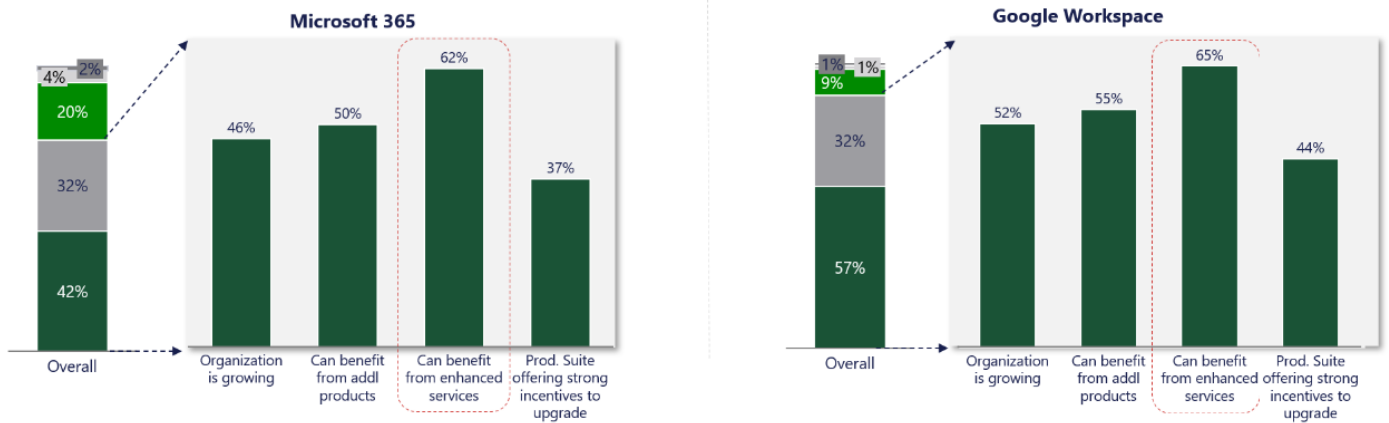
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Respondents who do not know the suite tier are taken out (2022N=18, 2023N=11)

Figure 48 : Reasons to Upgrade Productivity Suite

% of Respondents likely to upgrade to next Level, 2023N=491

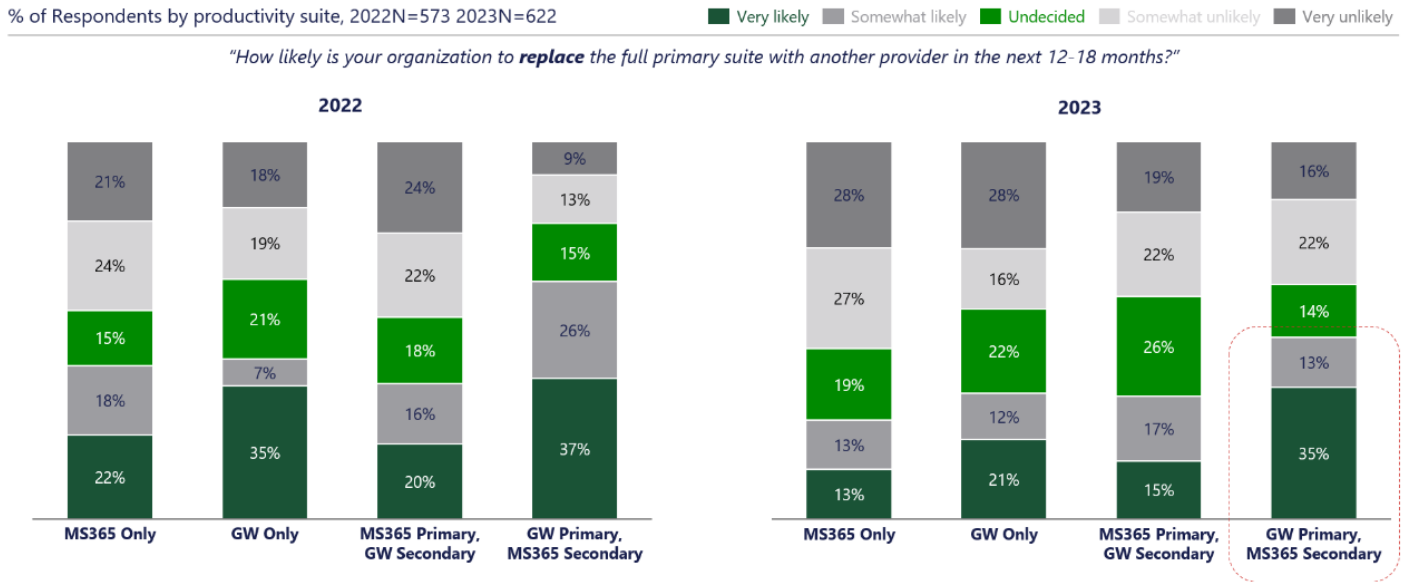
"Why are you looking to **upgrade** your organization's primary productivity suite in the next 12-18 months?"

Very likely Somewhat likely Undecided Somewhat unlikely Very unlikely



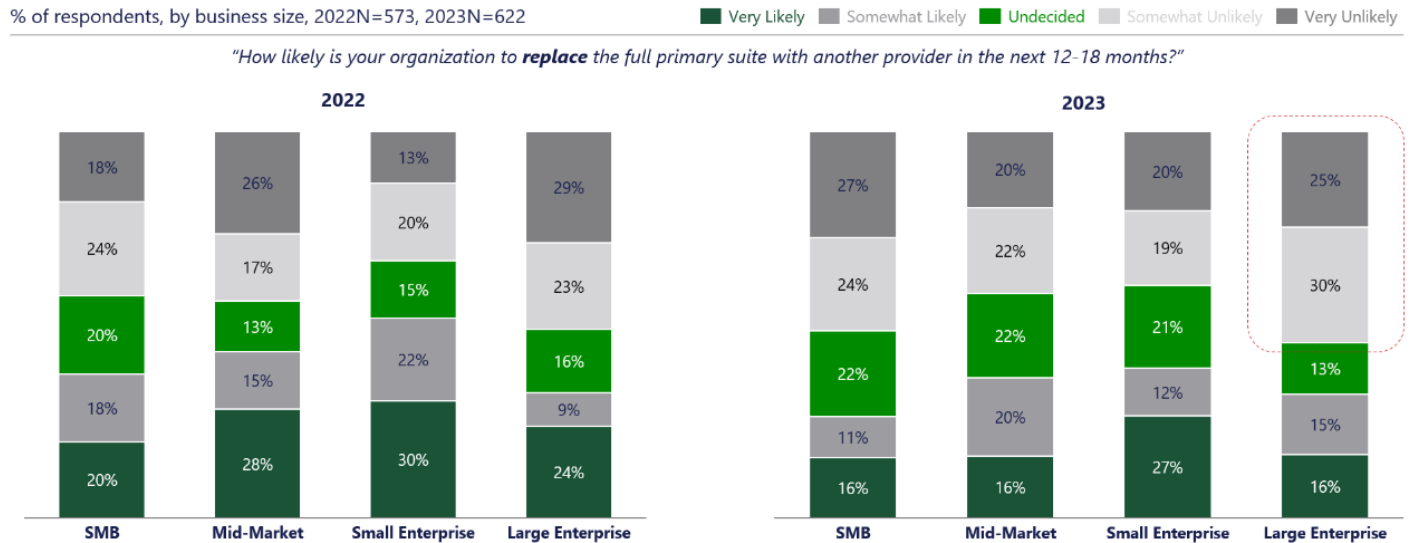
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 49 : Likelihood to Replace by Suite Usage



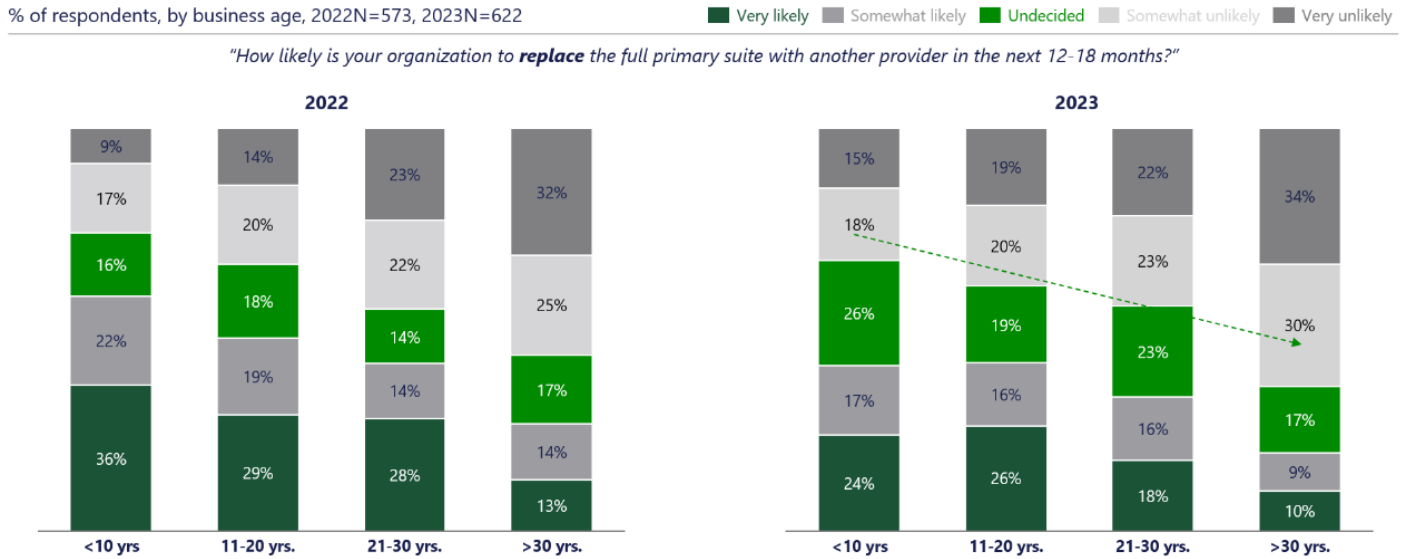
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 50 : Likelihood to Replace Primary Suite by Business Size



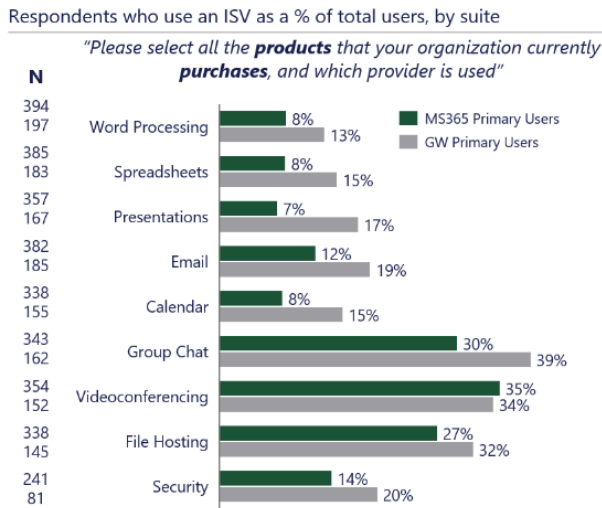
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 51 : Likelihood to Replace by Business Age



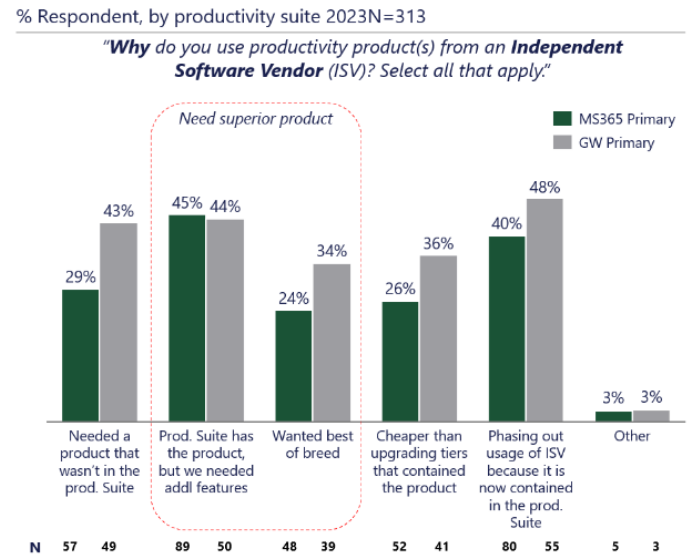
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 52 : ISV Usage by Primary Productivity Suite - Current



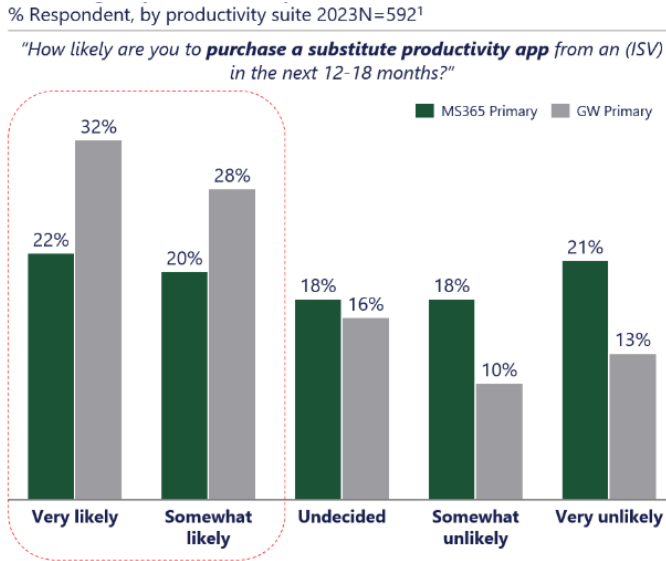
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 53 : Reasons for using ISVs - Current



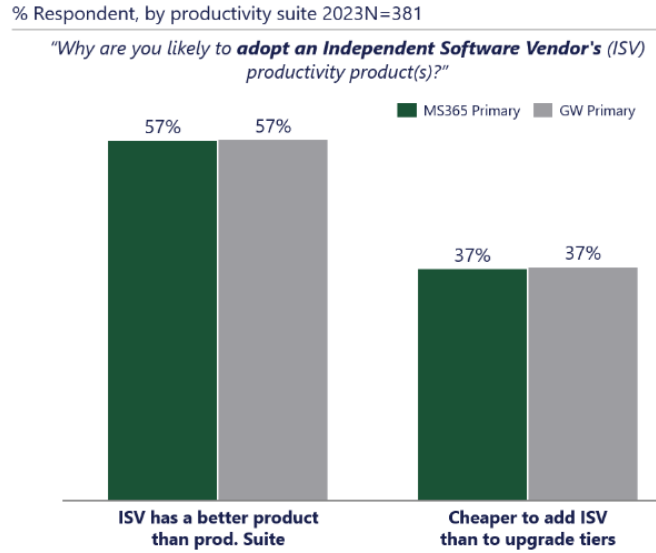
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622.
Note 1) Familiarity and comfort with a product are frequently cited "other" reasons

Figure 54 : ISV Usage by Productivity Suite Next 12-18 Months



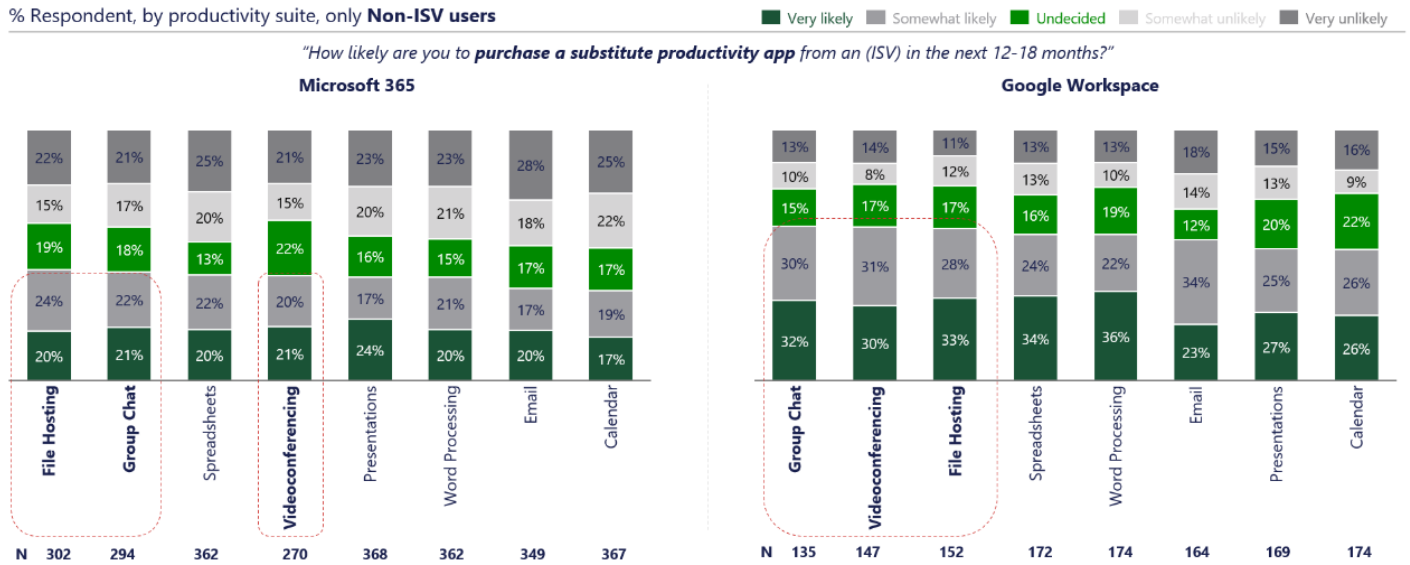
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 55 : Reasons for adopting ISVs Next 12-18 Months



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 56 : ISV Usage by Product and Suite Provider- Future



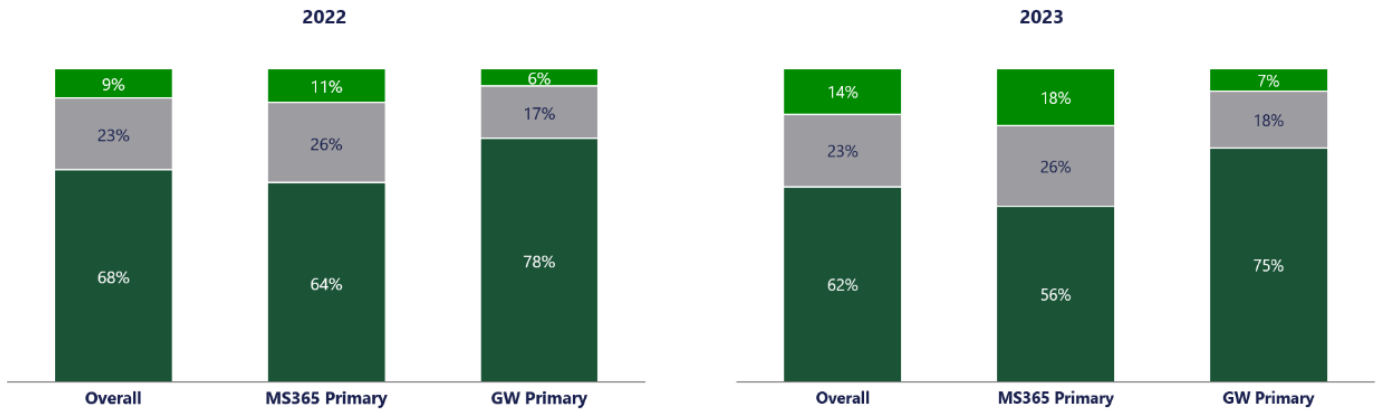
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 57 : UCaaS Replacement by Primary Productivity Suite

% of respondents, by primary productivity suite, 2022N=573, 2023N=622

"Do you see an application within your organization's primary productivity suite that combines voice, chat, and videoconferencing as a replacement to UCaaS (unified communications as a service)?"

■ Yes ■ No ■ We don't have a UCaaS Solution



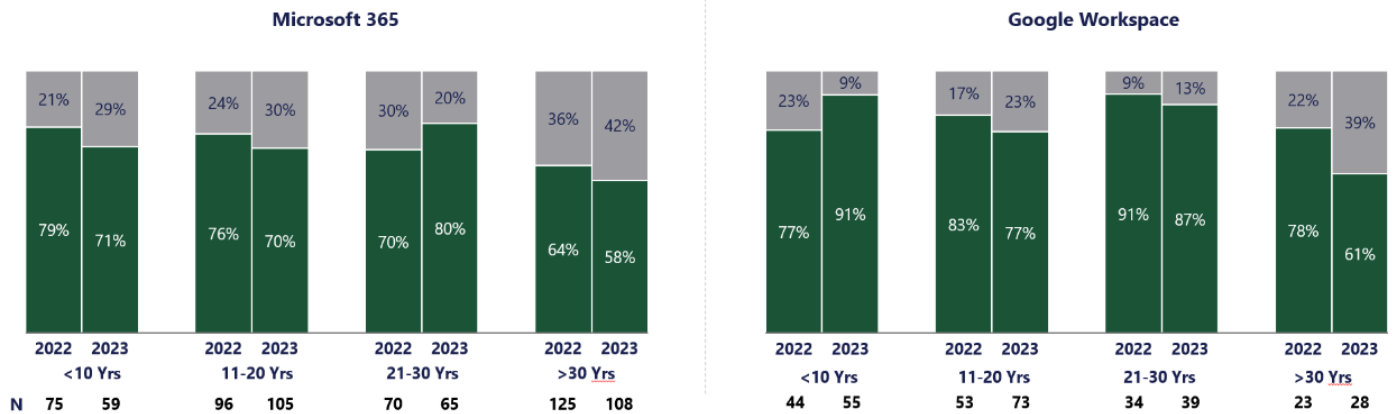
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 58 : UCaaS Replacement by Business Age

% Respondents by business age, 2023 MS365 N=337¹, 2023 GW N=195¹

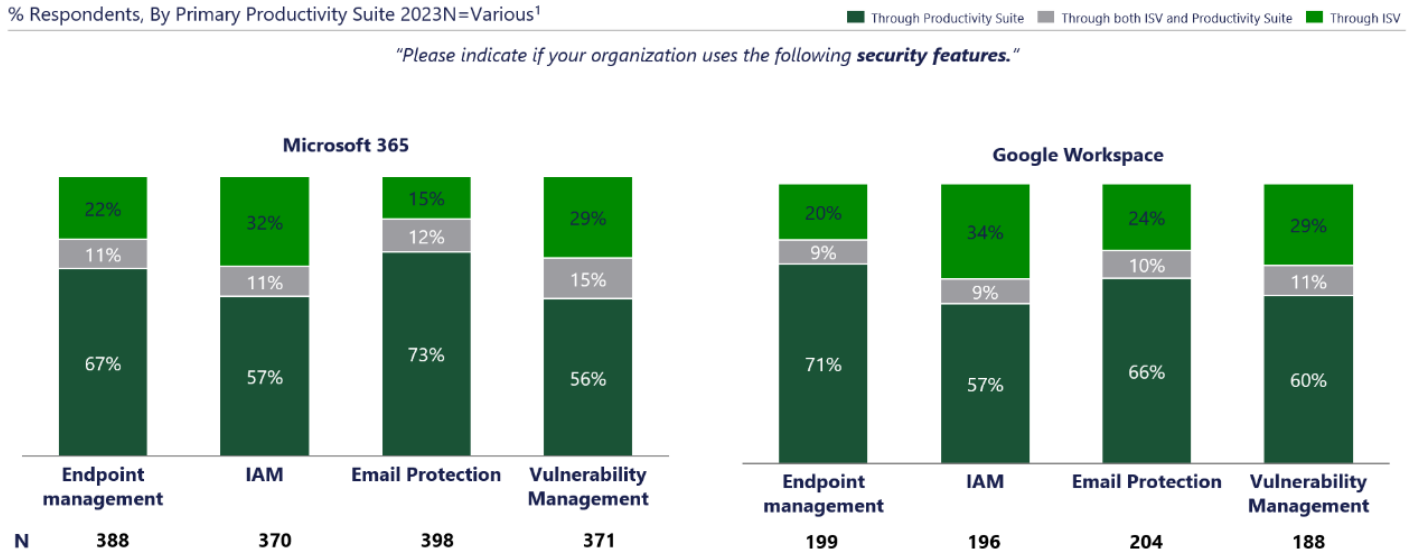
"Do you see an application within your organization's primary productivity suite that combines voice, chat, and videoconferencing as a replacement to UCaaS (unified communications as a service)?"

■ Yes ■ No



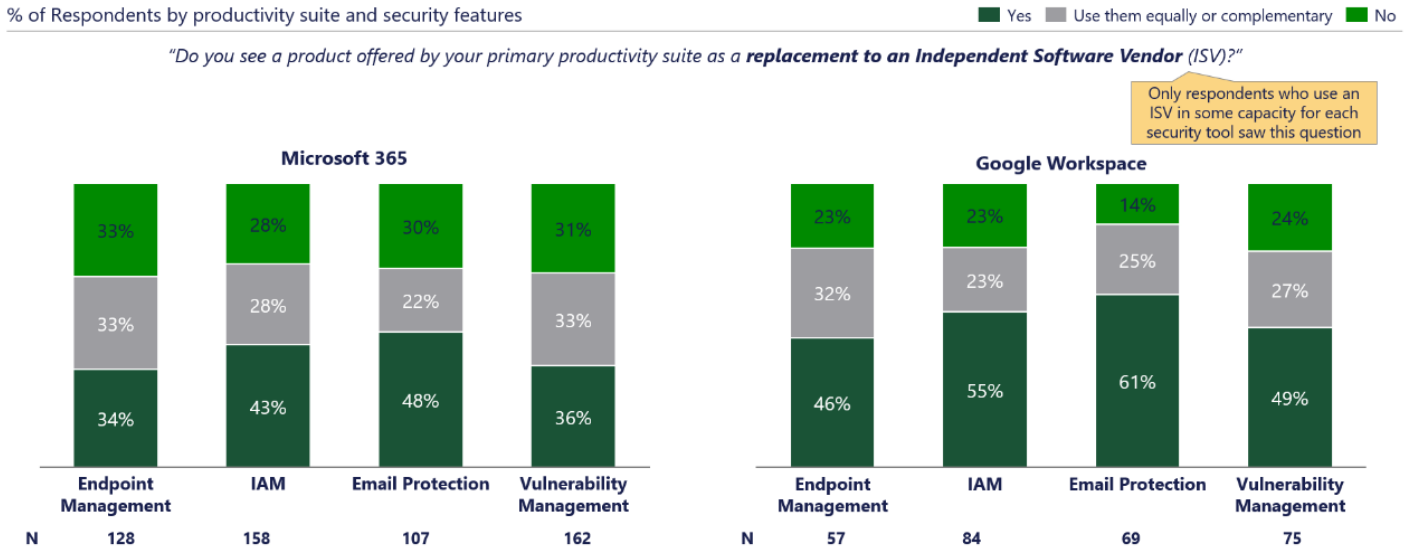
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Notes 1) Respondents who do not use UCaaS are removed

Figure 59 : Native vs ISV Security Feature Usage



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Respondents that are not users of each security product are removed

Figure 60 : Replacement of ISV with Native Security



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

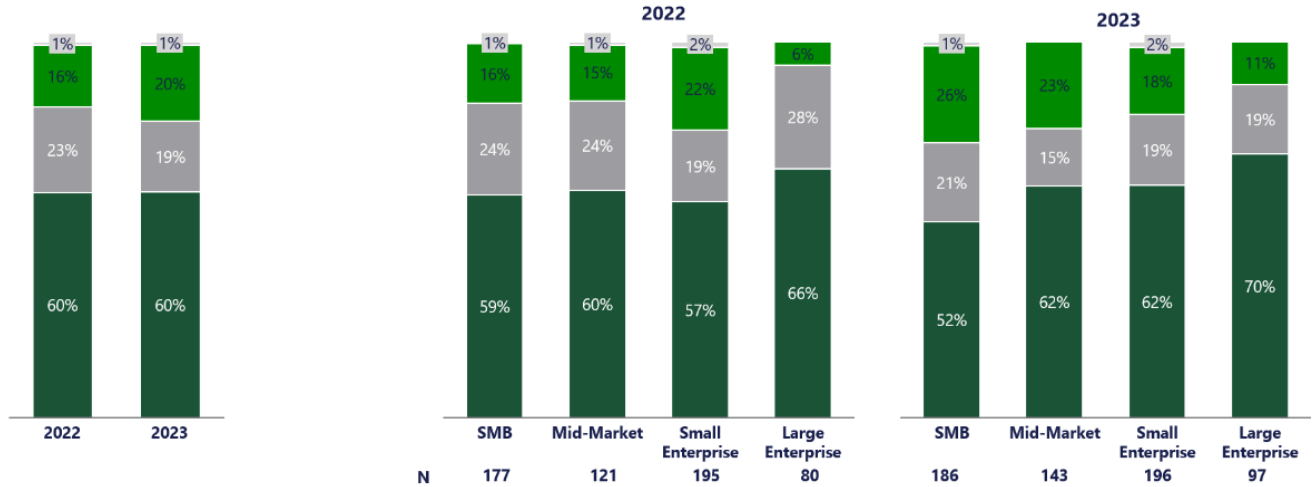
Figure 61 : Primary Productivity Suite

% of respondents by primary productivity suite, 2022 N=573, 2023 N=622

MS365 MS Office GW iWork

"Which is your **primary** productivity suite software?"

"Which is your **primary** productivity suite software?"



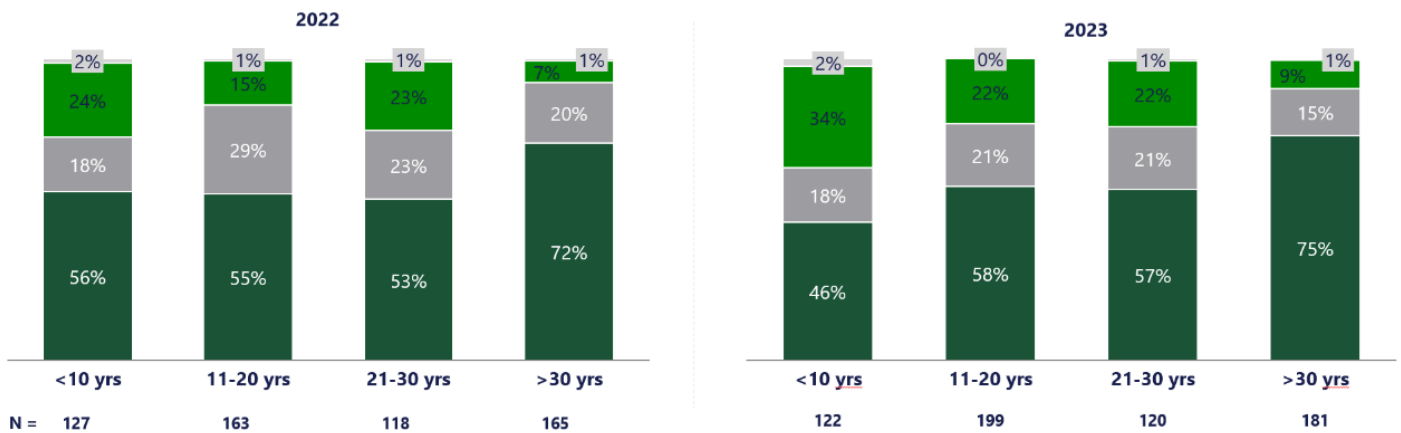
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Excludes ITDMs using multiple suites who only have MS365 + Office. Excludes ITDMs who have 2+ suites due to M&A activity

Figure 62 : Primary Productivity Suite by Business Age

% of respondents in each age group by productivity suite, 2022N=573, 2023N=622

"Which is your **primary** productivity suite software?"

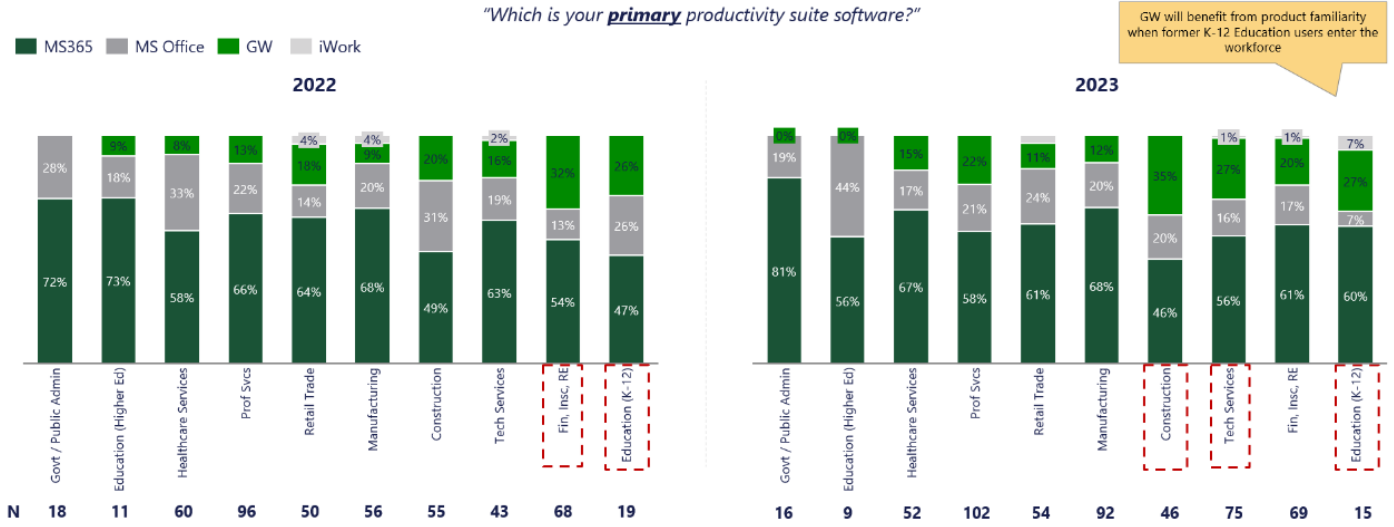
MS365 MS Office GW iWork



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 63 : Primary Productivity Suite by Industry

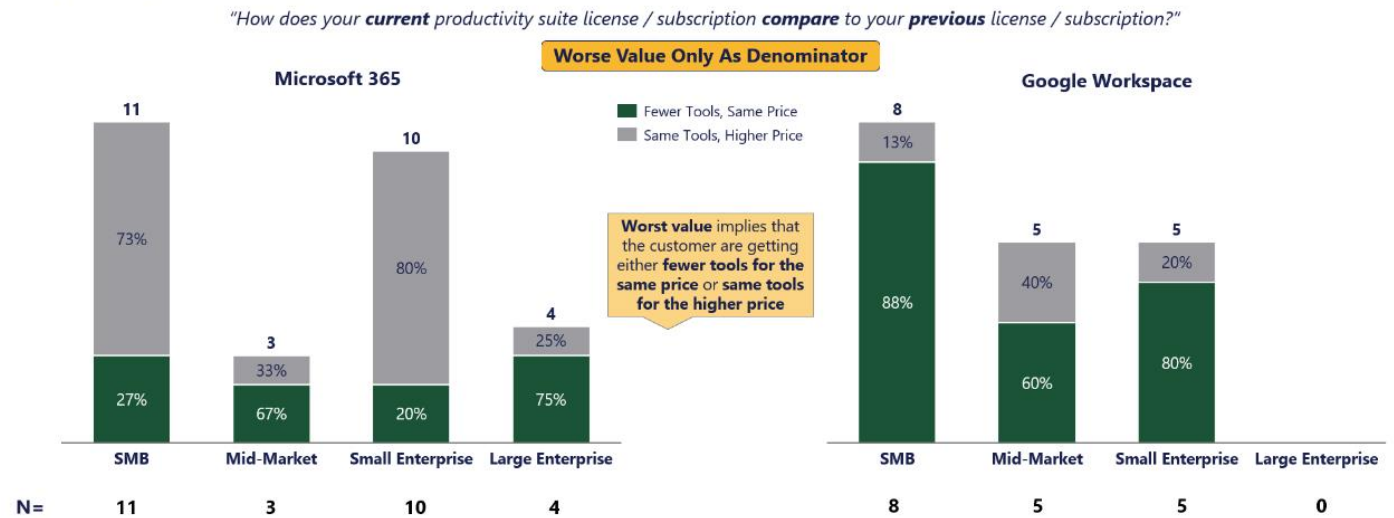
% of respondents in each industry by productivity suite, 2022N=476, 2023N = 530



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

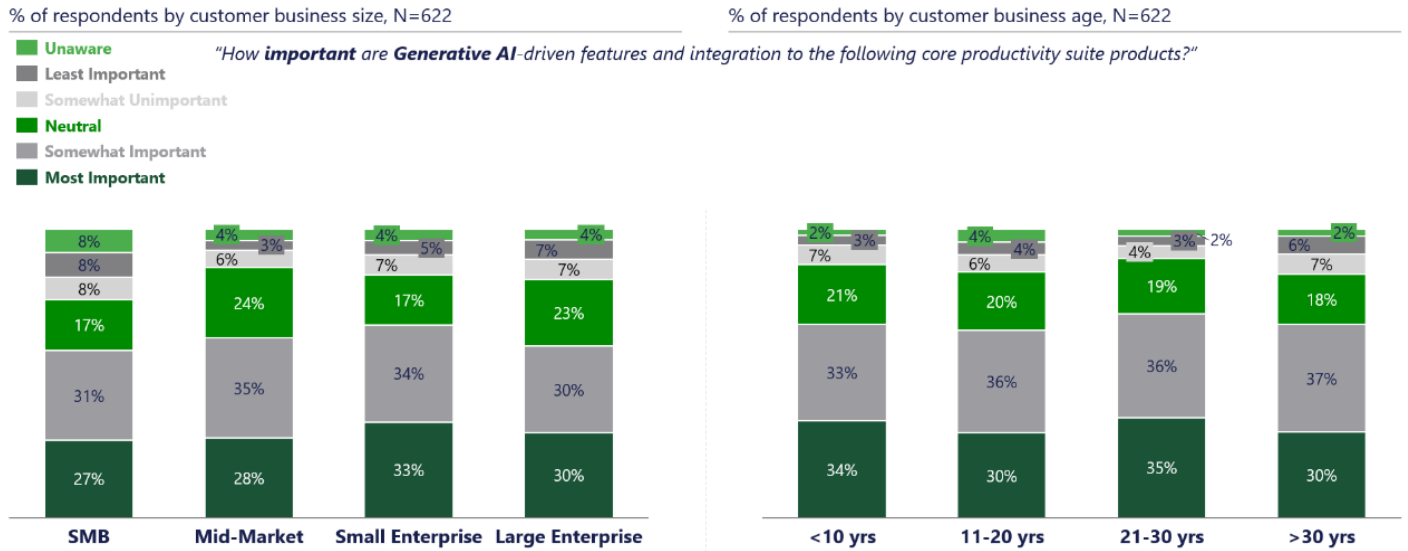
Figure 64 : Primary Productivity License / Subscription Renewal

% respondent by license / subscription renewal, 2023N=46



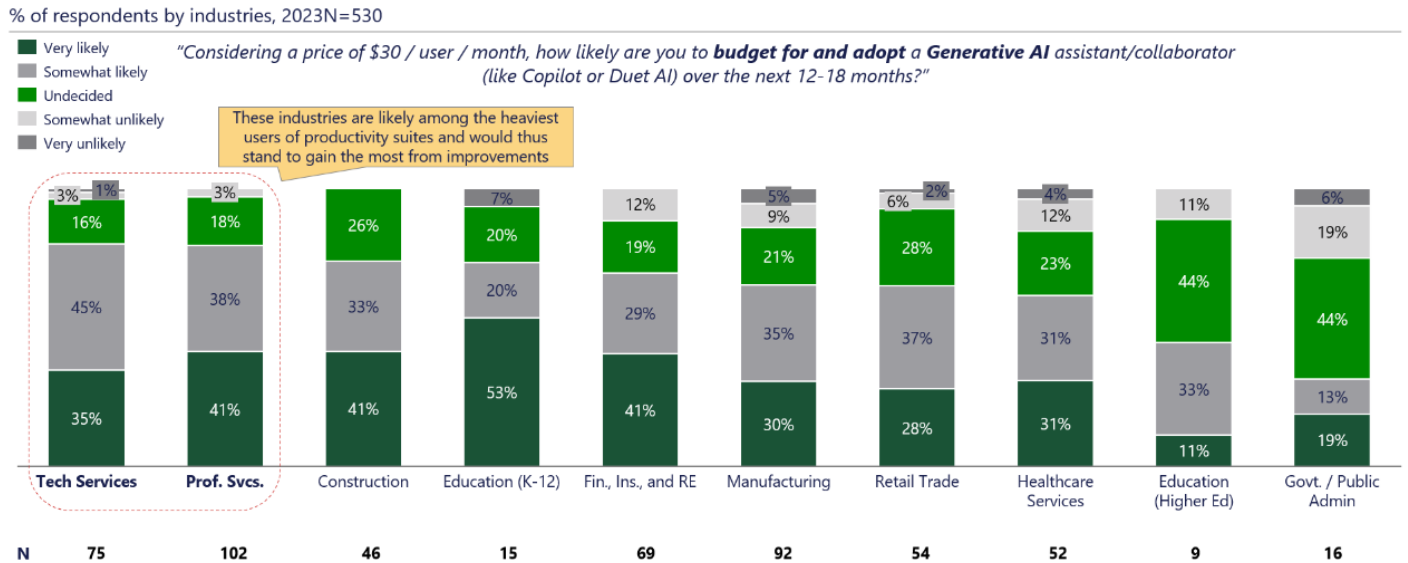
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 65 : GenAI Importance by Business Size and Business Age



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 66 : Adoption Likelihood by Industry



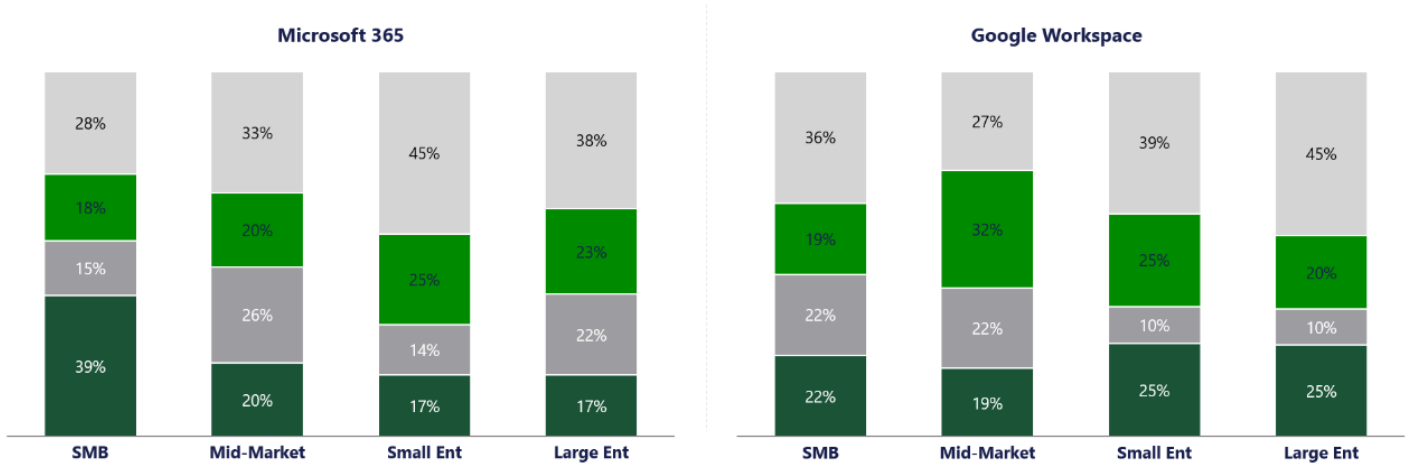
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 67 : Software Suite Bundling by Business Size

% of respondents in each size range by productivity suite, N=622

Standalone Bundled with SW Bundled with IaaS Bundled with SW & IaaS

"What best describes the way your primary productivity suite was purchased?"



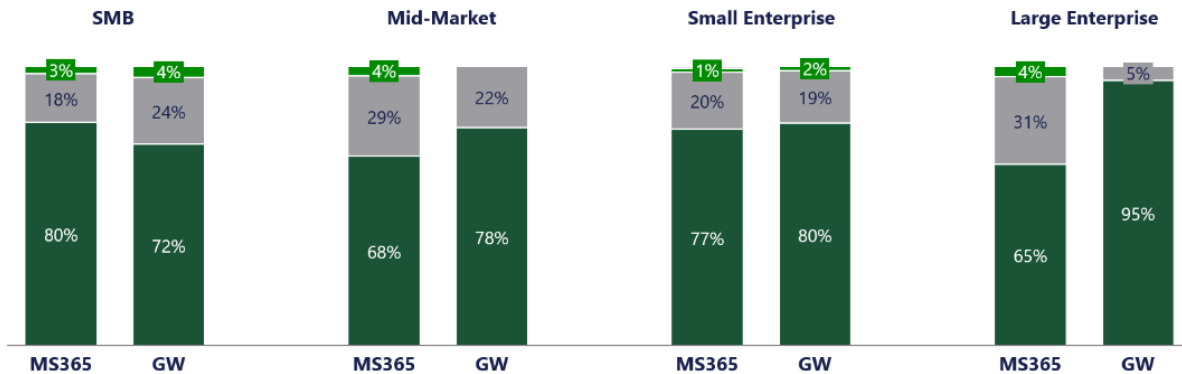
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 68 : Productivity Suite Satisfaction by Business Size

% of respondents by satisfaction level and Business size, 2023N=622

Very Satisfied
Somewhat Satisfied
Neutral
Somewhat Unsatisfied
Very Unsatisfied

"How satisfied is your organization with primary productivity suite?"



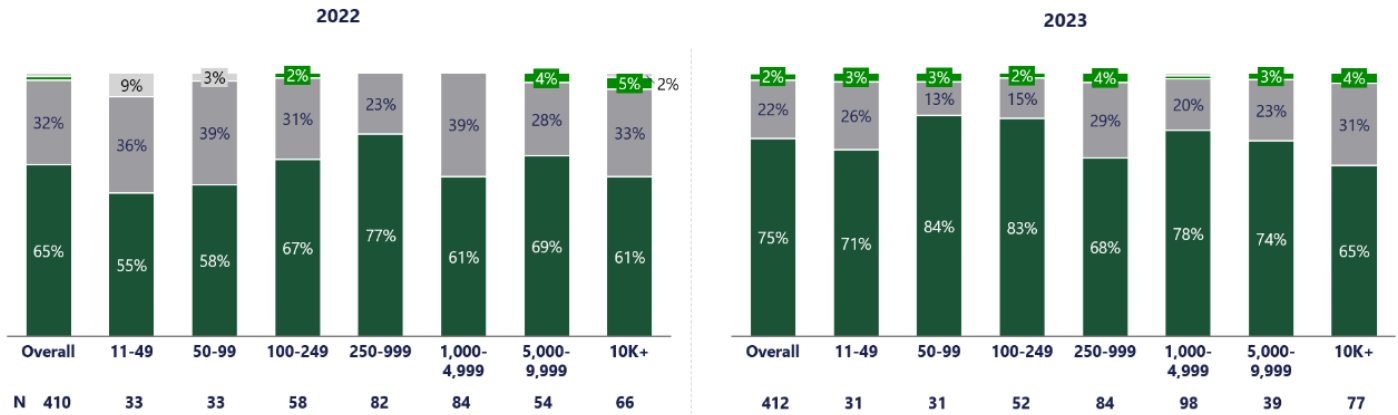
Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 69 : Satisfaction of organizations that use MS365 as primary suite, by business size

% of respondents by satisfaction level and business size, 2022N=410, 2023N=412

"How **satisfied** is your organization with **MS365**?"

Very Satisfied Somewhat Satisfied Neutral Somewhat Unsatisfied Very Unsatisfied



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

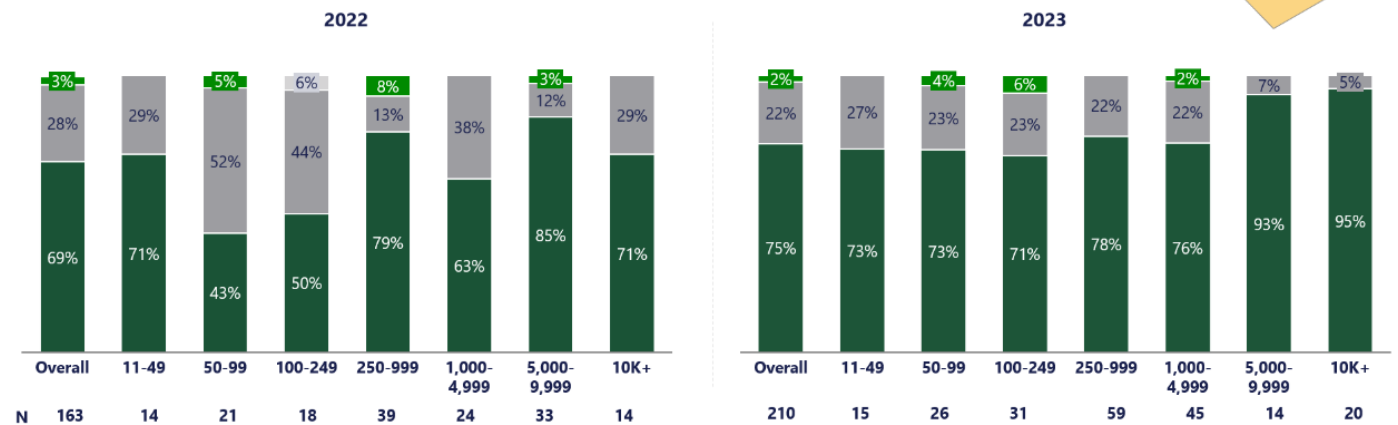
Figure 70 : Satisfaction of organizations that use Workspace as their primary suite, by business size

% of respondents by satisfaction level and business size, 2022N=163, 2023N=210

"How **satisfied** is your organization with **GW**?"

Very Satisfied Somewhat Satisfied Neutral Somewhat Unsatisfied Very Unsatisfied

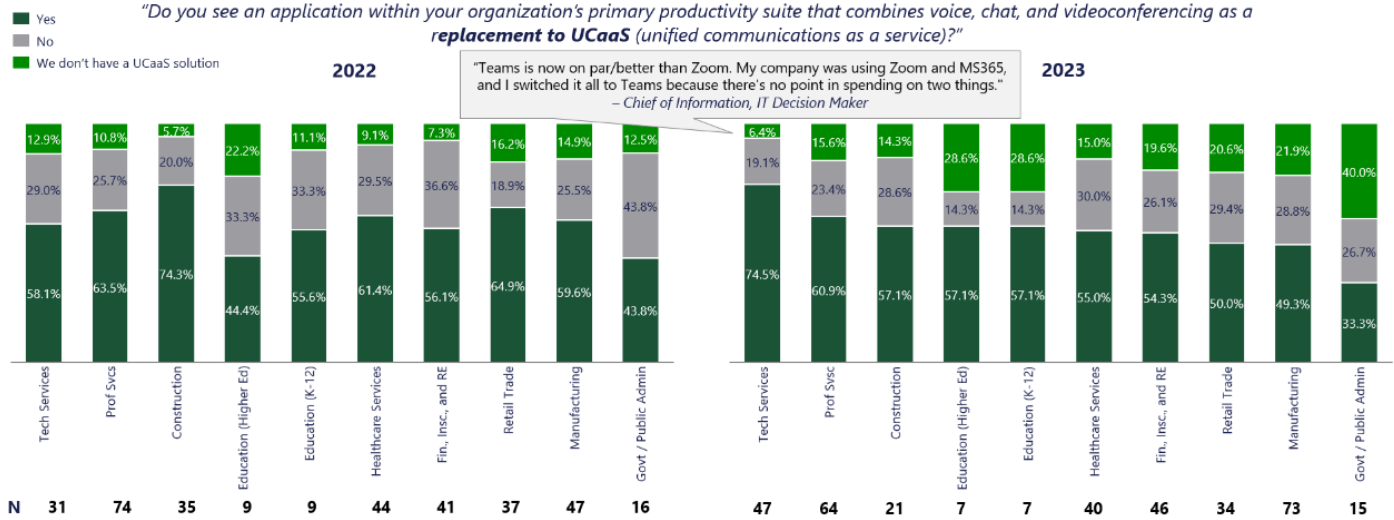
Vs 2022, more ITDMs that use GW are very satisfied across all business sizes, especially 1k+



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 71 : UCaaS Replacement by Industry – MS365 Primary ITDMs

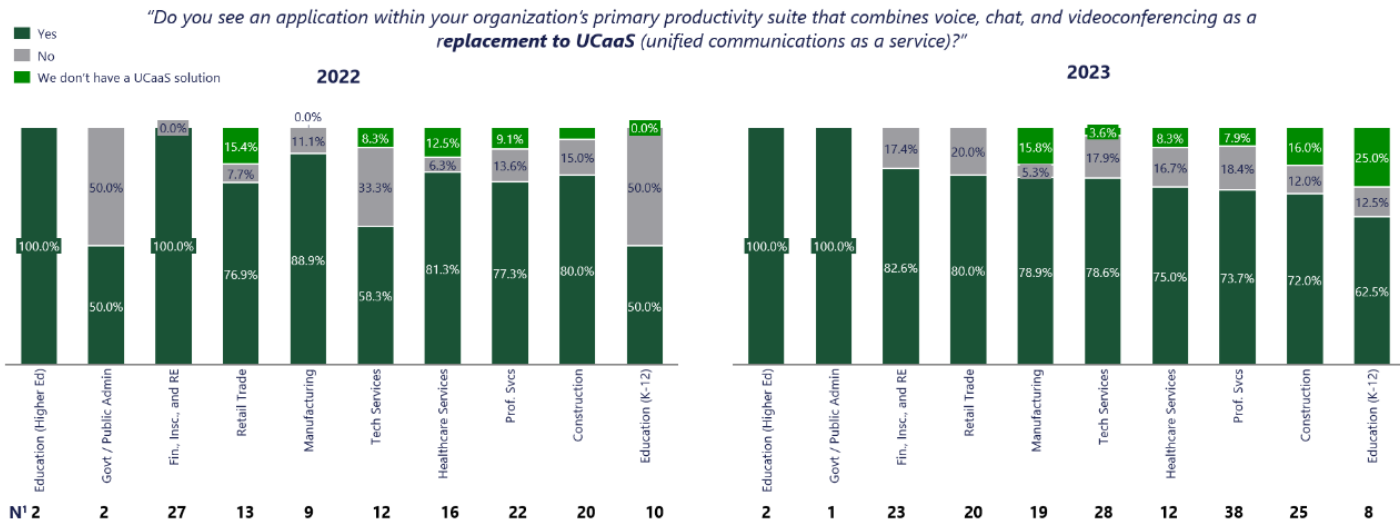
% Respondents by industry 2022N=343, 2023N=354



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622.

Figure 72 : UCaaS Replacement by Industry – Workspace Primary ITDMs

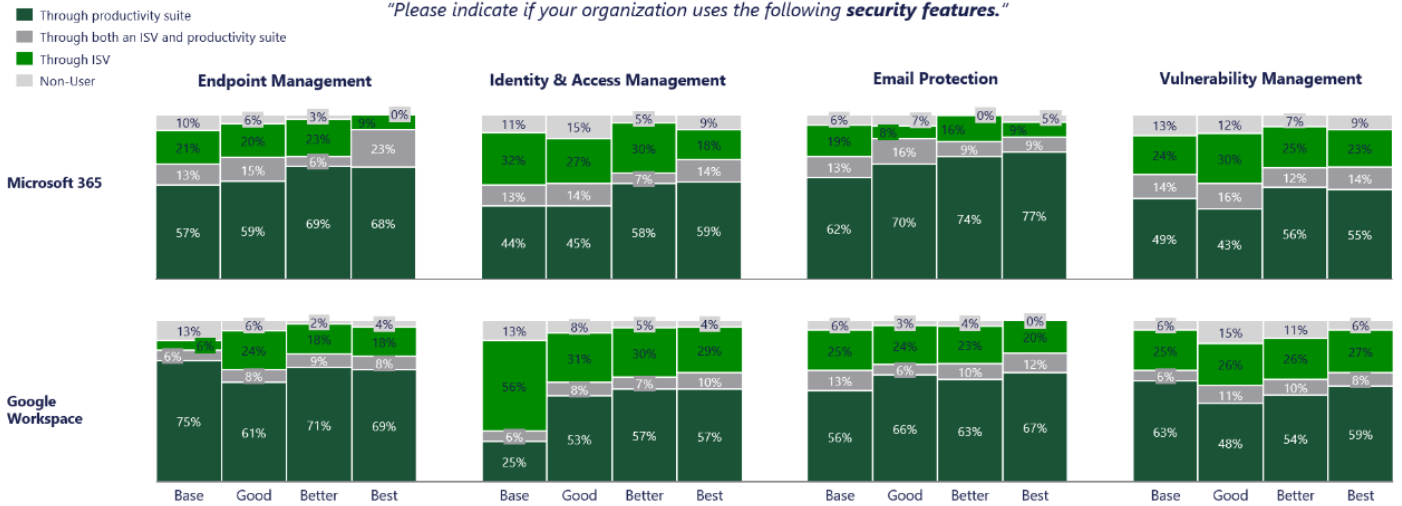
% Respondents by industry 2022N=133, 2023N=176



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Some industries have very low sample and should thus only be interpreted directionally

Figure 73 : Security ISV Usage by Provider by Subscription Tier Level

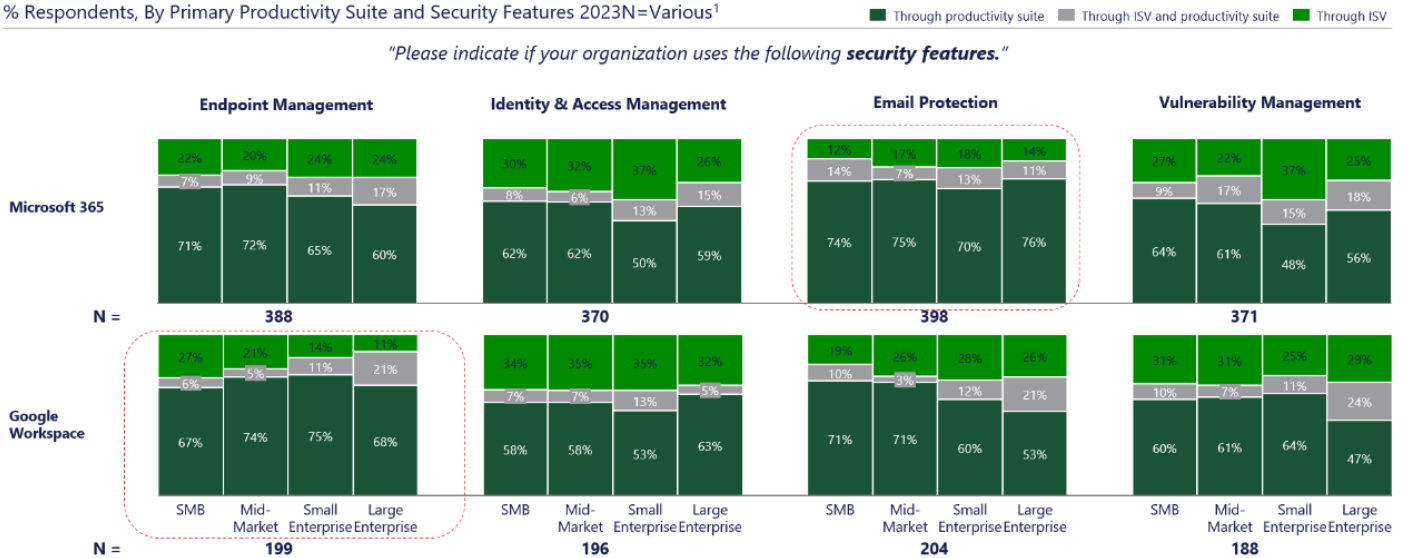
% Respondents, By Primary Productivity Suite and Security Features 2023N=611¹



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) There were 11 respondents that did not know what subscription tier their productivity suite was

Figure 74 : Security ISV Usage by Provider by Size

% Respondents, By Primary Productivity Suite and Security Features 2023N=Various¹

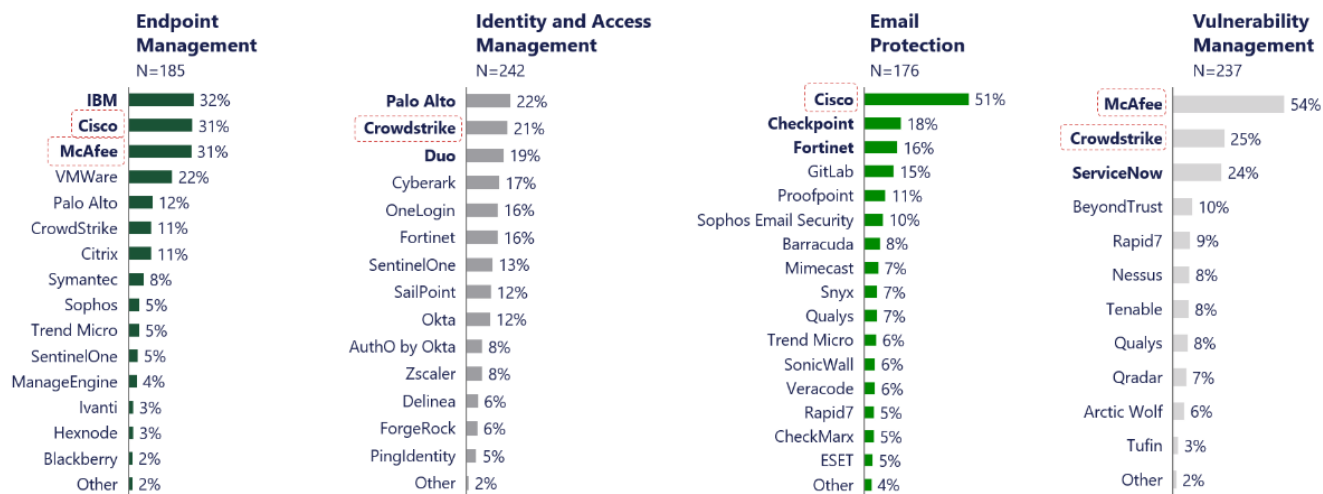


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622. Note 1) Respondents that are not users of each security product are removed

Figure 75 : Security ISV Provider Usage

% of Respondents by security features, N=Various

"Who is your Endpoint Management, IAM, Email Protection, or Vulnerability Management Vendor(s)?"

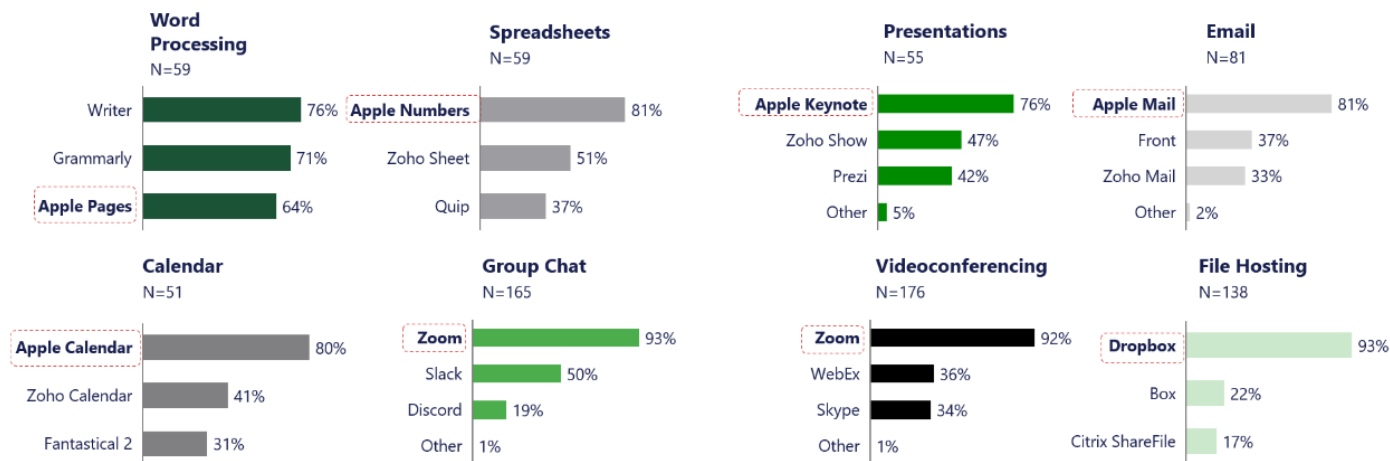


Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Figure 76 : ISV Provider Usage by Product

% of Respondents by usage of ISV provider, N=Various

"Which other [category] product(s) does your organization use? Please select all that apply."



Source: TD Cowen / Altman Solon Productivity Suite Survey, July 2023, N=622

Ticker	Rating	Price*	Price Target	Ticker	Rating	Price*	Price Target
MSFT	Outperform	\$377.44	\$390.00	CHKP	Outperform	\$142.53	\$160.00
CRWD	Outperform	\$207.73	\$180.00	CYBR	Outperform	\$190.40	\$195.00
FTNT	Market Perform	\$51.91	\$60.00	NET	Outperform	\$72.81	\$80.00
OKTA	Outperform	\$72.06	\$100.00	PANW	Outperform	\$260.57	\$295.00
TENB	Outperform	\$39.54	\$55.00	VRNS	Outperform	\$39.21	\$37.00
ZS	Outperform	\$191.96	\$195.00	GOOG	Outperform	\$137.92	\$155.00
S	Outperform	\$17.41	\$20.00	AMZN	Outperform	\$146.13	\$180.00

*As of 11/20/2023

VALUATION METHODOLOGY AND RISKS

Valuation Methodology

Cybersecurity & Information Security:

Our valuation methodology is primarily based on Enterprise Value to Free Cash Flow (EV/FCF), followed by Price-to-Earnings (P/E). However, this varies by company; for instance, we will often use Enterprise Value to Revenue (EV/Revs) or a discounted cash flow (DCF) analysis for software companies that are primarily subscriptions-based, or for growth companies that have recently entered the public equity markets.

We make investment recommendations on certain early stage, pre-revenue companies based upon an assessment of their business model, technology, probability of market success, and the potential market opportunity, balanced by an assessment of applicable risks. Such companies may not be assigned a price target.

E-Commerce:

Our valuation methodology is primarily based on Discounted Cash Flow analysis, comparable company multiples such as EV/FCF, EV/EBITDA, and P/E, and sum-of-the-parts analysis (for companies with ownership stakes in other equities or significant assets such as patents/IP). However, this varies by company; for instance, we will often use EV/Revenue for high-growth companies that have recently entered the public equity markets.

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Internet & New Media:

Our valuation methodology is primarily based on Discounted Cash Flow analysis, comparable company multiples such as EV/FCF, EV/EBITDA, and P/E, and sum-of-the-parts analysis (for companies with ownership stakes in other equities or significant assets such as patents/IP). However, this varies by company; for instance, we will often use EV/Revenue for high-growth companies that have recently entered the public equity markets.

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Investment Risks

Cybersecurity & Information Security:

The global economy or specific end markets significantly worsen, contracting IT spending and impairing software growth. The rate of SaaS/Cloud adoption slows, resulting in prolonged sales cycles and higher-than-anticipated quarterly volatility across much of our coverage universe. Competition increases materially, driving deflationary pricing pressure and compressing margins. In particular, innovation by new entrants in the software sector often produces solutions with similar or better functionality at materially lower prices than incumbents' legacy offerings.

E-Commerce:

The industry in which our companies operate is fiercely competitive and technological change is rapid. All of our companies face the risk that they are unable to keep pace with new innovations or that new innovations impact competitive positioning. Our companies are international operators and are therefore exposed to currency fluctuations and other factors associated with operating in a foreign territory. Finally, our names sit within traditional commerce and retail space and are exposed to the same seasonality and macro trends as the rest of the industry, including competition from offline retailers.

Internet & New Media:

The industry in which our companies operate is fiercely competitive and technological change is rapid. All of our companies face the risk that they are unable to keep pace with new innovations or that new innovations impact competitive positioning. Additionally, our companies are international operators and are therefore exposed to currency fluctuations and other factors associated with operating in a foreign territory. Finally, our names sit within the advertising industry more broadly and are exposed to the same seasonality and macro trends as the rest of the group, including competition from TV and other offline channels.

Software:

The global economy or specific end markets significantly worsen, contracting IT spending and impairing software growth. The rate of SaaS/Cloud adoption slows, resulting in prolonged sales cycles and higher-than-anticipated quarterly volatility across much of our coverage universe. Competition increases materially, driving deflationary pricing pressure and compressing margins. In particular, innovation by new entrants in the software sector often produces solutions with similar or better functionality at materially lower prices than incumbents' legacy offerings.

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