

# International Business Machines Corporation (IBM)

November 7, 2023

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We recommend a BUY on IBM at a target price of \$196, an annualized return of 11.2%

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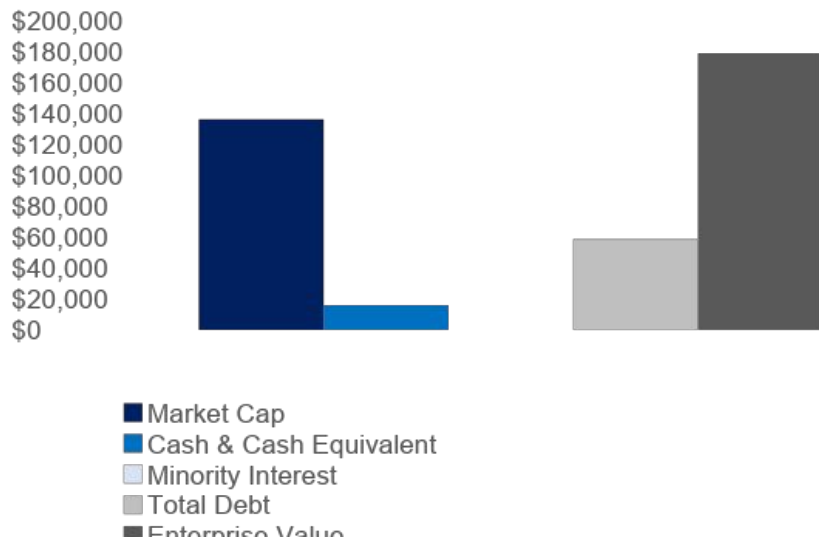
Valuation

# Company Overview

International Business Machines Corporation (NYSE: IBM)



## Current Capitalization (USD Millions)

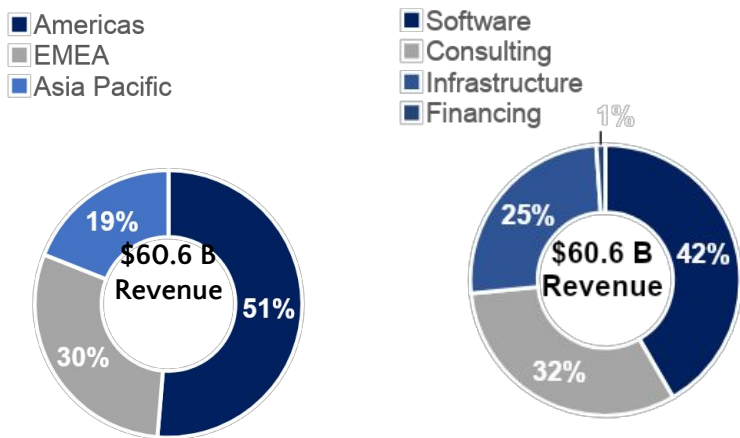


## Management Team

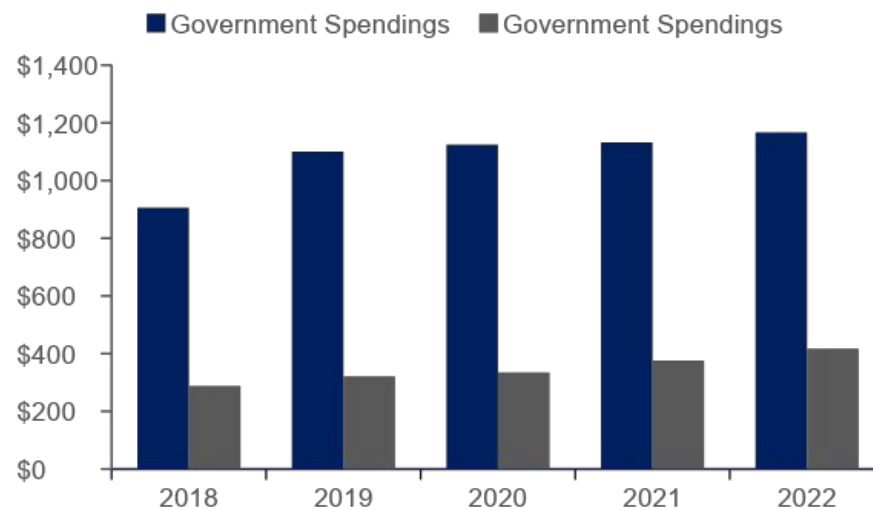


Name	Arvind Krishna	James J. Kavanaugh	Michelle H. Browdy	Gary David Cohn
Position	CEO /Chairman	CFO	Senior VP	Vice Chairman
Experience Yrs.	20+	20+	15	20+
Market Value of Shareholdings	\$42,673 M	\$14,582 M	\$17,436 M	\$5,942 M

## Revenue: Geographic and Product Segmentation



## U.S. Government Spending on IBM and Microsoft

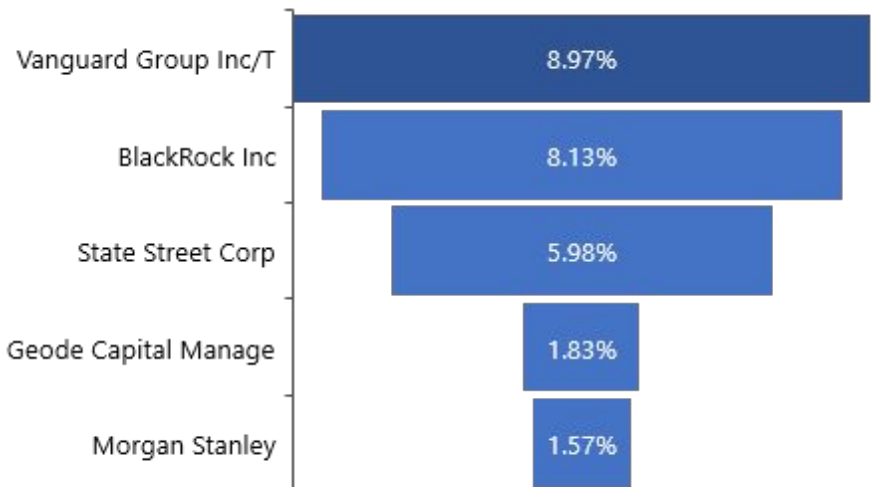


# Company Overview

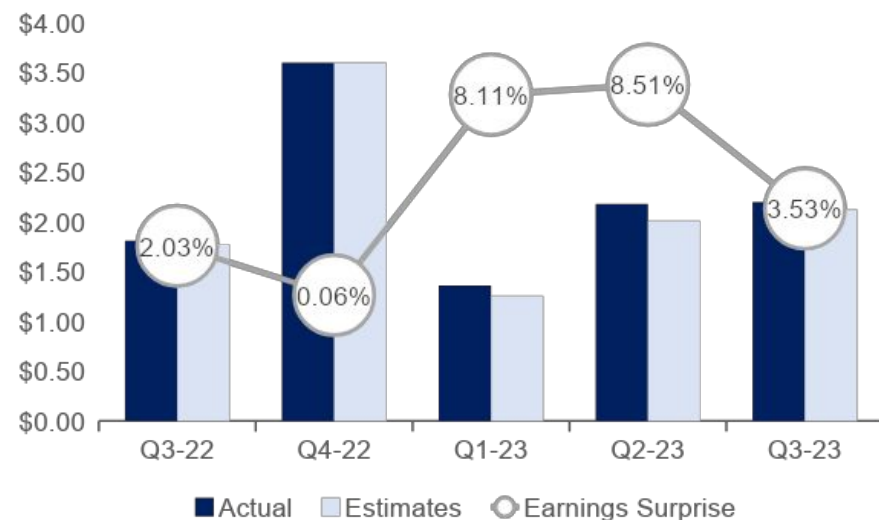
International Business Machines Corporation (NYSE: IBM)



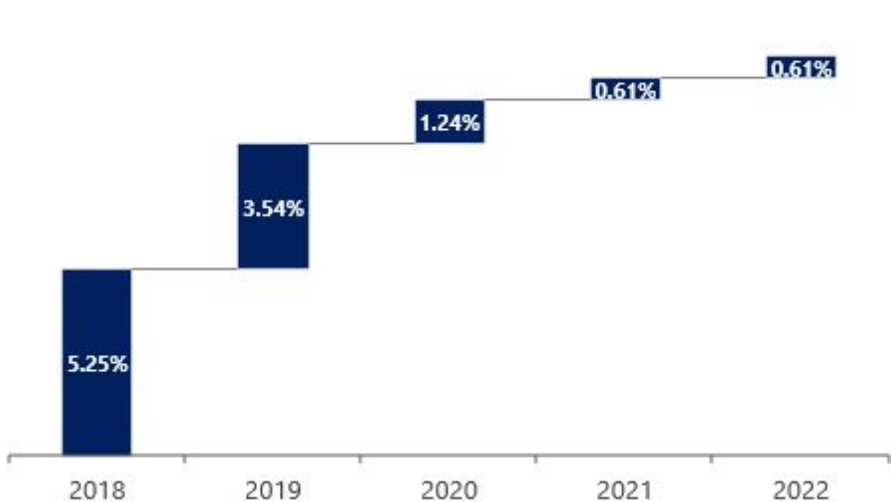
## Institutional Ownership: Top 5



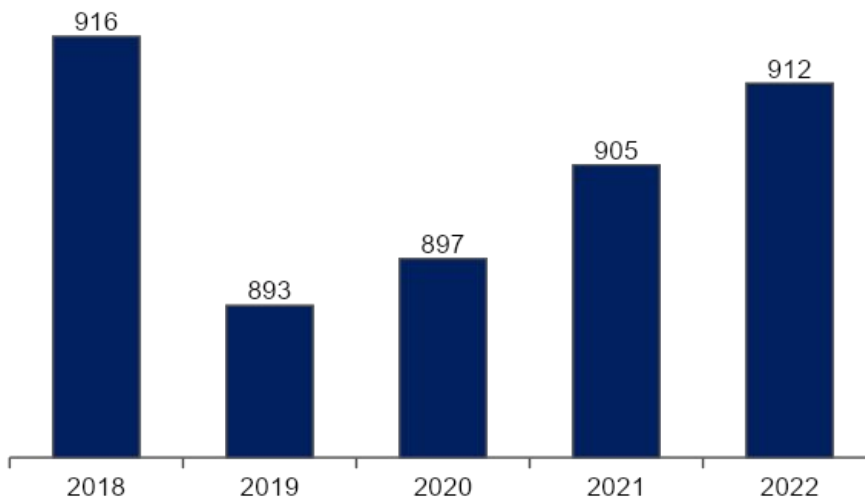
## Earning Trends (EPS, USD per Share)



## Dividend Growth Trend



## Shares Diluted Trend (\$USD)

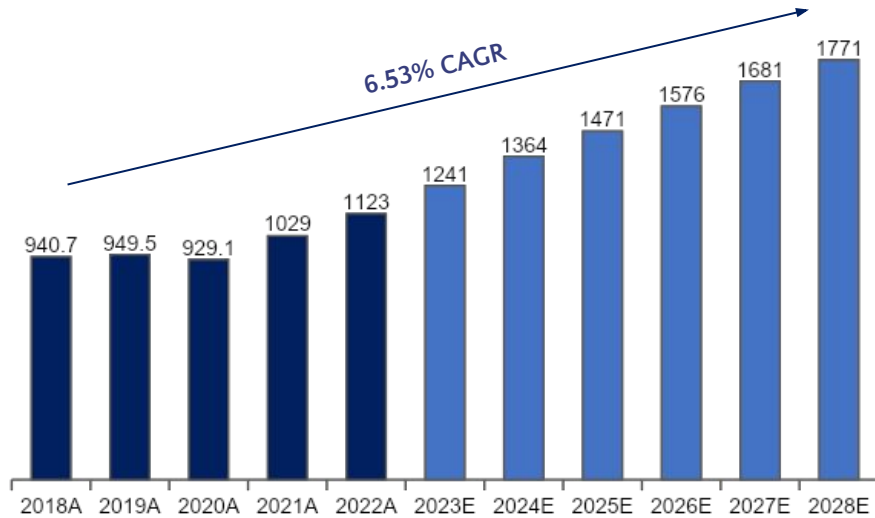


# Industry Overview

Information Technology Services



## Information Technology Services Revenue (USD\$ B)

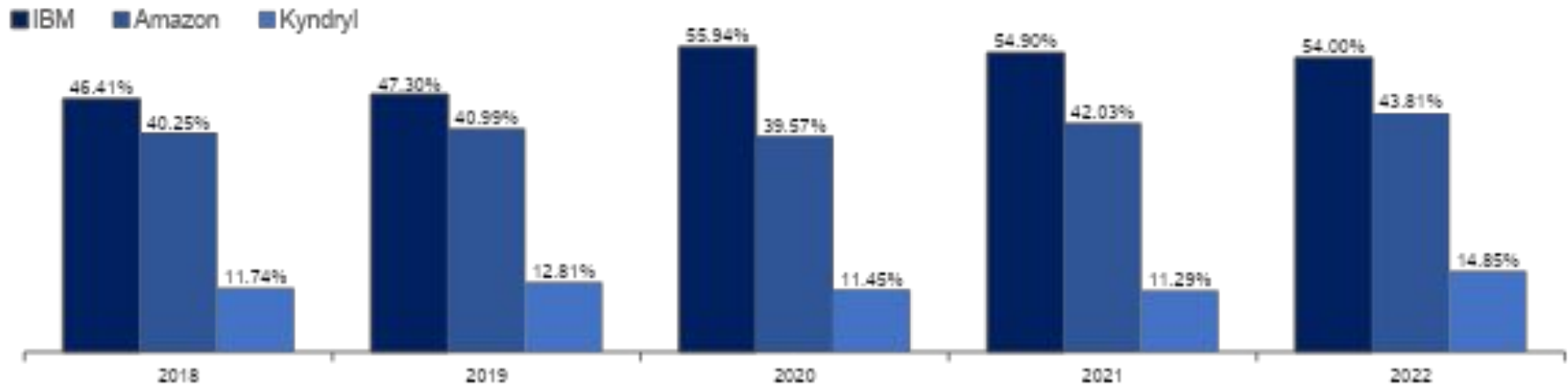


## Emerging Trends

- Increasing implementation across the economy of artificial intelligence, business automation and hybrid cloud computing.
- More companies are becoming aware of cyberattacks and the benefits to IT software to technologically transform their business.
- Increasing remote work grows the demand for technological enhancements and to strengthen cybersecurity for employees.



## Gross Margin Compared to its Competitors

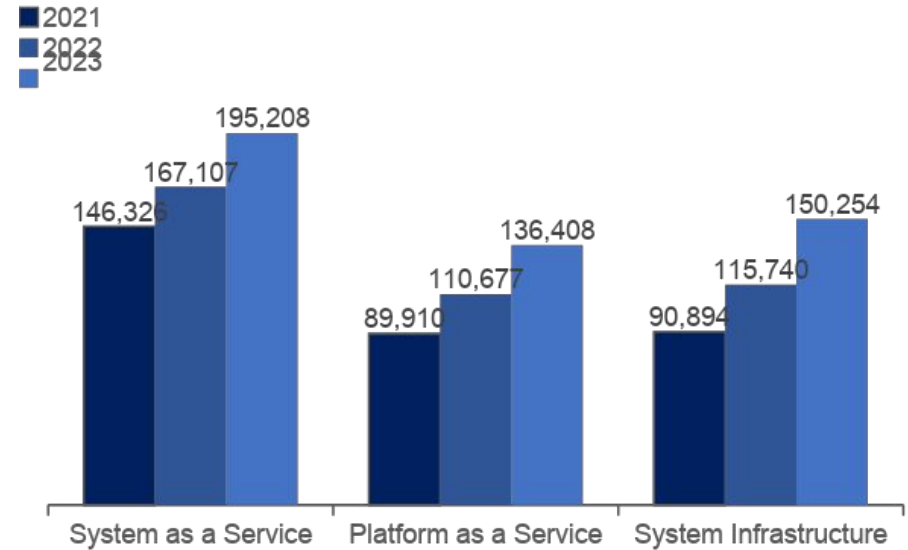


With a significant surge in demand for innovative software products, clients seek partners to build a bridge between private and public clouds. Gross margin will likely expand gradually, as the more-profitable software units becomes a bigger portion of overall company sales. IBM has a competitive advantage over many industry leaders in this aspect.

## P/E relative to Competition in the Tech World

Competitors	NTM P/E Multiple
<b>accenture</b>	25.2x
Microsoft	28.5x
<b>ORACLE</b>	18.4x
salesforce	22.9x
<b>SAP</b>	21.2x
<b>IBM</b>	14.4x

## Worldwide Public Cloud Service Spending Forecast (USD\$ M)



## Innovation Sustainability Rankings in the Industry

Overall Innovation	Strategy and vision	Technology use and development	Ecosystem	Voice of the customer

## ESG in the Industry



Consumers and businesses are becoming more environmentally conscious, being increasingly aware of company's environmental policy. Companies in the IT industry must uphold sustainable values as they are increasingly appealing to clients.



Increasing government pressure to make companies transparent to consumers, care to customer security and ethical data handling. Companies can leverage this to government contract discussions.



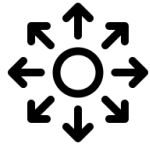
The social responsibility companies engage in with the environment, data handling, and corporate governance lead to customer retention and positive community impact.

## Key Factors for Building Competitive Advantages

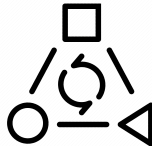
**Customization:** IT companies are focusing on personalizing their solutions for customers using artificial intelligence.



**Consolidation:** Companies in this industry demand expansion for their presence in the cloud computing market.



**Adaption:** Successful companies have been able to adapt to industry regulations and address social environment concerns.



## Key Drivers

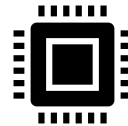
### Internal drivers



Artificial intelligence development to improve existing technologies



Cost controls through expansion and pricing models



Developing new services to diversify portfolio that cater to customer needs

### External drivers



Increasing remote work to promote cloud service demand

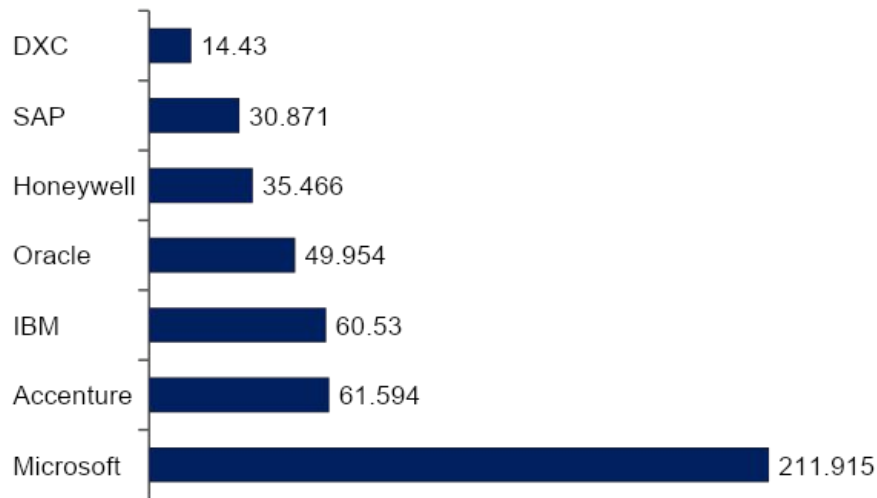


Demand for digital transformation across industries



Favourable economic conditions to encourage businesses to invest more in cloud infrastructure

## Leading IT Companies worldwide by Revenue (USD\$ B)



## Costs pertaining to IT Infrastructure

### Cloud Industry Implications

- Organizations may become overly dependent on a cloud provider's software, resulting in a situation where they are locked into that vendor's ecosystem
- Cloud providers may create exceptionally innovative solutions that become too complicated when trying to switch to a different provider
- Cloud providers often offer incentives, such as discounts for long-term commitments, which can strengthen customer loyalty and potentially deter users from considering a switch to alternative services.

### Costs Associated

- Costs of software, hardware and maintenance
- Training staff to acquire the knowledge to use the cloud infrastructure
- Data and application migration/transfer costs

# Thesis 1 – Modern Cloud Architecture

International Business Machines Corporation (NYSE: IBM)



## New Products are meeting consumer's demand

### New Software Products Launched in Fiscal 2023

**IBM Storage Defender:** This product offers a holistic view of an organization's data security posture, helping detect advanced threats and coordinating data recovery.

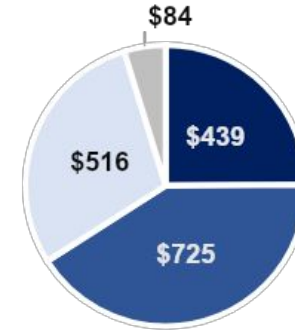


**IBM Federal HR Cloud:** on August 30, 2023, IBM announced they will be working with the Federal U.S. Government to help federal agencies streamline their HR processes and systems.



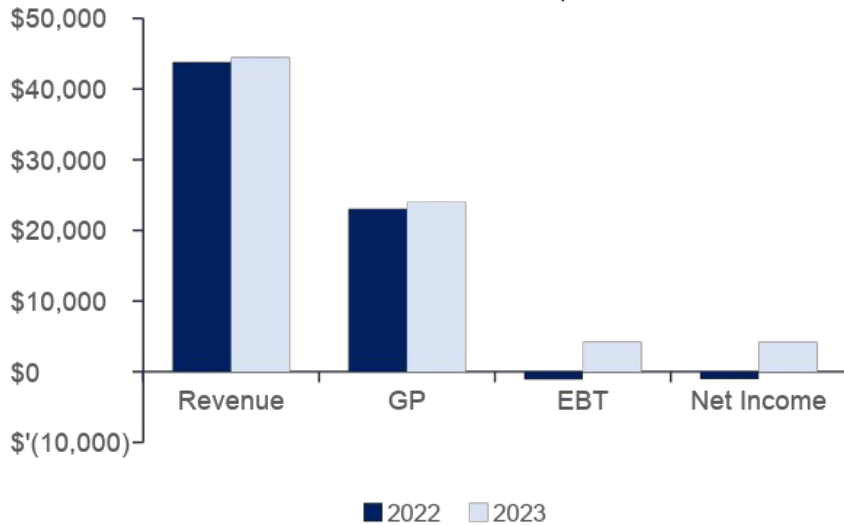
### Government Spending on IBM by Countries (USD B)

■ United States ■ Australia ■ Canada ■ United Kingdom

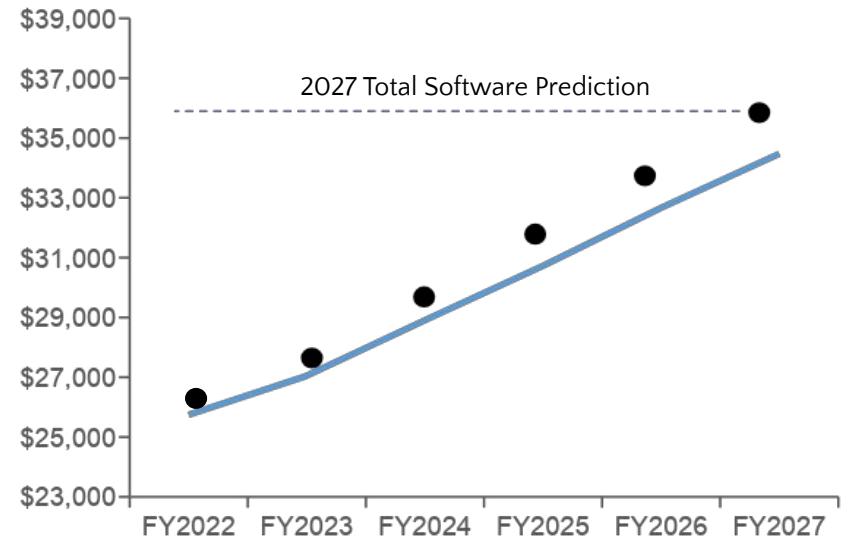


### Immediate Impact of Modern Cloud Architecture

9 Month Ended Development



### Software Sales Growth Runway





# Thesis 2 – Robust Growth in Consulting Opportunities

International Business Machines Corporation (NYSE: IBM)



## IBM's consumers prove to be stickier than expected

### Qualities needed to excel in the Consulting industry

High switching costs is an economic moat that IBM can leverage for business strategy decisions. IBM can further expand their IT infrastructure through consulting services for the following reasons:

- Innovation:** IBM's Infrastructure and Software divisions produce distinct cutting-edge technologies.
- Specialization:** IBM can offer more value-added and customized services to their clients. This is one of the core components that makes IBM an excellent consulting company in the industry.



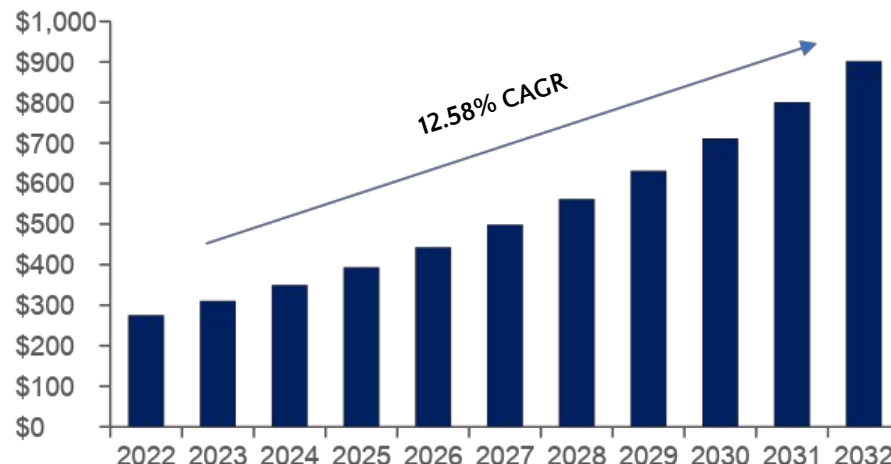
### Statistics For the Software Consulting Market

Market Size in 2023	USD 310.52 Billion
Market Size by 2032	USD 902.07 Billion
Growth Rate from 2023 to 2032	CAGR of 12.58%
Largest Market	North America
Fastest Growing Market	Asia Pacific
Segments Covered	By Application, By Enterprise Size, and By End-Use
Regions Covered	North America, Europe, Asia-Pacific, Latin America and Middle East & Africa

### Partnerships



### Software Consulting Market Revenue (USD Billion)



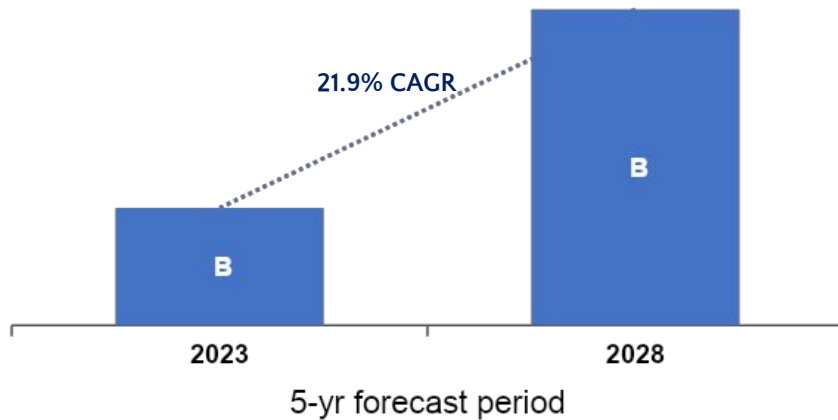
# Thesis 3 – M&A as a tool for Business Infrastructure Enhancement



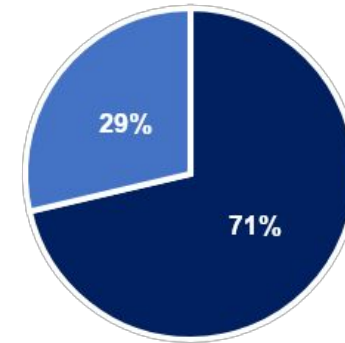
International Business Machines Corporation (NYSE: IBM)

IBM has a disciplined approach to capital allocation which is a driving factor for bottom-line growth

## Qualities needed to excel in the Consulting industry



## Statistics For the Software Consulting Market



■ Hybrid Platform & Solutions ■ Transactions

## Significant Acquisitions



Acquisition of Apptio in August 2023. This will allow IBM to improve their IT automation capabilities to optimize business processes & improve quality.

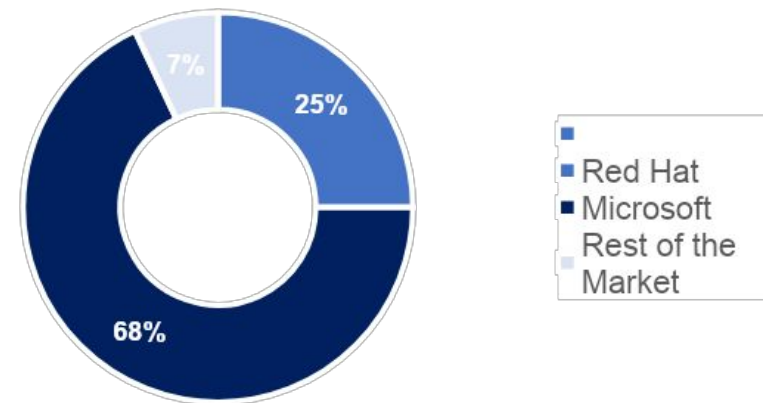


Acquisition of NS1 in February 2023. A leading provider of network automation SaaS solutions that will drive IBM's network agility in their hybrid cloud environments.



Landmark acquisition of Red Hat in July 2019. A leading software company specializing in open-source software solutions which added value to IBM's open hybrid architecture in their software OS.

## Global Paid Server OS Market Share



# Risks, Mitigants and Catalysts



Mitigated risks and attractive catalysts will ensure stable growth well into the future

## Risks

### Intellectual Property Portfolio May Prevent Competitive Offerings



IBM's patents and other intellectual property may not prevent competitors from independently developing products and services similar to or duplicative to the company. This could impact the strength of service offerings and in return affect projected growth.

### Decrease in Client Spending Budgets Onset Economic Downturn

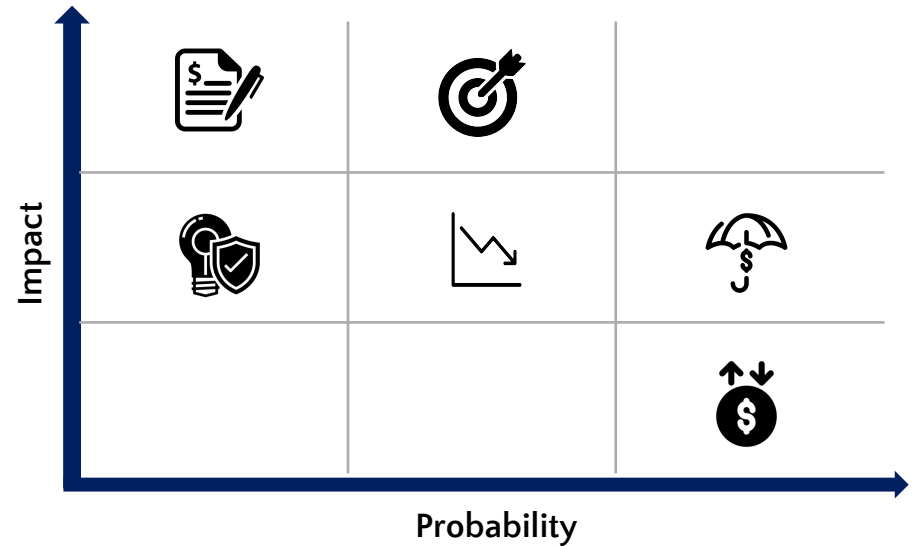


In the event of lower demand for IBM's products and solutions due to general economic conditions or a shift in client buying patterns, the company's revenue and profits could be affected.

### Foreign Currency fluctuations



IBM operates under various business units across the globe. The company's financial performance can therefore be significantly affected by fluctuations in the local currency against the U.S. dollar, impacting its bottom line and cash flows.



## Mitigations

### Aggressive Protection Strategies and Diversification



The company continues to adopt a diverse set of licenses and protections in blockchain technology, cybersecurity, climate change, and products that blend technology with healthcare to support its growth strategy and competitive edge.

### Continuously integrating cost-saving and technological advancements



Drive greater agility, productivity, flexibility, and cost savings continuously transforming with the use of automation, AI, and agile processes to lower the risk of unfavorable business performance.

### Hedging Efforts through Derivatives and Forward Contracts



The company limits risks of currency fluctuations through strong risk management procedures, including the use of derivatives, and, where cost effective, financing with debt in the currencies in which assets are denominated.

## Catalysts

### High Cloud Adoption Rate



IBM leverages cloud computing solutions to run crucial business processes and handle mission-critical information. Leveraging their extensive suite of cloud computing products and large international customer base will bolster growth in various markets and regions.

### Robust Partner Ecosystem and Innovative Solutions



The wide range of partners builds a strong ecosystem around IBM's products and services, strengthens its R&D capabilities, extends the value of its technology portfolio, and yield higher, better returns as a result.

### Introduced new AI Platform called WatsonX



This new platform is an engine of growth for existing models and machine learning. This will scale the company's innovative service offerings in growing markets and ensure to provide advanced technology solutions

# Comparable Company Analysis

Based on November 6, 2023 – After Market Close



Valuation Metrics Company Name	Ticker	Market Cap (\$M)	EV (\$M)	P/BV TTM		EV/EBITDA NTM	Debt/Equity TTM	EV / Sales NTM	ROE TTM	ROA TTM
				Book Value	PB Ratio					
Amazon, Inc.	AMZN	1,444,073 T	\$1,512,760 T	17.7	7.9x	13.0x	11%	2.5x	13%	4%
Adobe, Inc.	ADBE	\$257,280 B	\$252,679 B	34.6	16.3x	24.2x	2%	12.1x	34%	14%
Cisco Systems, Inc.	CSCO	\$215,851 B	\$194,706 B	10.9	4.9x	9.4x	4%	3.4x	30%	10%
Microsoft Corporation.	MSFT	\$2,649,731 T	\$2,590,862 T	29.7	12.0x	21.1x	4%	10.4x	39%	15%
Oracle Corporation.	ORCL	\$298,896 B	\$375,752 B	0.9	125.4x	13.2x	30%	6.9x	-1,163%	7%
Salesforce, Inc.	CRM	\$204,516 B	\$202,223 T	59.6	3.5x	15.1x	6%	5.6x	3%	3%
SAP SE	SAP	\$157,976 B	\$160,390 B	38.9	3.6x	13.9x	7%	4.5x	4%	4%
ServiceNow, Inc	NOW	\$124,653 B	\$123,123 B	35.1	17.4x	35.8x	2%	11.9x	27%	3%
Kyndryl, Inc.	KD	\$3,514 B	\$3,514 B	5.4	2.8x	2.9x	121%	0.4x	-71%	2%
<b>International Business Machines</b>	<b>IBM</b>	<b>\$136,010 B</b>	<b>\$178,523 B</b>	<b>25.3</b>	<b>5.9x</b>	<b>11.7x</b>	<b>43%</b>	<b>2.9x</b>	<b>31%</b>	<b>5%</b>
Minimum		\$3,514 B	\$6,254 B	0.9	2.8x	2.9x	2%	0.4x	-1,163%	-2%
25th Percentile		\$141,314 B	\$141,757 B	8.2	3.5x	11.2x	3%	3.0x	-34%	3%
Mean		\$595,165 B	\$602,083 B	25.9	21.5x	16.6x	21%	6.4x	-121%	6%
Median		\$215,851 B	\$202,223 B	29.7	7.9x	13.9x	6%	5.6x	13%	4%
75th Percentile		\$871,485 B	\$944,256 B	37.0	16.8x	22.6x	21%	11.2x	32%	12%
Maximum		\$2,649,731 T	\$2,590,862 T	59.6	125.4x	35.8x	121%	12.1x	39%	15%

Bear Case	
EBITDA (4.25 Year Forecast)	20,909
EV/EBITDA	10.2x
<b>Enterprise Value</b>	<b>\$213,726</b>
(-) Debt	58,525
(-) Minority Interest	75
(+) Cash	10,978
<b>Equity value</b>	<b>\$165,654</b>
Shares Issued	913
<b>Implied share price</b>	<b>\$181</b>
Current Price	\$149
Implied Upside	22%

Base Case	
EBITDA (4.25 Year Forecast)	20,909
EV/EBITDA	11.2x
<b>Enterprise Value</b>	<b>\$233,499</b>
(-) Debt	58,525
(-) Minority Interest	75
(+) Cash	10,978
<b>Equity value</b>	<b>\$186,877</b>
Shares Issued	913
<b>Implied share price</b>	<b>\$205</b>
Current Price	\$149
Implied Upside	37%

Bull Case	
EBITDA (4.25 Year Forecast)	20,909
EV/EBITDA	12.2x
<b>Enterprise Value</b>	<b>\$255,095</b>
(-) Debt	58,525
(-) Minority Interest	75
(+) Cash	10,978
<b>Equity value</b>	<b>\$207,473</b>
Shares Issued	913
<b>Implied share price</b>	<b>\$227</b>
Current Price	\$149
Implied Upside	53%

# Discounted Cash Flow Analysis

Base Case Scenario



Cash Flow Summary	FY 2022A	FY 2023E	FY 2024E	FY 2025E	FY 2026E	FY 2027E
Revenue	\$60,530	\$63,565	\$66,564	\$70,693	\$75,080	\$79,525
Revenue Growth %	6%	5%	5%	6%	6%	6%
<b>EBITDA</b>	<b>\$7,174</b>	<b>\$14,680</b>	<b>\$15,001</b>	<b>\$16,691</b>	<b>\$18,935</b>	<b>\$20,909</b>
EBITDA Margin %	12%	23%	23%	24%	24%	26%
<b>EBIT</b>	<b>\$2,372</b>	<b>\$10,198</b>	<b>\$10,607</b>	<b>\$12,332</b>	<b>\$14,473</b>	<b>\$16,215</b>
EBIT Margins %	4%	16%	16%	17%	19%	20%
Less: Taxes	(\$626)	(\$1,632)	(\$2,228)	(\$2,590)	(\$3,039)	(\$3,405)
<b>NOPAT</b>	<b>\$2,998</b>	<b>\$8,566</b>	<b>\$8,380</b>	<b>\$9,742</b>	<b>\$11,434</b>	<b>\$12,810</b>
Add: Depreciation & Amortization	\$4,802	\$4,482	\$4,4394	\$4,359	\$4,462	\$4,694
Less: Capital Expenditures	(\$1,861)	(\$1,769)	(\$1,852)	(\$2,679)	(\$2,846)	(\$3,014)
Less: Change in NWC	(\$1,718)	(\$2,776)	(\$133)	(\$183)	(\$165)	(\$195)
<b>Unlevered FCF</b>	<b>\$7,657</b>	<b>\$8,503</b>	<b>\$11,054</b>	<b>\$11,605</b>	<b>\$13,214</b>	<b>\$14,685</b>
Discount Period		0.3	1.3	2.3	3.3	4.3
Discount Factor		0.98	0.91	0.84	0.77	0.71
<b>PV of Unlevered FCF</b>		<b>\$8,336</b>	<b>\$10,008</b>	<b>\$9,704</b>	<b>\$10,205</b>	<b>\$10,474</b>

Terminal Value & Implied Share Price	
Terminal UFCF	\$14,685
Terminal Growth Rate	2%
<b>Terminal Value</b>	<b>\$238,688</b>
Discount Factor	0.71
PV of Terminal Value	\$170,288
PV of all UFCFs	\$48,727
<b>Implied TEV</b>	<b>\$218,995</b>
(-) Debt	(58,525)
(-) Minority Interest	(75)
(+) Cash	\$10,978
<b>Implied Equity Value</b>	<b>\$171,333</b>
Diluted Shares Outstanding	913
<b>Implied Equity Value Per Share</b>	<b>\$188</b>
Upside/(Downside):	26%

## Implied Share Price Sensitivity

		Perpetual Growth Rate				
		1.8%	1.9%	2.0%	2.1%	2.2%
WACC	8.1%	\$188	\$191	\$195	\$198	\$202
	8.2%	\$185	\$187	\$191	\$194	\$197
	8.3%	\$181	\$184	\$188	\$190	\$193
	8.4%	\$177	\$180	\$183	\$186	\$189
	8.5%	\$174	\$177	\$179	\$182	\$185

## Implied Terminal Multiple Sensitivity

		Multiples				
		10.2x	10.7x	11.2x	11.7x	12.2x
Terminal EBITDA	21,909	\$193	\$205	\$217	\$219	\$241
	21,409	\$187	\$199	\$210	\$222	\$234
	20,909	\$181	\$193	\$205	\$216	\$227
	20,409	\$176	\$187	\$198	\$209	\$221
	19,909	\$170	\$181	\$192	\$203	\$214

# Recommendation



We Recommend a **BUY** at a Target Price of **\$196**, an upside of **32%**

## Blended Valuation

Valuation Method	Weight	Target Price
DCF - Perpetuity	50%	\$188
Comps - Base	50%	\$205
<b>Blended Price</b>		<b>\$196</b>
Current Share Price		\$149
<b>Annualized Return</b>		<b>11.2%</b>

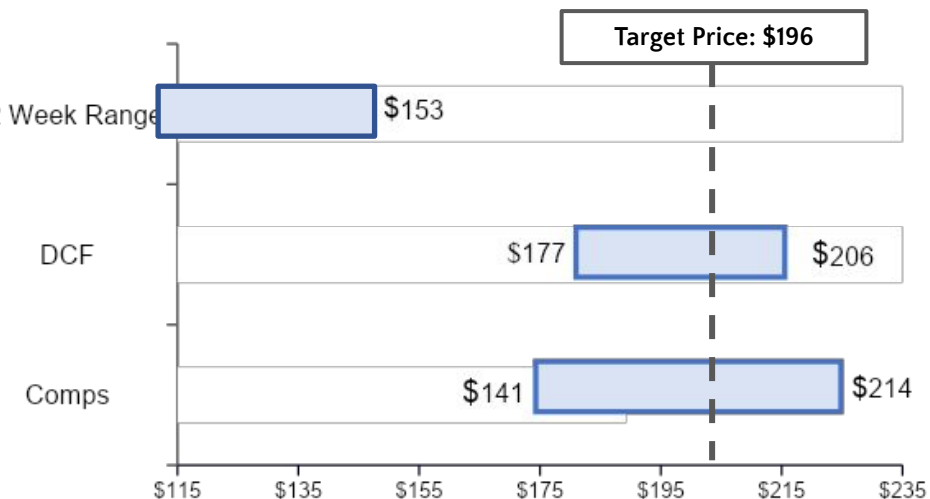
## Commentary

Based on our research, we recommend a BUY rating with a blended price target of \$196. After our in-depth investigation of the industry, it is evident that there is a healthy growth runway for IBM in the global market.

IBM is taking the necessary steps to achieve their mission strategy pertaining to global expansion and increased outsourcing. With modern cloud architecture, IBM will be able to leverage data analytics and AI to evaluate price elasticity, understand customer preferences, and negotiate pricing with suppliers. This will definitely help the organization, increase cash flows, enhance customer experience, and gain a competitive edge.

They are well-positioned to compete the international market and will benefit significantly from Apptio's acquisition. In addition, their commitment to continuous innovation demonstrates strong leadership in the market.

## Football Field



## Thesis Recap



**Modern Cloud Architecture**



**Robust growth in consulting opportunities worldwide**



**M&A as a tool for Business Infrastructure Enhancement**

IBM

## Appendices

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International Business Machines Corporation (IBM)

IBM Q  
System One



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**INVESTA**  
INSIGHTS

# Appendix I: Management Team



**Name**

Arvind Krishna

James J. Kavanaugh

Michelle H. Browdy

Gary D. Cohn

**Position**

Chairman and Chief Executive Officer

Senior Vice President and Chief Financial Officer

Senior Vice President, Legal and Regulatory Affairs, and General Counsel

Vice Chairman

**Years with Company**

30+ years

27 years

16 years

2 years

**Employment history**

CEO and chairman for the past 3 years. Previously involved with IT initiatives within the company

CFO for the past 5 years. Previously, heavily involved with finance and operations roles within IBM

General Counsel at IBM for 8 years. Previously worked in IBM's compliance department and board of directors

Vice Chairman at IBM for 2 years. Previously worked as a chief economic advisor for the president of the US

**Total Compensation**

\$16,1580,075

\$10,132,985

\$6,525,445

\$8,951,925

**Market Value of Shareholdings**

\$42,673,736

\$14,582,441

\$17,436,339

\$5,942,212



## Key Inputs

Levered Beta		
Weighted Average of Betas Unlevered based on Comps		1.01
Corporate Tax Rate		21%
Value of Debt for IBM		\$ 58,525 M
Shares Outstanding (Diluted)		913
Share Price		148.97
Market Value of Equity		\$136,010
Re-Levered Beta based on IBM's statistics	10%	1.35
5-year Linear Regression – S&P 500 IT vs IBM	90%	0.97
<b>Weighted Average Beta for valuation</b>	<b>Weight</b>	<b>1.00</b>

To calculate the re-levered beta, we gathered all the competitors that we believed were relevant to this analysis. Furthermore, we decided to put more weight to the linear regression as our 3 theses relies on IBM growing with the IT Services industry, software market and IT infrastructure.

While we understand that the market cap for some of these competitors such as HPE, DXC, and CTSI may seem very light relative to other peers, these enterprises are direct competitors to IBM in almost every business segment. As a result, this list is based on direct competitors, competitors with equivalent business segments, companies that operate in the same industry, and share the same costumers.

Forecasted WACC	
Cost of Debt	4.94%
Corporate Tax Rate	21%
Risk Free Rate	4.64%
Beta	1.00
Equity Risk Premium	5.5%
<b>Cost of Equity</b>	<b>10.16%</b>
<b>Equity / (Debt + Equity)</b>	<b>69.92%</b>
<b>Debt / (Debt + Equity)</b>	<b>30.08%</b>
<b>WACC</b>	<b>8.28%</b>

We utilized the current 10-year risk treasury yield (As of November 6, 2023 at 9:00PM) as the risk-free rate.

For the cost of debt, we utilized Aswath Damadoran's method by obtaining using the credit spread pertaining to their debt rating. Considering the S&P provide a stable outlook with a A- rating, we added the 1.62% credit spread to the risk-free rate. The addition of these two percentages is 6.26%. We then multiplied 6.26% by 1 minus the corporate tax rate of 21% to obtain a 4.94% cost of debt.

From 2014-2023, the 5-year average WACC has deviated between 6.6% -7.5%. The reason why the WACC we computed is outside of that range is because we are facing historic rise in interest rates and risk-free rates. As a result, we believe a WACC of 8.28 % is an adequate representation for the required rate of return for IBM over the next 5 years.

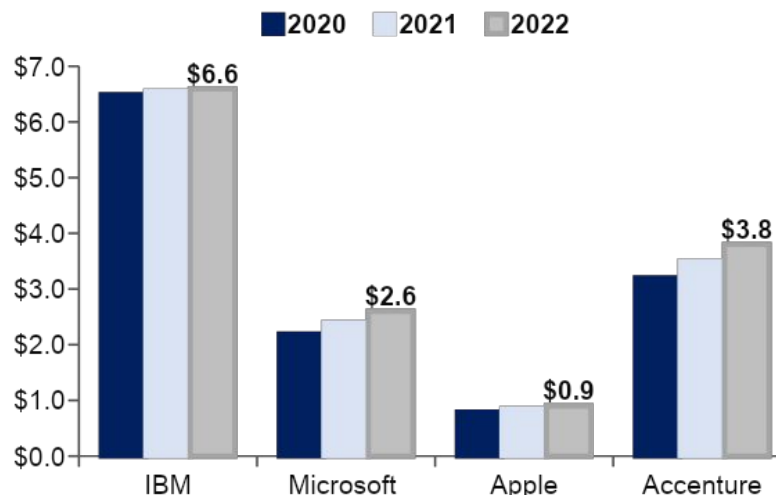
## Dividend Policy

Numerous investors look to IBM for its dividend offerings, appreciating its notably high payout for a technology firm and its longstanding history of consistent dividends.

Over the past three years, this tech giant has maintained a tradition of dividend payments and growth. The dividend seems to be backed by the firm's robust earnings and cash flow.

Even amidst the COVID-19 crisis, while many tech companies made significant cuts to their dividends, IBM raised its dividend by 0.61%. As of now, IBM's dividend yield stands at 5.38%, which is considerably higher than the sector's median of 1.64%.

Dividend Trend. IBM vs. Industry Competitors



## Competitive Moat 1 – Ecosystem of Business Services

- IBM sets itself apart from competitors through its extensive ecosystem of services and partnerships, coupled with its involvement in high-impact projects focused on groundbreaking technology:
- Services: IBM offers a diverse portfolio of products and services, spanning from hardware to software and cloud solutions. This diversification enables the company to have various revenue streams, decreasing its reliance on just one product or market.
- IBM's Infrastructure and Software divisions produce distinct cutting-edge technologies. IBM consulting then introduces these innovations to their clientele, assisting them in overseeing their applications within a hybrid cloud setting and automating their processes using data and AI. Consequently, IBM's unparalleled fusion of technological and business insights gives them a competitive edge in providing value to their clients.

## Competitive Moat 3 – Transformative Technologies

- Quantum Computing: With a mission to globally establish useful quantum technology, IBM has been at the forefront of introducing quantum technology. In 2022, IBM marked a notable achievement on its development trajectory by unveiling a 433-qubit processor. The company is set to release a groundbreaking 4,158 qubits processor by 2025, further expanding the boundaries of single-chip processor capabilities.
- AI and Hybrid Cloud: IBM's Watsonx.ai is a business-ready AI and data platform designed to leverage machine learning techniques. IBM's growth is significantly propelled by its hybrid cloud strategy, with Red Hat at its core. Red Hat's technology has become the go-to choice for businesses, surpassing public cloud offerings in aspects like scalability, security, user-friendliness, adaptability, uninterrupted experiences, and quicker innovation cycles. Esteemed entities like CIBC, Samsung Electronics, and the U.S. Department of Education have embraced this technology.

## Competitive Moat 2 – Ecosystem of Partnerships

- Partnerships: IBM boasts a formidable network of 80,000 business allies catering to 5,200 clients, an impressive 95% of whom are part of the Fortune 500. These strategic affiliations encompass industry giants such as Amazon Web Services (AWS), Microsoft, Oracle, Salesforce, Samsung Electronics, SAP, and others.
- Additionally, IBM has a substantial portfolio of government initiatives, including a \$725 million computing services agreement with the Australian Government and an \$84.4 million biometric platform contract with the UK in July 2023. These collaborations not only open doors to increased business opportunities and capital but also expand IBM's customer base and enhance its reputation. According to the Top 100 Contractors Report (TCR 100), compiled by the U.S. General Services Administration, in 2022, IBM is impressively situated at the 30th rank out of the top 100 most significant government contractors, having received a staggering \$1.167 trillion dollars from government contracts; nearly three times that of major competitors like Microsoft or KPMG, solidifying its fortified standing in today's market

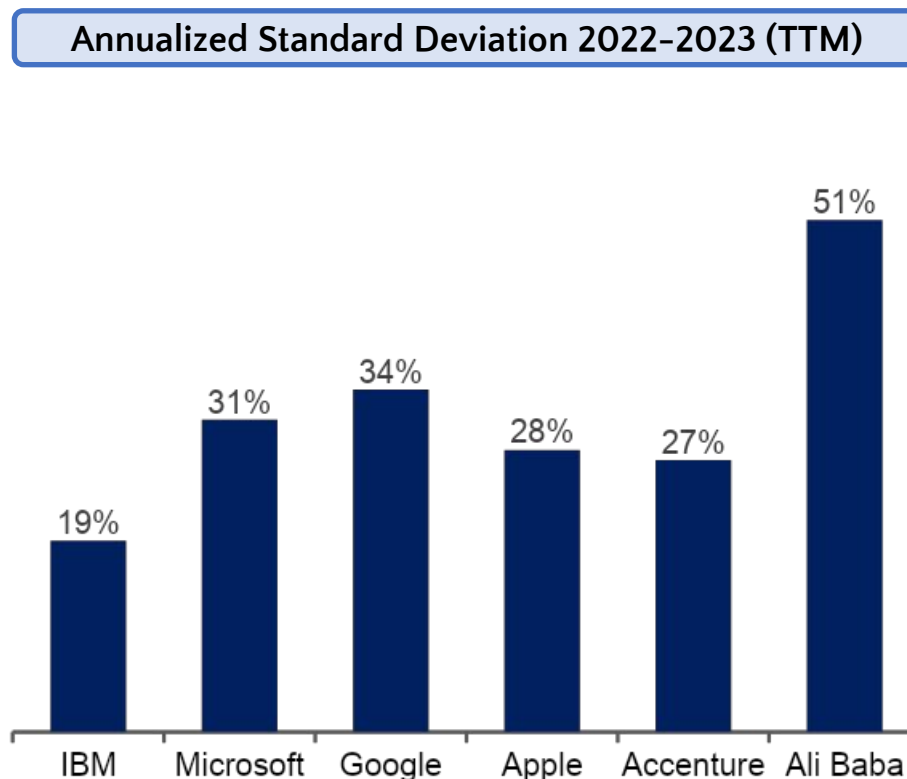
## Key Metrics

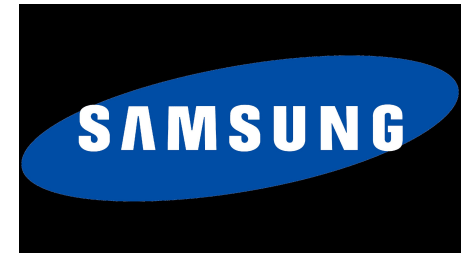
Share Price (\$)	\$141	TTM EPS (\$)	\$8.74
Market Cap (\$B)	\$134.77	Dividend Yield (%)	4.49%
Enterprise Value (\$B)	\$172.82	52 Wk Range	\$115.54 – \$153.21
EV/EBITDA (LTM)	14.83	Credit Rating	A-
P/E Ratio (LTM)	16.53	5-Year Beta	\$0.85

## Standard Deviation of Annual Returns

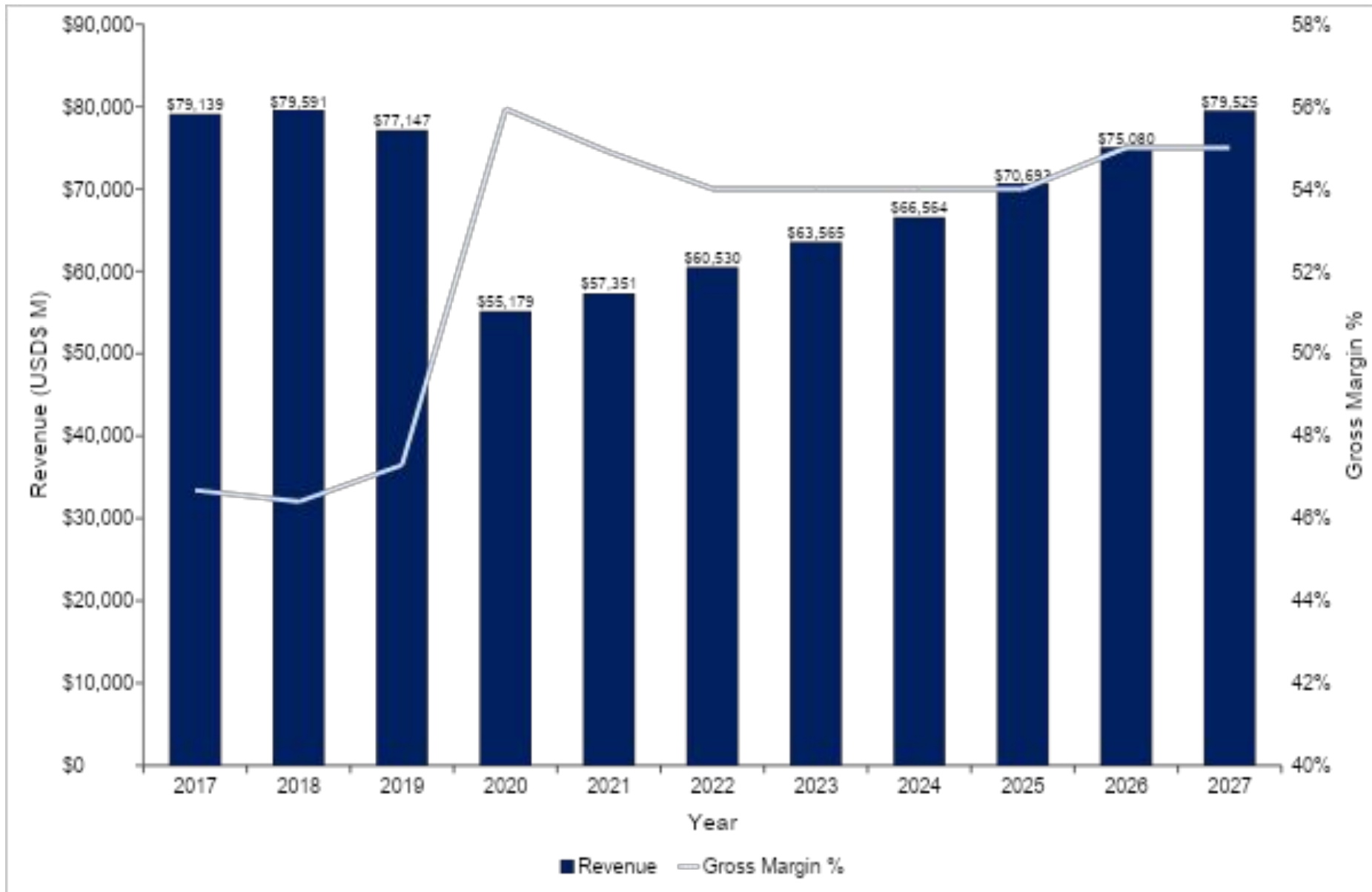
One of the key indicators of a company's performance and potential relates to the level of risk associated with the investment. This type of risk is measured by the volatility of its returns. We decided to calculate the standard deviation of the annualized returns for the top competitors in this industry to understand the levels of risk that is involved when someone invests in IBM's stock.

Based on the results, IBM has the lowest annualized standard deviation among the six companies, at 19%. This means that IBM's returns are more consistent and less prone to fluctuations than the other companies. It is important to note that over the past few years, IBM faced plenty of macroeconomic challenges such as highest inflation in the past decade, escalations of plenty geopolitical conflicts, and high interest rates. With their ability to overcome those challenges demonstrates their readiness for future opportunities.

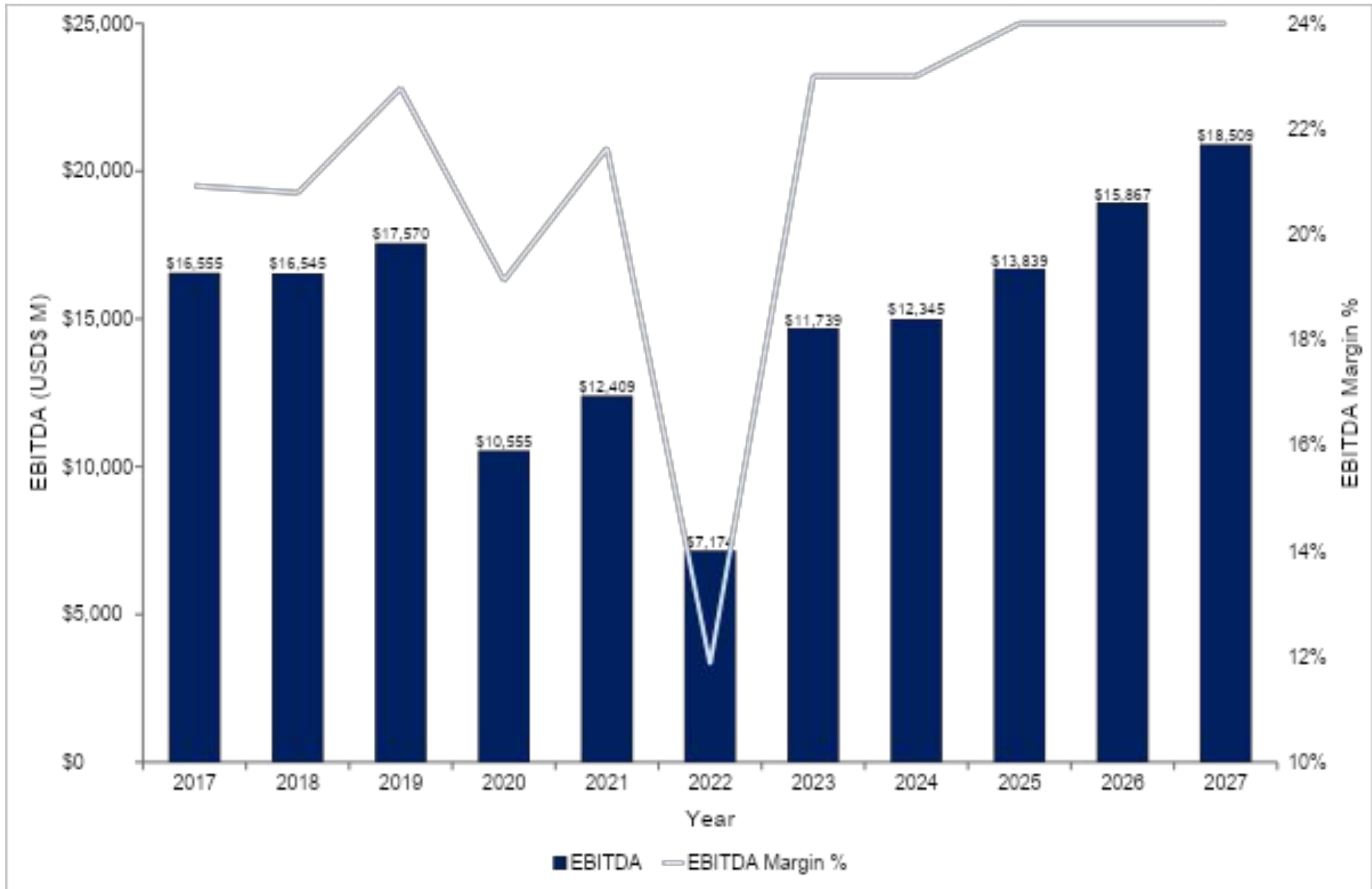




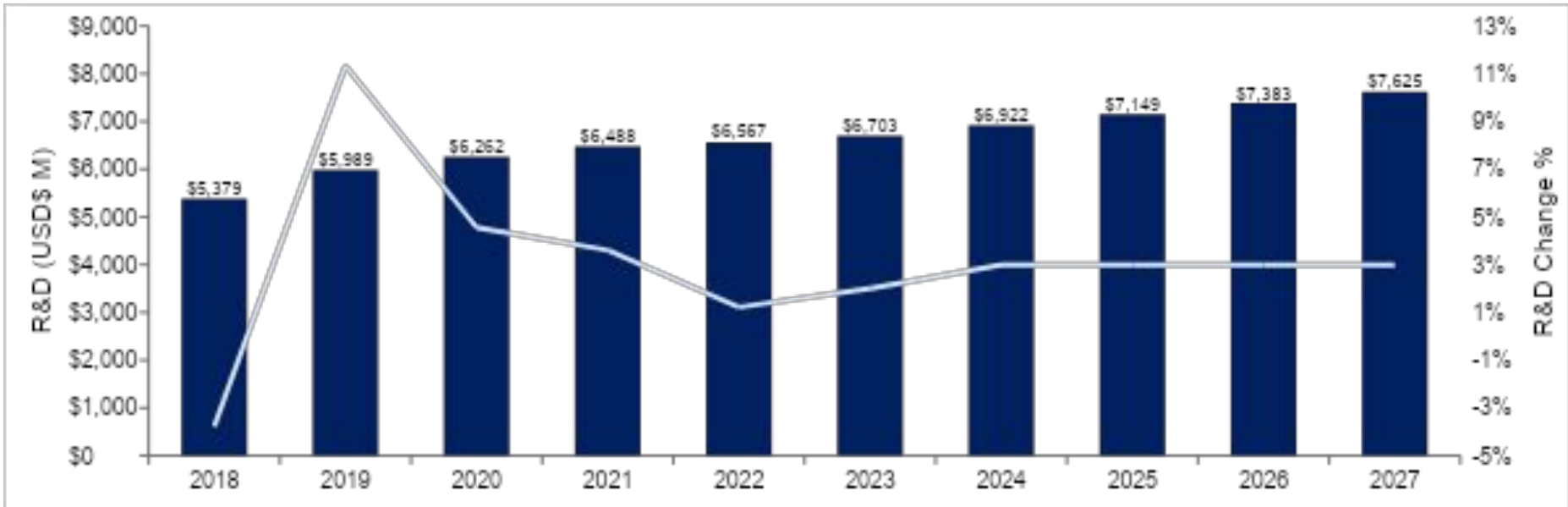
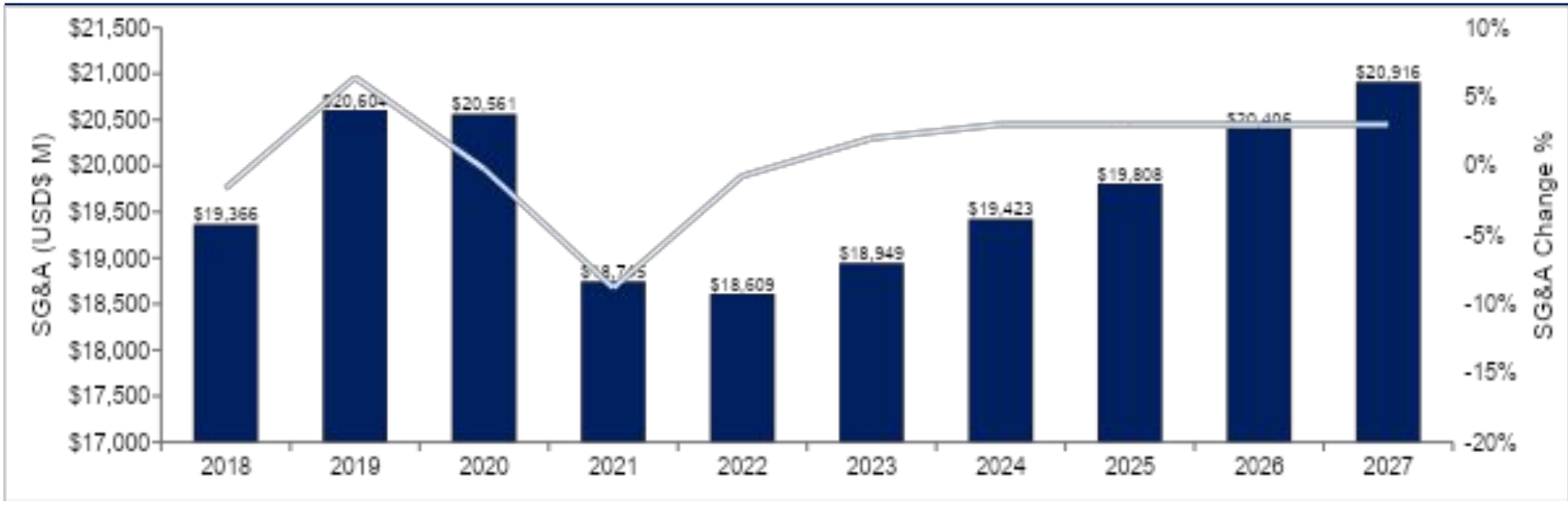
# Appendix VII: Revenue Growth and Gross Margin (USD\$ M)



# Appendix VIII: EBITDA and EBITDA Margin (USD\$ M)

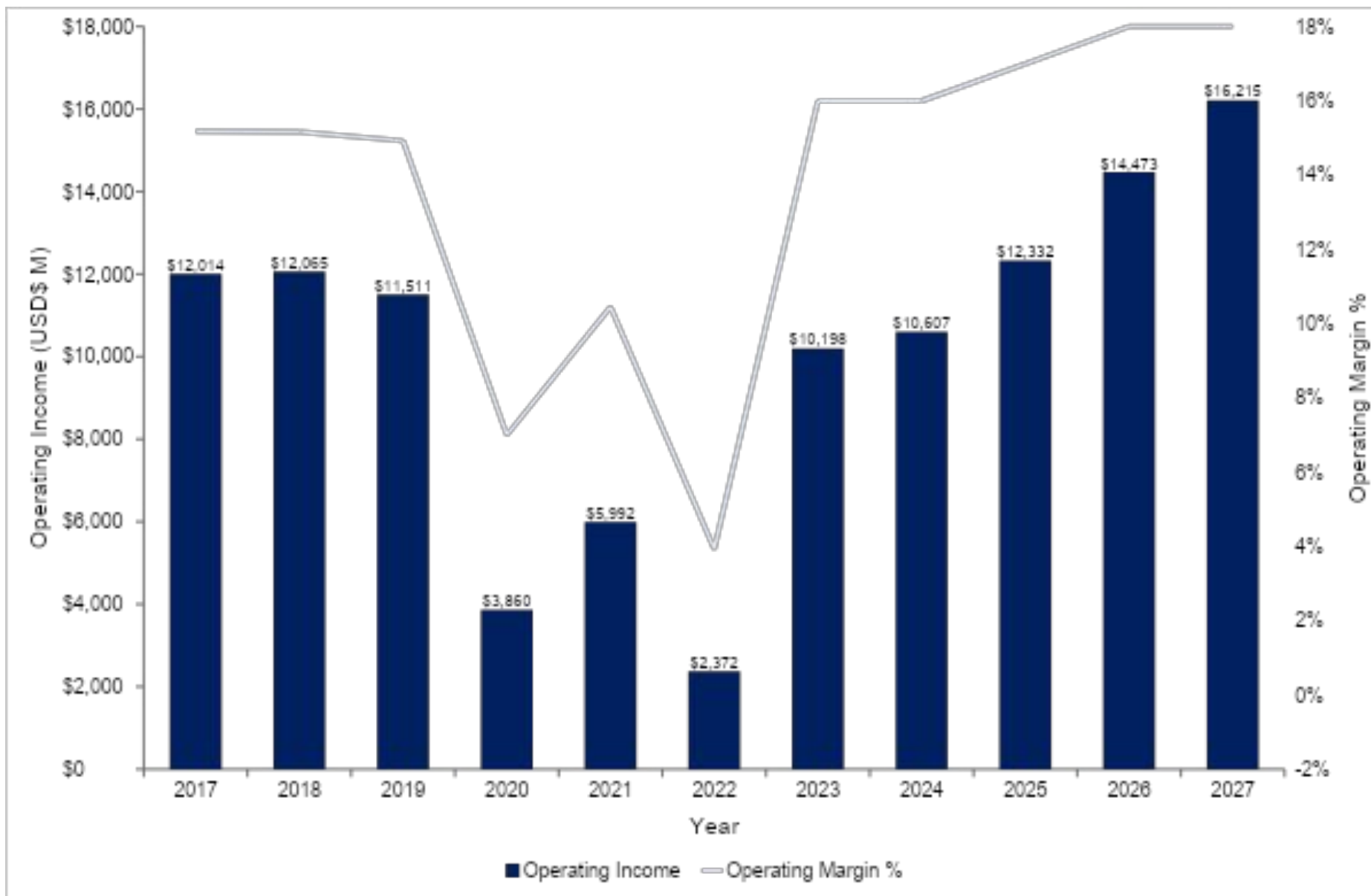


# Appendix IX: SG&A and R&D with Percentage Change (USD\$ M)





# Appendix X: Operating Income and Operating Margin (USD\$ M)

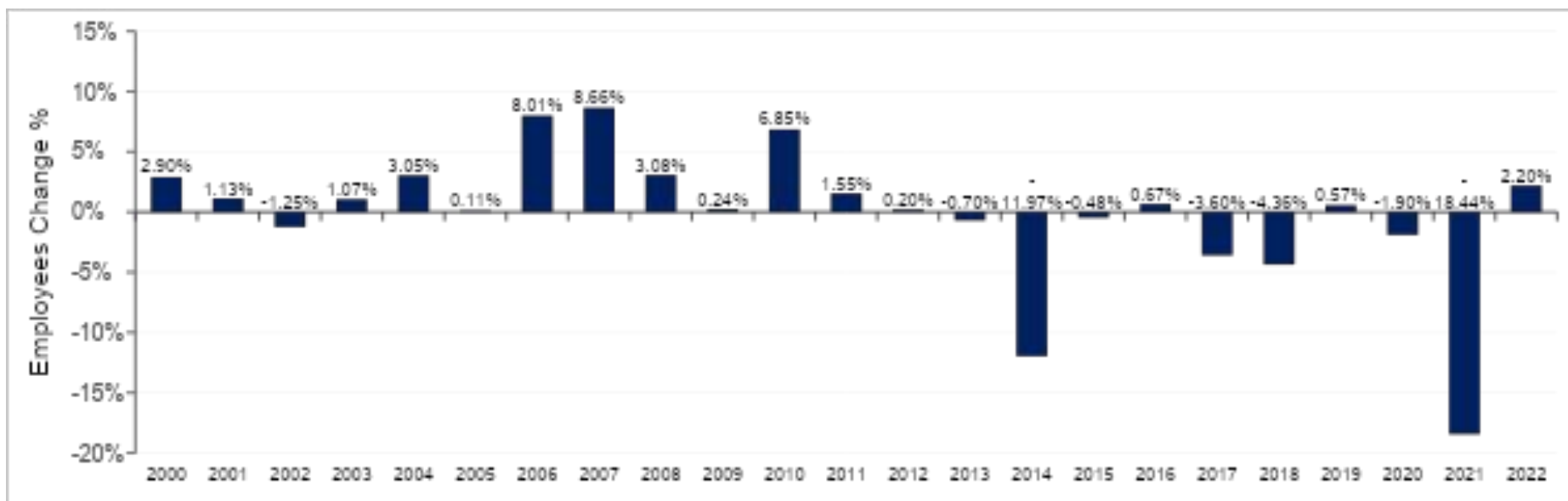
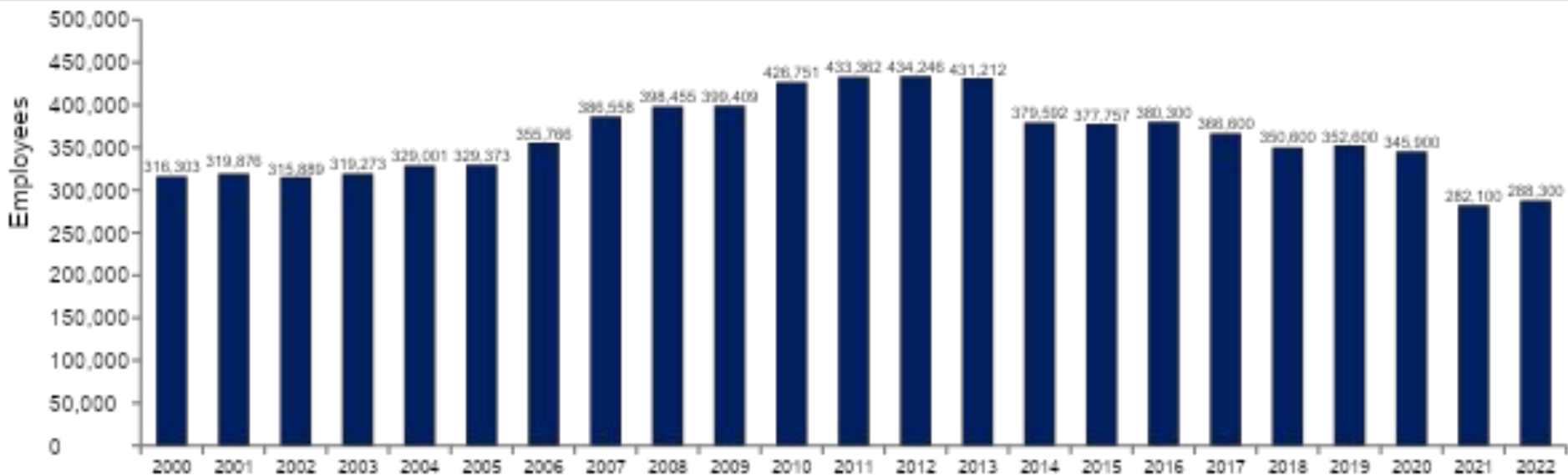


# Appendix XI: Working Capital Schedule (USD\$ M)

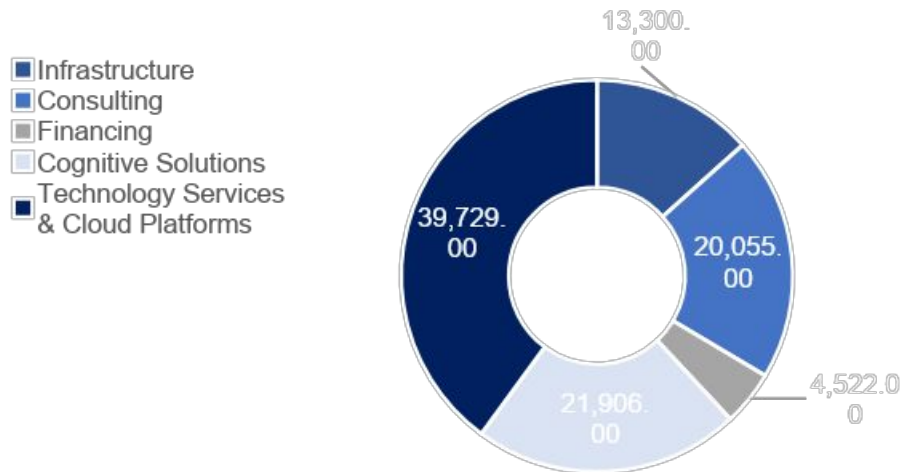


Year	FY 2022A	FY 2023E	FY 2024E	FY 2025E	FY 2026E	FY 2027E
Accounts Receivable Schedule	\$9,502	\$9,978	\$10,449	\$11,097	\$11,786	\$12,484
Sales Revenue	\$60,530	\$63,565	\$66,564	\$70,693	\$75,080	\$79,525
<b>DSO</b> <span style="border: 1px solid black; padding: 2px;">57</span>						
Inventory Schedule	\$1,476	\$1,550	\$1,623	\$1,723	\$1,810	\$1,918
Cost of Goods Sold	\$27,842	\$29,240	\$30,620	\$32,519	\$34,162	\$36,184
<b>DIO</b> <span style="border: 1px solid black; padding: 2px;">19</span>						
Accounts Payable Schedule	\$3,697	\$3,882	\$4,065	\$4,317	\$4,536	\$4,804
Cost of Goods Sold	\$27,842	\$29,240	\$30,620	\$32,519	\$34,162	\$36,184
<b>DPO</b> <span style="border: 1px solid black; padding: 2px;">48</span>						

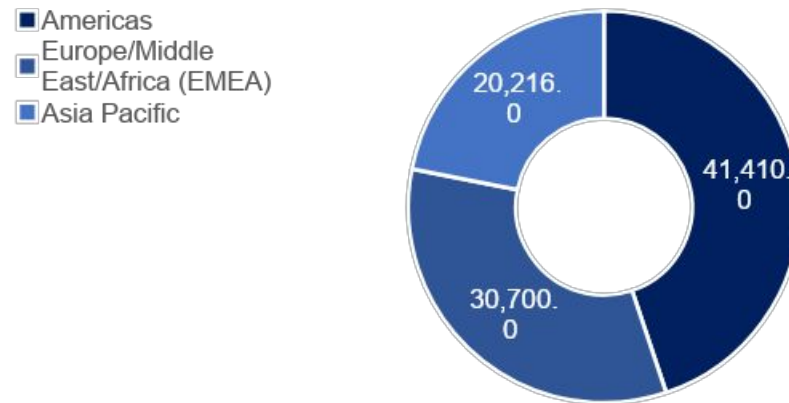
# Appendix XII: Historical IBM Employee Count



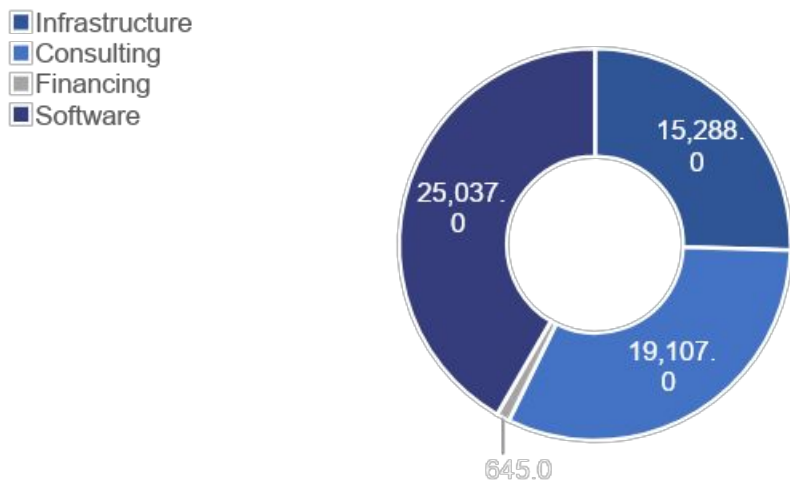
## Business Segmentation (2014)



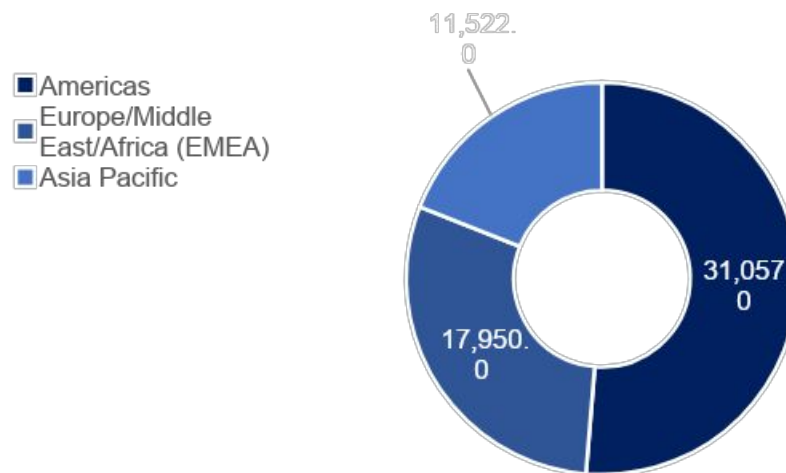
## Geographic Segmentation (2014)



## Business Segmentation (2022)



## Geographic Segmentation (2022)



Year	2018	2019	2020	2021	2022	5 Year Average
Price to book Ratio (Max)	7.8x	7.3x	6.7x	6.7x	6.8x	7.1x
Price to book ratio (Min)	4.9x	4.0x	4.5x	4.5x	5.1x	4.6x
Price to book ratio (Average)	6.8x	5.8x	5.7x	5.7x	5.8x	6.0x

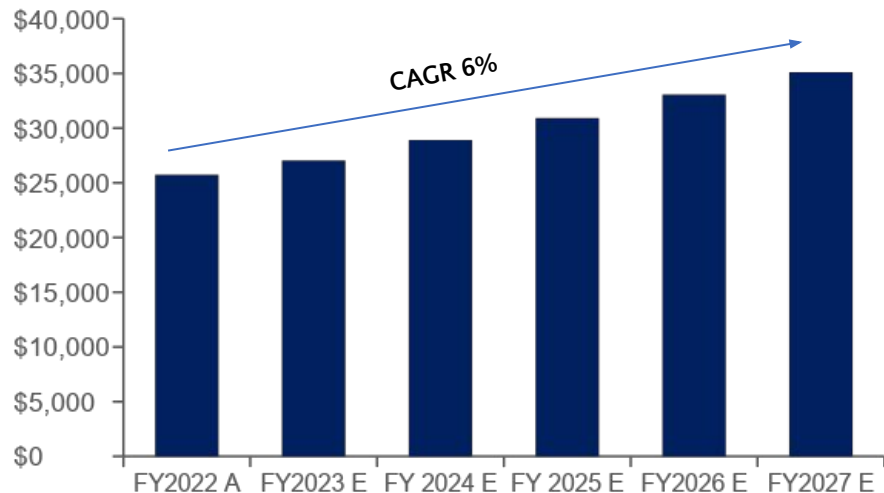
Book value per share	24.4	24.4	24.4
Price to book ratio share price	<b>Bear</b>	<b>Base</b>	<b>Bull</b>
	4.7x	5.9x	7.1x
	\$114.68	\$143.96	\$173.24

PB ratio for Comps	
Average	13.0x
Median	5.9x
25 <sup>th</sup> Percentile	1.7x
75 <sup>th</sup> Percentile	7.6x

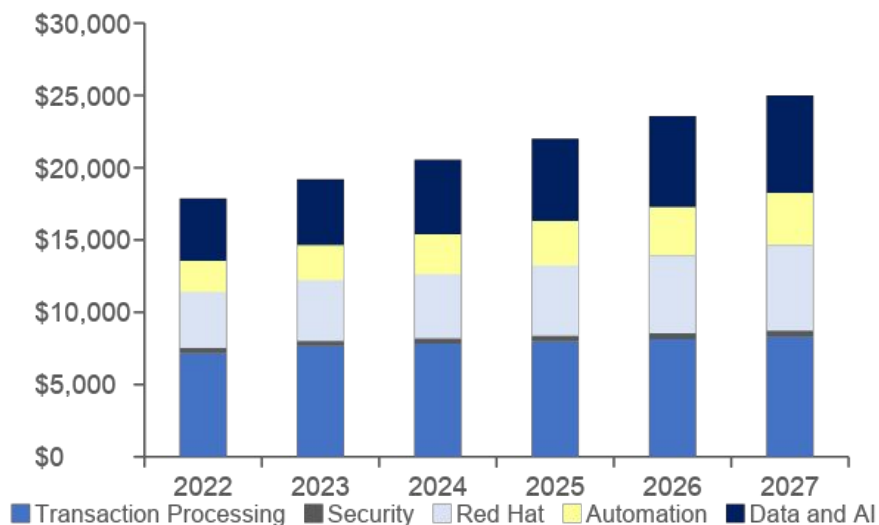
# Appendix XV: Revenues by Segment



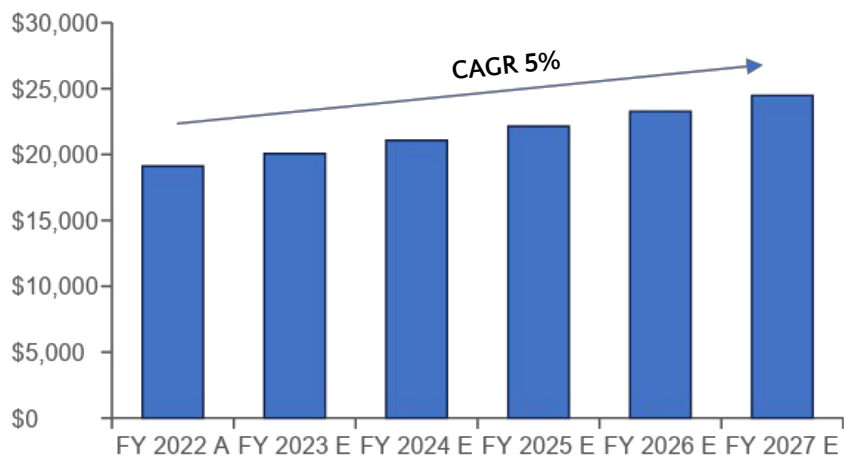
### Forecasted Revenue by Software Segment



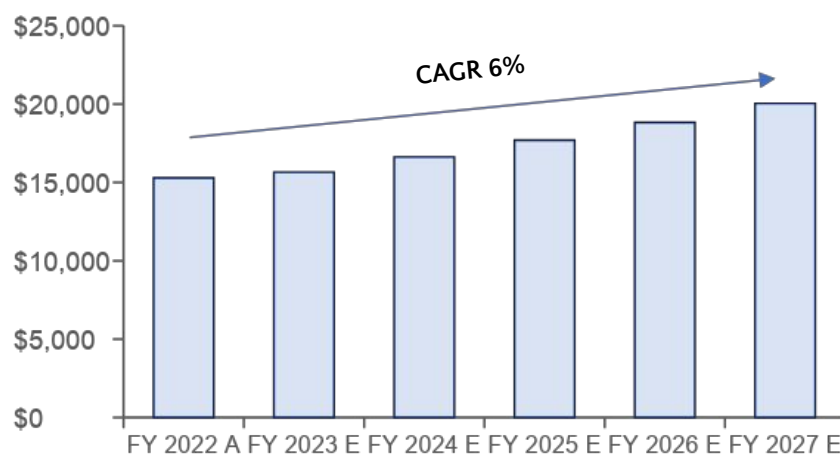
### Forecasted Hybrid Solutions Growth



### Forecasted Revenue by Consulting



### Forecasted Revenue by Infrastructure

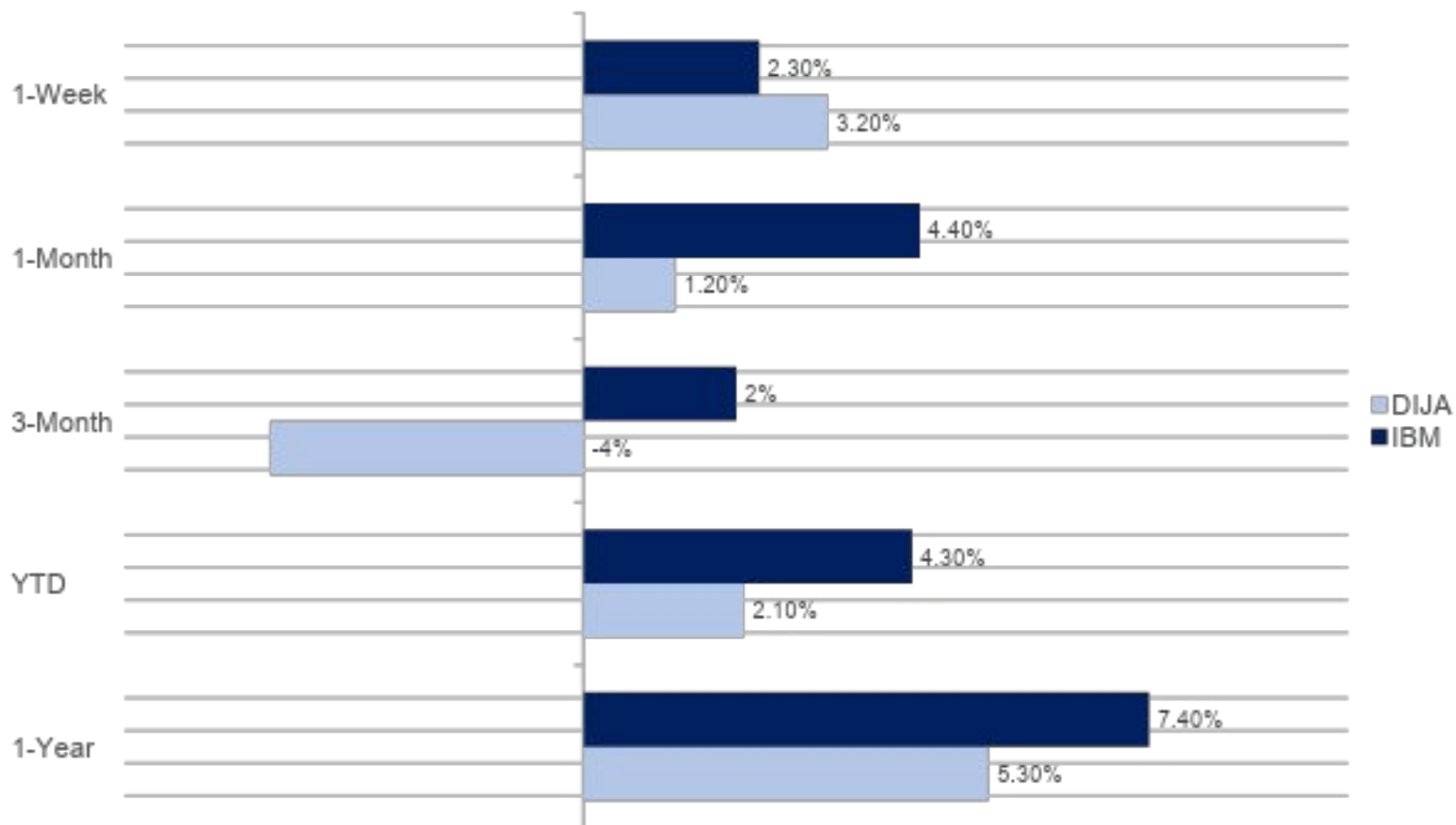


- 1. Storage Defender:** In today's rapidly evolving threat landscape, cyberattacks like ransomware are becoming increasingly damaging and commonplace. Early detection and response time is crucial. IBM launched this software to help alleviate this global issue. This product offers a holistic view of an organization's data security posture, helping detect advanced threats and coordinating data recovery. In addition, This product operates on a credit-based licensing model which allows clients to pay for the specific capabilities they use, rather than paying for an entire package that may be redundant and overpriced.
- 2. IBM Federal HR Cloud:** IBM announced on August 30<sup>th</sup>, 2023 that they will be working with the Federal U.S. Government to help federal agencies streamline their HR processes and systems. We believe this proves that IBM Federal HR Cloud meets the highest security standards for cloud services. This will also reinforce the partnership IBM has with the U.S Government, which secures future inflows of cash for this enterprise.
- 3. IBM Hybrid Cloud Mesh:** Within this industry, businesses must be able to connect their applications and data across different clouds and locations. This is a non-negotiable requirement for most enterprises. Cloud Mesh uses smart technology to automatically determine the best way to connect clouds and users, while delivering fast, reliable, and secure applications. This software will also help businesses save money, improve customer experience, and gain a competitive advantage over their competitors. This tackles one of the main concerns that businesses are having in this industry, while also saving costs due to their efficient use of computing resources.

Year	2018	2019	2020	2021	2022
<b>Asset Turnover</b>	0.6	0.6	0.4	0.4	0.5
<b>Degree of Financial Leverage</b>	1.1	1.1	1.5	1.2	2.1
<b>Interest Coverage Ratio</b>	16.7	8.6	3.0	5.2	2.0
<b>Debt to Equity Ratio</b>	2.7	3.3	3.2	2.9	2.5
<b>Profit Margin</b>	11%	12%	10%	10%	3%
<b>Current Ratio</b>	1.29	1.02	0.98	0.88	0.92

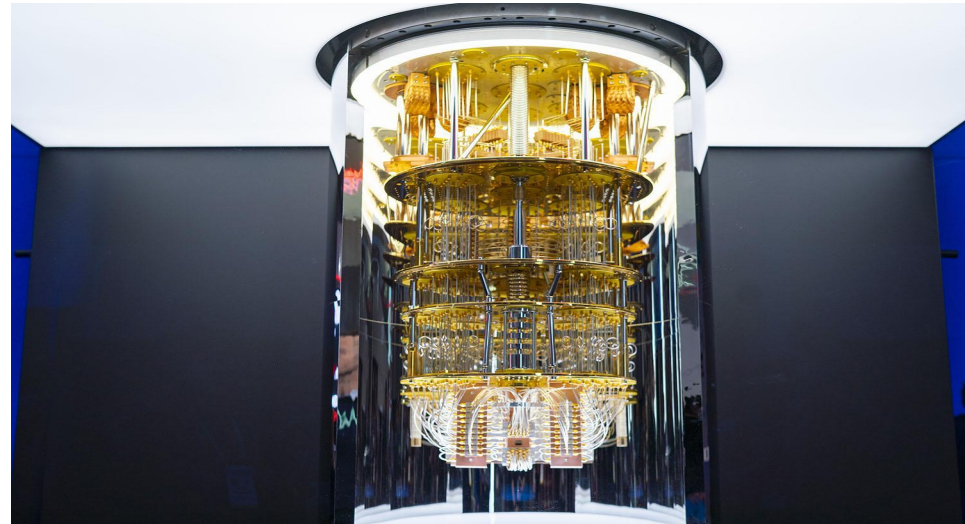


## Price Performance against DIJA



**IBM Quantum:** Quantum computers are computers that use quantum physics to optimize their outputs. They are not intended to replace classical computers, but they are expected to perform certain tasks much more efficiently than classical computers. They could potentially revolutionize areas such as:

1. **Cryptography:** Quantum computers could crack codes and run algorithms much faster than classical computers.
2. **Drug Discovery:** They could model complex molecular structures, leading to breakthroughs in pharmaceuticals.
3. **Climate Modeling:** Quantum computers could better predict weather patterns and the effects of climate change.



**WatsonX:** Generative AI solution models that help businesses work efficiently through large amount of data.

1. **Large Language Models:** These models use their knowledge base to understand language patterns and generate intelligent responses.
2. **WatsonX.Data:** This model contains different types of data that businesses use to operate and make important decision. E.g.: Customer information, data analytics, leads
3. **WatsonX.Governance:** A platform that allows management to direct, manage and monitor your organization's AI experience that provides confidence for business decisions. Users can monitor for model fairness and detect the need to retraining.



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