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CERTNEXUS®

# SKILLS OF THE FUTURE

AI and Cybersecurity in the Reskilling and Upskilling Revolution



(MULTIMIATICS)



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# PART 1

# DISRUPTIVE INNOVATION ERA





Digital is the main reason just over half of the companies on the Fortune 500 have disappeared since the year 2000

Pierre Nanterme  
CEO of Accenture





<https://www.aei.org> › fortune... · [Terjemahkan halaman ini](#) ⋮

## Fortune 500 Firms 1955 V. 2016: Only 12% Remain, Thanks ...

13 Des 2016 — In other words, only **12%** (and fewer than 1 in 8) of the **Fortune 500** companies in 1955 were **still** on the list 61 years later in 2016, ...



<https://partneredcontent.fortun...> · [Terjemahkan halaman ini](#) ⋮

## Age of disruption | Fortune

Only **twelve percent** of the **Fortune 500** companies who were in business in 1955 are **still** around. Before stepping down as CEO of Cisco Systems in June of 2015 ...



### 1990 Full list

Current View: 1-100

Rank	Company	Revenues (\$ millions)	Profits (\$ millions)
1	General Motors	126,974.3	4,224.3
2	Ford Motor	96,932.6	3,835.0
3	Exxon Mobil	86,656.0	3,510.0
4	Intl. Business Machines	63,438.0	3,758.0
5	General Electric	55,264.0	3,939.0
6	Mobil	50,976.0	1,809.0
7	Altria Group	39,069.0	2,946.0
8	Chrysler	36,156.0	359.0
9	DuPont	35,209.0	2,480.0
10	Texaco	32,416.0	2,413.0
11	ChevronTexaco	29,443.0	251.0
12	Amoco	24,214.0	1,610.0
13	Shell Oil	21,703.0	1,405.0
14	Procter & Gamble	21,689.0	1,206.0
15	Boeing	20,276.0	973.0
16	Occidental Petroleum	20,068.0	285.0
17	United Technologies	19,765.5	702.1
18	Eastman Kodak	18,546.0	529.0
19	Marathon Oil	17,755.0	965.0
20	Dow Chemical	17,730.0	2,487.0

### 2000 Full list

Current View: 1-100

Rank	Company	Revenues (\$ millions)	Profits (\$ millions)
1	General Motors	189,058.0	6,002.0
2	Wal-Mart Stores	166,809.0	5,377.0
3	Exxon Mobil	163,881.0	7,910.0
4	Ford Motor	162,558.0	7,237.0
5	General Electric	111,630.0	10,717.0
6	Intl. Business Machines	87,548.0	7,712.0
7	Citigroup	82,005.0	9,867.0
8	AT&T	62,391.0	3,428.0
9	Altria Group	61,751.0	7,675.0
10	Boeing	57,993.0	2,309.0
11	Bank of America Corp.	51,392.0	7,882.0
12	SBC Communications	49,489.0	8,159.0
13	Hewlett-Packard	48,253.0	3,491.0
14	Kroger	45,351.6	955.9
15	State Farm Insurance Cos	44,637.2	1,034.1
16	Sears Roebuck	41,071.0	1,453.0
17	American Intl. Group	40,656.1	5,055.4
18	Enron	40,112.0	893.0
19	TIAA-CREF	39,410.2	1,024.1
20	Compaq Computer	38,525.0	569.0

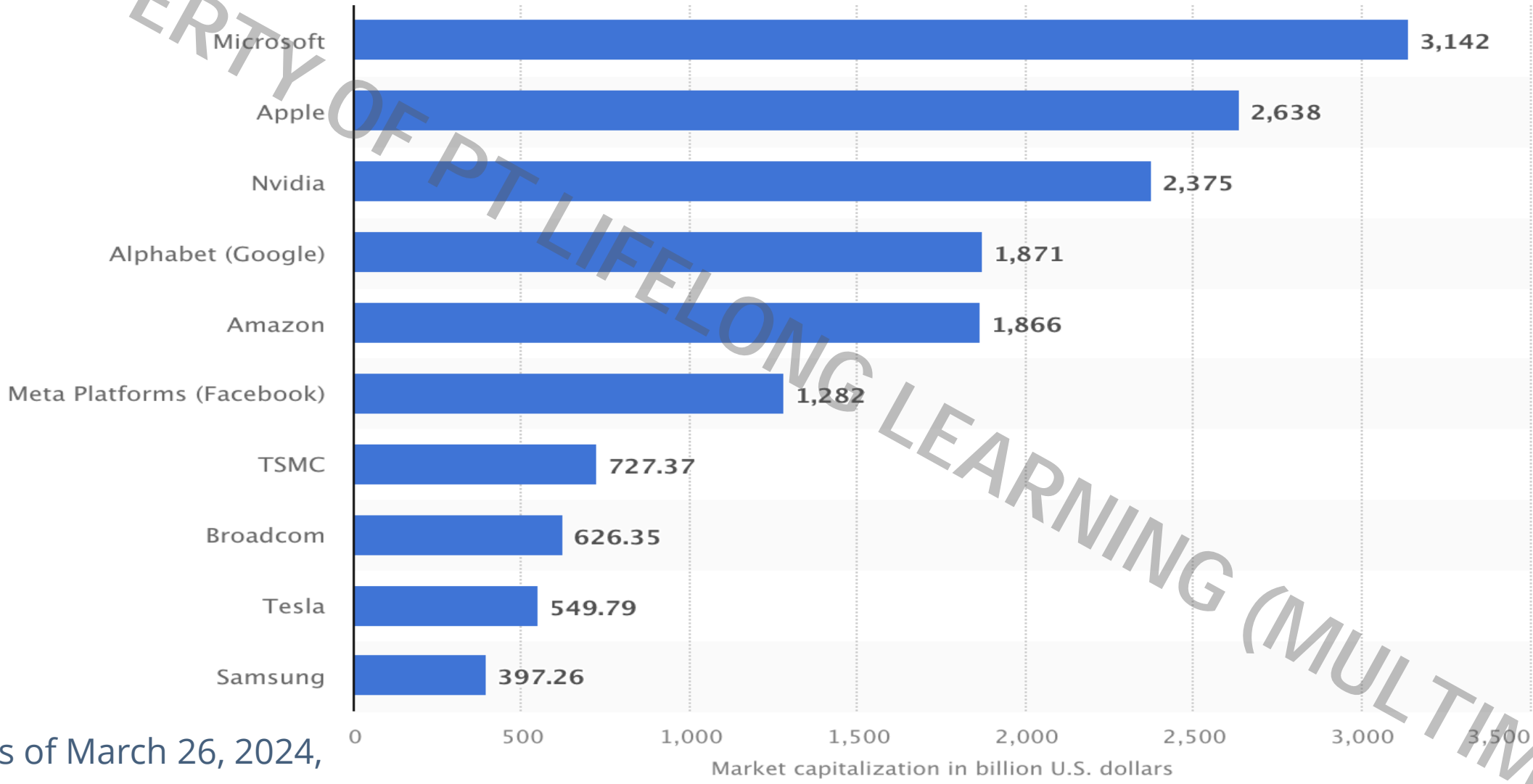
2022 Rank	Company	Market Capitalization	Sector	Location
1	Apple	\$2.3T	Technology	 U.S.
2	Microsoft	\$1.9T	Technology	 U.S.
3	Saudi Aramco	\$1.8T	Energy	 Saudi Arabia
4	Alphabet	\$1.2T	Technology	 U.S.
5	Amazon	\$924B	Consumer Discretionary	 U.S.
6	Berkshire Hathaway	\$686B	Financials	 U.S.
7	Tesla	\$522B	Consumer Discretionary	 U.S.
8	UnitedHealth Group	\$510B	Health Care	 U.S.
9	Johnson & Johnson	\$465B	Health Care	 U.S.
10	Visa	\$454B	Industrials	 U.S.

Showing 1 to 10 of 100 entries

[Previous](#)
[Next](#)

\*As of Dec 12, 2022.





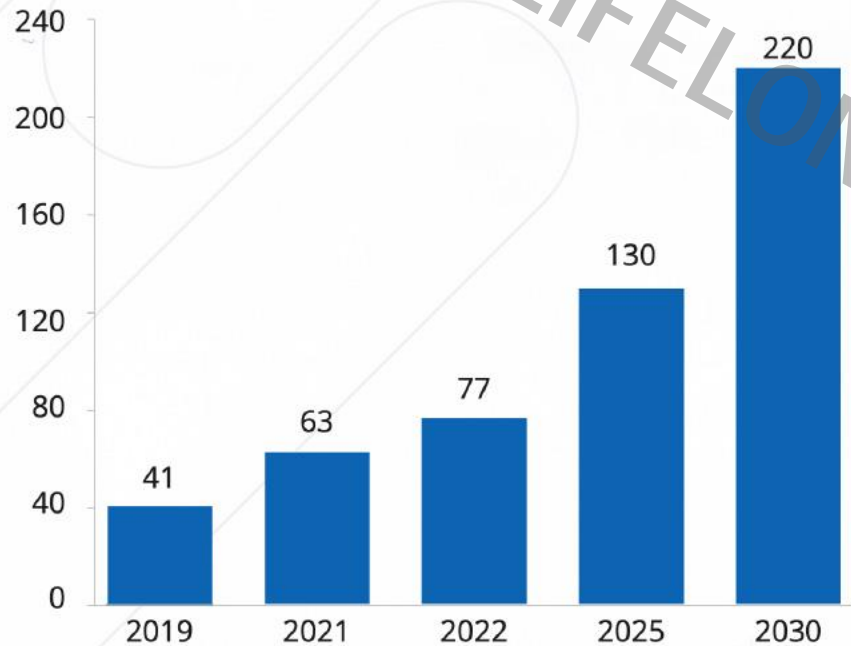
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As of March 26, 2024,

Market capitalization in billion U.S. dollars

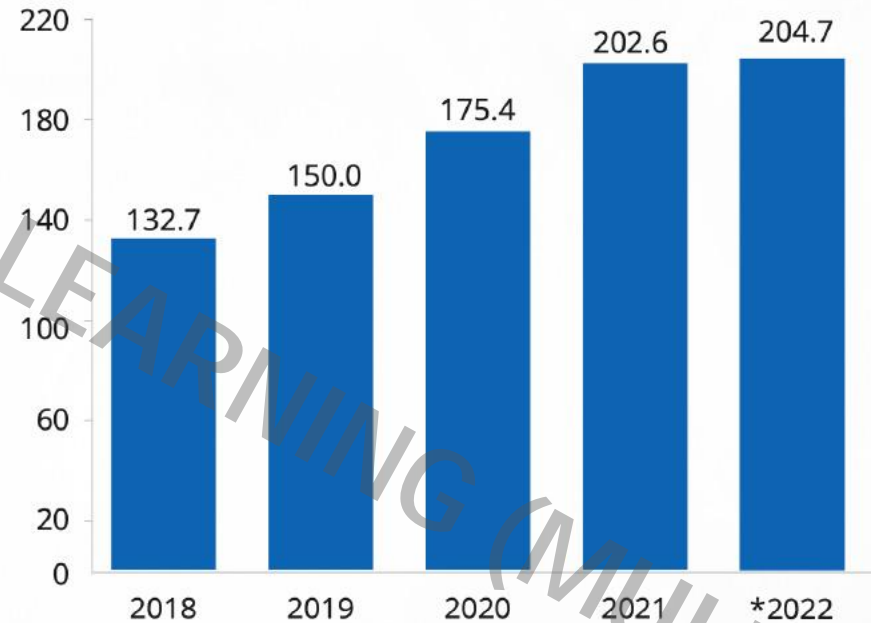
# GROWTH OF DIGITAL ECONOMY

**Indonesia's Digital Economy Value**  
 GMV, in US\$ Billion



Source: Google, Temasek and Bain, e-Economy SEA 2022

**Number of Internet Users in Indonesia**  
 in Million



\*As of January 2022

Source: We Are Social, Databoks (2022)



# DIGITAL ECONOMY

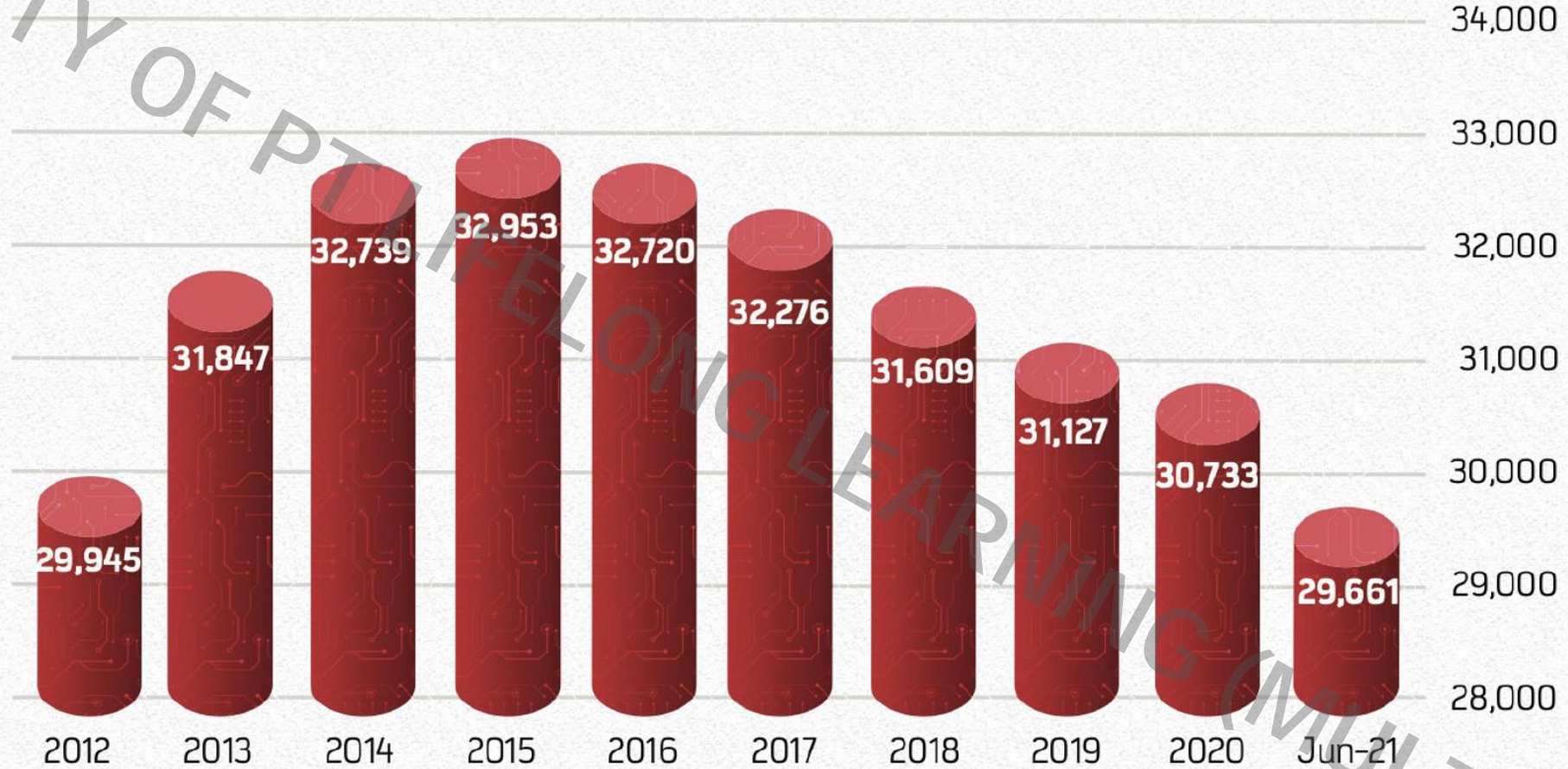
Aktivitas pembaruan *proses bisnis*,  
*model bisnis*, dan instrumen keuangan  
yang memberikan *nilai tambah baru* di  
sektor jasa keuangan dengan melibatkan  
*ekosistem digital*. OJK



## Introduction

### Number of Commercial Bank Branch Offices

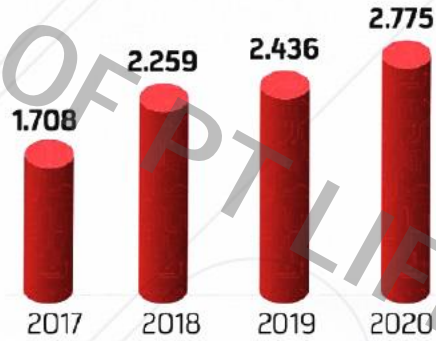
Unit



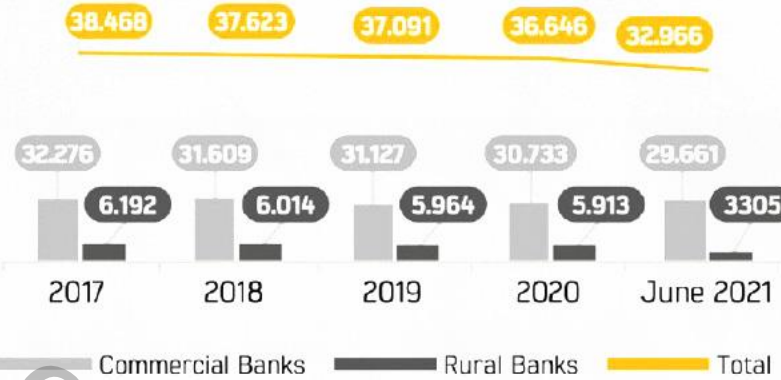
Source: Statistik Perbankan Indonesia, OJK (2021)



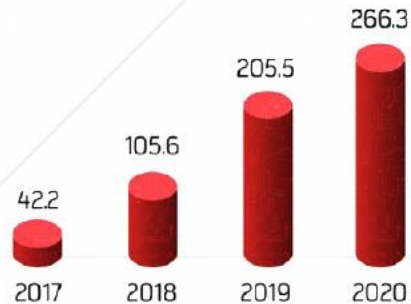
**Digital Banking Transactions**



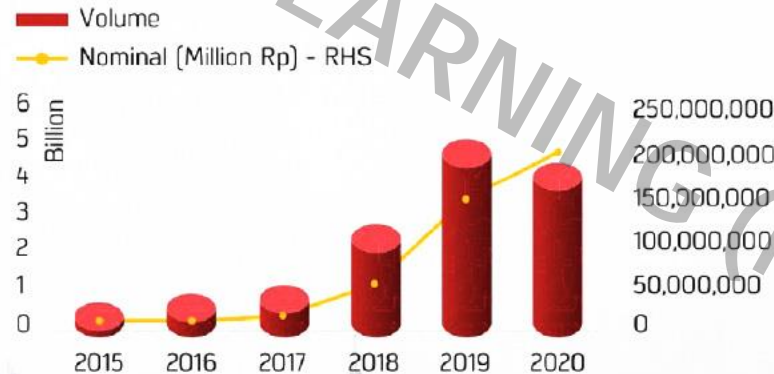
**Number of Offices**



**E-Commerce Transactions**



**Electronic Money Transactions**



Development of Digital Transactions in Indonesia

Source: Bank Indonesia and OJK's Indonesia Banking Statistics (2020)



# FINTECH DIGITAL SOLUTION

## E-money



## Remittance



## Payment gateway



## Enabler



## Credit scoring



## Aggregator



## Insurtech



## Wealth management



## Crowdfunding



## Fintech lending



## Paylater





# INDONESIAN DIGITAL BANK

## Regional banks



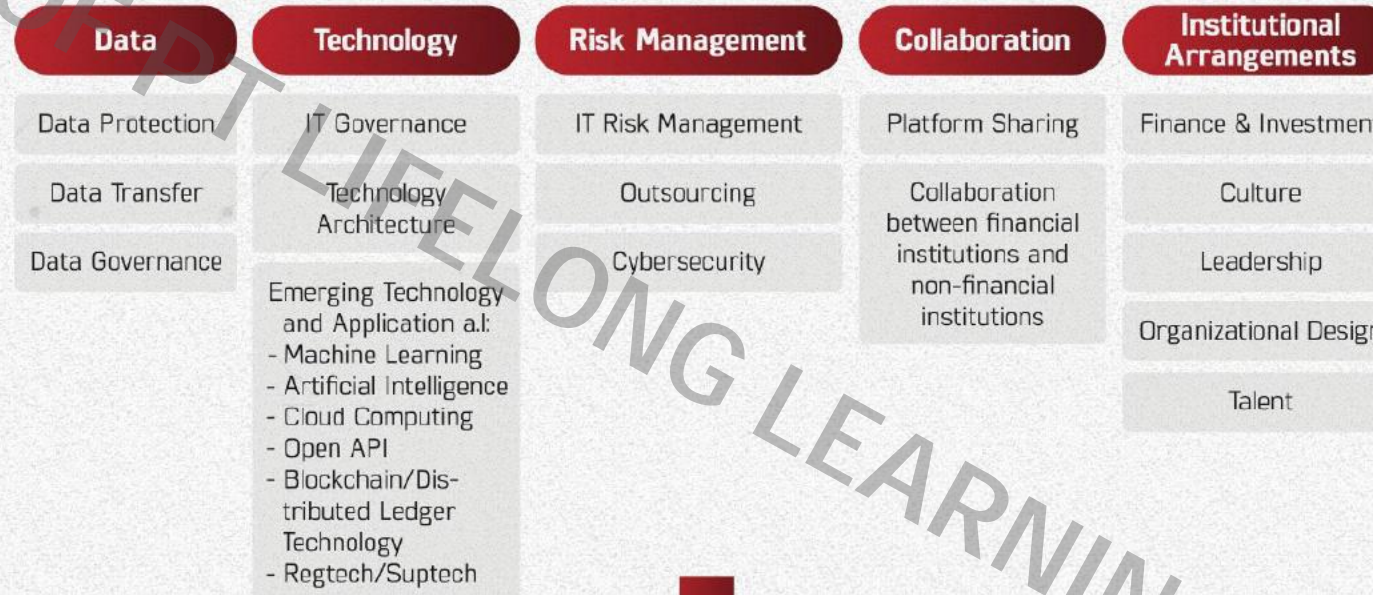
## Tech /Fintech



## Local Players







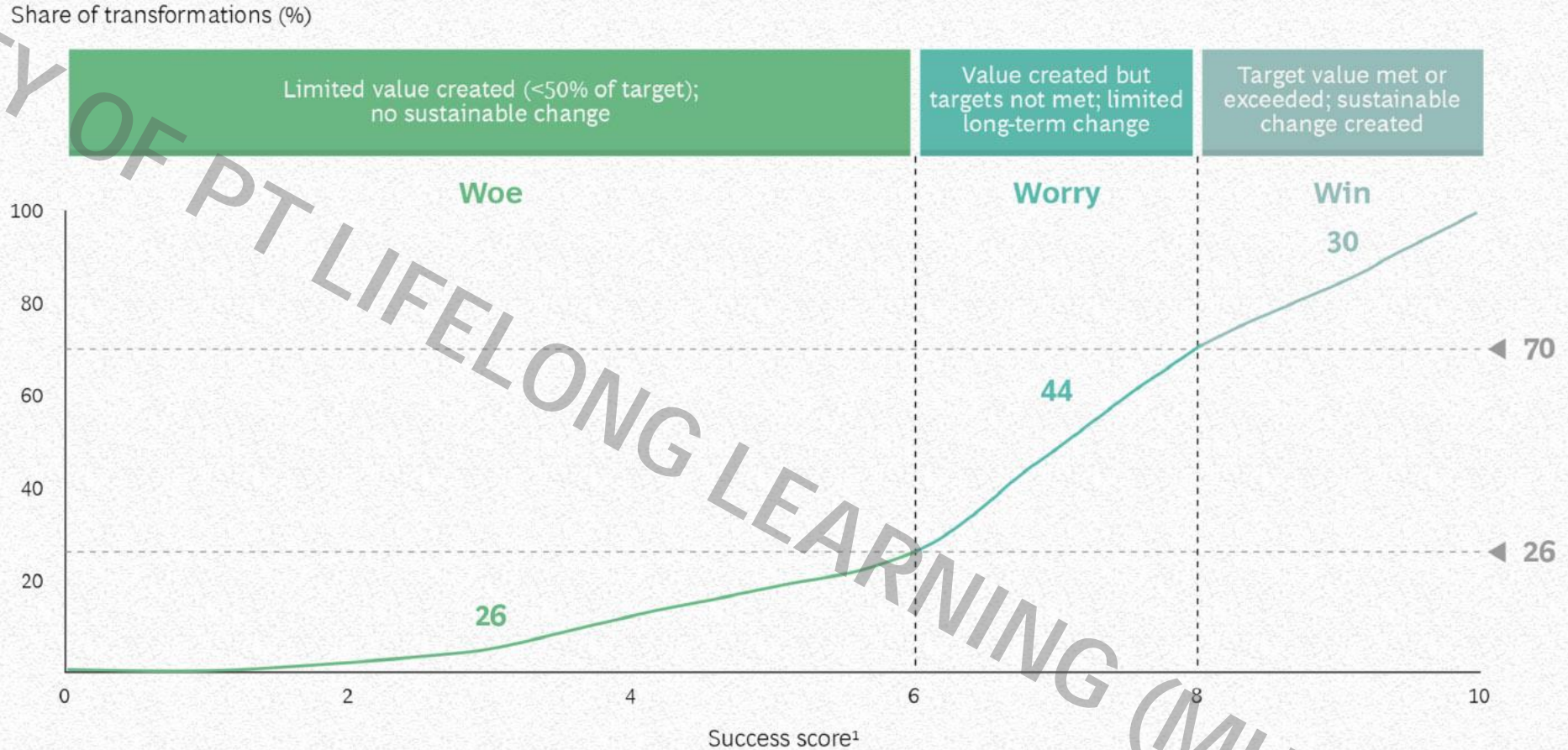
Blueprint for **Digital Transformation in Banking**

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# Exhibit 1 - Only 30% of Digital Transformations Are Successful



Source: BCG analysis.

Note: Based on 895 transformations.














<sup>1</sup>The success score is calculated on the basis of the percentage of predetermined targets met and value created, the percentage of targets met and value created on time, the success relative to other transformations, and the success relative to management's aspirations for sustainable change.



# Top Challenges by Digital Maturity

Struggling to fill the talent gap is a challenge for all SMBs, regardless of their size and digital maturity. SMB digital followers (Digital Indifferent and Digital Observers) see the lack of necessary technologies, digital mindset, and budget commitment as major obstacles. Digital leaders are not without similar challenges in terms of access to the right technologies and insight into operational and customer data.

## What Are Your Top Challenges in Digital Transformation?

Rank	Digital Indifferent STAGE 1	Digital Observer STAGE 2	Digital Challenger STAGE 3	Digital Native STAGE 4
1	 Shortage of digital skills and talent within my company			
2	 Lack of necessary technologies to enable digital transformation		 Lack of insight into operational and customer data	
3	 Lack of digital mindset/cultural challenges in the organization	 Lack of budget/commitment from management	 Lack of necessary technologies to enable digital transformation	
4	 Lack of insight into operational and customer data	 Lack of digital mindset/cultural challenges in the organization	 Lack of budget/commitment from management	 Lack of a proper digital transformation roadmap
5	 Lack of budget/commitment from management	 Lack of insight into operational and customer data	 Cultural resistance to change	



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# PART 2

# THE FUTURE

# SKILLS





THE WORLD OF WORK IS  
CHANGING – AND SOME JOBS ARE  
CHANGING FASTER THAN OTHERS.

**WE'LL ONLY BE AS GOOD AS THE  
SKILLS WE POSSESS. BUT WHICH  
SKILLS ARE THEY, AND HOW CAN  
WE MAKE SURE WE KEEP PACE?**

ASPECT	UPSKILLING	RESKILLING
Definition	Enhancing and expanding an employee's <b>current skill set.</b>	Significant <b>shifts in job requirements</b> , technological changes, or the obsolescence of certain roles.
Purpose	To improve and update skills for the same or more advanced roles <b>within the same field.</b>	To equip employees for a <b>completely different job function</b> within the organization.
Driven by	<b>Technological advancements</b> , changing industry standards, and the need for advanced competencies in existing roles.	Significant shifts in job requirements, <b>technological changes</b> , or the <b>obsolescence of certain roles.</b>
Focus	Building upon and refining skills that employees <b>already possess.</b>	Introducing <b>entirely new skill sets</b> unrelated to the employee's current role
Example	A software engineer <b>learning new programming languages</b> or advanced development methodologies.	<b>A customer service</b> representative being trained for a role in <b>data analysis.</b>
Outcome	Employees are better equipped <b>to handle more complex tasks</b> in their current or similar roles.	Employees become capable of transitioning to different roles within the organization, <b>ensuring adaptability and employability.</b>



Many employees don't have a sense of urgency about upskilling...

**Question:** Regarding your current role, to what extent do you agree or disagree with the following statements?

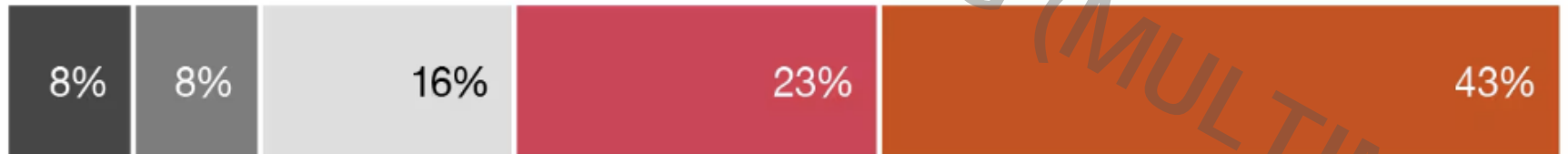
Strongly or moderately disagree
  Slightly disagree
  Neither agree nor disagree
  Slightly agree
  Strongly or moderately agree

In the next five years

The skills my job requires will change significantly in the next five years

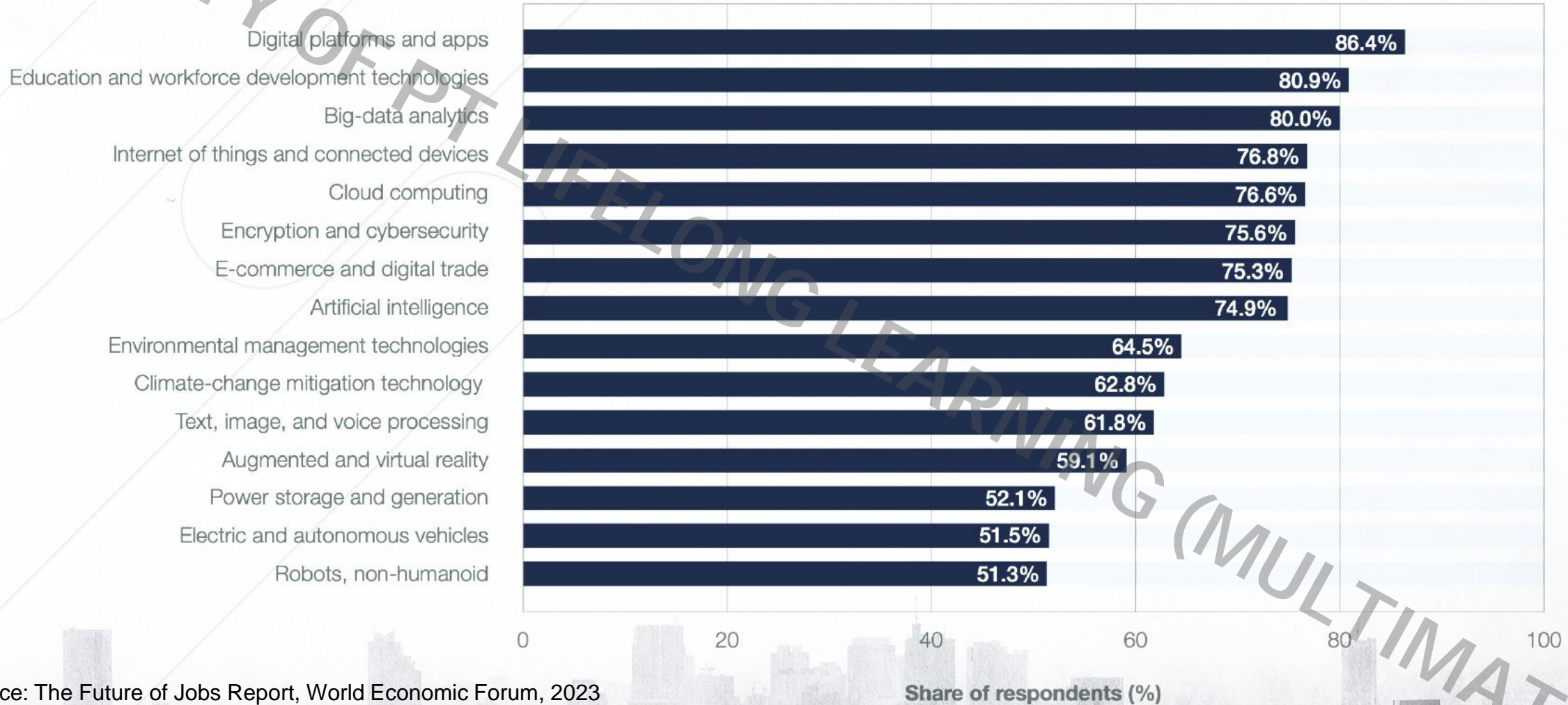


I have a clear sense of how the skills my job requires will change in the next five years



Source: PwC's Global Workforce Hopes and Fears Survey 2023 of 53,912 workers across 46 countries and territories

# TECHNOLOGY ADOPTION, 2023-2027

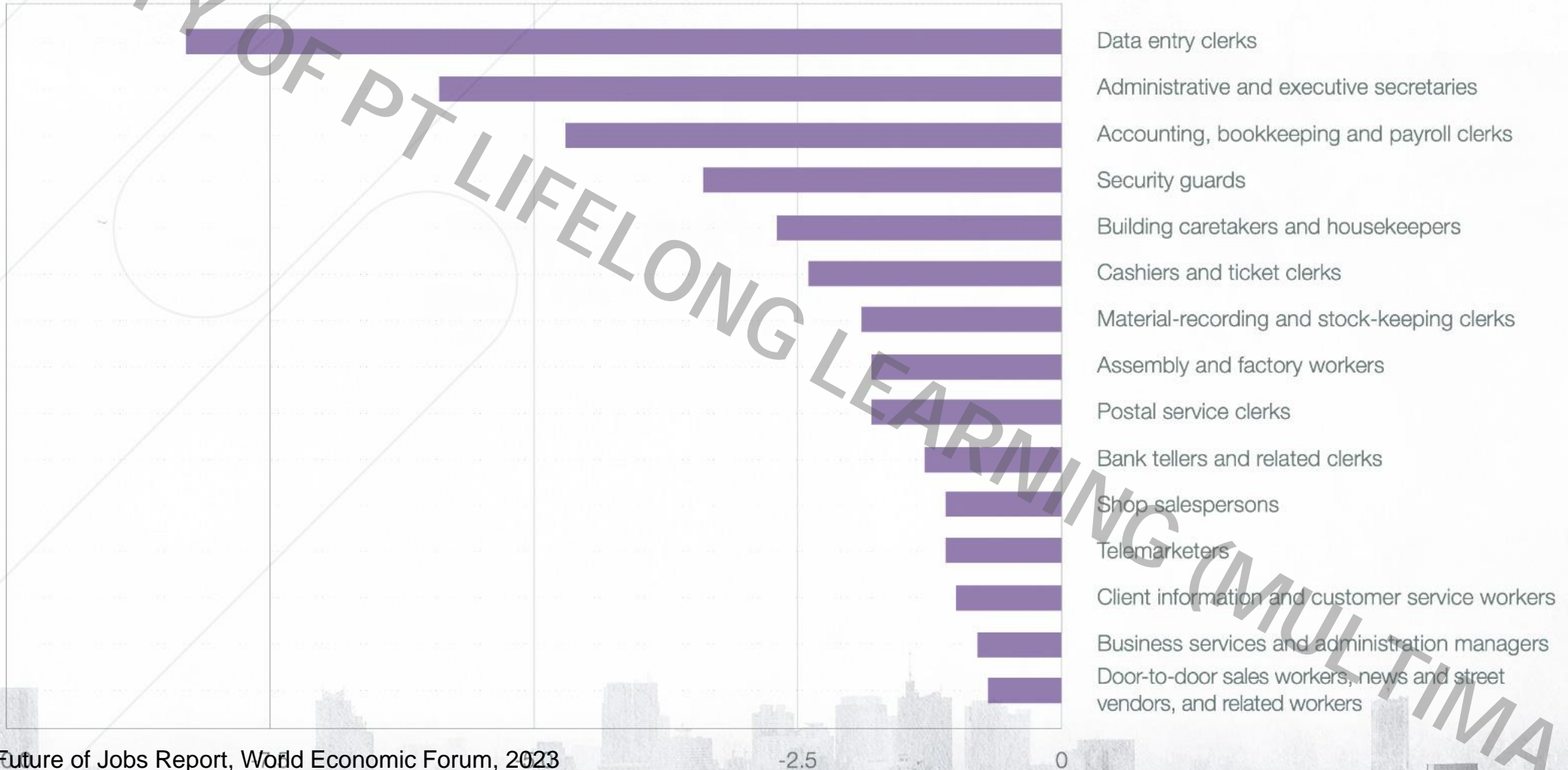


Source: The Future of Jobs Report, World Economic Forum, 2023

Share of respondents (%)

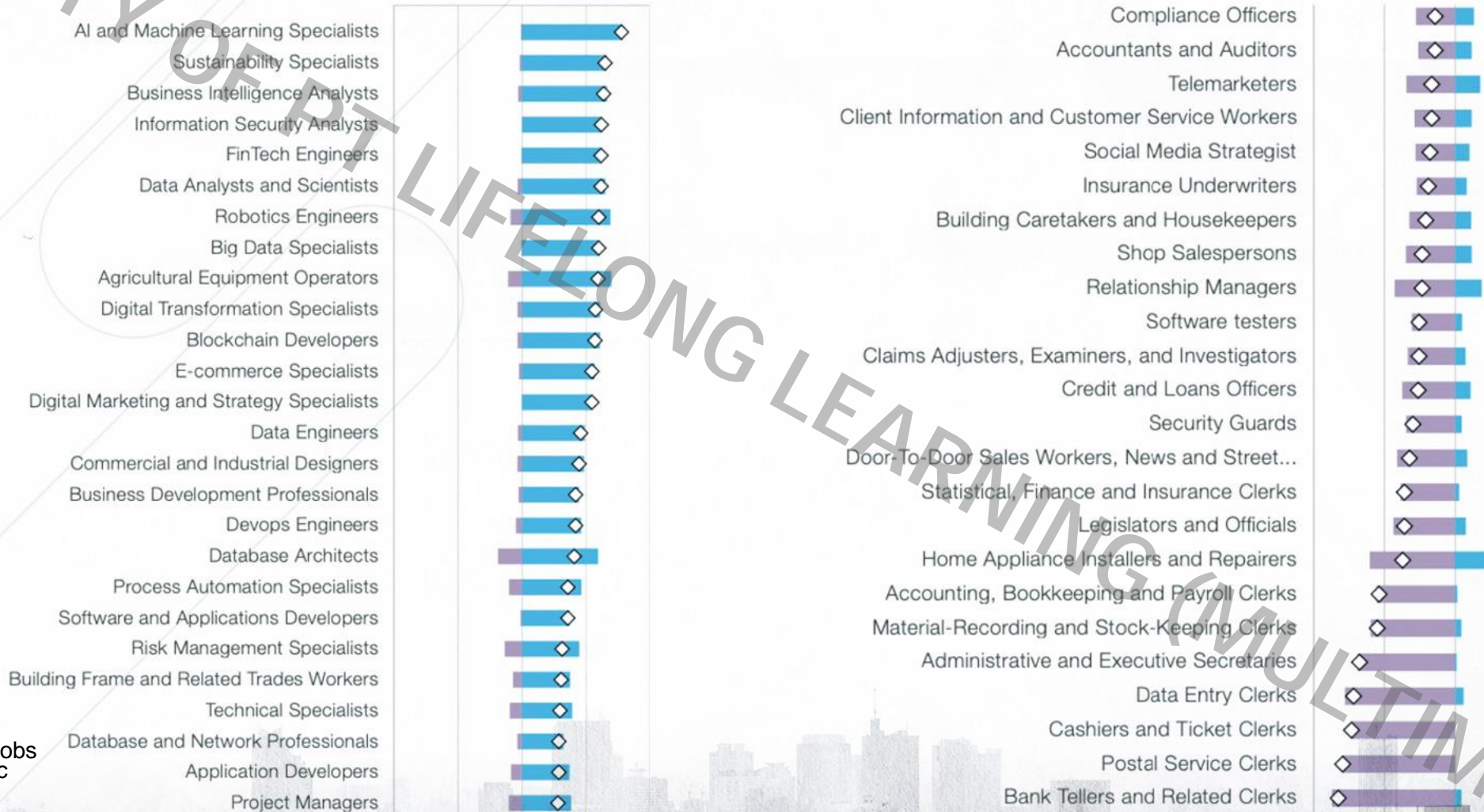


# LARGEST JOB DECLINE



Source: The Future of Jobs Report, World Economic Forum, 2023

# NEW JOBS AND LOST JOBS, 2023-2027



Source: The Future of Jobs Report, World Economic Forum, 2023



# RESKILLING FOCUS, 2023-2027

1. Analytical thinking
2. Creative thinking
3. Resilience, flexibility and agility
4. Motivation and self-awareness
5. Curiosity and lifelong learning
6. Technological literacy
7. Dependability and attention to detail
8. Empathy and active listening
9. Leadership and social influence
10. Quality control
11. Systems thinking
12. Talent management
13. Service orientation and customer service
14. Resource management and operations
15. AI and big data
16. Reading, writing and mathematics
17. Design and user experience
18. Multi-lingualism
19. Teaching and mentoring
20. Programming
21. Marketing and media
22. Networks and cybersecurity
23. Environmental stewardship
24. Manual dexterity, endurance and precision
25. Global citizenship
26. Sensory-processing abilities

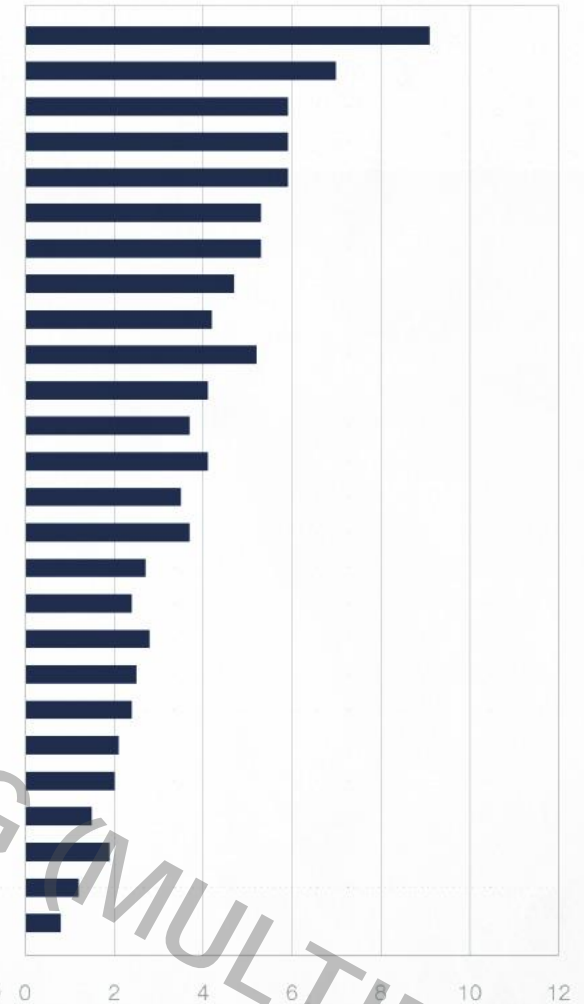
- Cognitive skills
- Physical abilities
- Engagement skills
- Self-efficacy
- Ethics
- Technology skills
- Management skills
- Working with others

Core skill for workers in 2023



Share of companies (%)

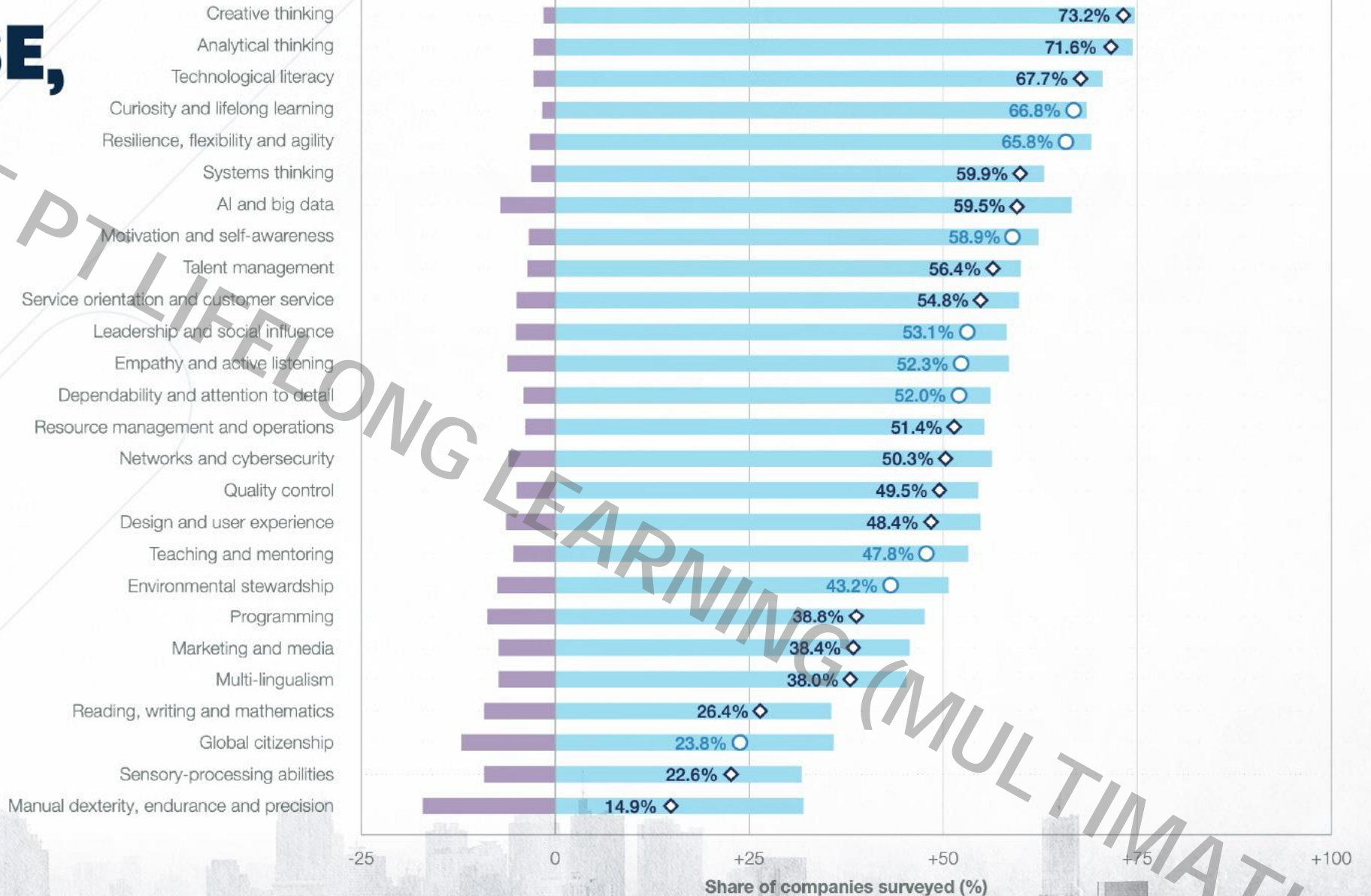
Estimated average skill set



Estimated share of skill sets (%)

Source: The Future of Jobs Report, World Economic Forum, 2023

# SKILLS ON THE RISE, 2023-2027



Source: The Future of Jobs Report, World Economic Forum, 2023



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# AI for Consumer Purposes



# 1. Virtual Personal Assistants

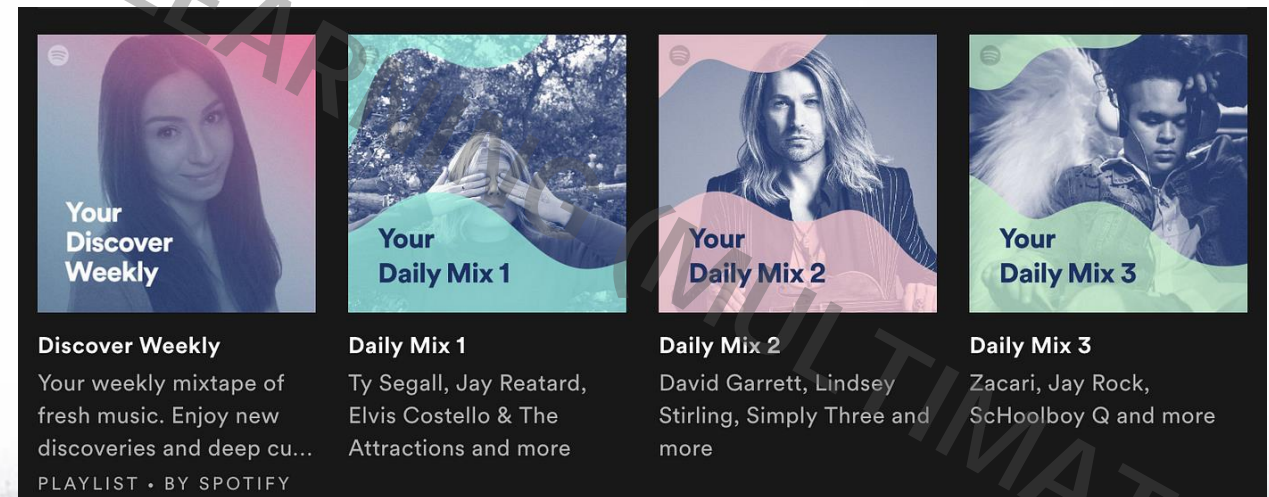
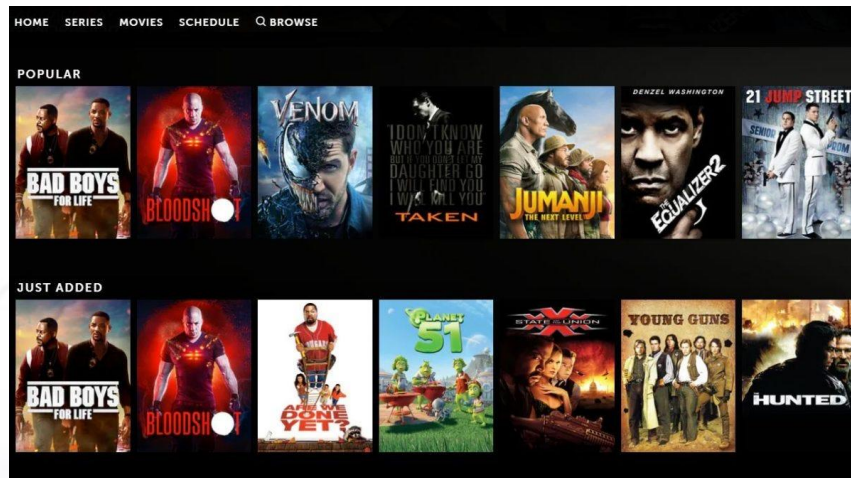
Virtual personal assistants like Apple's Siri, Amazon's Alexa, Google Assistant, and Microsoft's Cortana utilize AI algorithms to understand natural language queries and perform tasks such as setting reminders, answering questions, providing recommendations, and controlling smart home devices.





# 2. Recommendation Systems

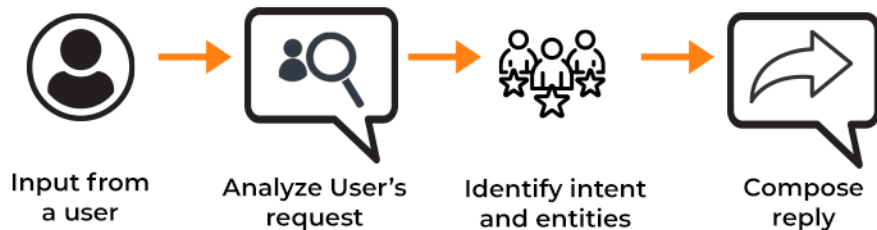
Recommendation systems are widely used by online platforms to personalize content and product recommendations for users. Examples include Netflix's recommendation engine for suggesting movies and TV shows, Amazon's product recommendation system, and Spotify's music recommendation algorithms.



# 3. Chatbots

Chatbots leverage natural language processing (NLP) and machine learning algorithms to engage in text-based conversations with users. They are used in various consumer-facing applications, including customer service, e-commerce, and online support systems.

HOW AN AI CHATBOTS WORKS





# 4. E-commerce Personalization

E-commerce platforms utilize AI to personalize the shopping experience for users by analyzing browsing behavior, purchase history, and demographic information to provide tailored product recommendations, discounts, and promotions.

PRODUCTS YOU RECENTLY VIEWED

Berry Blizzard Pack \$55.00 Friendship Pack (10 Br...) \$45.00 Arctic Waves \$6.00 Berry Cute \$6.00

CUSTOMERS ALSO LIKE

Berry Blizzard Pack \$55.00 Friendship Pack (10 Br...) \$45.00 Ku'uilei Pack \$60.00 Shore Break Pack \$60.00 Silver Wave Ring \$12.00

**AMERICAN GIANT**

See something you like?

Hi there, we noticed that you were browsing our site but that you haven't checked out yet. Please feel free to contact our Customer Service team if you have any questions.

[Shop Now](#)

---

Hoodie Dress - Super Black \$110.00

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Visit Us | Contact Us | Subscribe

# 5. Health and Fitness Apps

Health and fitness apps often incorporate AI features such as activity tracking, personalized workout plans, and dietary recommendations based on user preferences, health goals, and biometric data.



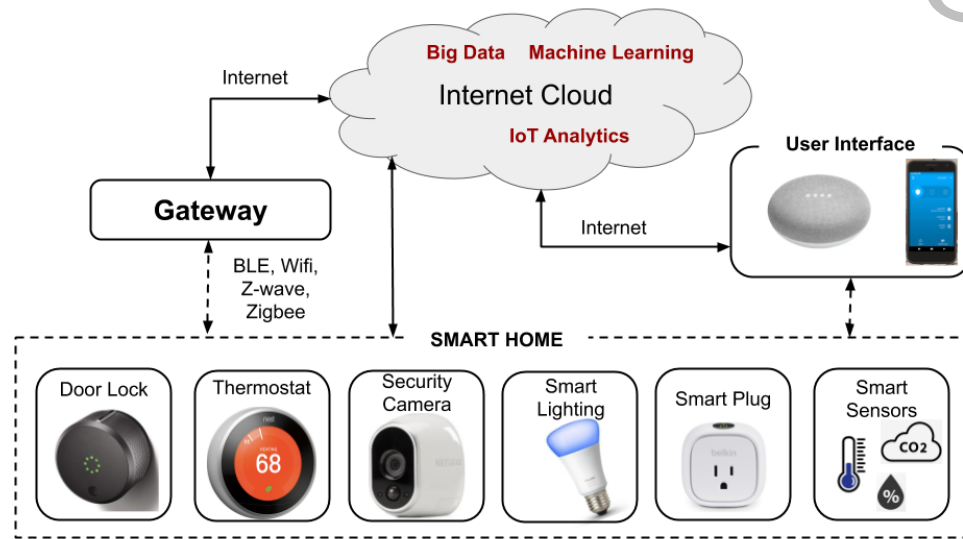
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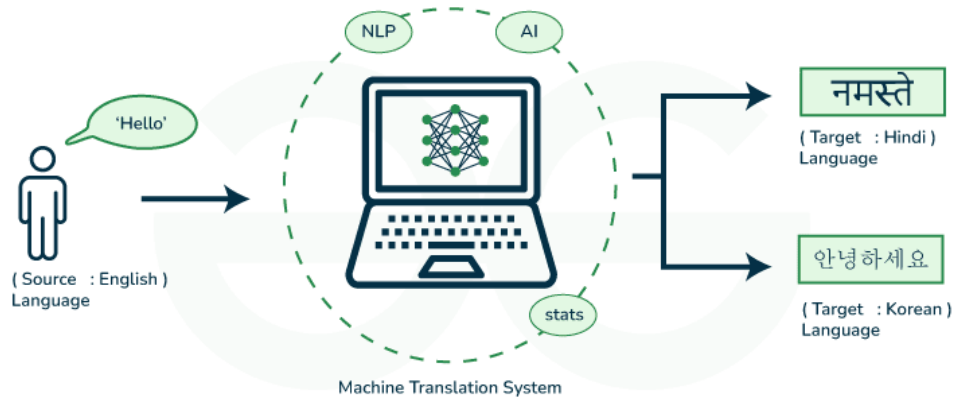
# 6. Smart Home Devices

AI-powered smart home devices, including smart speakers, thermostats, security cameras, and appliances, use machine learning algorithms to automate tasks, learn user preferences, and optimize energy usage.

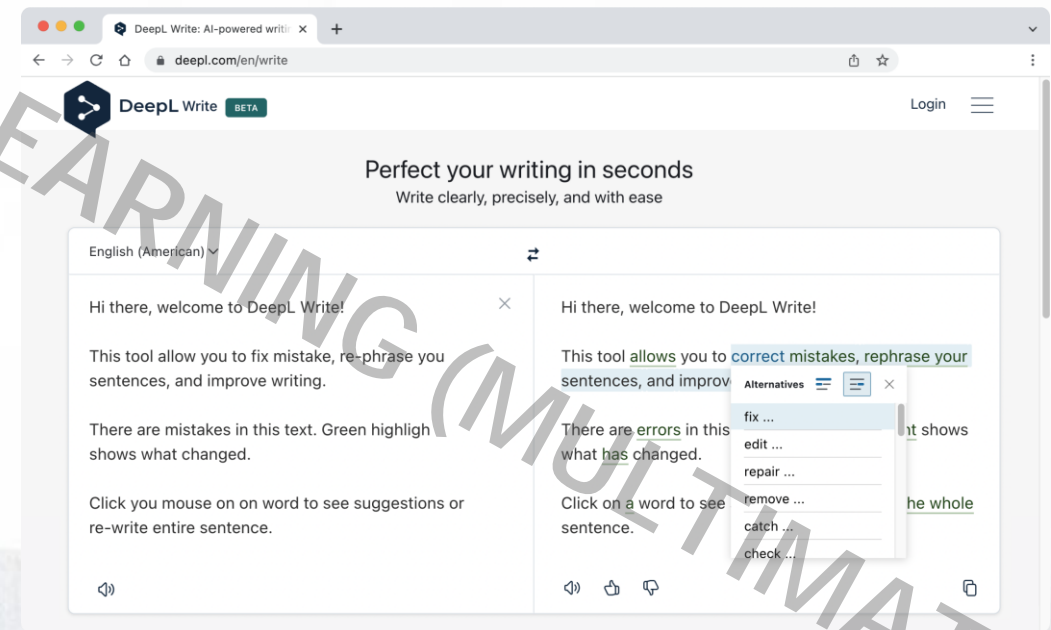


# 7. Language Translation Services

Language translation services like Google Translate and Microsoft Translator leverage AI and machine learning techniques to provide real-time translation of text and speech across multiple languages.



Machine Translation Model





# 8. Social Media Content Moderation

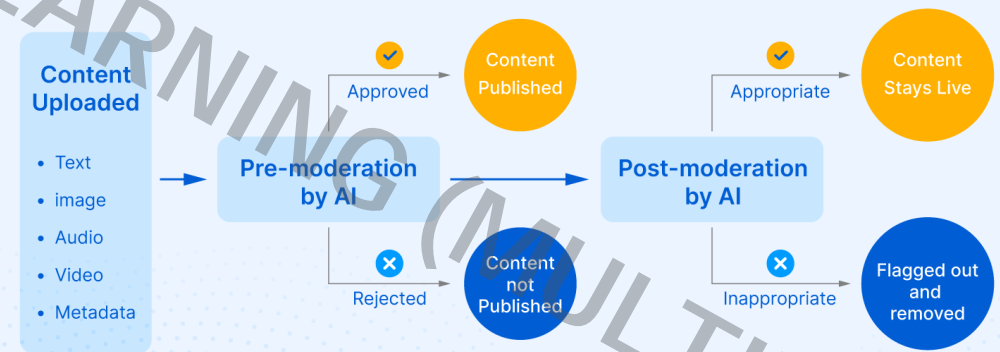
Social media platforms use AI algorithms to automatically detect and moderate content that violates community guidelines, including hate speech, harassment, and graphic imagery.

## How can AI content moderation help brands?

- ✓ Curate on-brand images
- ✓ Ensure the accuracy of information
- ✓ Screen organic product reviews
- ✓ Safeguard publicity campaigns
- ✓ Filter images on account creation



## The role of AI in content moderation



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# 9. Personal Finance Apps

AI-driven personal finance apps analyze users' spending habits, income, and financial goals to provide personalized financial advice, budgeting tools, and investment recommendations.





# 10. Augmented Reality (AR) and Virtual Reality (VR) Experiences

AI is used in AR and VR applications to create immersive and interactive experiences for consumers, including gaming, virtual tours, shopping experiences, and educational content.

## How do AR and VR differ?



**Augmented reality**  
uses the existing real-world environment and puts virtual information on top of it to create a sort of mixed reality.



**Virtual reality**  
uses technology such as a headset to create an immersive 3D simulated environment.



# AI for Fintech Purposes

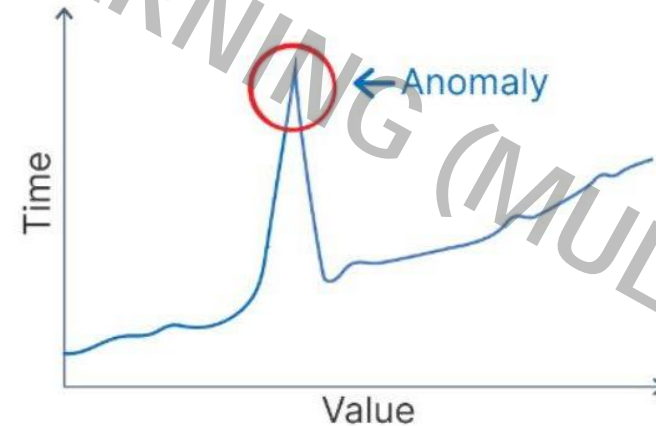
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# 1. Fraud Detection and Prevention

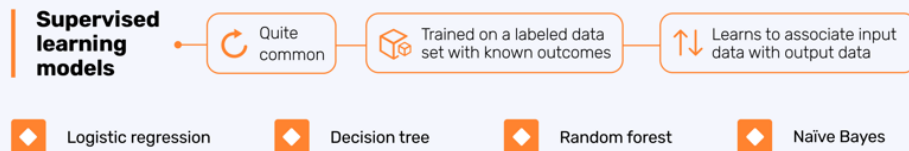
AI algorithms analyze large volumes of transaction data in real-time to detect patterns and anomalies that may indicate fraudulent activity. By identifying suspicious transactions or behaviors, AI helps financial institutions prevent fraud and protect customers' accounts.



# 2. Credit Scoring and Risk Assessment

AI-powered credit scoring models use machine learning algorithms to assess the creditworthiness of individuals and businesses based on various factors such as credit history, income, and repayment behavior. These models enable lenders to make more accurate and data-driven lending decisions, reducing the risk of default and improving loan approval rates.

## Types of AI-Based Credit Scoring Models (Part 1)



## Types of AI-Based Credit Scoring Models (Part 2)





## Steps Involved In Training AI Models For Credit Scoring

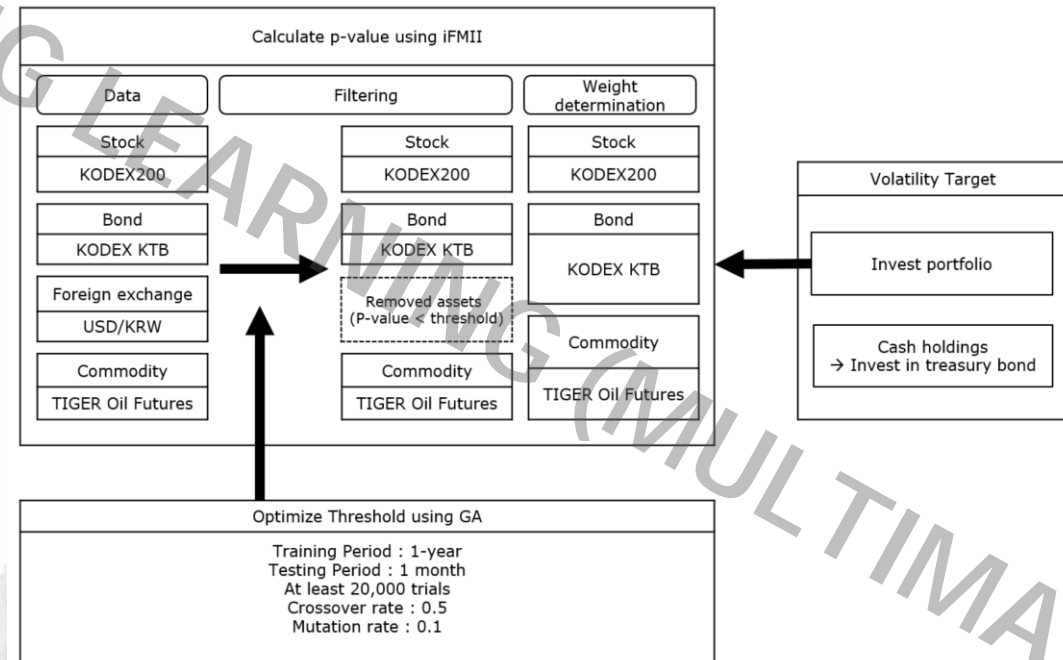


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# 3. Algorithmic Trading

AI algorithms analyze market data, news articles, social media sentiment, and other relevant information to identify trading opportunities and execute trades automatically. Algorithmic trading systems can react to market changes much faster than human traders, enabling financial institutions to capitalize on price movements and minimize trading risks.

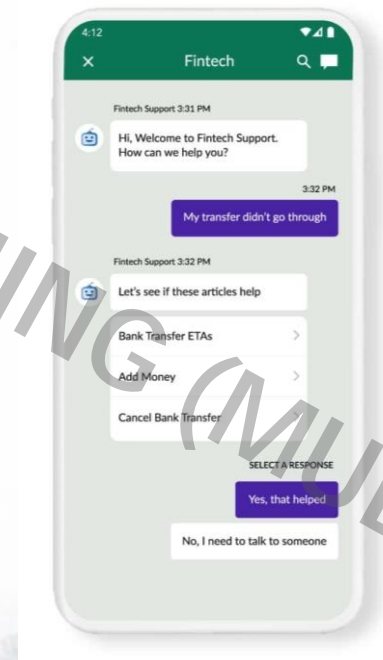
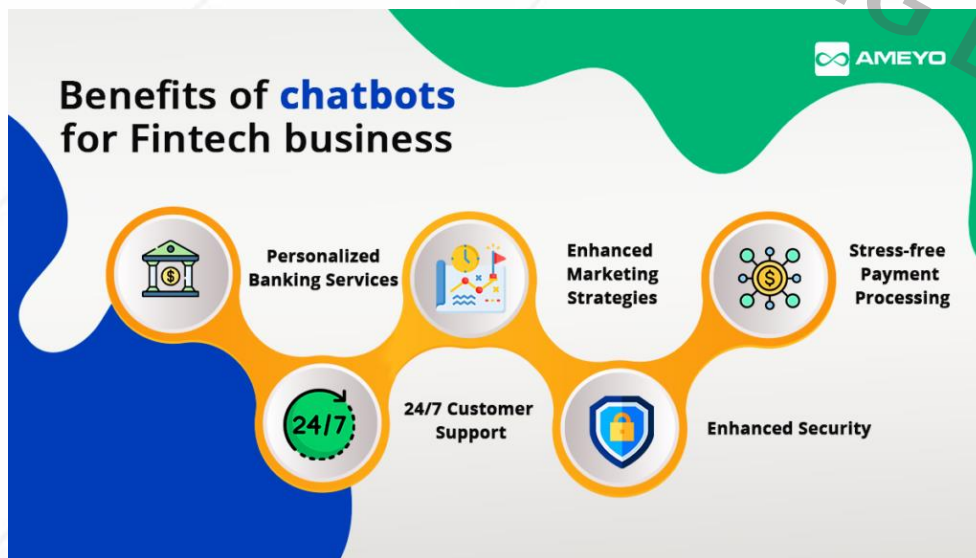


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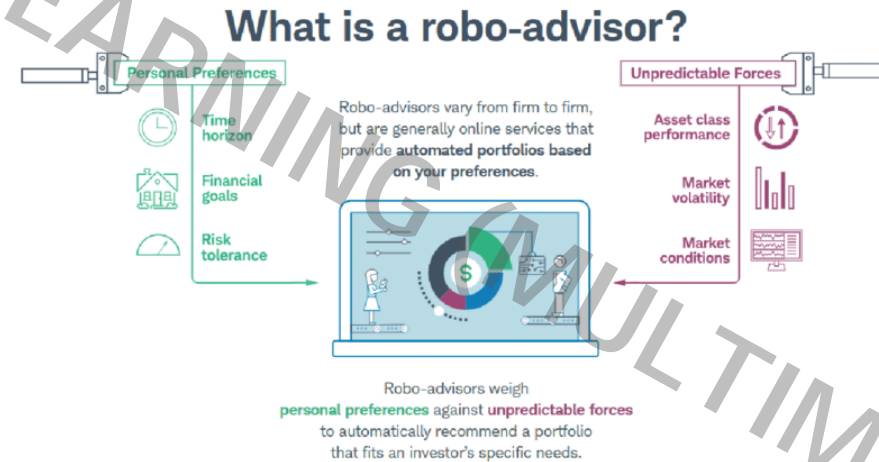
# 4. Customer Service and Support

AI-powered chatbots and virtual assistants are used by fintech companies to provide personalized customer service and support. These virtual agents can answer common queries, assist with account management, and help users navigate financial products and services through natural language conversations.



# 5. Personalized Financial Advice

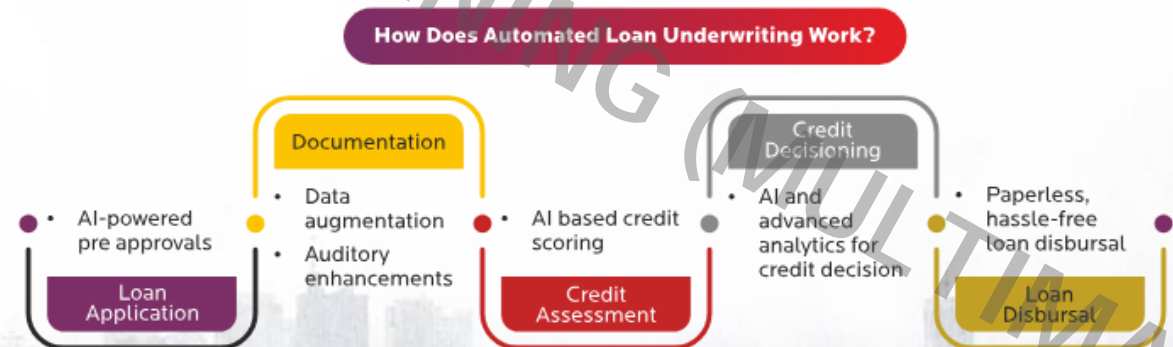
AI-driven robo-advisors analyze users' financial goals, risk tolerance, and investment preferences to provide personalized investment advice and portfolio recommendations. Robo-advisors automate the investment process, making it more accessible and affordable for retail investors to manage their portfolios.



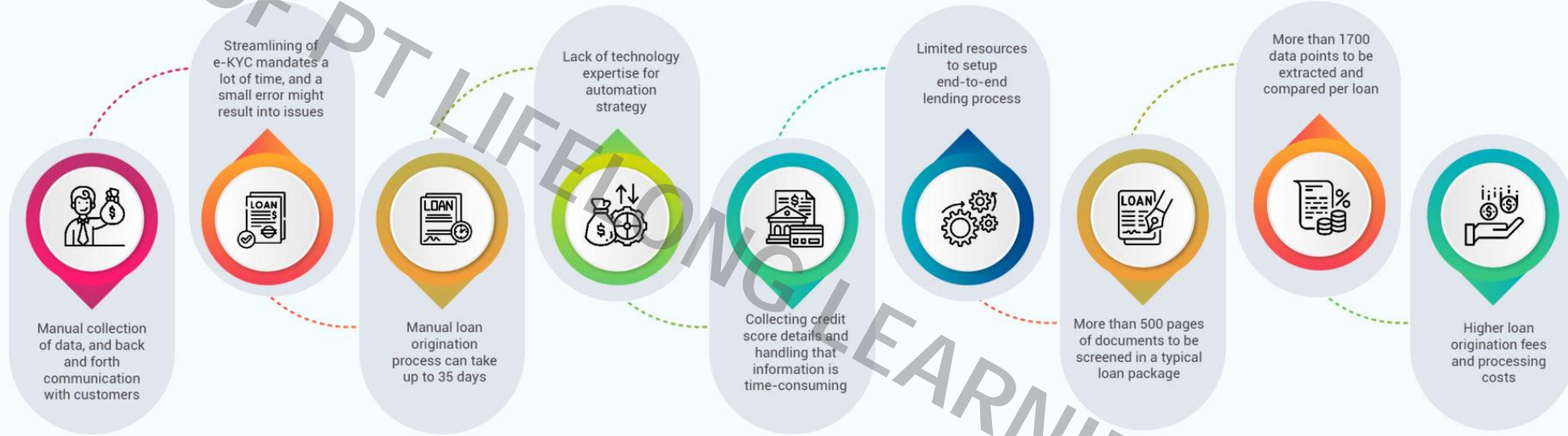


# 6. Underwriting and Loan Origination

AI algorithms streamline the underwriting and loan origination process by automating data collection, analysis, and decision-making. These algorithms assess borrowers' creditworthiness, evaluate loan applications, and determine loan terms and conditions more efficiently than traditional manual processes.



## Challenges faced by lending companies during loan origination



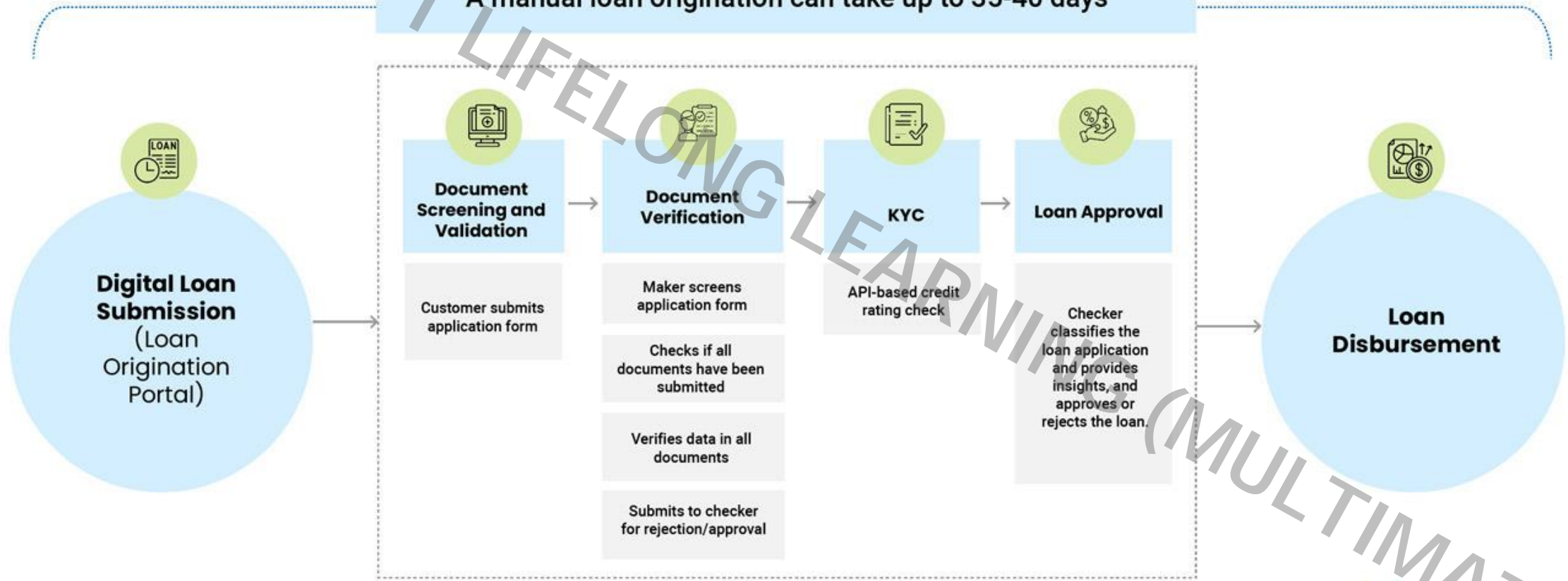
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# Traditional Loan Experience

A manual loan origination can take up to 35-40 days

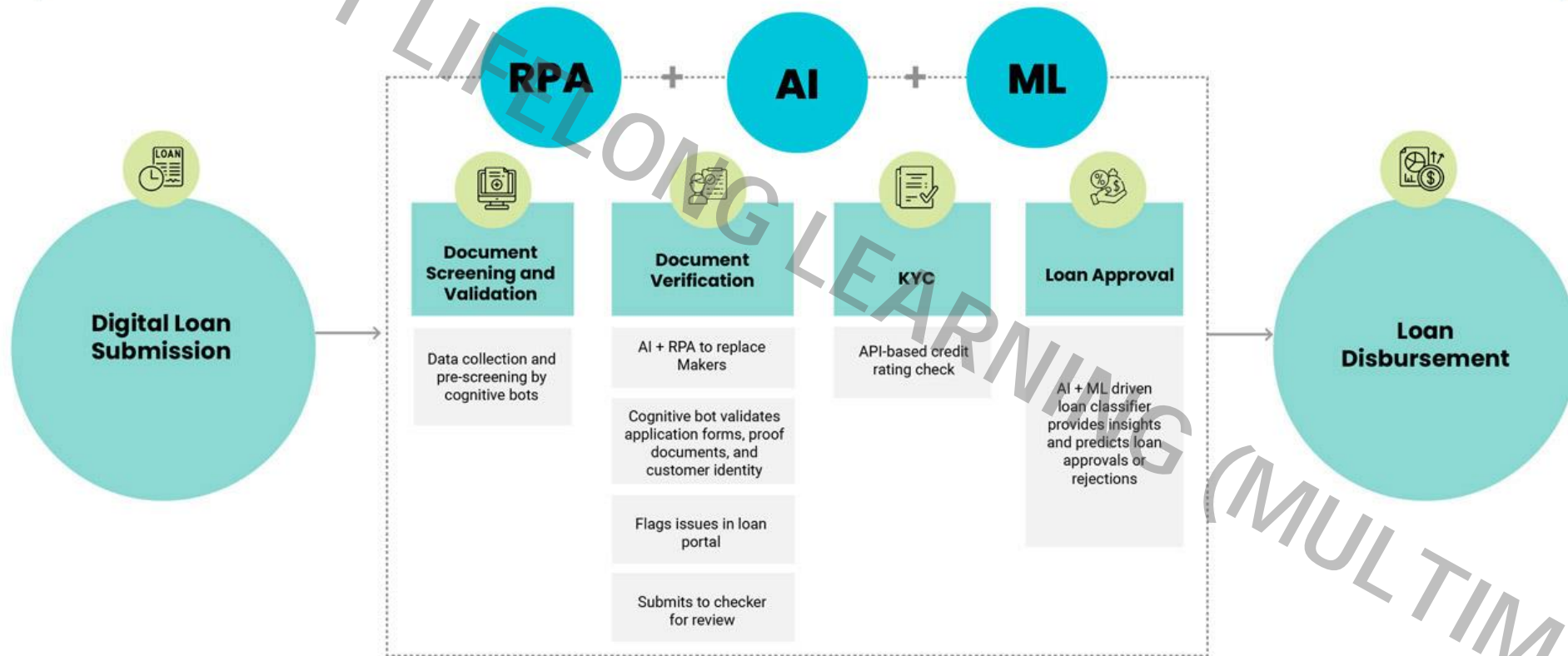


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MULTIMATICS

# Cognitive Lending Experience

With cognitive automation, lending companies take 80% lesser time to process new loans



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# 7. Compliance and Regulatory Reporting

AI technologies help financial institutions comply with regulatory requirements and reporting obligations by automating compliance tasks, monitoring transactions for suspicious activities, and generating regulatory reports. AI-powered compliance solutions improve accuracy, reduce compliance costs, and mitigate the risk of regulatory violations.

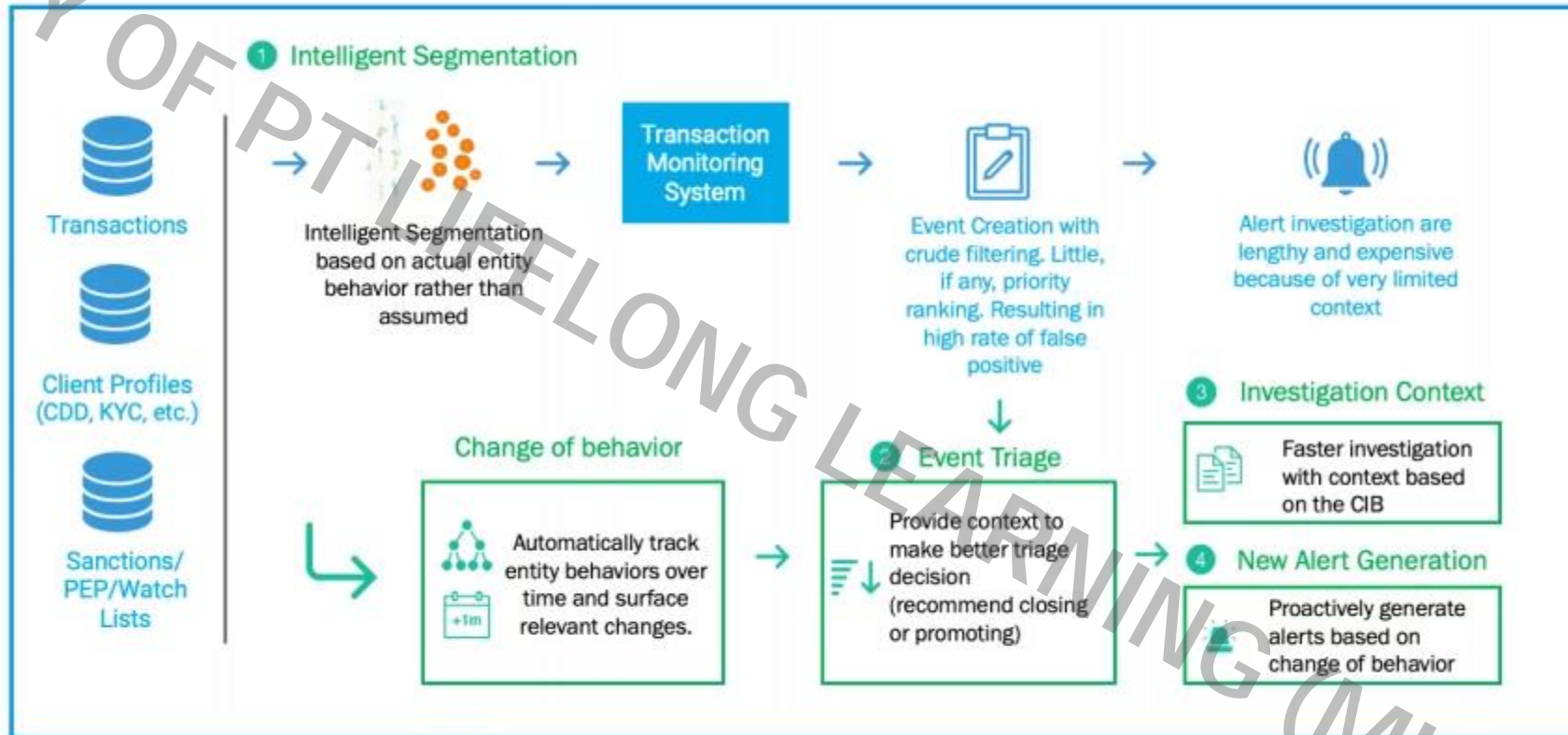


Figure 2: An augmented AML process applies intelligence at key lever points to produce significantly more accurate alerts.

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Customer data from KYC, CDD

Risk profile

Automated review system : deterministic or improved by machine learning

Transaction data

Sanctions and watchlists

Complementary sources\* : market activities, social media, newsfeed, trade finance

Customer segmentation

Anomaly Detection

Prioritization of the alerts\*

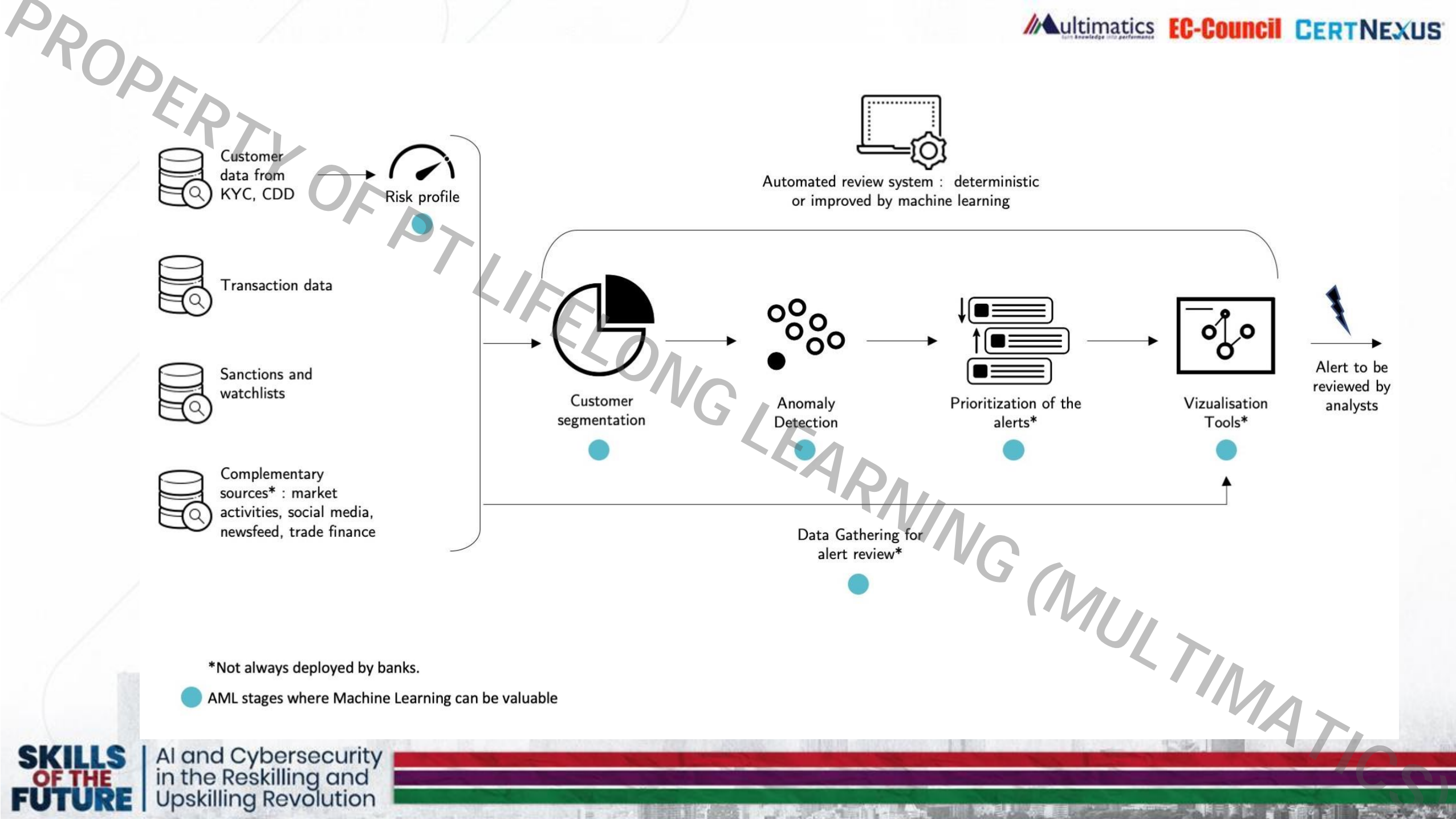
Vizualisation Tools\*

Alert to be reviewed by analysts

Data Gathering for alert review\*

\*Not always deployed by banks.

● AML stages where Machine Learning can be valuable



# 8. Personal Finance Management

AI-powered personal finance management apps analyze users' spending habits, income, and financial goals to provide personalized financial insights, budgeting tools, and savings recommendations. These apps help users track their expenses, optimize their finances, and achieve their financial objectives.

Use Cases of Personal Finance App



- Visualization
- Payment Reminders
- Expense Tracking
- AI-Assisted Saving Plan
- Reports and Stats
- Robust Security
- Debit/Credit Card Integration

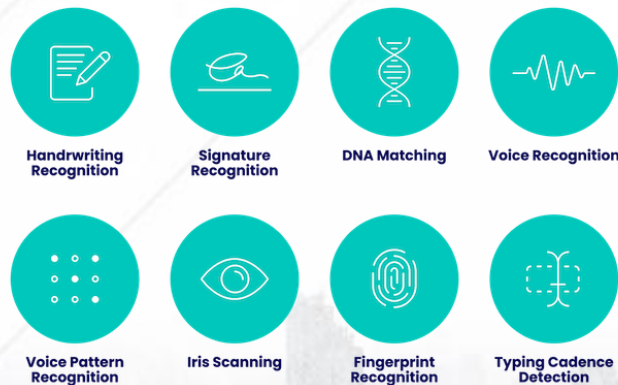
appinventiv



# 9. Voice Recognition and Biometric Authentication

AI technologies such as voice recognition and biometric authentication are used to enhance security and authentication in fintech applications. Voice biometrics and facial recognition systems verify users' identities more securely than traditional authentication methods, reducing the risk of identity theft and fraud.

Types of Biometrics Used for Authentication & Verification



## How Does Voice Biometric Authentication Work?



# 10. Predictive Analytics and Market Forecasting

AI algorithms analyze historical market data, economic indicators, and other relevant factors to forecast market trends and make investment predictions. Predictive analytics tools help investors make informed decisions and optimize their investment strategies based on data-driven insights.



If you click at the `multiplot` result at the left panel, you can check the real stock value (test dataset) with the forecasted values for `Open` and `Close` stock values.



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# BARRIER TO BUSINESS TRANSFORMATION 2023-2027



Source: The Future of Jobs Report, World Economic Forum, 2023



# WORKFORCE STRATEGIES 2023-2027



Source

World Economic Forum, Future of Jobs Survey 2023.

Share of organizations surveyed (%)

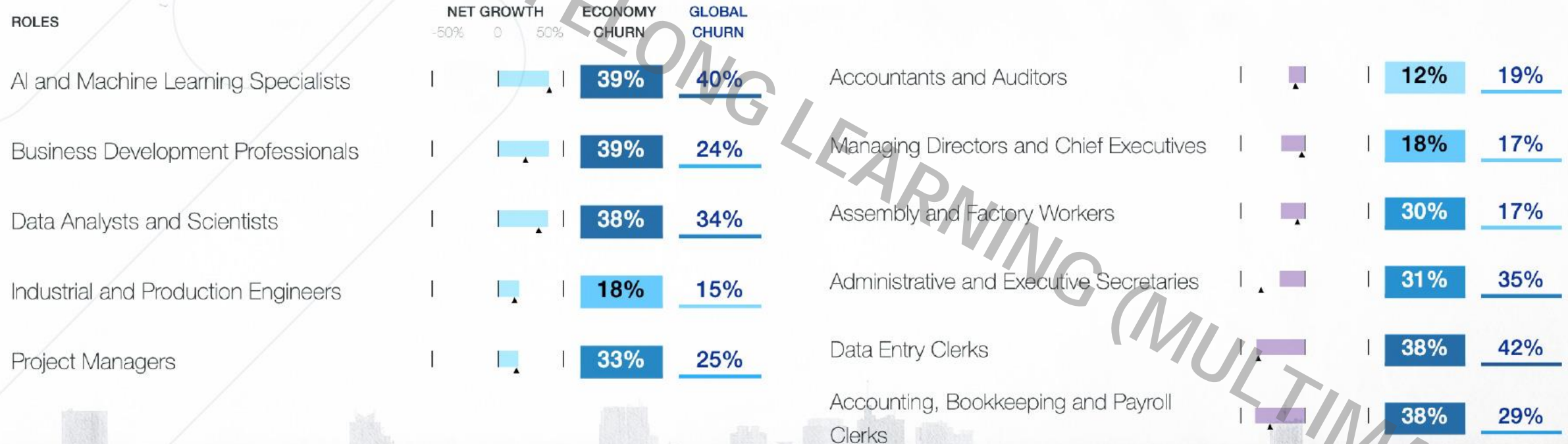
# Indonesia

164.6

## Trend outlook

### Key roles for business transformation

Roles most selected by organizations surveyed (as either growing, stable or declining), ordered by net role growth, and their net growth and structural churn (percent)



Source: The Future of Jobs Report, World Economic Forum, 2023



# MEASUREMENT OF SOFT SKILLS ATTAINMENT

Skill	Workible	OECD	LinkedIn	Oliver et al.	Deloitte Access Economics
Self-management 	✓		✓		✓
Communication 	✓		✓	✓	✓
Teamwork 	✓			✓	
Problem solving 	✓		✓	✓	✓
Digital literacy 		✓	✓		
Critical thinking 	✓				✓
Innovation 			✓	✓	
Emotional judgement 				✓	
Global citizenship 					
Professional ethics 			✓		

Source: The Future of Jobs Report, World Economic Forum, 2023

# SOFT SKILLS OF STEM WORKERS IN STEM INDUSTRIES



Source: The Future of Jobs Report, World Economic Forum, 2023



## Leadership

What soft skills do you need at your company right now?

## Junior Employees

What soft skills do you want to learn or sharpen?



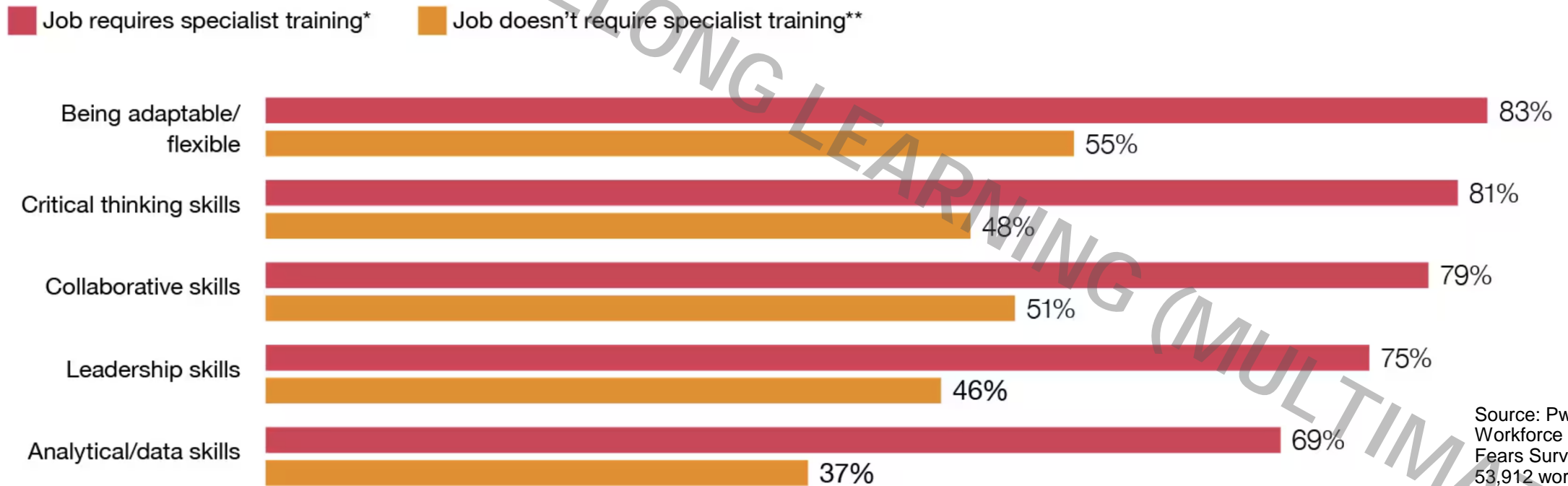
Figure 6

Workforce Skills Gap Trends 2024 : Survey Report, Springboard, Jan 2024

# The specialisation gap affects how employees view skills

**Question:** How important will the following skills be to your career in the next five years?

(Showing only 'very important' and 'extremely important' responses)

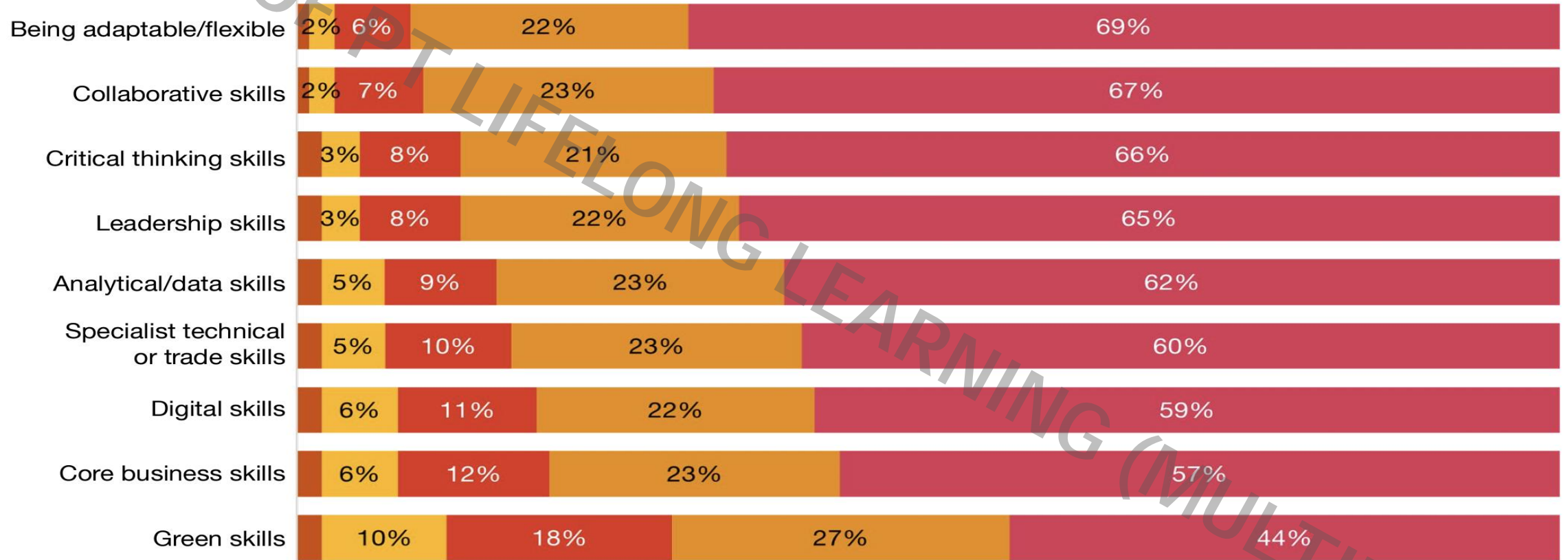


Source: PwC's Global Workforce Hopes and Fears Survey 2023 of 53,912 workers across 46 countries and territories



## Human skills matter most in the modern workplace

Q. How important will the following skills be to your career in the next five years?

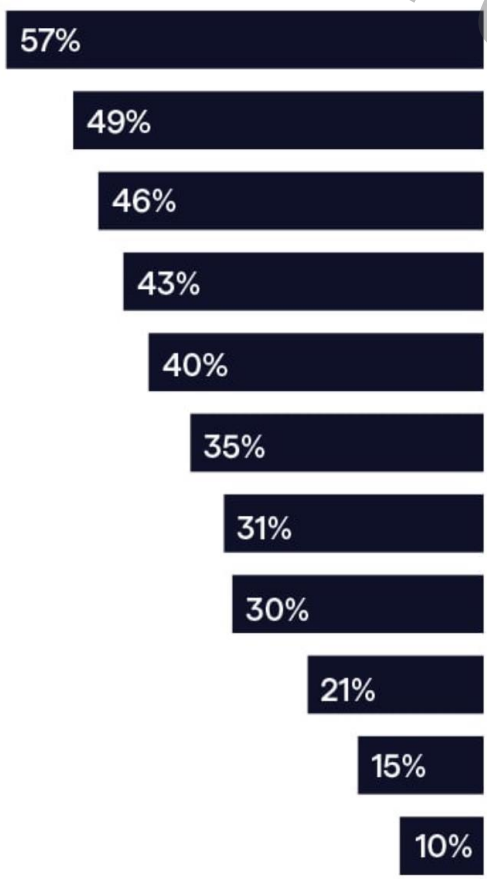


Source: PwC's Global Workforce Hopes and Fears Survey 2023 of 53,912 workers across 46 countries and territories

■ Don't know   
 ■ Not at all important   
 ■ Slightly important   
 ■ Moderately important   
 ■ Net: Important (Extremely + Very important)

**Leadership**

What soft skills do you need at your company right now?



**Junior Employees**

What soft skills do you want to learn or sharpen?



Figure 6

Workforce Skills Gap Trends  
2024 : Survey Report,  
Springboard, Jan 2024



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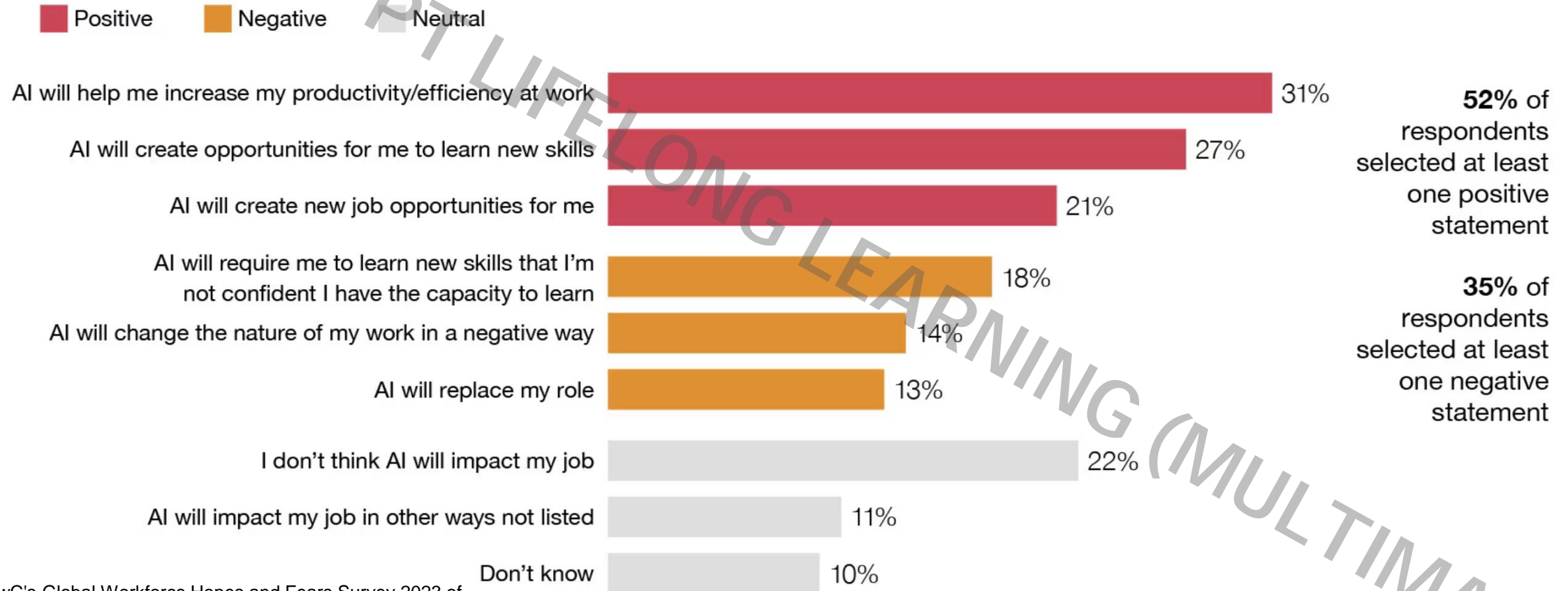
**A.I. WON'T  
STEAL JOBS  
BUT 'SOMEONE WHO' USE A.I.  
WILL'**

Jensen Huang  
Nvidia's CEO

LEARNING (MULTIMATICS)

# Employees see mostly positive impacts from AI

**Question:** What impact, if any, do you expect artificial intelligence (AI) to have on your career in the next five years?



Source: PwC's Global Workforce Hopes and Fears Survey 2023 of 53,912 workers across 46 countries and territories





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# Thank You

