

A laptop is shown on a wooden desk, displaying a website with the text 'ARTIFICIAL INTELLIGENCE' and 'AI'. The screen is surrounded by futuristic digital overlays, including a world map, a circular progress indicator, and various data visualizations. A person's hands are visible typing on the laptop keyboard. The background is dark and blurred, showing a person's arm and a small potted plant on the desk.

# Navigating 2030: AI and the Attention Economy in Indonesia

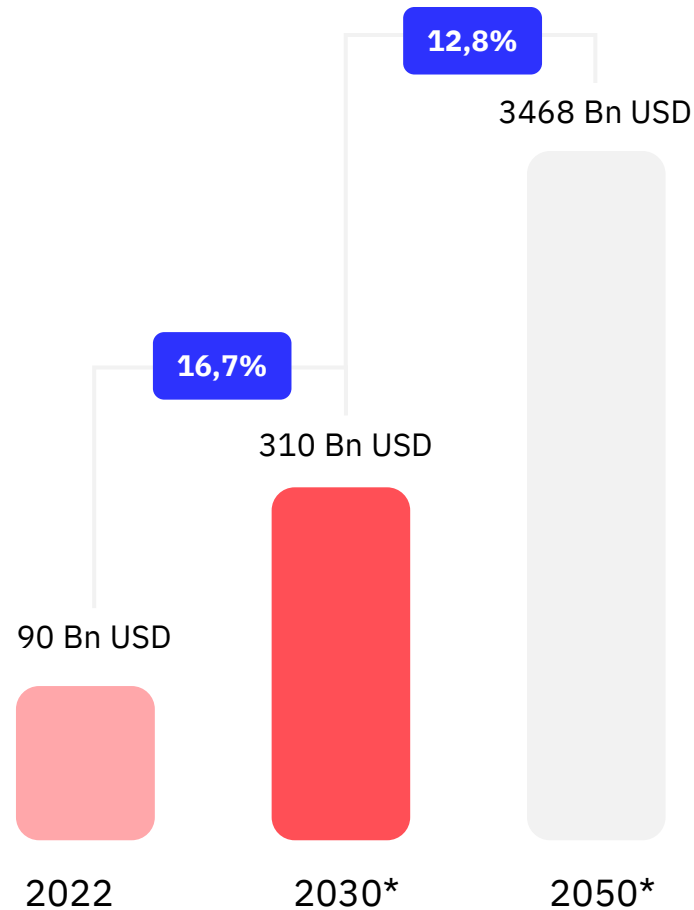
# Indonesia's digital leap: Key insights for 2030

- 1 **Economic Projection:** E-commerce, fintech, mobility and digital media contribute to an estimated USD 310 billion, projecting Indonesia to become a leading global economy by 2030.
- 2 **Internet Usage & AI Utilization:** Indonesia is to achieve over 90% internet penetration by 2030 with AI to curate personalised content
- 3 **Challenges & Strategic Priorities:**
  - **Talent Development:** Indonesia collaborates with the government, academia and industry to build a digital talent workforce of 9 million by 2030.
  - **Infrastructure Enhancement:** AI advancements include establishing 450 data centers and 2 supercomputers as well as improving the Cloud Index to 80 and average internet speeds to 220 Mbps.
  - **Investment Growth:** Ensure 5% of global investment flows (USD 20 billion) and the creation of 450 AI-focused startups to enhance Indonesia's investment profile.
- 4 **Conclusion:** Immediate and coordinated action in talent and infrastructure is essential to fulfill Indonesia's potential as a digital economy powerhouse by 2030.



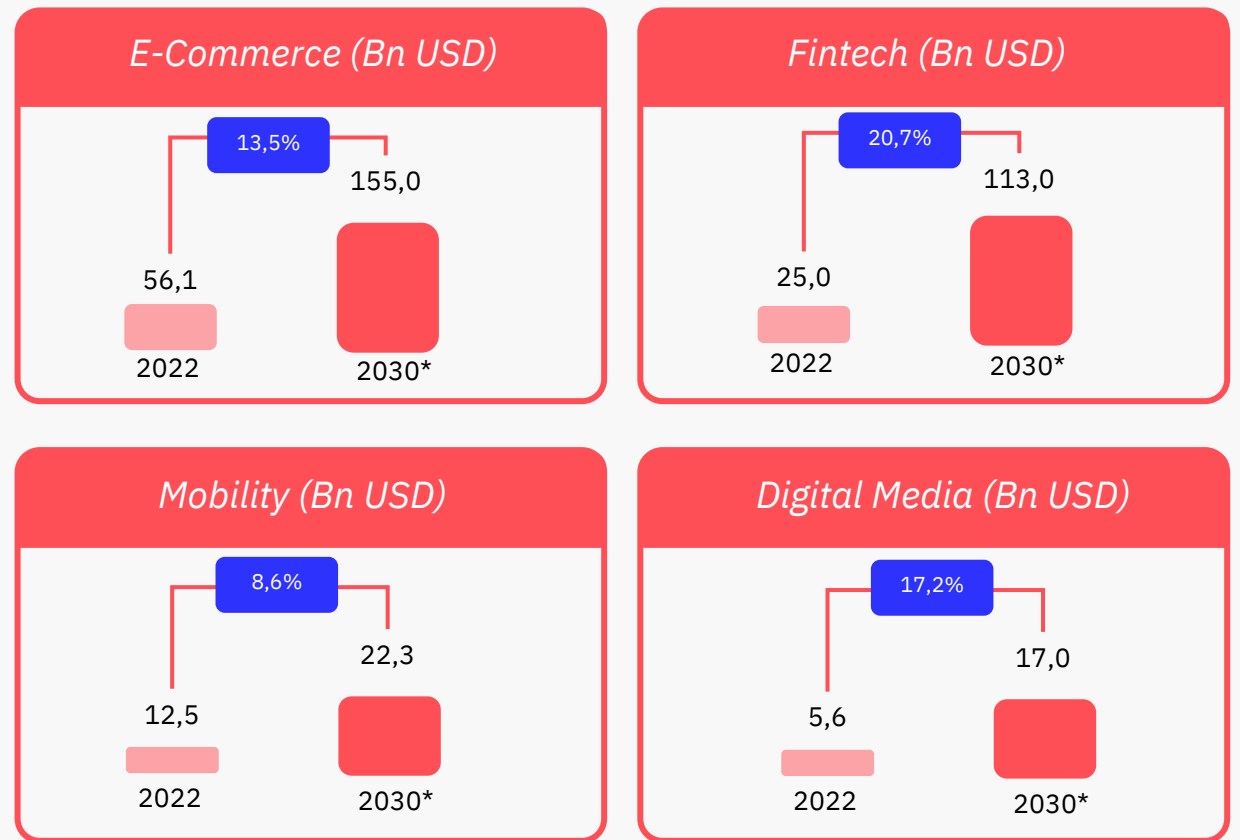
# Indonesia to become one of the world's top 7 by 2030 and aims for the top 5 by 2050

The digital sector is poised for significant growth



Source: Empowering Indonesia, Twimbit analysis

Digital economy is accelerated by 4 pillars: e-commerce, fintech, mobility, and digital media



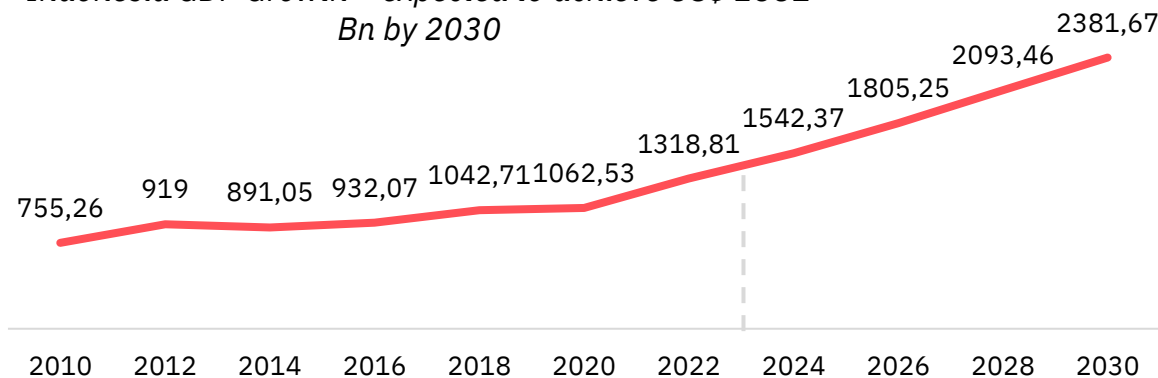
# The Rise of Attention Economy in Indonesia



# Indonesia ranks 4<sup>th</sup> globally for internet usage, expected to encompass over 90% of its population by 2030



Indonesia GDP Growth – expected to achieve US\$ 2381 Bn by 2030



Source: Datareportal.com, Twimbit analysis

## Demography Overview



Total Population

**276,4**  
Million



Internet Users

**212,9**  
Million [77%]



Social Media Users

**167,0**  
Million [60,4%]



Time spent/day

**7 Hours**  
42 minutes

**3 Hours**  
18 minutes

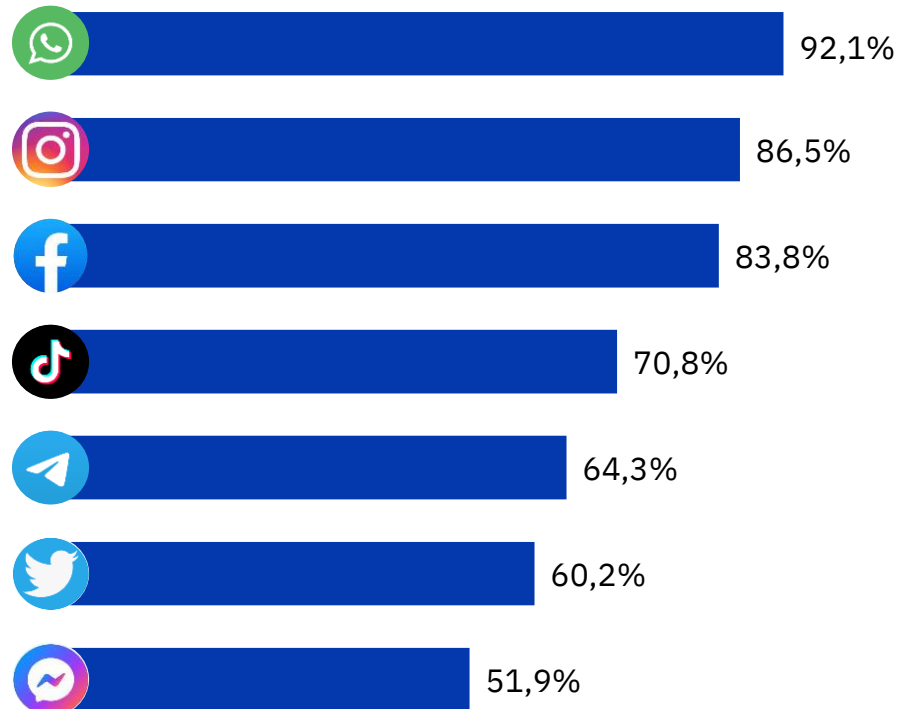


Opportunity

- Enable SMEs to access broader markets and spur economic diversification and competitiveness.
- Improve educational outcomes and equip the Indonesian workforce

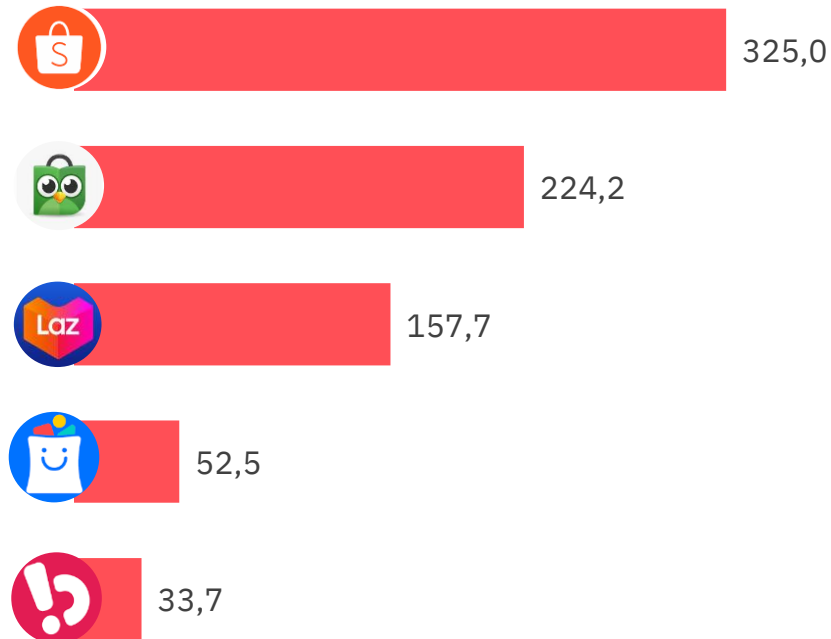
# Indonesia rises as a media and e-commerce powerhouse

Most popular social media platforms in Indonesia  
(% of active user)



Note: The percentage reflects the count of Indonesia's active social media users, totaling 167 million in 2023

Highest visited e-commerce Platform in Indonesia  
(#number of users)



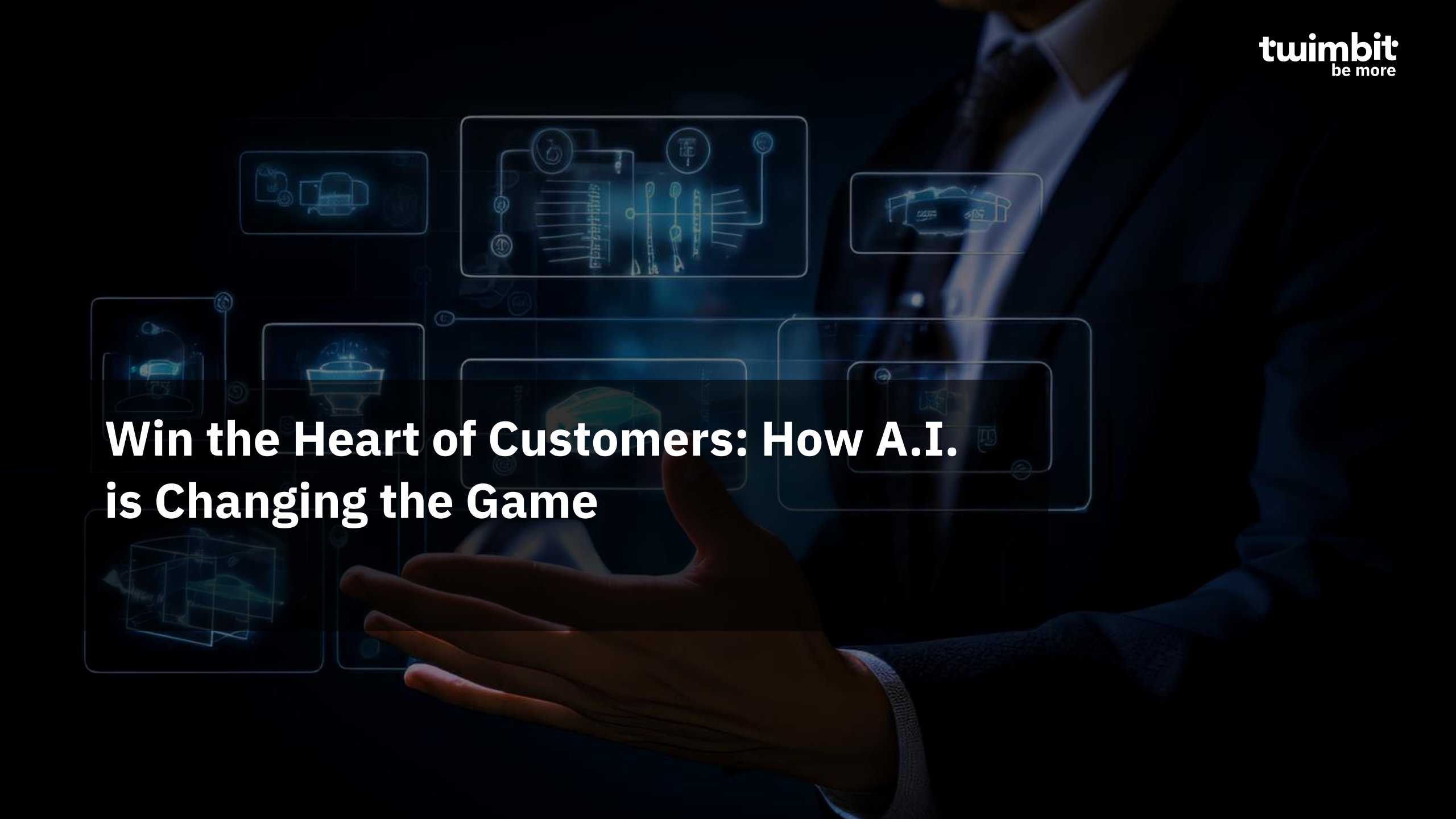
Note: The visitor total represents the cumulative count from Q1 and Q2 of 2023

## Challenges

- Attention spans last less than 10 seconds
- High difficulty to retain focus amidst information overload

## Opportunity

- Utilize AI to personalise content tailored to the customer's preferences



# **Win the Heart of Customers: How A.I. is Changing the Game**



# Tokopedia – Product Recommendation Playbook

*Leverage advanced recommender systems for tailored product discovery*

## Session Based Method

Recommends products based on the closeness vector of products with session data

*Customer Session*



*Customer starts their search session on the tech section*

*Customer ends their search session on the clothing section*

This stage addresses when a product is unavailable, or a user wants to change to another variant



Recommendation System (A.I)

High possibility to recommend



## Ranking Based Method

Recommends products based on features and user preferences. This model is more accurate in recommending products to individuals because it uses both product and user features



*User preference*



*User Session*

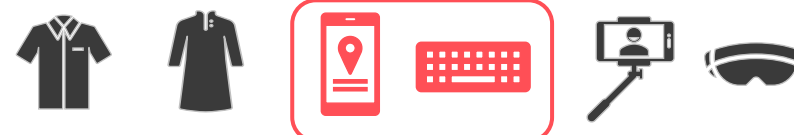
*Feed to the system*

The algorithm or method used is a Tree-Based Model



Recommendation System (A.I)

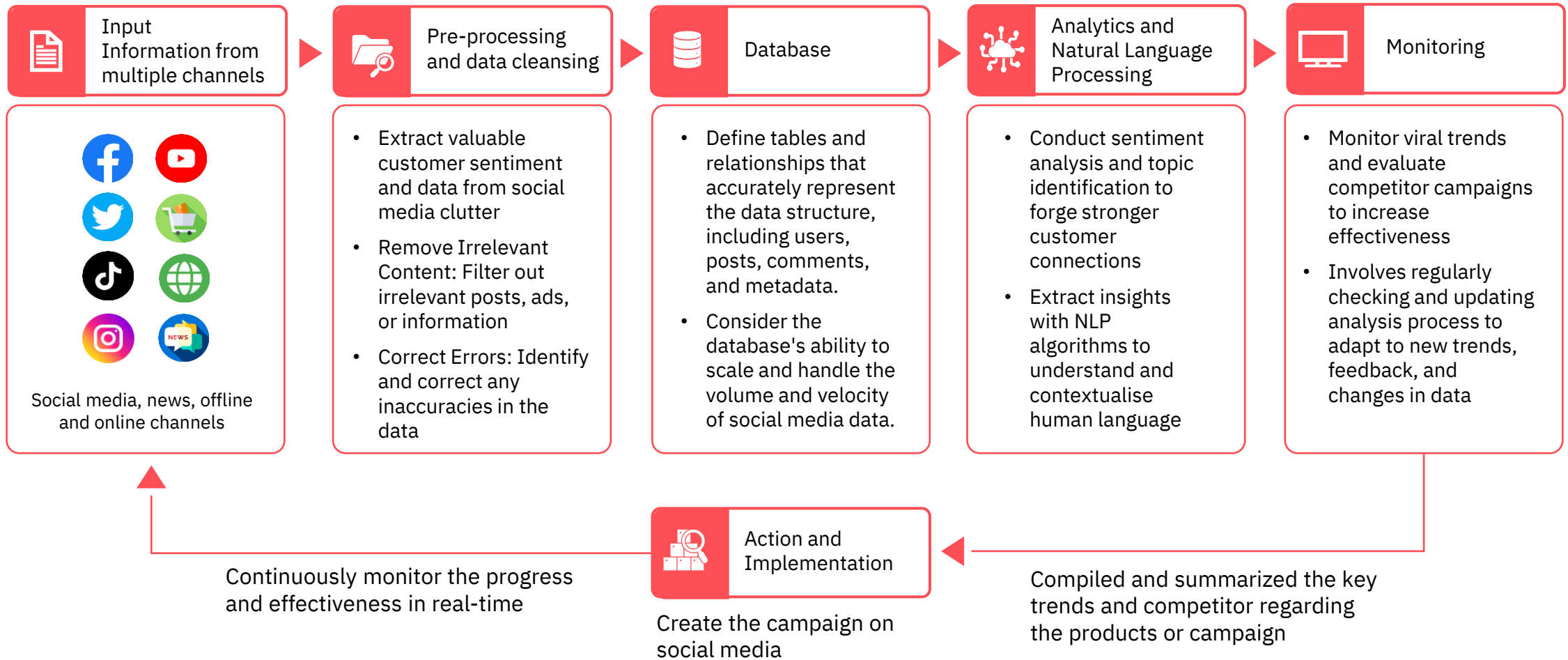
High possibility to recommend





# Dataxet – Media Analytics for Social Listening

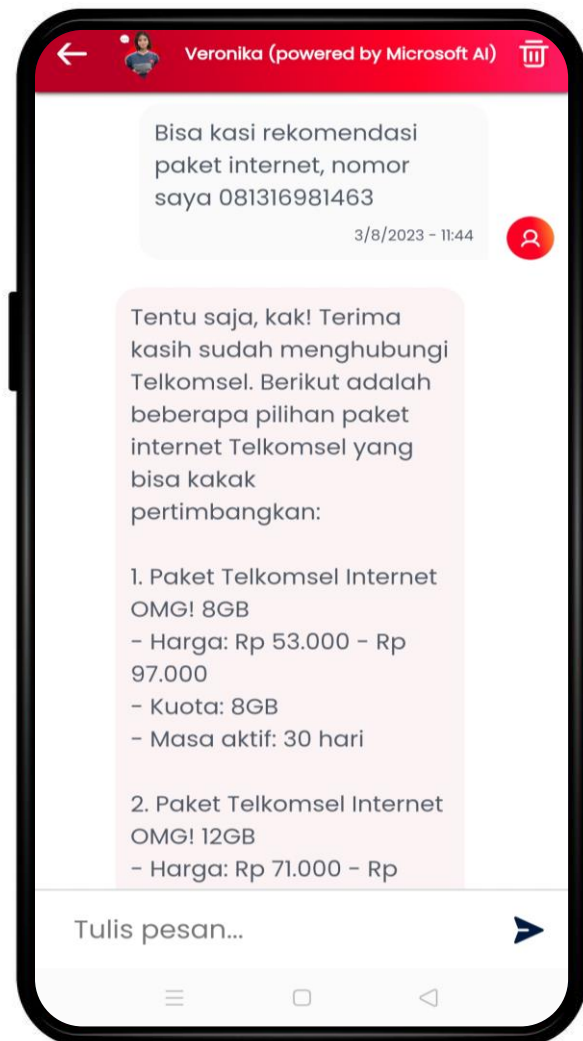
*Harness AI to analyze sentiments, trends, and industry content across channels*





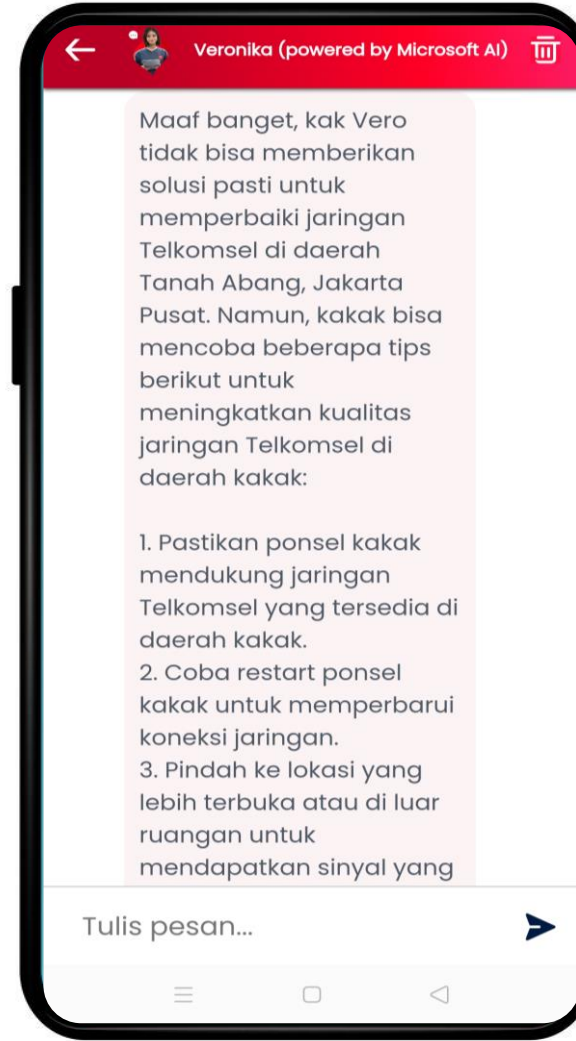
# Telkomsel – Flexible and Humanized Chatbots

*Veronika - Telkomsel virtual assistant powered by Microsoft Azure OpenAI Integration for Enhanced CX*



## Highlights

- Complete product knowledge to make informed and relevant requests
- Provide product recommendations based on user's preferences (phone number, social media users, etc.)



## Highlights

- Handle complex requests with humanized answers
- The virtual assistant can detail proposed solutions to customer complaints



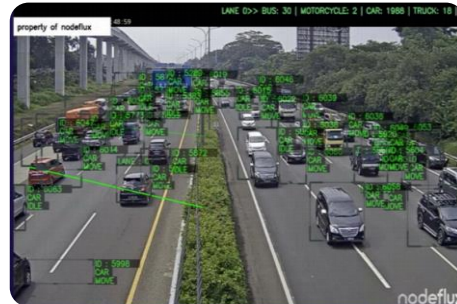
# Nodeflux – Traffic Sense for Monitoring Vehicle Activity

*AI-Driven Surveillance: Real-Time Tracking of Vehicle Activity and Traffic Flow Dynamics*



Measure 3 parameters in real time

- 1 Total Daily Vehicles per Area
  - Useful for assessing traffic volume and congestion levels



- 2 Classification Total Vehicle Type
  - Understand the mix of traffic for better-informed infrastructure planning and usage.



- 3 Speed Estimation
  - Crucial to reinforce traffic laws, study traffic flow, and identify common speeding spots

## Traffic Monitoring System



- Traffic in the road



- Take decision



- Sensor
- Camera CCTV
- Network Communication



- Visualization
- Real-time monitoring



- Database to store the data



- Data Analytics
- Computer Vision

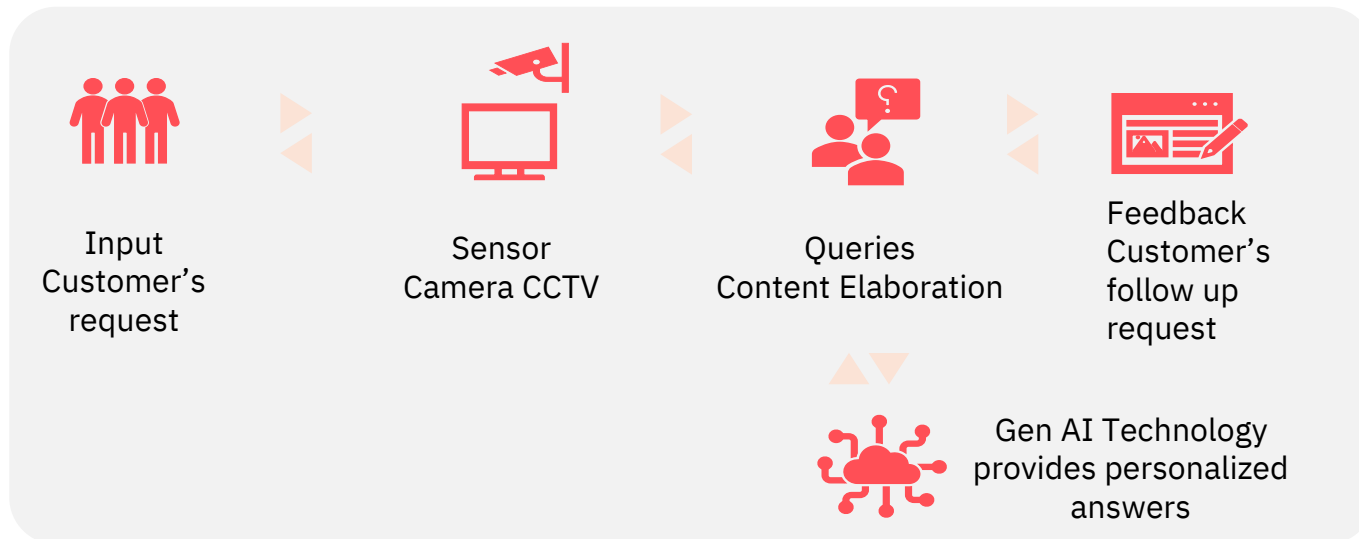
# KAI – Customised Contents Showcased by Virtual Agents

*Launching AI Avatars at Major Stations for Accessible Information for all customers*



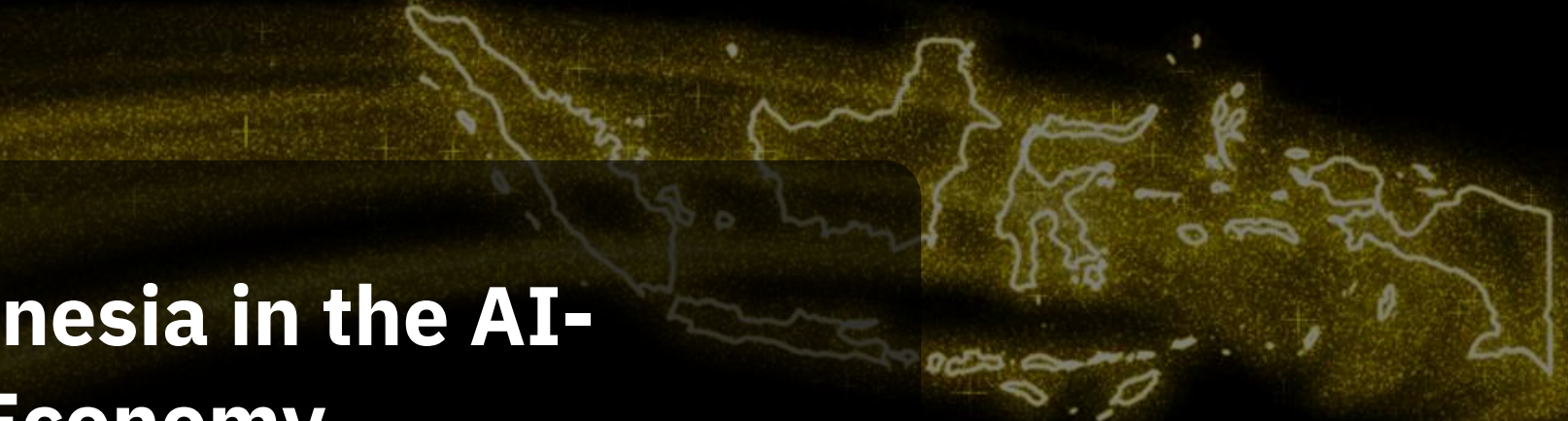
KAI launches a generative AI avatar chatbot using Microsoft's Azure OpenAI and Cognitive Services

- 1 Real-Time Interaction:** Respond instantly to customer queries through both voice and text.
- 2 Multi-Modal Activation:** Customers can activate VA either by touching the screen or through voice commands
- 3 Multilingual Support:** Communicate in multiple languages (Indonesian, English, Mandarin, etc.) and regional languages like Javanese and Sundanese.
- 4 Focus on Common Needs:** Allows customer service agents to concentrate on more complex customer needs.



## Highlights

- Can handle 200 queries per day – related to the common information
- Improve the efficiency of the customer service to handle common queries, while customer service agents can focus on complex problems



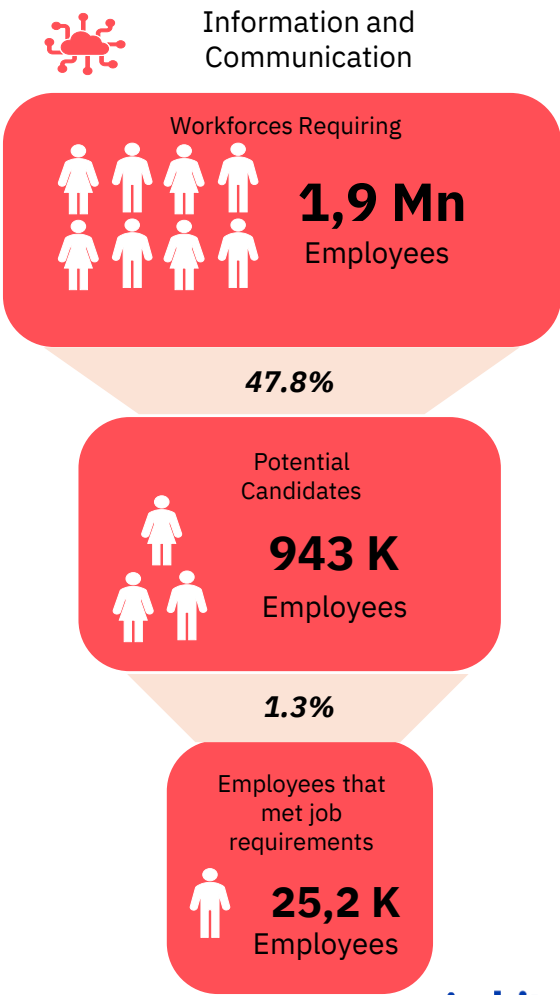
# **Empowering Indonesia in the AI-Driven Attention Economy**

# Indonesia's AI growth faces workforce readiness gap

The STEM talent pool remains an at average of 27%

| Industry                                                                                                        | AI Impact on the Industry (%) | STEM Graduated (%) | Total Employee (K) |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------|--------------------|
|  Information and Communication | 58,1%                         | 39,0%              | 943                |
|  Financial Service             | 55,2%                         | 27,2%              | 1565               |
|  Company Service               | 52,3%                         | 27,6%              | 1868               |
|  Real Estate                   | 38,8%                         | 24,0%              | 324                |
|  Government Administration     | 37,4%                         | 27,8%              | 4756               |
|  Healthcare                    | 34,0%                         | 59,0%              | 2113               |
|  Trading                       | 33,7%                         | 19,1%              | 23354              |
|  Electricity                  | 33,3%                         | 46,4%              | 276                |
|  Education                   | 33,0%                         | 14,0%              | 6324               |
|  Mining                      | 31,6%                         | 18,6%              | 1362               |
|  Transportation              | 28,5%                         | 23,3%              | 5153               |
|  Construction                | 25,6%                         | 15,2%              | 7911               |
|  Others                      | 30,4%                         | 14,4%              | 5394               |

Example: Only 1.3% workforce meet the job requirement in ICT Industry



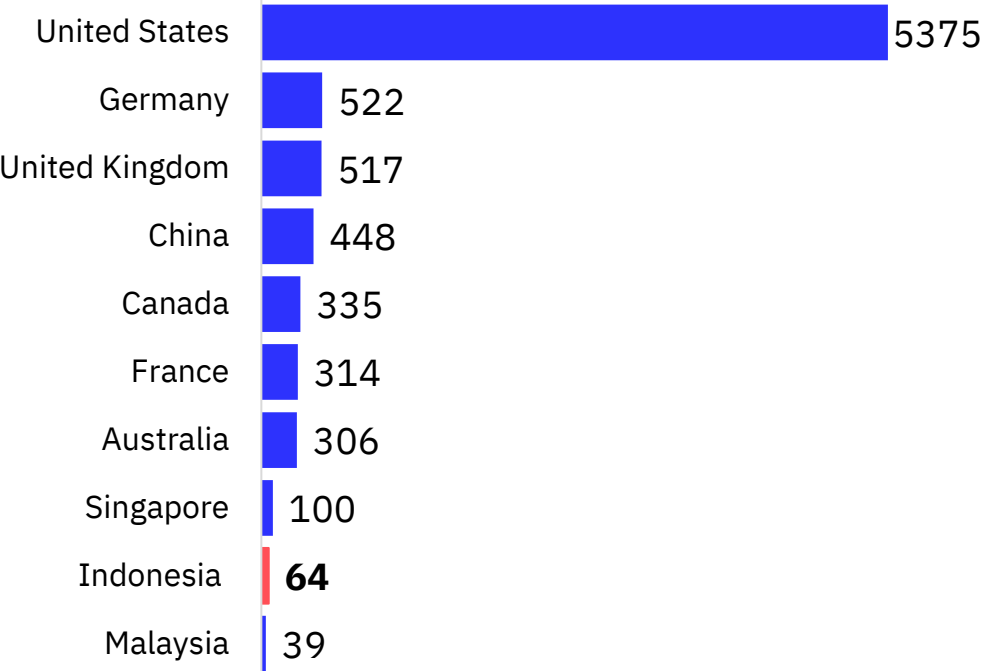
Source: Badan Pusat Statistik, OpenAI Report, Twimbit analysis

# Underdeveloped infrastructure afflicts Indonesia's efforts to support AI



**Data Centres:** Provides necessary computational power and storage capacity to process and manage large datasets

*Number of Data Centres (2023)*

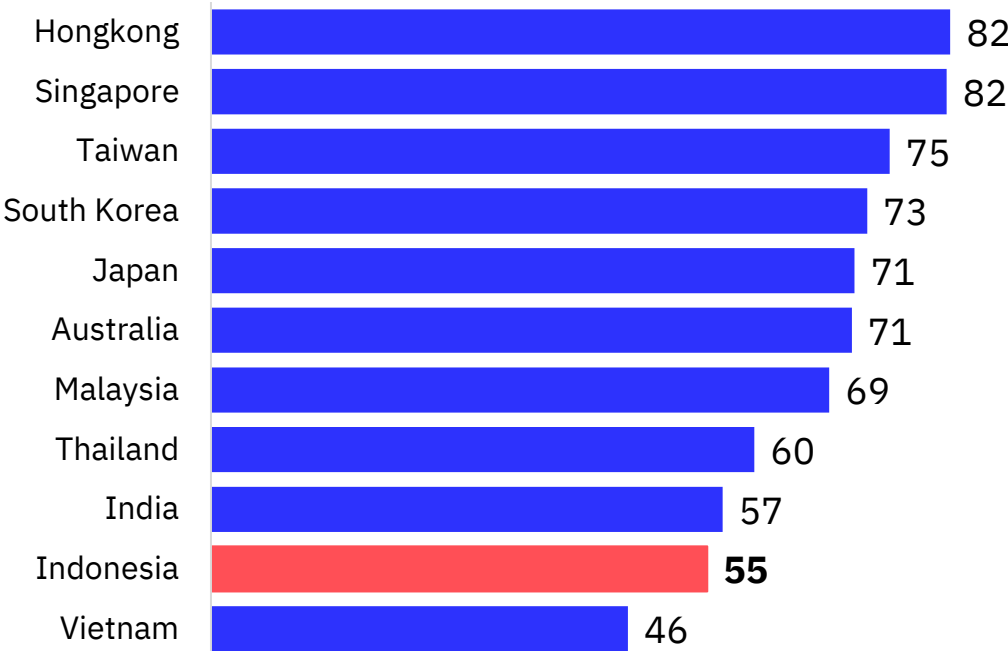


Indonesia has fewer data centers than Singapore, irrespective of country size



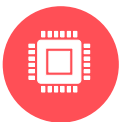
**Cloud:** Offers scalable and flexible access to computing resources and advanced AI services

*Cloud Readiness Index – CRI (2020)*



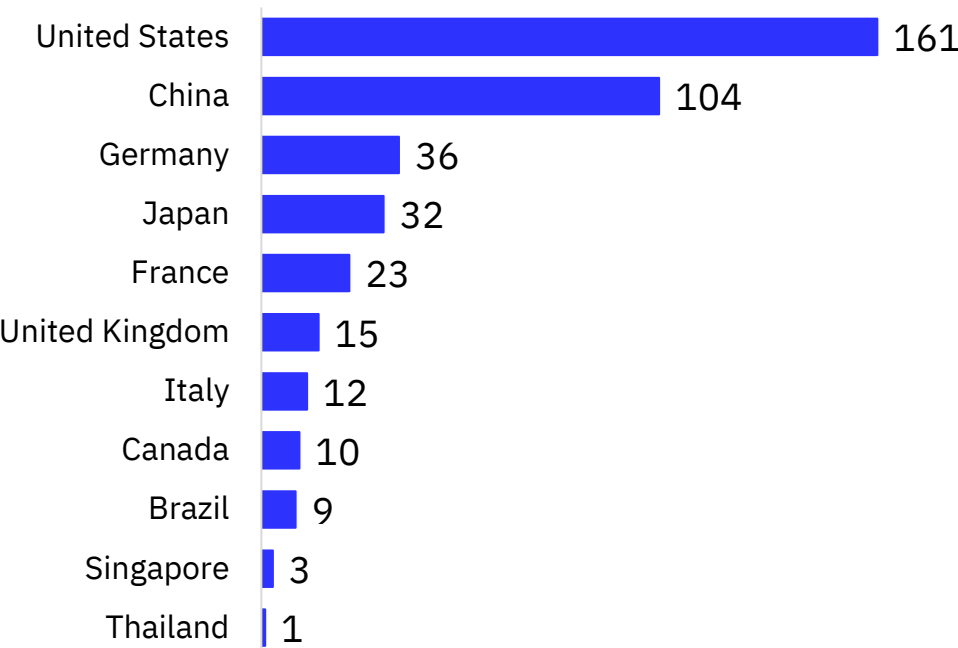
Indonesia falls behind Singapore, Malaysia, and Thailand

# Underdeveloped infrastructure afflicts Indonesia's efforts to support AI – cont'd



Supercomputers: Analyze large data and enable sophisticated AI model training with high speed and efficiency.

Top 500 Supercomputer (2023)

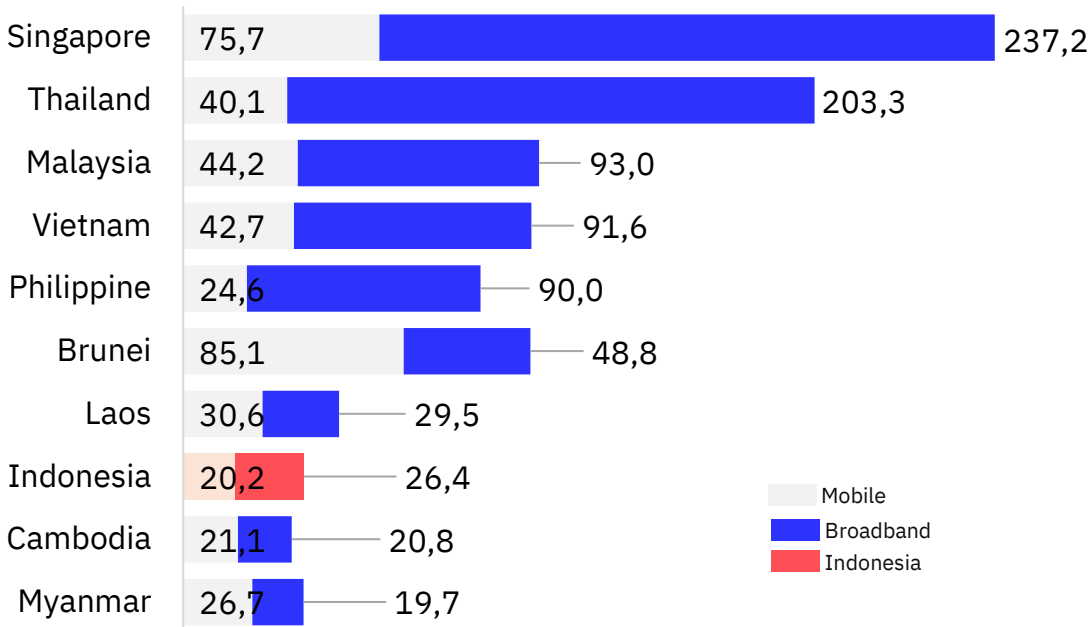


Indonesia has not yet deployed high-performance supercomputers



Network: Ensures high-speed data transfer and connectivity

Internet Speed – Mbps (2023)



Mobile and broadband speeds in Indonesia significantly trail those of neighboring countries - ~21 Mbps

# Indonesia has limited investments and number of AI-focused startups

Number of A.I. Startups by Country and Investment (USD Billion)



**Indonesia**

- The startup ecosystem comprises ~**2,584** entities.
- ~ **44 - 50 startups (~1.8%)** specialise in AI, attracting an investment total of around 1 billion USD.

**Top Deep Technology Startups**

Natural Language Processing (NLP)

 Kata.ai  Qontak  Bahasa.ai  Prosa.ai

Image Processing and Computer Vision

 nodeflux  neurabot  widya  alfabeta

Drone and Robotics

 aeroterrascan  AUTOCONZ  motodoro

Biotech and Genomics

 NUSANTICS  Spiralife  NalaGenetics  MAGALARVA

Energy

 SOLARKITA  PowerCube  XURYA  RIGHT PEOPLE RENEWABLE ENERGY

Internet of Things

 eFishery  cubeacon  FISTX  chickin

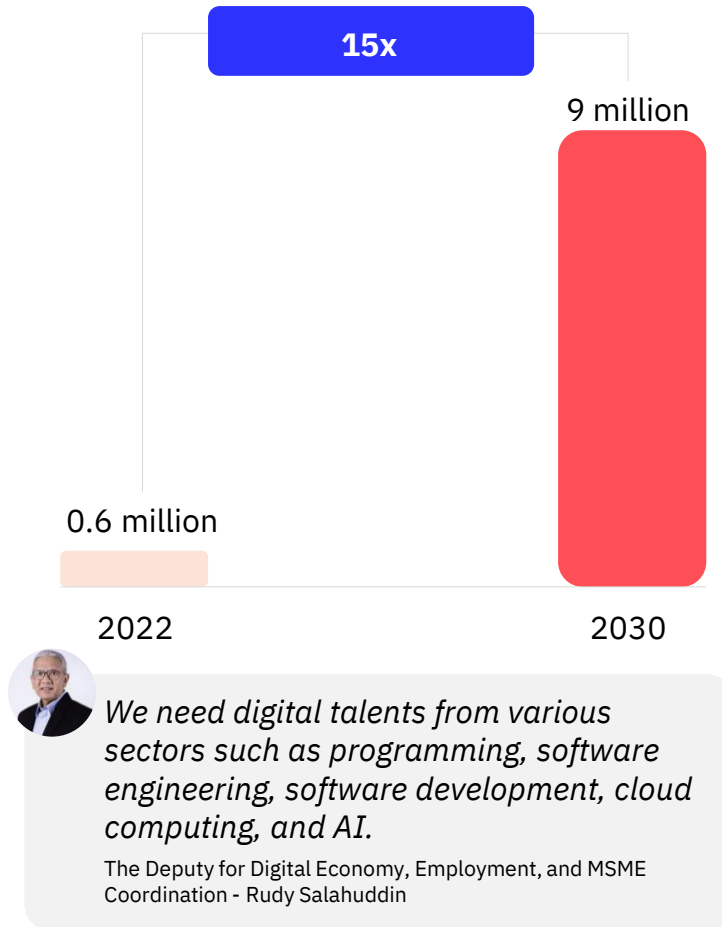
Private Investment (2013 – 2022)

Source: AI Index Report 2023, Twimbit analysis

# Bridge the talent gap to capitalize on AI-driven growth

Indonesia requires a digital talent workforce of 9 million by 2030 to enhance economy growth

Collaboration among government, academia, industry, and society is essential to cultivate a digital talent workforce of 9 million and realise 'Indonesia 2030'



## Government

- Create conducive policies and regulations for digital growth.
- Provide financial support and incentives.
- Build and maintain digital infrastructure for accessible education.
- Standardize digital education programs for quality assurance.



## Academia

- Develop relevant and up-to-date digital curriculum.
- Provide quality digital education and training.
- Lead in digital technologies and pedagogical research.
- Extend digital education initiatives to wider communities.

## 4 Key Stakeholders



## Society

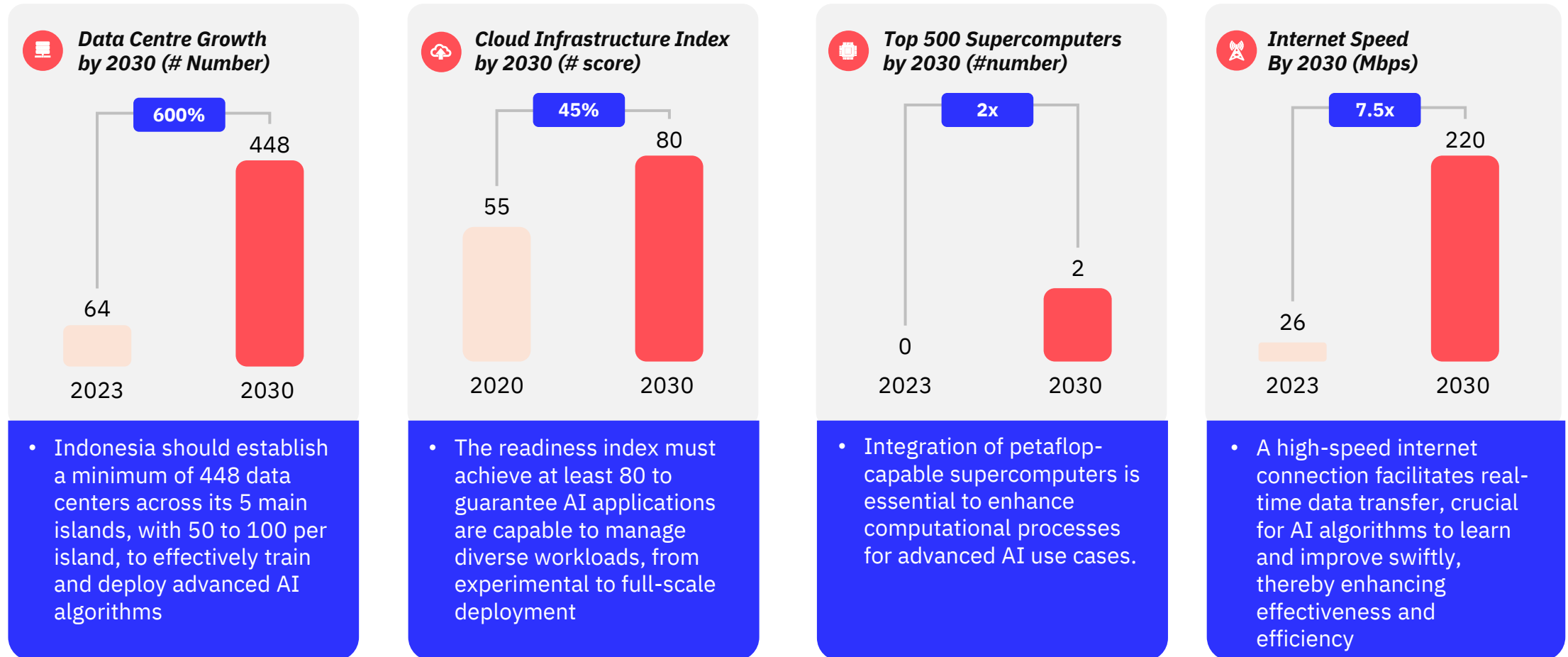
- Advocate for digital inclusion and participate in digital literacy initiatives.
- Lead grassroots efforts to improve digital skills and literacy.
- Provide valuable feedback to tailor digital initiatives to community needs.



## Industry

- Invest in the digital skills development of employees.
- Partner with academia to align education with industry needs.
- Drive digital innovation through research and development.
- Engage in CSR activities focusing on digital literacy and access.

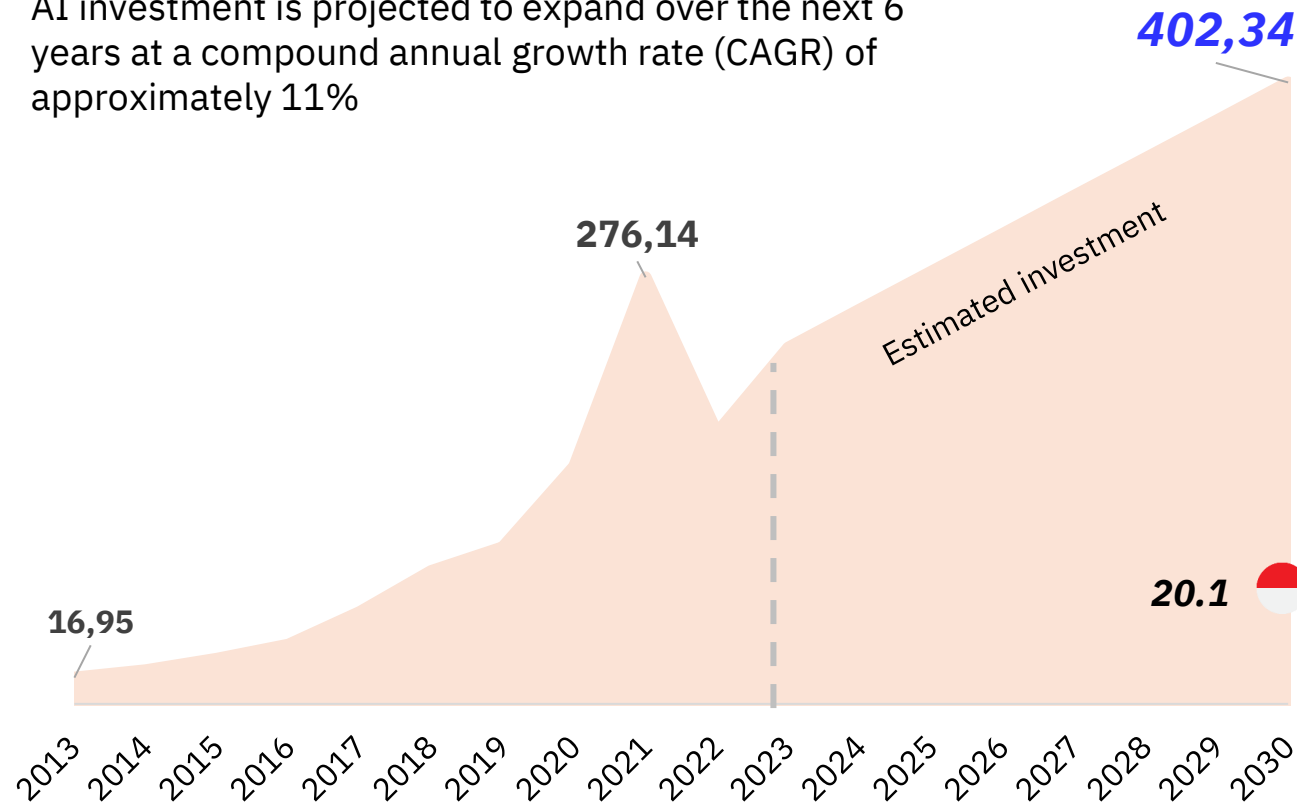
# Transform existing AI infrastructure and channel investments into advanced AI focused startups



# Amplify AI startup ecosystem through focused investments

## Global Annual Corporate Investment (USD billion)

AI investment is projected to expand over the next 6 years at a compound annual growth rate (CAGR) of approximately 11%



Indonesia should invest at least 5% of Global Investment by 2030 – **USD 20 billion**



With significant investment, Indonesia is anticipated to yield a minimum of **450 AI-centric startups**

### Focus area for investment



Medical and Healthcare



Data Management, processing and Cloud



Financial Technology



Cybersecurity and Data Protection



Retail



Industrial Automation and Network



We help build and grow  
**purpose-driven businesses**

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