

KIN4.0 insights session

March 18



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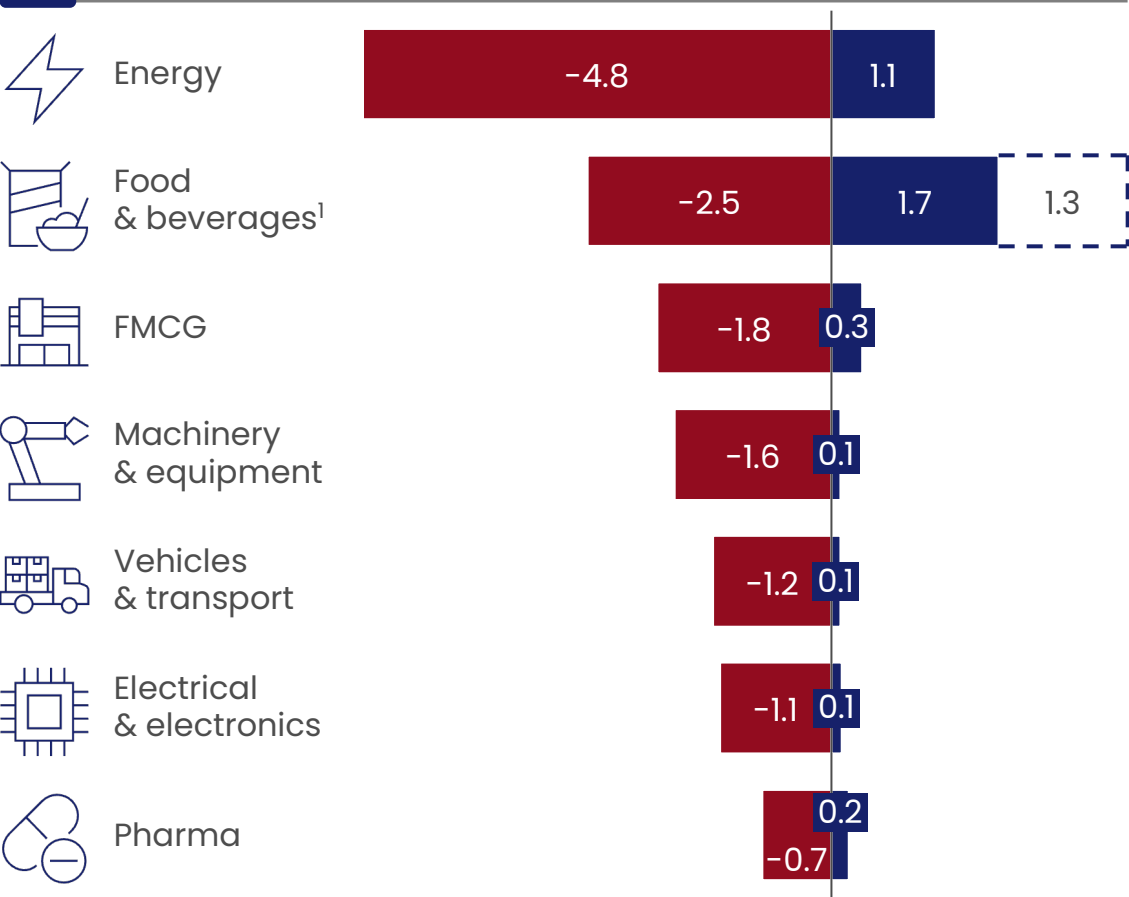
www.manufacturingafrica.org



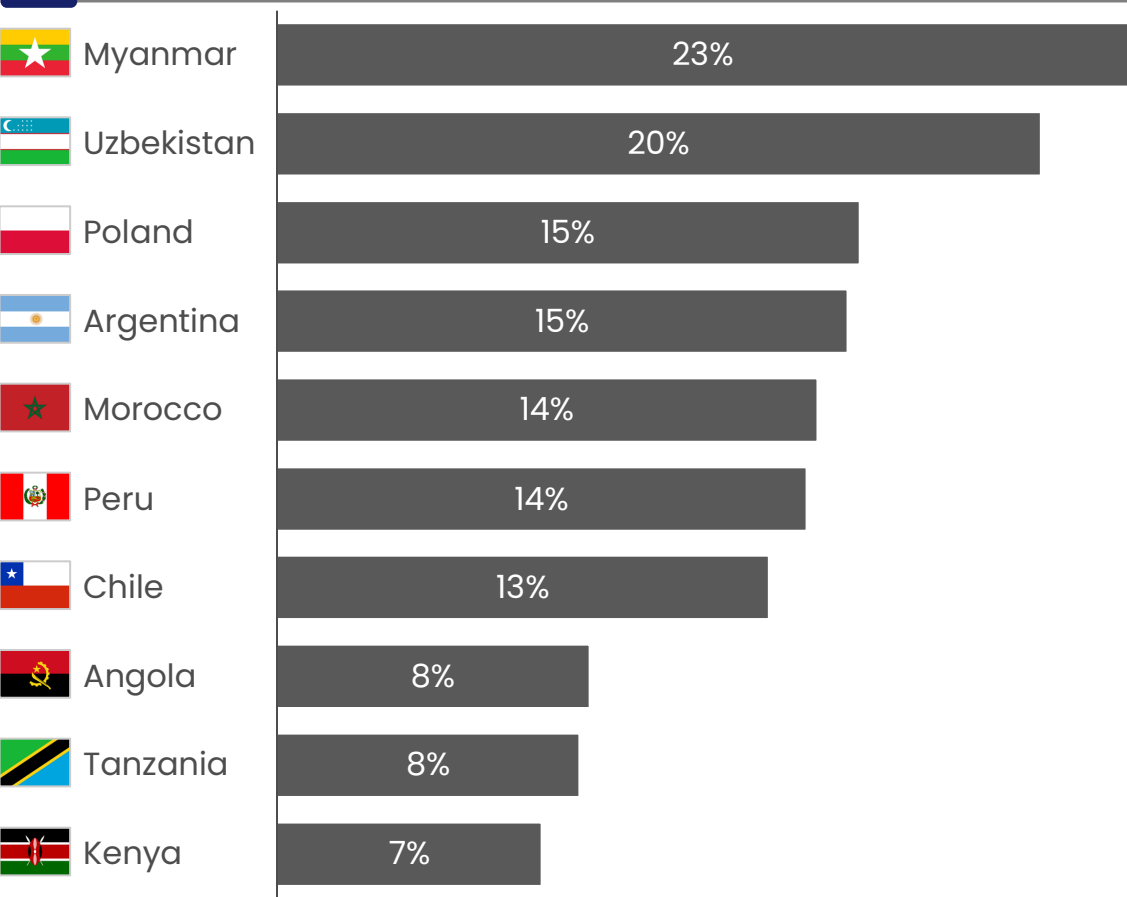
Kenya is a net importer with limited contribution from its manufacturing sector to the GDP

■ Imports ■ Exports □ Tea & coffee exports

Kenyan 2024 imports vs exports by sector, \$ Bn



Manufacturing value as % of GDP comparison vs peer² countries, 2024

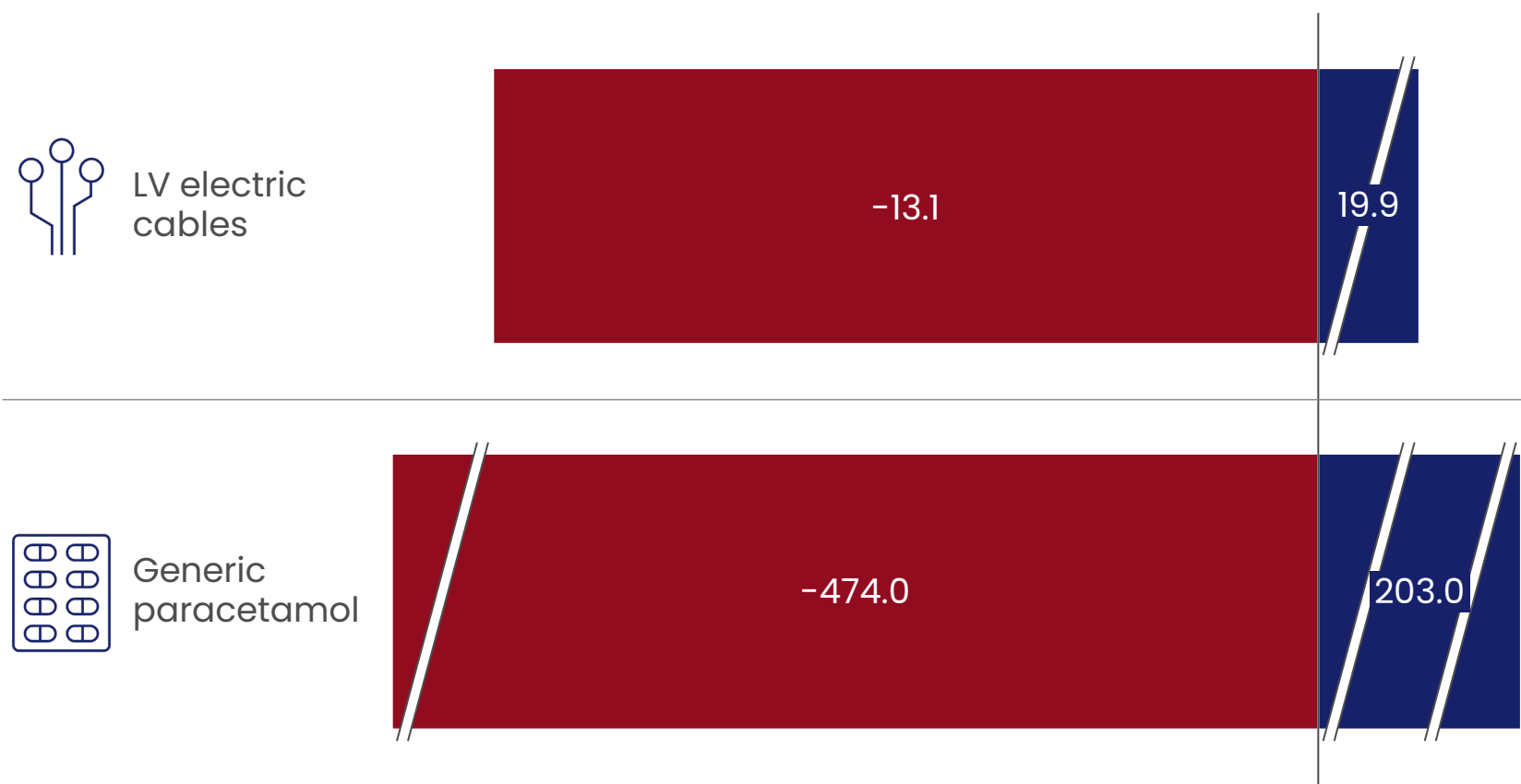


1. ~ \$1.3 Bn of food and beverage exports are related to Tea & Coffee alone
2. Key criteria for peer countries selection include; overall GDP, population size and geographical location

Local players are falling behind on competitiveness and face significant challenges in maintaining their market share

■ Imports ■ Locally manufactured

Sample key products imports vs local manufactured, 2024, \$ Mn



Origin countries of imports¹, 2024

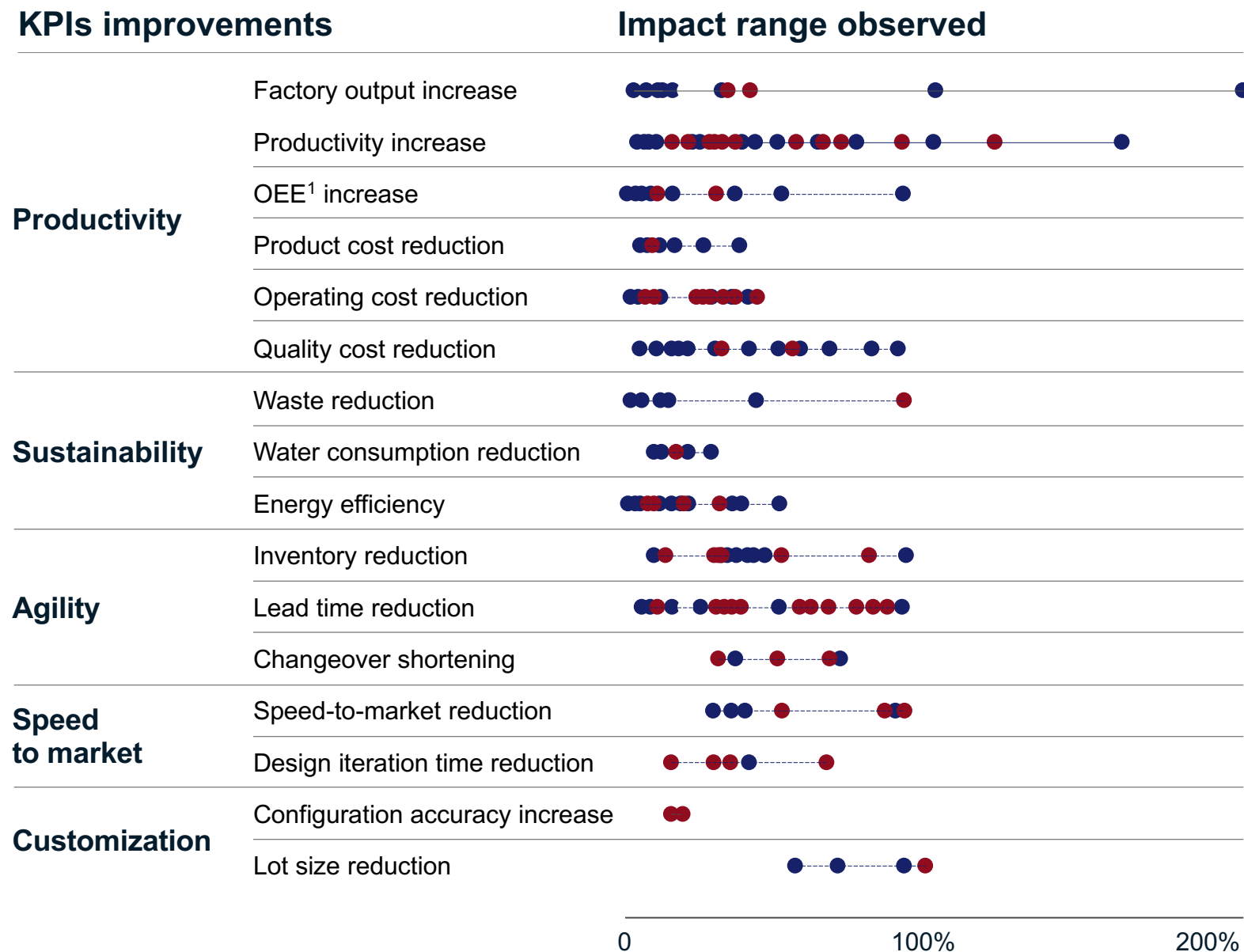
	China	30%
	Tanzania	26.4%
	Egypt	18.6%
	India	12.3%

	India	57.7%
	Germany	8.8%
	China	4.4%
	Pakistan	4.0%
	France	3.7%

1. Countries with largest imports into Kenya per product by value 2024

Industry 4.0 is the answer globally and it has been a key unlock to enable cost effective operations and maximize asset utilization

- 4-wall factory lighthouses
- End-to-end connected value chain Lighthouses



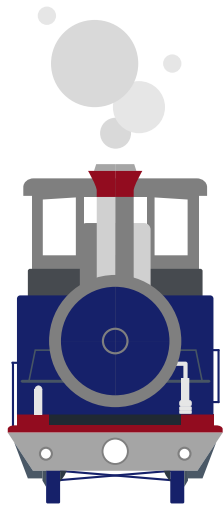
1. Overall equipment effectiveness
Source: World Economic Forum; McKinsey analysis

What is Industry 4.0?



Manufacturing industries have seen four industrial revolutions

1.0



**Mechanization, water
and steam power**

2.0



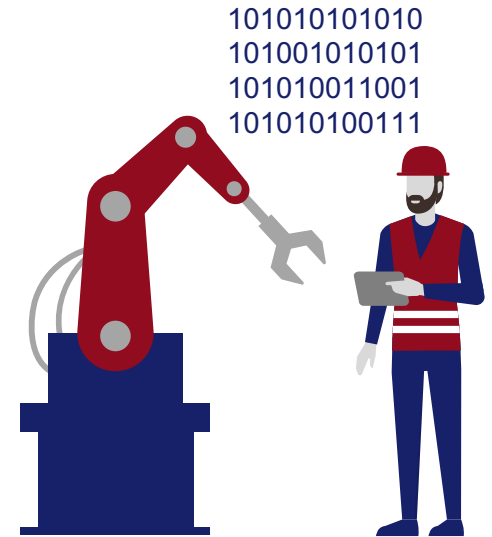
**Mass production,
assembly line and
electricity**

3.0



**Computers and
automation**

4.0



**Integrated digital
systems**

Industry 4.0

is characterized by 4 foundational technologies applied along the value chain

1. Connectivity, data, computational power

Sensors
Internet of Things
Cloud technology
Blockchain

3. Human-machine interaction

Virtual and augmented reality
Robotics and automation (collaborative robots, AGVs¹)
RPA², chatbots

2. Analytics and intelligence

Advanced analytics
Machine Learning
Artificial intelligence

4. Advanced engineering

Additive manufacturing (e.g. 3D printing)
Renewable energy
Nano-particles

- Customer orders
- Product Development
- Suppliers
- Procurement
- Production
- Outbound supply chain
- Customer service

End-to-end digital thread
seamless data flow along the value chain / product life cycle

1. Autonomous Guided Vehicles 2. Robotic Process Automation

However most companies struggle in implementing Industry 4.0 due to several key reasons holding back implementation and scale up

Business

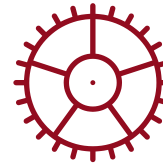


Problems to define clear **digital target roadmap** to impact and scale



Challenges **identifying and prioritizing** pilot use cases with clear business value

Technology



Siloed data and no clear suitable platform to integrate



Concerns on **Cybersecurity** risks

Organization



Lack of **digital talent** to execute roadmap



No coordination, **culture and mindsets**

MA launched a study to help factories address their competitive disadvantages through accelerating adoption of Industry 4.0 technologies

The study aims to achieve 3 key objectives:



Uplift **African manufacturing sector competitiveness**



Create **“Light-house examples”** of international best practice in Kenya that others manufacturing players can visit



Begin to build a **cadre of experts in both lean manufacturing and Industry 4.0**, who can serve as guides and mentors as the study scales up

Kenya

Wave 1

6 factories (in Nairobi)

Wave 2

7 factories (in Nairobi and Mombasa)

Wave 3

Planned

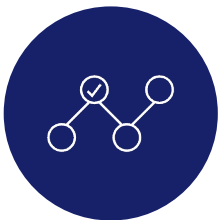
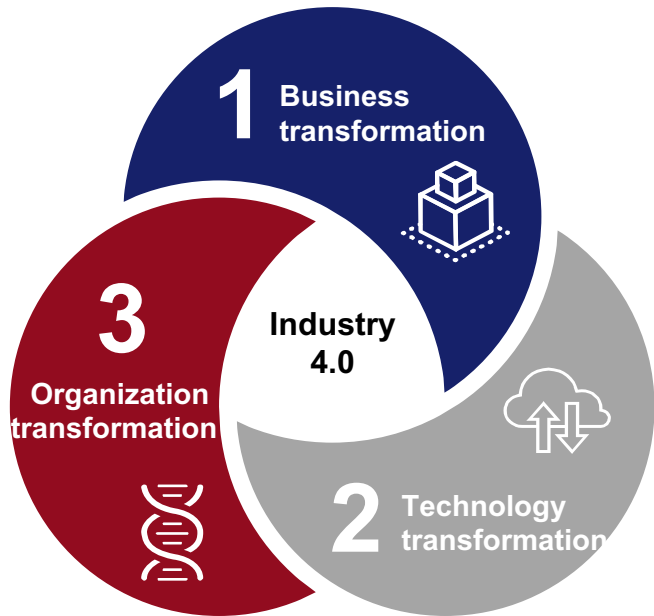
Nigeria

Wave 1

Planned

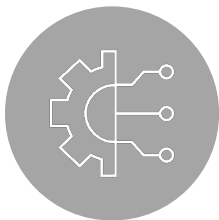
The study follows a triple transformation to enable adoption of Industry 4.0 through a phased study

Triple transformation methodology



1. Business transformation

Approach digital holistically with a **clear vision on business value** and develop a **phased roadmap**



2. Technology transformation

Form a **comprehensive and scalable** technology stack



3. Organization transformation

Drive transformation from the top, uplift capabilities and communicate success stories

Applied throughout the I4.0 transformation journey of the factories



13 factories participated so far throughout the first 2 waves, with a potential +20% EBITDA uplift identified

Overview of factory portfolio | Industry | Revenue (Bn KES) | Number of FTEs

Capwell | Agri-processing

Wheat and maize flour, rice, pulses



Kenblest | Agri-processing

Wheat flour and baked goods (2 factories)



Kim Fay | FMCG

Personal hygiene



Norda | FMCG

Packaged chips and crisps



TruFoods | FMCG

Jams, Sauces, Biscuits and canned fruits



CherryField | Apparel

Trousers and Jeans



SilAfrica | Plastic packaging

Plastic crates, containers and lids



Avocado Avenue | Agriprocessing

Crude Avocado Oil



Biodeal | Pharmaceuticals

Generic tablets, liquids and creams



Dune Packaging | Paper packaging

Paper sacks and bils,



Revital | Medical equipment

Medical devices and equipment



Millyglass | Packaging

Glass packaging



Thika/Tatu city

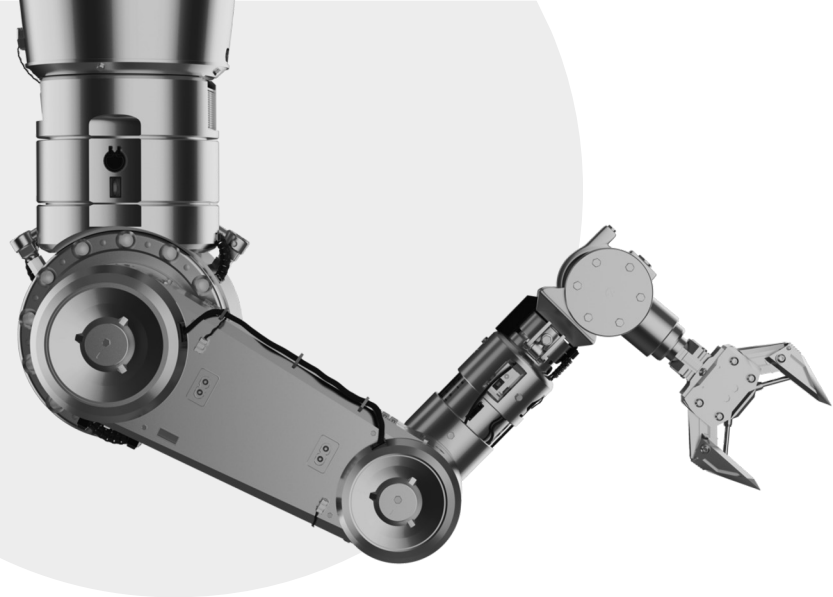
Nairobi

Mombasa/Kilifi



Manufacturing Africa

Note: All Revenue figures are as per latest reported fiscal cycle



5 Key takeaways from the study



High demand for the study, all of wave 2 factories were referred by wave 1 CEOs



Capability building is the main driver for implementation; thus factories undergo a series of capability building sessions



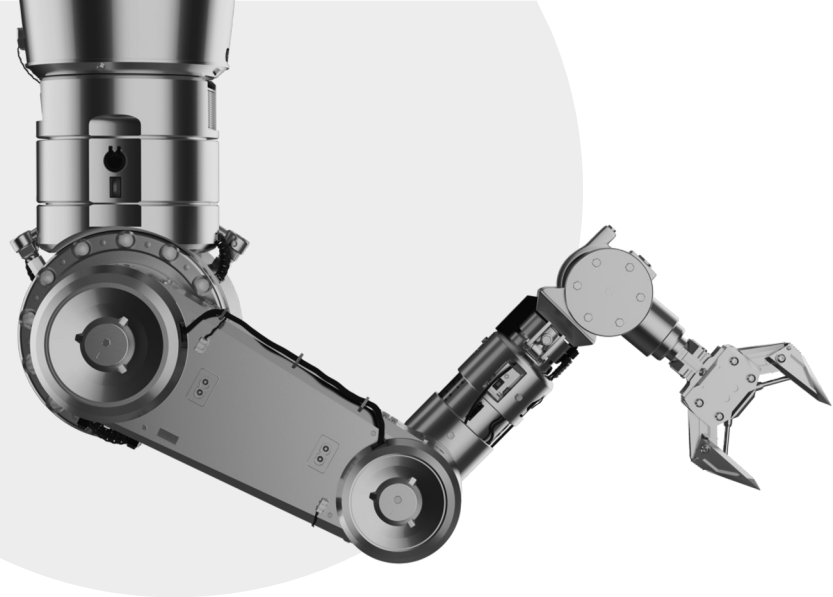
Hands-on experience with I4.0 use cases significantly uplift adoption, +10 I4.0 POCs has been deployed across the factories to enable broader buy in from the CEOs



+80% of the impact identified across the factories can be captured with **minimal to no investment**



Talent is the key driver to enable timely and successful implementation of Industry 4.0



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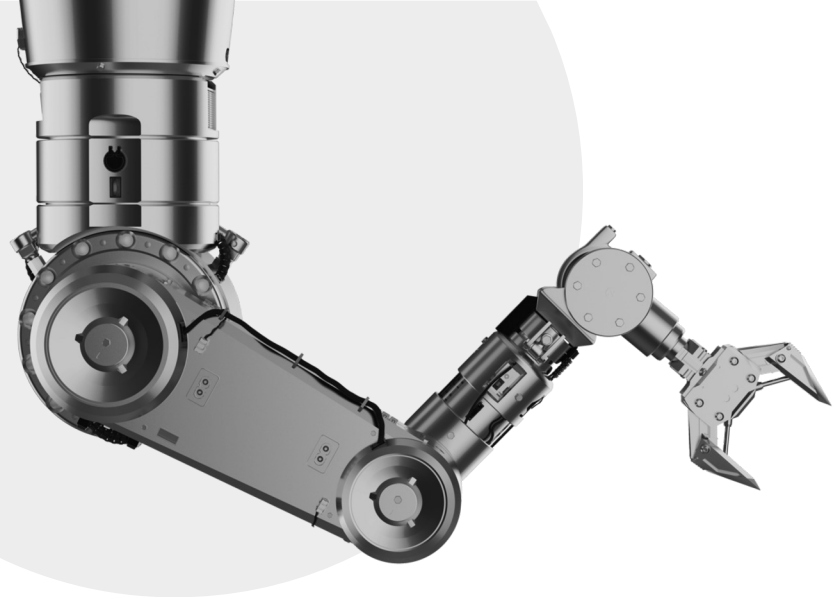
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Companies are eager to join and benefit from the study, an active Industry 4.0 cohort is being formed



	Wave 1	Wave 2	Wave 3	Nigeria
Outreach and companies sourcing	MA Network Direct LinkedIn outreach to companies' CEOs	All of the factories were solely sourced via CEOs recommendations and word of mouth	We have a backlog of ~10 interested factories	

 **All participants undergo a holistic selection criteria to ensure fitment and maximize benefit from the study**



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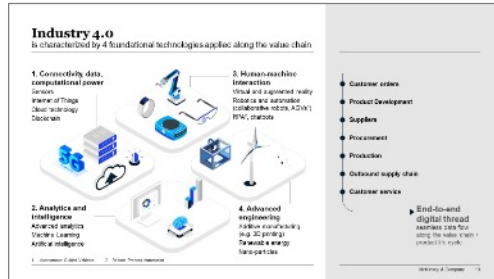
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2. We conduct awareness bootcamp to reinforce I4.0 awareness and help design initiatives

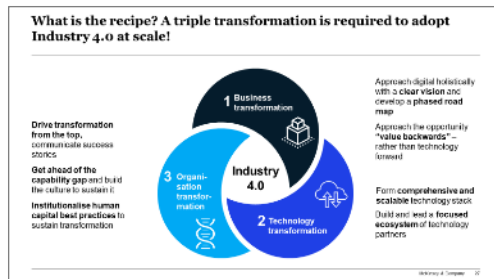
Bootcamps are scheduled during preparation phase virtually with the support of our global digital capability network

interactive bootcamp before wave start – Deep dive into selected industry 4.0 topics...

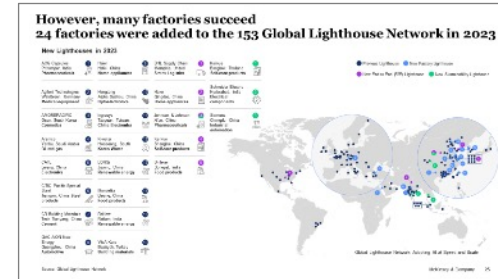
What is I4.0?



Our BOT (Business, Organization, Technology) approach



Impact achieved by successful transformation



... and showcase live digital solutions and problem solve on real-life problems

Hyper Personalized Line

- Flexible Automation
- Condition & Predictive maintenance
- Gen AI maintenance use case



Supply Chain Control Tower

- Demand deviation shock
- Supply delay shock



EV battery testing and disassembly

- AI Quality Check computer vision
- Automated pack disassembly
- AR DSOP
- AGV
- Energy efficiency management
- Digital SOP



2. In addition to in-person trainings targeting pain points faced by the factories

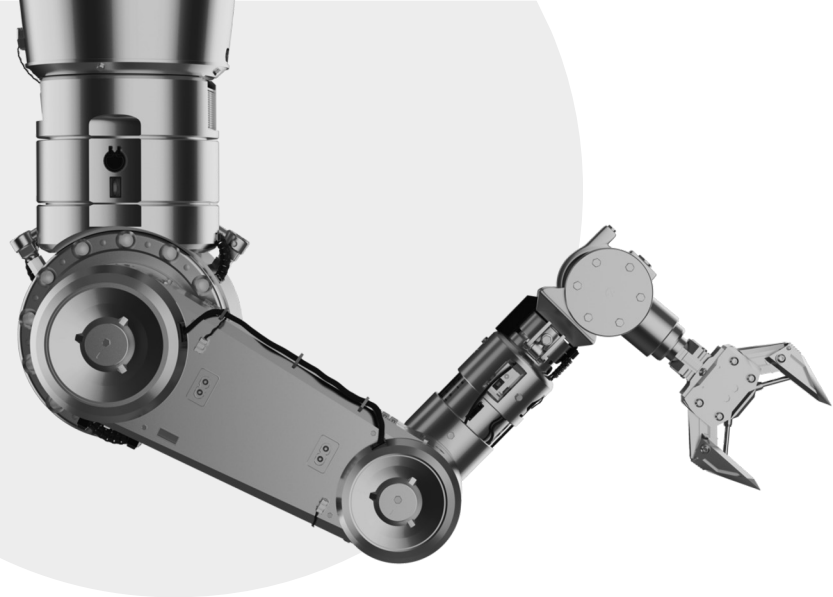
Example: Data best practices workshop with the cohort



What are some feasible approaches to transform your reporting mechanisms?

Theme	Activity
1 Restructure your data into a more analysis friendly form (while maintaining easier user input)	Excel exercise
2 Digitize your data collection method	Tulip exercise
3 Automate certain data collection	IoT exercise
4 Visualize your data	Tableau exercise
5 Review your IT/OT architecture	Presentation
6 Factory example (Avocado Avenue)	Live demo

10



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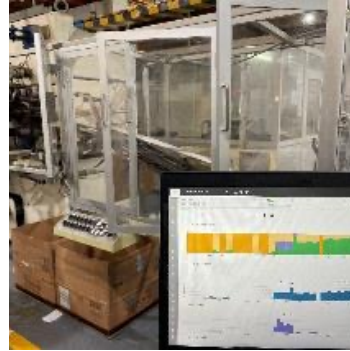
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3. Example. Deployment of IoT kits to enable real-time connectivity to factory machines...

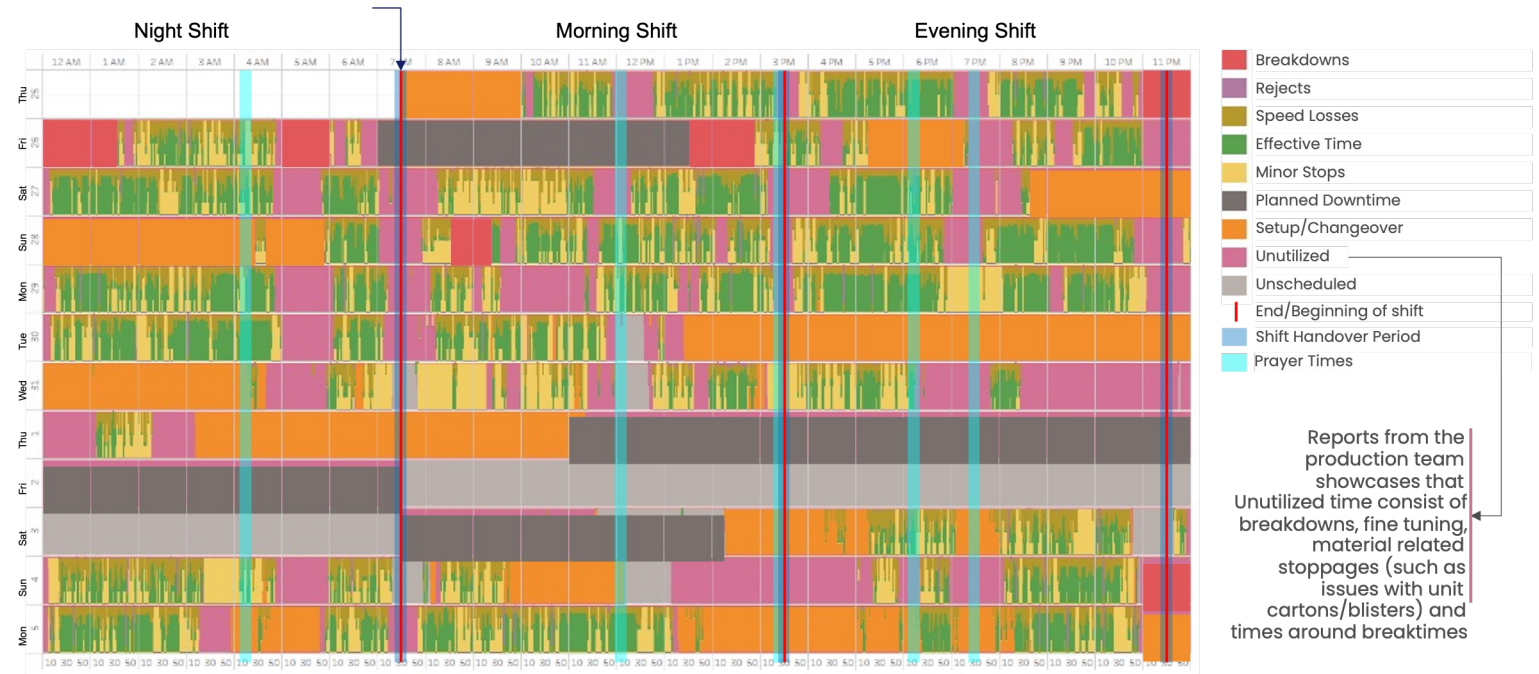
IOT based machine connectivity solutions to enable:



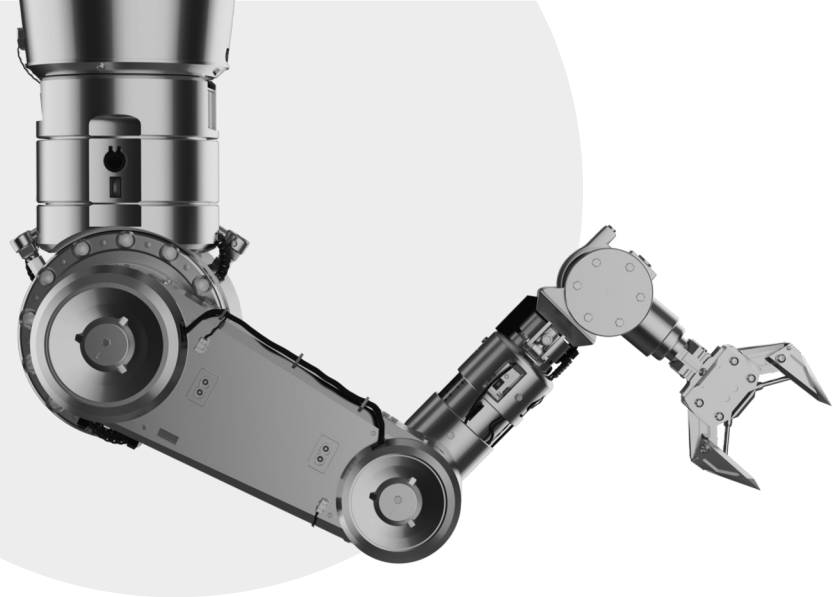
- Recording of machine parameters
- Accurate OEE¹ calculations and minute-based recording machine stoppages
- Live machine performance dashboard with embedded condition-based alerting



And generate real-time insights into day-day challenges faced by the production



1. Overall equipment effectiveness



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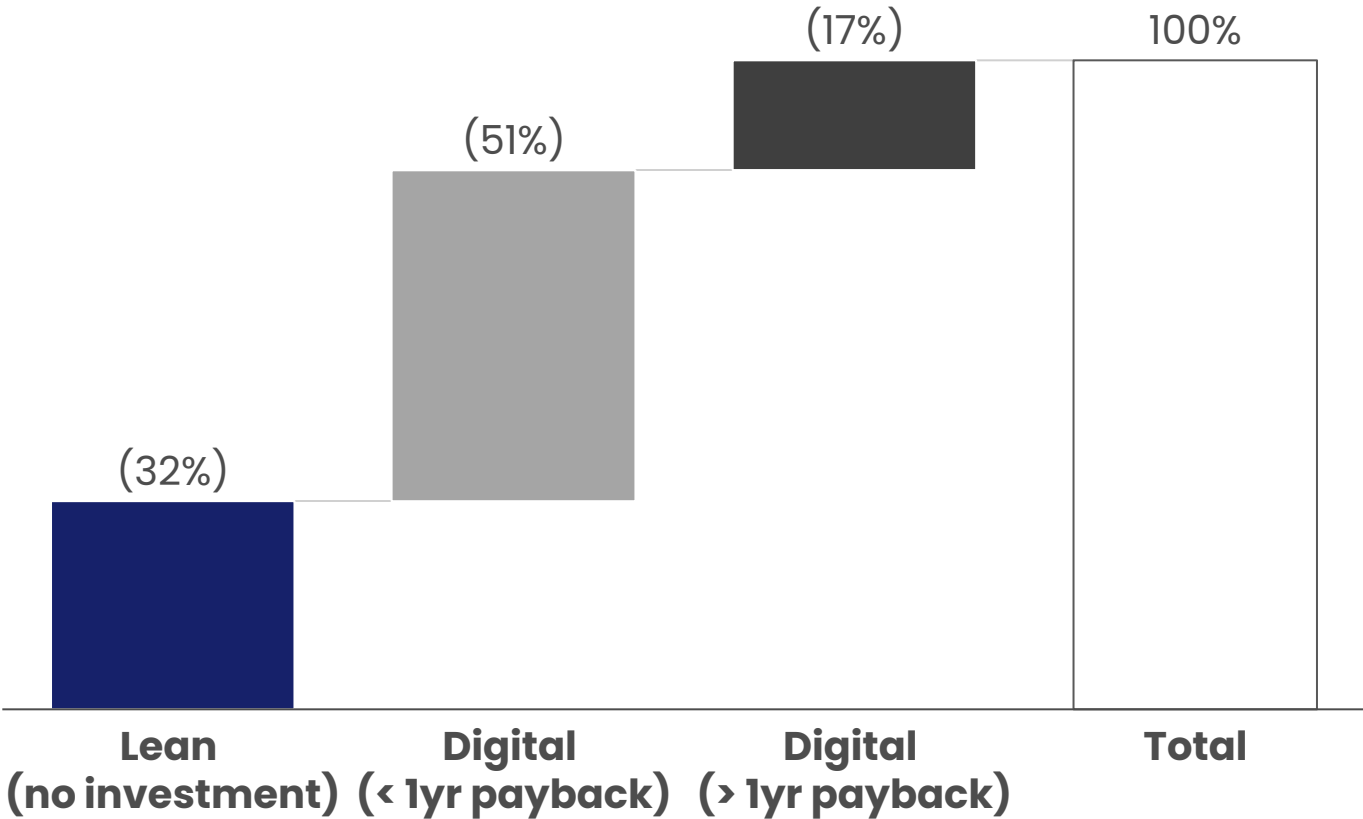
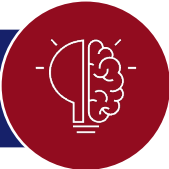
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4. 1/3 of the impact can be captured by lean initiatives with no capex, with most of the remaining impact coming from digital initiatives with minimal capex

Design initiatives impact, % of overall impact



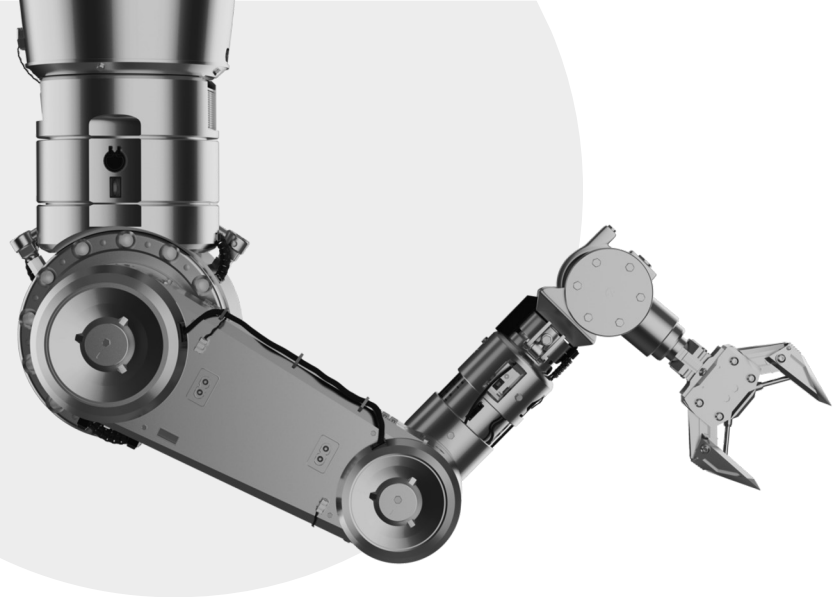
Lean initiatives account for 32% of overall impact, enabling factories to capture quick wins and further finance other initiatives



Digital initiatives with minimal investment account for 51% of impact driven from connectivity, digital SOPs, and root cause analysis digitization and shopfloor dashboards



High capex investments account for the remaining 17% of impact mainly driven by enabling production flexibility, digitizing planning tools and automation of production processes and quality inspection



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5. Talent enablement is the key driver to Industry 4.0 implementation across the Kenyan manufacturing sector

Target support in the factory by local experts

- Specialized integrators/ consultants
- Hands-on problem- solving & troubleshooting

Reliable technology partners

- Strong vendor partnerships
- Trusted solutions & ongoing support

Capability building in the factories

- In house training, upskilling problems
- Digital tools for operators & supervisors

Cohort of Industry 4.0 enables factories

- Sharing knowledge & best practices
- Scale and sustain momentum locally

