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Siemens Digital Industries South Africa

Dawn of Digitalization and its impact in Africa

Manufacturing & Infrastructure

Manufacturing & Infrastructure

Digitalization and Industry 4.0 ideal for optimizing production costs and enhancing global competitiveness

- Focus on manufacturing to boost **economic prospects** and **create employment**
- South Africa: **Local content** in automobile production to be increased from **39% to 60% by 2035**
- Siemens technology has supported **~57% of SA local car production** in 2018
- **US$ 459 million annual investment** by South African businesses to prepare for impact of 4th Industrial Revolution

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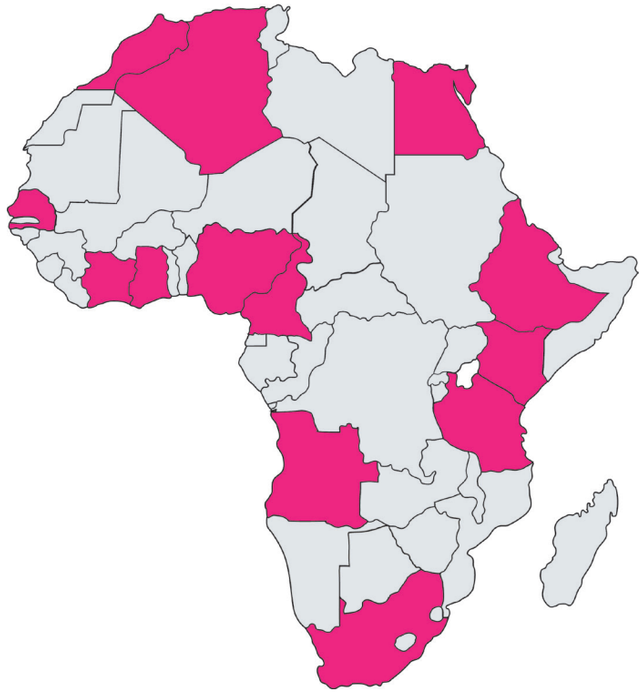
Source: Frost & Sullivan

Mega Trends: Impacting the manufacturing sector in Africa

- Increasing population and rising percentage of urbanisation across African economies will have a significant impact on demand for manufactured goods and the need for creating employment opportunities across manufacturing segments.
- Growing GDP per capita is expected to boost local demand for manufactured goods and while also providing the opportunity to create an export driven manufacturing setup. Local demand alone is however not expected to justify investment in the sector.
- FDI influx in Ethiopia and Ghana has witnessed a positive development owing to government initiatives and policies that are being implemented with regards to improvement in the manufacturing sector, infrastructure etc. Private investment in manufacturing is expected to increase with these initiatives.



Stagnating growth in countries like South Africa impacting disposable income levels, hampering sectors like the automotive industry where new investment in production expansion is constrained.

- Growing imports especially from Chinese and other Asian countries. This has a direct impact on foreign exchange and employment opportunities created in the manufacturing sector. There is a need for reversal of the trend and necessity to increase exports & value add from Africa.
- Reducing local demand and highly competitive global prices are challenging for local African industries. Higher operational costs of production in most African countries when compared to global standards.
- African countries are rich in mineral resources which are exported without much value addition and as such have a lower market value. The finished goods are however imported at a much higher price. Countries are losing out on valuable foreign exchange. Hence, the focus is to develop industries and supply chains that can add value to these raw materials and contribute in a greater way to the local economy.

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Source: Frost & Sullivan

South Africa: Manufacturing sector overview

Prominent Manufacturing Sub – Sectors, South Africa, 2018

01 **Mining, Metals & Cement**
02 **Food & Beverage**
03 **Automobile Manufacturing**

Manufacturing Sector Challenges, South Africa, 2018

Issues pertaining to stability of electricity supply and rising costs of electricity/energy has eroded manufacturing margins that South African industries enjoyed in the past

Under utilised capacity, lower productivity levels and labour unrest have negatively impacted margins and net operating surplus levels

Development of local supply chains and content are not exactly aligned with the requirements of the country's manufacturing industry. This would also entail technology modifications that suit local operating environments and skills available.

Availability of proper infrastructure is a key impediment to the manufacturing sector in the country. Logistics and inefficient modes of transportation not only add to final product cost but also incur additional time in reaching the final destination.

Manufacturing Sector Initiatives, South Africa, 2018

Increasing automobile production to 1% of the total global production from the current 0.68%. Local content utilisation also to be increased from 39% to 60% by 2035.	Investment of USD 459 million annually by South Africa businesses up until 2021 to prepare for the impact of the fourth industrial revolution.
Manufacturing Competitive Enhancement Programme (MCEP) to improve competitiveness of existing manufacturing facilities.	Mineral beneficiation (PGM) for fuel cell industry development. Growing market share of domestic mining equipment manufacturers. Mandela Mining Precinct focusing on mining efficiencies, mining 4.0, modernisation etc.

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Source: Frost & Sullivan

Automation, Digitalization and Industry 4.0. The ideal platforms for addressing concerns of the African manufacturing sector for achieving optimal production costs and enhancing competitiveness in the global/ export markets. However, implementation has its challenges

Key Imperatives	Automation Implications
Operational Efficiency Plan, manage and operate economically	Managing supply chains, resource utilisation and production processes efficiently; minimizing delays and production related losses.
Business Sustainability Growth amidst challenging business environment	Leapfrog technology adoption to enhance quality and competitiveness in global export markets.
Asset Performance and Management Connected assets	Data analytics, predictive maintenance and reduced production down times.

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Source: Frost & Sullivan

Outlook: The African manufacturing sector is expected to witness a gradual transformation with cost and skill implications of technology adoption emerging as key challenges for the sector

Siemens Digital Twin:
The digital twin in the automotive industry is the precise virtual model of a vehicle or a production plant. It displays their development throughout the entire lifecycle and allows operators to predict behaviour, optimizing performance, and implement insights from previous design and production experiences. Siemens offers the digital twin of product, production and performance that helps reduce the number of prototypes, predict performance of production and products through a combination of domain expertise and optimized tools.

In South Africa:
Siemens technology automates, drives and intelligently controls assembly lines, paint shops and body shops. Siemens also plays in integral role in the manufacturing process of the upstream automotive segment with industrial control technology playing a role in the automotive component and the tyre manufacturing industry.

Siemens Future Focus:
Siemens is committed to working together with its customers to ensure that their production facilities run at optimal efficiency. Siemens digitalization solutions make it easier for manufacturing entities to adapt quickly to new market situations and evolving technology while ensuring greater flexibility in meeting customer specific requirements.

Siemens Digital Twin – Electric City Car

Uniti, Sweden used Siemens engineering to develop their electric city car. Employment of the digital twin optimized development of the new car, allowing simulation and optimization of design in a complete virtual environment. Simcenter and Tecnomatix platforms ensured efficient production planning.

Comprehensive Product Portfolio

Siemens offers a comprehensive portfolio of products, solutions, systems and services that optimizes the entire product and production lifecycle of Automotive companies – from efficient product design to flexible production and maintenance of the plant and supporting some of the largest automotive manufacturers in South Africa.

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Source: Siemens / Frost & Sullivan

An understanding of the impact of digitalization & advanced manufacturing on processes exists. Steps are being taken by governments and industry associations for their adoption to increase competitiveness in local and global markets

Appetite for Technology Adoption / Digital Transformation 2018

Manufacturing Sub-Sector	South Africa	Kenya	Ethiopia	Ghana
Automobile Manufacturing & Assembly	Mature	Developing	Early	Developing
Food & Beverage	Developing	Developing	Developing	Early
Mining, Metals & Cement	Developing	Early	Early	Developing
Pharmaceutical	Developing	Early	Early	Early
Leather, Textile & Light Manufacturing	Early	Early	Early	Early

Early Developing Mature

Contribution of the manufacturing sector has been declining across key economies like SA and Kenya.

South Africa and Kenya are expected to be at the forefront in adopting digital platforms for manufacturing.

ROI is a key metric for determining investment in digital platforms across manufacturing sector.

"The automobile sector has a greater appetite for Digitalization and Industry 4.0 platforms. However, new investments in the sector will be gradual and governed by market demand. This will invariably impact the demand for advanced automation and digital solutions in the short to medium term."

-NAAMSA

"Manufacturing conglomerates have a preference for global OEMs which hampers participation of local players. Increased local OEM participation would increase demand and procurement of automation & digital products and solutions from regional partners and solution providers."

- Local Automotive Assembly Line Developer

"Technology and vendor preference for local OEMs is defined by product cost, service network, technical expertise & capabilities, availability of product/ stock
and past experience of the OEM with the brand."

- Global Mining Equipment OEM

Source: Frost & Sullivan