



POLICY BRIEF

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Introducing a Manufacturing Health Index (SA-MHI) to Support the Growth and Development of the Manufacturing Sector in South Africa

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Introduction

The South African manufacturing sector has experienced substantial decline over the past decade, with this evident in respect of gross value added, gross fixed capital formation, employment levels, and exporting levels. This decline has led to an imbalance in the national economy, with consumption driving economic growth and production lagging far behind. A range of factors are contributing to this downturn in South Africa's manufacturing capacities and capabilities, with different stakeholders and business executives often holding diverse opinions and ideological positions on the underlying reasons. The complexity of interrelated factors affecting the manufacturing sector at the macro-, meso- and micro-levels further complicates the understanding of its trajectory. Macro-level factors include global and national policy shifts, currency fluctuations, import tariffs, inflation rates, manufacturing incentives, and

labour regulations. Meso-level factors encompass aspects outside manufacturing organisations, such as the quality of industrial estates, transport infrastructure, digital connectivity, and living environments for employees. Micro-level factors pertain to the direct functioning of manufacturing operations, including energy and water supply, management, technical staff and worker quality, capital availability, and labour relations.

The lack of a comprehensive, accurate and up-to-date view on the state of the domestic manufacturing sector contributes to the vested positions being held. While existing indices like the Absa Manufacturing Purchasing Managers' Index and Statistics South Africa's Manufacturing Production and Sales report provide some information, they fall short in correlating macro-, meso- and micro-factors with changes in manufacturing activity.

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To address this issue and gain a clearer understanding of the factors driving the manufacturing sector's performance, the establishment of a quarterly based Manufacturing Health Index (MHI) for South Africa is proposed. The MHI would aim to provide objective evidence of the sector's health and performance, thus helping identify crucial factors affecting its growth. This briefing note outlines the objectives, outputs, methodologies and measurements that would underpin the introduction of an MHI. The proposed MHI would offer an opportunity to objectively analyse the sector's performance and identify crucial factors for its growth. With the right support and commitment, this index could play a pivotal role in steering the manufacturing sector back to a path of sustainable growth, thereby contributing to the overall economic prosperity of South Africa.

SA-MHI objectives

The MHI would generate four major benefits for South African manufacturing stakeholders:

1. The MHI would accurately measure the most recent quarterly performance and operational satisfaction levels of manufacturing executives in the South African manufacturing sector.
2. The MHI would accurately project the next quarterly South African manufacturing sector performance. This quarterly lead projection would evolve using an artificial intelligence algorithm that measures the accuracy of individual firm projections by pair-matching their historical, most recent quarter and their projected quarterly results. AI would moderate positive and negative perceptions based on the quarterly relationships between projections and actual performance, thereby improving its robustness.
3. The MHI's quarterly assessment and projection of performance will be sufficiently granular to identify the specific constraints and/or enablers of manufacturing organisation confidence and the underlying macro-, meso- and micro-factors shaping stronger and/or weaker performance within the South African manufacturing sector. This granularity will extend to manufacturing sub-sectors and specific geographies.
4. The collation of actual and projected quarterly performance data will provide a solid foundation for the completion of a comprehensive annual South African manufacturing sector health analysis that will comprehensively review the state of the South African manufacturing sector, and the key reasons for performance trends.

SA-MHI methodology and outputs

The proposed methodology to be used for the South African MHI would entail the creation of an online perception-based survey platform for a 30-minute quarterly survey (maximum length) targeting the chief executive officers (CEOs), managing directors (MDs) and/or general managers (GMs) of manufacturing operations. The survey would be administered to 300 South African-based manufacturing firms on a quarterly basis. The implementation of the methodology should result in four key outputs:

1. A comprehensive Quarterly South African MHI Report and associated Slide Deck analysing the South African manufacturing sector's health for the past quarter and projections for the next quarter.
2. A detailed annual report and associated Slide Deck reviewing performance for the past year and projections for the next year.
3. Quarterly and annual press statements detailing key findings, thereby ensuring that accurate and objective information is made available for public consumption and debate.
4. Quarterly and annual presentations of the MHI's findings, with this taking place

nationally and per major location and sector.

These outputs should have a positive effect on key stakeholder discussions relating to the performance of the manufacturing sector and the implementation of appropriate remedies and interventions; it will also position the MHI as the authoritative voice monitoring the development of the South African manufacturing sector. This should encourage firm participation, thereby securing sustainable participation in the quarterly and annual survey process.

Key SA-MHI measurements

The quarterly MHI should be structured to capture a set of lag indicators from each surveyed firm. Potential lag indicators are depicted in Table 1. As highlighted, the questions are intended to gain an understanding of the firm-level performance in the preceding quarter in respect of sales (to export and domestic customers); purchases of local and imported materials and components; salaries and wages; utility costs; capacity utilisation; productivity; employment; and fixed asset values.

Table 1: Potential key performance indicators to be captured quarterly in the MHI

Indicators	Rationale for inclusion
a. Export sales	Measurement of international competitiveness; international market health
b. Domestic market sales	Measurement of domestic competitiveness; domestic market health
c. Total sales	Overall company competitiveness; market health; company growth indicator
d. Value of local materials/ component purchases	The capacity of upstream suppliers; competitiveness of upstream domestic supply
e. Value of imports of materials/ component purchases	Import competition; dependence on import purchases
f. Salaries	Cost trends; inflationary pressures
g. Wages	Cost trends; inflationary pressures
h. Utility costs (energy, water)	Cost trends; inflationary pressures
i. Capacity utilisation	Capital utilisation; overhead recovery
j. Productivity (unit output per labour hour)	Competitiveness (versus cost movements)
k. Operating profit	Financial performance/sustainability
l. Employment	Employment contribution
m. Fixed assets	The health of capital base; productive capacity

For each key performance indicator, the MHI will capture a range of performance – from major to minor growth, to no change, and minor to strong decline – using a five-point measurement system, as depicted in Table 2. As indicated, the MHI will measure quarterly performance quite simply, with respondents indicating their organisation’s performance regarding strong or moderate growth, no change, or moderate to strong decline.

Table 2: Potential scoring system for quarterly MHI

Quarterly performance	Score
Growth of > 5%	+2
Growth of < 5%	+1
Essentially no change	0
Decline of > 5%	-1
Decline of < 5%	-2

To complement the quarterly lag indicators that are captured, the MHI should also

measure firm-level satisfaction ratings relating to the operating environment in which the firms find themselves. The quarterly survey will therefore interrogate the extent to which firms are satisfied with various internal and external performance areas, where 0% equals complete dissatisfaction, 50% a neutral perspective, and 100% complete satisfaction. Firms will also be asked to provide the primary reason for either a very positive or very negative satisfaction level (above 75% or below 25%).

Critically, and uniquely, the MHI will use an AI algorithm to understand the relationships between actual quarterly performance (lagging performance) and performance satisfaction levels, and the accuracy of lead performance projections by individual firm responses. Where firms are consistently too conservative in their projections of future quarterly performance (where quarterly lagging performance is consistently superior to quarterly projected performance), or too optimistic (quarterly lagging performance is more negative than quarterly projected performance), the use of AI will enable the MHI to project South African quarterly manufacturing performance more accurately. This will enable a corrected quarterly projection of South African manufacturing performance that incorporates potential biases in firm-level forecasts and more robustly links actual performance to areas of satisfaction or dissatisfaction, as identified by the firms.

To enrich the quarterly MHI, and to provide the MHI with actual firm-level data to strengthen the quarterly measurement process, a more detailed annual survey will need to be administered via the MHI online platform. The annual survey will capture 12 actual key performance indicators that align with the quarterly survey questions. The 12 KPIs relate to:

1. Total sales (local, African, distant exports)
2. Total material/component purchases (local, African, distant exports)

3. Total other purchases (local, African, distant exports)
4. Total capital employed in the business
5. Total stock holding at year end (raw materials, WIP, finished goods)
6. Total employment
7. Total remuneration bill (salaries, wages)
8. Total capital investment
9. Total R&D spend
10. Total training spend
11. BBBEE score
12. Operating profit

The KPIs collected annually will serve two purposes. First, combined with the four quarterly MHI surveys of the year in review, they will provide a comprehensive annual status quo perspective on actual manufacturing sector performance levels from one year to the next. Second, the annual data will build on the quarterly survey perception data and will be used to train the AI projection algorithm, thereby improving the accuracy of the projection model developed as the unique value proposition of the MHI.

Conclusion

This brief proposes the establishment of a Manufacturing Health Index (MHI) for South Africa to assess the state of the manufacturing sector on a quarterly basis. The MHI would use a firm-based, AI-moderated approach to predict the upcoming quarterly performance of the manufacturing sector, both overall and in specific subsectors and locations. It would also identify the primary reasons behind expected stronger or weaker performance, thereby laying bare the real reasons for the trajectory observed.

The MHI's singular focus on the manufacturing sector and its quarterly predictive capability should make it invaluable to key stakeholders, including investors, government at the national, provincial and local levels, firm management, sector and regional associations, and unions. The importance of evidence-based industrial policy development is clear, and the

MHI should be seen as a tool that can contribute to improving policy design and implementation through continuous learning.

Developing and maintaining the MHI through an online platform over a three-year period would require financial support, ideally from a corporate sponsor. The benefits of brand association with the MHI and the wide distribution and publicity of its findings make it a potentially attractive opportunity for corporate sponsors. Overall, the proposed MHI would represent a major step towards creating a more informed and effective industrial policy development process in South Africa, which would significantly benefit the country's manufacturing sector and, by implication, the broader economy.

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