

# Assessment of Automotive Industry Component Supplier's Competitiveness in South Africa

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**Abstract**— In today's world of global market competitiveness, the automotive industry component manufacturing sector, are not left out in the race for relevance and survival. These categories are classified as tier 1, tier 2 and tier 3 suppliers based on certain criteria, and they form part of the automotive value chain. The South African tier 2 automotive suppliers have not been competitive and the level of interventions within this industry space has been insignificant. Tier 1 suppliers currently prefer importing their supplies rather than local having to depend on local tier 2 supplies. With the fast changing trend in technology, benchmarking automotive components industry performance on national scale is crucial for global relevance and a secured future. The paper seeks to share findings on competitiveness assessment, carried out on the tier 2 automotive component suppliers in South Africa. In this study, a systematic diagnosis of the tier 2 and lower tiers which ideally, are meant to produce the large mass of components required by the local automotive manufacturers was performed and results indicate that there are gaps in areas such as employee engagement, continues improvement initiatives, research, development investment and energy efficiency. Addressing this issue will enable companies to be competitive nationally and globally.

**Keywords**— *Continuous improvement; benchmarking; competitiveness; automotive industry*

## I. INTRODUCTION

The automotive industry have gone through significant change, which cuts across all tiers involved in the manufacture of the final product. The rising demand for improved products coupled with the involvement of global players within the automotive industry value chain, both locally and internationally, have resulted in competitiveness experienced within these industry. Based on specific industry criteria, the component manufacturers form the tier1, tier 2 and tier 3 supplier bracket, and the enterprises within these tiers form part of the automotive value chain. Industrialized economies are taking the lead in supplies of components due to their competitiveness while emerging economies are rigorously initiating measures which seeks to meet up, through the introduction of change mechanisms, informed by industry performance measurements and competitiveness assessments of the various tiers. The study seeks to identify gaps which hinder competitiveness of tier 2 suppliers, with the aim of coming up with a suitable methodology, unique to the South African environment, which has the potential of improving competitiveness.

With the fast changing trend in technology, benchmarking automotive components industry performance on national scale is crucial for global relevance and a secured future. There is need for systematic diagnosis of the tier 2 and lower tiers which ideally, are meant to produce the large mass of components required by the local automotive manufacturers and Original Equipment Manufacturers (OEMs). The gap between the South African component suppliers and industrialized economies need be bridged in ensuring tier 2 suppliers are properly positioned and fit for purpose on a national and global level. Numerous interventions have thus far been channeled towards strengthening higher tier enterprises but little has been done to address the gaps in tier 2 enterprises. With these study, the key challenges and opportunities shall be identified, with the aim of implementing programs to achieve a World Class Manufacturing (WCM) sector.

Currently, the automotive assembly and component manufacturing supply sector are major contributors to the Gross Domestic Production (GDP) of South Africa with contributions estimated as R2,970 billion, which formed 7% of the overall GDP in 2012 [1]. Local based OEMs source their component largely from nearby automotive component manufacturers which produce a wide range of products and parts. However, some OEMs give preference to imported Semi Knocked-Down (SKD) components based on issues relating to competitiveness.

A joint needs assessment involving the International Labour Organization (ILO) and the United Nations Industrial Development Organization (UNIDO) was conducted and the findings from the study exposed the predominant gaps such as employee engagement, problem solving, adherence to health and safety and strategic training needs. The assessment involved enterprise survey of 13 preselected tier 2 enterprises, 3 tier 1 enterprises and 1 unqualified organization based on the selection criteria within three (3) provinces across South Africa. Majority of the company's assessed are based in Gauteng, due to the fact that the next phase of the study will be piloted in Gauteng. The instrument used for the survey was developed by drawing experience from ILO SCORE programme, UNIDO Tirisano program and key findings from past studies conducted within the automotive Industry.

## II. LITERATURE REVIEW

South Africa is not in isolation within the global automotive industry economic framework. As such, it is imperative to consider similar competitiveness assessments performed in automotive industries within and beyond the scope of the African region, by reflecting on possibilities of applying same to areas with similar peculiarities within its component manufacturing supply chain. In this context, the right questions can only be asked if they are based on validated reports guided by literature. In order to proceed with the study on competitiveness, it is necessary to clearly define the concept of competitiveness as described within context of use. It is equally important to identify issues which are key to sustaining national competitiveness, and rebalancing economic activity to support sustainable, export-led growth. In general terms, competitiveness is both a test of the economy and an opportunity to enhance economic performance through defined strategies as per need requirements that emanates from such competitiveness assessment.

Globally, the competitiveness of industries are measured by adopting relevant benchmarking instruments which applies best to the need and desired findings. According to the perception shared by the European Union [2], competitiveness is simply how countries create the best economic, social and environmental conditions for economic development. This is usually achieved by measuring policies, Institutions and Productivity. According to [3], the indicators adopted should depend on the questions being asked because there are no single perfect measures of indicators. In their opinion, the measure of competitiveness which lies within a well-defined conceptual framework entails a number of compromises and trade-offs among different criteria and objectives.

Measuring the performance of small industries can be a vigorous and delicate task due to the process of choosing the appropriate measuring matrixes. To bridge this gap, the United Nations working with other countries through the Organization for Economic Cooperation and Development (OECD) engaged on a study to address the critical gaps in sustainable manufacturing. Through the study, eighteen (18) internationally applicable performance indicators were derived.

When considering the method to adopt for a competitiveness study, a key determinant is the scope of evaluation which can either be internal, external or both. Internal measures of competitiveness generally look inward within a national or industrial landscape while external measures consider competitiveness on a global scale [4].

Based on the perspective of the Organization for Economic Co-operation and Development (OECD), competitiveness is defined as the ability of companies, industries, regions, nations or multinational regions to generate relatively high factor income and factor employment levels on a sustainable basis while remaining exposed to international competition [5]. Equally, OECD explains competitiveness as the ability of a country to produce goods and services, under free and equal market conditions, that pass the test of the international market and at the same time ensure long-term growth of living standards [2].

Defining competitiveness from another standpoint, the World Economic Forum (WEF) describes it as the set of institutions, policies, and factors that determine the level of productivity of a country. Productivity, which is a major factor in competitiveness indicates the sustainability level of prosperity that can be earned by an economy [6] and this earning, which is often determined by the Rates of Return (ROR) on investments within an economy is tied to the productivity level of the industry.

Generally, from literature, twelve (12) components are recognized as key, for the measurement of productivity. These performance measurement elements form the indicators applied for evaluating competitiveness in terms of productivity across various spheres' of industries. Nonetheless, not all the variables are applicable for all situations and assessments. The key indices mostly considered are how institutions perform, macro-economic environment, technological readiness, capacity to innovate by developing new products, improving business models and sustaining macro-economic stability, higher education & training structure, state of existing infrastructures, access to health and primary education, good market efficiency, labour market efficiency, financial market inclusion and development, market size and business sophistication.

According to [7], competitiveness indicators can be broadly classified as: (1) Financial indicators which include price indicators, exchange rate, Return on Investment, Return on Assets and other financial indices and (2) Non-financial

competitiveness indicators such as quality measures, customer satisfaction, market share, market share growth, sales volume, sales growth, productivity, inventory, lead time, preventive maintenance, performance to schedule and utilization. In a case study of the South African automotive industry, [8] claimed that the automotive sector in developing country's need to continuously upgrade performance, skills, and technology to remain relevant within the global automotive value chains.

The OECD bases its product indicators of relative competitiveness on: (1) Export unit values of manufacturers (2) Unit Labour Cost (ULC) of manufacturing each product and (3) major economic indicators. On an international competitiveness level, average export values are widely used. This is often used to study changes in competitive positions. However, according to [3], average export values pose a great risk of uncertainties and subjective claims, because every exporter is assumed to use an identical pricing policy on all markets which is not the case in true perspective because of lack of comprehensive bilateral price data. Labour cost also differ across the globe due to economic dynamics prevalent to some extent in each country. For a number of homogenous products, pricing are often determined at international levels. Therefore, it is imperative to combine both labour cost and export prices.

Nominal effective exchange rate is one of the accepted indicators seldom used due to its level of prejudice, based on the fact that effective exchange rate will not be in favor of countries with high inflation rate. The International Monetary Fund (IMF) on the other hand utilizes the MERM weight. This is however a function of the number of countries used to construct the indicator. The MERM model works by generating a weighting system reflecting competitiveness effects for all sampled countries, together with non-competitiveness factors such as substitution effects between products. In addition to the IMF weighting criteria, [3] explained that the quality of competitiveness measure depends largely on geographical coverage, the components used to construct the indicators and level of aggregation of the market and competitors.

Resource Based View Theory (RBV) is another model used for testing competitiveness. It bases its assertion on resources and capacities. Traditionally, the international competitiveness of countries was explained by international trade theories derived from the work of Adam Smith [9]. However, global economy is too complex to be scaled upon traditional theories. A correlation model was used to study the link between knowledge management capability and competitiveness [10]. These authors concluded that there is a significant relationship between knowledge management capability and industrial competitiveness

Competitiveness is not just about growth in productivity or economic performance, but subtle elements should be taken into account. These factors include working environment, compliance to local/international standards, technology, knowledge base, Research & Development (R&D), lead time, quality of life and customer satisfaction. Competitiveness as explained by the National Competitiveness Council (NCC) in Ireland is the ability of enterprises to successfully sell goods and services on international markets. Meanwhile, competitiveness is often measured in a narrower sense by comparing relative inflation rates and the falling demand for export [11]. Based on the assertion of [12], the loss of competitiveness is usually signalled by increasing import and falling exports.

In evaluating firm competitiveness, two-way fixed effect model was utilized for estimation of a firm's growth [13]. In explaining the correlation, it captured the variables that determine growth level as been a function of technology, Research and Development (R&D) expenditure from sales revenue, foreign equity participation and import of capital goods. According to [14], a related study of Korean and Malaysian automotive supplier industries reveals that automotive component suppliers of necessity need to operate in global value chains to remain competitive. Currently, Korean and Malaysian automotive manufacturers, competitiveness depends largely on their alliance with foreign automobile suppliers, modularization, and national automotive policies and institutions.

In a similar competitiveness study on the Indian auto component industry, five hypothesis were made and the study was structured to validate the same. The hypothesis include (1) firms with higher R&D intensity are more likely to win an award (2) firms with higher export intensity are more likely to win awards (3) Tier 1 firms are more likely to win awards than tier 2 firms (4) Award winning firms are likely to enjoy higher sales volume than non-award winning counterparts (5) Firm profitability in the Indian auto component industry is determined by the group, tier and the joint venture arrangements with multinational companies [15].

The development of Total Quality manufacturing (TQM) efforts, Quality Control Circles (QCCs), Cross Functional Teams (CFTs) and Supervisory Improvement Teams (SITs) is known to contribute to firm's operations improvement significantly.

The impact Foreign Direct Investment (FDI) have in the globalization process of industries cannot be overemphasized. International financial integration and access to financial injection from sources beyond the borders, enables improved economic performance and inclusion of industries in the global space. Competitiveness play a major role in FDI inflows. There are evidence to show that innovative environment accelerates investment decisions by promoting competition among investors.

An index of international financial competitiveness drawn from a panel of five advanced economies between 1980 to 2006 shows that price competitiveness, stable inflation rates and registered patents have a positive impact on the index [16].

Several parameters have been identified as indicators for measuring competitiveness of firm. However, internal competitiveness measurement methods greatly differ from external competitiveness measuring indicators. A disaggregated statistical approach commonly used for examining external competitiveness is the Unit Labour Cost (ULC) approach. Relative ULC as proposed at the industry level in a given sector and country is constructed simply by the industry's ULC relative to the sectorial average across countries. A second measure is derived from regressing the relative ULC on various explanatory variables such as the level of GDP per capita, the lagged unemployment rate, and the size of the sector in the country's total exports. The predicted value can be interpreted as a norm for relative ULC, and the deviation from the norm, called regression's residual, captures competitiveness. These measures perform well in explaining export growth of an industry in a country. It further tells if the labour wages are even and fair relative to national and global industry standard. According to [17][18], competitiveness is assumed to be synonymous with a firm's long-run profit performance and its ability to compensate its employees and provide superior returns to its owners.

According to [18], the ability of a manufacturing system to respond to customer demand in a timely fashion is widely accepted as a source of competitive advantage. The lead time is a critical factor that determines the competitiveness of every firm. "There is widespread acceptance of time as source of competitive advantage, and seminal contributions on time-based competition [19][20] have however placed the need to provide the right product, at the right quality and price within minimal lead-times high on the manufacturing strategy agenda. Responsiveness was actually perceived as a potential inhibitor to build-to-order at vehicle manufacturer level.

A reduction in raw material consumption per unit product has a positive impact on labour productivity. This concept relate directly to waste management which forms part of the competitiveness indicators. Several studies on 7 wastes clearly show how closely related waste management and resource utilization impact productivity of companies.

The role of firm size in fostering business performance as measured by productivity or export performance is well established in literature [21]. Larger firms are generally more efficient and more likely to compete favorably in global markets, through an expansion of their international operations. [22] in their comparative study of European firms, established that firm size/firm-level characteristics are of paramount importance, relative to overall country conditions, in explaining competitiveness. This suggests the vital role of the size distributions in determining aggregate performance [23][24]. In this study the focus is on the assessing tier 2 and lower automotive components suppliers' competitiveness, understanding their current status will ensure that appropriate support is given to them with the purpose of improving their competitiveness.

### III. METHODOLOGY

The developed questionnaire comprised a total of 73 questions, of which 54 questions were close ended and 19 questions were open ended. An observation sheet, using Likert Scale, was also prepared to aid the interpretation of the questionnaire which had 21 observation themes with approximately 100 observation pointers [25]. It was designed to acquire opinions on issues relating to productivity, labour relations, communication, cleaner production, Safety Health and Environment and quality [25].

In the inception phase of the study, ten (10) tier 2 automotive suppliers were projected to be visited. From the study design, the enterprises that form the sample were expected to be from Gauteng, Eastern Cape and Kwazulu-Natal provinces of South Africa. It was necessary to have this diversity due to environmental factors and challenges unique to each province.

Selection of the companies was done by the guideline received from Automotive Supplier Chain Competitiveness Initiative (ASCCI) which was used by ILO and UNIDO experts, to preselect enterprises to be assessed. Pilot needs assessments were undertaken in 4 companies in Gauteng jointly by UNIDO and ILO experts in order to test the ground, see responsiveness of firms and align UNIDO's and ILO's assessment frameworks.

Informed by the pilot study, these criteria were used for selecting the 10 tier 2 companies visited:

- 1) The company needed to have a total staff compliment of 50 to 400
- 2) The company needed to be a 100% Tier-2 or lower supplier, with at least 25% of turnover supplied to the automotive industry
- 3) The majority of the assessments should be conducted in Gauteng, with a maximum of 2 companies each being assessed in Kwa-Zulu Natal and Eastern Cape
- 4) Companies would consist of those that have had previous competitiveness improvement interventions and also those that have not
- 5) The assessment would target between 10 and 15 companies as a sample size

The assessment team used the criteria above to determine companies to be visited. Based on realities on ground while on the company visits, some slight waivers were applied to accept a few companies which were tier 2 but also supplied other industries. However, the criteria used to include them in the sample was that at least, 25% of turnover supplied to the automotive industry must be to tier 1 enterprises.

IV. RESULTS AND ANALYSIS

Table 1 presents the study coverage area within the 3 provinces. As mentioned in the methodology, not all the enterprises surveyed met the criteria set for tier 2 suppliers; therefore, our analysis in the report is based on the assessment of 13 as against 17 companies visited. Although the four companies of which their assessment was excluded from this study is not included in this study, it is important to note that key observations like: Team work, Employee ownership and lack of systematic continues improvement activities were similar with those observed in tier 2 and lower sample of the study.

TABLE I. SUMMARY OF DATA COLLECTION LOCATIONS AND RELEVANCE TO THE STUDY

S/NO	Province	Within study criteria
1	Gauteng	10
2	Kuazulu-Natal	2
3	Eastern Cape	1
	TOTAL	13

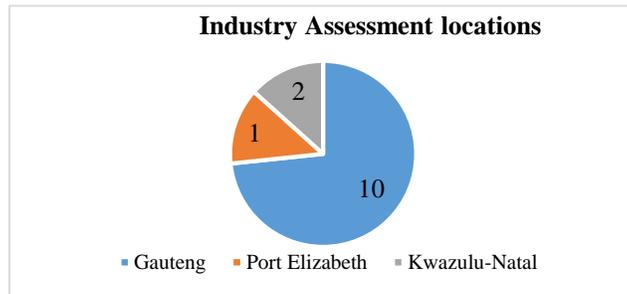


Fig .1 Industry Assessment locations

Table 1 and Figure1 indicates location in which the assessments were conducted. From this figure, majority of the companies were within Gauteng because majority of components suppliers are based within the Gauteng province.

A. Key findings

1) *Human resource development, workforce management, workplace cooperation, labour relations and compliance*

From the results, approximately 70% of the enterprises consider matriculation, as the minimum requirement for recruiting new employees while 30% base their entry level criteria on any form of formal education. For administrative and specialized positions, the qualification bar are raised, but this category of employee constitute less than 15% of the total workforce population, across the companies. On the average, employee with matric qualifications and no other value added qualification (FET college certificate, Degree) form approximately 80% of the total workforce, across the various enterprises. Due to the low literacy level in terms of education and personal competence, more semi-formal rudimentary training is required beyond the general training given to new employees during induction.

Workplace cooperation was really lacking in most enterprises, with evidence of workplace cooperation in only 41.7% of the enterprises.

In terms of feedback and suggestions from employees, 76.9% had suggestion boxes in place but these feedback/suggestion mechanism was not effective. Most of the organizations used the daily, weekly, monthly or occasional meetings to communicate internally. However, management to employee relationship was found to be really low in some of the enterprises visits with 23% of the companies visited found without any form of regular meetings with employees. Equally, no team based improvement processes were common to majority of enterprises visited. However, only 15.4% of the companies practiced team based improvement. Since very little suggestion mechanism exist in the firms assessed, employee engagement through suggestions and team based continuous improvement was grossly weak, and such gaps need to be checked.

On the issue of training, 69.2% of the enterprises engage their new intakes in basic SHE training during the induction phase. Some take the new employees through hands on training, on the job, while 7.6% of the enterprises do not take the new intakes through any form of formal training. No formal module covering personal contribution, team work, knowledge sharing and continuous improvement was recorded during the survey. Only 15.4% of the enterprises engage in continuous development of their employee through capacity development.

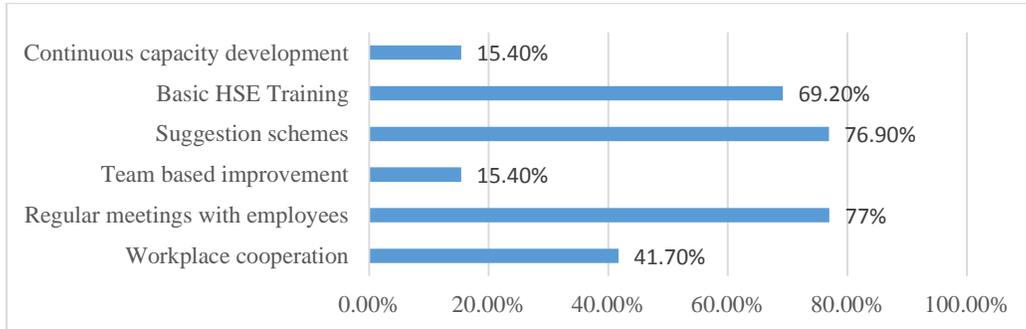


Fig 2. Findings on throughput relating to human resource management

The research deduced that 97% of the workforce, combined across the surveyed enterprises, are full-time employees. From this figure, there is need for enterprises to consciously make commitment towards the continuous improvement of their work force. Such investments that result in productivity improvement will definitely transform into value addition which ensures competitiveness. Emphasis should also be placed on cross training matrix because of the need to have well-grounded employees who can function across various sections within the industry thereby reducing redundancy challenges common within some production line.

Getting competent employees was not recorded to be a major challenge; 69.3% had no difficulty in getting skilled workforce, because most of the personnel are trained on the job, except for specialized roles. It was deduced that only 23.1% of enterprises experience difficulty in finding skilled workers while 7.6% occasionally experience difficulty in recruiting competent personnel. The skill set lacking, which was raised as a challenge across 23.1% of the companies, had to do with recruiting competent electrical technicians. From the study, it was equally inferred that getting skilled employee is not the major difficulty because most newly employed personnel are given on the job training; rather, the challenge had to do with getting dedicated, committed, competent workers, who can run with the goals, agenda, and vision of the organization. Furthermore, 46.3% of the enterprises highlighted absenteeism, as a huge problem hindering productivity.

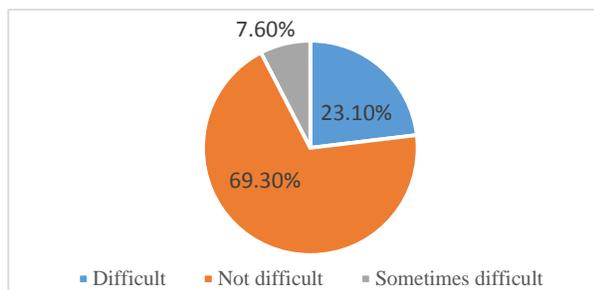


Fig 3. Difficulty in getting skilled labour

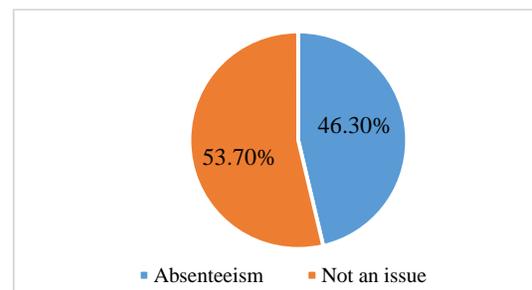


Fig 4. Level of absenteeism

Great flexibility was observed across the various enterprises in the hiring and firing processes. The level of conformance with labour laws and guidelines is equally impressive as no single one of the companies out-rightly contravened the labour/union agreement in the actual sense even though, 23.1% of the companies had labour related issues at some point or the other, but not with major consequences. Only 15.4% of the enterprises recorded major labour problems in the past, which resulted in legal actions. The major problems recorded were linked to retrenchment because of plant shut down, plant relocation and outright company sale.

In terms of labour relations, the feedback received showed 100% positive response on the relationship between the enterprises and labour unions. However, the average support received from labour union by the organizations was rated as 72.7%.

2) *Rewards/incentive system*

23.1% of the enterprises have well-structured compensation scheme in place for highly deserving workers. 7.6% of the population only compensate workers that choose to put in extra hours, while 69.3% of the total population assessed had never considered incentives (monetary or otherwise) for highly performing individual employees or work teams. 15.4% of the enterprises emphasized that monetary rewards result into other complications based on their past experiences. As such, non-monetary compensations was seen to motivate workers and yielded better results.

3) *Quality management practices, energy efficiency, Continuous process and productivity improvement*

According to the assessment, 84.6% of the enterprises do not invest in Research and Development (R&D), but only 2 companies invest in R&D. One of the companies invests 10% of its annual revenue into R&D while the other company's runs a full-fledged R&D center. From the study, this company was identified as the only sampled tier2 enterprise with an in house 3D world class tool development unit, with internationally trained engineers. Due to zero capacity in R&D, 38.5% of the tier 2 enterprises surveyed depend on information channeled to them through their suppliers, for continuous improvement. None of the tier 1 enterprises support tier 2 entities with product development activities. As such, they lag behind in terms of innovation and changing technology.

Currently, very little is understood about continuous improvement at the shop floor level in 46.2% of the enterprises surveyed. 53.8% of those utilizing continuous improvement do not have shop floor workers who have gone through process improvement and productivity optimization training.

From observation, tier 1 enterprises are not supporting tier 2 suppliers with productivity improvement activities, From observation, complex productivity tools may not be appropriate for most of the tier2 enterprises; rather, simple models that convey basic productivity concepts should be considered at the lower levels due to the wide literacy gap that exist within some of these enterprises. Although there are few companies engaging in process improvement activities , product improvement initiatives which should flow from tier 1 support is still lacking.

Poor visual aids and inadequate information on display boards was identified in 61.5% of the sample enterprises surveyed.

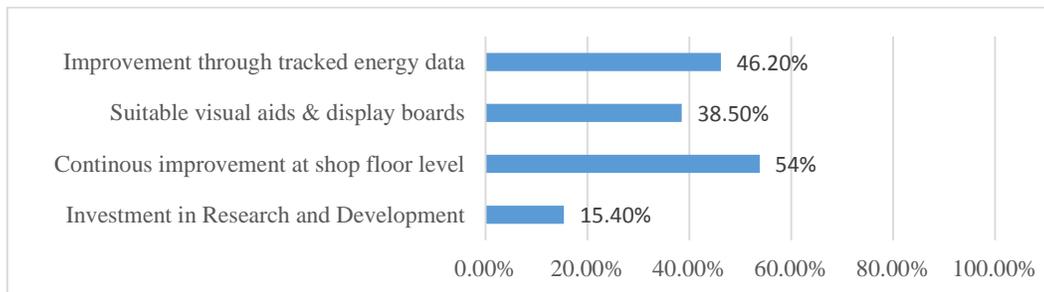


Fig 5. Quality management practices and continuous improvement

Energy use is been tracked by all the companies visited. However, only 46.2% used the data to improve energy consumptions for financial savings purposes. From evidence provided, cleaner production processes had been adopted by 76.9% of the enterprises at some time in the past, but there was little evidence to show that this is being improved upon across the production stages, except in 38.5% of the enterprises.

4) *Safety Health and environment (SHE)*

Only 15.4% of companies surveyed had wellness program in place; equally, there were no formal wellness training at scheduled intervals built into the systems of these enterprises except in one (1) of the locations. All the company's expose their workforce to basic HIV/AIDS awareness during induction but only 2 of these companies extend support to employees with obvious health challenges after induction into the organization. 41.7% of the companies did not fully conform to the use of Personal Protective Equipment's (PPE) even in hazardous conditions as discovered during the assessment.

Quite surprising is the findings in one of the enterprises, where there was obvious negligence in the use of PPE, despite having the ISO9001, 14001 and TS16969 standards. As such, conformance to this standard is highly required, and this must be communicated at all levels.

Pedestrian Walkways in factories are usually color marked and painted under ideal situation. This act as measure for segregating mobile equipment from pedestrians within the shop floor. However, this was lacking in 69.2% of the enterprises visited. Equally, Industrial safety barriers which prevent accidental collision of movement of forklifts and other moving equipment's within the shop floor environment was lacking in 30% of the shop floors where their operations require such barriers. Anti-slip walkway was equally not in place in one of the factories that deal with hazardous chemicals, stored in open tanks.

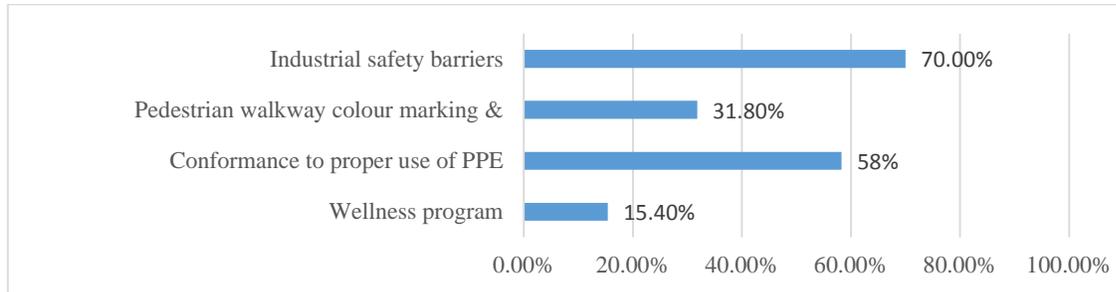


Fig 6. Conformance to industry Safety, Health and Environment (SHE) requirements

5) *Competitiveness in terms of sourcing raw materials and exports*

From the assessment, only four (4) of the enterprises are involved in direct export of their products, and the average total export from these four (4) sums up to 41.3% of total revenue by these fragment of the sample. However, four (4) other companies surveyed have some of their products sold in the international market, which it channels through tier 1 firms. In terms of raw materials, the industry gets its raw materials form both local supplies and through imports; however, most international firms prefer to source abroad due to the confidence they have in quality, price and brands.

6) *Performance Measurement*

Although high level company objectives are known by top management, there was little evidence to show that company objectives have been cascaded down to the shop floor employees. In some cases, Key Performance Indicators was recorded by supervisors and management, but, shop floor employees are unaware of these indicators. Equally, visual aids management boards were not regularly updated. There was little or no link of employee remuneration according to these performances.

V. CONCLUSION

The study on tier 2 component suppliers revealed the true state of automotive suppliers within this industry bracket, by uncovering uncaptured information and clarifying hypothetical assumptions which existed before the study. During the site visit, there were commendable practices observed in some of the enterprises wherein continuous communication of information with shop floor workers is norm throughout the day's operations, using highly legible display boards, which get updated by supervisors throughout the course of operation. Equally, there were few enterprises where use of Personal Protection Equipment's (PPE) is adhered to. Conversely, there were factories with delicate cutting machines which had no visible operations guidelines within the entire plant and many do not adhere to the use of PPEs. All the enterprises with good practices had a lot of things in common, and prime on the list is management's commitment to upholding ISO standards and OSHA act, with focus on quality management, cleaner production, performance management, good workplace cooperation, productivity and continuous improvement.

In terms of company size and management structure, 53.8% of the companies visited were initially established as single entity cottage businesses, and about half of these companies operated as family businesses, despite the company's growth over the years. As such, some of the initial culture and modus operandi still exist in the organization. In a few cases, there were no stringent management structures in place, which has been an advantage to some of those smaller companies. In such cases, workforce cooperation exist in an informal way. Another observation made was related to foundries. All the foundries assessed had clearly defined management structure, proper operations, productivity measurement using KPI's and continuous improvement models in place. One of the tier 2 companies assessed, did not have any ISO standards, despite been in operation for over 30 years. Obviously, there is need for strategic planning and budgeting in such an enterprise because the enterprise

based its reason for not acquiring it on cost. However, a quick walk through the shop floor showed non-conformance to some ISO9001/14001 standards.

From the survey, the following suggestions were highlighted by the company's regards the training needs most paramount to them. They are: Wellness program, Kaizen, 5S, 8 waste, cleaner production technology, TPM, QC/QM, Advanced Manufacturing Technology and use of IT for enhancing visual differentiation of fabric colors in the textile industry.

The frequent Industrial actions fuelled by the labour unions were presented by most enterprises, as part of the reason limiting direct foreign investment into the tier 2 automotive sector. Investors are weary of committing their funds into an unpredictable environment, because of the impact, lost time value has on their financial Returns.

Another findings highlighted by 46% of the enterprises had to do with the rising cost of electricity. The importation of raw materials cum finished components from China, India and other countries, has also been a major treat to local tier 2 component producers, because of price competitiveness.

A rising trend observed throughout the industry is the diversification from automotive component production to other product line. From statistics, 46.2% of the enterprises surveyed had diversified from automotive because of the competitiveness challenge associated with the automotive industry. If this trend is left unchecked, tier 2 manufacturers will lose out completely due to the constraints experienced within this tier of the value chain.

Two (2) of the companies that were not willing to take us on a facility walk, had a lot in common. They were international tier 2 companies with 100% foreign owned equity, and both expressed their displeasure towards local sustainability interventions. It is essential to be aware of such dynamics when selecting companies for future interventions. However, on the contrary, smaller international tier 2 enterprises with mixed share equity gave the team full audience during the assessment visits.

Open door policy should be considered because management need to have a close working relationship with their employees in order to foster trust and creativity. Visions and goals of enterprises will be effectively cascaded down, from top management to employees if there is conscious improvement in communication between both levels. Personal improvement programs provided by the organizations, will ultimately improve ability to read, write, identify and interpret industry symbols. Furthermore, specialized training on hazard management, response mechanism in event of emergency and the understanding of emergency/evacuation procedures are some of the key topical areas required, because 54% of the enterprises have this gaps

Finally, absence of dispensable funds earmarked for investment in emerging technologies and advanced world class manufacturing systems is a challenge to smaller tier 2 companies. As such, there should be specific local interventions which will address those high level issues to prevent more tier 2 component manufacturers from withdrawing from the automotive component supply value chain.

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