Role of Industrial and Manufacturing Engineering in the economy. A perspective from academia.

Goriwondo, William M.

The Chronicle

http://ir.nust.ac.zw/xmlui/handle/123456789/203

Downloaded from the National University of Science and Technology (NUST), Zimbabwe
Role of Industrial and Manufacturing Engineering in the economy. A perspective from academia.

Eng. William M. Goriwondo

I want to take this opportunity to answer the many questions that I have received from readers of this column. I have mentioned and referred to Industrial and Manufacturing engineering as a disciple that can provide some solutions to problems that bedevil the manufacturing sector. Yes, it is true that the Industrial and Manufacturing Engineer has a strategic role to play in the economy. Moreso to the Zimbabwean economy as it aspires for revival of the productive and manufacturing sector. It is at this time when the economy is faced with a productivity restart and high ambitions of being an economic powerhouse in the Southern African Development Community (SADC) that people need to know the roles of various stakeholders.

An engineer is a professional who studies science and engineering to develop systems that are useful to humankind. This makes life easy as developments lead to utilisation of the gifts of nature and manipulating them into useful products in the form of equipment and goods some of which offer services. The conversion process is a cumbersome process that is clouded with inefficiencies which need attention. To counter these challenges, the engineer comes in handy.

The National University of Science and Technology (NUST) trains Industrial and Manufacturing Engineers. The department of Industrial and Manufacturing engineering offers a Bachelor of Engineering degree in Industrial and Manufacturing Engineering. It also offers a Master of Engineering degree with two options. One option is Manufacturing Systems and Operations Management while the other one is Manufacturing Engineering and Operations Management.

What then is an Industrial and Manufacturing Engineer? You need to take stock of your organisation and ask yourself some questions. Do you require an engineer who is capable of improving your company’s profitability through productivity by designing, installing, operating and maintaining integrated systems of people, equipment, material, information and energy? If you answer YES to this question, then you need to employ or engage an Industrial and Manufacturing Engineer.

Their capability is brought about by the ability of the engineers to perform economic viability studies, design and use simulation models of systems as well as solving associated problems. The ability to integrate the total system is unique and acquired during their 5 year training program. After going through 5 years at NUST, one of which is Industrial training attachment in industry, the engineers will have in depth knowledge of the following areas:-

- Total Quality Management systems
- Capacity planning, facilities locations and plant layout
- Operations Management and Systems planning
- Production planning and control as a function of Production Management
• Plant Maintenance and Reliability engineering  
• Manufacturing systems and automation  
• Mathematical optimisation and Operations Research  
• Computerised management systems  
• Computer Aided Design (CAD) / Computer Aided Manufacturing (CAM)  
• Simulation and Modeling  
• Forecasting methods  
• Database designs

The areas covered are not limited to these but from the major functions of business as outlined earlier on, these make the starting point for running successful businesses.

All organizations need the services of an Industrial Engineer in one way or the other. It is however unfortunate that many such do not know their role and hence I took my time to explain in this article. Further information can be gotten but the starting point is to provoke the problems that your organisation is faced with and seek for a solution. Simply put, an Industrial Engineer is concerned with efficiency and effectiveness. This perfectly describes a business manager. However, there is need for leadership skill in attaining such effectiveness.

Developed countries have great use for these engineers in their quest for continuous improvement and this trend has been exhibited by the demand of the same in other developing countries who are utilizing them for improving efficiencies in their organisations. While they are being trained here in Zimbabwe, they are not being fully utilized and as such industry suffers from this lack of potential utilization. While some may be self starters, most remain suppressed in roles that they are not fully realizing their potential. Executives from all organizations, please utilize the potential and skills that lie in Industrial and Manufacturing Engineering.

With that I advocate the use of the engineering capacity that is in the country for the much needed economic revival. The productive sector is crying for lines of credit to recapitalize and working capital. This can only be effective if the organisations in this productive sector are operating efficiently. The major problems that characterize the Zimbabwean economy at the moment is low capacity utilisation which may be as a result of facilities planning, materials handling, information systems, production planning and control, project management, inventory planning and control as well as factory layout. These are some of the basics that Industrial and Manufacturing Engineers can tackle and provide sound solutions cost effectively.

The one major thrust that characterizes this profession is the learning of modern manufacturing principles that drive organisations towards World Class standards. This encompasses simulation and modeling, group technology, value analysis and robotics. I mention all these because a properly trained Industrial Engineer has the capacity to solve problems in these areas.
With that brief I see Industrial and Manufacturing engineering as a critical component of higher productivity. It is a vital part of every company’s future success as it provides the essential ingredients of corporate performance. It thus contributes to the revival of companies’ profitability. It is this drive that will lead to the success of the nation when all the companies in the productive sector are successful.

I hope this helps clarify why I have the capacity to write about the various aspects of productivity and the strategies that can be used to improve economic growth at national level. The trick in understanding and excelling in this endeavor is to do a self analysis to establish your strengths and weaknesses through a SWOT analysis. Develop partnerships which will help you to counter and complement weak areas. This does not mean that the Industrial and Manufacturing engineer is everything. It means that he/she has a great contribution where productivity and efficiency improvement are concerned. Testimonies of this lie with the many companies that have worked with or engaged Industrial and Manufacturing Engineers in the various positions that they can be employed.

Engineer William Msekiwa Goriwondo is a Lecturer at NUST in the Department of Industrial and Manufacturing Engineering. He is a World Class Manufacturing principles consultant at The Business Profitability Excellence Consulting (BPEC). For comments and feedback, please contact wgoriwondo@gmail.com.