

Information Technology Tools: Key to Improve the Performance of Small Manufacturing Sectors of India

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Abstract – Micro, Small and Medium Enterprises (MSMEs) sector promote industrialization of rural and backward areas and thus, helping in reducing regional imbalances and assuring more equitable distribution of national income and wealth. These also contribute enormously to the growth of nation's gross domestic production, employment, total manufacturing production and export. Adoption of Information and Communication Technology (ICT) tools, will enable an enterprise for global marketing, increased customer base and quick supplies with reduced chances of dishonest payments. Improved communication with customers will enable the enterprises to know the drawbacks, suggestions which would be helpful in improving the product design, performance and reliability. With this, business will be on computers and records are accessible to users round the clock and incurred cost will be reduced. Thus, for sustainable growth of MSMEs and to take competitive advantage, adoption of suitable ICT tools is essential.

Keywords – Information technology, Information and communication technology, Small scale industries, Small manufacturing enterprises.

I. INTRODUCTION

Worldwide, it is well established that Micro, Small and Medium Enterprises (MSMEs) play an important role in the development of national economy. They contribute significantly in nation's Gross Domestic Product (GDP), total manufacturing production, employment generation and exports [1]. These promote industrialization of rural and backward areas and helping in reducing regional imbalances and assuring more equitable distribution of national income and wealth. They also provide support service and raw materials to bigger enterprises.

Information Technology (IT) is believed to be the main driver of the economy, ever since the industrial revolution. In the context of Small and Medium Enterprises (SMEs), IT facilitates the expansion of new markets, where enterprises can compete or act as a supply chain partner in a network that has already been designed by internal conglomerates [2]. The work of earlier researcher's, for example [3]-[8], provide ample evidence to suggest that there exists vast opportunities of introducing and adopting Information Technology / Electronic Commerce (IT / EC) tools to improve the contributions made by MSMEs in the development of nation's economy. Further, [9] also advocated for the same.

Inspiring with this, a survey based research was planned to be conducted on this area. Referring the outcome of research and available literature, a software plan for in-house use of an enterprise is suggested. This suggested software can be designed and developed in a more customized manner. In the same respect, a literature review is also presented hereunder.

II. LITERATURE REVIEW

A. Defining Micro, Small and Medium Enterprises

The definition of MSMEs varies from region to region and country to country. Presently, in most of the countries, MSMEs are defined either by number of employed manpower, balance sheet total and/or annual turn-over. In India, the definition is based on the investment ceiling. The criteria for defining MSMEs, followed by many countries are presented in Table 1.

TABLE I
DEFINING MSMEs (MANUFACTURING / PRODUCTION ENTERPRISES)

Country	Micro Enterprises	Small Enterprises	Medium Enterprises
European Economy (€)	With less than 10 persons employed AND Turn-over or Balance Sheet Total of ≤ € 2 million	With 10 to 49 persons employed AND Turn-over or Balance Sheet Total of ≤ € 10 million	With 50 to 249 persons employed AND Turn-over or Balance Sheet Total of ≤ € 50 million
India (₹)	Investment ceiling for Plant, Machinery or Equipments upto INR 25 Lakhs	Investment ceiling for Plant, Machinery or Equipments above INR 25 Lakhs and upto INR 500 Lakhs	Investment ceiling for Plant, Machinery or Equipments above INR 500 Lakhs and upto INR 1000 Lakhs
Japan (Yen)	Capital less than 300 Million yen (US\$ 2.70 million) with number of employee less than 300		
Malaysia	Sales turnover of less than	Sales turnover between	Sales turnover between RM10

Country	Micro Enterprises	Small Enterprises	Medium Enterprises
(RM)	RM250,000 OR full time employees less than 5	RM250,000 and less than RM10 million OR full time employees between 5 and 50	million and RM25 million OR full time employees between 51 and 150
South Korea (Won)	Less than 10 employees	Less than 50 employees	Less than 300 employees and Capital (and sales) of 8 billion won or less
UK (£)	Turnover of not more than £6.5 million, a balance sheet total of not more than £3.26 million and not more than 50 employees While, according to Department of Trade and Industry (UK), micro enterprises has employees less than 10		turnover of not more than £25.9 million, a balance sheet total of not more than £12.9 million and not more than 250 employees
US (\$)	Employees less than 10, annual turnover of less than \$3 million and balance sheet total of less than \$3 million	Employees from 10 to 49, annual turnover of less than \$13 million and balance sheet total of less than \$13 million	Employees from 50 to 249, annual turnover of less than \$67 million and balance sheet total of less than \$67 million
1 € = \$1.282250; 1 US \$ = INR 54.279999; 1 Yen = \$0.010614 ; 1 RM = \$0.323394; 1 Won = \$ 0.000899; 1 £ = \$1.520550; References : [1], [10]-[13]			

B. Contribution of MSMEs in the Economy

In the light of available literature, it is well evident that MSMEs contribute significantly in the nation's economic development, which is accepted by both, developing and developed countries. In its support, example of few important countries is quoted. In the United States, SMEs accounted for 99.9% of the 27 million employer and non-employer private nonfarm businesses in 2006. They employed roughly half of the 120 million nonfarm private sector workers and accounted for approximately half of private nonagricultural GDP between 1998 and 2004 [14], [15]. China had more than 4.3 million registered SMEs in 2009 that comprises 99% of the nation's registered businesses. They contribute about 60% to the nation's GDP, half of its tax payments, about 70% of its exports and create about 80% of new jobs [16]. Further, they employ nearly 80% of the country's population [17].

At the start of 2012, SMEs accounted for 99.9% of all private sector businesses in the UK, 59.1% of private sector employment and 48.8% of private sector turnover. SMEs employed 14.1 million people and had a combined turnover of £1,500 billion [18]. SMEs form the backbone of the EU economy, which is accounting for 99.8% of non-financial enterprises in 2012, which equates to 20.7 million businesses. Out of these, 92.2% enterprises are micro, 6.5% enterprises are small and 1.1% enterprises are medium enterprises. In employment terms, SMEs provided an estimated 67.4% of jobs in non-financial business economy in 2012 [19].

In India, the MSMEs contribute appreciably to the manufacturing output, employment and exports of the country. According to the Economic Survey (2010-2011), released by Government of India (GOI), MSMEs contribute 8% of the country's GDP [20]. According to the Annual Report (2011-2012), issued by Ministry of MSMEs, GOI, MSMEs are credited with generating the highest rates of employment growth and account for a major share of industrial production and exports. MSMEs account for about 45% of manufacturing output and 40% of the total exports of the country. The sector is estimated to employ about 59.5 million persons in over 26.1 million enterprises throughout the country. Further, this sector has consistently registered a higher growth rate than the rest of the industrial sectors [21].

C. Information Technology Tools

SMEs are critical to the growth of national economies [22] and it is now widely accepted that globalization, deregulation and innovation, propelled by Information and Communication Technologies (ICT) are the key forces shaping the economic landscape [23]. IT revolution and global business opportunities created by entrepreneurs using the capabilities of new technology have an important role to play [24]. IT allows enterprises to obtain, process, store and exchange information. IT is a generic term for convergence of computers, hardware, software, telecommunications, Internet, electronics and the resulting technologies. Obtaining sustainable competitive advantages depends on organizational learning capabilities, which are essential in IT implementation [25]. ICT may not be the only cause of the changes that we are witnessing in today's global economy, but the rapid developments in ICT have given an impetus to the current wave of globalizations [26].

In the research, [8] investigated that the usages of IT in MSMEs must be improved to perform better and to improve earnings by increasing sales and reducing the cost incurred at various stages. Moreover, effective use of ICT provides fast access to recorded documents; analysis can be improved, as data is completely available without biasing. [27] cited that with the adoption of ICT, the significant opportunities are automation of product design and development like computer aided design, computer aided manufacturing, automation and integration of all business processes by implementing enterprise resource planning, supply chain management, customer relationship management, web-site, Internet, communication and knowledge management. Further, information resource management is the nucleus of computer integrated manufacturing. The advance manufacturing technologies used for this purpose include shared databases, wide area network and local area network [28]. Development in ICT provides the opportunity for SMEs to expand their business into foreign market, even on the first day of its establishment [29]. [30] quoted that the adoption and use of ICT is mainly focused on operational matters with few extensions into potential strategic use of such technologies in their business environment. Recent years have witnessed the worldwide adoption of Internet technology for achieving cost savings, improving customer service, promoting innovation and taking advantage of new business opportunities [31]. E-business plays an important role in business activities of all enterprises. It can assist customer to procure low cost products and services, incurring search costs, facilitating transactions between geographically separate parties, reducing paper work and decreasing the duration all the transactions [32]. [33] argued that, in present era, competitiveness is a major challenge before an enterprise. So, the adoption of Internet technologies is important to SMEs ongoing survival. The factors affecting the adoption of Internet technologies include owner / manager characteristics (perceived benefits, computer literacy, assertiveness, perceived control, subjective norms, mistrust of IT enterprises and lack of time) and enterprise characteristics (organizational readiness, external pressure to adopt, customer / supplier dependency, structural sophistication of the enterprise, size / sector / status, information intensity [34].

In this way, it is quite clear that IT has played an important role in the continuing efforts of enterprises worldwide to make their manufacturing systems, processes and overall enterprise more agile and productive, being small or large, by coordinating the complex array of manufacturing data, business decisions, work flows and processes, which have become increasingly important for today's enterprises to maintain their competitive edge [35]. E-technology enables information to be readily available and easily dispersed among the supply chain members for speeding up various logistics management activities such as order exchange, inventory management and delivery schedules [36]. [37] suggested that while adopting e-technology, operational and behavioural perspectives should be taken into consideration. EC scenario in India is more or less similar to the global picture. The aspects associated with the adoption of e-business include the identification of potential areas in which e-business technologies can be adopted, the availability of telecommunication networks, the potential gains expected from e-business and the impediments associated with e-business in a developing context [38]. [39] found that IT related techniques, enterprise-wide computer network and inter-enterprise computer networks are adopted relatively less by enterprises of India, coincident with high cost of telecommunication services in India.

Study of [40] concluded that variation in customer preferences and opportunities through the capabilities of IT to accommodate them seem to change the strategic direction of the enterprises. The strategic portfolio of the enterprise, as well as the relation among strategic priorities changes significantly. Enterprises can increase performance if IT and business strategy fit. Generally it was found that in all of the strategic clusters performance was increased by the adoption of advanced IT. The higher the adoption and implementation of flexibility strategy, the higher will be the impact of IT on performance. [41] observed that, in general, Malaysian SMEs are still not prepared to challenge in a global market. There are still many SMEs who think that technology investment especially in IT is necessary only for large enterprises and they believe that IT is only for automation process in manufacturing. Sometimes they feel that IT adds no value and is used only to reduce manpower. In-fact, practicing IT can enable SMEs to improve business models, enhance marketing strategies and create advance customer relationships.

The justification process is a major concern for those enterprises considering the development of an Information Technology / Information Security (IT/IS) infrastructure, and it may be putting the competitive advantage of many enterprises at risk. The reason is management's inability to evaluate the holistic implications of adopting new technology, both in terms of benefits and costs. Commonly employed criteria for IT/IS justification can be grouped as strategic impact, tactical considerations, operational performance, financial measures, non-financial indicators, tangibles and intangibles [42], [43]. Enterprises value can be employed to the benefits of IT investments that considers all future benefits to the enterprise, both short term and long-term. This eliminates the problem of estimating the time lag between implementation and increased profitability or productivity [44].

III. SOFTWARE PLAN FOR IN-HOUSE USE

SMEs have generally been slow to adopt and evaluate EC [45] and in their research, they identified that many SMEs are unaware of the potential of EC to enhance their business operations which they consider not applicable to the products and service. Referring the outcome of research and available literature, a software plan for in-house adoption is suggested herewith. A willing enterprise can plan for its customized designing, development and further adoption. For modules of suggested software, refer Fig. 1.

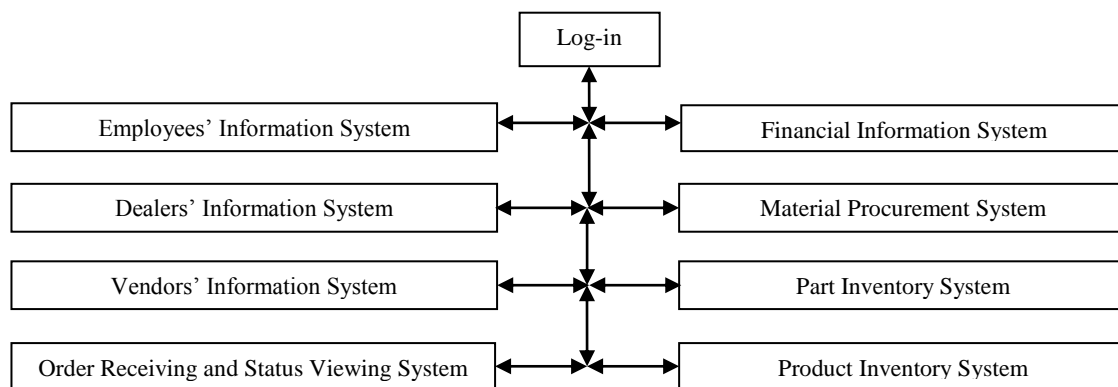


Fig. 1 : Module of suggested In-house Software

Module – 1 : Employees' Information System

This module helps in gathering information about all the employees of the enterprise. In this, the sub-modules are 'add employee's record', 'view employee's record', 'edit employee's record', 'compiled report of employees', and 'change password'.

The fields for 'add employee's record', 'view employee's record' and 'edit employee's record' includes employee number (key field), employee's name, designation, department, specialization, field of working, date of birth, gender, caste, religion, category, qualification (high-school, intermediate, industrial training, diploma, graduate, post graduate, engineering, doctorate, professional education), experience, father's name, address (correspondence), address (permanent), permanent account number, voter identity card number, contact numbers (area code, land-line number and mobile), status of service (working / left), salary details (saving account number, name of the bank, address of the bank, salary (Indian rupees/month), deductions (Indian rupees/month), next revision (due on). 'Compiled report of employees' is used to generate the compiled report of employees containing fields as employee's number, name, designation, department, date of birth, gender, education, and mobile number. 'Change password' is used to change the password of an authorized and existing employee. The fields are employee number, password, new password, confirm password.

Module – 2 : Dealers' Information System

This module helps in gathering information about the authorized dealer. The sub-modules for its information gathering are 'configure dealer's data', 'view dealer's data', 'edit dealer's data' and 'view dealers' list'.

'Configure dealer's data' is used to generate the dealer's record at its very first time. The fields are dealer number (key field), dealer's name, address of the enterprise, contact numbers (area code, land line number and fax number), e-mail, web-site, representative's name, representative's designation, representative's mobile, dealer's approval start date, dealer's approval finish date, dealer's status (active / non-active). 'View dealer's data' and 'edit dealer's data' are used to view / edit the details of dealer concerned. The fields are same as used in 'configure dealer's data'. 'View dealers' list' enables user to see the data about all the authorized dealers. The considered fields are dealer number (key field), dealer name (name of enterprise), address of the dealer (address of the enterprise), contact details (phone number, fax number, e-mail, web-site), contact person (name, designation and mobile), status (active or not active).

Module – 3 : Vendors' Information System

This module helps in gathering information about the authorized vendors. The sub-modules under this module are 'configure vendor's data', 'view vendor's data', 'edit vendor's data', and 'view vendors' list'.

'Configure vendors' data' is used initially (only for first time) to generate the record related to concerned vendor, while 'view / edit vendors' data' is used to view / modify the data of concerned vendor. The fields are vendor number (key field), vendor name, vendor address (name and address of enterprise), contact details (area code, phone number, fax), e-mail, web-site, vendor's representative name, representative designation, representative mobile, approval dates and status (start date, finish date, active or not active), approved supplier of items (part number, part name, status, rate – Indian rupees/unit for parts as applicable). 'View vendors' list' enables the user to see the data about all the authorized dealers. The information is generated against the fields as vendor number (key field), vendor name, vendor address (name and address of enterprise), phone number, e-mail, vendor's representative name, representative designation, representative mobile, approval status (active or not active).

Module – 4 : Order Receiving and Supply System

This module is created for receiving of orders, analyzing the production target and in record keeping of supplies. It has sub-modules as 'order receiving system', 'view order', 'edit order', 'view total ordered quantity', 'order supply system', 'edit order supply system', 'view order-supply report (for a dealers)', 'view order-supply report (for all orders)'.

'Order receiving system' helps in recording the information about the orders placed by authorized dealers for purchase of finished end products. The orders are received either by e-mail or telephonically. The fields for this sub-module are order details comprising dealer number, dealer name, product name, product number, quantity to be ordered, due date of supply, order number (key field – to be generated automatically), order date, accepted ordered quantity, order status

(accepted or not). 'View order' module helps in viewing the information about the orders placed by authorized dealers for purchase of finished end products (fields – same as 'order receiving system'). 'Edit order' helps in editing the recorded information about the orders placed by authorized dealers for purchase of finished end products. Information will be displayed under fields (as detailed in order receiving system) by entering order number (key field to operate). The editing can be done for - revised ordered quantity, revised date of supply. 'View total ordered quantity' helps in gathering information about total ordered quantity between two dates, necessary for production target fixing. The input are the dates (from, till). It displays the data in tabular form covering fields as order number, order date, dealer number, dealer name, product number, product name, quantity ordered, due date of supply, order status.

'Order supply system' is used to know the order and supply details. By entering order number, information against order details (as discussed earlier) and supply details including fields as gate pass number, available quantity (in stock), quantity supplied, bill number, bill amount, date of supply, supply status (supplied or not) is displayed. It can be edited by accessing 'Edit order supply system' under the same fields. 'Order supply report (for a dealer)' helps in gathering information about orders and supplies between two dates (sorted with dealer number) or for all orders for a dealer. The data is displayed under fields as dealer number, dealer name, order number, order date, product number, product name, quantity ordered, due date of supply, supplied quantity, gate-pass number, order status. 'Order supply report (for all dealers)' helps in gathering information about orders and supplies between two dates for all dealers. The data is displayed under fields as order number, gate-pass number, dealer number, dealer name, product number, product name, quantity ordered, due date of supply, order date, supplied quantity, date of supply, order status.

Module – 5 : Material Procurement System

This module is used for procurement of raw-material and sub-contracted parts from vendors. The sub-modules are 'generate purchase order for a vendor', 'view generated purchase order', 'edit generated purchase order', 'material procurement (receiving)', 'view material procurement (receiving)', 'edit material procurement (receiving)', 'report of all purchase orders for a vendor with its procurement status', 'report (all purchase orders for all vendors with their procurement status'.

'Generate purchase order' is used to generate purchase order (PO) for the procurement of sub-parts (either raw material for in-house parts or sub-contracted parts) from vendors. The generated PO can be viewed by entering PO number in 'view the generated purchase order' module. The generated PO can be edited by using 'edit the generated purchase order' module. The fields are PO number (to be generated automatically), vendor number, vendor name, part number (as applicable), part name (as applicable), rate (as applicable), quantity (as applicable), date of PO, due date, PO amount.

'Material procurement (receiving)' enables the user for record keeping of receiving of parts procured (either raw-material or sub-contracted parts) from vendors. 'View material procurement (receiving)' helps the user for viewing the data of receiving of parts procured (either raw-material or sub-contracted parts) from vendors. Gate entry number is the key field. 'Edit the material procurement (receiving)' allows the user for editing of data of receiving of parts procured (either raw-material or sub-contracted parts) from vendors. The fields are as gate entry number, PO number, date of PO and due date. The order-supply details include part number (as applicable), part name (as applicable), rate (as applicable), ordered quantity (as applicable), received quantity (part and as applicable), date of receiving, bill-PO number, bill PO date, bill-PO amount, procurement status.

The procurement report for a vendor for all procurements can be viewed by using 'report of all PO for a vendor', while the procurement report for a vendor for all procurements can be viewed by using 'report of all PO for all vendor'. The fields are vendor number, vendor name, PO number, PO date, part number, part name, ordered quantity, due date, supply status, supplied quantity, date of supply, gate entry number, bill-PO number, bill-PO date, bill-PO amount.

Module – 6 : Parts' Inventory System

This module helps in record keeping of receiving of sub-contracted parts and raw-material from vendors, issue of these parts and raw material to shop floor for manufacturing / assembly of finished end products and its status viewing. The sub-modules are 'configure sub-parts' information', 'view sub-parts' information', 'edit sub-parts' information', 'issue sub-parts (to shop floor)', 'view available quantity of sub-part', 'report of all sub-parts' availability', and 'report of issue of sub-parts (all)'.

'Configure sub-parts' information' enable the user to feed the data against considered fields initially, once. 'View sub-part's information' enable the user to view the data against considered fields by entering sub-part number as key field. 'Edit sub-part's information' enable the user to edit the data against considered fields. The considered fields are part number (key field), part name, part rate, safe stock quantity, part quantity, part status (sub-contracted, raw-material), product number, product name, quantity per product, authorized vendor number, authorized vendor name. 'Issue sub-parts' (to shop-floor)' enable the user for record keeping of issue of sub-contracted parts or raw-material to shop floor. The information for sub-part to be issued can be gathered by entering sub-part number. The considered fields are part number (key field), part name, part rate, safety stock quantity, part quantity, part status (sub-contracted, raw-material), product number, product name, quantity per product, authorized vendor number, authorized vendor name, available quantity, quantity to be issued (to be filled), balance quantity, date of issue, issued to (employee number; to be filled), issued to (employee name). 'View availability of sub-parts' enable the user to check the quantity available for any sub-part. The information for availability of sub-part can be gathered by entering sub-part number. The fields are part number (key field), part name, part status (sub-contracted, raw-material), product number, product name, quantity per product,

safe stock, authorized vendor number, authorized vendor name, available quantity. 'Report of availability of all sub-parts' issued to generate the report having fields as part number, part name, product name, available quantity, issue date, balance quantity, issued to (employee name). 'Report of issue of all sub-parts' is used to generate the report for certain time period by entering date (from) and date (till). This report has fields as part number, part name, product name, available quantity, issue date, balance quantity, issued to (employee name).

Module – 7 : Products' Inventory System

This module helps in record keeping of receiving of manufactured finished end products from shop floor and its status viewing. The sub-modules are 'configure products' information, 'view products' information, 'edit products' information, 'receive product (from shop-floor)', 'product's receiving report (all products)', and 'product's availability report (all products)'.

'Configure products' information enable the user to feed the data against considered fields initially. 'View product's information' enable the user to view the data for a product by entering product number as key field. 'Edit product's information' enable the user to edit the data for a product by entering product number as key field. In these regard, the considered fields are product number (key field), product name, safe stock quantity, quantity, stock status, product cost (Indian rupees/unit), authorized employee number (in-charge of shop-floor), authorized employee name, product image. 'Receive product' enable the user for record keeping of receiving the products from shop floor by selecting product number as key field. The referred fields are product number (key field), product name, safe stock quantity, safe stock status, quantity available in stock (numbers), product cost (Indian rupees/unit), product image, shop-floor supply number, date of receiving, receiving quantity (numbers, to be filled), production plan name, production plan day number, received from (employee number, to be filled), employee name, final updated quantity (numbers). 'Products' receiving report' can be generated for receiving of products from shop floor during certain time period. It can be generated by entering date (from) and date (till). The displayed report has following fields as shop-floor supply number, product number, product name, available quantity, receiving date, production plan name, production plan day number, employee number from whom it is received and final quantity. 'Products' availability report' can be generated for viewing the availability of products. The displayed report has fields as product number, product name, safe stock quantity and available quantity for issue.

Module – 8 : Finance Information System

This module is used for record keeping of financial data related to procurement (vendors) and sales (dealers). The sub-modules are 'bill generation', 'view generated bill', 'edit the generated bill', 'cancel the generated bill', 'bill payment (by dealers, against the sales of products)', 'purchase order (PO) payment (to vendor, against the procurement)', 'dealer's financial report (for one dealer)', 'dealers' financial report (for all dealer)', 'vendor's financial report (for one vendor)', 'vendors' financial report (for all vendors)'.

'Bill generation' is used to generate the bill, initially. Generated bill can be viewed by entering bill number in the financial details area (using view generated bill module). Generated bill can be edited by entering bill number (accessing edit generated bill module). Generated bill can be deleted or cancelled by entering bill number (by accessing cancel / delete the generated bill module). In these, the information is displayed against fields as order details (including order number, order date, ordered product number, ordered product name, ordered quantity (accepted or to be supplied), order status (pending / supplied), supply details (comprising gate-pass number, date of supply, supplied quantity), and financial details (that included bill number, bill date, rate (Indian rupee/unit), cost (Indian rupee), tax-1 (@per cent), tax-2 (@percent), total cost (Indian rupees), discount (@percent), discounted amount (Indian rupees), applicable bill amount (Indian rupees), bill status (pending / paid). Receiving of payments from dealers against the supply of products (sales) can be recorded by using 'bill payment (payment by dealer)' module and by entering the bill number under the financial details of this module. The information is displayed against fields as order details, supply details, financial details (details of fields - as discussed above), and receiving of payments (to be filled by the operator) that has fields as amount received, mode of payment, balance amount (Indian rupees), balance status (due on us / due on dealer), payment details, date.

Payments to vendors against the procurement of parts / raw-materials can be recorded by accessing 'purchase order (PO) payment (payment to vendor)' module that can be accessed by entering the PO number. The displayed information has fields as order and procurement details (comprising PO number, date of PO, vendor number, vendor name, ordered part number (as applicable), ordered part name (as applicable), ordered quantity (of parts, as applicable), received quantity (of parts, as applicable), procurement date, procurement status, gate-pass number) and financial details (fields are applicable bill-PO amount (Indian rupees), bill-PO date, advance paid (amount in Indian rupees), date of advance paid, PO balance amount). The required information is to be filled by operator against additional fields as amount paid, mode of payment, payment details, date of payment, balance amount (calculated automatically).

Details of order, supply and payments etc. can be viewed in a report form (by accessing 'dealer's financial report (for one dealer) module') for a dealer by entering dealer number, date (from) and date (till). The displayed report has fields as dealer's number, order number, order date, ordered product number, ordered product name, ordered quantity, supplied quantity, bill number, bill date, gate-pass number, bill amount, date of payment, amount received, mode of payment and bill status. Details of order, supply and payments etc. can be viewed in a report form (by accessing 'dealers' financial report (for all dealers)' module) for all dealer by entering date (from) and date (till). In the displayed report, the additional fields are total bill amount (Indian rupees), total payment received (Indian rupees) and total balance amount

(Indian rupees). Details of procurement, orders and payments etc. for single vendor can be viewed in a report form (by accessing 'vendor's financial report (for one vendor)' module) by entering vendor number, date (from) and date (till). The displayed report fields as vendor's number, PO number, PO date, ordered part number, ordered part name, ordered quantity, received quantity, PO-bill number, PO-bill date, gate-entry number, PO-bill amount, amount paid, date of payment, mode of payment, PO-bill status. Details of procurement, orders and payments etc. for all the vendors can be viewed in a report form (by accessing 'vendor's financial report (for all vendors)' module) by entering date (from) and date (till). The displayed report has few additional fields as total PO-bill amount (Indian rupees), total payment made (Indian rupees) and total balance amount (Indian rupees).

IV. DISCUSSION

For any nation, manufacturing sector, comprising MSMEs, is a very important segment as they not only provide raw material, sub-contracted parts and support services to bigger enterprises, but also support in economic development, industrialization and employment. In present situations, these MSMEs need to upgrade themselves so as to remain in business, take competitive advantage, compete globally and secure sustainable growth. In this regard, they need to adopt suitable ICT tools. The operation of such designed and developed software (which can be customized) starts with configuring all the details related to products, parts (in-house and sub-contracted), raw materials, dealers and vendors. It is assumed that all the orders are received from the dealers and raw material (for manufacturing of in-house parts) and finished sub-contracted parts are supplied by vendors. Finished products, after its production, stored in stock and from stock, supply is made to dealers, as per their orders. All the raw materials and sub-contracted parts, including sub-assemblies, are stored in store and for final assembly; these are issued to assembly line from where end product is produced. Payment is received from dealers (in lieu of sale of supplied products) and is made to vendors (for obtaining raw materials and sub-contracted parts) and employees (in terms of salary). For on-line supplies, to avoid dishonest payments, care should be taken and it is suggested that supply should be made only after receiving of payment. In this way, adoption of ICT tools will enable an enterprise for global marketing, increased customer base, quick supplies with reduced chances of dishonest payments. Improved communication with customers will enable the enterprises to know the drawbacks, suggestions which would be helpful in improving the product design, performance and reliability. This adoption will contribute in gaining competitive advantage over rivals, will increase customer base, and will ensure sustainable growth.

V. CONCLUSIONS

For any enterprises, which is striving to improve its performance and operations and willing to compete globally, successful adoption of suitable IT tools is needed. Suggested software will help an enterprise to run its business on computers and records (complete, in unbiased nature) will be accessible to users round the clock and incurred cost will be reduced. Thus, it is recommended that MSMEs should use software (in-house purpose) that can be planned and designed in a customized manner, further to have better management.

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