

Study on Implementing SAP in Automotive Component Manufacturing(SME) Industry in India

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ABSTRACT

Generally, SAP creates a common centralized database for all the applications running in an organization. It started with a vision: to develop standard application software for real-time business processing. This paper deals with the implementation of SAP in auto comp company . A study regarding the project is clearly mentioned in this paper. Here, the SAP Modules, Architecture and Strategies, SAP Management and Solutions and the outcome of the implementation are illustrated. In addition the pain points associated with the project and the respective SAP solution is also depicted.

Index Terms:-SAP, ERP, Auto component manufacturing

1. INTRODUCTION

Nowadays, the requirements of business have been quickly altered after the introduction of globalization. Under such circumstance, the needful challenges associated with the country are joined with the global economic conditions [6] [7] [1]. Thus the advantage of linking the industry with the world class integrated systems is that, it can sustain in global market, win in long term and can assist in competitive environment. Similar to the earlier method, it is not convenient to employ the profitable business, which is now realized by the industry. However, it is critical to remain in the competitive environment, since the growth of automotive market is accelerated [2] [8] [9]. The profit margin is enhanced by the cost cutting opportunity and the highly competitive pricing is adopted to make sustenance in the market.

A well-structured Enterprise Resource Planning (ERP) tool along with SAP is framed by the seamless data and data- flow demanded industry [3] [14] [15]. ERP is basically a software architecture that supports the streaming and distribution of geographically scattered enterprise information across all the functional units of a business house [12] [4] [13]. Basically in 1990, the term ERP was introduced by Gartner, however, the basics of ERP is from 1960s. Initially, the ERP was contributed to inventory management and control in the manufacturing sector. Later, it have applied to Finance, Materials, Human resources, Sales & Distribution, Sales & Distribution, Quality Control, Manufacturing etc [10] [5] [11]. According, the SAP also takes major role in Financial Accounting (FI), Management Accounting (CO) and Financial Supply Chain Management (Treasury and Risk Management) that belongs to the modules of integrated business processes.

The main contribution of the paper is to make a study regarding the implementation of SAP in Industry. The pain points associated with the project is depicted along with the necessary SAP solution to solve such points. The second section of the paper depicts the case study where as the third section describes the SAP modules, architecture and strategies. The description about the SAP management and solution is shown in the fourth section. Accordingly, the fifth section depicts the outcome of SAP implementation and final section provides the significant conclusion of the paper.

2. STUDY

In the auto comp company(SME) , a valuable study is directed which is located at Pune/ Aurangabad, Maharashtra. The outlook regarding the implementation of SAP, SAP blueprinting exercise, system architecture, testing and training strategy, data migration strategy and the project team governance at the time of SAP implementation is precisely demonstrated in the study. In addition, it also reveals the major drawbacks occurred during the functioning and needful corrective directions along with the adaptable altered management approaches. To the next, the role of SAP to provide prosperity to the story of Industry and associated pain points are also observed in this study.

This study also has made a review from the SAP practitioners, manufactures who are using SAP and the manufacturers who are not using SAP. The development of projects by SAP and its role in effective improvements was the main intension of the survey.

The implementation of SAP in SME is same as that of the platform of ERP. Here SAP consultant have chosen as the partner of implementation. Later, the project preparation regarding the implementation of SAP has initiated, after diverse preliminary rounds of discussions. Accordingly, the logistic and financial related processes of business was addressed by implementing the SAP ERP 6.0 version and selected FICO, MM, PP, SD and QM modules. In addition, the implementation of project was made possible by Accelerated SAP implementation (ASAP).

Regarding the implementation of SAP, the sponsor and manager of the project are extremely satisfied. Here, the success factors were contributed by dedicated core team as it holds the knowledge about the processes of core business, purpose of involvement of users, training and management support. From the case study, it was certified that the victory of SAP implementation is based on the powerful support of management and systematic approaches.

3. SAP MODULES, ARCHITECTURE AND STRATEGIES

A. SAP Modules and Organization Structure

The scope of the project from the beginning is clearly described in the SAP project core team. The precise outlook is depicted, since it was represented by the lead resources of respective business functions. Initially, the SAP modules have to be set before entering into the project. The SAP modules of business area like Management cost control is CO, Finance and accounting FI, Procurement, warehousing, goods movement and inventory is MM, Maintenance is PM, Manufacturing, Material planning is PP, Testing and Quality control is QM, Sales processing is SD and no specific modules in Miscellaneous business processes.

The requirements of the management cost control are budgetary control, auditing the daily manpower cost and benchmarking the fixed cost. On the contrary, statutory requirements like excise, customs, import/export, sevice tax, value added tax, central sales tax, profession tax, tax deducted at source, fringe benefit tax, income tax, provident fund, insurance, welfare fund and tax collected at source , standard book keeping system, report of system, profit and loss details, new balance and control in payment for the business partner, plan of transactions, analysis reports, fixed asset register, bank account details, audit compliance, payment to supplier, efficiency regarding the dies and tools are belongs to the finance and countong system.

In addition, the rquirements such as tracking of die amortization cost , stoppage of 57F4 document in the system, regulation on the value of materials, transferring the transporter bill as per the amount, automatic generation of documents with in the plants, improvement in purchace and sales order, perfect mapping of transactions, maintanace of BOM and purchase order, preparation of material shortage list, Subcontractor Delivery Adherence Report, bins tracking system, reports regarding the materials woth BOM, skill of entering the rate of customers comes under the Procurement, warehousing, goods movement and inventory business area. Maintance is also one of the areas of business which makes the report of machine breakdown and adopts preventive measures agains faults in machines.

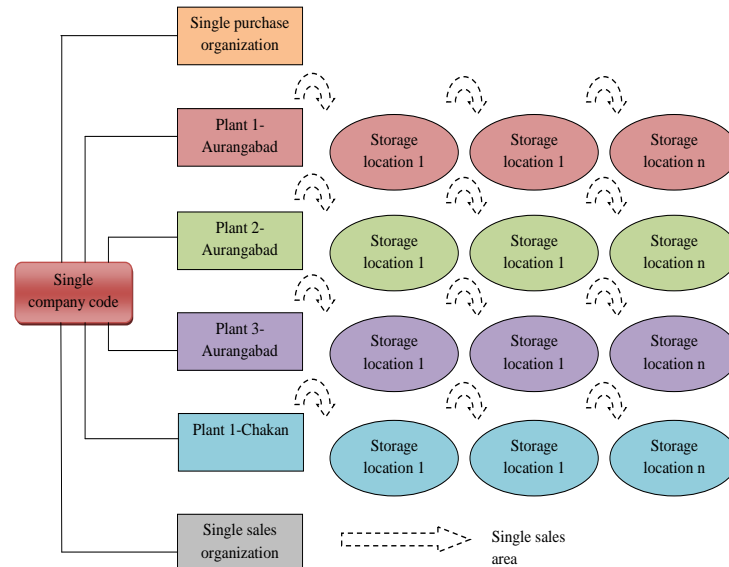


Fig. 1. Organisational structure of SME in SAP

Accordingly, manufacturing and planning of selecting the materials depends on the bill of material, scrap accounting, sales plan, alternate Bill of Material, plant level and company level MRP where as the sales processing depends on the numerous sale invoices generation and statements of state amendment. Among the requirements mentioned above, the control on testing and quality deals with describing all types of production losses, rejection data , vendor rating, logic behind the rejection of data, method to debit amount based to rejection to vendor, all category of facility associated with the material inwards, in- process and outward quality also taken as the part of requirements. Moreover, the other requirements are obtaining all level of business data, migration of traditional data, facility of data update, Module implementation of FI, CO, MM, SD, PP, QM, design of solution manager, SAP router, IDES etc and rate bifurcation. The organizational structure of the Industry associated with the SAP is shown in fig. 1. There are diverse organizational units such as departments, legal entities and sections which are depicted in the corresponding organizational structure.

B. Blue Printings

As per the modules of SAP, Consultant & team have proposed 120 preconfigured SAP processes. The SAP modules and submodules under the “to- be” processes are FI for account payable, account receivable, asset accounting, CO for controlling, profit center accounting, cost center accounting, MM for purchasing, subcontracting, country India version, inventory management, logistics information system, PP for MRP, make to order, SD for billing and logistics and QM for inward and outward inspections. The approaches required to fulfil the “to- be” process depends on the workshops, cross- functional meetings, mapping of to-be process and analysis of gap. Initially, workshops are formed among the significant functions and consultants. Also cross functional meetings are organized to take inputs from respective functions to create the end to end view of the processes and generate common understanding. On the other hand, “to- be” process is carried based on the above mentioned preconfiguration. Finally, certain gaps are noticed by comparing the “as-is” process and “to- be” process.

C. System Architecture, Testing and Training Strategies

System architecture: Two types of tyre system landscape are generally present in Yeshshree which is shown in fig. 2. After the completion of custom developments and system configuration, it is tested in the development system. Then the production system is ported with corresponding transport system. Solution Manager is the central support and system management suite provided by SAP customers as part of their license agreement. In addition, the solution manager also helps to manage diverse SAP components like ERP, CRM, BI, EP (Enterprise portal) as well as any Non-SAP systems. Furthermore, the solution manager is also documented with business processes.

The other application of solution manager is change control management, test management, upgrade management, IT service management and custom code management. Since, the industry manages the production and development system, only limited solution manager is used in the current project.

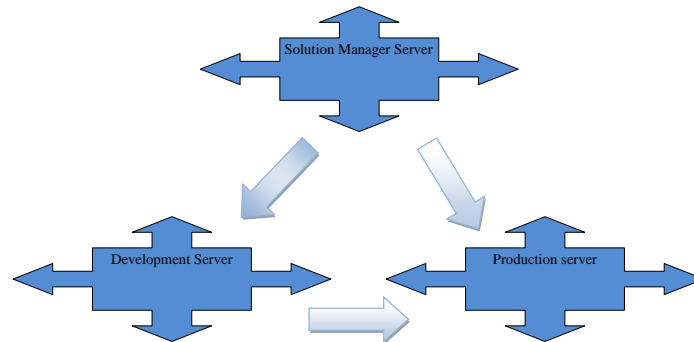


Fig. 2. Architecture of Two System landscape in SME

Testing strategy: The two main levels of testing are Unit testing and User Acceptance Testing (UAT).

Unit Testing: The consultants help to perform the unit testing of Yeshshree. The main purpose of Unit testing was to ensure that various process scenarios are working fine at transactional level, as per the standard SAP configurations and the additional configurations performed by consultants. During the problem level, the custom developments are also made as a part of the work. However, the consultants take the responsibility to create the significant data.

User Acceptance Testing (UAT) cum Integration Testing: On comparing the unit testing with UAT, it can be certified that UAT is an accomplished process. The purpose of UAT was to test all the business process scenarios in integrated manner by respective end users, using their role based authorization profiles. The acceptance of the project or the exit criteria depends on the victorious achievement of UAT testing. In general, UAT is referred as Integration Testing, since the integration and UAT are linked together.

Infrastructure: The wide ranging of preparation leads to complete the UAT testing successfully. End users from various functions were identified & dedicated for the UAT. A test room was created with complete infrastructure including PCs installed with SAP & connected to the SAP server. The business functions regarding diverse SAP transactions are trained by the end users.

Test Cases: The testing is done based on the created plan. The consultants prepare the test cases with inputs from core team members to test various business processes in integrated manner. At the beginning of the test case form, the circumstances of the test are described. The business processes included for testing as a part of each scenario are also mentioned. It is also provided with the respective summary, along with this, the testing date and client name of SAP is also mentioned for reference section. In addition, the data set required for the test is shown in section of "Set Up Data". The main types of data are Vendor master, Scheduling agreement, Source list and material master which are also clearly mentioned in the form. Actual business data is created in SAP system so that testing is based on actual data. On other hand, the name of the upload program is depicted, if the created data uses any upload program. The next section of the form describes the general steps for testing. Expected test result is mentioned and against which the actual "Actual result" is recorded. The document number generated as a result of testing is also mentioned in "Actual result" column for any verification. The name of the tester and the final test status is mentioned. The test result is verified by respective consultant, core team member and the test manager. If the actual result is not as per expected result, the test step is repeated with due correction or rework. Finally, the appropriate comments are obtained from the experimental result such as pass or fail. In addition, the retesting is performed if any further correction is required. At the end of the experiment, the test case is sent to the approved status and the date of approval is recorded and the UAT was declared as completed once all the test cases were tested.

Training strategy: The main aspect associated with the implementation of SAP is the training strategy which considers the change management involved in the process. It is necessary to adopt the work and the transaction is entered on the real time basis.

Training levels: There are basically three basic levels regarding the training part of the project. The core team belongs to the first level. As the core team is required to take care of the system maintenance (application management) post implementation, they are the important stake holders in training. Core team was involved for almost every aspect of the system right from system installation and data base administration to the system configurations actual execution of transactions. Initially, a module level training was given to the core team to create acquaintance about SAP. The more thrust was given on the “hands on” training for the core team. The core team was actually trained on the job by working various SAP transactions and the effect of various system configurations on the transactions. They are taken through the various important database tables. Core team was also made aware about the data upload tools like LSMW. The core team was also expected to train the end users, which is called “Train the Trainer” approach. The business transaction is done by the end users who belong to the second level. As per the business functions, the training is restricted. The core team helps to handle the end users. The third level is actually the management layer. Management team i.e. leads of respective business functions was trained basically on the approval process as well as generating SAP reports to check various information so as to take right business decisions.

Data conversion strategy: The most important strategy in SAP implementation is the data conversion. The data which is stored in legacy system data base or excel sheets on local machines is required to be carefully screened, cleansed and then uploaded to the respective SAP tables. The foremost steps of data conversion strategy are the data collection, data conversion and data verification.

4. SAP MANAGEMENT AND SOLUTIONS

A. Management Procedures

An effective project team structure is necessary to adopt successful project implementation. The governance process is defines well. The roles & responsibilities of the team members and the managers are defines very well. This helps all stake holders to understand the expectations from each member of the project and his reporting line if an issue is to be escalated. The adopted project organization structure regarding the experimentation is shown in 3. It is utilized at the beginning of the project. The steering committee was formed consisting of Project sponsor, CEO, Program manager and the project managers from industry and consultant side. They assign various teams and members to each team. The effective working of project is based on the project team members from industry and Consultant.

Structure of project organization

Quality Management: The project has to gone into specific Quality Management gates. SAP consultant team ensured in the workshops that the SAP processes recommended are in line with the industry requirements. Peer review was performed for the configuration documents. The functional and technical specifications created for the custom developments were scrutinized for the correctness of the template and overall standards followed in custom development. The UAT test case results were checked in details and compared with the expected results. The final quality audit was performed by consultant. before go live. The synchronization of business processes and the configurations or custom developments was ensured before actual go live.

Project Acceptance criteria: An agreement based on “acceptance criteria” is necessary during the implementation of the project. The Project is considered as complete only if the agreed “acceptance criteria” is met. In addition, successful process mapping, efficient user training and successful month end activities are considered as the chief acceptance criteria regarding the project.

Process mapping: Process mapping was ensured time to time within the project phases like blue print and realization. Quality audit was performed before go live. The process blueprint and UAT results were signed off by relevant stake holders so as to ensure that the process mapping is done as desired.

User training: An important position is taken by the User training in the implementation of SAP. The appropriate training is particularly handled as “Train the trainer” approach. In this approach, the core team members were trained by Consultant. These trained core team members in turn trained the end users. However, this training was guided by Consultant & training effectiveness was ensured.

Successful month end activities: For any business, it is important that there month end activities are completed smoothly. Financial documents such as balance sheet, Profit and loss account are required to get generated and satisfy the management. There are some documents which are of statutory importance and required to be submitted to government. Hence, Consultant ensured that the month end activities are performed on time by Industry team under Consultant guidance.

Issue Management: It is always possible that there are few things do not happen as planned. Also, there is possibility of difference of opinion within stake holders about a particular point. Such things are termed as “issues”. The issues are enlisted; resolution actions are proposed and ensured.

There were very few “show stopper” issues, without which the project could have not progressed. Such issues were referred to the steering committee and amicable solutions were sought. There were some issues which were more related with the process, functionalities & user understanding. Such issues were tracked and discussed in team meetings. Suitable work around was suggested and agreed to resolve the issues.

Change Management: Change management in SAP implementation project is also very important. Some business processes may change after SAP implementation. There has to be a buy in from the process owners to such changes. “System ownership” is required to be transferred to the end users and it is required to be ensured that the end users are making appropriate use of SAP system. If this change is not managed carefully, then there is always a reluctance to accept the changes by the impacted party. The Change impact analysis was therefore performed by Consultant. Consultant found that there are two major areas of change management, Process owner management and end user system acquaintance.

Process owner management: Process owners were appraised about the required mandatory changes in business processes, during the blue print workshops. Their concerns were addressed. It was convinced the process owners why the changes are necessary. Moreover, the process owners were assured that the changes are only transactional so that the ultimate business objective of data integration, data collection, reporting etc can be met.

End user system acquaintance: To achieve this, the team of exclusive system users from various business functions was identified much earlier in the project. After finalization of process blue print, this team was provided with “hands-on” training about the SAP processes and transactions mapped for their respective business functions. The management regarding the impact of Go live assist this training.

B. Pain Points and SAP Solutions

During the phase of project initiation, diverse pain points were considered. So it is essential to adopt the applicable solutions to overwhelm such challenges. The major operational area involved in the project includes goods receipt and invoice, cheque payments, payment advice, delivery confirmation, management reporting, goods receipt information to suppliers, subcontractor stock, pricing amendment – vendor as well as customer, inventory control, management of scrap, time per operation.

The pain point of goods receipt and invoice is time consuming, so that the Auto GRN/ Cenvat/ Bill booking system and Bar codes are used as the respective solution which attains the benefits such as Time Saving, reduction of human errors, completion with in time and Headcount saving. In addition, the cheque payments may suffer from poor operational control which can be solved by the RTGS/NEFT Payment Mode which is

more convenient to reduce the payee related errors and avoid human intervention and cheque collection process. On the contrary, manual payment advice process is the another pain from the payment advice where it can be solved by sending system generated auto payment advice to registered email address after payments so that payment recipients obtains the timely information and invoice reconciliation of the process becomes easy. Furthermore, lack of confirmation message from the delivery is also one of the pain points where the System generated sales report sent to customer and acknowledgement is taken on monthly basis so that it can be solved which provides an easy task. Moreover, system generated report created consisting the information such as Vendor stock, Scrap limit, Non-moving material, Fund position, Outstanding and ageing report is used to solve the management reporting problems. Also the additional problems are supplier complaints, lack of information regarding the stock status to the subcontractor, unreliable tracking of information, shortage of materials, lack of control on scrap disposal and lack of measurements and control on standard time. These pain points are also solved by the relevant SAP solutions like sending acknowledgement to the supplier, generation of stock report, creation of custom developed report, introducing consumption based MRP process, fixation of Plant wise allowable maximum scrap value, update of Standard TPO.

5. BEEFITS OF SAP IMPLEMENTATION

With the hope of future growth, SME have implemented SAP. The overall growth of any company is based on the growth of the market as well as the eagerness of the industrialist to capitalize the opportunity. However, the maintenance of the operational discipline is accomplished by an effective ERP.

SAP offers various benefits to the automotive component manufacturing which are Strategic and operational in nature.

Stragic benefits : The major strategic benefits offered by SAP are integration within business processes, adaptability, unique solution features, Country specific solutions, Industry specific solutions, Pre-configured solutions and reliable product support.

Operational benefits: The major Operational benefits offered by SAP are Outbound and Inbound supply chain optimization, optimization in planning process such as material planning, production order planning, capacity planning, stream lined financial processes, single point data entry i.e the data entered in one transaction is reused in next transaction.

6. CONCLUSION

SAP offers various benefits to the Auto component manufacturers. This paper has presented the implementation of SAP in auto comp company. An effective study related with the project was illustrated in this paper. In addition, the SAP Modules, Architecture and Strategies, SAP Management and Solutions and the outcome of the implementation were also exhibited. Finally, the pain points regarding the implementation and the adaptable SAP solution to solve such pains were also employed to promote a superior level to the company.

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