

# **REALIZATION OF SAP BASED EDUCATIONAL SYSTEM, EFFECTS ON ACADEME AND THEIR METAHEURISTIC APPROACH TOWARDS ERP SUCCESS**

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**Abstract**—*Information Technology (IT), such as Enterprise Resource Planning (ERP) have been involved to have a hassle free academic and bringing educational effectiveness. The idea of bringing System, application and products (SAP) in data mining will bring a faster evolution towards the integration of educational modules and thereby providing the common educational platform across various affiliated institution of the same university. This technique brings the efficiency of learning under the common platform and thereby the students and faculty members of various affiliated institutes will be getting a common feedback mechanism by which educational efficiency is achieved. The result of this study will bring the positivizes of ERP success in educational platform and various metaheuristic approach have been identified to overcome the common problems faced by the students and the faculty members. The various learning methodology like SAKAI and MOODLE will be depending upon the individual effort of the learning aspect whereas the SAP bringing the integration towards the whole organizational success. From this present study, we can conclude that the organizational goals can be best achieved through SAP based educational system.*

**Keywords**—*Business Analytics, Enterprise Resource Planning, Information and Technology, Learning Management Systems, System Application and Products in Data Processing.*

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## **INTRODUCTION**

This present study deals with the common survey between the present non-ERP educational system and the features of implementing SAP in academics. With the advent and implementation of Information and Technology (ICT) in assorted domains, the Academic Sector is also taking enormous advantages from Software Suites including Learning Management Systems (LMS) and Learning ERP Applications. This research work is focused on the analytics patterns of Learning ERP and its impact on the academe. In this proposed work, the investigation and analysis of existing academic propulsion is proposed with the use of Learning ERP applications. Now days, most of the universities and educational organizations are using Learning ERPs for the automation of frequent activities for higher degree of accuracy and performance. In this projected research work, the statistical data analysis is proposed to be implemented from Primary as well as Secondary Sources so that the performance from single / multiple dimensions on Learning ERP and its performance can be categorized and analyzed with the comparative suggestive points. This work is having focus on the collection of primary data from number of academic organizations and research institutes so that the analysis of learning ERP as well as its need can be done with effectual results and concluding remarks. A research questionnaire with queries regarding the necessities and thrust applications of learning ERP is proposed to be integrated so that the responses from multiple types of users including Teachers and Administrators can be fetched for predictive analysis. Once the data is collected, the analysis of responses using statistical functions and data mining algorithms can be done including Chi-Square Test, t-Test, F-Test, Clustering, Association Rule Mining, Visualization and many others.

Various parameters have been proposed and entertained with respect to the SERVQUAL model and some of them are reliability, tangibility, empathy, assurance and responsiveness. These parameters are taken into consideration for the empirical analysis of the problem faced by the student's community. Similarly, the work has been analysed with respect to various parameters that are best favour for the student's community.

## **LITERATURE REVIEW**

Govan Mark describe the Enterprise Resource Planning systems as “It is the constructive software solutions need to integrate the entire range of processes and functions involved in the business and to showcase a holistic view of the business in an empirical manner from a single information sourced IT architecture” [1]. Thus, an ERP system can be defined to have a capability of linking different areas of an enterprise such as sales, order management, supply chain management, customer relationship management, into a tightly close system with shared empirical data and visibility [2].

Karan T. Parr describe the ERP systems have the capability to improve the business functionality and thereby reducing the cost. Even though the implementation cost is more, but the result of achieving the target is very high [3]. Steve Maria explained the ERP system as the backbone of Business Analytics for an organization where the feedback system between the students and the teachers can be enabled [4]. This paper also describes the common review of education on ERP specific to the higher education sector to have better understanding the gap occurrence in this area. Belkis Stein stated the usage of System Application and Products (SAP) in data processing for the educational system to have improved systematic way of teaching aids to use across the different academic institutions [5].

## **ERP SYSTEMS IN HIGHER EDUCATION SECTOR**

The environmental factor for the advancement on Universities across the world decline the students scholarship from the government and other funding organization, the competition across the educational institution in terms of revenue generation, rapid increase in students strength, competition among the students globally, recent changes in the academic and non-academic work, the pressure from the government on increasing efficiency, general diversifying factors and the expectation from the parents community.

These rapid substantial factors need to be consider across the educational institutions. Thus, the adoption of ERP brings greater efficiency by bringing the integration of the various management systems and considering the adopted factors in it. This also evolves the better management system and a goof feedback system to the students and the parent’s community. The main objective of this proposed implementation of ERP system in Higher Education Institutes has been to integrate different functional and administrative aspects into a more cost-effective aspect and more systematic approach and thereby seeking a gain and achieve strategic advantage.

## **OBJECTIVE OF PROPOSED RESEARCH**

This Manuscript mainly focuses on the usage pattern of E-Learning ERP applications in the academic domain globally. Also, the drawbacks available in the current e-learning methodology like SAKAI, MOODLE have been highlighted and the improvement suggestions have been provided using ERP applications. The Main objective involves the following.

- ✓ Evaluation of learning performance using Enterprise resource planning in various academic institutions on assorted parameters and legal factors.
- ✓ Analyzing the learning management system role with respect to the new feedback system between teachers, students and the parents.
- ✓ Contentment level of the teachers and students in various affiliated institutions can be captured easily by the university and thereby bringing the transparency across the process and performance management.
- ✓ Investigating the relationship involved between the overall performance of the mentors and students in relation with the learning management system implemented with learning ERP adoption.

## **RESEARCH QUESTIONNAIRE**

By considering the objective, the research questionnaire has been prepared with respect to the below parameters into consideration.

- ✓ The responsiveness of the students and the teachers in feedback mechanism and based on the feedback, the teaching mechanism can be improved.
- ✓ The Tangibility towards the teaching aid used in the educational institution, examination pattern, course content and the knowledge transfer practice.
- ✓ The empathy parameter is considered with respect to the assertiveness of the students and the teachers in achieving the educational objectives.
- ✓ The Assurance parameter is always considered with respect to the competitive environment across various educational institution or various affiliated colleges of the same university.
- ✓ The reliability parameter enhances the growth of the organization by terms of results, financial concerns, achievement in learning, etc.

Thus, the reliability, assurance, tangibility, empathy and responsiveness have been considered as the key factors in designing the research questionnaire. The empirical study of SERVQUAL model have been framed and the response have been collected from 500 engineering graduates in various colleges of Tamil Nadu.

## **RESEARCH APPROACH AND EXECUTION**

This research model involves the three types of approach namely explorative approach, descriptive approach and analytical approach. Mostly the research is based on a descriptive approach in ERP since we focus in establishing existing models that can be used to evaluate ERP based system in higher educational institution. This research model also includes some of the base explorative factors like assertiveness of students, intelligent quotient of the students. During this phase, we will be able to demonstrate clearly about the defined purpose as well as various limitations involved for the descriptive part of the analysis. The third model used in this research is always prescriptive in nature, because this part partially focused on constructing a new method for the identification and thereby measuring the cost as well as benefit characteristics of a learning-based ERP-system in various educational organization.

Like other organizations, Universities must decide how much customization should be done to the ERP system for it to fit the organization's needs, or conversely, to what extent the University should change its practices to suit the so-called 'best practices' of the ERP. One approach to implement an ERP system is to customize the ERP system package to fit the existing business processes. However, customization of the ERP software package should be avoided or at least minimized to achieve the full benefits of the ERP system. ERP system customization can increase the project time, introduce new bugs into the system, and complicate future upgrades to new versions from the vendor. ERP systems are based on "best business practices" which are "defined structures of doing business operations" that the implementing organization can choose to exploit. Further, ERP vendors promote these packages as having "Universal Applicability". These views argue for adapting the organization to the ERP. However, it is observed that ERP design assumptions do not always fit with university operations. It is suggested that industry best practice standards in ERP packages are inappropriate for universities, due to the unique and impossible-to-model structures and decision-making processes that most of these institutions possess.

Thus, it is evident that ERP system will be incorporating the basic elements of in time data and lean productive analysis in the same sense that they predict to facilitate in various educational sectors, also at the same time this system is committed towards minimal labour and high efficiency.

## **METAHEURISTIC APPROACH**

There are adaptable key factors to be considered in this research for the metaheuristic approach which includes commitment of changes on daily basis, making sure that adequate budget and capital is available, over estimating the integration of different learning methodologies, Assess the organizational readiness to take ERP initiative on regular basis, time lined gaining of knowledge, adaptability of new resources.

After implementing these key factors, there is an integration strategy followed in system applications and products in data processing (SAP) with the oracle database. The Metaheuristic approach can be implemented in SAP Business Warehousing system and SAP Human Resource Management system as a key example.

The end results using this metaheuristic approach is showing that the system is having high efficiency than the normal approach of various other learning management systems like SAKAI and Moodle. Also, there are 15 different key factors considered with this evaluation model to bring transparency in the approach.

This dedicated model can be used as a learning management system and brings high efficiency in achieving the organizational objectives easily. The same set of data have been analysed in both R programming and python programming and the end results shows that there is a slight variance available with respect to the key factors considered.

## **DATA ANALYTICS AND INTERPRETATION**

The data have been interpreted with Fi-test with the consideration of Mean and standard deviation between the assorted parameters like tangibility, reliability, assurance, empathy and responsiveness. The sum of the square between the valid data and meta data is found to be  $p=0.02$  and the invalid data to be  $p=0.01$ . Thus, the interpretation has been done using SAP Analytics and using Python. The result of statistical data (valid and invalid) can be depicted in the below table.

**Table 1: Statistical Result**

	<i>Standard Deviation</i>	<i>Var</i>	<i>Pf</i>	<i>Sig.</i>
Valid data	1.020	1	8.900	.036
Invalid data	0.300	26	0	0
Total	1.320	27	8.90	0.036

Thus, from the above table, we have a clear understanding that the ERP which is used for the learning purpose is calculated with respect to the variance and its homogeneity. The standard deviation of is greater than 1.320 which is comparatively high than the standard deviation of the response from the current learning methodology using SAKAI and MOODLE.

The data have also been prepared with respect to the acceptance score of learning ERP by the students and teachers of various engineering colleges and is manipulated on the scale of one to five. There is a positive response from the student's community on the learning adoption method followed with Moodle LMS. Also, the end results have been demonstrated with respect to the publication of idea into the social media and repetitive feedback mechanism from the engineering college students of Tamil Nadu and Karnataka. Also, the feedback system is enabled with the high sensitivity social media platforms.

### **CONCLUSION**

There must be a common educational system across India and it can be best achieved through a common learning management system which evolves through the integration of various systems adapted in the educational organization. This learning adoption technique using ERP can be best suited for achieving the common educational system in the global perspective. This research work is focused on the global market size on the student's community and their ability to adapt with the technology-based learning management system. Thus, by implementing this the escalation can be done to any higher level with the common genuine feedback system and the actions have been taken upon. This Metaheuristic approach will give the higher degree of efficiency and performance and gives real time monitoring of the students.

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