# INTERNATIONAL JOURNAL
## FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

# Impact of Enterprise Resource Management System on Industrial Revolution 4.0

Prachi Khokle[1], Utkarsh Priyadarshi[2], Flowary Moon[3], Nikhil Aparajit[4], Aman Nashine[5], Prof. Jogi John[6]

[1,2,3,4,5]*Student,* [6]*Assistant Professor, Priyadarshini College of Engineering, Nagpur*

*Abstract: The world is going through its fourth industrial revolution right now. Managing large workspaces in big Enterprises has been made easy with the advent of particular software categories popularly known as ERP short for Enterprise Resource Planner. With ERPs, management of data from all kinds of fields of work like finance, operations, sales, manufacturing, marketing, sales, pre-sales/post-sales, HR, etc are easy now.*
*What's even more enticing about it all is that all of this can now be stored on Cloud storage and can be acces-sed from pretty much any device. This makes it incredibly easy for business owners to manage their enterprise from anywhere in the world, anytime. Our project tries to demonstrate the impact of the ERP software ecosystem using a prototypeERP system built using Codeigniter Framework built on PHP, and a front-end based on boot-strap with a comprehensive My-sql database and a Google Cloud Infrastructure. Our Project will make use of some open-source repositories and build on it a working prototype that can manage the data of a fictitious company.*

## I. INTRODUCTION

Our research aims to do a comparative study of the Resource Management Systems in various industries across the four industrial revolutions that the world has seen. ERP has its roots in the early 1970s when Material Resource Planning software came to be. Enterprise Resource Planning (ERP) systems are according to some the "do it all" systems, helping companies manage almost everything from finance to HR and Sales to Customer Management etc.

This research here tries to shed light on how ERP systems have impacted various businesses over the course of time and have literally doubled various critical success factors for any enterprise. With the advent of the fourth industrial revolution, ERP systems have also evolved significantly. Implementation of ERP systems has moved on to a subscription-based SaaS model (SaaS model is defined as an application or service that is deployed from a centralised data centre across a network, providing access and use on a recurring fee basis, where users normally rent the applications/services from a central provider).

## II. OBJECTIVES

### A. Erms Over Industrial Revolution 4.0

The research focuses on the comprehensive comparison based study on the changes in industrial resource management through various industrial advancements through the ages.

Advantages of technical advancements in the industrial revolution 4.0 on the field of resource management and the overall change in managing large corporations. Our research aims to obtain data on the rise in productivity in various manufacturing sectors.

### B. Advancements In ERMS

The primary goal of the project aims towards researching the area of evolution of enterprise resource management systems over the ages.
1) How did the enterprise resource management system grow during the industrial revolution?
2) How does it impact the workload and success rate of the industries or organizations where it is used?
3) What are the stats that keep growing or changing due to use of enterprise resource management systems?
4) How does it affect the work environments and overall work life balance?

### C. Predictions And Prognosis

By studying the entire pattern and observing the impact of it on the revolution era we can predict the future behavior and pattern of the enterprise resource management system . It shows how it will impact the future arena and what mostly the forthcoming enterprise resource management system looks like, what are their features and objectives.

*D. Model On Enterprise Resource Management System*

In the respective project, we have actually implemented and modeled a real time enterprise resource management system with all the mentioned and necessary modules. This model is the latest and current time used model of the enterprise resource management system which is used by various organizations and industries to manage and organize their work sophistically, both effectively and efficiently. A hands-on experience of what modern day enterprise management is all about by making use of working prototype.

## III. LITERATURE REVIEW

*A. Paper (1): Post implementation practices of ERP systems and relationship to financial performance by Edith Galy & Mary Jane.*

The paper proposed that the accountability of investments, success is maintained by the enterprise resource management system of organization. depicts that there is a great need for continued improvement and assessment as erp evolves over time. Enterprise resource management systems require a great degree of coordination and technological infrastructure within the firm.

The literature has shown that establishing a clear cause-and-effect relationship between managerial practices and financial returns results in higher commitment to implementing these practices.

*B. Paper (2): The ERP surge of hybrid models - an exploratory research into five and ten years forecast by Pedro Ruivo & Tiago Oliveira.*

The paper proposed a focused study on analysing firm strategies and planning to transition the usage of ERP on-premises to software as a service (SaaS), including hybrid models.

The traditional ERPs are generally hosted on the local server of each organization. The system is basically very static in nature and requires planning before building an infrastructure according to requirement. Now, over the years of evolution, the ERP systems can be deployed in the cloud & can use the Software as a Service (SaaS) model. Here, the infrastructure is given by third party companies like Google Cloud, AWS etc. Admins have to choose the hardware, processing requirement & pay only according to it & get the required parameters at any moment.

*C. Paper (3): Enterprise Resource Planning: Managing the implementation process by Vincent Mabert & Ashok Soni.*

According to the paper, Since the mid 1990s , thousands of companies have installed ERP systems which are enterprise wide online interactive systems that support cross functional processes using a common database. This system is complex which at least theoretically provides seamless integration of processes across function areas. An ERP implementation takes many years to complete and is expensive for any company but even then there is no guarantee of a successful outcome.

The research reported in this paper is a part of a long-term ongoing project. This project has been carried out using a two phased approach. In Phase1, a case study was employed to study ERP implementations at twelve manufacturing centres. Additionally senior consultants at six consulting firms specialising in ERP implementations were interviewed.

*D. Paper (4): Enterprise resource planning: A taxonomy of critical factors By: Majed Al-Mashari, Abdullah Al-Mudimigh*

This paper presents a novel taxonomy of the critical success factors in the enterprise resource planning (ERP) implementation process. ERP benefits cannot be fully realised unless a strong alignment and reconciliation mechanism is established between technical and organisational imperatives based on the principles of process orientation.

Upon this premise, the taxonomy is based on a comprehensive analysis of ERP literature combining research studies and organisational experiences. The taxonomy reflects the essential features of ERP systems, as being built based on the principles of business process management. Furthermore, it illustrates that ERP benefits are realised when a tight link is established between the implementation approach and business process performance measures.

*E. Paper (5): Enterprise resource planning, operations and management Enabling and constraining ERP and the role of the production and operations manager. By: Kim Sundtoft Hald and Jan Mouritsen*

This research aims to explore the enabling and constraining effects of enterprise resource planning (ERP) systems and speculate on how these can be linked to the four generic roles of operations management (OM) proposed by Slack et al. Design/methodology/approach – This research understands ERP as boundary objects characterised by modularity, abstraction, accommodation, and standardization. An in-depth cross-disciplinary literature review and role synthesis are conducted. Findings – Four enabling and three constraining effects of ERP are deduced from existing literature. ERP and OM are linked conceptually.

## IV. ARCHITECTURE OVERVIEW

The ERP system has a centralized flow of all information in the organization that reduces data loss and increases data flexibility. With the advent of web-based technology, ERP systems can integrate information within an organization with its external partners, clients and providers.

The project uses the Cloud Architecture & SaaS (Software as a Service) methodology.
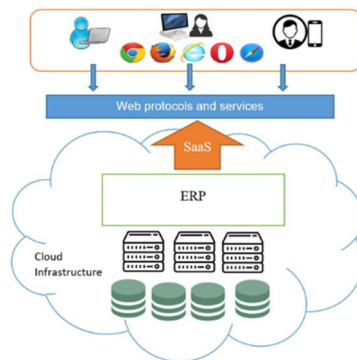


Cloud Architecture

Cloud computing is an advanced technology built on advanced solutions to facilitate access to computer resources and storage for any business processes. It can best be described as "required access to IT resources located outside your data center, shared with others, easy to use, paid for, and accessed on the web". Customers can access the resources whenever they want and wherever they use a simple browser without having to worry about any other technical issues. Cloud-based ERP systems can be categorized by a SaaS type of cloud computing services.

Organizations have the opportunity to choose the ERP modules they want and do not pay for other unnecessary modules that may not be needed in their business. Using Cloud-based ERP provides customer organizations with high availability of resources, distribution, reliability and error tolerance as well as security and ease of use.

## V. CONCLUSION

As our extensive research on the topic has shown us that an ERP system has a tremendous impact on an industry or a particular business. We have also concluded that as cited in the above literature that depending on how early or how late the systems are implemented, businesses can have varied results of implementing an ERP. With the Coronavirus pandemic looming over our heads, it is not very difficult to predict where the ERP systems and other office automation technologies are heading.

It won't be wrong to say that within the next 5-10 years as the culture of work-from-home starts to become more and more mainstream, ERP systems and systems that help manage businesses remotely will become more and more prevalent. There also seems to be a trend of individual module-based ERP systems being developed instead of a complete ERP suite as most modern small to medium businesses do not require the full-scale ERP versions.

## REFERENCES

[1] ERP, Wikipedia, available at <https://en.wikipedia.org/wiki/Enterprise_resource_planning>
[2] Research Paper, Academia, available at <https://www.academia.edu/Documents/in/ERP_system>
[3] ERP Modules, Oracle Netsuite, available at <https://www.netsuite.com/portal/resource/articles/erp/erp-modules.shtml>
[4] ERP Functions & Modules, European Business Review, available at <https://www.europeanbusinessreview.com/erp-modules-types-features-functions/>
[5] SaaS ERP, Oracle Netsuite, available at <https://www.netsuite.com/portal/resource/articles/erp/saas-erp.shtml>
[6] Evolution of ERP, GeeksForGeeks <https://www.geeksforgeeks.org/evolution-of-erp-system/>
[7] Document, IEEE, available at <https://ieeexplore.ieee.org/abstract/document/6516344>
[8] Research Paper, Research Gate, available at <https://www.researchgate.net/publication/228427747_The_Effect_of_ERP_System_Implementation_on_Business_Performance_An_Exploratory_Case-Study>
[9] Scope Document, Road Map ERP, available at <https://roadmapit.com/blog/posts/65/the-scope-of-erp-software>
[10] Importance of ERP in an organization, Finance Online, available at <https://financesonline.com/why-an-erp-system-is-important-to-your-company/>
[11] Statistics of ERP systems, Oracle Netsuite, available at <https://www.netsuite.com/portal/resource/articles/erp/erp-statistics.shtml>
[12] Technologies used in ERP, Oracle Netsuite, available at <https://dzone.com/articles/list-of-erp-technologies-what-is-right-for-you>

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)