

Evolution of Enterprise Information Science and Systems

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Abstract: The fast development of information technology has considerably transformed structure of the organizational and their operations over the previous decade. Amid od 2015 and 2020 (proposed), businesses gradually lifted from traditional Electronic Data Processing (EDP) schemes to united Enterprise Resource Planning (ERP) and moving towards Cloud ERP platforms, maintained by Management Information Systems (MIS) for tactical decision-making and taking. This paper inspects the development, features and data stream of EDP, MIS, ERP along with Cloud ERP systems throughout the period 2015–2020. Here study of 2020 is projected and it focuses in what way organizations developed from isolated transaction processing to centralized. Also rapidly moving towards cloud-empowered, real-time information systems that expand operational competence, association and decision-making. The study accomplishes that Cloud ERP arisen as the overriding enterprise resolution by participating business procedures with cloud computing approaches whereas empowering scalability, flexibility and cost-effectiveness.

Key Words: Electronic Data Processing (EDP), Management Information System (MIS), Enterprise Resource Planning (ERP), Cloud ERP, Information Systems, Digital Transformation, Data Ambiguities, Pre-processing.

1. INTRODUCTION:

The information systems have developed the backbone of contemporary organizations thru empowering well-organized management of corporate operations and tactical decision-making. Organizations primarily trusted on Electronic Data Processing (EDP) schemes to automate tedious transaction processing responsibilities. As business operations developed gradually complex, Management Information Systems (MIS) were made known to adapt operational data into expressive executive information.

The appearance of Enterprise Resource Planning (ERP) schemes additionally converted enterprise computing thru mixing several functional sections into a united database. Then, progressions in cloud computing directed to the acceptance of Cloud ERP, which delivers organizations with remote accessibility, lesser infrastructure expenses, improved collaboration along with real-time analytics.

Amid 2015 and 2019, 2020 (proposed), organizations globally augmented their digital transformation creativities, ensuing in rapid acceptance of ERP and Cloud ERP technologies.

2. LITERATURE REVIEW:

Al-Fawaz (2008) discussed the critical success factor of the ERP implementation [1], Chien, S., & Tsuar, S. (2007), examining the success of ERP by the help of case studies in three Taiwanese high-tech industries [2], D. Cooke et al. discussed the latest and upcoming ERP trends in the detail and forecast the future [3], Pandya et al. discussed on the detection of data anomalies in the system [4].

Kailash Totla et al. thoroughly explain the insights and the critical success factor in the pathway of development of EPR system with Mult perspective analysis and study of various sector of ERP [5,6], Ranzhe, J. & Xun, Q. (2007) made critical research on the critical success factors for the ERP Systems employment with consideration of service management [7], Stephan A. et al. (2009) also did the work in way of defining critical success factor the ERP and further developments [8].

Sanjay Gaur et al. with different research studies defining the solution of data ambiguities and process of data-preprocessing for better data management in ERP [9,10,13,14]. Kumawat, B et al (2018) gives study of cloud technologies-research issues, challenges, engineering, platforms and applications [11], Jitendra Rajawat et al. discussed trusted and secure model for cloud data storage and trusted and mutual manager-based approach for cloud security in their various research [12,16,17].

3. ELECTRONIC DATA PROCESSING (EDP):

Electronic Data Processing (EDP) characterizes the initial stage of high-tech business activities. Its attentions mainly on automating routine clerical and transaction-processing events like as billing, inventory, payroll management and accounting.

The key characteristics included are processes structured data, performs reoccurring business communications, partial reporting competence. department-specific activities, manual data entry and solo computer systems management.

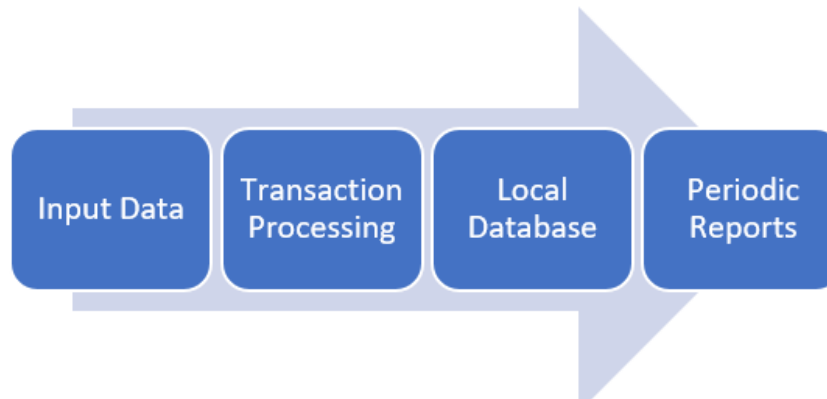


Figure 1: Data Flow in EDP

Advantages: It abridged manual work and apply speedy transaction processing. it helps in enhanced the calculation accuracy and gives improved record maintenance.

Limitations: it suffers from absence of integration and have partial analytical ability. It also shoes data redundancy and sluggish information sharing.

4. MANAGEMENT INFORMATION SYSTEM (MIS):

Management Information Systems grew to support managers in planning, monitoring, controlling, and decision-making thru translating operational data in the valuable business information. Unlike EDP, MIS highlights managerial reporting despite than the transaction processing.

The key characteristics are it supports strategic decisions, produces summary reports, utilised historical data, expands managerial control and gives performance monitoring.

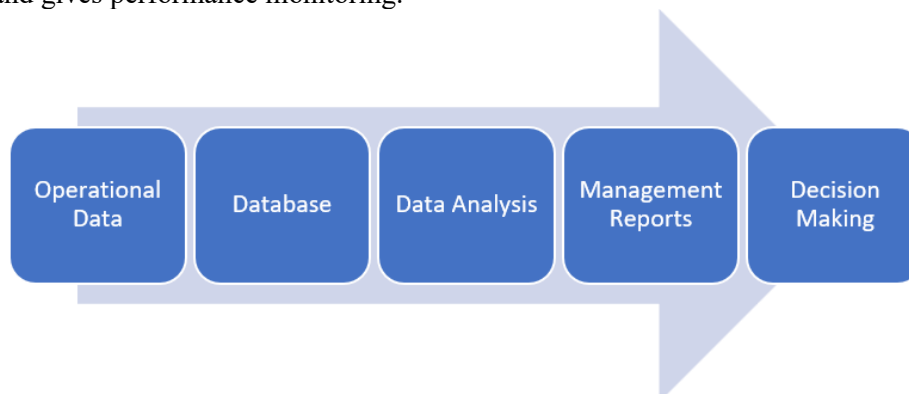


Figure 2: Data Flow of MIS

Advantages: it gives better planning and speedy reporting. It gives enhanced organizational control and improved resource allocation

Limitations: it limits as it depends on quality of data, historical analysis and vas little real-time ability.

5. ENTERPRISE RESOURCE PLANNING (ERP):

ERP integrates the entire organizational subdivisions into a central information arrangement. As a substitute of keeping dispersed databases for human resources, finance, production, inventory, sales, and procurement. The ERP setup produces a united enterprise database.

Throughout 2015–2017, ERP acceptance increased considerably due to digital business revolution and combined supply chain management.

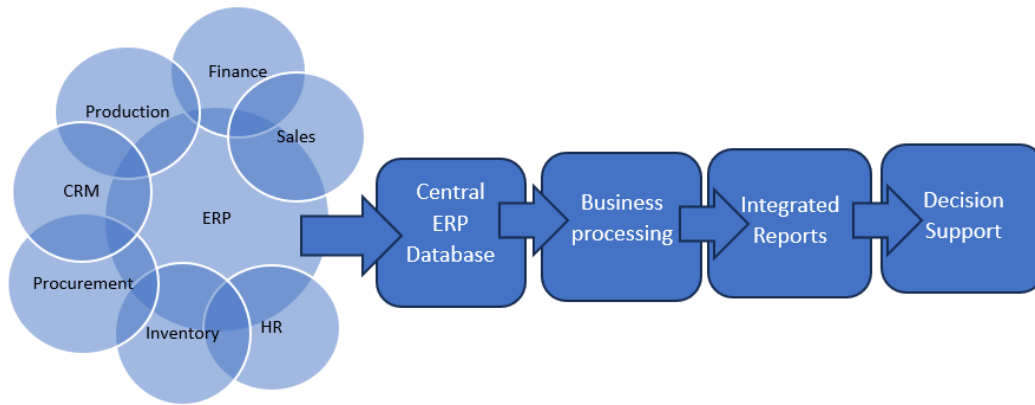


Figure 3: ERP Modules and Data Flow

Advantages: it removes data redundancy and enhance communication along with the real-time information. It gives healthier resource planning and business processes.

Limitations: it holds big execution cost, extensive deployment time. Needs employee training and have complex customization.

6. CLOUD ERP:

Cloud ERP characterizes the next generation of enterprise structures by uniting ERP working with cloud computing approach. In its place of upholding local servers, organizations log ERP applications via Internet.

Amid **2018 and 2019-2020(projected)**, Cloud ERP turn out to be progressively prevalent for the reason that of rising cloud infrastructure, remote work necessities and Software-as-a-Service (SaaS) acceptance.

The key characteristics included Internet-based admittance, real-time harmonization, mobile approachability, high scalability, automatic software updates and low maintenance cost.

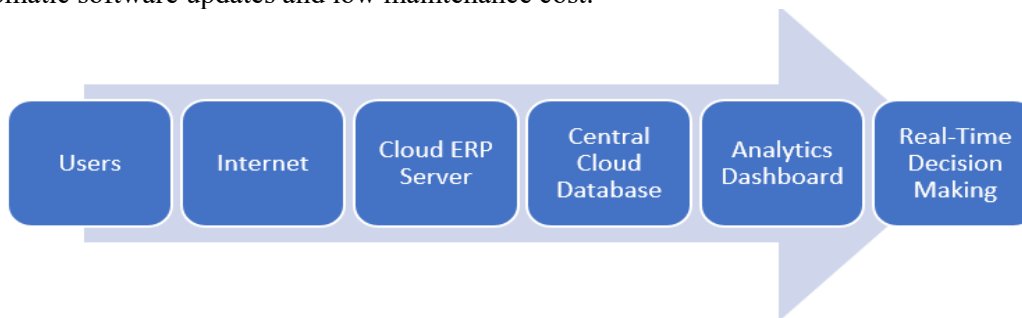


Figure 4: Cloud ERP Data Flow

Advantages: it provides lower infrastructure speculation, easy implementation and anywhere accessibility. It gives high scalability facility, auto backup and improved collaboration. **Limitations:** The system has internet dependency, vendor dependency and have data privacy concerns with subscription costs.

7. COMPARATIVE ANALYSIS:

Following is illustration of the comparison of the key characteristics of the EDP to Cloud ERP scenario in the chorological order.

Feature	EDP	MIS	ERP	Cloud ERP
Primary Objective	Transaction Processing	Decision Support	Business Integration	Cloud-Based Enterprise Integration
Database	Local	Departmental	Centralized	Cloud Centralized
Accessibility	Local Computer	Office Network	Enterprise Network	Anywhere via Internet
Integration	Very Low	Moderate	High	Very High
Reporting	Periodic	Management Reports	Real-Time Reports	Real-Time Dashboards
Scalability	Low	Moderate	High	Very High
Cost	Low	Medium	High	Subscription Based
Decision Support	Limited	Good	Better	Excellent

Table 1: Comparative Analysis

8. EVOLUTION DURING 2015–2020:

The retro from 2015 to 2020 observed a key shift in the enterprise information structures.

- **2015–2016:** Several organizations still trusted on conventional EDP structures for accounting, payroll, and inventory processing.
- **2016–2017:** ERP employment amplified as organizations wanted united business management and enhanced operational efficacy.
- **2018:** The Cloud technologies developed additional maturity, inspiring organizations to attain ERP structures to cloud platforms.
- **2019:** Businesses progressively accepted Software-as-a-Service (SaaS) ERP results, dipping infrastructure prices and permitting remote access.
- **2020:** The projection of Cloud ERP acceptance will provide, digital association and nonstop business actions. Organizations through cloud-empowered enterprise schemes established greater flexibility and business endurance.

9. CONCLUSION:

The development from EDP to MIS, ERP and Cloud ERP amid 2015 and 2019, 2020 depicts an essential shift in organizational information administration. EDP placed the basis for computerized transaction processing whereas MIS improved managerial reporting along with decision support. ERP united business activities through central databases and Cloud ERP prolonged these abilities with scalable and internet-enable services which support real-time connotation and analytics. By the year 2020, Cloud ERP become the provider of enterprise solution with flexibility, accessibility and cost efficacy. As institutions continue their digital transformation voyages, participating developing technologies with Cloud ERP is probable to further advance business agility, operational performance and tactical decision-making.

REFERENCES:

1. Al-Fawaz, K., Al-Salti, Z., & Eldab, T. (2008): Critical Success Factors in ERP Implementation: A Review, European and Mediterranean Conference on Information Systems, EMCIS2008, Dubai
2. Chien, S., & Tsuar, S. (2007). Investigating the success of ERP systems: Case studies in three Taiwanese high-tech industries, *Computers in Industry*, 58:783-793.
3. D. Cooke, L. Gelman, W. J. Peterson, ERP Trends. New York: The Conference Board, 2001, pp. 1-28.
4. D D Pandya and Sanjay Gaur, (2018): Detection of Anomalous value in Data Mining, *Kalpa Publications in Engineering*, 2, 1-6.
5. Kailash Totla, Manju Mandot and Sanjay Gaur (2016): An Insight of Critical Success Factors for ERP Model, *International Journal of Emerging Research in Management & Technology*, 5(2), 90-92.
6. Kailash Totla, Manju Mandot and Sanjay Gaur (2016): A Perception of Multi Perspective ERP Model, *Journal of Environmental Science, Computer Science and Engineering & Technology, Sec. A*; 5(2), 056-062.
7. Ranzhe, J. & Xun, Q. (2007). "A Study on Critical Success Factors in ERP Systems Implementation," *Service Systems and Service Management, International Conference*, 1(6):9-11.
8. Stephan A. Kronbichler*, Herwig Ostermann and Roland Staudinger (2009), A Review of Critical Success Factors for ERP-Projects, *The Open Information Systems Journal*, 2009, 3, 14-25.
9. S. Gaur and M.S. Dulawat (2010): A perception of statistical inference in data mining, *International Journal of Computer Science and Communication*, 1(2), 653-658.
10. S. Gaur and D. Soni (2018), Root-Squire Closest Fit Approach for Handling Anomalous Values in Data Mining, *Second World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4)*, London, UK, 2018, pp. 292-296, doi: 10.1109/WorldS4.2018.8611613.
11. Kumawat, B., Chaudhary, S., & Gaur, S. (2018). A study of cloud technologies-research issues, challenges, engineering, platforms and applications: A survey. *International Journal of Multimedia, Image Processing and Pattern Recognition [ISSN: 2581-625X (online)]*, 1(1).
12. Jitendra Rajawat and Sanjay Gaur (2013): Trusted and Secure model for cloud data storage, *Journal of Environment Science, Computer Science and Engineering and Technology*, 2(3), 883-888.E-ISSN 2278-179X, June-Aug. 2013.
13. Gaur, Sanjay and Dulawat, M.S. (2010): Univariate Analysis for Data Preparation in context of Missing Values, *Journal of Computer and Mathematical Sciences*, 1(5), 628-635.
14. Sharma, Swati and Gaur, Sanjay (2013): Contiguous Agile Approach to Manage Odd Size Missing Block in Data Mining", *International Journal of Advanced Research In Computer Science*, 4(11), 214-217.
15. Gaur Sanjay and Dulawat, M. S. (2011): Improved closest fit techniques to handle missing attribute values, *Journal of Computer and Mathematical Sciences*, 2(2), 384-390.
16. Jitendra Rajawat and Sanjay Gaur (2013): Trusted and Mutual Manager based Approach for Cloud Security, *International Journal Mathematical Achieve*, 4 (11), 216-219, ISSN 2229-5046.
17. Jitendra Rajawat and Sanjay Gaur (2014), An Overview of Security Models and Threats in Cloud Computing, *International Journal of Latest Technology in Engineering, Mngmt & Applied Science*, 3 (5), 252-257, ISSN- 2278-2540.