

## **Empirical Study of ERP Implementation Strategies-Filling Gaps between the Success and Failure of ERP Implementation Process**

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### **ABSTRACT**

In businesses, implementation of new ERP system is as important as finding the right solution of new enterprise resource planning systems. Understanding and selecting the best practice out of the available huge strategies for implementation the ERP software is very difficult. The aim of this paper is to provide consolidated information and research of each and every strategy as a single point of reference so that selection of the best process of implementation of ERP system in an organization can be easily done. This paper also presents the important factors that need to be considered while studying the feasibility of choosing a right implementation strategy which is the basis on which an organization must choose which implementation strategy is right for them and under which circumstance.

**Keywords**— Big Bang Strategy; ERP implementation Strategies; Parallel Adoption

### **1. INTRODUCTION**

ERP is “a packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total, integrated solution for the organization’s information-processing needs” [2]. If the ERP software is implemented well, the integration all the functional modules of an organization operate as a single package with a common database. It can be concluded from the research and literature that the success of ERPs to a great extent depends on the way it has been implemented in the organization.

There is a significant correlation between specific business strategies and particular ERP implementation strategies. Several successful implementations of ERP

software have been emerged from several ERP rollout strategies. A Well planned and a well-defined strategy at the beginning of the implementation is very crucial in determining the success of the outcomes at the end of implementation.

Before choosing the right ERP implementation strategy for an organization we should have an insight into all the strategies that have been developed so far along with their pros and cons in detail.

## **2. IMPLEMENTATION STRATEGIES**

An ERP implementation (transition) strategy determines how the organization will be moved from legacy system to the new ERP system. There exist several transition strategies in literature but all of them are the variants of basic types [2].

- Big Bang [1]
- Phased [1]
- Parallel [1]
- Hybrid [1]

### **2.1 Big Bang transition strategy [1]:**

The name itself is descriptive enough to explain the big bang strategy. A big bang ERP implementation takes place as a single, main event. A specific date is set and all the modules are installed across the entire organization in one go. This specific date is called as Go-Live date and is decided by the top management after discussions with the implementation team.

The transition from the legacy system doesn't takes place without prefect planning and preparation. There are several pre-implementation activities that need to be carried out in advance and prior to the big bang. Once the planning activities have been successfully executed, the old system is turned off, and the new system should be launched. One cannot rollback from this point.

It has been always the topic of dilemma among the system integrators, service providers as well as the ERP vendors whether to go for Big bang strategy or not as it always involves the huge risks. However, the implementation of Big bang is fast and less expensive. Major benefits and drawbacks of big bang implementation are:

#### **Advantages:**

1. Implementation time is shorter.
2. Costs are much lower as the whole transformation takes place at once so no intermediate programs are required for communications between the two systems.
3. Training of employees is required only for the new system, not for the transition period.
4. Implementation takes place only on the Go-Live date and everyone is aware of the date.

#### **Disadvantages:**

1. It requires the in-depth knowledge of the existing system and lots of time is consumed in careful planning and preparation for new ERP system's

implementation.

2. Details of processes may be ignored in the as transition time is quick.
3. Less time is given for training to employees to learn the new system.
4. If one module fails it can affect the other module.
5. If failure happens then it is very difficult to be recovered.

## **2.2 Phased Rollout / Incremental Strategy [1]:**

In phased strategy the elements or modules of the ERP system are introduced slowly in a well planned sequence. The legacy systems are replaced gradually with the new one. In the phased approach, the organization first focuses on the most important business requirements and the initial implementations are made only to a limited number of organizational units. Once first transition is successfully achieved, and then a little less important or complex functions are added in the next phase to include additional organizational units.

This incremental approach helps the organizations to reduce the scope, changing the smaller pieces of the business units, perform reviews in between phases and improving the process by getting the feedback and implementing it into successive phases.

There are several techniques in which Phased Rollout can be achieved [3]:

1. Phased rollout by module – In this Strategy, ERP modules are implemented one at a time. It begins with core business functions those necessary for daily operations and then more modules and functionality are added with each incremental phase. This is most common approach used by organizations.
2. Phased rollout by business unit – According to this approach implementation takes place in one or more departments or business units at a time. In some organizations a special implementation team is set up that looks and analyzes each and every department during implementation phases. The team gradually gains better experience with every implementation and hence subsequent phases become efficient.
3. Phased rollout by geography – This approach is useful for large organizations that have multiple locations or independent departments. ERP system is introduced at one or more company locations at a time. Major benefits and drawbacks of Phased Rollout are:

### **Advantages:**

1. It is less complex and hence reduces overall risk.
2. Lesser number of resources is required.
3. Ample time is available for modifications and changes therefore users get longer time to adapt the changes

### **Disadvantages:**

1. More time consuming and hence it is costly.
2. It takes more time for implementation and several compromises are required.

### **2.3 Parallel Adoption [1]:**

Parallel Adoption includes running of the existing and new ERP system together therefore it involves least risks in all ERP implementation methodologies. It helps users to learn the new system while performing regular activities on the existing system. Once the new system is implemented successfully, then legacy system is shutdown.

Parallel adoption lies as an intermediate between phased rollout and big bang. The transition phase is slower than big bang, but faster in comparison to phased adoption. Also, user adaptation process is easier and simplified than big bang, but more complex than phased rollout.

#### **Advantages:**

1. This Strategy is particularly useful in mission critical situations that can't survive with a major system failure.
2. Comparisons of both old & new system can be made accurately as we can gather and compare the performance metrics of both parallel systems.

#### **Disadvantages:**

1. It is most expensive implementation strategy as changeover costs are high.
2. Huge number of resources is required at the time of transition from old to new system.
3. There is a lot of duplication of functional integration since both systems are running in parallel.

### **2.4 Hybrid Strategy [1]:**

Hybrid approaches are generally applicable in large ERP implementations in which organizations are distributed across multiple business units. For example, a typical hybrid implementation requires the organizations to choose the big bang approach for smaller business units whereas a phased approach somewhere else.

Advantages and Disadvantages of a hybrid strategy vary from organization to organization and requirement to requirement.

## **3. COMPARISON STUDY**

A brief online survey [3] was done on 45 organizations that have been involved in ERP implementation. In view of consideration highlighted above, several questions have been raised.

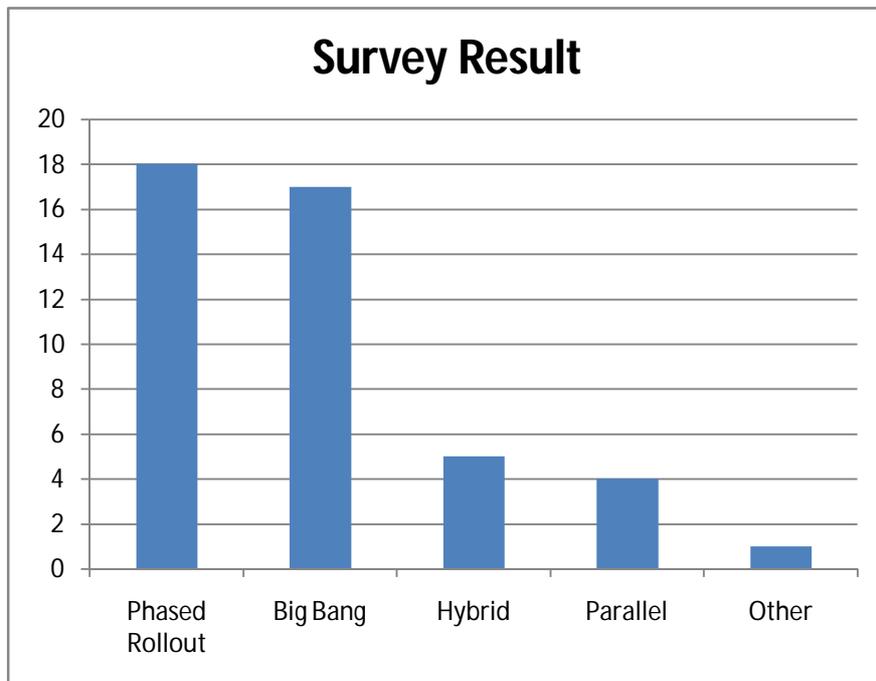
1. How a firm assesses the feasibility of the Big bang strategy?
2. How organizations deal with the Technical complications and the organizational complications?
3. How effectiveness of an implementation strategy can be assessed and analyzed?

#### **An interesting result came out of the survey.**

"big bang, " "phased rollout" or a combination of the two strategies were followed by

eighty-nine percent of users.

The number of phased rollout respondents as compared to big bang was almost equal; parallel adoption was used by only four users; only one user was in the "other" category.



**Figure 1-** The bar chart of the survey report presented in [3]

Eighty-eight percent of ERP implementations in 45 organizations i.e. 40 out of 45 – were successful. Only 5 implementations were unsuccessful due to miscellaneous reasons.

#### **4. FACTORS FOR CHOOSING IMPLEMENTATION STRATEGY**

Choosing an ERP package & then implementation strategy depends on individual's requirements therefore there are several critical factors which has been produced as a result of in depth research, analysis and empirical studies of various researches. Depending upon the results of the research on critical success/ failure factors mentioned in the literature it has been deduced that Enterprise systems success or failure is not a monolithic concept rather it is multidimensional and relative[7].

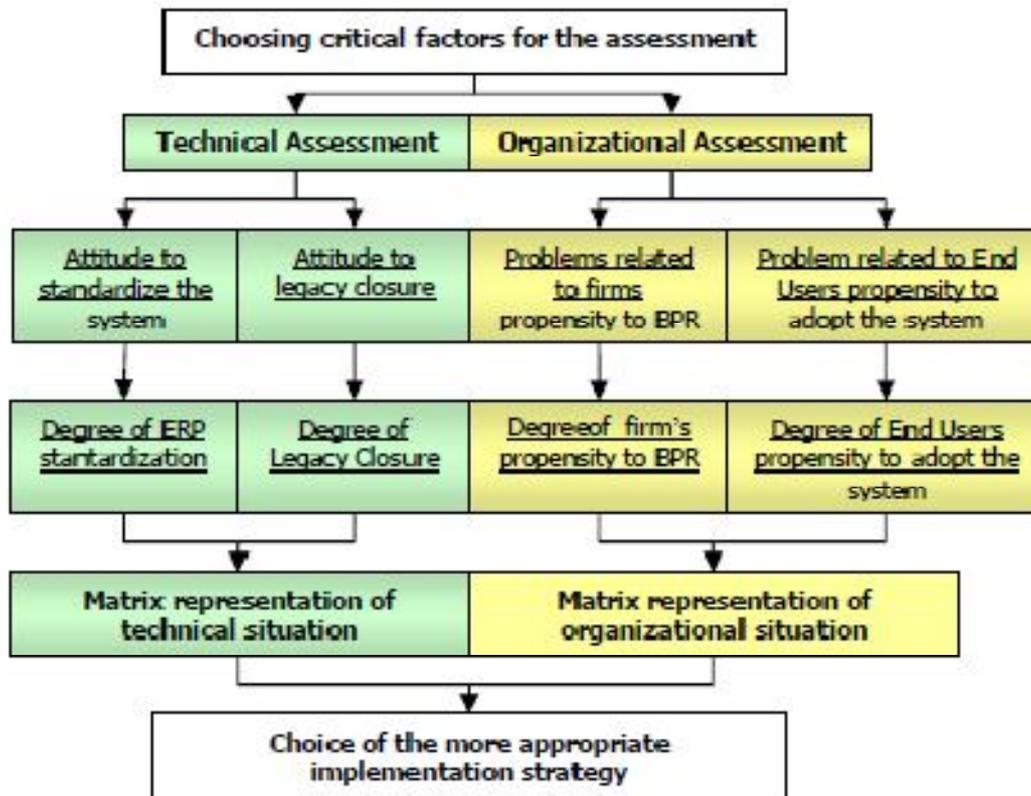
In the recent literature [8, 9, 10, 11, 12, 13] there is the illustration of numerous failure cases amongst the companies that implemented ERP systems. The disappointing results were observed not only due to technical criticalities in the implementation like inadequate definition of functional requirements, difficulties related to legacy closing, inability in choosing the right ERP software, etc.), but also the due to the organizational one like, top management is having lack of commitment,

end users having lack of involvement and resistant to change, etc.

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A methodology has been developed [5] within the research project involving DIEG (Department of Business and Managerial Engineering) and SSC (Shared Service Center). Using the methodology given in [5], literature review and the success factors in [8, 14] a defined set of technical indicators and the organizational indicators have been developed. These indicators are then mapped in the corresponding positional metrics. The simulation model is developed using these positional metrics values and then is used to evaluate the level of feasibility of Big Bang or Incremental approach.



**Figure 2-** The flow chart of the methodology presented in [5]

According to this flow chart, critical factors have been broadly classified into technical indicators and organizational indicators.

On the basis of the literature review and empirical evidences, it has been concluded that the higher the values of both set of technical indicators higher is the feasibility of adopting the Big-bang strategy. On the other hand, when levels of indicators are not high then the phased rollout should be preferred.

**Table 1-** It refers to the Technical Indicators: attitude to standardize the system presented in [5].

<b>1. Attitude to standardize the system</b>	
<i>Indicators</i>	<i>Variables</i>
1.1 Dimension	Number of business process (transversal to functional areas) effectively supported by legacy
1.2 Customization Needs	Number of customization needs

**Table 2-** It refers to the Technical Indicators: attitude to legacy closure presented in [5]

<b>2. Attitude to legacy closure</b>	
<i>Indicators</i>	<i>Variables</i>
2.1 ERP Size	Number of modules and submodules that are being implemented
2.2 Legacy Systems Status	Number of legacy still running to be closed
	Number of functional areas effectively supported by legacy systems

**Table 3-** It refers to the Organizational Indicators: End User Propensity presented in [5]

<b>3. End users propensity</b>	
<i>Indicators</i>	<i>Variables</i>
3.1 Characteristics of end users	Academic level
	Previous experience of ERP systems
	Experience of other information systems (legacies)
	Position within company hierarchy
3.2 Presence of Change Enablers within organizational system	Staff training investment
	Job rotation
	System in place for mapping and monitoring Human Resources competences
	To what extent the system encourages the workforce to be involved in innovation process

**Table 4-** It refers to the Organizational Indicators: BPR Propensity presented in [5]

<b>4. BPR propensity</b>	
<i>Indicators</i>	<i>Variables</i>
4.1 Organizational system	Business model adopted
	Effective recourse to changes to business processes
	Inter-functional orientation of system to objectives and performance
4.2 Project Management expertise	Previous experience of Project Managers in ERP implementation systems
	Competences available for project management
	Inter-functional team project
4.3 BPR experience and know-how.	Previous BPR planning and know how in planning and design BPR
4.4 Monitoring of risks linked to BPR implementation	Analysis of external limitations
	Analysis of internal limitations
	Resistance to change
	Re-conversion of individual competence profiles
4.5 Evaluation of processes	Quality systems

Similarly when both sets of organizational indicators possess the high value the feasibility of adopting the Big-bang strategy is high and when levels of organizational indicators are low then chance to adopt the phased rollout are high.

## 5. CONCLUSIONS

This paper presents detailed information of various ERP implementation strategies and the factors influencing the selection of these strategies from the organizational and technical prospective. Every implementation strategy whether it is Big Bang or Phased or Parallel have their own set of advantages or disadvantages which in turn purely on the needs and resources available in a specific organization. Big bang is quicker in implementation but involves huge amounts of risk if problems are encountered after the implementation. There is a long catch up period if something goes wrong and associated with an initial dip in organizational productivity as users learn the new system. On the other hand, Phased rollout offers more security when

problems are encountered, but requires more time and resources. Parallel adoption takes the greatest amount of resources and is very cost intensive.

The decision to select the best strategy for an organization does not solely depend upon the individual requirements of the company and the strategy but also depends upon several critical factors like technical and organizational. For selection of the best fit one must consider the indicators and metrics also while simulating the situation of their company.

In this study both the technical factors and organizational factors have been studied separately and the relation between them has not been analyzed. New indicators can be developed by studying more systems and also relationship among the technical and organizational factors. The model can be further improved by studying the indicators so that the risk of failure can be minimized.

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