

### GSJ: Volume 10, Issue 5, May 2022, Online: ISSN 2320-9186

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# "Judgmental failure factors (JFF) of ERP Implementation"

### Literature-based review on case comparison of ERP Implementations projects

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#### Abstract

The current literature on ERP implementation challenges during implementation stages and causes of ERP implementation failure is examined first. To investigate "why" and "how" certain ERP systems could not be implemented successfully, a case study research methodology was used. The ERP implementation process and challenges in each phase of ERP implementation were studied using an ERP life cycle framework. There were three common significant failure elements discussed: inadequate consultant efficacy, project management effectiveness, and business process re-engineering quality. It is intended that this study will contribute to closing the current knowledge gap and providing practical recommendations to academics and practitioners alike.

## 1. Introduction

### .1.1 Background of the study

In industrial 4.0, most entrepreneurs welcome the digital era without analyzing much about technological changes. Many entrepreneurs only focus on resources that they have with them. Planning is a basic rule that one wants to practice before starting any activity in the world.

Business activity planning is more critical for the competitive business world. Most researchers said resource planning is more crucial if resources are not in order. The "system" is a word that has meaning itself. Entrepreneurs realized that they need digitalized systems that can be accessed quickly and are friendly to the business to get the best output from the current system. Firms in the IT industry identified the requirement of the business community and developed planning programs that help to plan enterprise resources. After 1990 Enterprise resource planning (ERP) systems widely spread to manage small & medium businesses (Seethamraju, 2015).

An ERP software is an integrated system solution. The vendor offers a package that supports the seamless integration of all the information flowing through a company (financial management, human resources management, supply chain management, and customer relationship management information) (Davenport, 1998). ERP implementation process is not a simple process. It has a significant impact on the business KPI (Key Performance Indicators). Past researchers have recognized and investigated lots of critical issues, success factors, and implementation problems during the performance and operations of ERP (Al-Mashari et al., 2003; Shanks, 2000; Soh et al., 2000). Researchers identified many cases that failed during the implementations (Shanks, 2000).

ERP implementation process is a never-ending process without proper training arrangements for users. According to the prior research, one of the significant managerial problems is the conflict with consultants during the implementation period of the ERP system (Menon, 2019; Themistocleous et al., 2001). Consultants can bring specialized skills, experience, and know-how to the organization, which the organization needs when it is time-consuming and expensive to build internally (Chang et al., 2000; Gable, 2021). They could offer a firm-broader view and encourage unity between the team, and consultants are usually neutral (Davenport, 1998).

ERP system is a technical system that collaborates with business process reengineering. It adds more value to drive the business process. ERP consultants can perform the role of a change facilitator and knowledge transfer. The consulting firm needs to use guide learning, formal training, and knowledge creation activities to familiarize and train clients with ERP systems (Dutta & Kumar, 2021). The appropriate guidance increases the efficiency of the business process.

Mismatches between ERP and organizations significantly impact the business process, which could be the main reason for ERP implementation and operation failure (Menon, 2019). In this case, the need for better customization of ERP software will improve, and the risks linked with

the ERP implementation will be much more significant (Abdullah, 2021). According to the author (Soh et al., 2000), there could be various levels of mismatch, namely business functions, data, and output. Specific ERP problems could arise with the implementation (Markus et al., 2000; Yadav & Joseph, 2020). To reduce potential risk, carefully selecting and evaluating ERP systems are required to manage software mismatch. This study aims to study the "ERP system life cycle" and identify the factors contributing to ERP life cycle failures.

## 2. Purpose of the Study

The enterprise resource planning (ERP) package is a beneficial tool for firms to establish strong capabilities, enhance performance, make better decisions, and achieve a competitive advantage. The ERP package strives to integrate all critical business processes through improved partnerships to gain a competitive edge. IT-enabled reengineering is a popular method for achieving significant improvements in business processes (Al-Mashari et al., 2003).

Failure of ERP system implementation projects has been known to lead to problems as serious as bankruptcy (Scott, 1999). But Prior literature has shown many ERP failures within the business units. Most famous and emphasized incidents are Hershey, Nike, and Foxymeyer (inability of Hershey to ship candy at Halloween, Nike was losing some shoe orders, and Foxymeyer's failure to process orders) (Menon, 2019; Wong et al., 2005). Some researchers reported failures of ERP implementation range of 67%-90% (Prasetyo et al., 2019; Wong et al., 2005).

## 3. Methodology

After reviewing different research philosophies in other philosophical contexts, the author used a deductive approach to investigate the concept. The author followed theories and industry practices to identify the failure factors related to ERP implementation. The paper has developed by reviewing articles by following the synopsis format of the literature review to organize content about the case. The author has used secondary sources in the selected research area.

## 4. Empirical review

Specialists discuss the impact of the failure of ERP in a relative point, referring to the shutting down of the system. Its definition can use only part of the ERP system, suffering business loss,

dropping market price, losing both market share and competitive advantages due to implementation failure (Wong et al., 2005). However, there have been numerous definitions of the failure of ERP implementation. According to the prior literature, failure has been defined based on the Return on Investment (ROI) on ERP, identified in the project approval phase. It has been found that failure rates are 60-90% (Mahmood et al., 2019; Wong et al., 2005).

Previous researchers chose an "ERP System Life Cycle" perspective to investigate the causes of failure in the ERP implementation process. This perspective can help look at what happens at each phase of the experience cycle (Markus et al., 2000). Because ERP implementation failure rates are very high and the resulting business consequences are too severe, there is a strong incentive to open the "black box" and explore the causes of failure (Wong et al., 2005). Prior research has focused on Information systems (IS) for the definition of IS failure. However, most studies have failed to consider the depth of the ERP failure experiences.

Many companies appear to undervalue the issues and problems that frequently arise during the ERP life cycle (Markus et al., 2000). Understanding issues related to life cycle management will also aid in directing the ERP research agenda (Chang et al., 2000). A variety of phase models in the literature propose that a specialized focus is necessary during the various stages of ERP deployment. Markus et al., (2000) developed a four-phase ERP implementation process model that included a project phase, shakedown phase, onward, and upward phase.

Further to two research papers (Al-Mashari et al., 2003; Wong et al., 2005), the following factors were identified as judgemental failure factors of ERP implementation.

No.	Judgmental failure factors for ERP implementation
1	ERP System Misfit
1	
2	The high turnover rate of project team members
3	Over-reliance on heavy customization
4	Poor consultancy effectiveness
5	Poor IT Infrastructure

6	Poor Knowledge transfer
7	Poor Project Management Effectiveness
8	Poor quality business process reengineering (BPR)
9	Poor quality of testing
10	Poor top Management support
11	Too tight project schedule
12	Unclear concept of nature and use of ERP system from the user's perspective
13	Unrealistic expectations from top management concerning the ERP system
14	User's Resistance to Change

#### Table 1 JFF ERP Implementation (Al-Mashari et al., 2003; Wong et al., 2005)

A few researchers named ERP as a part of an IT project. While IT project failure is Instinctively understandable, there is still no consistent definition of what a failed IT project represents. Several authors define failure as "Growth of operational discontinue, leaving supporters dissatisfied with the magnitude to which the system has served their interest" (Chua, 2009). In Chua (2009), another group defined failure as either canceled projects or not delivering business objectives within the budget. Another research pointed out, Clients & service providers deviate from the plan by thirty percent or more during the implementation period, directly impacting the system failure (Whittaker, 1999).

According to Whittaker (1999), the following factors have led to the failures of ERP projects.

Ranking	<b>Risk Facto</b>	rs		Common	deficiencies-	Most like	ely fac	ctors	
				factors					
1	Slippage	from	the	Incorrectly	estimated	Business	and	operatio	nal
	schedule			activity dura	ations	changes	are	needed	to
						deliver th	e ben	efits	

2	Change in scope of	Incorrect assumptions	Clearly understood
	technology, Functionality,	regarding resource	deliverables
	or Business case	availability	
3	Cost overruns associated	Inadequate assignment of	Quantified costs and
	with one or more project	activity accountabilities	benefits
	components		
4	Change in any key	Missing or incomplete	The overall scope of the
	individuals such as the	review and approval	project Business and
	business sponsor, project	activities	technology risks
	manager, or vendor		
	manager		

 Table 2 Factors affected by ERP failures (Whittaker, 1999)

### 5. Case Review & Discussion

According to Menon (2019), critical failure factors are grouped under three dimensions, Technological, Organizational & Human. However, three common characteristics are summarized as poor consultant effectiveness, poor project management effectiveness, and poor quality of business process reengineering (BPR) (Wong et al., 2005). Further critical failure factors are grouped into four people-related, process-related, Technical-related, and external project risk factors (Chua, 2009).

Following four business cases were critically analyzed to identify the leading root causes of ERP implementation failure factors in his research (Wong et al., 2005). The author did not disclose the company names in the research article to maintain ethical clearance.

Company Name	Business Profile	Annual Sales Turnover
		(USD)
Alpha	Multi-national electronic component manufacturing company (listed in Fortune 500), headquartered in Europe with production plants located in China	Around 400 million

	and Taiwan	
Beta	Furniture manufacturing company (listed	Around 140 million
	in the Hong Kong Stock Exchange	
	market), headquartered in Hong Kong,	
	with a production plant located in China	
9		
Gamma	Electronic component manufacturing	Around 10 million
	company headquartered in Hong Kong	
	with a production plant located in China	
Delta	Multimedia speaker manufacturing	Around 10 million
	company headquartered in Hong Kong	
	with a production plant located in China	

#### Table 3 Four business cases (Wong et al., 2005)

The researcher discussed three common factors identified as failure factors.

#### **.1.2** Poor consultant effectiveness

Project phase communication issues lead to the controversy between ERP and business process reengineering. According to the literature, consultants were considered by their project team members to be inexperienced with ERP systems and unable to provide professional advice on ERP project planning. As suggested in the previous research, intangible assets have a significant responsibility to implement ERP (Chua, 2009; Menon, 2019; Moeuf et al., 2020; Prasetyo et al., 2019; Wong et al., 2005).

#### .1.3 **Poor quality of BPR (Business Process Reengineering)**

The project team mentioned that the given business process reengineering (BPR) vision was unclear. The consultant's advice was not professional in conducting BPR. The project team noted solutions did not correctly solve the business process issues. ERP was not matched with the business process. Poor quality of BPR led to incorrect system configuration problems.

Consultants did not conduct mapping analysis to map the ERP functionality with business requirements. Users and the business process were not ready for ERP implementation.ERP vendors led awareness programs to users, which was inefficient to operate the new ERP (Chua, 2009; Menon, 2019; Moeuf et al., 2020; Prasetyo et al., 2019; Wong et al., 2005).

#### .1.4 Poor project management effectiveness

Project success core factors are plan, lead, management, and monitoring of the different phases of the project. Core factors failure is the significant reason for failing the implementation project. ERP implementation failures occurred due to the same reasons.ERP systems are more complex, and project teams were required to collaborate with top management, different department, users, and consultants during the implementation process. None of the organizations' project managers could effectively manage ERP implementation due to a lack of ERP knowledge, capability, and project management abilities. Poor time planning and unrealistic project time periods are two additional factors discussed separately during the research articles. Project time schedules with human resources and human capability vary with available resources. When reviewing their communication and training effectiveness, conducting BPR, and testing system performance, it is critical for the project manager to manage the consultants successfully (Chua, 2009; Menon, 2019; Moeuf et al., 2020; Prasetyo et al., 2019; Wong et al., 2005).

Chua, (2009) identified four failure factors related to ERP implementations by analyzing eight failure projects and their risk factors. These are Correspondence failure, process failure, Interaction failure, and expectation failure. According to the research article, critically analyzed case studies are numbered below.

Case Number	Project Details
Case 1	MANDATA large scale IT project initiated in Australian Public Service
	Board's
Case 2	Regional Information Systems Plan (RISP) in Wessex Regional Health
	Authority's
a a	
Case 3	CONFIRM system in AMR Information System's (AMRIS)

Case 4	Transfer and Automated Registration of Uncertified Stock (TAURUS)
	system in The London Stock Exchange's
Case 5	Baggage-handling system in Denver International Airport
Case 6	London Ambulance Service Computer-Aided Dispatch system (LASCAD)
Case 7	FoxMeyer Drug's Delta III Project
Case 8	The Federal Bureau Investigation's (FBI) in Virtual Case File (VCF)

Table 4 Eight cases of ERP implementation (Chua, 2009)

Each case has its failure factors that correlate with the four risk factors: people-related, processrelated, Technical-related, and external project risk factors.

No.	Case name	Judgemental Failure factors
Case 1	Australian Public Service Board's MANDATA	The project lacked insufficient numbers of skilled IT staff
		Changes in the external circumstances led to a series of funding cuts
		Without an influential project champion, users remained ambivalent
		The poor alternative implementation strategy gave rise to technical difficulties that could not be overcome
		Its scope became reduced over time, and the project lost its legitimacy altogether.
Case 2	WessexRegionalHealthAuthority's(WRHA)RegionalInformation system plan (RISP)	WRHA had no prior experience in IT project management.

		The vision for RISP was also a lofty one.
		The budget was poorly controlled, Internal
		audits for RISP were also found to be
		inadequate.
		End users' perspectives were not taken into
		consideration.
		Implementation delays and changes to the main
		RISP project.
Case 3	AMR Information System's	The vision for CONFIRM was overly grand
	(AMRIS) CONFIRM	
		Too technical system
		The CASE tool used by the development team
	$\sim$	could not integrate two important components
	$(\cap)$	within CONFIRM.
		Unable to make the database fault-tolerant, a
		critical requirement of the system.
		Unable to track the project progress due to the
		infrequent meet in both parties.
		To aggravate the situation, middle-level
		managers from AMRIS deliberately concealed
		news of technical glitches, delays, and cost
		overruns.
Case 4	The London Stock Exchange's	Recession in the early 1990s diminished
	Transfer and Automated	TAURUS' commercial attractiveness even
	Registration of Uncertified Stock	before it was completed.
	(TAURUS) system	
		The technical team was evenly exhibiting to
		meet a muriad of stakeholders' demands
		meet a mynau of stakenoluers uemanus

		It was impossible for TAURUS to be completed
		within the original budget and schedule.
Case 5	Baggage-handling system in	The project failure was the sheer expanse of
	Denver International Airport	DIA, which was twice the size of Manhattan.
		BAE was asked to design and build the system
		in one year, even though it was estimated to
		take four.
		Clients had no prior experience with managing
		projects of such scale
		The poor management of users' expectations
		Clients were not aligning with the design
Case 6	London Ambulance Service	The developer of LASCAD, had no previous
	Computer-Aided Dispatch	experience in building such a dispatch system.
	system (LASCAD)	
		The project's schedule was too aggressive
		LASCAD development, the emergency backup
		system was untested.
		Insufficient training hours for users.
Case 7	FoxMeyer Drug's Delta III	The unrealistic expectation is cast on the
	Project	system.
		Even before the benefits from the ERP were
		realized, the management committed the folly
		of entering into the UHC contract.
		The system proved to be incapable of coping
		with the vast transaction volume.
		The decision to couple the ERP implementation
		and the integration with the warehouse

		automation system was unwitting.
		FoxMeyer also lacked skilled personnel and
		relied heavily on the vendors.
		Quality assurance was relegated to external
		consultants
Case 8	The Federal Bureau	The requirements provided by FBI were not
	Investigation's (FBI) Virtual Case	sufficiently defined in terms of completeness
	File (VCF)	and accuracy.
		The decision to develop VCF within 22 months
		was overly unrealistic.
		Change control was poorly managed even
		though there was a change control board.

Table 5 Judgemental failure factors of eight cases (Chua, 2009)

The identified failure factors are related to people, processes, technological and external.

People related failures are,

- I. Inexperienced clients or vendors.
- II. Lacks of stakeholder's commitment.
- III. Overly- impressive top management.
- IV. Users' unawareness of the systems.

Process related failures are,

- I. Unclear scope and requirement.
- II. Unrealistic schedule.
- III. Poor budgetary control.
- IV. Lack of change control.

Technical related failure factors are,

- I. High technical complexity.
- II. Inappropriate approach to project development.
- III. Incomplete software testing.

Extra project risk failure factors are,

- I. External environment changes.
- II. Tightly coupling with other ongoing high-stake projects.

Further to the research concluded by Garg & Garg (2013), they identified six primary roots related to ERP implementation failure factors after analyzing data from the Indian retail sector. The researcher used a cause and effect diagram (It is sometimes referred to as the "Ishikawa diagram", because Kauro Ishikawa developed it, and the "Fishbone diagram", because the complete diagram resembles a fish skeleton) to determine the correct roots to identify failure factors of the industry.



Figure 1 CE diagram (Garg & Garg, 2013)

## **6.**Conclusion

The author of this concept paper wants to analyze all the factors under four main factors. Those factors are (1) People ( who are involved in implementing the ERP projects ), (2) Process (refer to the organization sectors/Divisions), (3) Technology, and (4) External factors (PPTE).

#### 1. People factor

According to this study of the ERP implementation process and assessment of failure determinants, the effectiveness of ERP consultants has a significant role in deciding the ERP implementation failures. ERP consultants are third-party experts hired to fill in knowledge gaps and transmit expertise to project staff. ERP implementation failures were not clearly defined through the research papers on leadership and ownership failures during the analysis of all case studies. People who lacked ownership of the project were diverse in the ERP implementations to another root. Stakeholders always try to depend on the consultants' expertise (Consultants' perspectives are greater than operational perspectives) without analyzing deeply. This study extends current literature by studying the failure factors of ERP implementations to prioritize the managers' role.

#### 2. Process

ERP misfit is the term researchers use to extract the process failure in ERP systems. Business process reengineering is three words some organizations are used to energize the process according to the cases selected by the author. Vendors are third-party ventures with exciting factors to decorate existing processes with multiple tools. The existing process is not precisely aligned with the reengineering adaptation that the vendors designed.

#### 3. Technological factor

Prior literature also identified technological failure factors that vastly impact misconduct ERP implementation and operations. Multiple brands of a network component, machines with various generations of technologies (Motivations to use ERP), several platforms of servers, and operating systems created numerous issues.

#### 4. External Enviroment

External environment changes that couldn't be controlled through the internal policies. Budget allocation, ERP objectives, and timelines could be changed by Political, Environmental, and Social changes.

Organizations seeking a competitive advantage in today's global market must have a robust, integrated, and seamless approach to BPR supported by a robust IT infrastructure. What appears to have come out of this research is that the potential benefits of reengineering are only attainable if an organization has the complete commitment, leadership, and dedication.

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