

**Ganesh Neupane**

**A PROJECT PLAN FOR THE IMPLEMENTATION OF S/4HANA**

**Thesis**

**CENTRIA UNIVERSITY OF APPLIED SCIENCES**

**Industrial Management**

**May 2020**

**ABSTRACT**

<b>Centria University of Applied Sciences</b>	<b>Date</b> May 2020	<b>Author</b> Ganesh Neupane
<b>Degree programme</b> Industrial Management		
<b>Name of thesis</b> A PROJECT PLAN FOR THE IMPLEMENTATION OF S/4HANA		
<b>Supervisor</b> Janne Peltoniemi	<b>Pages</b> 43	
<p>The overall aim of the paper was to provide comprehensive project plan techniques aligning the business process management for the successful implementation of S/4HANA. To narrow the gap between the S/4HANA features and process requirements, a detailed study of the critical success factors was performed.</p> <p>The theoretical part discusses about the basic project management concepts along with the SAP activate methodology for the implementation of the concerned solution. A certain degree of organizational and process changes is usually required for the successful implementation of ERP solutions, which was then discussed. This kind of an approach helps to maximize the contribution of the ERP to business operations by redesigning the practices and process of the organization before the system is implemented.</p> <p>In order to reach an objective of the thesis, case studies were performed with various firms which had implemented SAP. The research part includes a content analysis of an article or journal, published by firms that helped to access and analyze the reliability of theoretical findings as well as to provide the practical insight into the issue of critical success factors of S/4HANA implementation process.</p>		

<p><b>Key words</b> Business process management, Implementation, Project management, S/4HANA, SAP Activate methodology</p>
--

## CONCEPT DEFINITION

ALE	Application Link Enabled
AM	Asset Management
ASAP	Accelerated SAP
BOM	Bill of Material
CO	Controlling
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
FI	Financial
HR	Humane resource
IS	Industry Solution
KPI	Key Performance Indicator
MM	Material management
OLAP	Online Analytics Processing
OLTP	Online transaction Processing
OM	Quality Management
PLM	Product Lifecycle Management
PMI	Project Management of Institute
PS	Project System
SAP	Systems, Applications, Products in data processing
SCM	Supply Chain Management
SD	Sales and Distribution
SRM	Supplier relationship Manager
TSO	Technical Support Organization
WBS	Work Breakdown Structure

**ABSTRACT**  
**CONCEPT DEFINITIONS**

**CONTENTS**

<b>1 INTRODUCTION.....</b>	<b>1</b>
<b>2 PROJECT MANAGEMENT .....</b>	<b>3</b>
2.1 Definition.....	3
2.2 Project life cycle.....	3
<b>3 SAP .....</b>	<b>6</b>
3.1 Overview, history and development of SAP .....	6
3.2 SAP S/4HANA .....	8
3.3 S/4HANA Modules .....	9
3.4 Capabilities .....	10
3.4.1 Finance .....	10
3.4.2 Supply Chain .....	10
3.4.3 Manufacturing.....	11
3.4.4 Research and development (R&D) and engineering.....	12
3.4.5 Sales .....	12
3.4.6 Procurement .....	13
<b>4 IMPLEMENTATION OF SAP S/4HANA .....</b>	<b>14</b>
4.1 The ASAP methodology.....	14
4.2 The SAP Activate methodology .....	16
4.2.1 Discover .....	18
4.2.2 Prepare .....	19
4.2.3 Explore .....	21
4.2.4 Realize .....	21
4.2.5 Deploy.....	22
4.2.6 Run .....	22
4.3 Project governance.....	23
4.4 SAP solution manager.....	23
<b>5 ORGANIZATIONAL READINESS .....</b>	<b>25</b>
5.1 Understanding the capabilities of SAP Activate .....	26
5.2 Implementation Partner .....	27
<b>6 CRITICAL SUCCESS FACTORS .....</b>	<b>29</b>
6.1 Teamwork and composition .....	29
6.2 Top management support.....	30
6.3 Business plan and vision .....	30
6.4 Project management .....	31
6.5 Organizational culture change management strategy .....	31
6.6 Business process reengineering and management .....	33
<b>7 RESEARCH METHODOLOGY .....</b>	<b>35</b>
7.1 Content analysis .....	35
7.2 Result.....	39

<b>8 CONCLUSION .....</b>	<b>40</b>
---------------------------	-----------

<b>REFERENCES.....</b>	<b>41</b>
------------------------	-----------

**FIGURES**

FIGURE 1. Phases of project management	4
FIGURE 2. Three tier architecture in SAP system	7
FIGURE 3. Evolution of SAP	8
FIGURE 4. SAP portfolio categories	13
FIGURE 5. ASAP roadmap	15
FIGURE 6. SAP Activate Roadmap	17
FIGURE 7. Transition Scenario to SAP S/4HANA	18

**TABLES**

TABLE 1. Factors contributing to the success of SAP implementation	36
TABLE 2. Factors contributing to the failure of SAP implementation	38
TABLE 3. Percentage of factors contributing to the success or failure of SAP implementation	39

## 1 INTRODUCTION

In the competitive world, Enterprise resource planning (ERP) systems have become the lifeblood for the modern business enterprises. Enterprise resource planning systems refers to a set of application systems that contains multiple integrated software modules to manage the organizational resources. ERP enables seamless integration of the business process and information sharing across departmental boundaries within a company and its business partners. The capability of information sharing along the company's value chain is crucial to effective decision making and operating efficiency. Therefore, to enhance the organizational competitiveness in terms of Functionality and Customization, companies have largely shown their interest on implementing the SAP S/4HANA, an enterprise resource planning software. (Singh 2017.)

The implementation of SAP software such as S/4HANA is an extensive operation that brings many changes within the organization. Depending upon the organizational needs and available resources, the whole operation might take up to several years. Virtually every person in the organization is involved weather they are part of SAP technical support organization (TSO) or the actual end-users of the SAP software. Therefore, to meet the organizational goals in terms of the budget, product quality and time, it is important that the implementation process is planned and executed using a solid method. Moreover, some of the organizations placed their focus primarily on the technical aspects of implementation rather than business objectives and requirement which results in the failure of organizational goals. (Singh 2017.)

In addition to the technical requirements associated with setting up and operating S/4HANA system, a solid project plan must be created and deployed with due considerations given to the issues such as IT governance and strategic alignment, business practices and process improvement, Change management, Humane resources development and training. This thesis aimed at providing a detail and successful project plan for the implementation of S/4HANA together with the business and organizational issues.

Either it concerns about the implementation of SAP itself or any other product or services, the work is guided under the principles of project management techniques to achieve the objective. In addition, a concrete project plan helps to achieve an objective of the SAP implementation by aligning the constraints such as cost, quality and time. Therefore, this chapter aims at providing a deeper insight into the project

management elements and the process from the management point of view. Moreover, the thesis discusses and analyzes the history and development of ERP software such as SAP. In addition, a brief introduction to the topic along with the capability of the software provides the reader for making the decision when it comes about the choosing of right ERP software based upon the organizational mission and goal. AS a part of S/4HANA implementation, different methodologies are discussed and analyzed. SAP Activate methodology, one of the comprehensive methodologies along with the phases involves as a part of implementation roadmap is discussed. Although the SAP Activate methodology itself provides a complete comprehensive package for the project implementation of S/4HANA, some of the critical success factors such as business process and change management, human resources and expertise management have been explored in more detail.

In order to reach an objective of the thesis, case studies were performed with various firms which had implemented SAP. The research part includes a content analysis of an article or journal, published by firms that helped to access and analyze the reliability of theoretical findings as well as to provide the practical insight into the issue of critical success factors of S/4HANA implementation process.

## **2 PROJECT MANAGEMENT**

Project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The objective of project management is to secure quality planning and implementing the project successfully. Therefore, this chapter aims at providing a deeper insight into the project management elements and the process from the management point of view.

### **2.1 Definition**

The growth and acceptance of project management has changed significantly over the past decades and the change is expected to continue in the 21<sup>st</sup> century. The growth of project management can be traced through the topics such as roles and responsibilities, organizational structure, decision making and especially corporate profitability. The survival of the firm depends upon how well the project management is implemented and how quickly.

Project management can be defined as the structured application of skills, knowledge, tools and techniques to organize process, activities and tasks designed to bring about a desired outcome that efficiently meets a project or a business need. A project is a temporary non-routine effort limited by scope, time and cost that creates a unique product, service, or result that meets the specified requirements or a customer need. (Quartararo 2016.)

Moreover, a project can be defined as a unique venture with beginning and end, conducted by people to meet established goals within parameters of cost, schedule and quality (Jeffrey 2016).

### **2.2 Project life cycle**

Every project that is undertaken goes through a cycle known as the project life cycle. This is the standard format for all the projects irrespective of the size or the location, budget or the service. The duration for each phase in the project life cycle may vary however, a standard project life cycle guides a project from its beginning to its end in a systematic, timely and controlled manner which benefits the stakeholders and hence helps to achieve an organizational goal (Jeffrey 2016).

According to Project Management of Institute (PMI), the project management cycle goes through the following five phases that are shown in the figure 1 below:



FIGURE 1. Phases of project management (samartsheet.com)

Project initiation is the starting phase of the project which aims at defining the project at a broad level. Whether the project should be taken or not, this is the stage where the feasibility testing is performed. When doing so, the project charter is created that outlines the purpose and requirements of the project. The scope of the work is determined, and the necessary resources is identified followed by the stakeholder's commitment. (Eby 2018.)

Project planning is the second phase where all the detailed information regarding specifications, schedules and other plans are developed. This phase focuses on developing a roadmap that everyone will follow. It involves project management skills and techniques, cost and time evaluations, the determination of quality expectations and specifications and give rise to the work break down structure. During the planning phase, most importantly the goals are set which should be S.M.A.R.T (Specific, Measurable, attainable, realistic, timely) and C.L.E.A.R (Collaborative, Limited, Emotional, Appreciable, Refinable). The project plan also includes establishing baselines or performance measures which helps to

determine the track of the project. The roles and responsibilities are clearly defined so that everyone knows what their role is. Therefore, the planning phase defines the project scope statement, work breakdown schedule (WBS), milestones, Gantt Chart, Communication plan and the risk management plan. (Eby 2018.)

Project execution is the third phase where deliverables are developed and completed. The status reports and meetings, development updates and performance report are carried out during this phase. The teams involved in the project are informed about their responsibilities with a meeting. Tasks completed during the execution phase includes developing teams, assigning resources, executing project management plans, procurement management, setting up tracking system, updating project schedules and modifying project plans as needed. (Eby 2018.)

During the project performance and monitoring phase, the project progression and performance is measured to ensure that everything happening aligns with the project management plan. It is the duty of the project manager to determine if the project is on track. The project manager with the help of Key Performance indicators (KPIs) measures the project performances. Some of the KPIs to measure the performance includes:

- Project objectives: Measures if the project is on schedule to meet the stakeholder's objectives.
- Quality deliverables: to determine if the specific tasks deliverables are being meet.
- Effort and cost tracking: The effort and the cost of resources are analyzed to see if the budget is on track. This also informs if the project will meet its completion date based on the current performance.
- Project performances: Monitors the changes in the project considering the issues that arises and remedies to tackle with those issues. (Eby 2018.)

The project closure is the final phase which represents the completed project. Contractors hired to perform specific work are laid off during this time. The final evaluation of the project is carried out in coordination with all the team members. The final project budget and the project report is carried out. (Eby 2018.)

### 3 SAP

Before going throughout the implementation phases of SAP ERP, it is necessary to understand the environment and functionalities of SAP ERP system. The following chapter aims at providing the crucial information and background details concerned with the topic.

#### 3.1 Overview, history and development of SAP

SAP ERP is an enterprise resource planning software developed by a German company SAP SE. The software was founded by ex-IBM employees who had been working in the enterprise software division. Being founded in 1972 as a private partnership being provided with the services in the areas of payroll and accounting process, today SAP is considered as the leading ERP's software in the world. The software has a very interesting evolution from the basic product to the product used till the date. The first commercial product was launched in the year 1973 based on the tier system i.e. one tier system known as SAP R1 followed by SAP R2 and SAP R3 respectively. The R represents for real time data processing. The software mainly consists of three layers i.e. Presentation layer, Application layer and Data base layer. In SAP R1, all these layers were installed in one server. SAP R1 was basically focused to financial accounting system to record transactions, report operating data and analyze financial data. In R2 system, the presentation layer has one layer whereas the application and the database layers are presented on another layer. Although the mainframe solo tune was not opened, With the help of Application Link Enabled (ALE) technology, R2 was able to link within the system and share online data. Additionally, additional modules were added to the portfolio with the release of Humane Resource management. At the same time, with the introduction of SAP R3 system, the needs of customers from the small to multi-billion companies were meet. The worlds mostly used standard business software is highly customized using the SAP's proprietary language, ABAP/4. The SAP R3 software is a set of programs and tools that interfaces with the computer operating system, underlying database, communication protocols and the presentation interfaces. (SAP SE 2020.)

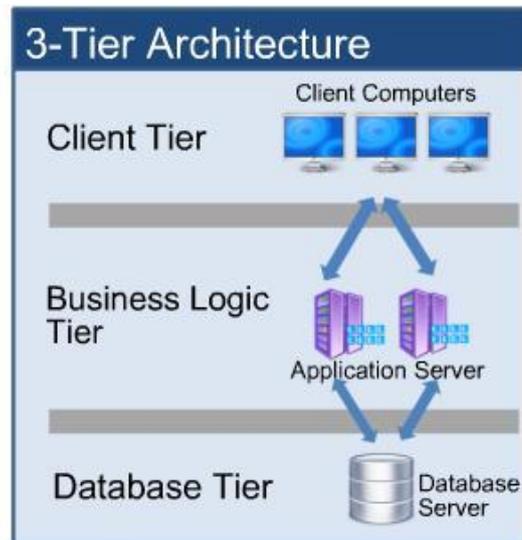


FIGURE 2. Three tier architecture in SAP system (Adopted from Tallam 2013)

With the introduction of mySAP platform, employees, customers, suppliers and other business partners were able to work together across the company borders at anytime, anywhere. mySAP is not a single product but it is a suite of products from sap including SAP R3. Besides of having many updated modules in R3, mySAP has the products such as supplier relationship management (SRM), customer relationship management (CRM), Product lifecycle management (PLM) and supply chain management (SCM). (Tallam 2013.)

In 2006, SAP introduced SAP ERP which makes SAP as one of the market leaders in business software, enterprise performance management and business intelligence. In 2009, SAP launched its SAP Business suite 7 software which helped the business to optimize their performance and reduce the costs. In 2010, SAP launched an in-memory platform called HANA which can do real-time analytics. This reacts business to react more quickly to changing conditions providing the significant strategies benefits. With the evolution of HANA, performance has been optimized with the combination of online analytics processing system (OLAP) and online transaction processing system (OLTP) into a single structure. SAP HANA itself does not determine what sorts of tasks a business does however can accommodate any type of data. Moreover, HANA is a platform for business applications such as SAP applications for Finance, HR, and logistics. Moreover, SAP SE has been continuously working to harness the speed of HANA's speed and flexibility, the older version of the SAP software will only be able to work on HANA's platform till 2025. At this point, customers need to have completed their SAP HANA migration and must have upgraded to the new software. (SAP SE 2020.)

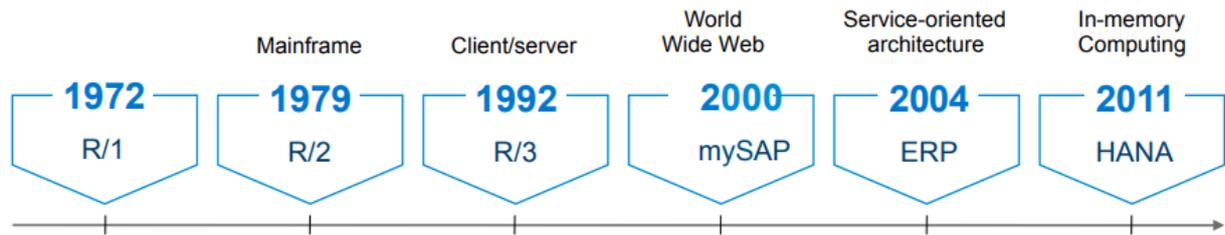


FIGURE 3. Evolution of SAP (Adopted from Ktern 2018)

### 3.2 SAP S/4HANA

We are living in the digital world and the exponential growth in digital information cannot be handled by just upscaling our infrastructure or existing process which will complicate the solution. The places of underlying hardware architecture advancement and computing power are way faster, and to take advantage we need to adapt them and redesign the business suite for the digital world. Thus, SAP has rewritten the complete suite named as SAP S/4HANA where the customers can completely reimagine their business models, processes and decision making with an enriched end user experience. (Singh 2017.)

SAP S/4HANA is a real-time enterprise resource management business suite for the digital business. SAP/S4 HANA was announced in February 2015 and is one of the most important releases in 23 years. Being built on the advanced in-memory platform, SAP HANA, the system offers a personalized and customer-grade user experience with SAP Fiori. Deployable on cloud or on-premise, SAP S/4HANA can drive instant values across all lines of business irrespective of the industry or business size. (Singh 2017.)

Since S/4HANA is built on SAP HANA platform, it has all the capabilities to manage the data and application including the predictive analysis and real time decision support. Some of the features includes:

- Can be deployed on-premise or on a cloud or both.
- Allows organization to build faster and more cost-effective business applications.

- Helps to enhance the efficiency of an enterprise processes by embedding the analytics in the transactional context and by removing the visibility blackouts caused by batch processing.
- Provides brand-new user experience by improving the productivity and satisfaction of business users.
- Can handle both Online Transaction Processing (OLTP) and Online Analytics Processing (OLAP) processing from a single model and therefore, we do not need to move the transactional data to a separate system. (Singh 2017.)

### 3.3 S/4HANA Modules

Simplicity is one of the SAP's major goal in the creation of S/4HANA modules. They are individual components of S/4HANA implementation. Each module offers functionality for a specific business purpose such as General Ledger, Logistics, Materials Management and so forth. These modules harness the full power of the underlying SAP HANA database. Upgrades become easier and hence the customer can quickly take an advantage of newer features as soon as they are released by SAP. SAP simple finance is one of the main components of S/4HANA which aims to enhance the financial process and enable real-time analysis of financial data. (Singh 2017.) SAP solutions include several functional modules, which supports transactions to execute key business process such as:

- Financial (FI)
- Controlling (CO)
- Asset Management (AM)
- Project System (PS)
- Workflow (WF)
- Industry Solution (IS)
- Humane Resource (HR)
- Plant Maintenance (PM)
- Quality Management (QM)
- Production Planning (PM)
- Material Management (MM)
- Sales and Distribution (SD). (SAP 2019.)

### **3.4 Capabilities**

SAP S/4HANA provides next generation process that connects and organizes the entire business taking the advantage of artificial intelligence (AI) so that every employee can make quick decision. Some of the capabilities of S/4HANA includes finance, supply chain, manufacturing, research and development, sales, procurement, ectara which are further discussed.

#### **3.4.1 Finance**

Finance is one of the modules included in SAP that deals in managing financial transactions within enterprises. This module helps employees to manage and report real-time data involved in financial transactions. Following are some of the activities and tasks offered by the Finance module:

- Faster report generation and reduction in bill processing time
- Improves the profitability and cost with comprehensive analytics
- Enables subscription-based revenue model
- Simplify accounting and financial close process by combining financial and management accounting and profitability data into a single universal journal.
- Optimizes straight-through process with real time analytics, audit trails and compliance reporting to predict cash flow accurately, manage liquidity efficiently that helps to improve treasury and financial risk processes. (SAP 2019.)

#### **3.4.2 Supply Chain**

Supply chain management is one of the key modules in SAP that controls production planning, business forecasting and demand planning. The process helps suppliers, customers, manufacturers, business partners and retailers connect with each other to manage supply chain process effectively and efficiently. Following are some of the benefits offered by this module:

- Lower inventory costs

- Helps in providing more accurate commitment dates to customers by considering business rules, material availability
- Help ensure on-time delivery to the right locations by supporting the complete transport lifecycle for domestic and international freight
- Optimizes inventory levels and processes by coordinating goods movements across inbound, outbound and physical inventory processes to minimize waste, loss and damage. (SAP 2019.)

### **3.4.3 Manufacturing**

Production planning (PP) is one of the modules offered by SAP which consists of master data, system configuration and transactions in order to accomplish the plan procedure for production. The module collaborates with master data, sales and operation planning, resource planning, material requirement planning, product cost planning and so on while working towards production management in enterprises. Following are some of the activities of SAP PP module:

- Helps to improve operational efficiency reducing the delivery delays
- Improves production planning by coordinating manufacturing operations from material requirements to inventory and adjusting plans based on real-time information from the business, suppliers' network and plant floor.
- Supports complex assembly processes by creating an efficient plan covering the areas such as material requirements, production and capacity planning, bills of materials, routing, factory layout and machines models.
- Optimizes production and material flow and enables flexible and efficient manufacturing process by using the methods such as lean control, continuous improvement and just-in-time production.
- Boosts quality and lowers cost by fostering collaboration between R&D and manufacturing teams with relevant data and smooth handovers of engineering documents, bills of materials and design changes.
- Enhances quality management by running closed-loop quality management process to prevent the issues. (SAP 2019.)

### 3.4.4 Research and development (R&D) and engineering

SAP R&D and engineering is one of the capabilities offered by SAP that Manages, translates and integrates customer driven innovations to optimize project efficiency by delivering high quality projects on time and within scope and maintaining continuous design standards. Following are some of the activities offered by the module:

- Manages, translates and integrates customer driven innovations to optimize project efficiency by delivering high quality projects on time and within scope and maintaining continuous design standards.
- Manages enterprise projects effectively investing in the right projects by aligning the project portfolio with the enterprise strategy to identify opportunities and manage resource.
- Accelerates the market by increasing the efficiency of Bill of Material (BOM) management and enabling closed loop inspection planning in accordance with industries standards such as ISO/TS 16949 and ISO 9000.
- Boosts efficiency with requirement driven process by linking requirements to product data, analyzing requirements and gaining insights from downstream process.
- Reduces warranty costs and improve service levels by embedding sensors into the product that helps in monitoring and enabling remote diagnosis and maintenance. (SAP 2019.)

### 3.4.5 Sales

SAP Sales and Distribution (SD) module deals in managing all transactions ranging from inquiries, proposals, quotation, and pricing that helps greatly in inventory control and management. Following are some of the capabilities offered by SD module:

- Improves revenue and cash flow by managing order-to-cash process flawlessly and providing access to accurate, real time information.
- Supports sales force and sales manager providing the customers data on interactions, activities and territories.
- Enhances cashflow and manages subscription billing more efficiently.
- Decreases the lead time for sales quotation with a single source of true and improved data access.

- Helps to expand sales by improving the product design based on customer feedback. (SAP 2019.)

### 3.4.6 Procurement

SAP Material Management (MM) is one of the modules offered by SAP that manages procurement processes within the organization. Following are some of the capabilities offered by MM module that helps to enhance the procurement practices:

- Provides extensive insights on purchasing cost by analyzing purchase orders, invoices and contracts and evaluates supplier performance with real-time data access.
- Streamlines operational purchasing having insight to the preferred suppliers and agreements.
- Automates sourcing and contract management by accessing every sourcing data point in one system and managing automated procurement documentation.
- Reduces procurement cost enabling the centralized procurement process instead of multiple approvals.
- Helps to reduce supply-chain risk by improving supply chain visibility to identify and form relationships with an optimal mix of suppliers and partners who can best serve the organizational strategic vision. (SAP 2019.)



FIGURE 4. SAP portfolio categories (Adapted from SAP 2019)

## **4 IMPLEMENTATION OF SAP S/4HANA**

A lot of process and organizational changes occurs during the implementation of S/4HANA. Depending upon the organizational needs and available resources, the whole operation might take up to several years. Virtually every person in the organization is involved whether they are the part of SAP technical support organization (TSO) or the actual end-users of the SAP software. Therefore, to meet the organizational goals in terms of budget, product quality and time, it is important that the implementation process is planned and executed using a solid method. At the same time, various methodologies have been provided by the SAP as a part of implementation such as Accelerated SAP (ASAP) for on-premise and SAP Launch for the cloud. However, the latest implementation method provided by the SAP is SAP Activate. Before we go ahead with the SAP activate methodology, let's quickly review the SAP ASAP methodology and find the differences. (Singh 2017.)

### **4.1 The ASAP methodology**

ASAP methodology is one of the important software development life cycles used for SAP implementation projects. SAP projects are long and intense which requires much effort and many resources from developers and managers. It can be tricky if SAP projects are not planned in a proper form. The ASAP methodology provides the proper for an implementation road map. ASAP methodology divides a project according to the vital phases considered as a milestone. This is a phased delivery-oriented methodology that minimizes risk and reduces the total cost of implementation. The whole process consists of five steps. Each step of the roadmap provides a detailed plan to help document SAP systems, collect and implement recommendations. Each step of the process is accompanied by quality control that helps to track deliveries and other critical success factor. (Singh 2015.) An implementation project typically has the following ASAP phases and workstreams as described in the figure 5.



FIGURE 5. ASAP roadmap (Adopted from Techilive 2020)

Project preparation is the initial phase of the ASAP methodology where the project objective is identified, and the landscape of the project is prepared. Information regarding the server information, project costs, resources, subject matter experts and business teams are decided by the PMO. It consists of the project manager, a steering committee, core business members and sponsors. The study of the current system and the processes is carried out by the core team. The project management team also hires resources and carries out project planning and outline. (Singh 2015.)

The second phase, business blueprint has a purpose to achieve a common understanding of how the company intends to run SAP to support their business. During this phase, the project team does a gap analysis, an analysis of the differences between the current system and the system to be studied. Resources are allocated for the requirement of the new system. Integration points, interfaces and process maps are finalized. The best business solution is identified performing the cost of ownership analysis. High availability and disaster requirements are determined. The best SAP hardware and software technology partner is selected. Technical support organization (TSO) members are hired, and training is provided to various team members such as data center specialists, high availability specialists, network specialists and end users. (Singh 2015.)

During the realization phase, organizational change management is addressed to maximize the collective efforts of all the people involved in the change and hence to minimize the risk of failure of implementing the changes. Moreover, functional integration and regression test is performed to ensure that the business process work. Testing is mainly performed in the quality control server. (Singh 2015.)

Final preparation is the crucial phase of the overall implementation. The main target of this stage is getting the system ready for the implementation and the company. All the previously done activities such as testing, end user training and system management are consolidated. Volume and stress tests are designed to test the system infrastructure. During this phase, systems and stress test is performed to see if the expectations of the end users as defined in the agreement will meet. The CUTOVER plan is prepared and then executed describing all the tasks that have to be performed before the actual go live. (Kale 2000.)

The SAP system is finally turned on for the end-users during the Go Live phase. Main activities in this phase include addressing and correcting the errors which might occur in day-to-day operation or issues reported by end users. Moreover, the goal is to obtain feedback on the solution and to monitor for the continuous improvement. With a purpose of providing enough support for end users, it is also necessary to setup a help desk and customer competency center. (Kale 2000.)

#### **4.2 The SAP Activate methodology**

SAP Activate is a complete methodology, and it is more comprehensive than any system SAP has built before. Being built on the foundations of ASAP methodology, SAP Activate has been able to create a system to upgrade, migrate or transform any SAP landscape enabling companies to modernize their software stack and meet the SAP 2025 deadline. SAP activate is more up to date than ASAP in terms of software upgrade and real-time information being provided with. Moreover, the customers have found a much clear path with the up-to-date selection of resources and tools to guide them through their migration path. Because SAP Activate supports for both waterfall and agile method, it is up to the customer to decide whether to work with the existing waterfall methodologies of ASAP or to draw their own sprint. Fit-to-standard analysis is one of the improvements by Activate that helps to reduce the need for costly and time-consuming customization by starting with the functionalities SAP already has. In fit-to-standard workshop, the customer can explore how a standard design and process could fit their business needs. Moreover, SAP Activate combines both ASAP and Launch into one methodology, a complete methodology for on-premise and cloud landscapes. (Osterhaus 2019.)

The SAP activate methodology follows six phases providing the real-time guidelines and support throughout the project life cycle of SAP solutions. These phases are a series of value delivery and quality checks, reflected in the approach as quality gate checkpoints to make sure that the solution delivers the

value as expected by identifying the risks early with a total quality approach. The SAP activate phases are Discover, Prepare, Explore, Realize and Run. (Osterhaus 2019.)

The SAP Activate methodology is structured in two phases, workstreams, deliverables and tasks. Phases are the stages of a project such as discover, prepare etc. Each phase ends with the quality gate to verify the completion of deliverables. Workstream is the collection of related deliverables. Workstream can span in multiple phases but is not dependent on phase start and end for e.g. Project Management. Deliverables are the outcomes that are expected out of project. Many deliverables are included in a workstream for e.g. project initiation and governance. Task is the actual work that need to be done. One or several tasks together makes a deliverable for e.g. creating project charter and scope statement. (SAP 2019.)

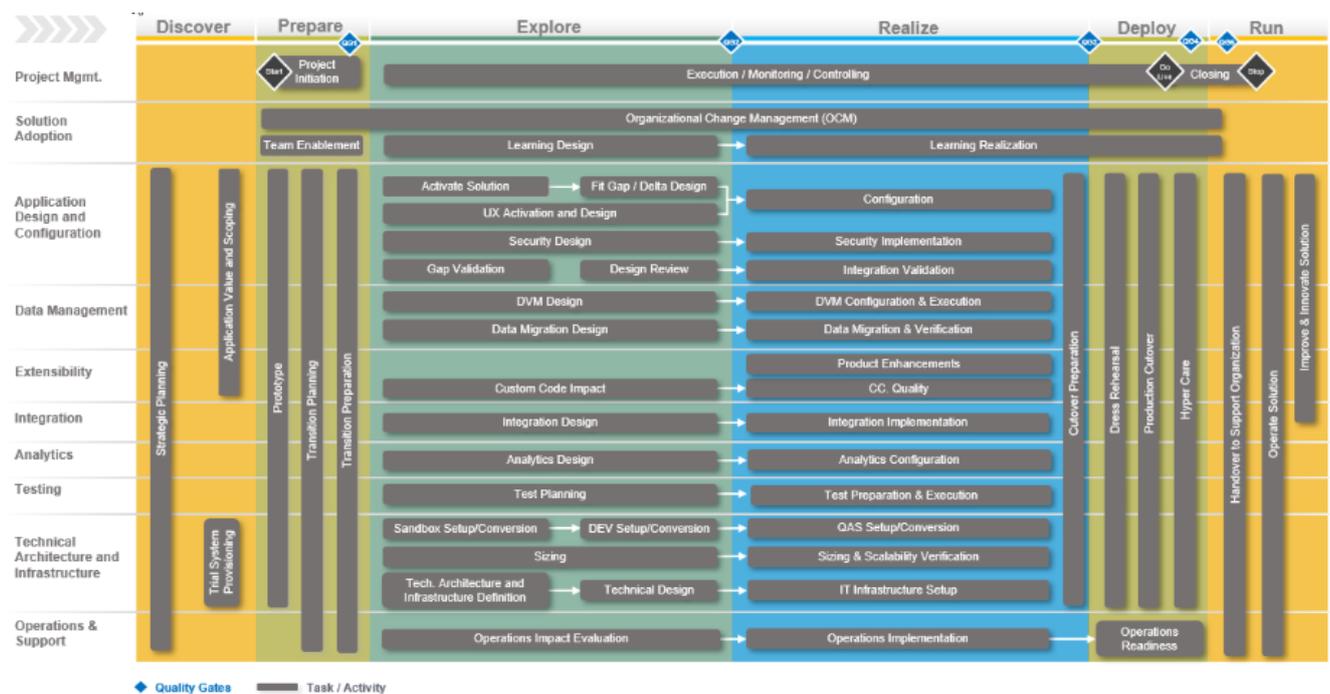


FIGURE 6. SAP Activate Roadmap (Adopted from SAP 2019)

In the above figure, the vertical columns starting from Discover to Run are the phases of the roadmap whereas Rows starting from Project management to Operations and support are the workstreams. The elements within the black box are the activities and tasks followed by the quality gates within the blue shaped diamond box. The six phases of SAP Activate methodology are discover, prepare, explore, realize, deploy and run.

### 4.2.1 Discover

This is the phase where the overall strategy for digital transformation and implementation plan is created. Because SAP Activate is continuously helping to achieve those strategies, it is important to recognize the benefits and values of SAP S/4HANA. It is necessary to identify the high-level areas of the existing solution landscape that brings benefits to an organization while moving to SAP S/4HANA. Moreover, the free trial system provided by the SAP helps business personnel to experience the potential and the service offered by the application. Also, it is recommended to create a value-based and company specific implementation strategy which includes deciding on the implementation scenario for e.g. the decision either to convert the existing system or to install a new one. In addition to this, transition to S/4HANA provides an opportunity to increase the competitive advantage and drive agile innovations based on custom or partner specific extensions using SAP HANA and SAP cloud platform. Building a solid implementation strategy which is the foundation for the business case, it is equally important that the customer become familiar with the benefits of SAP HANA and SAP S/4HANA and the benefits it can bring to the customers business. (SAP 2019, Q4.) There are three implementation scenarios for S/4HANA as in the figure below:

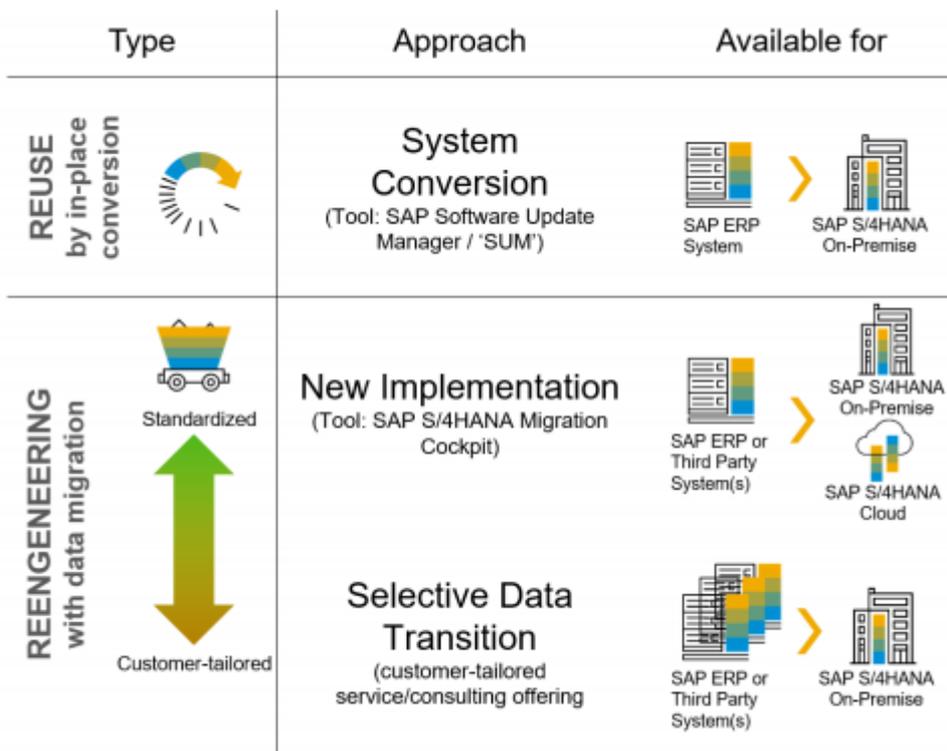


FIGURE 7. Transition Scenario to SAP S/4HANA (Adopted from SAP 2019)

### 4.2.2 Prepare

The project is officially initiated in the prepare phase once the business case has been approved. During this phase general project preparation such as staffing, governance and reporting requirements are carried out. The prepare phase of SAP Activate is mainly focused on planning and preparation. Within this phase, the project goal is defined, the scope of the project is identified and the initial project plan is created. Project governance, roles and responsibilities and management plans for running the project are identified during this phase. The deliverable of this phase would be the input for the next phase, Explore. At the same time, the system environment is set up including the best practices for ready-to-run process. (Singh 2017, 59.) In case of S/4HANA implementation, the following are some of the key activities performed during this phase:

- Defining project standards and government framework
- Detailed project scope documentation
- Implementation plan and rollout strategy
- Define project plan and goals with high level scope
- Get the executive sponsorship
- Identifying the business value objectives
- Validate the project objectives
- Define the roles and responsibilities for the project team
- Establish project management, tracking and reporting mechanism for value delivery
- Start the project. (SAP 2019.)

Creating the project charter and the project management plan are some of the important tasks performed during the project initiation of the prepare phase. The project charter formally documents the business needs and benefits of the project to confirm the agreement with the stakeholders. The project is authorized based on the order form and business case. The project charter outlines the purpose, approach and the key characteristics of the project. With the creation of such kind of a document, the boundaries of the project are well defined and gives a way for senior management to accept and commit to the project. (SAP 2019.) The project charter contains the following information:

- Current situation
- Proposed resolution

- Solution description
- Project goal and objectives
- Business case summary
- Estimated time and cost
- Key dates
- Project stakeholders
- Critical success factors
- Risk management. (SAP Q4, 2019.)

Along with the project charter, creating the project management plan is also one of the major tasks need to be carried out during the project initiation phase. The project management plan is the document that describes how the project will be executed, monitored and controlled. It integrates and strengthens all the subsidiary plans and baselines from the planning process. Some of the tasks performed while creating project management plan includes:

- Establishing the scope baseline
- Establishing the schedule baseline
- Establishing the cost baseline
- Establishing the quality baseline
- Defining the scope management plan
- Defining the requirement management plan
- Defining the cost management plan
- Defining the quality management plan
- Defining the process improvement plan
- Defining the humane resource management plan
- Defining the communication management plan and the project reporting standards
- Defining the risk management plan
- Defining the procurement management plan
- Defining the stakeholder management plan
- Defining the change management process
- Defining the issue management process
- Defining the project constraints
- Defining the project standards. (SAP 2019.)

### 4.2.3 Explore

Once the prepare phase has been finalized considering a detailed planning for the functional and technical work streams, the explore phase will be kicked off. During the explore phase, all the technical and functional aspects of the implementation project such as solution scoping, content activation are fully planned, documented and hence ready to be executed. The focus is to verify if the solution scenarios meets business needs and to capture the backlogs. (SAP 2019.) As a part of S/4HANA implementation, some of the key activities performed during the phase includes:

- Conducting the solution validation workshop
- Integrating to the legacy system as required
- Identifying and defining the configuration value

During the phase, SAP Best practices content for the selected cloud solution is the part of S/4HANA starter system. In addition, the custom codes need to be analyzed with respect to business needs and requirements. However, each phase of the SAP Activate roadmap is guided with the help of workstreams that follows a certain activity and tasks. Similarly, in the solution adoption work stream, the training strategy for the end users is developed based upon the functional design. In the Application design and configuration work stream, fit/gap analysis and delta design workshop are analyzed with S/4HANA value and implementation strategy. Additional applications such as central Finance setup in a selective data transition is planned in this phase as well. The S/4HANA specific security strategy and high-level roadmap is to be defined. In the Data management workstream, Data load from the source systems is prepared and planned. In the integration workstream, integration design work starts in alignment with the to-be application design that helps to properly integrate the SAP S/4HANA system in the solution landscape. (SAP 2019.)

### 4.2.4 Realize

In the Realize phase, the technical architecture and infrastructure is prepared. Supporting systems are either set up or converted according to the best practice and the implementation plan. Custom code is adjusted for S/4HANA and SAP cloud platform. Application and analytics functions are implemented, configured, integrated and teste. Finally, end-user training including project-specific training material

and team setup is prepared as required. (SAP 2019.) Some of the key activities during the realize phase includes:

- Configuring the solution in the quality environment
- Creating the cutover plan and conducting end-to-end testing of a solution
- Providing change management and end user training. (SAP 2019.)

In the application design and configuration work stream, the functional changes such as general configuration, master data and security changes are implemented as defined in the delta design document.

#### **4.2.5 Deploy**

The purpose of this phase is to finalize the readiness for S/4HANA and business process for the production go-live. This includes final testing, preparing the cut-over, and finalizing the IT infrastructure and operations. (SAP 2019.) Some of the key activities performed during this phase includes:

- Executing the cutover plan
- Transition to a new system
- Close the project. (SAP 2019.)

#### **4.2.6 Run**

The transition of the project ends with the Deploy phase. The aim of Run phase is to establish a safe and efficient operations of the newly created solution. This includes the operation platform, core IT support process, setup for additional operation tools, enablement of the operational team, etc. Moreover, continuous improvement operation is established to improve IT operations based on the newly gained experience. In addition to this, this is the right time to plan further innovations which could be implemented according to the overall implementation strategy, created in the discover phase of the project. The implementation strategy can now be reviewed and enriched based on the system usage experience which has been gained in the first week after Go-Live. (SAP 2019.)

In the case of S/4HANA implementation, some of the key activities in this phase can be jotted down as follows:

- Monitoring systems, alerting, analysis and administration of the solution.
- Small enhancements and fixes.
- Optimization. (Singh 2019.)

### **4.3 Project governance**

Project governance is an oversight function that is critical to the success of the project. It provides the project manager with a framework to manage and control the project consistently. It includes tools for decision making, role definition, responsibilities, accountability and the alignment of the stakeholders around the purpose of the project. (Singh 2017.) The following roles should be clearly defined during the implementation cycle of S/4HANA project:

- Project manager
- Solution architect
- Organizational change manager
- Test manager
- Business process experts
- UX, integration and technical lead
- Solution experts/consultants for finance, supply chain experts and the application area where the implementation is going to be happened
- Training expert. (SAP 2019; Singh 2017.)

Furthermore, the organizational structure of the project team should be clearly defined.

### **4.4 SAP solution manager**

SAP solution manager is a platform to manage the life cycle of the SAP solution in a heterogeneous environment. It provides tools, methods and process management content that can be used during the

preparation of business blueprint, configuration and implementation. It reduces the amount of effort required to manage the SAP and nonSAP systems with a maximum potential. It provides integrated content, tools methodologies and access to SAP system. In addition to minimizing the risks and increasing the reliability of the solution, SAP solution manager helps to lower the total cost of ownership (TCO) throughout the solution lifecycle. Addressing the technical and business aspects of the solution, it ensures maximum benefits of the IT investments. The SAP solution manager provides content that accelerates implementations and upgrades of SAP business suite including configuration information and a process-driven approach for implementation covering blueprint, configuration and final preparation phases. SAP solution manager includes a service desk that helps a project to manage incidents more efficiently and eases the settlement of support costs. Solution manager facilitates all phases of technical support including planning, deployment, operation and optimization. Furthermore, SAP solution manager provides diagnostics functions which allow identification, analysis and resolution of problems in heterogeneous environment. (SAP 2019; Singh 2017.)

As the solution empowers communication between all the stakeholders, project teams, SAP partners, consulting teams and the SAP activate global support, it is recommended for the project management teams to utilize the pre-configured environment for SAP solution manager that will provide a ready to run SAP solution manager environment. Some of the processes provided by the SAP solution manager includes requirements management, project management, process management, testing, information technology (IT) service management, application operations, business process operation, custom code management and many more. The best practices help the companies to work with the pre-configured business process documentation with the minimum customization. Therefore, it is necessary to realize the functionalities of SAP solution manager during the prepare phase of implementation part. (SAP 2019; Singh 2017.)

## **5 ORGANIZATIONAL READINESS**

Prior to implementation, it is always important for an organization to have a clear mission and vision of implementing SAP as an ERP software. A business plan that outlines the proposed strategic and tangible benefits, resources, risks, costs and timeline is crucial which helps to focus on business benefits (Wee 2000). The investment should be justified based on a problem and the change tied directly to the direction of the company (Falkowski 1998). Project mission should align with business needs and should be clearly stated (Roberts & Barrar 1992). Identification of the goals and benefits is crucial.

Furthermore, the organization should be aware of the risks associated with the business process changes after the transition to the new system. The scope must be clearly defined which particularly includes the number of systems implemented, involvement of business process reengineering needed and the involvement of business units. Analyzing Business and IT systems involving existing business process, organizational structure and culture affects success that determines the IT and organizational change required for success (Holland 1999). As a part of change management effort, employees should be involved in the design and implementation of business process and the software providing formal education and training.

Top management support must be included in each step and in all company levels. Process owners have to be defined and the organizations need to give them adequate power and include them in the project from the very beginning. Insufficient documentation can be a problem during business process reengineering; therefore, it is necessary to identify the existing business process and see if they are documented well. Customizing an ERP system has been associated with an increase in IT costs and implementation time, the complexities of existing business legacy systems must be successfully managed and a willingness to change. Therefore, while customizing the business process, a strong business case on the loss of competitive advantage should be developed. In order to minimize the customization, the ERP package should be selected in a sense that they meet the information and functional needs of the organization and must support the organizational business process. It is important that all the functional areas are involved during the selection of ERP package in order to have a comprehensive view of the enterprise requirements. Furthermore, it is important to decide that the amount of data that the organization wants to convert which helps to manage the project efficiently. Moreover, it is equally important to develop a realistic view of time and cost. The size of organization and their willingness to change usually deter-

mines the time and cost i.e. the more changes required the more will be the time and cost. While developing the internal and external resources plan, it is crucial to define the gaps between the existing resources and resources required. (Parthasarathy 2007.)

The Transition to S/4HANA can be done in many ways. S/4HANA can be implemented both on-premise and cloud. Basically, there are three implementation scenarios for SAP S/4HANA which are: new implementation, selective data transition and system conversion. New implementation is for those who would like to implement a new instance of S/4HANA by either migrating the existing legacy system or by running a new installation of S/4HANA. Selective data transition is for those who would like to merge their existing SAP software landscape or third-party systems. System conversion is for those who would like to convert the existing SAP ERP application to SAP S/4HANA. (SAP 2019, Q4.) However, the company should be aware of the number of changes they are willing to do. Normally the approaches to implementation can be divided as Big Bang approach, Location-Wise approach and Module-Wise approach. In the Big-Bang approach, the organization decides to implement all the modules at the same time. Although this kind of an approach can provide full benefit of the software to an organization, there are more risks factors as the company completely replaces the existing system. Hence, extensive care is necessary to ensure that the ERP implementation goes successfully. The Location wise approach are riskier in a sense that organization chooses a specific location such as regional office, zonal office or head office. This approach enables an organization to reduce the cost and time. At the same time, by getting feedback from the implementation zone, the organization will be able to make its future decisions on further investment. The last one is a module-wise approach where individual modules are considered for the implementation. The Modules include Finance, HR, material management, etc. (Parthasarathy 2007.) So far, the paper concerns about the SAP Activate as an implementation methodology for the system, it is important to leverage the capabilities and functionalities of the SAP Activate.

## **5.1 Understanding the capabilities of SAP Activate**

SAP activate methodology is a simple, modular and agile framework developed by SAP company that allows customers for the implementation or migration to SAP S/4HANA. The methodology can be used individually, with the SAP Partner or with SAP Directly. SAP Activate offers business partner a ready-to-run digitalized business process which helps customers to choose the right approach for their business needs either it is about the new implementation, integration or the migration to S/4HANA. The methodology is the overall starting point for initiating implementation of S/4HANA. The methodology is the

successor of the ASAP methodology and SAP Launch methodologies. Since the framework is already embedded in SAP S/4HANA, no further license is required to foster the capabilities offered by SAP Activate. (VoicenData 2015.)

There are three main components of SAP Activate: Best Practices, Methodology and Guided configuration. Best Practices offers readily configured business process based on the industry best practices. Methodology offers SAP Guidance to accelerate implementation and optimization. Guided configuration offers tools to help content provided by SAP Activate best practices and make customized adjustments. Moreover, SAP activate is available for both on-premise and cloud editions and supports all the three implementation approaches i.e. new implementation, system conversion or landscape transformation. Although the phases of SAP Activate methodology were already discussed in the previous chapter, it is important that the organization and the implementation teams are aware of the benefits provided in each phase of SAP Activate. (Kunkulagunta 2018.)

The discover phase of SAP Activate helps customers to consider and experience SAP S/4HANA before starting a project. Strategies and the roadmap are developed for the implementation journey. During this phase, customers can experience S/4HANA with preconfigured SAP Best practices. Prepare phase helps the business to plan the project including quality and risks plan. System environment is set up including the best practices with a ready to run process. During the explore phase, Customer team explores the SAP solution functionalities whereas the implementation partner explores the customer business. Fit/Gap analysis helps the both sides to identify the configuration and extensions that best meet the customers requirement. Realize is the phase where team members configure and extends the system based on the requirements captured in explore phase. During the Deploy phase, final preparations are carried out to ensure that the system data and users are ready for transitioning to production environment. The purpose of Run phase is to continue the adoption of implemented solution across the organization. (Kunkulagunta 2018.)

## **5.2 Implementation Partner**

Choosing the right implementation partner is even more important than the choice of ERP software. A successful SAP S/4HANA implementation heavily depends upon the system integrator chosen which is one of the important decisions carried out. (Parthasarathy 2007.)

Therefore, it is crucial to evaluate SAP system integrator based on the following competencies and scale:

- Global footprint compatible with the organization
- Individual capability of team members
- Experience with S/4HANA as opposed to older versions of SAP
- Industry experiences
- Cultural fit with the organization
- Reputation
- Ability to provide the complete solution
- Reliability
- Ability to handle the customization
- Project cost, time and training facilities

Identifying the right partner not only provides solutions to the business process of the organization but also will help the ERP team to carry out the implementation successfully. Evaluation of the ERP package enables top management and the team to evaluate the product from various partners from the organizational, technical and business perspectives. As the evaluation has to be done carefully, the role of technical and functional consultants is quite high. Proper evaluation will lead to the identification of the best partner and help the ERP team to carry all the rest phases of implementation successfully. (Parthasarathy 2007.)

## **6 CRITICAL SUCCESS FACTORS**

Implementing ERP software such as SAP S/4HANA automates core corporate services such as manufacturing, humane resource, finance and supply chain management (SCM) by incorporating the best practices to facilitate rapid decision-making, cost reduction and greater managerial control. These factors make SAP software integration complex because consensus is required from the whole enterprise to reengineer a core business process and take the advantage of software. Thus, it is necessarily important that the organizations manage the gap between their legacy systems and the S/4HANA business process. Therefore, it is the role of managers to consider that the project is addressing the following issues such as Business plan and vision, organizational change management strategy, project management, top management support, business process reengineering, etc. which are further discussed.

### **6.1 Teamwork and composition**

ERP teamwork and composition are important throughout the life cycle. The successful project team is cross-functional, consisting the best people in the organization. The team should have a composition of consultants and internal staff who can develop the necessary technical skills for design and implementation (Summer 1999). Furthermore, it is important that the functional team members involved in the project need to be assigned full time to the implementation. The workload should be manageable, and the team members should be co-located together at an assigned location to facilitate working together (Wee 2000).

Moreover, the team should be given compensation and initiatives for the successful implementation of the system on time and within the assigned budget (Wee 2000). The team must be familiar with the business functions and products, so they know what needs to be done to support major business process (Rosario 2000). Moreover, it is important to share the information within the company, particularly between the implementation partners and partnering companies in a trustful environment. Creating initiatives and risk sharing agreements can help to achieve a common goal. (Nah, Lau & Kuang 2001.)

## **6.2 Top management support**

Parr and Shanks (2000) describes top management support as management advocacy, the provision of adequate resources and commitment to the project. Top management needs to identify the top priority publicly and explicitly (Nah et al. 2001). It is the role of senior management being involved with full commitment and willingness to allocate valuable resources to the implementation effort (Holland & Light 1999).

Successful ERP implementation heavily depends upon the involvement of strong management because top management support must be included in each step and in all company levels. Handling the ERP implementation responsibility to the technical departments is one of the vital mistakes done by the companies that results in the failure of the project (Harrison 2004). Therefore, it is necessary to understand the involvement and participation of top management executives in the implementation, use and success of ERP projects. Furthermore, if the top management has enough knowledge of information management supporting initiatives of information specialists, there is a clear indicator that the top management is aware of the business process management in a company which gives a positive impact for the successful implementation of project. (Zabiek, Kovaic & Indihar 2009, 15, 4.)

## **6.3 Business plan and vision**

It is very important to have a clear vision, goal and business plan for a successful ERP project. A business plan is crucial and should specify resources, benefits, costs, risks and a timeline. For the implementation, the project needs a clear vision and mission that specifies measurable goals and targets. The goals and benefits of the project must be clear and well understood. To align with the future direction of the business, a justification for the investment in an ERP system should be made based on the change in the work process. It is important for a project to align the business strategy with IT strategy. (Nah & Delgado 2006.)

Furthermore, the factor relates to change management. For successful change management, it is important to put emphasis on business plan and vision throughout the change process. The business plan and vision serve to guide the ongoing organizational effort related to change. Specific and measurable goals should be included since reaching the goals will sustain organizational commitment to ERP implementation. (Nah et al. 2001.)

## **6.4 Project management**

A comprehensive project management itself is critical to the success of ERP implementation. Along with the clear responsibility, the scope of the ERP implementation project must be clearly defined and controlled. Any changes in the original project should be evaluated based on the business benefits and be implemented later. Moreover, changes to the scope of the project must be assessed based on the additional time and cost. The milestones and the delivery dates of the project must be realistic and clearly stated. Since ERP implementation consists of a large number of parties involved, it is important to coordinate project activities across all affected parties. Internal integration tools are essential to coordinate activities involving the project team whereas external integration tools are necessary to facilitate collaboration with external stakeholders hence to assure that user and process requirements are being integrated into the system. The timelines must be enforced, and progress must be tracked by monitoring the milestones and targets. Hence, the success of the project can be estimated by completion dates, costs, quality and the system performance. (Nah & Delgado 2006.)

In addition to this, selecting the right project team and the project manager is positively related to the successful implementation of ERP projects. Accordingly, team composition and teamwork between the implementer and the consultant is important. The team and its ability to work within the guidelines of a plan by communicating effectively and working together are essential for the project success. Since the success of the project depends upon the way a project manager carries a project, the manager must have both strategic and tactical project management qualifications. It is crucial that the project manager should be a high-level executive sponsor who has the power to set goals and legitimize change. (Dezdar & Ainin 1997.)

## **6.5 Organizational culture change management strategy**

The management of every organization decides implementing ERP systems to gain an advantage or benefit for the business. In order to reach the management targets, the employees have to use the IT systems which are connoted also as an organizational change because the system usage affects the employee's behavior. Hence the management must implement a strategy of organizational change management inside the organization. (Jurkscheit & Verlag 2013, 11.)

Organizational change management includes tasks, measurements and actions towards an overall change. An organizational change management is required for the realization of new strategies, structures, systems, process and behaviors which should be implemented into the organization (Kotter 1996). He says that a change process in an organization goes through a series of phases which needs a considerable length of time, skipping a phase creates the illusion of quickness but the quality of the change is not given as a result (Kotter 1996; Jurkscheit 2013). Following are the eight steps model purposed by Kotter:

- Examining market and competitive realities whereas identifying and discussing crises, potential crises or major opportunities.
- Assembling a group with enough power to lead the change effort and encouraging the group to work together as a team.
- Creating a vision to help direct the change effort and developing the strategies for achieving those visions.
- Communicating the vision.
- Getting rid of obstacles to change and changing systems or structure that seriously undermine the vision.
- Creating and Planning for visible performance improvements and hence recognizing and rewarding employees involved in the improvements.
- Hiring, promoting and developing the employees who can implement the vision and hence re-engineering the process with new projects, themes and change agents.
- Articulating the connections between new behaviors and corporate success and hence developing the means to ensure the leadership and succession. (Jurkscheit 2013, 12-13.)

At the same time, usage of the eight-step model does not provide any guarantee as the success factors for the change management but provides a guidance for those issues which should be respected during the change management process. However, it is still affected by the challenges and mistakes which are made during the change management process in an organization. One of the biggest challenges is the emotional factors on people's attitudes to change (Haberberg & Rieple 2008). Kotter and Schlesinger (2008) said that the resistance of change is because of the misunderstanding and lack of trust. If people in demanding situations retreat into familiar, and thus psychologically comfortable, they make conservative decisions (Haberberg & Rieple 2008).

Another challenge is that because of the small and large changes running at the same time within an organization, people find difficulty in deciding the most important change which results in the resistance for change (Anderson & Anderson 2010). Therefore, this is the weakness of leadership and hence the management must make the changes understandable for all involved stakeholders. A lack of vision is also a challenging issue for many companies. Without having a well-defined and communicated vision, a transforming effort towards ERP like S/4HANA can easily dissolve into a list of confusing and incomplete projects that can take the organization in the wrong direction or nowhere at all (Kotter 1996).

A change needs clear reflective governance with a clear structure of the roles that are needed to lead and carry out the changes (Anderson & Anderson 2010). In addition, some people do not have the patience to support a long-term change and expect the result within a very limited time and hence give up which is a major problem. Capacity is underestimated and leaders load changes on top of their everyday operational work which leads to stress and lowered performance. The timeline of changes must be defined as well as the maintenance of the operational performance without overburdening people. (Anderson & Anderson 2010.)

## **6.6 Business process reengineering and management**

A business process is a set of related, structured activities or tasks to produce a service or product by the involvement of people or equipment. A business process begins with a mission objective and ends with the achievement of the business objective by providing the result of customer value. Although a complex business process may be decomposed into several subprocesses, a business process can be organized into three types: operational process, management process and supporting process. (Von 2014.)

In order to achieve the successful implementation of ERP, the alignment of the business processes to the software implementation is crucial. It is necessary that the business processes are modified to fit the new system with minimum customization. Software should not be modified as far as possible to reduce errors and it is necessary to take the advantage of newer versions and releases of software. (Holland 1999; Bingi 1999; Rosario 2000.) At the same time, the quality of business review and redesign is crucial. While choosing the package, vendor support and the number of previous implementers must be considered (Rosario 2000; Roberts & Barrar 1992). Therefore, it is necessary to define the role of process

owner together with the process identification and documentation part (Zabjek, Kovacic & Indihar 2009).

Companies do not reengineer process however, people do. Hence the initiative to change the business process should come from the top management where the involvement of the process owner is crucial and necessary. Employees working with the new processes must own them AS otherwise the project tends to fail. (Caron 1994; Zabjek, Kovacic, & Indihar 2009.) Companies lacking the process owner are not process oriented. Therefore, it is necessary to define the process owner and distribute adequate power to them from the very beginning of implementation phase. A process owner is an individual with the ultimate authority and responsibility over process operations for achieving the business processes goals. The task of process owner is to make the business reengineering happen with business goals. Therefore, it is necessary that the process owner should be a person of trust and confidence with high reputation, respect, tolerance and readiness to change. (Zabjek, Kovacic & Indihar 2009.) Quite a few researches show that companies are aware of the importance to define the process owner which is one of the reasons for the failure of the project (Zairi & Sinclair 1995).

Furthermore, identifying the core business process is necessarily important prior to reengineering as a part of implementing a new system. Organizations must have a process map with a defined business process to facilitate understanding and sharing of the workflow in the company (Hammer & Champy 2003). A process can be defined as the set of tasks that transforms a set of inputs into a specified set of outputs. Processes have to be defined and understood. It is important that the processes are documented and visible prior and after the changes have occurred. The understanding of the processes should be graphically represented. Graphical representation of business processes represents processes activities and thus helps to identify the flow and business processes improvements. (Zabjek, Kovacic & Indihar 2009.)

## **7 RESEARCH METHODOLOGY**

The primary purpose of this research was to find out the factors that contribute to the success and failures while implementing SAP. Content analysis had been used to gather information from published articles and the company's website to gather the factors that led to the success or failure for an ERP project, specifically SAP implementations. Content analysis was used on this level as a tool for analyzing the resources and making recommendations that helps in providing knowledge, new insights and practical guides to future actions.

The data generating and data reduction methodology involved analyzing textbooks, magazine and journal articles for the information related to companies that have implemented SAP software. Articles and journals were chosen through the library database, using search keywords such as SAP, Companies implementing SAP, SAP Success, SAP failure and Implementation. Companies were not selected for further analysis if the articles were mainly concerned to the outcomes and advantages after the implementation rather than the success and failure factors while implementing. Moreover, throughout the help of SAP official website, it was easier to study the customer stories and the companies that implemented SAP. In all, dozens of articles and books were searched. Although many company case studies were studied, only a few of them that concerned with the research methodology approach were analyzed for finding the success and failure factors while implementing SAP. Altogether 20 different companies since 2000 till this date were analyzed to find the outcome.

The content analysis showed that SAP implementation success accounted for a half of the companies studied, and the failure accounted for the remaining. It was harder to gather data and information of the companies that failed to implement the software as companies tend to keep problems hidden from the public view as much as possible to avoid embarrassment.

### **7.1 Content analysis**

Prior to ERP implementation, even before the vendor is chosen, a detailed study and planning of project should be carried out to achieve the successful outcome. Furthermore, it is important to notice that despite of the implementation team and the technical part, it is important that the company has a clear vision, it is ready to face the changes, and addresses the issues such as change management. By utilizing

the methodology of content analysis, it was even easier to identify the factors that occurred within the research and quantify their frequency. The companies evaluated within this research were mapped against the criteria and the conclusions are drawn based upon the information.

Critical success factors for the implementation as discussed earlier were combined into six logical groupings. These factors either led to the success or to the failure of an implementation project. All the information listed within the article were evaluated and were listed upon the format of research methodology. The companies and relative data are listed in tables 1 and 2.

TABLE 1. Factors contributing to the success of SAP implementation

Company description				Factors						
Company	Industry	No. employees	Revenue (\$)	Worked with SAP functionality	Project management support, teamwork & consultant	Business plan and vision	Adequate testing	Org. culture and change mgmt. strategy	Business process reengineering and training	T# Factors
Amoco	Oil		33 B	1	1			1	1	4
Chevron	Petroleum	53,621	43 B	1	1			1	1	4
Colgate	Consumer product	38,300	9 B	1		1				2

(Continues)

TABLE 1. (Continues).

Down chemical	chemical	50,000	26 B						1	1
Eastman Kodak	photography	78,400	14 B	1			1			2
Gillette	Personal care products	35,200	4 B				1		1	2
Lockheed Martin	aeronautics	126,000	25 B	1	1	1		1		4
Mead Corp	Paper	16,300	3.8	1		1		1		3
Merisel	Computer products	570	2.5 B				1		1	2
Rebook	footwear	6,000	2.9B					1	1	2
Total				6	3	3	3	5	6	26
%				23.1	11.5	11.5	11.5	19.2	23.8	100

TABLE 2. Factors contributing to the failure of SAP implementation

Company description				Factors						
Company	Industry	No. employees	Revenue (\$)	Worked with SAP functionality	Project management support, teamwork & consultant	Business plan and vision	Adequate testing	Org. culture and change mgmt. strategy	Business process reengineering and training	T# Factors
Allied Waste industry	Waste and recycling	28,000	5.7 B			1			1	2
EI Dupont	petroleum	71,735	29 B					1		1
Hershey	Chocolate mfg.	14,300	4 B				1		1	2
Ikon	Office Tec	39,600	4 B			1			1	2
Nash Finch	Food wholesaler	7,304	297 M			1				1
PetSmart	Pet supply retailer	9,779	2 B						1	1
Samsone	Luggage mfg.	7,150	784						1	1
Sobey's	Canadian grocery		89.1 M	1						1
Unisource	Utilities	1,203	7 B			1		1	1	3

(Continues)

TABLE 2. (Continues)

Whirlpool	Home appliance	61,000	10 B				1			1
Total				1	0	4	2	2	6	15
%				6.7	0	26.7	13.3	13.3	40	100

## 7.2 Result

When Analyzing tables 1 and 2, it is easily noticeable that the companies contributing to more than one factor have successfully been able to implement SAP whereas companies addressing the fewer amount of success factor has unsuccessful implementation. The 20 companies listed a total of 41 occurrences of these factors. For the 10 firms where SAP was successfully implemented, the six factors were listed 26 times whereas, in the 10 firms where SAP implementation was unsuccessful, the six factors were listed only 15 times. Table 3 shows the percentage of each factor contributing to the success or failure of implementation.

TABLE 3. Percentage of factors contributing to the success or failure of implementation

Factors	% factor ( Success)	% factor (failure)
Worked with SAP functionality and scope	23.1	6.7
Project management support, teamwork and consultant	11.5	0
Business plan and vision	11.5	26.7
Adequate testing	11.5	13.3
Organization culture and change management strategy	19.2	13.3
Business process reengineering and training	23.8	40
Total	100	100

## 8 CONCLUSION

Table 3 shows that companies working with the factor 'Business process reengineering and training' have the highest chance of achieving success which is 23.8% followed by the factor 'Worked with SAP functionality and scope' with 23.1 %. At the same time, 'organization culture and change management strategy' stood on the third position as one of the success factors having 19.2% of success rate. Finally, rest of the three factors have the same percentage of success rate accounting for 11.5 %.

Moreover, it is concluded that 'Project management support, teamwork and consultant' is one of the factor contributing to the failure of implementation having a score 0%, which means that the company did not address it at all followed by the factor 'worked with SAP functionality and scope' with 6.7 %. Although a large number of companies address to the factor ' Business process reengineering and training' scoring 40% of the total factor, unfortunately the company failed to implement SAP followed by the factor 'Business plan and vision' with 26.7% of the total factor.

The secondary aim of the thesis has been achieved throughout the research methodology for finding and proving the factors responsible for the success and failure of the SAP implementation project. The responsible factors for the implementation have been discussed earlier in more detail. Analyzing the case studies of different companies implementing SAP, again it was possible to prioritize different factors responsible for the success or failure of implementation.

The primary aim of the paper was to provide a deeper insight into the project management techniques and methods for SAP implementation. When Analyzing table 3, it is further manifested that poor project management is one of the reasons why firm fails to implement SAP. Therefore, it is important to follow the guidelines and project management techniques as provided by SAP Activate, one of the best methodologies for the implementation of SAP which has been recommended earlier. Because implementing the ERP system such as SAP is an extensive operation that needs much effort and strategies that might change the whole process and culture with the organization, it is important to work with SAP functionalities and scope. SAP best practices and SAP solution manager discussed earlier in this thesis helps to address those issues to facilitate the successful implementation.

## REFERENCES

- Majed, M. & Abdullah, M. 2003. ERP implementation: Lesson from a case study. United Kingdom, West Linn. *Information technology & People* 16(1), 21.
- Bondarouk, T. & Tanya, V. 2006. Action-oriented group learning in the implementation of information technologies: results from three case studies. United Kingdom, Abingdon: Taylor & Francis Ltd 15(1), 42.
- Dezdar, S. & Ainin, S. 1997. Examining ERP implementation success from a project environment perspective. *Business process management journal* 17(6), 201.
- Eby, K. 2018. Demystifying five phases of project management: Smartsheet Inc. Available: <https://www.smartsheet.com/blog/demystifying-5-phases-project-management>. Accessed 2nd February 2020.
- Eisner, A. B., Robinson, R. & Teasley, R. 2005. Fresh Direct. Allied academics international conference. Jordan whitney enterprise, inc. United states, Arden. *International academy for case studies* 12(1), 39.
- Gargeya, V.B. & Brady, C. 2005. Success and failure factors of adopting SAP in ERP system implementation. United Kingdom, Brandford: Emerland group publishing limited. *Business process management journal* 11(5), 501-516
- Hayes, R. B. & Utecht, K. M. 2009. Enterprise resource planning Implementation in an institution of Higher Learning: A case study of Drummond university. *Journal of cases on information technology*. United states, Hershey: IGI Global 11(2), 42-55.
- Jeffrey K, P. 2010. Project management. Achieving competitive management. 2<sup>nd</sup> edition. Erie: Prentice hall.
- Jurkscheit, J. & Verlag, D. 2013. An analysis of the success factors in implementing an ITIL based IT change and release management application: Anchor academic publishing.
- Kale, V. 2000. Implementing SAP R/3: the guide for business and technology managers. Indianapolis, IN: Sams Publishing.
- King, Julia. 1996. Lessons on installing R/3. *Computerworld*. United states, Framingham: Computerworld inc 30(18), 69.
- Kotter, J. P. 1996. *Lead Change*. Boston: Harvard Business Press.
- Kunkulagunta, M. 2018. SAP activate methodology for SAP S/4HANA. Available: [https://www.linkedin.com/in/mohankunkulagunta?lipi=urn%3Ali%3Apage%3Ad\\_flagship3\\_profile\\_view\\_base\\_contact\\_details%3BMjTN5hZTSX%2BfsrGt15z%2FxA%3D%3D](https://www.linkedin.com/in/mohankunkulagunta?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_contact_details%3BMjTN5hZTSX%2BfsrGt15z%2FxA%3D%3D). Accessed 24 February 2020.
- Malloy, A. 1997. Case study: SAP falls into grace. *Computer world*. United States, Framingham: Computerworld Inc 31(21), 79.

- Mearian, L. 2000. CEO: SAP installation caused problems. *Computer world*. United States, Framingham: computerworld inc 34(48), 20.
- Mearian, L. 2001. Supermarket dums \$89M SAP Projects. *Computerworld*. United States, Framingham: Computerworld inc 35(6), 77.
- Nah, F.F. & Delgado, S. 2006. Critical success factors for enterprise resource planning implementation and upgrade. *the journal of computer information systems* 46(5), 99-113.
- Nah, F.F., Lau, L.S. & Kuang, J. 2001. Critical factors for successful implementation of enterprise systems. *Business Process Management Journal* 7(3), 285-296.
- Nenov, I. & Smith, J. 2001. Mead Corporation: A case study of enterprise resource planning (ERP) implementation. Allied Academics international conference. International academy for case studies. United states, Arden. Vol. 8 iss. 1, :42-47.
- Osterhaus, P. 2019. ASAP Methodology vs. SAP Activate. Understanding the differences: Protera technologies. Available: <https://www.protera.com/sap-blog/asap-methodology-vs-sap-activate/> . Accessed 8 February 2020.
- Parthasarathy, S. 2007. Enterprise resource planning. A managerial and technical perspective. New Delhi: New age international ltd.
- Paul, T. 1997. SAP and the Hibernia experience. Hamilton. Society of management accountants of Canada. *The management Accounting Magazine* 71(9), 23-27.
- Quartararo, M. 2016. Project management in electronic discovery. An introduction to core principles of legal project management and leadership in eDiscovery: eDiscoveryPM.com
- Rosing, M. V., Kemp, N. & Hove, M. 2014. Process tagging. A Process classification and categorization concept. *The complete business process handbook. Body of knowledge from process modelling to BPM* 1, 123-17.
- SAP S/4HANA Capabilities. Available: SAP.com. Accessed 9 February 2020.
- SAP 2019. Transition to SAP S/4HANA, Volume Q4. Available: [https://support.sap.com/content/dam/SAAP/SAP\\_Activate/S4H\\_155.pdf](https://support.sap.com/content/dam/SAAP/SAP_Activate/S4H_155.pdf) . Accessed 11 January 2020.
- Singh, V. 2017. Implementing SAP S/4HANA. Manage your SAP Projects with SAP Activate. Birmingham: Packt publishing ltd.
- Songini, M. L. 2006. NASA's SAP Launch Drags. *Computerworld*. United States, Framingham: Computerworld inc 40(13), 16.
- VoicenData 2015. SAP Activate to accelerate SAP S/4HANA adoption. New Delhi: Athena information solutions Pvt. Ltd. Trade Journals. Available: <https://search.proquest.com/docview/1697084096?accountid=10007>. Assessed 19th January 2020.

Zabjek, D., Kovacic, A. & Stemberger, M.I. 2009. The influence of Business process management and some other CSFs on successful ERP implementation, *Business process management Journal* 15(4).