CHAPTER 1

INTRODUCTION
1 Introduction

In today’s competitive business world state-of-the-art technology, superior products and a steady source of capital are tickets of entry into the marketplace. Many organizations find that the key to gaining a competitive advantage is the ability of their workforce to maximize the advantages and deliver competent work. It is very critical for an organization to determine whether their employees possess behavior necessary for effective performance in their roles. Many companies have started using competency models to help identify necessary skills, knowledge and personal characteristics that are needed for successful performance in a job and to ensure that processes in their organization focus on developing those identified skills.

One of the core issues companies are facing today is the increase in manpower cost. Adding complexity to this issue there is organizations looking to downsize and manage with fewer resources which need increase in efficiency and employee productivity. Increasing efficiency and employee productivity in an organization is not going to be possible unless organizations are able to identify capabilities that an individual needs to possess.

This capacity of an individual that leads to a behaviour which meets the job demands within the parameters of an organization environment and in turn brings about desired result is called as “Competency”. Organizations are finding it challenging to identify competencies that really create a difference. Of many industries that get affected by competency of an employee information technology is one of the industries which could be on top due to the nature of dependence that the industry has on technology and employee expertise in a particular technology.
It is practically close to impossible if we try to list the technologies on which services are being provided. One particular area which provides global opportunities to Information technology vendors is the Enterprise Resource Planning (ERP) space. Of the products available in ERP space SAP being a product with a considerable market share it would make more meaning to explore further specifically in the area of SAP technology. While organizations have been used to turning around competent technical resources for SAP project requirements they are facing challenges in turning around right functional resources for SAP project requirements. For organizations that are delivering SAP services from Indian subcontinent providing a competent functional consultant is very important because of the cost advantage on one side and increased capability to offshore more services in the SAP space on the other side.

In line with the above thought process this research aims at understanding the key competencies required for a SAP functional consultant which would help Information technology organizations that are involved in providing ERP implementation/rollout/support services for clients across the globe. A study that supports industry in identifying and grooming right SAP functional consultants in India will add value to the SAP world in total. To have a common understanding the researcher proposes the following operational definitions for key constructs and terms used in the context of this research work:

**Competency:** Underlying characteristics required for a person which results in effective and or superior performance on the job. (Klemp, 1980)

**Competency Mapping:** It is a process of identification of the competencies required to perform successfully a given job or role or a set of tasks at a given point of time. It consists of breaking a
given role or job into its constituent tasks or activities and identifying the competencies needed to perform the same successfully. (R.K. Sahu, 2009)

**Competency Model:** A Competency model is a collection of competencies that together define successful performance in a particular work setting. Competency models are the foundation for important human resource functions such as recruitment and hiring, training and development, and performance management. (R.K. Sahu, 2009)

**ERP:** Enterprise Resource Planning is a term that is used for business management systems which are designed to integrate the data sources and processes of an entire organization into a unified system. (Mohammad A. Rashid and Jon David Patrick, 2002)

**SAP:** An ERP Product which is explained as Systems Application and Products in data processing. (help.sap.com)

**SAP Functional Consultant:** A Consultant who is involved in understanding of business processes based on customer requirements, maps business processes to functionalities available in SAP, performs a detailed fit-gap analysis and accordingly suggests a solution in SAP is a SAP Functional Consultant. (help.sap.com)

- **SD Consultant:** SAP functional consultant in Sales and Distribution Module
- **FICO Consultant:** SAP functional consultant in Finance and Controlling Module
- **MM Consultant:** SAP functional consultant in Materials Management Module
- **PP Consultant:** SAP Functional consultant in Production Planning Module
The research topic is given below

**Competency Mapping of ‘SAP’ Functional Consultants in India**

### 1.1 Competency – Definition

There are different definitions to competency; few of them are given below

- Competency is a cluster of related knowledge, skills and attitudes that affect major part of one’s job that correlates with performance on the job, that can be measured against well accepted standards that can be improved via training and development (Parry, 1996)
- Competency is defined as characteristics of an individual that leads to demonstration of skills and abilities which result in effective performance within an occupational area. Competency also embodies the capacity to transfer skills and abilities from one area to another (Hogg B, 1989)
- Competency is “underlying characteristics of a person which results in effective and or superior performance on the job” (Klemp, 1980)

For the purpose of this research the researcher chooses the definition provided below as operational definition among the one’s indicated above :

- Competency is “underlying characteristics of a person which results in effective and or superior performance on the job” (Klemp, 1980)

A close look of the above mentioned definitions reveal

- Competencies are characteristics of an individual
- Competencies lead the demonstration of skills and abilities therefore competency must be demonstrated and hence must be observable. It must not be inferred or extrapolated
Competencies must lead to effective performance; this means that the performance of a person with competency must be significantly better than that of a person without it. Competency thus refers to behavior differentiating success from merely doing the job.

Competency also embodies the capacity to transfer skills and abilities from one area to another. Competencies cannot be restricted to single job alone but the person must be able to carry them along.

Competencies of an individual can be divided into two parts:

i. Threshold Competencies

These are essential characters that everyone on the job needs to be minimally effective, but this does not distinguish or differentiate superior or average performer.

ii. Differentiating Competencies

These factors distinguish superior from average performers.

One important point of view that needs to be understood is competency is not performance but a qualification to perform. People who deliver work cannot deliver it effectively without competencies that are required for the work but competency does not guarantee that people will perform to the required levels. There are many instances wherein competent people fail to deliver due to other factors apart from competency.

1.1.1 Competency Mapping

Competency mapping tries to explore beyond the knowledge and skills of a person. There are two approaches to develop competency mapping (Chandramowly, 2002) namely top-down approach and the bottom-up approach. In the top-down approach competencies needed for effective or superior performance are identified by expert groups consisting job incumbents, superiors and subordinates after analyzing organizational objectives. In bottom up approach the knowledge, skills, motives and attitudes of high performing employees are studied using
appropriate techniques like case analysis, focus group interviews, participant observation, repertory grid etc., There is another approach known as the Hybrid approach which involves developing a competency model based on both the models mentioned above along with theoretical knowledge and institution by experts/HR professionals. After examining performance on the job the said competencies are either confirmed or revised based on outcomes.

According to (AbhijitBhabhe, UjjwalaPendse et al., 2002) current methods of competency mapping techniques like the job analysis questionnaire, day in a life observation, focus group interview and critical incident technique profiles the behaviour of best performers on the job with the aim of making it known to others.

Competency model contains competencies which can and cannot be readily found in many people, which can and cannot be easily trained through training and development interventions. The researcher proposes to use a hybrid approach for mapping competencies of a SAP functional consultant meaning, employing a top down approach through Subject Matter Expert discussions (SME) with superiors and sub ordinates to arrive at competencies required for a SAP functional consultant and applying bottom up approach through focus group interviews, day in a life observation and knowledge from practicing SAP functional consultants.

1.1.2 Competency – Historical Perspective

In the early 1970’s a high ranking official with the United states Information Agency (USIA) attended a workshop delivered by Harvard Professor David.C.McClelland (McClelland), a distinguished psychologist with a particular interest in motivation and achievement. McClelland had developed a set of personality tests to identify which attitudes and habits were shared and demonstrated by high achievers. The official approached McClelland with a challenge: Could he identify the attitudes and habits of an outstanding officer so that the agency could begin selecting employees on the basis of more relevant criteria than the screening tests
McClelland worked with top managers, high performers and average performers of the USIA to identify competencies. This exercise is identified as a starting point of competency technique in modern world. This activity of identifying competencies extended from USIA to civil service jobs. He pointed out the incongruity of using standardized psychology and intelligence tests, such as IQ tests. He argued for the use of competency testing in place of standardized tests.

In 1973 McClelland and fellow psychologist David Berlew together formed an organization-McBer to put their ideas of competency testing into practice. Since that time competency models have become increasingly wide spread. Thousands of organizations throughout the world have commissioned competency studies that are used as the basis for decisions about how to identify people to handle a particular technology, hiring, training, promotion and other human resource issues.

Competency models that are properly developed can play a vital role for organizations. Organizations can focus their selection, training and development, performance appraisal succession and planning system based on behaviors that have most relevance to successful performance.

1.1.3 Competency Models

A competency model can identify four broad categories of competencies

- Competencies which cannot be readily found in many people, most important for successful performance on the job and can be developed easily with training and development interventions
- Competencies which cannot be readily found in many people, most important for successful performance on the job and difficult to acquire through training and development intervention
• Competencies that distinguish superior form average performance which are difficult to acquire through training and development interventions and reasonably easy to identify

• Competencies that distinguish superiors from average performers which are difficult to acquire through training and development and reasonable easy to identify

Listed below are few methods listed below which are normally used to develop competency models:

➢ **The job competence assessment method** uses interviews and observation of outstanding and average performers to determine the competencies that differentiate between them in critical incidents (Dubios, 1993), see (Spencer and Spencer, 1993) for extensive description of their research using this methodology.

➢ **The modified job competence assessment method** also identifies such behavioural differences but provides a written account of critical incidents (Dubios, 1993)

➢ **Generic Model Overlay Method** provides organizations with off the shelf generic competency model for a specific role or function (Dubios, 1992)

➢ **Flexible job competency model** method seeks to identify competencies that will be required to perform effectively under different conditions in the future (Linkage,1997)

➢ **The accelerated competency systems method** places the focus on the competencies that specifically supports the production of output , such as an organization’s products , services or information (Linkage, 1997)

Through this research the researcher aims to arrive at a competency model for SAP functional consultants.
1.2 Enterprise Resource Planning

1.2.1 Enterprise Resource Planning: An Introduction

Enterprise Resource Planning means the techniques and concepts for integrated management businesses as a whole form the viewpoint of the effective use of management resources to improve the efficiency of enterprise management. ERP packages are integrated software packages. Originally, ERP packages were targeted at the manufacturing industry and consisted mainly of functions for general planning and management of core business such as sales management, production management, accounting and financials etc. ERP software is designed to model and automate many of the basic processes of an organization from finance to shop floor, with the goal of integrating information across the company and eliminating complex, expensive links between computer systems that were never meant to talk with each other.

ERP is a software architecture that facilitates the flow of information among the different functions within an enterprise. Similarly, ERP facilitates information sharing across organizational units and geographical locations. It enables decision-makers to have an enterprise-wide view of the information they need in a timely, reliable and consistent fashion.

ERP provides the backbone for an enterprise-wide information system. At the core of this enterprise software is a central database which draws data from and feeds data into modular applications that operate on a common computing platform, thus standardizing business processes and data definitions into a unified environment. With an ERP system, data needs to be entered only once. The system provides consistency and visibility or transparency across the entire enterprise. A primary benefit of ERP is easier access to reliable, integrated information. A
related benefit is the elimination of redundant data and the rationalization of processes, which result in substantial cost savings. ERP systems are transforming the way organizations do business. They have become indispensable tools with a huge impact on both the business and information technology worlds.

An ERP system is capable of the following:

- Affects almost all organizations irrespective of their size and nature
- Forces the competition to change their strategies and processes
- Influences business partners to become more competitive
- Improves the profits of the consulting organizations
- Is the most Important tool for business process reengineering
- Enforces best practice business process in organizations
- Changes the nature of the information systems function and IT Professionals

Quantifiable benefits from an ERP system are:

- Reduced Inventory and Inventory carrying costs
- Reduced Manpower costs
- Reduced Material costs
- Improved sales and customer service
- Efficient Financial Management

1.2.2 ERP Market: An Overview

Due to the continued recovery from the recent global downturn (meaning fewer new "big" projects) and the fact that many organizations already made their ERP upgrades which are in a phase of stabilization. This resulted in a year of slight growth of 2% in year 2014 and a market value of $24.5billion in total software revenue (Chris Pang, Yanna Dharmasthira et al.,
The balance of power between vendor and end user shifted back to the end user in 2012 and remained so in 2013. Some ERP providers did buck the trend, however, with impressive double-digit growth; they were considered to be best-of-breed providers, rather than large mega vendors (which were generally helped by acquisitions). This shows that despite efforts by large ERP suite providers to offer more functionality natively, there is still a strong preference by large to use a multiproduct strategy for their ERP requirements rather than sticking on to a single ERP product vendor. Therefore, it is not necessary to feel forced to settle for an ERP suite or a best-of-breed strategy, as more business value and benefit can be derived from using a hybrid approach. Mergers, acquisitions and divestitures of course occurred (and continue to occur). But overall, these actions generally improve the business position of the vendors affected. Also, although the original brands may disappear, the products will often live on and be supported for a long time.

Globally leading analysts (Gartner, 2011) define ERP as an application strategy encompassing functionality that automates the administrative processes for any company or business and functionality that supports the needs of product-centric organizations in production, inventory, and maintenance, repair and overhaul functions. Broadly, these can be divided into operational ERP and administrative ERP. Table 1.1 below provides detailed information on top 10 ERP vendors by revenue and market share from 2009 to 2013. SAP AG continues to be the biggest player in the market with an estimated 24.4% of the market share. SAP AG being the market leader and leading the followers by a huge revenue gap becomes a clear choice for researcher in terms of preferred ERP product to be researched.
Table 1.1: Top 10 ERP software vendors  
Market Share 2009-2013

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Revenue (In Million Dollars)</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP</td>
<td>5,094</td>
<td>5,360</td>
</tr>
<tr>
<td>Oracle</td>
<td>2414</td>
<td>2602</td>
</tr>
<tr>
<td>Sage</td>
<td>1342</td>
<td>1293</td>
</tr>
<tr>
<td>Infor</td>
<td>1011</td>
<td>943</td>
</tr>
<tr>
<td>Microsoft</td>
<td>856</td>
<td>946</td>
</tr>
<tr>
<td>Kronos</td>
<td>458</td>
<td>496</td>
</tr>
<tr>
<td>Totvs</td>
<td>303</td>
<td>409</td>
</tr>
<tr>
<td>Concur</td>
<td>248</td>
<td>389</td>
</tr>
<tr>
<td>Yonyou</td>
<td>356</td>
<td>360</td>
</tr>
<tr>
<td>Unit4 Software</td>
<td>279</td>
<td>308</td>
</tr>
<tr>
<td>Other Vendors</td>
<td>7767</td>
<td>8230</td>
</tr>
</tbody>
</table>

Source: Analyst Report 2009-2013 (Chris Pang, Yanna Dharmasthira et al., 2009-13)

Figure 1.1: Global ERP Market Share 2009-2013
The way the market is moving and the share SAP commands in the market makes SAP an undisputable leader. This gives an idea about the demand that will exist in the market for SAP Technology and the challenges that organizations will be facing on a day to day basis thus acting as one of the important factors for the researcher to zero in on mapping competency models for SAP functional consultants.

1.2.3 ERP: Evolution of ERP Systems

Enterprise resource planning systems or enterprise systems are software systems for business management, encompassing modules such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business. The architecture of the software facilitates transparent integration of modules, providing flow of information between all functions within the enterprise in a consistently visible manner. Corporate computing with ERPs allows companies to implement a single integrated system by replacing or re-engineering their mostly incompatible legacy information systems.

American Production and Inventory Control Society (2001) has defined ERP systems as “a method for the effective planning and controlling of all the resources needed to take, make, ship and account for customer orders in a manufacturing, distribution or service company.”

We quote several definitions from the published literature to further explain the concept: “ERP (enterprise resource planning systems) comprises of a commercial software package that promises the seamless integration of all the information flowing through the company—financial, accounting, human resources, supply chain and customer information”.

“ERP systems are configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization” (Kumar and Van Hillsgersberg, 2000). “One database, one application and a unified interface across the
entire enterprise” (Tadjer, 1998). “ERP systems are computer-based systems designed to process an organization’s transactions and facilitate integrated and real-time planning, production, and customer response” (O’Leary, 2001). During the 1960s most organizations designed, developed and implemented centralized computing systems, mostly automating their inventory control systems using inventory control packages (IC). These were legacy systems based on programming languages such as COBOL, ALGOL and FORTRAN.

Material requirements planning (MRP) systems were developed in the 1970s which involved mainly planning the product or parts requirements according to the master production schedule. Following this route new software systems called manufacturing resources planning (MRP II) were introduced in the 1980s with an emphasis on optimizing manufacturing processes by synchronizing the materials with production requirements. MRP II included areas such as shop floor and distribution management, project management, finance, human resource and engineering. ERP systems first appeared in the late 1980s and the beginning of the 1990s with the power of enterprise-wide inter-functional coordination and integration. Based on the technological foundations of MRP and MRP II, ERP systems integrate business processes including manufacturing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance and transportation, providing accessibility, visibility and consistency across the enterprise. During the 1990s ERP vendors added more modules and functions as “add-ons” to the core modules giving birth to the “extended ERPs.” These ERP extensions include advanced planning and scheduling (APS), e-business solutions such as customer relationship management (CRM) and supply chain management (SCM).

It is generally a misleading perception that implementing an ERP system will improve organizations’ functionalities overnight. The high expectation of achieving all-round cost savings
and service improvements is very much dependent on how good the chosen ERP system fits to
the organizational functionalities and how well the tailoring and configuration process of the
system matched with the business culture, strategy and structure of the organization. Overall an
ERP system is expected to improve both back bone and front-end functions simultaneously.
Organizations choose and deploy ERP systems for many tangible and intangible benefits and
strategic reasons. In many cases the calculation of return on investment (ROI) is weighted
against the many intangible and strategic benefits. It was estimated (Gartner Report, 2009-13)
that the spending on ERP systems in 1998 was about US$17 billion following annual growth
rates ranging from 30% to 50%. Companies also spend a multiple of licensing costs on services
related to implementation and maintenance of the software. The worldwide license and
maintenance revenue for ERP systems was US$21.5 billion in 2000, which represented a growth
of 13.1% from the 1999 market value of US$19 billion (Broatch, 2001).

Continued growth of the ERP systems market is attributed to the fact that the vendors are
adding applications such as supply chain management, customer relationship management and
the integration of Internet-enabled applications for e-business. More than 60% of the Fortune
1000 companies have installed or are in the process of implementing packaged ERP systems to
support their back-end business activities (Kraft, 2001). These packages implemented by the
Fortune 1000 companies run well over the IT budgets for most SMEs. ERP vendors are targeting
this untapped SME market with supposedly scaled-back systems suitable for smaller firms by
offering simple, cheaper and pre-configured easy-to-install solutions within budget and time
constraints. For some vendors this may lead to offering centrally managed Internet-enabled ERP-
system-based services for SMEs to access and use anytime from anywhere.
1.2.4 SAP: Company Overview

Headquartered in Walldorf, Germany, with locations in more than 130 countries, SAP AG is the world leader in enterprise software and software-related services. Based on market capitalization, SAP is the world’s third largest independent software manufacturer. SAP delivers products and services that help accelerate business innovation for its 238,000 customers in more than 180 countries.

In 1972, five entrepreneurs had a vision for the business potential of technology. With one customer and a handful of employees, SAP set out on a path that would not only transform the world of information technology, but also forever alter the way companies do business. SAP’s 41-year history of success is defined by a few key themes:

- A belief that “real-time” data processing can help bring people closer to business intelligence
- A dedication to innovation and an entrepreneurial spirit that enable SAP to continually push what’s technically possible
- An early commitment to collaboration and co-creating solutions with customers

As market leader in enterprise application software SAP helps companies of all sizes and industries run better. SAP applications and services enable more than 253,500 customers to operate profitably, adapt continuously and grow sustainably.

The shareholder structure for SAP is characterized by wide distribution of share ownership. Applying the definition, accepted on the Frankfurt Stock Exchange which excludes treasury stock from the free float stood at 74.7 % at the end of 2013, more details are depicted in the figure next page.
Financially SAP AG is considered to be one of the strong organizations. Total revenue of SAP increased from Euro 16,223 million to Euro 16,815 million representing an increase of 4% and in 2013 SAP’s operating profit totaled to Euro 4479 million which is a significant year over year increase despite adverse currency effects. Figure 4 below gives a view of SAP’s Operating profit year on year.

Figure 1.3: Operating Profit of SAP (2009-2013)

Source: Annual report of SAP - 2013
While there are always discussions in consultant circles that like other ERP product leaders in the past one day SAP would also be challenged by a new ERP product but looking at the market share, revenue share and operating profit that SAP is gaining that looks to be a distant possibility. As a SAP functional consultant the researcher has been hearing this every five years that in another five years there will be a product which will challenge SAP but that fifth year never seems to be arriving for SAP. This kind of strength on the other hand encourages many companies to go ahead with implementing SAP solution as they get the confidence that the product and the organizations are going to be around for a longer time to provide continuous support.

1.2.5 SAP: Product Overview

The name SAP is acronym for **Systems, Applications and Products in Data Processing**. SAP is an extremely complicated system with excellent support to business where no one individual can understand all of it. SAP runs on a fourth generation programming language called Advance Business Application Programming (ABAP).

It has many of the features of other modern programming languages such as the familiar C, Visual Basic, and Power Builder. SAP is functionally categorized into 3 core functional areas:

**Logistics**

- Sales and Distribution (SD)
- Material Management (MM)
- Warehouse Management (WM)
- Production Planning (PP)
- General Logistics (LO)
- Quality Management (QM)

**Financial**

- Financial Accounting (FI)
- Controlling (CO)
- Enterprise Controlling (EC)
- Investment Management (IM)
- Treasury (TR)

**Human Resources**
- Personnel Administration (PA)
- Personnel Development (PD)

Over and above the Core business processes SAP Solution also has Industry specific coverage, few of them are provided below:

<table>
<thead>
<tr>
<th>Aerospace and Defense</th>
<th>Mining</th>
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</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>Oil and Gas</td>
</tr>
<tr>
<td>Banking</td>
<td>Pharmaceuticals</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Postal Services</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>Professional Services</td>
</tr>
<tr>
<td>Defense and Security</td>
<td>Public Sector</td>
</tr>
<tr>
<td>Engineering and Construction</td>
<td>Railways</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Retail</td>
</tr>
<tr>
<td>High Tech</td>
<td>Telecommunication</td>
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<tr>
<td>Higher Education</td>
<td>Utilities</td>
</tr>
<tr>
<td>Industrial Machinery</td>
<td>Wholesale Distribution</td>
</tr>
<tr>
<td>Insurance</td>
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<tr>
<td>Life Sciences</td>
<td></td>
</tr>
<tr>
<td>Logistic Service provider</td>
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</tr>
<tr>
<td>Media</td>
<td></td>
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<td>Mill Products</td>
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</table>
While there are many modules indicated above there are few core modules of SAP which forms as the base for all other modules. Through Subject matter expert interviews and experience from SAP implementations the researcher has picked up the core modules for building competency models for SAP functional consultants. Logistics forms the core part of any organization, be it manufacturing or service, lot of importance is on the logistics module of SAP. SAP as a product is considered to be very strong in logistics hence the following modules from logistics have been considered in scope of this research.

- Sales and Distribution (SD)
- Materials Management (MM)
- Production Planning (PP)

Apart from logistics finance forms the core of any ERP implementation, this research considers
- Finance and Controlling module (FICO) also in scope.

Based on the width and depth of the solution ruggedness that SAP provides as an ERP product it is a clear indication that to make this product work for an organization it requires lot of knowledge and experience. In short it requires lot of “Competence” from the consultant who implements SAP for a customer. While on a technology front it involves working in programming, the resource who works on programming and other technological requirement is tagged as a technical consultant.

On the business process front it involves understanding of the business processes at a customer location, mapping the business process to what is available in SAP and what is not available in SAP, performing a detailed fit-gap analysis and accordingly suggesting a solution. A consultant who works on the above mentioned area is called a Functional Consultant. In SAP consulting circles it is commented that “Functional consultants can make or Break the SAP Implementation.”
1.2.6 ERP: Implementation Issues

ERP Implementations are notoriously resource intensive, highly complex, time-consuming and highly unpredictable in terms of costs. The primary challenge that often leaves companies marooned when it comes to ERP is that most companies cannot handle a project of such complexity and projects that require huge amount of technology resource. Lack of budget and skilled personnel are key reasons that prevent companies from focusing on necessary steps. Of various risk factors in Managing ERP technology having technology in place with right people is the most critical issue.

1.2.7 Key Risk Factors of ERP Implementation

According to a study conducted by Deloitte Consulting in 2010 people issues are key all along the way – before, during and after the ERP implementation (Pat Phelan, 2010). The outcome of the study outlines the importance of people issues and the close knit integration of that with technology issues.

Figure 1.4: Risk Factors in Managing ERP Technology

Source: Gartner (Pat Phelan, 2010)
Study indicates that the key risk factor in ERP is People and process along with technology. When we mean people it includes the implementation team (Consultants) involved in delivering the ERP engagement. Consultants are competent people in the implementation of ERP package. They might not be familiar with the internal workings and organization culture and might inadvertently create trouble by trying to implement the ERP system without taking into account the needs of the organization which will become a definite recipe for disaster. To minimise the risk the consultants in the engagement should have the right level of skills and should have the right attitude to understand the business process of the organization before suggesting an ERP solution to the organization.

1.2.8 SAP: Functional Consulting – Overview

While there are multiple parameters that are key for successful ERP implementations eight key factors listed below (Denise Ganly, 2012) indicating common pitfalls that need to be monitored to ensure a successful ERP implementation

- Inadequate or poor scoping of ERP
- Lack of executive management commitment
- Insufficient or inadequate budgeting
- Inadequate Change management and training
- Inexperienced project management and project team
- Appropriate SI selection
- Extensive modifications
- Unacceptable end user and batch response time

Among the eight key factors that are listed few of them are are explained below in detail:
1.2.9 Defining Proper ERP Project Scope

For ERP to be successful, its scope must be well-understood and agreed on by its key Stakeholders. The term "ERP" often means different things to different constituencies. As such, it is important to be clear as to what ERP will and will not deliver to the organization. A clear Understanding of the ERP scope should be documented in an ERP strategy and an application Architecture based on pace layering. ERP must not only support the critical functions of the organization, but also must take into account data, analytics and process management elements needed to fulfill the business's requirements.

However, the scope of ERP is often limited to traditional ERP modules, with little or no thought given to master data management (MDM), business process management, and business Intelligence or analytics. As a result, the net impact of ERP in these organizations is Nowhere near as good as it should be; users are often frustrated by ERP's limitations, and management is annoyed that it needs to spend more time and money to achieve the results it believed ERP was supposed to deliver.

Organizations repeatedly report that if they could do the ERP project again, they would double the time spent scoping the project, because there is a direct correlation between time spent in scoping the project and the extent of cost and time overruns.

While the content mentioned above looks to be a scoping issue but proper scoping can be actually carried out by strong consultants. A competent consultant can clearly identify scope items and will be in a position to clearly scope out and scope in the requirements. Technical scoping is comparatively less complex when compared to process scoping. If process scoping is not completed properly that could result in a complete mismatch with client expectations resulting in an ERP project being termed as failure.
**Build an Enthusiastic Project Team Led By an Experienced Project Manager**

Building a strong project team should be a priority, because it is a major differentiator between success and failure. In-house project members with deep business knowledge should be assigned to the project team on a full-time basis for the life of the project, and should work closely with the implementation partners. Their positions should be backfilled while they are "seconded" (that is, to transfer an employee temporarily to other employment or another position) onto the ERP project. The costs associated with this should be built into the project's budget and the ERP business case. Strong business knowledge is something which is stressed here as a key factor which acts as a major differentiator between success and failure. Strong business knowledge comes from two sources

- In-house project members with deep business knowledge
- Functional consultants from a SI vendor who brings in business knowledge and SAP product knowledge

While both the above mentioned points directly and indirectly point to SAP Functional consultants it makes sense to research in the topic and understand what Functional consultants do and what makes a good functional consultant.

**Role of a SAP Functional Consultant**

Role of a SAP functional consultant (Pat Phelan, 2012) indicates that to achieve maximum benefit in an engagement we should formally define the functional consultant’s role plan and arrange position assignments before the ERP business application implementation starts and make a functional consultant a permanent position in an enterprise.

Having seen how important is a functional consultant’s role the important traits of a functional consultant are listed below:
• An understanding of how the enterprise conducts business and how business gets mapped in SAP.

• An understanding of IT as it relates to how SAP/business application is configured and deployed.

• Analytical skills to determine whether the business requirements can be satisfied by process changes, technology changes or a combination of both and what standard SAP offers to cater to the requirement.

• Change management skills to facilitate changing business processes during and after an implementation.

• The ability to develop and sustain a good working relationship with key business and IT stake holders.

Apart from the points indicated above, Functional consultant also serves as a balancing mechanism between the lines of business and the IT department, particularly when the IT department initiates changes that may not be obviously tied to business process improvements. An example of this is a software upgrade that is required to continue receiving technical support from an application vendor. In most organizations, the functional consultants along with business lead facilitate meetings that determine the requirements, project scope and process changes. As such, they need to have strong leadership, presentation, communication and change management skills, along with a high level of credibility with the business and IT departments.

Through couple of paragraphs mentioned above researcher has provided and overview of a role of SAP functional consultant and with information below the researcher is looking at analyzing demand gap situation for SAP functional consultants.

SAP functional consultants have been on demand for quite some time. Having knowledge on functional modules of SAP has been considered as a passport to attractive roles with
multinational IT service providers. This may be attributed to the salary structure that is in existence for SAP functional consultants across the information technology industry. Without even finding out whether one is suitable for the role of a SAP functional consultant we find many people aspiring to be a functional consultant in an organization that implement, supports or rolls out SAP. This aspiration has resulted in multiple institutes mushrooming in the country which claim to teach SAP (or) share knowledge on functional modules. On the other side, leading multinational organizations like Accenture, IBM, CAP Gemini, Tata Consultancy Services, Wipro Technologies, Infosys Technologies, Mahindra Satyam and other IT companies are looking at hiring qualified and experienced SAP functional consultants.

Demand for SAP functional consultants have been on the increase in our country for the past decade and the cost of SAP functional consultants has been considered to be one of the higher in the Industry. While organizations are ready to pay higher packages for good SAP functional consultants the demand supply scenario is not that promising and doesn’t support leading organizations in hiring the required number of SAP functional consultants. With the kind of expertise they are looking forward to. One of the important issues that information technology organizations are facing today is to probe, analyze and ascertain the kind of claims the prospective employee mentions in the resume.

This research will help organizations understand what are the exact building blocks that we need to look for in a SAP functional consultant and what kind of factors govern the building block in each module that is considered in scope. This would help industry minimize the challenges that industry is facing today.
1.3 Legal Disclaimer

As there is enough Competition in market place for ERP product market share and more than enough competition when it comes to competition with service providers who offer Implementation, roll-out and support services for ERP products there is every possibility that this research work may be inferred as work which provides a point of view or opinion on ERP product (or) ERP service provider hence, the researcher wanted to explicitly provide a disclaimer to avoid mis-interpretation of this research. The disclaimer is provided below:

This research work is carried out to analyze the competencies and other related parameters for ERP functional consultants. This work in no way tries to analyze, explore or evaluate the performance of any of the ERP Product or service offered by any service provider for ERP product. The research outcome is not expected to specifically indicate performance of functional consultant from any specific ERP service provider nor the data available will be leveraged to perform that analysis.

1.4 Organization of Thesis

The thesis is divided into chapters and the sequencing of the chapters is done as follows:

Chapter 1 INTRODUCTION

This chapter introduces the research topic and discusses the concept of Competency, Competency modeling and Competency mapping. Separate sections are included on ERP overview, Evolution of ERP, ERP Market overview. Along with them the key risk factors of ERP Implementation and Role of SAP functional consultant were also discussed in detail. Brief sections on SAP Organization and Product overview had also been added.

Chapter 2 REVIEW OF LITERATURE

This chapter reviews research studies conducted at both international and national level which is relevant to competency, ERP and SAP. This also includes information from Analyst
reports (Gartner) on ERP market and functional consulting. Gaps existing in previous research are also discussed following which research problem is stated.

Chapter 3 RESEARCH FRAMEWORK

This chapter discusses objectives of the research, research questions and hypothesis framed. A research plan indicating broad linking of objectives, supporting research questions/hypothesis and relevant statistical tools is also included. This chapter discusses about the Jag and Sen’s building block model for SAP functional consultants. The limitations of the research are also stated.

CHAPTER 4 ANALYSIS AND INTERPRETATION

This chapter analyses the data collected through focus group interviews, subject matter expert discussions and questionnaire have been analysed, and relevant interpretations were drawn from the outcome to meet research objectives. Appropriate diagrams, charts and tables are used.

CHAPTER 5 FINDINGS

A summary of findings derived from the data analysis and related interpretations are discussed in this chapter. A detailed Jag and Sen’s building block model for each SAP functional module in scope of this research has been arrived at.

CHAPTER 6 RECOMMENDATIONS AND CONCLUSION

A list of recommendations which are useful for the stakeholders such as organizations that implement SAP services for their clients, Functional consultants involved in building their competencies and key stakeholder in organizations who design policies for recruitment, training and competency building for SAP functional consultants.