



**WORLD JOURNAL OF PHARMACOLOGICAL  
RESEARCH AND TECHNOLOGY**

**Techno Managerial Skills**

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**ABSTRACT**

Technology plays a vital role in the pharmaceutical and biotechnology industries. Advances in robotics, *in silico* simulation, high-throughput synthesis and screening, genomics, and information technology, to name a few, present tremendous opportunities and challenges. In addition, most pharmaceutical companies engage in numerous strategic alliances and partnerships, which now almost always involve the sharing and management of advanced technologies as well as complex intellectual property issues. Managing sophisticated technological environments is no longer the sole responsibility of the information technology department. Scientists, clinicians and other business people are increasingly called upon to manage complex technological environments or to deal extensively with those who do.

Therefore, need for individuals, not only with the proper technical background, but also advanced knowledge of management skills and techniques and also who can develop technologies having impact on organizations, employees and customers. Technology Management include instruction in production and operations management, project management, computer applications, quality control, safety and health issues, statistics, and general management principles.

**Keywords:** Techno-managerial skills, Management, Technology, Pharma industry.

Received 3 November 2015, Accepted 7 December 2015

## INTRODUCTION

Globalization and rapid technological change is a reality for companies today. It has changed the manner in which business has been routinely conducted and has brought into focus delivery of results in real time. Newer forms of organizational structures have emerged that are flatter with fewer hierarchical levels. Instead of evaluating primarily on the basis of quantitative results and on *what* is achieved, the focus is shifting to *how* it is achieved as an indication of an employee's ability to keep performing well in the future. It has made 'competencies' the new mantra for the HR departments aiming to effect change within organizations. Technology and innovation management education is now regarded as a critical area of study in most business schools. This growing importance is partly a strategic response to managing knowledge-driven industry development. In a changing business climate, traditional management education needs to combine with pragmatic technology management education that provides rich ground for developing managerial theories that are less "fuzzy" and practically more relevant to industry needs. Management studies are not just about theoretical constructs, but must, instead, address practical resolutions and problem solving in the real business world.

The final model that emerges from the study goes beyond managerial competencies - a model of techno-managerial competency that may be better suited to emerging jobs in a more technology-driven future.

This model consists of four factors:

1. Technical skills comprising of knowledge fundamentals, engineering drawing appreciation, manufacturability appreciation, materials choice appreciation, knowledge of emerging trends, etc.
2. Group problem-solving skills comprising of problem analysis, creativity and originality, technical leadership ability, communication ability, people management skills, etc.
3. Managerial skills comprising of perseverance, quest for learning, business understanding, visualization, attention to detail, etc.
4. Aptitude comprising of analytical ability, creativity, risk-taking orientation, etc [1, 2].

Competence has been defined largely in terms of the desire to see specific work-related behaviour very clearly:

- The ability to perform effectively the functions associated with management in a work situation [3].
- A knowledge, skill, ability or characteristic associated with high performance on a job [4].
- Observable or habitual behaviours that enable a person to succeed in her activity or function [5].
- A combination of motives, traits, self-concepts, attitudes or values, skills, and abilities that differentiate superior performers from average performers [6].
- The capacity to transfer skills and abilities from one area to another [7].

### **How Are Competencies Identified And Measured?**

A comprehensive method to identify and measure competencies is the one adopted by McBer which involves five stages [8]:

- **Identification of criterion measure:** Choosing an appropriate measure of job performance to identify top performers and collecting data on managers.
- **Job analysis:** Generating a list of characteristics perceived as leading to effective and/or superior performance and obtaining ratings from the managers to compute a weighted list of characteristics which are then analysed in clusters.
- **Behaviour event interviews (BEI):** Conducting BEIs to obtain a detailed description of the manager's performance, coding interview data, and relating it to job performance data.
- **Tests and measures:** Choosing tests and measures to assess competencies, administering and scoring them, and relating them to job performance data.
- **Establishing the competency model:** Integrating results from the previous three steps and statistically and theoretically determining and documenting causal relationships among the competencies and between the competencies and job performance.

The pharmaceutical industry is going through changes; traditionally big pharma companies were doing everything from research and development to commercialize them. However, the recent trends i.e low R&D productivity, high cost and to tap the potential of the emerging economies one has to switch from selling medicines to managing outcomes. Alternate business models will be required to operate more effectively in the changing times. The industry is at a critical junction where customer's expectations are increasing. Customer wants new therapies that are clinically and economically better than the existing alternatives. The sensitivity to side effects

and harsh drug delivery techniques have led to the poor patient compliance to most of the therapies. Even to certain ailments we do not have a scientific solution. Our researches are more of me-too type and what we are getting as a R&D product is me-too of products available since past decade. Even the prevailing management culture, mental models and strategies on which industry relies are the same over its traditionally lie down. Even though, the business today has taken an elliptical route. If by 2020, Indian Pharma industry has to be a global leader the R&D and the technology developments need to be strengthens.

More so the chronic diseases are increasingly placing even greater pressure on already stressed healthcare projects. Even to date the solution to dengue for example is yet not proved. The healthcare policy makers are increasingly mandating what doctors can prescribe. The actual pharmacist role is many a time missed in the healthcare process of our country.

However, with increasing medical insurance the phamacoeconomic performance of the trait is yet need to be understood better and a more satisfying practical solution to medically insured customers is yet to be seen. There are vast challenges of the trait from solution for the fatal diseases and clinical advancement to manage such chronic situations at one side is yet to be answered but at the same time we see major self-medicating sectors coming up as a breakthrough. Therefore the demand for medicines is growing more rapidly in chronic segment as well as it leads to path for high potential growth for generic market.

Even now-a-days the focus has changed from treatment to prevention so a lot of research and investment are seemed for developing pre-emptive measures. Everyday news of withdrawal of certain number of drugs from US is reported, the cautions of USFDA have made Indian market to get approval of not only truly innovative medicine but launching of any new formulation may be of existing drug molecule, which has become a challenging task that Pharma companies are facing. At the same time with new regulations for conducting clinical trials in India, this sector had seen a setback which has affected the employment as well. With an introduction of regulated price for certain essential drugs even the top brands are facing problems that have affected the profitability of certain companies but on contrary medicines at the low cost to the consumer were an endeavor of the government which was very well perceived by the society at large.

**There are several ways to Help Individuals and Teams of Managers to deliver measurable results for the pharmaceutical industry**

- Consulting on Strategy Implementation and Managing Change

- Business Transformation Programmes
- Strategy Implementation Programmes for teams of executive and senior managers
- Mentoring & Business Coaching for executive and senior managers
- 200+ Open Enrolment Workshops for individual senior and middle managers
- Corporate Learning & Development, Corporate Universities and Management Academies

We are not only facing the challenges but there are lots of opportunities which need to be tapped. Different strategies for growing markets need to be developed; more investment in R&D is required to understand the molecular basis of diseases and the role specific mechanism need to be invested. The R&D should be therapeutic area sensitive and further expertise should be developed in selected area.

Overall the measures and rewards that truly stimulated revolution should be taken care of. The global pharmaceutical market is expected to increase three-fold by 2020. The demand for medicine is rising rapidly. The middle-class is expanding. More innovation driven market approach is needed. Only few companies are currently capitalizing on the full power of genomics. New form of medical intervention like vaccines, implants and regenerative medicines are in pipeline. Value based purchasing will be the hallmark.

Understanding these challenges and opportunities which industry is going through clearly tells us the need for individuals, not only with the proper technical background, but also advanced knowledge of management skills and techniques. Researchers, scientists and technicians are now being called upon to deal with complex business issues that they may never have faced before. The personnel with these skills involve knowledge of effective management ideas. The skilled professionals have necessary skills of the Pharma value chain from drug discovery to commercialization and includes critical supporting functions, such as supply chain logistics and regulatory and compliance.

In the pharmaceutical technology what is required is not only the management use of technology for human advantage but also skilled personnel's to effectively handle the complex technological system and mapping such technologies as per the customer need. Therefore to manage technology well there is requirement of management skills required for drug discovery to develop proper operation of the technology. The new winds of change are felt in India too with liberalization and globalization of the Indian economy and the growing competition, industry are needed who could market its goods, look after its finances and hire manpower more efficiently.

Industry need people who could develop market and effect pharmacoeconomist who could look after its finances and human resources efficiently.

The need of the market is to strengthen Pharma companies in their R&D set up and defining clear pathways from drug designing development, clinical evaluation and to actual launch of product. One has to understand the pathophysiology of drug and therapeutic area or segment in Pharma Company could strengthen themselves. There is more partnership which advised companies to walk together and even joint ventures with academic segments are suggested. Most of the universities in India are developing such researches with the industry and the market demand is something else. Industries are doing me-too researches and universities are following different path. All have to work together in partnership and alliance so that effective market requirements are met by maintaining economic bioavailability. Such partnership would also help to reduce the R&D expenditure incurred for launching any drug into the market. The Pharma industry could easily outsource their projects for R&D work whereby the research fellows at the university will have better knowledge to develop their resources as well. Government should also come up with such policies to boost R&D activities in universities and controlling the market so as to bring everyone to a common path of success. However , we see at academic and industry level the proper skilled human resources are not available.

The Indian Pharma industry is going through crisis one side we see employment crisis and at the other edge we feel education crisis. The education crisis has evolved from being so heavily focused on skills that are not employment related. The outcomes of the universities and institutions lack in skills required for jobs in industries whereas employment crisis is related with large number of recruiters who believes that today applicant lacks skills like problem solving, leadership and latest technological intelligence. The curricula of most of the universities and institutions are outdated which contribute to the widening of the talent gap. While good grades and specialized skill sets are required for many jobs, there are some hiring attributes that make prospective employees more desirable to employers all over the world: leadership, personal and intellectual humility, the ability to attribute some purpose to your work, and the ability to take ownership of the task at hand.

Therefore techno- managerial approach combines general management theories with technology management practice to link business and technology communities in a Pharma industry is desired.

Person with techno managerial skills can

1. Apply an understanding of self, as well as an understanding of the dynamics of groups and team interaction, to compare and contrast the impact of various plans and strategies on measureable productivity, effectiveness and efficiency
2. Discuss and apply the methods used to plan , organize, lead and control within an organizational setting
3. Analyze and use the appropriate skills and techniques needed for solving problems and decision making
4. Communicate effectively: oral, written and non-verbal, using current technology where appropriate
5. Perform statistical analysis
6. Able to prepare a comprehensive business plan
7. Evaluate various technologies and plan how these could be used effectively
8. Select better therapy options for various diseases by sound understanding of pathophysiology of diseases
9. Develop pharmacoeconomically better R&D outcomes

It seems that what's needed is clear: a collaborative effort by employers and educational leaders to shape the most urgent directives for the future of education, with the help of extensive two-way feedback. By nurturing the "change maker" skills like empathy, creativity, and leadership among current and prospective employees and modifying the education system to provide market-relevant hard skills, we can perhaps hope to bridge this widening talent gap [9].

## CONCLUSION

The conclusion of this short communication is to describe the role of techno managerial skills in organization, identification of possible relevant technologies for the organization, mapping technologies to business and market needs, technology project portfolio and a set of technologies in use. Technology management involves various areas of management skills to the discovery, development, operation and proper use of technology. This paper investigates the various facts related to techno managerial skills in pharma industry.

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