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INNOVATIVE WORK CULTURE AT INDIAN PHARMA INDUSTRY LEADING/ MOTIVATING TO NEW PRODUCT DEVELOPMENT IN INDIA

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ABSTRACT

Indian pharmaceutical sector is a growing and competitive sector so to remain in market not only development of new drugs and new molecular entity is necessary but launching of new products in less span of time using minimum expense also necessary. Therefore, creation of innovative environment in workplace, hiring a suitable candidate and keeping them motivated, is vital for the companies. Pharmaceutical Research and Development centres(R&D) in India are facing challenges like low output, long product development time, high failure rate and high expense to output ratio. This study is done to identify the attributes responsible for low efficiency of research and development and lack of innovation in work culture in Indian pharmaceutical industry and also compare the increase in the spending of pharma companies on R&D year on year. The main purpose of this paper to explore the role of HR for improving R&D innovation ability, reducing cost and increase the potential success rate and provide vital contribution in changing the R&D model. Based on literature review and analysis of secondary data, it has been observed that Multiple Decision-Making (MCDM) tools like AHP (Analytical Hierarchy Process) is useful tool for HR in decision making. HR can use AHP tool for creating innovative work culture and skill inventory through right employee selection in R&D. This paper gives you the overview of the use of AHP in employees selection process so that Pharmaceutical R&D can boost the success rate in development of new product.

KEYWORDS

MCDM tool, R&D model, analytical hierarchy process, innovative work culture, skill inventory.

JEL CODES

O15, M15, J28, L65.

INTRODUCTION

Pharmaceutical sector is exclusively dedicated towards general medicinal services. pharmaceutical industry is a standout amongst the most developing sectors in India and the biggest exporter of moderate nonexclusive medication in developed and developing world. Pharmaceutical market in India is expanding at the normal rate of 22.4% compounded annually from 2015-20. Indian pharmaceutical division industry supplies more than 50% of worldwide demand for different immunizations, 40 % request of generic demand in the US and 25 % of all medicines in UK (Source: Ibfef.org). India has vital position in worldwide pharmaceutical market because of strong manufacturing, product development and process innovation capabilities.

Pharma industry is a major source of employment- survey suggest that 2.5 million people are directly or indirectly employs in pharma industry and many of these jobs are in high skill areas of R&D (Research and Development) and manufacturing. Pharma industry is third largest contributor of reducing trade deficit of India and generates 10 billion dollar of trade surplus every year.

Indian pharma industry represented for 34 percent of abbreviated new drug application (ANDAs) filings in 2016 and more than 50 percent of drug master files (DMFs) submitted in first quarter in 2016. Around 1200 UK MHRA market authorization are taken by the Indian companies till May 2014. Pharma industry has invested huge money in world-class manufacturing facilities to serve the international market. India has the highest number of US FDA-registered manufacturing sites. Pharmaceutical industry in India has significantly expanded capabilities across different dosage forms and technologies and is increasingly focused on innovation and new product development.

However, pharma industry is facing numerous complications- one important factor is the time required for discovery of new molecules and R&D productivity. If we compare the data of last ten years drug discovery has become stagnant i.e. approximately only 21 new molecules discovered in spite of having huge number of new drug in clinical trials phase.

According to statistical data of ten years, out of the new molecule in pipelines 458 in pre-clinical phase, 903 in stage 1, 1411 in stage 2, and 347 in stage 3, totalling 3119 (data for the biggest pharma companies only). The failure rate is calculated to be 46% in Stage-1, 66% in Stage-2, and 30% in Stage-3. In global perspective Average cost of new drug discovery has been calculated approximately between 2 to 4 billion dollars.

BACKGROUND

Today Indian pharmaceutical industry is considered as a worldwide pioneer in the creation of great quality generic drugs and is positioned third regarding manufacturing of pharmaceutical products by volume. The adjustment in the administrative condition in 2005 activated new strategies, which permitted in expansion of drug discovery race. Drug discovery started with the evolving of India as a favourite place for "chemistry" outsourcing (GVK, Syngene, Chembiotech, etc.).

If pharmaceutical companies want to sustain in the market, they need to increase the clinical trials success rate or potential of commercial use of new drugs. Therefore, importance of research and development (R&D) comes into picture. (PWC survey)

Pharma companies are not only investing huge money from their expenditure in R&D as a whole but also on the individual level. The total worldwide R&D spend of pharmaceutical and biotechnology companies increased from 108 billion dollars (2006) to 141 billion dollars (2015).

However, due to various factors like low R&D efficiency in spite of high R&D budgets, tight regulatory guidelines, low possibilities of clinical success, unsure market, and lack of skilled human resources are creating challenges in pharmaceutical industry for the development of new drugs. Interestingly, only 3 in 10 marketed drugs produce revenue that can exceed cost pertained for the research and development of the drug otherwise most of the pharmaceutical companies revenue have not been matched with their expenditures. This uncertainty has put pressure on investors.

Because of High investment by the investors on R&D, investor expect return of investment (ROI) but due to low efficiency it has created imbalance on the long-term sustainability of the industry's R&D model.

The need for adequate staff, skilled personnel, and training were the basic problem. Pharmaceutical industry cited a need for training in leadership and management skills, regulatory science and affairs, technical management, and advanced technology skills.

Limited availability of skilled employees can have a negative effect on bio/pharma industry growth. It is noted that employment concerns are one roadblock to continuing growth for the biopharmaceutical industry. More than one-half of bioprocessing facilities experienced capability problems in 2017 due to difficulties in hiring needed operations staff. Outsourcing manufacturing processes due to staff limitations may not be a solution, he noted, as contract manufacturers also faces the same problems.

Development of new drug cost billions of dollars and still, there is no surety that new molecules pass in clinical trials. Pharmaceutical companies would need to upgrade innovation and skill, so that they can maintain the expectation of investors.

For new product development, industry should focus on increasing the culture of innovation in the R&D facilities.

This is going to put huge responsibility on the HR domain, so that, they can recruit, train, motivate and retain the best talent in industry.

REVIEW OF LITERATURE

Alexander (2014). "Changing R&D models in research-based pharmaceutical companies". Found out that successful launch of new medicines with rate of monetary investment in R&D decreased. Authors also identified the critical factors impacted on R&D efficiency and also found out the concept R&D's are following to increase the efficiency like activities to increase in innovation potential, Activities to reduce the R&D cost.

Kabtta (2017). "Top five Indian pharma companies together spent over Rs 8000 crore on R&D spend in FY17". Talked about that R&D spending of top Indian drug manufacturing companies. Author said that Indian companies increase R&D spending to compete with the global peers and also shown data of increase in R&D spending from FY 10 to FY 17. Although, huge investment done on R&D with respect to sales earned by the companies. Further, Indian pharma companies increase investment in the development of new drugs.

Yousefi & et.al (2017), "New Product Development in the Pharmaceutical Industry: Evidence from a generic market". described the fast change in the environment of new drug product development in pharma market, author favoured multi decision making tool like Analytical Hierarchy process for the problem solving for the new drug development.

Ricardo (2010). "Using the analytic hierarchy process (ahp) to select and prioritize projects in a portfolio". Talked about the mathematical aspects, principles and technique of Analytical Hierarchy process for the selection of portfolio. Author also described the each and every steps of AHP with an example.

Ramadan & et.al (2013). "Decision Making and Evaluation System for Employee Recruitment Using Fuzzy Analytic Hierarchy Process". Described the role of Analytical Hierarchy process in the multiple decision making for the recruitment of best employee in company. Author used the AHP software to evaluate the recruitment process in a company so that selection of suitable employee can be possible.

OBJECTIVES

- 1- To create innovative work culture for new drug development.
- 2- Role of HR in fast changing environment for new drug development in Indian pharma market.
- 3- To favour the application of AHP as MCDM (Multiple criteria Decision Making) for Indian companies.

RATIONALE

According to the information obtained through survey that the efficiency of R&D centre is decreased due to lack of availability of quality workers, high R&D costs, tight regulatory guidelines, low possibilities of success, unsure market. This shows that, need of increased role of creating culture of innovation in pharmaceutical industry. Lastly, above information also figure out that why a transformation in the R&D model is required and which models pharma companies must follow to increase the productivity and efficiency of their R&D organizations.

RESEARCH METHODOLOGY

This study is performed on the basis of secondary data, which shown the increase in the investment of Indian pharmaceutical companies in Research and Development for development of new molecules and Biosimilars to compete with global peers. However, this increase in investment put pressure on expense to profit ratio of the companies. The secondary data is taken from the survey published in newspaper article. After analysing various papers, it has been found that Analytical Hierarchy Process (a multiple decision-making tool) is very effective tool for creating innovative work environment skill development, improve return of investment and improve employee performance in R&Ds, which ultimately improve the efficiency and reduced product cost. In study, it has been observed that AHP would be very effectively used in selection of suitable talent in Pharmaceutical Research and development centres in India.

ANALYSIS

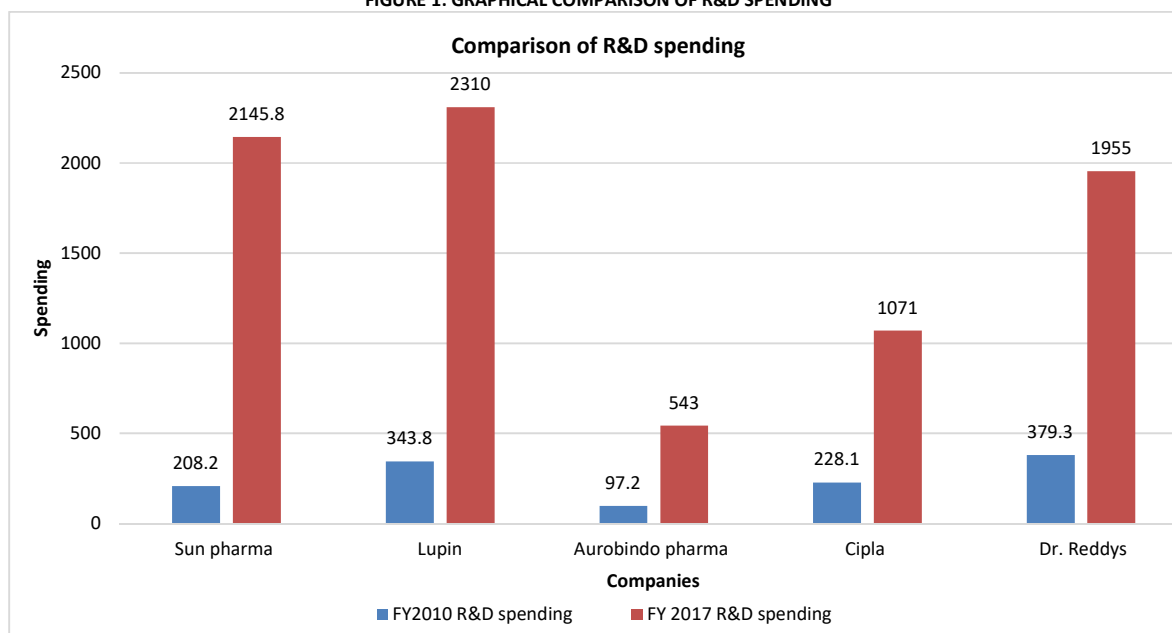
Those pharmaceutical industries who are innovative, grew fast than the least innovative company. Pharma R&D needs to emphasize on finding and retaining the right talent, pursuing the right allies by keeping patients and investors at the centre of the process. Through innovation companies can earn huge revenue. We got a strong relationship between innovation and growth: Since three years, the most innovative companies grew at a rate of 16% higher than the least innovative. Looking ahead, the top 20% of innovators anticipated 3 times as much growth as the bottom 20% in the next five years.

TABLE 1: R&D SPENDING OF FIVE INDIAN COMPANIES

Companies	FY2010				FY 2017			
	R&D spending	Revenue	R&D spend as percent-age as revenue	Net-profit	R&D spending	Revenue	R&D spend as per-centage as revenue	Net-profit
Sun pharma	208.2	3808.6	5.5	1351.1	2145.8	30264.2	7.1	6964.3
Lupin	343.8	4773.6	7.2	681.6	2310	17119.8	13.5	2557.4
Aurobindo pharma	97.2	3575.4	2.7	563.4	543	14844.7	3.7	2301.6
Cipla	228.1	5359.5	4.3	1082.5	1071	14280.8	7.5	1006.3
Dr. Reddys	379.3	7027.7	5.4	106.7	1955	14080.9	13.9	1257.2
Total	1256.6	24544.8	25.1	3785.3	8024.8	90590.4	45.7	14086.8

Source: ET Bureau, June 8, 2017

FIGURE 1: GRAPHICAL COMPARISON OF R&D SPENDING



Often India spending on research and development is too little, but pharmaceutical companies increased investment on R&D in FY 17. According to Bloomberg, top drug makers of India spent a record Rs 8025 crores in R&D in FY 17. This spending constitutes 9% of the cumulative revenues of the companies. Indeed, the total R&D spending of more than 8000 crores is not only higher profit earned by the largest company in FY 17 but also profit earned by the other small companies. Apart from development on generic drugs, Indian pharmaceutical companies are now started investing in research of complex molecule (NDA), speciality and differentiated product a biosimilars.

As compared to FY 2010, Top five pharmaceutical companies of India increased the investment six folds till FY 2017, which bring the expense to revenue ratio in to scrutiny.

For Example- Lupin has done 368 ANDA (Abbreviated new drug application) filing of which 154 approval are in pipelines. Lupin planning to spent 13.5 % of total sales revenue on R&D in which more money is spent on conducting Trials of ND (New drug), Biosimilars.

Few more companies, like Glenmark, one of the earliest takers of innovative research in local drug market spent 12% of its revenue spent on R&D. The company has several new products and new molecular entities in the area of oncology, Respiratory and dermatology division.

From the above data, it has been found that, after spending more percentage of revenue on R&D, Indian pharmaceutical companies are not able to launch new molecule entities, New chemical entities and biosimilars in to the market.

However, this low R&D efficiency in spite of high R&D costs, low possibilities of clinical success, is due to lack of culture of innovation, Higher attrition rate and limited availabilities of qualified person in to the sector.

There are many methods through which companies can increase R&D productivity and reduce their spending and cost.

- Research collaboration
- Merger and acquisition
- Portfolio management
- Innovation centres
- Open sourcing
- Virtual R&D

Pharma sector in India is very intensive and competitive, so companies which are capable to launch new products early in to the market than other companies would have more growth rate. Therefore, selecting a right person, keep them motivated an retaining them is very crucial for the companies. However, many companies are using old method for retention like offering high wages or stock option. Although, culture of every organization differs from each other so that, who stirred from one industry to another industry for higher pay, might find the change not worthful in the new organisation. In this case, Non -monetary appreciation is more effective than the monetary.

Thus, Role of HR becoming more crucial in changing the model of R&D.

ROLES OF HR MANAGERS

ATTRACT BEST CANDIDATES

In R&D field highly, experienced personnel are required and personnel should be highly specialised in his field. Due to which, close look on candidate profile required while recruitment is done. Hr should know how to Attract a best candidate from the pool of personnel. Moreover, Hr should know the company's future perspective so that HR managers have clarity in choosing the right candidate for the projects.

INCREASE EMPLOYEE RETENTION

Even in the organisation, retention of key employee is very important for the smooth running of valuable projects. Hr should have the capability to understand and respond to the need and want of the employee and find different ways to keep them motivated.

In companies, work environment is depending on the work culture of specific company, which varies from one company to another, recruiters try to compare the work culture of one company to another, as two companies cannot be same, the employers could not able to produce desired results.

DECREASE EMPLOYEE REDUNDANCY

Sometime, employee feel redundant being in the same company for many years, as technology is developing fast, experienced employees do not have access to upgrade themselves with upgrading technology so due to this employee change their job to learn new technology coming in R&D, So, to retain employee, companies need to start training programmes to upgrade their key employees.

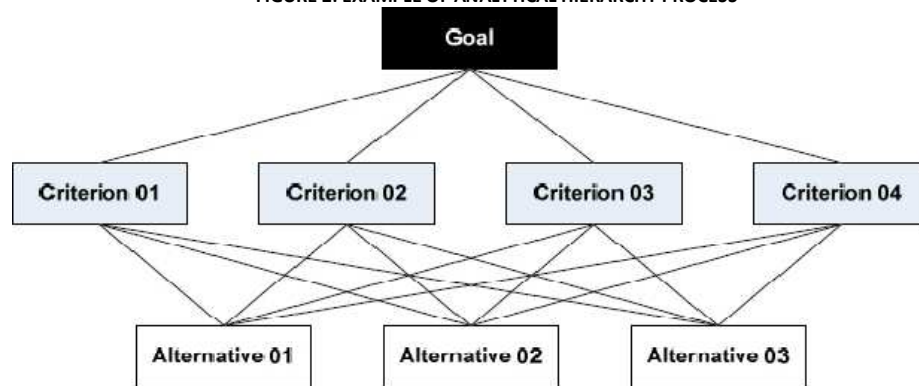
Regards to the most valuable employees in terms of prizes, systematic appraisals, public statement of one's achievements needs to be done by various pharmaceutical companies to confirm that the employees are pleased at his/her place of work and desires to continue."

As companies seems to be very aggressive to cut cost and increase global competitiveness then companies need to improve the performance of the employees. There are tools to improve the human performance problems and selection. One such tool which help human resource department is Analytical Hierarchy Process method.

ANALYTICAL HIERARCHY PROCESS METHOD (AHP)

This method was developed in 1970s by Thomas L. Saaty. This method is used in decision making for complex situation. In this method companies identify certain factors, which affect the decision making of company, in this model we present a hierarchy structure of problems of human performance problem and systemically assess the different alternative by comparing the each of chosen criteria.

This tool is useful for HR to find out solutions to create innovative work culture, Participation, human capabilities, and attitudes in company.

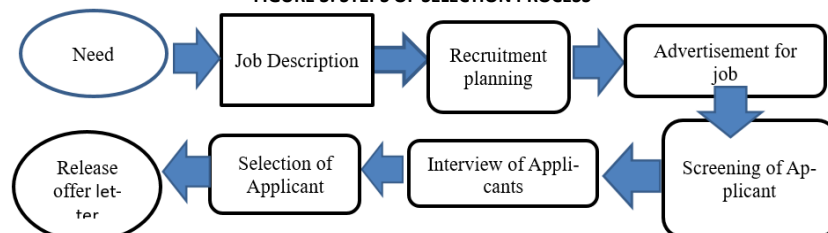
FIGURE 2: EXAMPLE OF ANALYTICAL HIERARCHY PROCESS

In AHP, qualitative problems are converted in to numerical value and further processed and compared. After all comparison is made, the relative weights between each criteria to be checked. The numerical probability of each alternative is calculated and then determines the feasibility of alternative to fulfil the expected goals. Higher the probability of alternatives, better the probabilities that alternative has to satisfy the final objective of the company.

In R&D good employee is also a contributory factor apart from other factors like product related, equipment related reason etc. for creation of innovative work culture in industry.

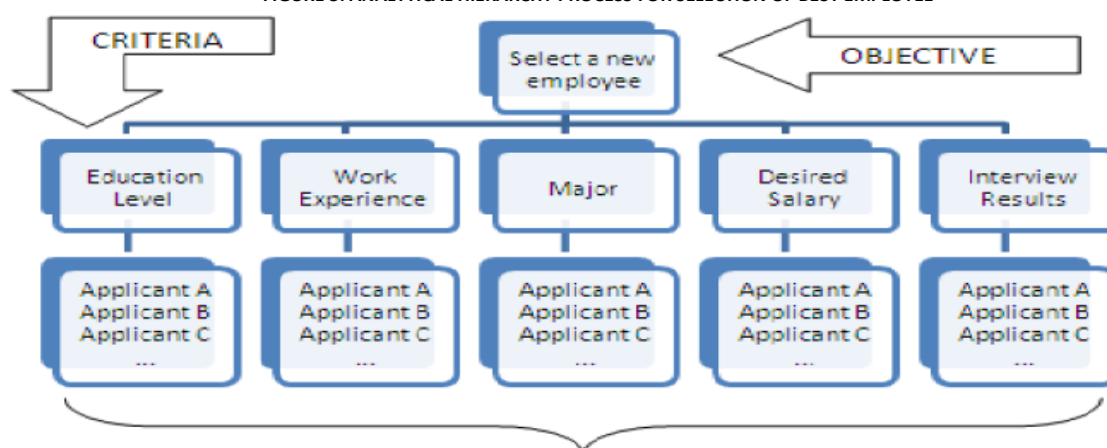
SELECTION PROCESS

Selection process is very long and time consumable process. It refers to the process of choosing someone, who is fit for the job and has right qualification. Selection process is important for a company because selecting a good and bad candidates affect the performance of a company. Recruitment in a company is based on the yearly budget of the company and long term plan of the organization.

STEPS INVOLVE IN SELECTION PROCESS**FIGURE 3: STEPS OF SELECTION PROCESS****IMPORTANCE OF SELECTION PROCESS**

- 1- Good selection maintains the supremacy over the competitive companies.
- 2- Reduces the labour cost and increase the performance of the company.
- 3- Help in the expansion of the businesses.
- 4- Helps in creating innovative work culture in company.
- 5- Helps in increasing the knowledge intent in organization.

For improving the work culture of R&D's and bringing of innovation approach in R&D in Pharma industries, recruitment and evaluation of best employee can be done through Analytical Hierarchy process method.

FIGURE 3: ANALYTICAL HIERARCHY PROCESS FOR SELECTION OF BEST EMPLOYEE**Alternatives**

To perform AHP (Analytical hierarchy Process) calculation, Fuzzy AHP software work, which first calculate the weight of pairwise comparison and then will retrieve all the data about the applicant. System will retrieve only the vital information regarding employee like gender, age, work experience and desired salary and further

every single data of all participant is converted in to numerical form and compare with the weight calculated from the pair matrix. The result come in the form of rank, which shows the fittest applicant available for the job.

CONCLUSION

Innovation in R&D will come through innovative work culture and Analytical Hierarchy process method is very useful tool for multiple decision making in selection of right candidate for the development of complex new drug product and New chemical entity in R & D. Subsequently, according to the survey conducted by PWC in which growth rate of innovative companies is 16% much higher than least innovative companies. In future preview, PWC surveyed that 20% of the innovators anticipate three times more growth than the least 20% innovative companies in global pharma market.

So, as to compete in global context Indian companies too follow the multiple decision-making tool for creating innovative work culture, So that, reduce the R&D cost and increased productivity of R&D and maintain the equity and expense ratio.

To achieve more success in new drug development, pharma companies need to make the following changes:

- Improve employee capabilities through multiple innovative process.
- Recruit people, who have exposure of multiple cultures and aware about innovation need.
- Improve employees' skills.
- Form more tactical alliances with innovative driven companies and active involvements research.
- Develop decision-making abilities.

LIMITATION

Data is limited up to five big local drug makers (Cipla, Dr.Reddys, Sun pharma, Lupin, Aurobindo pharma)

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