Do talent management practices make difference? : A case study of biotechnology start-up firms

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Abstract

The goal of this paper is to explore talent management practices and strategies that may have direct or indirect effect on the performance of emerging firms in biotechnology industry. Specifically, differences between the practices adopted by firms with greater performance indicators and that of firms with low performance indicators are investigated. This paper also gives the details about the emerging issues and challenges in setting up a biotechnology start-up firm and how these issues and challenges are different from that of any other knowledge-based start-up firms.

The research findings are based on the information obtained by interviewing 8 representative firms. Cross-case analysis technique was used to analyze the qualitative data to explore the common management practices opted by firms with successful commercialization than that of the firms which are still in struggling phase. The study lists the high performance work practices and critical success factors in entrepreneurial setting. In a sense, the paper concludes how managing skilled labour, in an effective manner, may affect the performance of emerging biotechnology start-up firms.

Keywords: Biotechnology; Start-up firms; Talent Management; Performance

1. Introduction

Biotechnology is emerging as a high growth sector globally with the potential to provide tremendous benefits in areas of agriculture, human and animal health, environment protection, Industrial processing, and to improve the quality of products and services. It is not a separate science but rather a mix of disciplines – genetics, molecular biology, biochemistry, embryology, and cell biology – transmuted into productive processes by coupling with such practical disciplines as chemical engineering, information technology, and robotics (Doyle, 1996).

The origin of biotechnology industry in USA and Europe could be directly linked with the academic and research institutions, whereas in India, the biotechnology industry has evolved differently. Companies have entered the biotechnology sector in India mainly through four distinct routes. The early entrants were started as counterparts of large pharmaceutical companies. After that, pure biotechnology start-ups focused recombinant drugs production, research services, clinical trials and bioinformatics came into picture.

Considering biotechnology as a next booming sector after information technology, many software companies started biology branches and more recently industrial conglomerates. Indian biotechnology sector has evolved over time and become attractive globally as collaborating partners for biotechnology activities across the value chain (Palnitkar, 2005).

2. Literature review

2.1 Biotechnology start-ups: An overview

In general, biotechnology firms refer to companies whose products require laboratory experiments or clinical development including medical devices, diagnostics, and pharmaceuticals. In many ways, all startup firms are alike; however, the biotechnology start-up firms warrant its own context with its long product cycle which relies heavily on scientific experiments and intellectual property. They require long gestation period, frequently exceeding over 10 years, before the product can be successfully commercialized. Therefore, the biotechnology industry as a whole has never recorded a net profit (Glick, 1997). This statement, up to certain extent, still holds true today and critics argue that unless there is fundamental change in this structure; biotech won't be able to attract the investments and talent required to realize its potential for transforming healthcare (Glick, 2008). ‘‘The launching of a company based on a new technology is not a simple task, and in many ways, is more difficult in biotechnology than it was in many other industries’’ (Kenney, 1986, p. 25). Start-up biotechnology firms must evolve from pure technology-driven entities to market-driven entities (Berry, 1996).

In modern biotechnology, the activities of firms range from offering services to carrying out the end to end drug development process. Although business models in the biotechnology sector are not homogeneous, they are roughly divided into three types of business models in practice: service or platform firm, hybrid and product firm (Konde and Viren, 2009).

1. Service or platform firm: A service firm is a firm that provides services or carries out contract research. (Bigliardi et al., 2005). In general, the capital required for running a service firm is relatively low compared to the other business models.

2. Hybrid firm**:** A hybrid model is a business model in which a combination of activities (service, platform or product development related) is carried out (Hu and Mosmuller, 2003). This business model enables to have a relatively steady income originating from either offering services or out-licensing a platform technology and engaging in drug development. This relatively steady income does not solve the need for attracting external capital for medicinal product development, as the investments required to engage in this activity are generally too high (Konde and Viren, 2009).

3. Product firm: Product firms are firms that have drug development as their principal activity. These firms are financially strong and have been in the market for longer than the service or hybrid firms (L. Willemstein and T. van der Valk , 2007).

Biotechnology firms which fall under the category of service/platform or hybrid firms would be mostly in their early stages of development.

2.2 Talent management in Biotechnology start-ups

Prior research on biotechnology business has addressed a wide range of issues including the role of the science-base and technology provided by the universities, university spin-off formation, innovation strategies, alliance formations, marketing issues etc. Most of the earlier research deals with industry-level issues in a broader way, leaving firm-specific issues under-researched. Furthermore, the main focus of firm-specific studies were typically on survival and growth and with very little emphasis on how the firms operate as in individual unit in its own ecosystem , what type of managerial activities they choose to opt in order to achieve competitive advantage in the industry.

R&D based organizations where people, often only a small group of Individuals with highly specialized and scarce talent, are the primary if not sole driver of value creation expected to be managed professionally and strategically (David Finegold and Stephen Frenkel, 2006). Moreover, the current trend towards knowledge-intensive industries means that competition increasingly depends on the management of the relational bases of members of organisations (Dabic and Marina, 2011).

Small biotechnology firms excel at innovative research mainly because of their smaller size, flexibility entrepreneurial work environment and ties to research institutions and universities for advance research facilities. Attracting and retaining key employees are often as critical to a start-up biotechnology firm's success as protecting IP (Kapner and Virginia, 2002). It has been estimated that intangible assets can provide three times as much value as tangible assets (Grupp and Robert W, 2002). Thus, from this ‘best practices’ standpoint, effective talent management practices and their successful implementation is necessary for biotechnology start-up firms to gain competitive advantage and promising future.

2.3 Talent management and Productivity in Biotechnology start-ups

Pfeffer (1998) stated “organizations serious about obtaining profits through people will expand the effort needed to recruit the right people in the first place”, in particular, the research and development firms are becoming more specialized in the scientific field. Hence, the top priority for human capital in R&D organizations is the attraction and retention of talent to support product or service growth (Kochanski et al., 2003), because creativity is the source of business success and is embedded in talent.

Productivity of a Biotechnology start-up firm is mainly dependent on the talent pool it acquires. The R&D team is mainly responsible for the product innovation which plays a

crucial role in the sustainability of the business. Finding effective methods with which to manage an R&D team so that it achieves a high level of innovation performance should be on top of the agenda of any business (Beheshti, 2004). Firms are intensely competitive for skilled knowledge workers. This is the reason why biotechnology companies should become more innovative in devising and implementing strategies to attract and retain skilled and valuable employees. In conclusion, greater emphasis needs to be placed by managers and their organisations on the value of skilled knowledge workers and the growth of intellectual capital if firms are to improve their bottom line (Terziovski, M., Morgan, J.P., 2006).

3. Data and methodology

This research has no pre-set hypothesis; instead it takes more of an investigating approach to develop the insight into what different management practices are being followed by the biotechnology start-up firms.

3.1 The study

The current study tries to explore talent management practices and strategies that may have direct or indirect effect on the performance of emerging firms in biotechnology industry and issues regarding the same. Since all start-up firms were shy to reveal their revenues, we asked them to rate themselves on a scale of 5 indicating their overall performance from very poor to excellent. A cross-case analysis technique was used to analyse common management practices opted by firms with successful commercialization than that of the firms which are still in struggling phase. So the current study aims:

1. To list the critical success factors in entrepreneurial setting.
2. To explore various talent management practices opted by biotechnology start-up firms
3. To study the differences between the talent management practices adopted by start-up firms with successful commercialization than that of the firms which are still in struggling phase.

3.2 Sample

The present study proposes to cover a sample of 8 start-up firms which will meet the following criteria:

1. The firms to be in their early stage of development (service or platform and hybrid firms);
2. The firms to be located in southern region of India (preferably in Chennai and Hyderabad);

Since the topic is exploratory in nature, in depth interviews with an open ended questionnaire were used to collect the qualitative data.

3.3 General information about the companies being interviewed

The firms being interviewed were mainly operating in the sectors as human therapeutics and vaccination, human diagnostics, aquaculture and contract research with 2-10 years of experience in the respective fields. Five Out of the eight firms were global based; and are being operated in India for about 10 years now. The strength varies from 10 to 60 employees for each firm.

The duration of interviews were almost one and a half hours with the purpose of understanding the emerging issues and challenges, Critical success factors and High performance work practices in entrepreneurial setting in an elaborate manner. HR managers or the personnel responsible for talent management activities were interviewed.

4. The case study

4.1 Emerging issues and challenges in setting up a biotechnology firm

In many ways, all startup firms face similar challenges however, what makes biotechnology industry unique is its lengthy product development cycle, its relying up on science and intellectual property, and regulatory approvals. In addition to it environment in which biotechnology firms operate is very uncertain and changes very rapidly. The factor which motivates the entrepreneurs to start a biotech firm as said by Dr. T. Charles Bhaskaran (CEO of Geomarine Biotechnologies) is "*The flair of science which is so fascinating that it keeps us motivated and positive about the future*".

The common responses upon being asked about the most critical needs for the prospering and growth of biotech industry were:

- Ideas and innovations
- Access to capital
- Access to skilled manpower
- Access to advance technology
- Public awareness.

Organization setting and culture, most of the biotechnology start-ups are quite different from other knowledge based start-up firms. Innovation driven and non-hierarchical structures of these academically oriented firms makes them unique and different in many ways then other traditional start-ups. It cannot be looked at as a regular profit-seeking start-up. New biotechnology start-up firms seem to be driven by scientific discoveries

and innovative performance. Relying up heavily on science and intellectual property along with long product development cycle has its own mark in case of biotechnology start-up firms.

4.2 Cases Comparison

Although each firm shows relatively similar recruitment and retention patterns, they have some distinct features in their nature and characteristics which distinguish one from the other.

4.2.1 Difficulty of recruiting highly talented scientists

Among the eight companies that were interviewed, three firms expressed that they have difficulties in recruiting potential scientists. They have faced problems even in recruiting candidates with two or more years of experience. Few of them reported that they do not have this problem but filling the highly specific scientific areas takes longer period of time. Some of the reasons being given were:

- Low number of applicants with the required skills
- Lack of required qualification and work experience
- Low number of applicants with required attitude and motivation
- Poor terms and conditions offered for the job

On citing the reasons contributing to successful recruitment, the answer varies with different firms. They range from competitive and high salary, firm reputation, alliances with other biotechnology and pharmaceutical firms, association with universities, career development opportunities and interest in nature of work.

4.2.2 Recruitment and selection

In these firms, either CEO or a senior scientist was responsible for recruitment and selection as there isn't any distinguished HR Dept. All the companies employ a variety of recruitment methods, varying from traditional methods such as advertisement in newspaper to campus connects. The most effective way to recruit the potential candidates reported is through references .The decisive factors, for successful recruitment were given as pay level, reputation of firm, and future potential of the work. Most famous recruitment methods were via website, campus connect, newspaper ads, headhunting companies and through references. It was interesting to note that two of the eight companies which were doing fairly good, do not have a probation period, while rest of the six companies did have the probation period.

Except one, which was a government aided healthcare firm, rest of them do not have any annual recruitment cycle. Generally hiring is done according to the demand of projects.

All the firms preferred postgraduates over graduate candidates, citing graduate candidates are not well trained even on basic laboratory practices as the reason.

Selection process of each of the firms comprised of 2-3 levels of written tests and interviews. One of these companies conducts an open scholarship test every year awarding scholarship and internship at their firm to the well performed students. This gives the firm time to access the potential of the candidate to hire him/her for full time position. This not only helps the firm in building a good reputation but also helps in obtaining better chances for hiring potential candidates.

4.2.3 Turnover rate and retention

Unlike IT professionals, scientists do not change organization and area of expertise frequently. They tend to stay in one organization and develop their career along with the firm. This is not the case with graduate research assistant though. The range of employee turnover reported was from 23% to 80%. Attrition was more at entry level and middle level. Graduate research assistants were more prone to leave the firm contributing to the high rate of attrition. The main reason cited for leaving the firm is to pursue higher education. Thus, companies now prefer postgraduates instead of graduates. Another reason why the attrition rate seems so high was the less no. of employees in the start-up firm which automatically creates a big difference even if one employee leaves.

Firms with better retention rate are reportedly providing above-average benefit and salary whereas other companies generally pay around the average of the market standards. Besides tangible financial rewards, other elements which were contributing to the better retention were challenging work, working with advance technology, firm's reputation (monopoly in the particular field), opportunities for professional development, clear communication channels with a happy and family-like working environment helps in retaining employees.

One of the firms reported a very interesting way to retain aspiring scientists. The CEO of the firm is a PhD holder and associated with a reputed university. He guides postgraduates to pursue their PhDs in the university. So the postgraduates, who work under him, will be working on live projects in his firm in order to pursue their PhD. Since PhD takes around 5 years to be completed, he can retain them for the longer duration in his firm.

The HR manager of one firm with better retention rate than the others explained that they place more emphasis on effective recruitment and selection process. When a candidate joins the firm, they fully trust on his potential and abilities. The level of trust and respect they put in the employee is the main element for successful retention of the high potential employees.

4.2.4 Appraisal system

Half of the firms (mainly global firms) were reportedly having a well defined appraisal system and it is carried out annually with performance review every six months. Rest of them use performance review after every project. Upon asking, on which criteria the performance is being evaluated, it was reported that to gauge the performance of entry level employee is easy. There were fixed milestones to be achieved because of repeating nature of work. In case of senior scientists, there were some provisions such as coming up with ideas or methods to speed up progress of the current project. Generally, the appraiser just knows the level with which the scientist is performing.

One good way to improve the performance and learning reported was to rate the performance on the basis of learning credits. All the employees were provided with the digital and physical libraries as the resource support. Adding learning credit as one of the performance measure criterion promotes learning culture and enhances career development opportunities which adds up to better employee retention rate.

4.2.5 Training and development:

All the firms being interviewed were maintaining systematically structured on-the-job training programs. On-the-job trainings were dived into basic training and job specific training. All of them gave priority to training. Training process was more advanced in global firms. They were providing a broad spectrum of training to employees ranging from regulatory compliances, medical device quality control and quality assurance, clinical affairs, clinical biostatistics, technology management, project management, data management to entrepreneurial activities and business development at different levels.

For job related competency development, every firm has digital/physical library. Few of them even sponsor employees to attend workshops and conferences. To obtain project specific skills, some of the firms have tie-ups with educational or training institutes. Few of them encourage employees to participate in various managerial skill development workshops.

5. Case study results

5.1 Quality concern

Among the eight firms interviewed, three expressed the viewpoint that the number of skilled and potential candidates is declining. Even though there are enough number of colleges offering biotechnology in south India the number of skilled candidates was a big concern compared to the number of applicants for a particular job, as reported by few firms. They stated that the quality of academic knowledge is dropping although the number of science graduates and postgraduates is enlarging. One of the firms said that in case of an urgent requirement, they do tend to fill in position even when the candidate isn't up to their mark .One of the controversies is that in cases where they do not come across candidates with all the desired skill sets and knowledge in the candidate,

should they compromise with skill sets or the requirement itself at the first place. In case of senior scientists, they don't have many choices. But, at the lower level recruitment becomes easy however half of the firms reported that even though it's easy to recruit at the entry level, attrition is also high at this level.

Secondly, all the firms which were interviewed emphasised highly on recruiting and retaining the "star scientist" in their research team. These highly talented scientists are the main intellectual capital of the firm which entails the issues of quality, reliability and capability.

The response on being asked, if the quality of candidates a firm is recruiting is being affected by the competition with the other biotechnology firms was true to certain extent for the entry level positions but not for senior scientist's position. Reason being, most of the companies are operating in one specific area which is different from the others. So people specializing in specific fields will get more attracted to the firms operating in the particular area. It's the opportunity to learn and opportunities for professional development which attracts them to the particular firm, since their area of expertise is aligned with the firm's area of operation.

One of the firms stated that new graduates come in and learn quickly but the down side is that after one or two years, they move out either for higher studies or to another firm whereas in the case of less qualified candidates such as school drop outs , they pick up slowly and it takes longer to train them up but they would stay longer. Therefore, this firm would recruit less qualified employees into laboratories for repeated processes. Even though getting the specialised candidates is tough we can't deny that they make valuable contribution to the firm. Employers need to figure out the better ways to retain them.

5.2 Recruitment methods-How effective?

All the interviewed firms claimed that they adopted a combination of recruitment methods to attract potential applicants but, the reality is unlike IT firms these firms are not proactive in recruitment process. Most frequent and reliable ways reported were through references and head hunting companies for senior scientists and internet for entry level positions and interns. The literature says that to recruit scientific professionals, posting recruitment advertisements in the trade journals or the professional journals would attract the most favourable applicants but none of the firms are using these means of recruitment. Firms should be more active in campus connect programs, job fairs and other ways to be connected with various academic institutes. These types of activities will not only enhance the attractiveness of the field but also ensures the adequate supply of potential candidates to the firms. Firms with the better performance were able to attract better candidates than the rest, the reason being, their good public image and reputation though the firms are at start-up phase, they worked sufficiently on their visibility in the market which enhanced the probability of getting potential candidates.

5.3 The attracting features of the organization

Scientists are more thrilled to do a meaningful and challenging work which is aligned to their skill sets and knowledge and also provides the space for further learning and development. One of the senior scientists stated, upon asking what you look for in a firm before joining it, "I prefer a dynamic and progressive organization which provides challenging and interesting work. I will choose a place where I can learn, grow and enhance my skill sets". So a major factor in such fields which determines the retention of a potential employee is the nature of work being provided at the firm.

The literature also suggests that a firm's image and reputation act as a major component of early job choice decisions. Turban and Greening (1997) suggested that socially responsible actions and positive images lead to competitive advantage through the attraction of high quality staff. One of the firms with good performance indicators stated that the two major attraction factors to attract potential applicants for R&D positions are firm's reputation and pay. So to summarize everything in a line we can state that when it comes to attracting senior scientists with desirable experience, the firms should be ready to provide interesting and challenging work, dynamic environment, competitive salary and advanced lab equipment.

5.4 Effective ways of retention

All the eight firms interviewed claimed their attrition rate to range from 23% to 80%. The research done by Kochanski and Ledford (2001) shows that on an average, R&D organizations do maintain a lower turnover rate around 3.6% compared to that of industries such as retail and service. If we take this figure as an indicator to map the level of retention in all the eight firms, we can say that these firms are in need to device better ways of employee retention.

Reportedly all the firms commented that the turnover rate for senior scientists was quite low compared to the junior scientists and research assistants but, they were sensing that the trend might go up. Reasons could be various opportunities in the industry with better salary and additional benefits for experienced candidates. However, studies have shown that in R&D settings employees rarely leave a firm purely for monetary benefits. In the same line The Biotechnology Human Resource Council Benchmark Retention Study ranked the indicators which determine the retention as personal growth, compensation, work environment, feedback and recognition and vision and purpose of the firm.

When all the firms were questioned about the above factors they claimed to fulfil each one of them. Every one of them said that their training sessions are advance and intensive. Their appraisal systems were reported to be updated and monitored. They reported to provide a dynamic environment and average salary in order to serve all the retention factors. However, it is hard to state if these views are more idealistic than realistic. Yet, if the views are accepted as realistic, the results do not justify the causes of retention problems.

Apart from the regular retention practices, firms are using various innovative ways to improve the retention namely, association with educational institutes, scholarship programs, various training and career development programs apart from focusing only on monetary benefits. Despite the variation in these techniques that all the firms proposed, it backs up what Buhler (1998) believes that Committing to the retention of employees means offering training and development, developing career advancement programs, enriching jobs, empowering employees and becoming creative in offering non-financial rewards.

6. Discussion and conclusion

During the past two decades, biotechnology has emerged as a vital global industry worldwide. To list the major obstacles to growth, Access to capital, access to skilled manpower, ideas and innovations, access to advance technology and public awareness top the list. For a research intensive industry like biotechnology effective management practices should be put in place to ensure potential candidates with the right talent and motivation join the team. Biotechnology firms are finding it difficult to attract and retain high talent scientists. While the interviewed firms stated the difficulty in attracting greater numbers of applicants for scientific positions, they also commented about the trend that the quality of applicants was often below what they expected. Along with that, firms these days are not only concerned about the academic skills but also on soft skills which adds up to the difficulties to meet those demands in available candidates.

When it comes to recruitment methods, all the interviewed firms reported that they employed combination of techniques to attract as many candidates as possible. However, for effective recruitment, different strategies and means should be used at the different levels. In the same line, interview results show firm reputation and above average salary are the first attracting features of a firm. During the interviews, all firms reported high attrition rates which is of major concern. Among the eight interviewed firms, there are three firms, which appear to succeed in recruiting and retaining scientists. However, due to the difference in size and characteristics, they have their unique features of attracting and retaining scientists which cannot be generalised or concluded as “best”. New management skills are required to understand the industry dynamics and latest employment trends.

7. Limitation of study

First, the case study sample was limited to 8 firms and two geographically dispersed locations which make the generalizations of results difficult. Second limitation is the self-report data collected in the interviews, which generates more idealistic responses than realistic ones. Indeed, the findings presented in this study are possibly suggestive, not definitive. Consequently, further studies are needed to consolidate these findings and to enhance the generalizability of the results.

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