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Experimenting With Life Science Intermediaries: The Case of the Pharmaceutical Sector

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Abstract

The pharmaceutical sector is waking up to the need for more novel and innovative models for engaging with research partners to facilitate more effective knowledge transfer. This paper looks at two examples within the sector of models currently being implemented by global companies and examines how they work, and their potential for helping the companies realise future success. The historical and contemporary contexts within the sector in which these models sit is also examined.

1. Introduction

Novel and innovative methods for knowledge transfer and commercialisation are currently being 'experimented' with by the pharmaceutical sector. This paper reviews the strategies employed in two UK cases where the pharmaceutical sector has invested in life science intermediaries to drive their innovation strategy.

2. Background

It has been more than a decade since the Lambert Report [4] instigated a push by Government to improve the transfer of knowledge and innovation from academia to industry in the hope of reaping economic and societal benefit. During this period Government support for the life sciences sector has resulted in the creation of numerous iterations of national, local and regional intermediaries. The role of these intermediaries, in nearly all cases, has been to facilitate connections between industry and academia.

The question "what is an intermediary?" has been explored by a number of researchers, including Shohert and Prevezer [6], who defined an intermediary "as a public or private organisation that acts as an agent to transfer technology between producers and users and whose main purpose is to carry out a bridging function". More recently Wilson [7] defined intermediaries as "organisations or individuals that occupy the space between the researcher and commercial exploitation of that research". The innovation strategies employed by the two cases explored here embrace this function of intermediaries within their own corporate strategies. They have created their intermediaries to bridge the divide between researcher and the commercial exploitation of their research.

The pharmaceutical sector has a constant need to widen its product pipeline. This has not been easy as most of the low hanging fruit has been picked. It is broadly accepted that the era of the blockbuster drug is on the way out and with large numbers of drugs coming off patent, the timing is right for the sector to start exploring new innovation strategies.

3. Discussion

Lessons from the past are important for moving forward. Historically the pharmaceutical sector had a reputation for being risk adverse, and there are many examples of this. For example, legislation on Orphan Drugs came out in the early 1980's in the USA. This incentivised companies by creating a more attractive market. However, this was at the height of the blockbuster era, and companies saw no reason to explore this opportunity. Instead big-pharma left this space to less risk averse biotech companies like Amgen and Genentech, who thrived by exploiting these previously unexplored markets. The pharmaceutical sector needs to examine different pathways to replenishing its drug pipelines by looking at innovative new ways of identifying potential new drug candidates. Creating innovation intermediaries to help them do this is a bold move and alien to the traditional closed mode of innovation that has been the norm for decades within this sector, a sector that traditionally kept R&D activities behind closed doors in order to prevent the leakage of ideas to the outside world [5]

Johnson and Johnson (J&J) have over the last year opened a number of innovation hubs located within centres of academic excellence [8], and have focused on a national agenda. GSK our second case study has focused its innovation strategy on a local or regional approach. GSK has invested in a physical bio-incubator, the Stevenage Bioscience BioCatalyst [10], which is positioned across the green from the company's Stevenage site.

The model that GSK has chosen uses the principals of the triple helix as it is only one of the investors in the Stevenage Biosciences Biocatalyst - the others being the Department for Business Innovation and Skills, The Wellcome Trust, The East of England Development Agency and the Technology Strategy Board. All of these partners fall into one of the sectors of government, industry and academia that make up the three strands of the triple helix model. The triple helix model was first proposed by Etzkowitz and Leydesdorff in 2000 [3] and is frequently used within the university – industry interactions literature as an important model in promoting innovation. It is depicted with three strands that are interwoven, similar in design to that of the double helix of DNA.

Where the helices interface is where 'hybrid' organisations reside. These hybrid organisations are essentially intermediaries that range from incubators, science parks, cluster networks, venture capital firms, strategic alliances and technology transfer offices [2]. Not only is the Stevenage Bioscience Biocatalyst a triple helix hybrid organisation it also has another distinctive feature in that it embraces the open innovation model and was the first open innovation bio-incubator in the UK.

Open innovation is a relatively new concept that was first introduced to the academic literature in 2003 by Chesbrough. This new paradigm has added to our understanding of the innovation process and is described by Chesbrough [1] as the "purposive inflow and outflows of knowledge to accelerate internal innovation and expand markets for external use of innovation". The open innovation model allows companies to combine both internal and external ideas and innovations to create value [1]. The model promotes enhanced sharing of risks and benefits with partners. This is therefore what makes it a more 'open' system of innovation co-operation. The boundaries between partners become more permeable to inward and outward flows of knowledge.

The model has become increasingly popular with the pharmaceutical sector. GSK launched its open innovation policy in 2010, with the creation of 'Open Lab' based in Madrid Spain [9], where it has invested in malaria discovery with a focus on the developing world, then in 2011 the Stevenage Bioscience Biocatalyst was opened. A number of other pharmaceutical companies have embraced the open innovation model. They use online forums that enable the company to access and share ideas from external sources. The virtual online model is now more common than the physical intermediary model used by our two case companies.

As previously mentioned the J&J model applies a national innovation strategy and the company has positioned hubs in all the major scientific centres of excellence in the UK. They have a dedicated team who are based in their London Innovation Centre office who manage the network of innovation centres around the UK. The company sees this model as experimental; however, it is already starting to see benefits from locating close to academic centres of excellence. Its strategy is to locate within a suitably established incubator that is located in the proximity of a university or hospital. This ensures a close link to the academics which means the academic can drop-in with ideas that could be incubated, funded and mentored into something tangible once the idea reaches the right stage of maturity.

4. Conclusion

Have the pharmaceutical companies finally woken up to the possibilities of utilising these intermediary models to help them in their quest to replenish their ailing drug pipelines? Their innovation strategies appear to have changed and they are more open to external activities to help them find the more elusive blockbuster drug. What these models show is that something is finally being done about it. Experimenting with open innovation systems opposed to closed innovation systems shows they are willing to start taking risks, like the young Genentech and Amgen, who took a risk in the Orphan Drug market.

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