Patents and ESG Compliance in Startups

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Short report

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Abstract

Patents help in protecting research and development efforts in an organization. They are known to increase valuation during merger and acquisition and act as a signal for investors to make investment decisions in startups. Despite the value that patents add to a firm, a vast majority of patents remain unutilised across large organizations. Environmental, Social, and Governance investing is gaining popularity and investors are increasingly using ESG analysis to make investments. In this paper, we studied startups that were funded. Further, we identified and filtered out startups that are ESG compliant. We found that startups that are ESG compliant have better patent utilization. We believe that startups that are ESG compliant will foster responsible investing and sustainable innovation.

1. Introduction

R&D is core to innovation. Assigning a value to the results of R&D, also known as valorisation, is often considered a measure of the return on investment for universities, public research organizations, and public-private partnerships conducting research. One of the outcomes of R&D is patent filing. Often, patent applications and granted patents are used as a measure of efficiency of the R&D work. A frequent problem that firms cite is their inability to commercialize or utilize the patents they own. Studies reveal that most patents remain unexploited or unutilized within firms. In a recent report by European Patent Office (EPO), wherein a survey conducted to measure valorisation of scientific results showed that out of the respondents interviewed, 63% of respondents said the reason for failure to commercialize patents is because they are at the R&D stage, 55% said it is because commercial opportunities have not yet been identified, and 38% said they failed to find interested partners (EPO, 2020).

Environmental, Social, and Governance (ESG) investing is gaining popularity and investors are increasingly using ESG analysis to make investments. We believe startups that are ESG compliant have better patent utilization. Startups that are ESG compliant and having better patent utilization will foster responsible investing and sustainable innovation.

2. Patent As Signal For Investments

Patents act as a signal for investors to make investment decisions in startups. Startups and larger firms file patents for several reasons, for example, to protect R&D efforts, to act as an effective marketing tool, or to bring revenue through licensing or sale. Several research findings discuss how patent filings act as a signal for investors to fund startups. Availability of funding spurs further innovation and it is observed that venture capital and innovation is correlated with entrepreneurship opportunities (Kortum & Lerner, 2015). Patent filings act as a credible signal to venture capitalists about the startup firm quality. This becomes a key decision making factor to make investments into the startup (Cao & Hsu, 2011). Several studies suggest that the reason companies patent at an early stage is because they would like to attract venture capital. Patents need to be looked beyond as instruments to exclude competition, and outside traditional litigation and licensing. Further, it has been found that factors that drive innovation vary between the type of industries and the size of the firms (Lemley, 2000). Farre et.al in their research findings discuss how venture capital firms view patents as a signal of quality and observe patents have the largest effect in a startup fundraising (Farre-Mensa, Hegde, & Ljungqvist, 2020).

Patents are deemed to be signals of quality since they go through stringent process of meeting criteria of patenting, i.e., industrial applicability, novelty, non-obviousness, and patentable subject matter. Not only do patents act as a signal for investors during the funding stage, but they are equally useful during mergers and acquisitions. Sharon Belenzon and Andrea Patacconi analysed 33,000 mergers and acquisition deals for patent filing trends at US Patent and trademark office (USPTO) and EPO. They observe that the value of a firm increases with innovation. Further, the authors observe that increasing total patent portfolio by one patent translates to a $1.2 million increase in acquisition value (Belenzon & Patacconi, 2013). Investors look for the scale up potential of a startup having a patented product or solution. Further, it is important that patents should have an impact on the top line and/or bottom line in the P/L statement, to attract investments.

3. Patent Utilisation In Firms

Patent utilisation rate can be defined as the percentage of all the patents that have been licensed, sold, litigated, or reduced to practice. Patent utilisation or patent exploitation considers the appropriation for R&D efforts and innovation efforts of a firm. A survey of German companies on the use of patents and informal appropriation mechanisms show that only a small percentage of firms, approximately 7.4%, stress the importance of formal appropriation for R&D efforts (Neuhäusler, 2012). (Peter van Dongen, 2014) discusses how patents resulting out of academic inventions are utilized or exploited in the Netherlands. It was found that variety of IP strategies have been used to utilize patents and more than 50% of patents are un-utilized and remain for further development and innovations. Alfonso et. al discusses the market for patents in Europe. Among the determinants of patent licensing such as patent breadth, value, protection, firm size, the most important determinant is firm size. The study reveals that the probability that a large firm offers a patent for licensing is about 19% lower than a small firm (Alfonso Gambardella, 2007). It is also found that patent utilisation is dependent on the firm's market share. It is found that market share influences three modes of patent exploitation, own use or reducing to actual practice, licensing, and blocking (Donghyuk Choi, 2018). Fig. 1 illustrates factors influencing patent utilisation.

4. Responsible Investments

Environmental, Social, and Governance (ESG) investing or responsible investing is gaining popularity and investors are increasingly using ESG analysis to make investments. Organizations around the world are taking steps to be compliant to sustainability disclosures in their annual reporting. In
November 2021, the International Financial Reporting Standards Foundation or IFRS Foundation, the organization that oversees financial reporting standard-settings around the world, announced the formation of the International Sustainability Standards Board (ISSB) to develop sustainability disclosure standards to meet investors’ information needs. The ISSB will build upon existing Sustainability Accounting Standards Board (SASB) Standards with inputs from companies, investors, and regulators to simplify sustainability disclosures.

(Henriksson, Livnat, Pfefler, Stumpf, & Zeng, 2018) has done an extensive literature review on the benefits of ESG compliance by companies. According to Henriksson et al., companies with better ESG scores tend to be able to borrow more cheaply, have higher credit rankings and lower cost of equity capital. According to (Goss & Roberts, 2011), low-quality borrowers that engage in discretionary corporate social responsibility (CSR) spending, face higher loan spreads and shorter maturities. (Schneider, 2011) discusses that a firm’s operating sites and facilities that might be acting as collateral can become a liability, rather than an asset, when they are associated with polluting operations. (Derwall & Verwijmeren, 2007) has done study on Governance metrics international (GMI) to evaluate corporate governance practices of U.S. firms. The authors found evidence that better governance is associated with lower firm-specific risk, lower systematic risk, and a lower implied cost of equity capital.

5. Sustainable Innovations

Sustainable innovation can be defined as an advancement or improvement of a company’s products, services, or processes which will have a positive social and environmental impact and at the same time create profit or economic benefit for the company. Inventions can be defined as technical improvement of a product or a process and are deemed to be patentable if they have an industrial application, is novel, non-obvious, and falls under patentable subject matter. Sustainable innovation of a company’s process often translates to sustainable business model innovation. According to Bocken et al., sustainable business model involves value creation, value capture and value delivery (Bocken, Schuit, & Kraaijenhagen, 2018). Sustainable business model innovation involves complex and systemic tasks and at times is equated to circular business models where the value creation, value capture and value delivery incorporates reusability and recycling. Hernandez et al. introduces a conceptual framework of an integrated sustainable business model and intellectual property (IP) canvas (Hernández-Checa R., 2020). The conceptual framework is aimed at bridging gap of how to integrate intellectual property, including patents, into sustainable business models.

Ever since India opened for economic liberalisation and became part of the World trade organization (WTO) and signed the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement in 1995, India has witnessed technological advancement. The tenth annual U.S. Chamber International IP Index 2022 ranks India at 44th rank among the top 55 countries who have fared well in intellectual property rights. In 2016, Indian government introduced the startup India program where more than 60000 startups have benefited. Joshi et al., discusses the startup emergence within applied universities in India. Of particular importance is the Indian Institute of Technology, Madras and National Chemical Laboratory, Pune. The paper analyses the pre-incubation level processes that have resulted in enhanced opportunity recognition potential. The authors explore the process from pre-incubation level and refer to the startup incubators that are situated in these universities (Kshitija Joshi, 2021). Panda and Joy emphasise the importance of IP based debt lending for startups and the need for change in the role by Indian banks (Bibekananda Panda, 2021).

To study the patent landscape having sustainable innovations, we analysed 391 startups funded by Alternative investment funds (AIF)- Fund of Funds for startups (FFS), under startup India from the period 2016 to 2020. We analysed funded startups who have filed at least one patent at the Indian Patent Office. Specifically, we did search in the Indian patent Office database to see if patents disclose environmental sustainability or social sustainability in the description or claims section.

Innovations having environmental impact

We define patents with environmental sustainability impact to be in any one of the following applications

- a. Renewable energy
- b. Recycling – down cycling
- c. Water consumption or water saving
- d. Inventions around greenhouse gas (GHG) emissions or reduction of harmful gases.

Innovations having social impact

Secondly, we selected patents that disclose social sustainability in any one of the following applications

- a. Reusability – up cycling or circular economy
- b. Energy saving or Energy sharing economy.
- c. Subscription based models or access economy.

Out of the 391 startups analysed who received funding, 16 filed for patents, out of which 5 startups filed patents having either environmental and/or social impact. Table 1 lists the patent domains of the startups, the funding received, and the ESG impact of patents.

Table 1: Startups with patents having ESG impact
<table>
<thead>
<tr>
<th>Patent Domain</th>
<th>Environmental Impact</th>
<th>Social impact</th>
<th>Funding (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>Yes</td>
<td>Yes</td>
<td>1356114</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Yes</td>
<td>Yes</td>
<td>527647</td>
</tr>
<tr>
<td>Electrical</td>
<td>Yes</td>
<td>No</td>
<td>424544</td>
</tr>
<tr>
<td>Bio-medical</td>
<td>Yes</td>
<td>No</td>
<td>376024</td>
</tr>
<tr>
<td>Communication</td>
<td>No</td>
<td>Yes</td>
<td>181947</td>
</tr>
<tr>
<td>Computer Science</td>
<td>No</td>
<td>Yes</td>
<td>52158</td>
</tr>
</tbody>
</table>

One can observe from Table 1, that an ESG compliant startup from the chemical industry, which is traditionally associated with lower ESG scores, has received the highest funding when compared to firms from other domains who are also ESG compliant. Another observation is firms that were compliant to both environmental and social sustainability received higher funding than the firms that scored on any one of environmental and social sustainability.

6. Conclusion

Our study shows that ESG-compliant startups or startups who are in the ESG space have increased funding prospects. Further, we observed that the startups that are ESG compliant have better patent utilization. Investors can be more confident in startups having patents and ESG compliance as the study shows that such startups have better patent utilization. This will in turn pave way for responsible investing by investors.

Abbreviations

Environmental, Social, and Governance (ESG)
European Patent Office (EPO)
US Patent and trademark office (USPTO)
World trade organization (WTO)
Trade-Related Aspects of Intellectual Property Rights (TRIPS)
Corporate social responsibility (CSR)
International Financial Reporting Standards (IFRS)
International Sustainability Standards Board (ISSB)
Sustainability Accounting Standards Board (SASB)

Declarations

Availability of data and materials

All data generated or analysed during this study are included in this published article [and its supplementary information files].

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Both authors have made substantial contribution to this research work. All authors read and approved the final manuscript.

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Renooj Jacob: Mr. Jacob has more than 20 years’ experience and is working as Senior Strategist for Intellectual Property & Business at a reputed IP law firm where he regularly advises startups, and large organizations in their IP strategy, patent prosecution, patent Valuation, and patent commercialization. He was the founder of a boutique IP firm which was later merged with a reputed IP law firm. He was on the board of directors at a biopharma equipment manufacturer until recently and was institutional in driving the merger and acquisition of the same with a European MNC. Mr. Jacob regularly conducts IP sessions and is a mentor for several startups. Mr Jacob’s research interest include how to better utilize patents, patent commercialization in startups, sustainable innovations, and sustainable business models.

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References


**Figures**

![Diagram](image_url)

*Figure 1*

*Patent utilization in firms*