

An Environmental Analysis On Pollution Eating Bikes

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ABSTRACT - Pollution eating bikes is an emerging technology that is used to control pollution all over the world. This technology was designed by a Dutch designer, Daan Roosegaarde founder of Studio Roosegaarde (Studio Roosegaarde, 2018). This technology is by far the most used technology in china to reduce pollution caused by bikes. This research is on pollution eating technology and its implementation in Delhi, the capital of India. Studio Roosegaarde is a company that designs specially for the welfare of the society, is designed as a social lab and its founder is Daan Roosegaarde whose main aim is to create a pollution free future along with his team of experts. Delhi, known for being largely populated and also one of the most polluted states in India is where this product can be launched. PESTLE analysis, SWOT analysis and Porter's five forces have been used to assess the business environment where the product can be launched. The environment is found to be favourable to launch the product. The economic and social challenges that the company will be facing at the time of launch and also to make the people aware how pollution can be solved using the new technology.

Key Words: Technology, Pollution eating Bikes, Environmental issues, Socio cultural, economical

I. INTRODUCTION

Pollution eating bikes is an emerging technology is used to control pollution all over the world. This new technology is incorporated into bikes to control pollution by absorbing the polluted air and letting out clean air into the environment. This technology was designed by a Dutch designer, Daan Roosegaarde founder of Studio Roosegaarde (Studio Roosegaarde, 2018). This technology is by far the most used technology in china to reduce pollution caused by bikes. This research proposes that the technology to be implemented in Delhi, India which is one of the most polluted cities in India (Athreya, 2018).

The research is about an environmental analysis about the Indian economy and recommend the importance of pollution control technology to be implemented in Delhi and in the most polluted cities in India. The research carries an extensive representation of the business environment in India with the help of Porter's five forces, SWOT analysis and PESTLE analysis followed by recommendations for the new product to be launched.

COMPANY INTRODUCTION

Studio Roosegaarde, a social design lab of Dutch artist Daan Roosegaarde designs landscapes for the betterment of future. The company, along with its designers and engineers seek to make the world a better and healthier place to live

in. The Smog free tower created by Daan Roosegaarde and his team of experts is the world's first smog vacuum cleaner that uses patented positive ionisation technology to produce clean air in public spaces (Phillips, 2016). The smog free projects have recently been launched in China, Netherlands and Poland (Studio Roosegaarde, 2018). Other finding of the lab includes Glowing nature, waterlicht, smoke free ring, windvogel and so on.

II. LITERATURE REVIEW

PESTLE analytical tool has been critically evaluated for analysing business environments. In 1987, Francis J. Aguilar discussed the environmental factors affecting business. He gave the acronym "ETPS" which indicates "Economic, Technical, Political and Social" factors (Aguilar, 1967). Arnold Brown in early 1970s focused on the acronym "STEPE" which indicates "Social, Technical, Economic, Political and Ecological" After a decade of Brown's STEPE Analysis, many academics tried to define the environmental factors that resulted in PEST, PESTLE, STEP and STEEPLE analysis. In order to set up a business and to maintain it successfully, it is essential to conduct a PESTLE analysis before setting up the business (James Cadle, 2010). This analysis will help in analysing both competitive and dynamic business environment. Hence, the analysis must cover both direct and indirect factors that might affect the business performance in the future so as to

help in developing strategies that can be implemented to avoid such issues.

To conduct a critical evaluation on PESTLE analysis tools, it is essential to explore further into the strengths and weaknesses of other competing models along with PESTLE tool. Tools like SWOT analysis, Porter's five forces are all well-known models of the business environment. Some academics have computed that PESTLE analytical tool is an effective tool of analysing business environment as it is an easy and simple tool of analysis (Podswa, 2009). As it is a simple and efficient tool, it is easily understandable and reliable regardless of education level or the area of audience. This aspect of the analytical tool makes it more attractive compared to other tools. This tool also helps in guiding the individuals who are in a position to take managerial decisions by avoiding unnecessary complexities. Academics who vouched for the use of this analytical tool have given their reasons against those who criticise the tool. Some academics have openly said about their preference for the other business analytical models.

III. ENVIRONMENTAL ANALYSIS OF INDIAN ECONOMY FOR ENTERING INTO BUSINESS

Figure1. SWOT ANALYSIS – A MODEL



STRENGTHS

Rapid growth of the Information Technology and BPO sector, Vast industrial growth in both public and private sectors, Investment increase in real assets and the Incremental inflow of Foreign Direct Investment (FDI) across the industrial sector are some of the main strengths of India in terms of business development (Foundation, 2019). The economic survey reported that in the year 2016-2017 India will witness economic growth from 6.5 to 6.75 percent making it the fastest growing major economy in the world. The increased inflow of Foreign Direct Investment (FDI) is as a result of the reformed measures that has grown 1.7 percent in the year 2015 to 2016 (Foundation, 2019) which shows that the economy is growing and which is feasible for the company to introduce the pollution eating technology to control pollution.

India consists of a huge labour force that is most effective and also has a large population of English speaking people considering the fact that India has the highest population of English speaking population after the US. Extensive higher education system in India and world class technological

institutes add more value to the business environment cultivating talents from within.

India has a multi-ethnic, multi-lingual and multi-religious society living respectively. India's rich culture has spread to remote grounds through brokers, savants, transients, etc. India's film industry creates more component films than some other nation. India sells about 3.6 billion tickets every year; this is the most elevated on the planet. Hollywood sells about 2.6 billion tickets every year. Indian film has discovered acknowledgment all through the world (Basu, 2001).

Thus, the strength of the country such as economic growth, Multi-cultural people of highest population of English-speaking, and effective growth of film industry can create an awareness among the society at large about the introduction of pollution eating technology to control pollution and thereby to attain society welfare.

WEAKNESSES

Primary weakness of the Indian economy is its excessive dependence on agricultural sector growth. Although it has been proven the most successful soil for agriculture, it has its impact on the economy. One of the other main drawbacks in the economy is social development. Also, there is a high percentage of people who are unemployed thus resulting in a low literacy rate and under development of the economy. Other key weaknesses of India are Poverty, corruption, illiteracy and healthcare issues. According to the world bank, one in five Indians are poor which accounts to 20% of India's population of about 1.3 billion people. According to a survey, only those who live on an income of below \$1.9 per day, which is about Rs 125 per day are poor (World bank, 2019).

On the off chance that we think about this, at that point as indicated by McKinsey Global Institute, the greater part of India, that is, around 56% are poor. What is significantly additionally aggravating is the rich-poor gap that India right now faces. According to Credit Suisse's Global Wealth Databook 2014, India's best 1% hold about portion of the nation's complete riches. Seeing the rich live in extravagance and inefficiency is debilitating for poor people. (World bank, 2019).

The poor need expectation and assets to transcend neediness. Education gives them this expectation. Today, about 45% of the poor are unskilled. While India has had the capacity to accomplish all inclusive essential instruction, this isn't sufficient in the present aggressive world.

The need of great importance is to change our instructive establishments to offer gifted young fellows and ladies whose training and information make them sufficiently appealing for corporates to enlist. Most assembling offices currently use robots with just an unobtrusive number of

individuals to regulate the smooth working of procedures. In our lifetime, we will observe computerization of our everyday lives which will intrigue – self-propelled autos, robots for household work, automatons to convey products to homes... this suggests securing positions which are low on the scholarly scale will end up troublesome. Unmistakably, instruction should be patched up to outfit the activity of the applicant with learning and abilities that will enable him to verify work which can't be robotized. That is one of the key difficulties India should confront – patching up her instruction framework directly from elementary school to proficient training.

Considering the above said weaknesses of the country, the company should adopt efficient strategies to overcome it by creating the awareness about the product and its reasonable price in introducing pollution eating technology to control pollution.

OPPORTUNITIES

Degree for passage of private firms in different segments for business: Indian ideological groups have understood that communism or communist financial arrangements have hampered the monetary development before. The after effects of progression are unmistakable with the development in economy and way of life. It is far-fetched that the present belief system would change. This gives an incredible chance to private part for business development and extension. Reducing Instability: Indian government is gradually getting to be steady. Since its freedom in 1947, political situation has improved gradually to take the present shape. Ideological groups have turned out to be increasingly mindful and therefore, governments have turned out to be steadier than previously. This is an extraordinary certainty promoter for residential just as remote financial specialists. Inflow of outside direct speculation is probably going to increment in numerous parts: Liberalization arrangements of government are additionally an extraordinary contributing component since it has added to the certainty of remote speculators in this industry. The legislature of India has permitted remote direct speculation up to 100% through the programmed course in the medications and pharmaceuticals industry of the nation, on the condition, that the movement ought not fall into the classes that require authorizing. Huge outside trade winning prospect in IT and ITES part: With the development of IT industry and by goodness of modest and quality administrations accessible, India has risen as major re-appropriating centre for different MNCs acquiring a great deal of remote trade. With the expansion in the buying intensity of the Indians, the bundled nourishment industry is picking up significance in the Indian market, particularly in the urban areas and among the adolescent.

Thus, India being a developing country, pollution eating technology company can find an opportunity to enter in the emerging markets and find its own place by creating an

effective awareness among the society at large about the introduction of pollution eating technology to control pollution.

THREATS

Increasingly more of the farming area is being taken up to fulfil the needs of the lodging and mechanical division, in this manner lessening land under development. The competitive populism in the federal democracy can damage fiscal discipline and governance standards. The international political order and environment are fast changing towards isolation and protectionism. The mood of anti-globalisation regarding the goods, services and labour prevails in advanced economies. This could effectively close a potent option of achieving 15-20 per cent export growth in India to realise its overall growth potential of 8-10 per cent GDP growth over time. Challenges arising out of pay revisions and UDAY bonds are significant concerns for states to maintain their fiscal discipline targets (Das, 2018). If the rising dollar on account of developments in the US economy results in the dollar induced depreciation in Yuan, it may lead to substantial structural transformation and disruptions in China that can have adverse spill over effects on Indian trade and investment.

The potential US-China trade war could destabilise the world economy. International oil prices are on the rise and so also the commodity prices. However, the Survey fails to recognise likely problems of slippages in oil production on one hand and the threat of shale gas production in the USA on the other hand, which can effectively constrain the oil price rise. As a consequence of developments in the US economy, global interest rates and inflation rates in advanced countries are on the way to strengthen. This can have an adverse impact on India's capital inflow and outflow and hence on its investment climate. The stat shows that the world exports to GDP ratio have been declining for the last 6 years. So, under such an ominous environment, raising the share of India's exports in the world exports is likely to be very challenging. India's competitiveness in the world market is seriously threatened by emerging countries such as Vietnam, Bangladesh and Philippines (The Hindu, 2018).

These emerging threats like government standards and unpredictable economy should be considered and analysed by the company in the introduction of pollution eating technology to control pollution.

PESTLE TOOLS

Delhi, national capital of India has been facing serious environmental issues that is causing health related problems to its people. Thick smog was seen in areas that is most affected by pollution (Arora, 2018). Delhi, already counted as one of the worst polluted state in the world has multiple factors leading to pollution such as dust pollution by construction activities, pollution by vehicles, industrial

pollution and so on (Shrivastava, 2016). Some areas encountered poor visibility as pollution levels reached 30 times the world health organisation's recommended limit.

POLITICAL FACTORS

India although has a stable central government is divided into twenty-nine states and each one has a separate ruling party, hence there is always a difference of opinion amongst the people ruling the state. The government has tried to create awareness to the hugely populated country but lacks judiciary and strong institutions to assist this campaign. Since the declaration mechanical change strategies in 1991, India's economy has been extensively steady. For example, there was gigantic decrease to 6 on mechanical mandatory authorizing, divestment on swarmed open division ventures, advancement of remote capital, allowing of authorization on outside innovative understandings, and the arrangement of FIBP (Foreign Investment Promotion Board) Thus there has been a consistent improvement of Indian monetary elements. For example, the year 2009 saw the nation register a GDP of U.\$3.965 trillion, development of 6%. So also, there was a noteworthy development of direct remote speculation for that year 2009 to U.\$10.532 billion. In this manner Indian economy exhibits its strength through its capacity to get over the worldwide financial re-modifications (TheEconomicTimes, 2017).

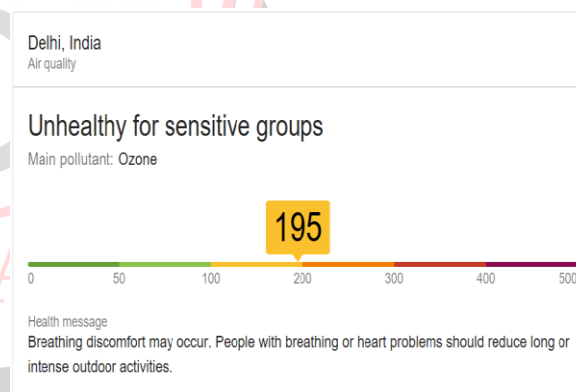
SOCIO-CULTURAL FACTORS

The social factors are the ones that shapes people as it is. It has an impact on how people behave in a certain region and how they perceive everything. The massive growth in demand for organic food is an example that changes are being accepted and people are jointly understanding the need for being fit and healthy. Products often take advantage of the society's concern and population changes are directly affecting the organisation. Social considers, for example, changing patterns impassively affect a business situation. For example, India's maturing populace has seen an ascent in annuity expenses to firms just as expanded enlistment of more established specialists. Being the world's second exceedingly populated country, India's populace is evaluated at 1.1 billion. This is into different structures with various rates: at 31.8% is 0-14 years, 63.1% is 14-64 years and at 5.1% are those more than 65 years. These structures forces changing portability, work mentalities and relaxation, training and dimension of aptitudes, socioeconomics of populace, salary dissemination just as working conditions (Syamala Devi Bhoganadam, 2015).

ENVIRONMENTAL FACTORS

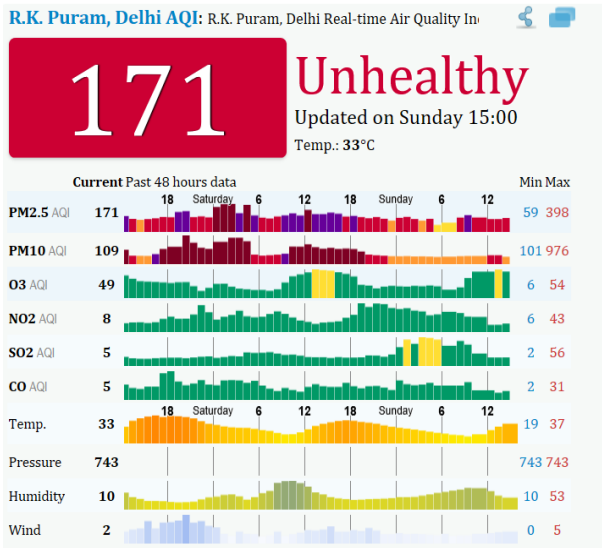
In order to set up pollution eating bike technology in Delhi, India, many aspects has to be taken into consideration to understand if the business needs different strategies to be adapted to make it a successful one in the market. Fine dusts, smokes resulted in construction sites contribute majorly to pollution (Bengali, 2016). The average air quality index for Delhi is 195 with major pollutant as Ozone. Delhi government announced that they will be implementing a three-tier air treatment system which will include setting up of wind purification units, mist fountains and virtual chimney at five major traffic intersections on trial basis to deal with the rising air pollution level (Times of India, 2016). This air treatment system has the potential to reduce carbon monoxide and break down emission by 40-60% meter radius at peak hours of traffic in Delhi. In a place like Delhi, where five million plus bikes are now being used is one of the main reasons for pollution in the city and this increase in pollution has been a cause to the developing health problems (Ranjan, 2015). People who have been categorised as sensitive to certain pollutants have breathing issues and more such problems as a result. The following image shows the average air quality index of Delhi with 195 and major pollutant as Ozone.

Figure 2: Air quality index for sensitive groups in Delhi, India. Main pollutant- Ozone (Google, 2018)



In this scenario, the pollution eating bike technology will definitely be a great example to such companies that are currently developing new technologies or products to control pollution in Delhi.

Figure 3: Delhi, India real time AQI on a random day (AQI- Air Quality Index) (Anon., 2018)



The above image shows that the air purity in Delhi, India is unhealthy. The test was taken on a random day.

TECHNOLOGY

Innovative technologies are being discovered to reduce the pollution level in Delhi, India. Delhi, the national capital of India has many recognised institutions for science and technology that is presently researching on the ways to control pollution in India. These research institutes include Indian institute of technology and so on. Bike sharing technology can also be integrated with the local technology like introducing a mobile application to monitor the pollution level. One of the main technological growth that India has been in the last few decades has been the advancement in smart phones and its usage by people of every age group. The government is encouraging research and partnership with its local colleges researches to build the required human resource to be able to develop the advancing technology both economically and politically. In such situations, technological barriers are very few as technological growth is encouraged and is welcomed.

LEGAL

Being the national capital of India, the local government follows certain laws that will guide in setting up of the company in the city. The companies are also fairly encouraged to set up businesses that will help in reducing the pollution of the city. The companies are also encouraged to follow environmental codes as the conditions are getting worsened on a daily basis. As it reduces pollution there might not be many legal barriers in setting up the company. The companies can also partner with the government in conducting workshops and other programmes at schools and colleges to bring an awareness to the society on the increase in pollution and its effect on the society.

IV. RECOMMENDATIONS

The potential issues that the company might face is that the awareness about the problems that cause because of

pollution. The company can create an awareness programme that will help in making the people understand about the effect it might have on the city, the country and the entire nation. The company can take advantage of the growing number of mobile phone users and connect to people and communicate the kind of impact this rise in pollution will create in the future. This will help in conveying the message to the people as well as to inform them about what the company will offer to reduce pollution in their city. The company can also set up camps in schools, universities and demonstrate what this rise in pollution will look like in the future to give them proper insights to this growing problem. This can be done by setting up teams of people to conduct such programmes which is also cost efficient as many schools and universities will encourage such social welfare programmes.

Another issue is to make everyone aware of the product that the company will produce in order to reduce pollution effectively. To make this work, the company can promote their product on social media considering the fact that there are many mobile phone users in the city. Promotions can be done in every way possible, for example, television platform can be very helpful for promotion and also newspapers. The company can also engage in other public relations activities by partnering with government ministries of environment and transport. This will eventually create an awareness on the product of the company.

V. CONCLUSION

Delhi, India being one of the most polluted states in the world will serve as a platform for Studio Roosegaarde to invest with its pollution eating bikes as there exists an increased level of pollution causing serious health issues. With not many barriers to entry, this social investment can reduce the pollution in Delhi. The strategies that are recommended can be implemented to overcome any such barrier. This can also be a starting point to expand the plan to other states in India where pollution thrives almost equally. Delhi being a large state of India can be looked at as an example to have Studio Roosegaarde start their social lab in other parts of India where this condition exists.

REFERENCES

- [1] Aguilar, F. J., 1967. Scanning the environment. New York, Macmillan: An Arkville Press book.
- [2] Anon., 2018. [Online] Available at: <http://aqicn.org/city/delhi/r.k.-puram/>
- [3] Arora, N., 2018. thewire. [Online] Available at: <https://thewire.in/21284/the-road-to-fixing-air-pollution-in-delhi-beyond-odd-even>
- [4] Athreye, V., 2018. mapsofindia. [Online] Available at: <https://www.mapsofindia.com/my-india/cities/10-most-polluted-cities-of-india>

- [5] Basu, K., 2001. India and the Global Economy: Role of Culture, Norms and Beliefs. *Economic and Political Weekly* , 36(40), pp. 3837-3842 .
- [6] Bengali, S., 2016. To fight the world's worst air pollution, New Delhi forces cars off the roads, *New Delhi: Los Angeles Times*.
- [7] Das, D., 2018. UDAY effect: With interest burden unplugged, more power to Discoms. 27 Jan.
- [8] Foundation, I. B. E., 2019. India Brand Equity Foundation. [Online]
Available at: <https://www.ibef.org/economy/foreign-direct-investment.aspx>
[Accessed 22 March 2019].
- [9] Google, 2018. Google. [Online]
Available at:
https://www.google.com.sg/search?ei=LhHcWqSQM4b1vgSp1ZPYBw&q=air+quality+index+delhi&oq=air+quality+&gs_l=psy-ab.3.0.0i67k116j0i67k1j0l2.562693.566193.0.568501.12.6.0.6.6.0.146.404.4j1.5.0...0...1c.1.64.psy-ab.1.11.447...0i46i67k1j46i67k1j0i13i67k1.0
- [10] James Cadle, D. P. P. T., 2010. *Business Analysis Techniques: 72 Essential Tools for Success*. s.l.:BCS, The Chartered Institute.
- [11] Phillips, B., 2016. *Meet the smog-eating machine*, s.l.: The Hindu.
- [12] Podeswa, H., 2009. *The Business Analysts's Handbook*. s.l.:Cengage learning.
- [13] Ranjan, R., 2015. 55 lakh bikes are the biggest Delhi polluters, *New Delhi: Indiatoday*.
- [14] Shrivastava, J. K. B. a. A., 2016. Delhi's air pollution is a classic case of environmental injustice, *New Delhi: The Guardian*.
- [15] Studio Roosegaarde, 2018. Studio Roosegaarde. [Online]
Available at: <https://www.studio Roosegaarde.net/>
- [16] Studio Roosegaarde, 2018. studio Roosegaarde. [Online]
Available at: <https://www.studio Roosegaarde.net/info>
- [17] Syamala Devi Bhoganadam, S. r. D., 2015. A Study On Socio Cultural Factors Influencing Indian Entrepreneurship: A Critical Examination. *International Journal of Applied Engineering Research* , 10(23), pp. 43807-43812.
- [18] TheEconomicTimes, 2017. Political factors to weigh more on economy: Assocham. Going forward, major attention is likely to be given to the rural landscape with several initiatives like support to farmers, rural and agri infrastructure. , 17 Dec.
- [19] TheHindu, 2018. India is 58th most competitive economy in WEF index. 27 Oct.
- [20] Times of India, 2016. Delhi government plans to install air purifiers, mist fountain to curb air pollution, s.l.: Times of India.
- [21] World bank, 2019. data.worldbank. [Online]
Available at: <https://data.worldbank.org/country/india>
[Accessed 22 March 2019].