

**CHESTER BUSINESS SCHOOL**

**MANAGING INNOVATION**

**TOPIC: TESLA REVOLUTION-INTRODUCTION OF TESLA AIR**

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***DATE OF SUBMISSION:***

**WORD COUNT: 4000**

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# **EXECUTIVE SUMMARY**

Incorporation of innovative measures into Tesla corporation would ascertain it’s productivity in the long run.This innovation is “Tesla Air”. Its main envision is to change how people move by developing eVTOL aircrafts The eVTOL stands for electronic vertical take-off landings. Such an innovation is specifically built-up for traveling within cities. This would diminish traveling time and overall traffic congestion. Such a design utilizes this company’s already in existence battery technologies with sustainable energies for providing an ecological secure way as compared to conventional modes of transit. EVTOL will diminish pollution levels in many cities while also providing an efficient mode of transit specifically for urban residents. However, in order to develop and implement such a strategy, we need to first ascertain how development of distinctive eVTOL models would occur or how vertiports within various distinctive areas of cities would be established. In addition to this, there needs to be smooth integration of airplane services within already existing IT facilities of Tesla. This plan is in accordance with Tesla’s future goals of global shifting towards renewable energies.

# **INTRODUCTION**

Tesla Motors operates as a US-based vehicle producer being traded on the stock exchange of the NASDAQ . Tesla is far more than simply an automotive; it additionally serves as a technological and engineering company with an intense emphasis on innovation in energy. It began operations in 2003 via five Californian business owners, and Elon Musk remains presently its the chief executive officer. Initially, they had been unaware about the company's prospects. The inaugural automobile was released in the year 2008, after being revealed in 2006. The Roadster made by Tesla had been initially produced in large quantities, an entirely-electric car (EV) legitimately accessible for purchasing globally. Tesla's offices in the California city of Palo Alto serves as where the company's innovations in technology are primarily developed. The Tesla Gigafactory, that remains under development, occupies a two-million square foot operation outside Nevada's Reno city & is an alliance with Panasonic's (a multinational organization) which produces a good deal of those lithium-ion battery modules that supply power to the automobiles. The factories produce approximately 6,000 to 400 workers, accordingly. (Aguado et al., 2018)

# **BACKGROUND**

Both urban and rural areas have been rapidly expanding, making traffic congestions an important key-issue that needs to be addressed. This required decreasing carbon dioxide levels. At present, conventional transportation modes serve to be insufficient for contemporary urban areas and it;s residents. The insufficiency occurs in the way of employees getting late to work in morning, also the increased traffic has also become a major factor for pollution rising to dangerous levels. Urban residents feel stressed out lately for these reasons. Establishing innovative measures for all this becomes imperative as the surfaced transportation problems have become even more apparent.

The company chosen for innovation is Tesla. The Tesla company is engaged in your businesses which occupy the front line for climate changes and green living efforts. These are electric motor cars (EVs) along with renewable energies. The enhanced expertise within battery technologies, storage of energies or integration of software, tesla is the best option for air transportation. Its operations and interest align with the plan we have presented to them. Within the automobile sector, revolutionization has occurred and it’s all efforts done by Tesla. Transformation of automobiles with electronic automobiles paving way for energy solutions. However, even Tesla too with all its success is facing limitations lately.

Major concern for the Tesla company is intense competition within the EV sector. More corporations entering this market would mean even more competition and Tesla won’t be able to preserve it’s monopolistic status anymore. Hence with new competitors, Tesla needs to level up it’s game and introduce new innovations that stand out from others. Another major issue is expanding the battery production in order to meet it’s increased demand. The manufacturing of batteries is deemed resource-intensive and requires immense investments within its technological department. In addition, Tesla faces issues in uniting its diversified energy products within an integrated framework. For ensurement of seamless integration of electric vehicles, battery systems for storages and renewable energies, softwares with innovation or technological remedies might be required. (Li, 2023)

For the problems discussed above, there needs to be a solution addressed too. For this, the launch of Tesla Air is the best possible outcome. Such a launch will assist in broadening Tesla's product lines hence more revenue generation specifically for sustainability. In today’s globalized world, advanced technology has resulted in urban areas being more interested in sustainable transit possibilities, this means market demand for air mobility would be quite high in the upcoming future. The high-tech of Tesla would allow it to be more competitive than others in the automobile industry through economies of scale. Introduction of eVOL aircrafts for transportation measures would be in term with minimization of reliability on fossil fuels, paving way for an effective response to contemporary transportation problems.

# **FINDINGS**

We have made suggestions of Tesla air traffic for sustainability measures. The Tesla Air has the main aim for construction of eVTOL ( Electrical Vertical Takeoff and Landing). This eVTOL is an aircraft designed for short distance transport specifically within cities. The aircrafts would be propelled by advanced lithium-ion battery technology of Tesla, this would have zero to none emissions and would operate in a quiet manner. Such measures will be followed up by more efficient, sped-up as well as ecologically sustaining alternatives as compared to conventional transportation methods already in existence. Such an innovation will utilize the company’s battery technologies, incorporation of softwares as well as environmentally friendly solutions for addressing any obstacles regarding urban mobility.

## **4.1 TECHNOLOGICAL VIABILITY**

### **RECHARGEABLE TECHNOLOGIES:**

This airplane would have an expected range of being from 50-100 miles for city traveling as per individual charge, this makes an ideal situation for considerations already indicated just now. The company’s advanced technology in rechargeable battery capacity along with rapid recharging serve to have implications for efficiently implementing this concept. The company’s experiences with advanced rechargeable technologies in electronic motor cars along with battery backing systems gives a solid framework for creating reliable and effective batteries for eVTOL.

### **AIRCRAFT LAYOUT**

The eVTOLS would be built up in small size so that they may operate in huge populated areas without any requirements of considerable infrastructures as they would be able to land and takeoff in vertical manner. Its layout would be built in a manner that prioritizes security, efficiency and customer-centricity. This may be achieved by utilization of materials which decrease weights and simultaneously increase durability. Implementation of noise reducing technologies would serve as sufficient because it reduces any effects of populated areas.

### **INTEGRATION OF SOFTWARE**

The airplane would include extensive navigation along with autonomous flight capability fully embedded with Tesla’s present software systems. This includes autopilots as well as self-driving technologies. Such technologies ensure efficiency in handling city airspaces. The flight operations would be conducted by using present data analytics, artificial intelligence for deduction of obstacles while also guaranteeing that navigational connections are in place with transporting networks.

## **4.2 ANALYSIS OF MARKET**

Increased urbanization and heavy traffic congestions have increased the demand for innovative ways of traveling. UAM (Urban air mobility) has been expected to enhance by the year 2030. It would develop instances for services like commutes, medical treatments for patients on urgent basis and even supply chain management along with some other factors. On one side cities are expanding while on the other there is enhanced demand for effective, flexible as well as ecologically friendly choices of transportation. Tesla might also face rivalry in the marketplace. At first, it was a monopoly as there was no other seller in the market but lately numerous other companies have penetrated the market serving as its competitors. Many companies like Uber and Airbus have already started investigations for air traveling in cities. Tesla has a competitive advantage coming from its advanced battery technologies, integration of softwares as well as huge brand image for ecologically friendly production. Although many of its competitors were progressive but Tesla’s productivity in robotics has given it a leverage over others.

## **4.3 4P’S ANALYSIS OF MODEL**

The four P’s include product, prices, place and promotions. Let’s take a look at each of them in context of Tesla’s new innovation introduced i.e eVTOL airplane.

**PRODUCT**

The main product launched would be called as eVTOL airplane. This is designed exclusively for urban traveling. The airplane would operate rapidly, efficiently and on low levels of caro=bon transporting options. Numerous other services would also be included like vertiport layout along with apps launched for ride booking. All this will be closely attached to Tesla’s present ecosystem. The app will be in use for booking, making payments and tracking arrival and departure of flights. The Product is also the most important P’s here. The eVTOL is the main and most important element of the whole innovative plan. It’s the essential core of Tesla which makes it stand unique.

**PRICES**

For this new innovation to be available for all consumers, it will be set at an affordable rate. At first, owing to developmental costs with infrastructure expenditures, prices might be set high. But hopefully reduced via economies of scale and technological advancements. For accommodation of consumers with different backgrounds, various models will be introduced. Each with subscription based systems or prices set per trip. These would vary from low to high prices according to affordability of consumers.

**PLACES**

The introduction of Tesla Air services will be in urban areas being heavily impacted by traffic congestions. First of all, it will be launched in most populated cities of various states who are facing traffic issues. Before expanding its services to everywhere, the regions of inaugural would be considered as test beds for refining of services.

**PROMOTIONS**

In order to utilize this company’s strength and present consumers, certain marketing efforts will be of central focus for Tesla air’s efficiency, reliability and innovative measures. Certain advertising strategies would include collaborations with local authorities, executing internet campaigns and exhibition of eVTOL technologies. PR activities would elaborate on both environmental initiatives and possible urban developments.

## ***4.4 BENEFITS***

| **DECREASED TRAFFIC CONGESTION** | The launch of eVTOL airplanes would have potential to reduce heavy traffic within crowded areas. In addition, it will reduce travel time it takes going from to offices or other areas. This makes it an important aspect in enhancing the efficiencies of urban transportation networking. Tesla Air serving as a better alternative to the already present mode of transport would be better in assisting cities fulfilling their demands of increasing populace with associated demand of transportation. |
| --- | --- |
| **EFFECT ON ENVIRONMENT** | The eVTOL with its 0 emissions would aid in diminishing pollution levels within cities, this may contribute towards international objectives of gaining sustainability. Usage of electronic planes for within city traveling may decline carbon footprints of city transportation may also assist by putting efforts for combatting of evolving climate dynamics. In addition, eVTOL quiet operations would reduce noise, this would improve overall standards of living in urban landscapes. |
| **INNOVATING LEADERSHIP** | The entrance of Tesla into air mobility would show its leadership within innovative mobility solutions. Such a strategic move would preserve Tesla’s reputation for technological innovation and will pave way for novel opportunities pertaining to growth and uniqueness. Standing at the frontline for air transit, this company would establish new industrial trends and may as well serve baselines for further advancements. |
| **EXPANSION OF PRODUCT PORTFOLIOS** | The entrance of Tesla into air transit has expanded its business portfolio which assisted it in lessening dependencies on transportation sectors while also creating new sources of revenues. The Tesla’s move has the main prospect of preserving financial stabilities while also maximizing its operations towards more regions as per developmental prospects. Henceforth, the eVTOL (product for Tesla) has expanded the company’s offerings. This entails it;s devotion to taking care of certain areas of sustenance mobility. |
| **ELEVATED CONSUMER EXPERIENCE** | Advanced technology incorporation would result in elevated customer experiences. Consumers would save their time amidst traveling, being more convenient and may have in-flight experiences and get to know how traveling in urban flights feel like. In addition, combination of autonomous flight features with present time data analytics guarantee security and efficiency. |

**TABLE 01**

## ***4.5 LIMITATIONS***

| **ADMINISTRATIVE LIMITATIONS** | Navigation of complex regulatory concepts within cities' air transit has been considered a challenge so far. Coalitions with aviation authorities and internal authorities would be required for appropriate certifications along with meeting of secure requirements. The procedure of gaining regulatory permissions might be extensive, delaying or even postponing the launching and expanding of Tesla’s air services. |
| --- | --- |
| **REQUIREMENT OF INFRASTRUCTURE** | The required infrastructures have to be built like vertiports. But for them to be developed, some hefty investments and collaborations with the local government might be required. Strategic location, management of expenditures for development and following of land usage regulations might pose some problems. In addition, traffic capacity provisions along with pricing standards by the infrastructure may serve as vital factors. |
| **TECHNICAL DANGERS** | Tesla air’s success lies in its dependability and efficiency. The product eVTOL has to be secure and free of any battery failures. Main concern here is of bad performances of automated flying systems along with adverse weather situations which might impact operations pertaining to aviation. There needs to be establishment of testing initiatives that test whether any technical danger is there and make ascertain that flights would be error-free. |
| **CONSUMER RECOGNITION** | In order to make sure air transportation is successful, consumers have to put their trust in it and deem it acceptable. For this, transparency is the way. Meetings with local residents would help in resolving concerns for safety, noise pollutants etc. Individual’s attitudes impact the operations significantly i.e their responses would entail whether Tesla air will be expanded to many regions or not. (Tesla, 2019) |
| **ECONOMIC LONGEVITY** | Accumulation of revenues initially might not be enough for manufacturing of eVTOLs as its manufacturing might be too expensive for certain companies. For achievement of cost-effective activities, finance planning needs to be done carefully and in an efficient manner. |

**TABLE 02**

# **5. DISCUSSION**

## **5.1 TIDD AND BESSANT MODEL OF INNOVATION PROCESSES**

The new innovation i.e. Tesla Air is deemed quite compatible with Tidd and Bessant’s model of innovation processes. The framework offers an organized initiative towards innovation, with processings like conceptual developing, selecting, executions as well as proliferation. (Tidd, 2013)

-**CONCEPTUAL DEVELOPING**

Main reason for this innovative program is addressing metropolitan transit issues. The increasing population is directly proportional to traffic congestion, this addresses the immediate need for new modes of transportation which serve to be both efficient and sustainable. Such a phase is based on exterior environmental requirements for new methods to deal with metropolitan transit crises. It is complementary to Tesla’s goal of transforming the world towards sustainability.

**-SELECTION**

When deciding on eVTOL ideas, both technological feasibility and market potentials need to be addressed. Such concept is pertaining to Tesla’s present expertise in battery technologies, software integrating as well as solutions for green energy. Marketplace study that includes present urban compute structures and competitiveness would justify use of eVTOLS as an alternative to be effectively utilized.

**-EXECUTION**

Main job of developers would be to get eVTOL airplanes operational and ready to use. Tesla’s engineering department would create and construct the airplane with technical materials and advanced technology. This execution phase would include installing infrastructures like vertiports, stations for charging etc. Such a stage requires stringent testing, regulation compliances as well as primary experimental initiatives in chosen cities.

**-PROLIFERATION**

This phase involves adoption of the marketplace and developing the suggested solution. This innovation will be launched into various urban areas having focus on decreasing traffic jams, increased ecological footprint as well as effective movement of consumers within cities. Such efforts can be done via marketing tactics, strategic alignments with local governmental bodies as well as public demonstrations for gaining acceptance of points made above.

# **5.2 ORGANIZATIONAL CULTURE**

The organizational culture of Tesla has been identified by some key fundamental aspects. These include innovations, risk-taking behaviors and a green environment. Such a development ought to be established in regions where advanced technology could be researched rapidly because of organizational customs that generate it, rapid development would allow these concepts to be tangible in nature. (Kim, 2020, 42-61)

## **INNOVATIONS AND RISK-TAKING BEHAVIOR**

The Tesla culture is to push its workers into taking risks for searching for new solutions. Such an approach is deemed critical for eVTOL technological development, which has presented substantial technological as well as regulatory issues. The history of this company in the development of electronic automobiles and self-driving technological advancements have proved its capacity to take on any unique initiative and deliver it to the market.

## **SUSTAINABILITY**

The company’s devotion to sustainability is in deep coalition to main aims of newly introduced innovation i.e Tesla Air. This airplane (eVTOL) with its zero emissions would contribute towards Tesla’s efforts in reducing dependencies on fossil fuels while also tackling ever-evolving climate changes. This interconnection of inventiveness and environmental strategies would give effective company support for such an initiative.

## **ENGINEER EXPERTISE/RAPID PROTOTYPES**

The engineering expertise with rapid prototypes serve as critical aspects for this company’s eVTOL airplanes development. They would have to work in a simultaneous manner. On one hand, they need to work faster generating unique concepts based on testing and feedback while on other hand, they have to deal with technical barriers in linkage with eVTOL technology.

## **PRECAUTIONARY AND LEGISLATIVE COMPLIANCE**

Although Tesla has prided itself on a culture of rapid inventions, safety measures need to be incorporated while building up eVTOLS for ensuring compliance with laws and regulations of aviation. For guaranteeing comprehensive testing, validations as well as conformity to regulatory compliance, this company’s very present innovative procedures have to be modified. Balancing out speed and safety ought to be important for aviation’s success.

## **5.3 INTERNAL AND EXTERNAL FACTORS**

***Internal Factors***

The development of Tesla Air relies heavily on its expansive internal resources. These resources enable the invention to occur. **Engineering expertise** within an organization serves as one of most valuable assets for attainment of this aim. The company has skilled engineers and designer specialists within aerodynamics, science materials and engine technologies. These workers are required for development of secure, efficient and dependable eVTOL aircraft. Numerous issues pertaining to metropolitan air transit are addressed by their expertise alone.

Another internal resource found in our studies regarding Tesla is its **battery productive capacities**. The Gigafactories have been identified for production of high-performing batteries, henceforth they are quite important for providing consistent supplies of high levels of lithium-ion batteries required for operation of eVTOL airplanes. In order to make this new technology in practice, Tesla needs to establish extensive battery power, endurance along with rapid charging capacities. Henceforth, by installation of such high powered batteries, eVTOL would perform at range and be accessible for city commutes.

Additionally, advancements in **self-driving automobile** expertise specifically in Tesla’s IT sector would be very important in creation of sound and effective eVTOL platforms. In addition, the self-driving technology and autopilots would ascertain the Tesla Air is performing with accurate navigation and obstacles are eradicated as well as autonomous flights perform well. The installed application software would be able to interact with city air traffic networking channels in a secure manner while making sure they provide dependable and user-friendly services.

**Internal finance resources** serve as an essential benefit for Tesla Corporation. This company has an exceptional financial position which allows it to make sufficient expenditures in research and development. These resources would help out in development of eVTOL technology. Additionally, substantial funds would be required for development of related layouts in this case vertiports with stations for charging. The financial position is also quite useful for carrying out research and development required for productions along with marketing operations required for successful launching of Tesla’s eVTOL.

The already existing **brand image** of Tesla would serve as a key advantage. As the company is already recognized for its products and green living strategies, the efficient brand presence would allow for easy market entrance as well as quick adoption of this new innovation. This would be possible because client trust is already there for Tesla as it has alway served with a productive and efficient outcome. The new service would utilize the company's image and its devotion for sustainability for building up confidence in new consumers too.

***EXTERNAL FACTORS***

In addition to internal factors, certain external factors are also in existence for properly integrating this new innovation. First of all, **Legislative frameworks** provide sufficient challenges since standards pertaining to aviation compliance along with attainment of relevant certifications is important for achievement of a business. For this success, there needs to be strong coordination among aviation authorities and local governments. The licensing could take many months for completion, with main concerts involving safety regulations, airspace management as well as maintenance protocols delaying matters.

Another important factor is **public perspectives**. In order to gain general adoption, the new innovative technology needs to be perceived by the general public as secure and dependable. There needs to be incorporation of transparency in communications and community engagements. These serve important in active deal of concerns pertaining to security, noise pollutants and sensory interferences etc. Comprehensive testation would address these issues in the long term. Positive public perceptions would entail success in the marketplace and productivity levels would increase.

In addition, **Economic conditions** have played an important role in determination of feasibility as well as scalability of metropolitan air traffic solutions. Economic stabilization and development of city infrastructures would assist in propagation of this new innovation. Adequate economic situations like enhanced consumer purchasing power with investments in infrastructure programs would assist in implementing with scaling up of service provided. Furthermore, any economic destabilization could impose challenges like putting constraints on inflow of investments required for infrastructure development.

**Competitive environment** is another external factor that Tesla has to deal with. Marketplace for city air transportation has already attracted many multinational companies like Uber and Airbus. This has called for constant innovations for Tesla so that it would stay ahead when it comes to battery technologies, integration of softwares and brand image. So, appropriate measures need to be taken into account pertaining to market dynamics.

Some **environmental and social factors** are already in existence that might affect Tesla Air. The evolving environmental consciousness in relation with pursuit for ecological transportation falls in line with Tesla’s plan of sustainability for the next several years.Socially, eco-friendliness with strategic transportation is on priority basis. Strategic transit in the sense that it is electrically powered instead of depending on combustible engines.

# **6. CONCLUSION**

It has been concluded hereby that our new innovation i.e. Tesla Air would be a bold step forward in future but is deemed essential for city transits. The advantage of Tesla’s expertise in battery technologies and renewable energies for making a sustainable, effective and innovative remedy for city transportation problems. The addressing of traffic jams and city pollution have allowed us to understand Tesla company’s missions and goals for the future i.e. shifting the world towards sustainability. For effective implementation of regulatory structures, building up of infrastructures and guaranteeing technical reliability is necessary. Having the right strategy would allow Tesla to have potential in transforming city transit systems and reinforce Tesla’s position having top position when it comes to innovation and sustainability.

# **7. RECOMMENDATIONS**

For successful implementation of this innovation, Tesla needs to focus on following measures:

* Perform its operations in close proximity to aviation authorities and local governance in early stages of development for ensuring regulatory compliance and quick approval process.
* Promotion of construction of vertiports including stations of charging within adequate city locations. Distribution of resources and expenses among local authorities and partnerships would serve quite significant.
* Tesla needs to constantly improve its battery capacity along with automotive flight systems giving priority to safety of consumers first.
* The phased roll-out plans start with pilot plans within some cities of choice. Take technological and operational feedback from such programs before progressing to other cities as well.

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