UKS31799

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PROJECT RISK MANAGEMENT

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Task 1

Risk factor: Poor aerodynamic structure

- ***Description***

As per the description by Piechna (2021), aerodynamics is the most significant factor in the F1 racing program that defines the literature on how the body of the vehicle interchanges with air. Aerodynamics acts an important role in evaluating the execution and picking up of a car which is the main reason behind the countless time spent by the team in the wind tunnel examining and purifying their aerodynamic structure. In the context of racing cars, the aerodynamic structure can escalate tire-to-road fastening without hiking the mass of the vehicle. It helps to develop both braking and cornering and also permits the control of the car's stability features. The poor-quality aerodynamic structure of the racing cars can put the performance of the racers in danger as the racers will not have the ability to overtake the previous racers. It can also put an impact on the business of Formula 1 with the low performance of the racers.

- ***Consequences***

As opined by Martins *et al*. (2021), racing cars that have poor aerodynamic structure may have a major impact on their performance. Aerodynamics help the racing cars to interact with the air in order to overtake the other cars and won the race. The racing cars face the air with the technologies provided by the aerodynamic structure installed in the car. The poor aerodynamic structure may consequence the racing cars losing their capacity over performance as it reacts with the air as soon as any car comes in contact with another car. It may also affect the business as the overall performance of the racing cars depends on the structure of the racing car. It may consequence in a loss in the business as the productivity of the racing cars depends mainly on the structure of the racing cars.

- ***Probability***

The risk factor, the poor aerodynamic structure has a probability of a high effect on the business of Formula 1. The aerodynamic structure is one of the major aspects in terms of the manufacture of racing cars and it can affect the performance of the cars with the poor structure. As per the explanation of Basso *et al.* (2021), the business of Formula 1 should focus on the structures of the cars to provide the best performance in the program and boost its business. Racing cars are determined by the classification of speed and poor structure can become a barrier in the most important factor of racing cars. It can also affect the business with the damages to the car which can happen on the interaction of two or more cars.

- ***Impact***

The poor aerodynamic structure can have a high impact on the business as there have been many expectations connected with the use of technologies in the structural progress of the car. It can affect the business with a high loss in order to fail in fulfilling the expectations of the team members and the drivers. On the other hand, the risk factor can impact the popularity of the business with the report of damages in the racing cars. The business of Formula 1 also can have an impact on the poor aerodynamic structure of the racing cars as the cars were facing difficulties in overtaking the other cars while racing.

- ***Mitigation plan***

A mitigation plan refers to the strategies that help the project reduce the risk factor in order to have a better plan for the project (Szudarek *et al*., 2021). The mitigation plan for the poor aerodynamic structure includes the proper utilisation of advanced technology in the development of racing cars. The technology can work in the favour of the business of Formula 1 by reducing the fault in its structure. The authority of Formula 1 should also focus on the designs of its production to avoid the risk factor of poor structure.

- ***Contingency plan***

The contingency plan for the poor aerodynamic structure involves the engineers with their effectiveness in the project. The authority of Formula 1 should focus on the effectiveness of the engineers to avoid the risk of poor aerodynamic structure. It should also have a backup plan for any kind of damage occurred during the examination of the structure. Having a precaution for the risk factor can help the business to overcome the damages that can occur due to the lack of efficiency in any kind of production plan of the project. Thus the contingency plan for the poor aerodynamic structure should include the development of proper technology and style in the development process.

Risk factor: Heavy weight of the cars

- ***Description***

As per the discussion of De Rita *et al*. (2019), the weight of the racing cars plays a significant role in the performance of the particular car. The racing cars should have a low weight in order to fulfil the demand of the racers. Reducing weight can help drivers to perform more effectively in the race as weight can become a barrier to the winning position of the drivers. As per the explanation of Kumar *et al*. (2021), the average weight of the racing car should not be over 2871 lbs to provide better performance to the racing drivers. The drivers can have difficulties in performance if the racing cars have more weight as it will make the cars heavier. The racing cars should have less weight as it will make a convenience for the drivers to fly on the road. The cars that are heavier face some difficulties in the race as the weight become the barrier for the driver to win the race. It can also impact the business of Formula 1 as the business wants to become a revolutionary product in the market and the weight factor can become a major problem in this aspect.

- ***Consequences***

The heavy weight of the racing car can have consequences for the business as weight can become a significant barrier to the winning position of the driver. As per the explanation of Vázquez *et al*. (2020), the heavy weight of racing cars can have negative impacts on the business as it is one of the important features of the racing car. Racers depend on the weight of the racing cars as it helps them to achieve their goal within a limited period. Racing cars with less weight help the drivers in accomplishing their goals as it becomes easier for them to control the car with the minimum weight. The heavy weight of the racing car can also put a negative impact on the population of Formula 1 as strongly affects the performance of the cars.

- ***Probability***

The heavy weight of the cars can have a probability of medium impact on the business of Formula 1 as it would impact the sales of the product. The increasing demand for racing cars with less weight is another reason for the risk in this aspect. The risk factor has a probability of medium impact on the business as it is connected to the performance of the cars which eventually becomes the most important factor for the business to grow. On the other hand, the weight factor of the racing cars is one of the important factors for the race which can impact the business.

- ***Impact***

The risk factor, the heavy weight of the racing cars may have a low impact on the business of Formula 1 as most of the racing cars are manufactured by following the weight measurement with advanced technology. On the other hand, the driving skills of the racing drivers are a major aspect of this current status to have an impact on the performance of the racing cars (Gosala *et al*., 2019). Thus, the weight factor of the business puts a low impact on the business. However, it can be put a major effect on the business with a lack of demand for the product.

- ***Mitigation plan***

The mitigation plan for the risk factor, the heavy weight of the racing cars includes a perfect structure plan with the production material of the racing cars. A perfect structural plan can help the production of the business to focus on the weight of the racing cars in control. It can also help the business in focusing on the performance of the racing cars. A mitigation plan for a particular risk factor can help the business to avoid the negative impacts of the particular factor (Lygeros *et al.*, 2020). Thus the mitigation plan for the heavy weight of the racing cars can help Formula 1 avoid any difficulties created by the risk factor.

- ***Contingency plan***

The contingency plan for the heavy weight of the racing cars includes a strategic plan towards the weight management of the manufactured product. It involves the engagement of the production engineers to follow the mitigation plan properly in order to avoid difficulties. The plan also includes some strategic plans for innovation with advanced technologies to match the increasing demand for racing cars with less weight. On the other hand, the contingency plan for the risk factor, the heavy weight of the racing cars should include a better engine to avoid the weight factor in the racing cars.

Risk factor: Injuries of the drivers

- ***Description***

The racing cars of the project Formula 1 have been designed by following the modern styles of racing cars. It has high-quality wheels, an open cockpit and a high-quality single-seater facility which attracts consumers to adopt the product (Islam and Mannering, 2020). The modern structure of Formula 1 also helps the business to grow in the market with the growing demand for modern technologies. Its one-seater facility helps the drivers to control the car in an effective manner as it has a fire control option inside the car. The racing car also comes with a belt facility to adjust the driver comfortably in the car. However, The open cockpit modern design can also become a danger for racing drivers as several injuries can happen to the drivers while the continuing race. As per the discussion of Chen *et al*. (2019), the increasing number of head injuries during the race can affect the lives of many racing drivers. It is estimated that an open cockpit can hike the number of patients in terms of injuries continuing the race. Thus, the open cockpit design of Formula 1 can help the business to grow with its modern approach as well as can become a danger for the racing drivers due to the increasing number of injuries of the racing drivers.

- ***Consequences***

The open cockpit facility of Formula 1 can have a negative impact on the business of the revolutionary racing car due to the increasing number of head injuries for racing car drivers. The racing cars run the platform with maximum speed and any carelessness or difficulties in the driving control of the drivers can lead to severe damage to the racing car drivers (Shaaban *et al*., 2020). Major Head injuries or health issues can happen with the low-security factor of Formula 1 racing cars. Again, It comes with a sitting belt which will tie the driver to the seat. The sitting belt can help the drivers with comfortability and it can also lead the drivers to have major difficulties in the rescue process while having any injury.

- ***Probability***

The risk factor, injuries of the driver can have a probability of medium risk as it also depends on the driving skills of the racing drivers along with the design of the racing cars. The driving skills of the racing drivers can affect the business of Formula 1 as it includes the well-being of the racing drivers. On the other hand, the innovative model of Formula 1 comes with a strong helmet for the racing driver which saves them from minor injuries during the race.

- ***Impact***

The risk factor, injuries of the driver have a very high impact on the business of Formula 1 as the number of major injuries of the racing drives is increasing day by day. The open cockpit system follows the modern design to attract its customers and to encourage the watchers towards the game (Liu *et al*., 2019). However, it can be very dangerous for racing drivers as can cause life injuries for them. Moreover, the modern design comes with a strong helmet facility for racing drivers for minor injuries. However, major injuries cannot be saved by the helmet and it can also put an impact on the head of the racing drivers with more difficulty.

- ***Mitigation plan***

The mitigation plan for the risk factor injuries of the drivers should include the safety concern of the racing drivers to focus on the increasing number of injuries to the racing drivers. Again, the business should plan a modern way with different designs of the cockpit to avoid the increasing injuries of the racing drivers. On the other hand, the authority should invest in healthcare amenities for the security of the racing drivers.

- ***Contingency plan***

The contingency plan for the risk factor injuries of the drivers involves the healthcare experts to perform the necessary activities for the healthcare injuries. The business of Formula 1 should also focus on the mitigation plan to have perfect execution of the plan. On the other hand, necessary medical examinations of the racing drivers should have done by the authority to nurture the health factor of the racing drivers.

Task 2

Pareto analysis

The Pareto analysis is also known as an 80/20 rule as this analysis is used to follow the Pareto principle which states that 80% of the aim of the project can be fulfilled by doing 20% of the work. With the help of this analysis, the project managers are able to identify the area where the chance of the biggest payoff. This tool has different advantages which are highlighted below:

1. At the start of the time this tool identifies the biggest problem of the project.
2. This tool is useful for organizing the work in a proper manner.
3. With the help of this tool, the productivity of the company and employees are increased.

In a racing car, the weight of the car is a risk factor for the drivers as the performance of the car is dependent on its weight. If Pareto analysis will be used for this risk factor at first this tool starts evaluating how to reduce the weight of racing so that the performance of the car is improved (Kumar & Jain 2020). There are steps available in this analysis by which this risk factor can be easily solved.

Step 1: Collect data
Step 2: calculate the weight of each risk
Step 3: Sort the data
Step 4: Create a Pareto chart by plotting the cumulative percentage of the weight of each risk.
Step 5: Analyze the chart
Step 6: Take action to address the key risk factors identified in the Pareto analysis.

By performing this analysis for the risk factor weight of the racing car, it can identify the critical few risk factors that need to be addressed to improve the performance of the racing car. The risk factors of the car may include problems related to the engine, fuel, grip, and driver of the car.

Ishikawa Diagrams

Ishikawa Diagrams are also called the fishbone diagram or the cause and effect diagram used to demonstrate the potential causes relating to any specific event. The Ishikawa Diagram is most commonly used to prevent the design of the product and the defect in the quality of the product in order to identify potential factors which result in the causing of an overall impact (Botezatu *et al.,* 2019). Therefore, the defect is demonstrated as the head of the fish while the cause extends as the fishbones. There are 3 typical categories that can be used to trace back to the cause of the problem:

- ***The 5 Ms (Manufacturing)***

Machine
Method
Man Power
Material
Measurement

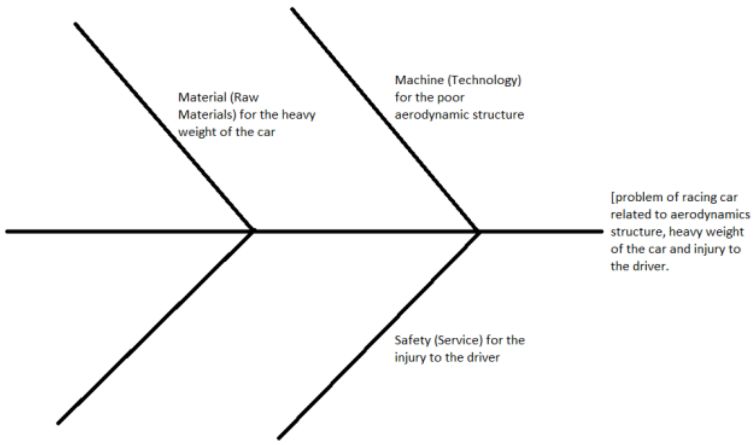
- ***The 8 Ps (Marketing)***

Product/Service
Place
Price
Personnel
Promotion
Physical Evidence
Process
Publicity

- ***The 5Ss (Services)***

Surroundings

Systems
Suppliers
Skills
Safety
Effect is the problem for which the cause has to be detected.



For the racing cars, applying the 5Ms (Manufacturing), the risk of poor aerodynamic structure of the car can be traced to the cause related to the technology used in the machine. This is so because it is the aerodynamics which impacts the performance of the car based on which the car makes profitable business. The risk of heavy weight of the car can also be traced to the material of the raw materials used in the manufacturing of the car. In other words, the material used in the manufacturing of the car must be light so that it catalysts the fast driving and functioning of aerodynamics while the car is in full performance. Further, applying the 5Ss (Services), the risk of injury to the driver can be traced to the cause of safety which must ensure that the product maintains reasonable safety gears to ensure the safety of the driver. Therefore, it is essential that the car must possess the safety gears which are required at the standards of a racing car to ensure safety of the driver.

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