

Executive Summary

Innovation in the autonomous car manufacturing is improving incrementally that self-driving cars will be a reality soon. The leaders in the autonomous industry are Tesla, Volvo, and Audi who are revealing significantly advanced technologies that seem to be out of this world, having full autopilot capability while resulting in significant safety standards. This state of the art technology is going to spread all over the globe in the next century. In order to study this upcoming innovation, three different types of innovation in autonomous cars were discussed; Product Innovation, Service Innovation, and Operational Innovation. The discussion explored the current innovation in autonomous vehicles (AVs), from the systems used in them, to the extent of the technology achieved in this sector. Also, the ethical side of the implementation of the autonomous cars in our society was discussed and the current limitations of fully implementing this technology throughout the world.

The research in the product innovation of AVs revealed that most models operate via “Sense-Plan-Act” control system that allows this robot-like action. However, some unreliable sensors can be augmented with V2X communications and render the technology rather unsafe and unpredictable. The latter can generate an ethical dilemma in society whether to sacrifice the passenger’s life to save pedestrians crossing the road. Failure of these systems can lead to a lot of roadside fatalities.

On the service innovation side, it was found that one of the benefits of AVs is that they increase mobility for those who cannot drive such as children, seniors, blind, disabled, or even the drunk/ under the influence. Moreover, like public transit, users can sleep, work, and do all sorts of activities in an autonomous vehicle, potentially eroding traditional advantages of public transit. Having all this connected vehicle technology all over the globe will eventually provide a great opportunity to implement an efficient and intelligent routing system.

Operational innovation is another type of innovation associated with AVs and debates that the development cycle of these cars must shorten, as autonomous technology moves very quickly in comparison to automobile technology. AVs require new expertise from software development, telecommunications, machine learning and artificial intelligence as well as thorough safety measures to ensure this continuation in innovation and the expansion of this technology worldwide.

In Conclusion, the innovation in AVs is exponentially improving over the years and will be the future of personal cars and vehicles. In order for this technology to be successfully implemented and utilized, an effective use of the DSRC in cars should be witnessed to fully benefit from this technology. Also, to make the use of autonomous vehicle a reality, incremental change should occur through widespread information sharing and establishing standards from third party boards to successfully face operational innovation