Impact of Smart Technology-Based Automated Vehicle on Driver's Competency

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DESCRIPTION

In the case of an Automated Vehicle (AV) failure or limitation, this article examines the effects of technology dependence on driving abilities and the ability of an operator to resume vehicle operation. The findings in this paper are based on the most recent research on the influence of autonomous vehicles on drivers, as well as the most prominent studies on the subject conducted over the last three decades. After a period of automated driving, drivers who resume manual operation of the car perform worse than drivers who continue to operate the vehicle manually. Long-term use of automation may result in a loss of skills and understanding of the vehicle's status and procedures. The automotive industry, regulatory authorities, and drivers face a number of issues as a result of these changes.

One of the most powerful drivers driving contemporary changes in the automotive industry is the evolution toward more automation and connectivity. Technological advancements in automobiles have always been accompanied by simultaneous advancements in driving skills and human-vehicle interaction. As autos grow increasingly automated and linked, drivers are likely to modify their driving habits to match. Automated vehicles (AV) will use new technology to supplement or perform more of the functions typically performed by human drivers. It is widely assumed in the automotive business, as well as in research and the public discourse, that drivers will grow dependent on automation to some extent, if not over-reliant. In other cases, though, drivers may prefer to revert to manual vehicle operation. They may be forced to do so if they are confronted with an occurrence that is unrelated to the programming of these technologies, such as an automation failure. It is also critical to investigate the ramifications of these scenarios, because if the system fails to perform as the driver expects, dangerous circumstances may arise that would not have occurred in the absence of the AV function. The effects of technology dependence on driving abilities and the ability of a driver to resume manual vehicle operation in the case of a system failure or limitation are examined in this article.

The conclusions offered in this article are based on the most recent research on the impact of CAV technology on drivers' performance and comprehension of critical situation warnings. The CAR team has also looked at interesting research projects on human factors in automation, ergonomics, and aviation automation. Factors including trust and dependence, situational awareness, behaviour adaptation, and workload were taken into account while analysing the influence of automation on driver performance. It's worth noting that the vast majority of studies on this subject were conducted on driving simulators, with only a few tests conducted actual test tracks.

Even if laboratory simulations provide some useful information, they do not precisely predict field performance. Future real-world driving testing will be critical in providing a thorough solution to the article's major questions. Furthermore, more research on the effects of Connected Vehicle (CV) apps on driver performance and skills is required, as future vehicles will almost certainly include both automated and connected applications. It will also necessitate an awareness of the automated features' capabilities and limits. Human operators will need to increase their coordination, cooperation, and collaboration abilities when driving responsibilities are divided between drivers and automated systems. Most crucially, while completing secondary duties, drivers will need to retain a constant level of awareness of the AV's performance and the environment.

CONCLUSION

For the past 30 years, researchers have been studying how new technologies affect drivers' abilities and performance as vehicles become more automated and linked. Although there are many variations, most academics agree that automation will most likely result in a loss of expertise, a lack of understanding of the system's state and procedures, and a greater difficulty in troubleshooting for drivers. Furthermore, most experts believe that when people return to manual control after a time of automation control, their performance is worse than when they only employed the manual option.

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