ISSN 2335-7940 (spausdintas)
ISSN 1822-9913 (internetinis)

RISK ASSESTMENT OF THE IMPLEMENTATION OF SMART TECHNOLOGIES IN TRANSPORTATION

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Summary

After analysing the result of the survey given to the employees on the company Teltonika Networks we can have as a result that sometimes the risk of losing valuable information of client or tracking a trailer is there but they still think that is more an asset than a disadvantage, we can see than more of the half of the employees advice to use smart technologies for the improvement in transportation, and we can observe that the smart technologies that are more useful are: Internet of Things (IoT), Big data and artificial intelligence. We can summaries that it is always a plus to implement these solutions. After years we have found the way to reduce risk in all of these areas of opportunities, they still some improvement that smart technologies companies need to solve but we can see that is a benefit more than a disadvantage, because with all the improvement of cyber-attack and VPN´s have been able to reduce risk on losing money, information and the reduction of time.

Keywords: Smart technologies, transportation, risk.

Introduction

Transportation is one of the most important economies for all countries around the world, without transportation countries cannot trade good or service among each other. As all we know for the long of the time transportation has been improved from the beginning of the time. Technology is not absent of improvement so if you combine these two forces you can reach good results to your company or even your country. But in order to find the best solution for your implementation of new technologies in transportation we need to see the risk of using them. There are two types of risks, namely internal risk (e.g. Operation, technology and organization risk) and external risk (e.g. market risk and supplier risk) (Santhi. et al., 2015). Risk studies can help the decision maker to evaluate and to decide whether a project is feasible to execute considering the company capability including organizational structure, level of technology, the ability of human resources, financial condition, production level and marketing level. Also, we have to be aware that risks in transportation business cannot be considered only as losses, they are an opportunity to deviate from the goal to achieve strategic goals (Polinkevych, Khovrak, Trynchuk, Klapkiv, & Volynets, 2021).

Research aim: To assess the risk arising from the implementation of smart technologies in transport sector and to present risk reduction opportunities.

The following **objectives** have been set to achieve the aim:

1. To assess the interaction between smart technologies and transportation
2. To analyse risk management for smart technologies used in transportation.

Research object and methods

The research object is to identify the risk on the implementation of smart technologies in transportation sector in order to reduce losses of information, money and time. The method is on analysing online sources and Survey and questionnaire in Teltonika Networks company.

Research results and discussion

After the survey given to the employees in company Teltonika networks we can interpreter the results. With a 47% of the employees use smart technology to support assessments for transportation, where at the same time we could find a risk on the function of smart technologies. Employees affirm that they sometimes experience bad function where they have lost important information thanks to does failures. Although employee's advice other companies to use smart technologies for improvement in transportation. we can assets the results and see that the smart technologies that the company uses more are Internet of Things IoT, Artificial intelligence, Digital platforms, and Big Data. So, lets focus on these technologies for this article.

The purpose of this section is to identify Smart technologies implementation in transportation. Such as IoT, Artificial intelligence, 3D printing, big data analytics, blockchain, automation, robotics, drones, machine learning, augmented reality, self-propelled vehicles, and digital platform. Although most of them are already implemented in transportation sector, I will talk about the most important ones and describe the functionality in transportation.

The explosive development of the digital world and its influence on our daily lives cannot be stopped. As shown in the report, the megatrends Blockchain, Artificial Intelligence and Internet of Things are merging. In this digital world tokens represent the physical assets and can act as connection between both worlds in terms of value. Smart Contracts form the basis for tokens. They allow arbitrary functionality and a maximum of flexibility. To synchronize both worlds regarding data IoT is predestined. These data are used by Smart Contracts and AI algorithms to analyse specific situations in the physical world, make decisions and trigger actions either in the digital or physical world. In this workflow AI takes the role of adaptive decision engine. All together they form digital twins of objects or even people from the physical world.

Smart technology in transportation business connected with innovation risk and what differs from other risks in some specific features: high degree of uncertainty and return; it is not a result of a specific harmful phenomenon, but a result of the creative and intellectual work; the risk symptoms appear late – at the end of the implementation of the smart technologies' as innovation and the production tests, when the costs for it have already been incurred; the risk is related to direct and indirect economic effects; it is avoidable only by a transfer of innovation to an external source (Panteleeva, 2013).

Internet of Things IoT

Internet of things have been growing fast every year, there is always a new discover a new application, or a new way to use this solution related to any area that you can think about, it can be use in restaurants, hotels, museums and of course in transportation and so on.

We are going to focus on the use of internet of things for transportation and logistics area. These areas are the most benefit from this implementation, the growth of these areas is enormous just think about GPS, nowadays simple people we use GPS for everything, to find your friend's house, the nearest hospital and so on, so imagine for transportation and logistics companies. Broaden the scope to enterprises or fleet management and we see examples of IoT hugely impacting asset tracking and security, traffic management and usage-based cost allocation.

IoT allows air pollution to be monitored in real-time via the use of air quality sensors, enabling sources of this pollution to be identified promptly and accurately. For example, gas leaks can be immediately detected, and swift action can be taken. Preventative strategies can be formed quickly if pollution sources are closely monitored (Vernon.2020).

Artificial Intelligence

Artificial Intelligence is a system that display intelligent behaviour by analysing their environment and taking actions this is how the European commission described. This system designed by humans give a complex goal by perceiving their environment through data acquisition, processing the information, derived from this data, and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model.

We can find other definitions by different companies, but I will say that Artificial intelligence in general means perception of the environmental function by sensors, the data entry that means all the recollection of information that is the thinking mode of artificial intelligence, and finally the decision of autonomy by acting by itself.

Sensing is about data acquisition. This may concern local data such as the situation on the road, but also contextual information such as weather conditions.

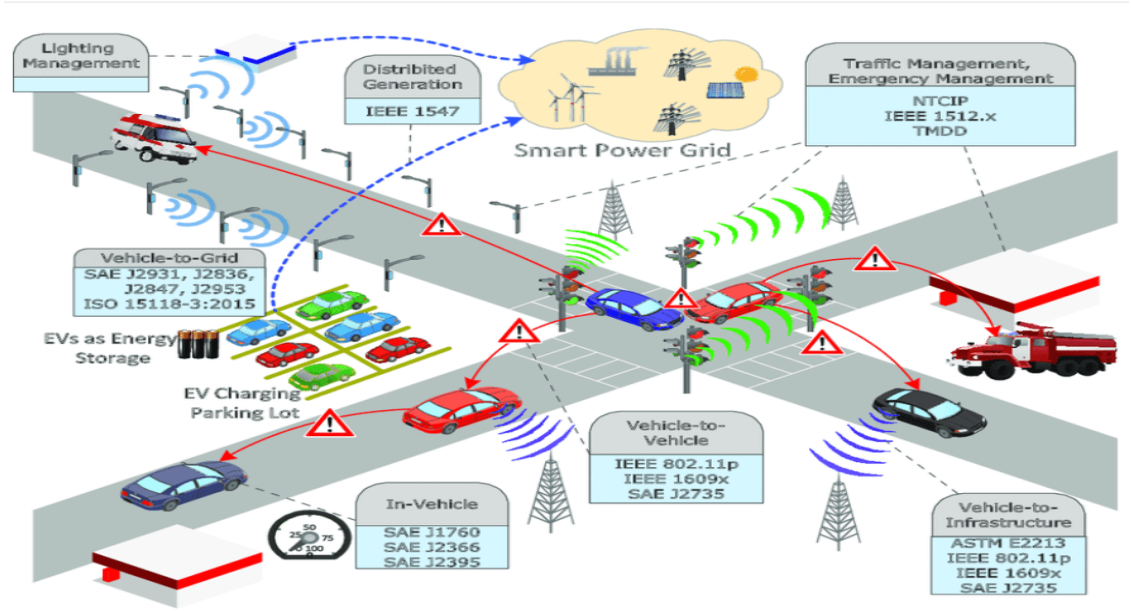

Figure 1. Artificial Intelligence ITS System. (Yilmaz.2016)

Digital platform

Digital platform can be described as a place for exchanges of information, goods, or services to occur between producers and consumers as well as the community that interacts with said platform. It's important to understand that the community itself is an essential piece of the digital platform without that community, the digital platform has very little inherent value. We interact with digital platforms on a constant basis thanks to the success of the digital platform approach. This platform helps the companies to interact with other companies so in case of transportation they could be inform if a client is interested in hiring, they transportation service or what type of products companies sell or service provide, this platform helps even normal people to communicate among all other people and to be connected even if they live in another country. Digital platforms take a lot of different forms depending on the business model they employ and the specific purposes they seek to serve.

Digital transformations are different for each company because every organization has different goals in mind, but a tangible goal to seek through digital transformation is the creation of a digital platform. While there is no shortage of digital platforms, there is still plenty of room for innovation and niche services that have audiences waiting for the day when their needs are finally met (Watts 2020).

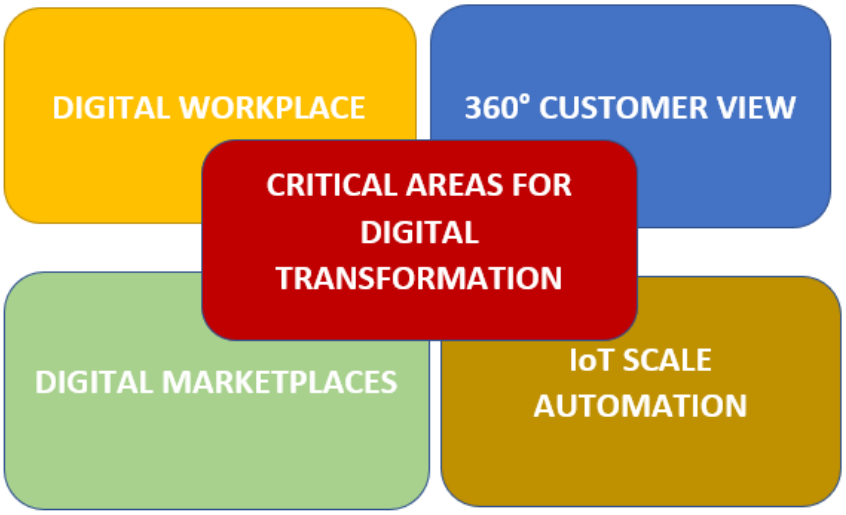

Figure 2. Digital platforms Risk

Big Data Analytics

Big data analytics it refers to data sets so large and complex that they require non-traditional data processing computer applications to treat them properly, there is many areas of opportunity using Big Data analytics that I will be showing next (Alibasic et la. 2022)

Management Performing Administrative Activities, Documenting Information, Processing Information, and similar skills are in decreasing because they are replaced by new technology. For example, to document and record information we do not need to hold a collection of physical documents records. Instead, we have electronic versions and store them in the cloud or some similar online platform.

Quality Control Inspecting products, services, or processes to control quality and/or performance is similar like Equipment factor. However, here we focus more on software and end products rather than on machines itself. As expected, these skills are in more demand.

Analytics This factor has a quite low standard deviation, so it is almost unchanged for these 7 years because even computers are great in dealing with numbers, we still need mathematical skills for new algorithms and various kinds of optimization problems.

Table 1. Benefits on implementing smart technologies in transportation

SMART TECHNOLOGY	SMART TECHNOLOGIES USE IN TRANSPORTATION
Internet of things IoT	Helps the transportation company on tracking the bus in order to reduce risk while driving or reduce time if an accident on the road.
Artificial Intelligence	Gives the benefit of sending information to transportation companies in case if a sensor in the trailer is failing.
Digital platforms	With this solution we can obtain valuable information for potential clients and areas of opportunities
Big Data	Recollect data from client and be able to connect the information with all departments in company example. Accounting department could inform logistics department if the payment from client have been done.

Equipment Equipment skills are showing positive value which means that average occupational requirements are higher for this skill factor in 2015 than in 2008 which is normal due to the fact that now we have so many machines and automated processes which require humans to look after these.

Manual We see that manual is most affected which is expected because these kinds of jobs consist of the routine manual tasks which can be easily automated and replaced with machines. Hence, manual skills' importance within jobs has decreased over time.

Cognitive This factor is showing negative value without weights and slightly negative with weights. This can be due to skills within it that can be shared with many other occupations.

The table above show us the benefits that we can find in the implementation of the technologies most of them help us to secure information either from our client or about the transportation company, also they have brought other benefits like reducing cost, and time which is very valuable to continue in the market.

Conclusions

1. In conclusion risk in implementing new technologies in transportation it will always be there like in any innovation. But more than the risk is the benefits of what it brings to the solution for the transportation company. Risk in implementation could be reduce with a good analysis on areas of opportunities and also risk of operation could be reduce with these smart technologies.
2. The Conclusion after the survey to the employees is that using smart technologies is always an asset more than a risk to the company, because it reduce time, money and effort from employees, as we can see in the article the most used technologies are IoT, Artificial intelligence, digital platforms and Big data, but we will need to be expecting more and more innovation because this is only the beginning.

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