

Shanghai University Innovative Startups: Starships Technologies

Thando Mahlaba

Student ID: 20760111

Masters in International Trade

DOI: <https://doi.org/10.5281/zenodo.7599609>

Published Date: 02-February-2023

Abstract: Autonomously driving delivery robots are developed all around the world, and the first prototypes are tested already in last-mile deliveries of packages Estonia has taken the lead in autonomously delivery robots. Starship Technologies is one of the pioneers of robotic delivery robots. This leading company provides intra-city delivery which is an innovative business and social plan with the onset of pandemic which is deemed to be one the delivery preferences that clients will opt for.

Purpose: The purpose of this study is to review the innovative and entrepreneurial projects during the time of coronavirus outbreak. The study examines the innovative projects of Starship Technologies including their products.

Design/methodology/approach: Case study is used to find out the innovative projects and products that are useful and ready to use during the COVID-19 pandemic.

Findings: Autonomous delivery robots have been impeccable to provide more engagement and easy access to the community. This will bring greater interactivity, promoting sales, purchases and enhance the logistic operations of the after sales customer care.

Originality/value: this study offers original insights and critiques of the literature, highlights the offerings of the innovative innovation and proposing new research avenues for the future

Keywords: autonomous delivery robots, Starship Technologies, intracity delivery, delivery preferences.

1. INTRODUCTION

Starship, a U.S./Estonian employer which offers pressing shipping through small self-riding robots on sidewalks. a milestone unmatched by any other company and which places them only behind Waymo in the autonomous transportation space when it comes to production operations.

Many teams are working on the problem of building robotic vehicles that carry passengers and deliver cargo.. This takes place at many levels, from automated freight trucks, to transit vehicles, to robo taxis, to small road-based delivery robots and a surprisingly large number of smaller robots Use sidewalks and paths instead of lanes. This problem is much simpler. The speed is slow, the robots are small, the environment is very complex, but there are no cars. The team has been working on this issue because it can be resolved.

The world is changing at a rapid rate with an exponential growth in robotics. Technology is advancing daily . In today's world, robotics serves more functions than just a piece of metal to keep chaos from daily human lives. Because the end target has escalated above simple instructions of on/off ,left and right, the standard for Autonomous robots is being redefined and is changing as a driver of innovation. Robotic innovation is now centred around human interaction , making life easier

and more convenient . Business moguls make every effort to build a sustainable and economical presence. This takes place at many levels, from automated freight trucks, to transit vehicles, to robot taxis, to small road-based delivery robots

Delivery robot is an autonomous robot which is designed to deliver orders from point A to point B autonomously. Autonomous robots are robots that perform actions or tasks with a high degree of autonomy without external intervention. .

The 21st century has become one of the most technological advances and digitalized age and continues to grow exponentially . In the likes of Autonomous delivery robots , artificial intelligence and the likes have played a role in the automotive industry . Autonomous delivery robots are one of key entities and an important unit to help the world through a global pandemic to help curb the spread of the virus. It is an important tool in society helping us reduce human to human contact .

Study hypothesis

1. autonomous mechanism plays a innovative role in society
2. New age life-style has Associate in Nursing influence on the community Associate in Nursing aims at achieving growth at an exponential rate within the new digital age .
3. The previous manner of life encompasses a relation with new technology geared toward achieving tangible organic process results and therefore the terms square measure favourable.

2. LITERATURE REVIEW

Case Study: Spaceship Technologies Ltd

Starship Technologies Launched in 2014 by Skype co-founders, Ahti Heinla and Janus Friis, spaceship Technologies these days operates in many cities across the planet. their business headquarters is in city with their main engineering workplace in Baltic Republic. spaceship Technologies may be a European technology startup with subsidiaries in Baltic Republic, the uk (UK), and USA, that has engineered the primary commercially out there autonomous delivery robots so as to “revolutionize the native delivery industry” (European business). spaceship is ready to believe their robots can revolutionise food and package deliveries, providing folks convenient new services that improve lifestyle. Their well-tried ability to harness technology combined with our expertise providing services to lots of folks build this a reality. Access to the product within the robots is organized by a smartphone app, that allows the shopper to unlock the mechanism cowl lid and retrieve the nice

Starships Technologies have made Associate in Nursing innovative product: self driving delivery product. The Self driving mechanism will carry things like groceries , parcels and food in a very half-dozen klick radius. The innovative delivery service facilitates instant delivery that works round the shoppers schedule .The robots square measure eco friendly merchandise, As Associate in Nursing electronically powered mechanism, their system is implausibly clean and implausibly inexperienced. it's each sensible for the earth and any business WHO would love to use the mechanism. Once ordered the robots’ entire journey and placement is monitored on a smartphone.

Starship Technologies considers its delivery robots as a supplemental type of cargo, not as a replacement, i.e., the supplying models which will be used with robots square measure completely different than those models of ancient delivery strategies. Ahti Heinla, the co-founder of spaceship Technologies, illustrated in Associate in Nursing interview the various areas of complementing delivery with bicycle couriers operational in terribly dense urban environments, since they're able to overcome gridlocks and traffic jams, whereas autonomous vehicle square measure sure for the delivery in suburbs with low traffic (Heinla, A. 2017)

Access to the product within the robots is organized by a smartphone app, that allows the shopper to unlock the mechanism cowl lid and retrieve the products. If somebody tries to steal the mechanism, the cameras can take a photograph of the felon, Associate in Nursing an alarm can sound. to boot, multiple chase devices will track the robot’s location via GPS, and therefore the remote operator is ready to talk through two-way speakers with the thief; and, obviously, the mechanism can finish off and can not open the product unit unless re-programmed by spaceship.

Using robotics for delivery

In the twenty first century the usage of on-line looking has redoubled drastically thus creating the employment and want of innovation like the Self driving Autonomous robots by Starships Technologies , delivery and traveler company square measure possibly to reaching to need to enhance their services and create the looking expertise for the client higher and convenient than the present level of service delivery. As a result of the pursuit usage of the robots is low it absolutely was not economically realistic.

The only publication that's directly associated with the subject of this analysis was authored by Vleeshouwer, Duin, and Verbraeck (ResearchGate. 2017) .As they used atiny low bakeshop as case study and located that victimisation the automaton delivery service would cut back the prices considerably, however as a result of the pursuit usage of the automatons is low it absolutely was not economically realistic that has instructed that robots is practicable if firms intensify and incorporate the rise of robot operation (Jennings, D., and Figliozzi, M. 2019.). This is often wherever spaceship technologies are available as their main drive is to market and educate the society concerning the employment of self driven delivery robots.

The Usage of artificial intelligence for delivery at an oversized scale can increase the effectuality of the entire ecommerce trade globally . Several older firms have currently integrated the employment of on-line ecommerce to their business into the new approach of creating sales for his or her company as they need to see that it's convenient and reaches an oversized quantity of purchasers. supplying conjointly plays an enormous role in purchases and sales as customers hold it as a create or break issue once getting a product on-line. The innovative answer of self-driving delivery robots makes the procedure and deciding of buying a product abundant easier for the shopper as they recognize that the robots square measure additional economical and have a fast delivery time, advances in artificial intelligence and 4IR square measure revolutionising business, society and our personal lives.

As mentioned Robots for delivery could be a safe and additional economical approach. All places have a regulation for delivery robots of about 16km/h. In actual reality, spaceship follow-ups that seventieth of pedestrians don't pay any attention to the robots, and most of the remainder of street-goers react absolutely to the robots (Zhang B). What is more, spaceship Technologies claims that over the tens of thousands of miles of sidewalks their SADR's have traveled, meeting scores of folks, there are zero accidents (Harris, M).

The role of robotics in society

Robots are employed in various areas, particularly wherever they will relieve strenuous errands or complete duties that are dangerous for somebody's to undertake. Recent advances in AI and 4IR are revolutionising business, society and our personal lives.

Robotics and AI augment and amplify human potential, increase productivity and are moving from straightforward reasoning towards human-like psychological feature skills (ESA area solution).

Robots are obtainable in all told shapes and sizes all that entail completely different elements for construction. These are the 3 general classes of robotics: Computation: they have a central process unit known as a controller that determines the actions they absorb a selected planned state of affairs. These controllers will be programmed to fulfil duties as straightforward as turning a screw or as complicated as mimicking human social decencies and expressions.

Movement: in situations of autonomous units, robots want specific mechanical elements to permit them to maneuver freely while not direct physical intervention from their human operators. These elements embrace things like wheels that enable them to travel and motors that propel them. different parts like grippers enable them to interface with the globe around them in a very direct and targeted approach (Piper Thompson). As documented , the role of AI in society is large . AI within the transportation business .

Robotics in the transport sector.

Robotics is increasing the transport and supplying business. Flanked by radio transmitters, vision cameras, magnetometers, LiDAR, lasers, equipped with digital maps, navigation systems and fitted sensors to spot obstacles, robots will drive severally to a destination and calculate their precise position and route. With the assistance of sensors, they will determine

important things and may respond consequently, sharing the route with individuals and different vehicles. Automating transport may boost safety, dependability and potency. whereas demand can drop for drivers and pilots, new roles up to speed and management can open up. However, for the total impact, infrastructure, laws and attitudes can have to be compelled to shift. From self-driving cars, to automaton buses already being trialled on European streets to drones set to make a full new transport network in cities, corporations are already investing to vary the face of personal and industrial travel. These controllers will be programmed to fulfil duties as straightforward as turning a screw or as advanced as mimicking human social decencies and expressions.

Different variations of delivery robots developed and used worldwide

This chapter concisely introduces some modifications of delivery robots designed by multiple companies and used worldwide.

Robomart



(TechCrunch)

Robomart is that the serial entrepreneur's latest startup company. Robomart is degree autonomous foodstuff department on wheels.

Solar Impulse states that Robomarts area unit entirely electrical road vehicles designed with latest technology, the vehicles are also as driverless faculty, are controlled by teleoperations for safety. The Bots have a checkout-free system for convenience, and purposeful refrigeration for cooling

The availability models which is able to be used with robots area unit utterly completely different from those models of ancient delivery ways in which. firms have presently integrated the utilization of on-line ecommerce to their business into the new suggests that of constructing sales for his or her company as they have seen that it's convenient Associate in Nursinging reaches an oversize amount of shoppers.

Robmart could also be a corporation into autonomous delivery robots that provides a service of delivery groceries, food and prepared foods from the grocery aisle to the doorsill with a white-labelled service for wholesalers and enormous box retailers.

Robomart has built a self-driving store that patrons can hail just by sound a button. once it arrives, they get to shop for, check-out free, right at their threshold. for several years, customers had the convenience of their native merchandiser and delivery boy coming door-to-door, and by leveraging driverless technology, Robomart recreates that level of convenience and accessibility Thanks to the fully electric, temperature-controlled roller shutter. Britain Lad 2019

Nuro



The Nuro vehicle may be a totally autonomous, on-road vehicle designed to move merchandise — quickly, safely, and affordably for purchasers. Its designed to induce something anytime and anyplace because it is meant to run errands ,from food to clean laundry. The vehicle is economical, electric, and totally autonomous, it delivers life’s desires at a value anyone will afford. These controllers will be programmed to fulfil duties as straightforward as turning a screw or as advanced as mimicking human social decencies and expressions. Movement: in situ of autonomous units, robots want specific mechanical elements to permit them to maneuver freely while not direct physical intervention from their human controller.

“The R-1, Nuro’s debut vehicle is that the height of a sedan however regarding 0.5 as wide, and as long as a wise automotive. It navigates mistreatment the same old suite of self-driving sensors—cameras, radars, and a spinning measuring system unit perked up up high. It’s totally electrical and has 2 wares compartments which will be specialised to suit all types things you’d pay cash to send whizzing around town: luggage of groceries, flowers, pizzas.”



(Alex Davies 2018) .

(robotics & automation)

International Journal of Novel Research in Marketing Management and EconomicsVol. 10, Issue 1, pp: (23-31), Month: January - April 2023, Available at: www.noveltyjournals.com

Aethon have autonomous mechanism , that relies to assist go in the attention business. The TUG autonomous mechanism works in your hospital 24/7 moving materials and clinical provides. It keeps your employees centered on patient care, provides surge capability throughout peak demand and improves the potency of provision.

Aethon is considered one in every of the most effective with autonomous robots square measure they need associate degree innovative code that has a complete fleet of robots that square measure musical organization through a code that manages every delivery and improves the dispatch of the robots.

The mechanism is seen to produce a much better operating setting. It Improves Labor Utilization, Automates Material Handling, Improves employee Safety, Improves Guest & Patient Satisfaction and at last its Reliable & Safe. These square measure all advantages and qualities finish users square measure searching for in implementation of robots within the work area.

Neolix

Neolix Technologies ,a self-driving provision start-up primarily based primarily in Peiping,

Neolix is one amongst the infinite startups developing autonomous delivery vehicles that area unit level four as outlined by the Society of Automotive Engineers, which means they're utterly self-driving in some or all things. the corporate is mainly targeting markets like food delivery, mobile retail, and security. Neolix is one amongst the infinite startups developing autonomous delivery vehicles that area unit level four as outlined by the Society of Automotive Engine

Neolix currently predicts annual sales of a hundred thousand units inside five years and is rebuking potential customers across the world. Its current flagship customers area unit Chinese technical school giants JD.com and Huawei (Forbes)

Neolix is one amongst the primary automaton delivery firms to manufacture their robots at such high volumes.

Coronavirus (COVID-19) pandemic and delivery robots

Corona virus is associate infectious virus Covid-19 that bust get into china late Dec 2019. Coronavirus could be a metastasis offensive virus that has gentle symptoms to life threatening vital. people that area unit infected with virus can undergo these symptoms and ought to quarantine themselves or if the infection has reached life threatening levels they're going to ought to move to the closest hospital facility for additional help. The Virus spreads through droplets of spittle or discharge from the nose. This happen through somebody coughing or sneeze thus vital that you just follow clean hygiene by sanitizing your hands in the slightest degree times and refrain from touching handles and knob and different belongings that will cause the transfer of the virus. carrying a mask, laundry your hands and sanitizing is crucial to stop the unfold of Coronavirus, it's crucial that folks follow associate angle of cleanliness publicly areas as these place area unit super spreader areas. many various elements of the planet area unit either making an attempt new vaccines or creating them. the planet Health

organization has been concerned in majority of the testing of immunizing agents altogether country area unit still within the quest to seek out a vaccine that works at a ninetieth cure quantitative relation as presently the Johnson & Johnson trial is that the solely western drugs trial that works at fifty fifth.

The innovative plan of delivery robots throughout the time of Coronavirus (COVID-19) pandemic is the best time to place the innovation to the take a look at. For the rationale that this can be a contactless technique to work ,with the notion of the virus unfolding once in touch with different humans the usage of autonomous delivery robots helps curb the spread of the virus as human to human contact is being eliminated.

The ongoing COVID-19 pandemic has created a surge within the public interest and demand for ADRs since it will offer contactless delivery, an extremely sought-after service underneath the directives of social distancing (sciencedirect). This can be each within the interest of the corporate and therefore the community.

“We do everything we are able to to stay our customers and staff safe. All of the sanitation processes around our service are reviewed by specialists and we’re following their steerage on operative procedures to confirm a secure and convenient service for everybody. while not robots, additional humans are required within the supply chain for delivery, and as humans area unit the key supply of transmission – victimisation robots decreases this risk.” (Andy ballistic capsule, 2020; Alex Hern 2020)

Topic-centred discussion

The main purpose of this study is to explore the innovative role of delivery robotics in the 21st century. The popularity of digital applications in the ecommerce industry has forced corporations to look for an alternative which keeps up with the number of purchases made with the delivery time.

Ecommerce has tremendously expanded its platform and accessibility which now includes the main selling point as customer services as an important factor which determines the subconscious decision of the customer whether or not to make a purchase online. In this paper we investigate the innovative products that are relevant during the COVID-19 pandemic. Social media as a mode of spreading the word of their innovative products reduces costs . Using the internet has also become a great key factor in the development and success of a company.

Online communities such as Facebook and Twitter are good places to make companies aware of what is going on in the world around them at their fingertips. This includes customers reviews and experiences with the online shopping culture and experience of their deliveries. Companies are likely to push this kind of service to millennials as they are receptive to new innovative innovations which could make their lives easier and more convenient.

More solely an advantage to the company when using Social media as a mode to spread the word of their innovative products it reduces costs . Using the internet has also become a great key factor in the development and success of a company. Coopeland and Malik (2005) show that new media enables connectivity and interactivity of individuals and groups, as well as facilitates the spread of word-of-mouth information sharing.

Before COVID-19 maintained its grip across the globe, the fourth industrial revolution by the World Economic Forum was declared, which predicted a greater change in the last mile delivery services across the globe. Along with the world having gone through the fourth industrial revolution this served as a catalyst in the autonomous delivery robot industry giving them a boost to incorporate their products in our daily lives.

As COVID-19 has created a short term disruption and long term structural changes due to which the e-commerce sector is experiencing a slow-moving growth in new online categories such as groceries and home care. Due to COVID-19 pandemic, the overall sales of e-commerce businesses in the world has increased.

3. METHODOLOGY, RESULT AND STRATEGY

This study examines the innovative and entrepreneurial projects and relevance during the time of coronavirus outbreak.

The type of research methodology that was used for this specific topic is explanatory design. All my secondary data will be taken from school intranet and other sources which provide journals , articles and online books. This paper mainly uses the methods of literature investigation, comparison , theory and practice. All my secondary data will be taken from school intranet and other sources which provide journals , articles and online books, collection of effective information , through

International Journal of Novel Research in Marketing Management and Economics

Vol. 10, Issue 1, pp: (23-31), Month: January - April 2023, Available at: www.noveltyjournals.com

the information query, collection, comparison, collation, summary, will be used as the basis of this research and demonstration.

Commercial companies in the globe have started to incorporate and test the usage of autonomous delivery robots in the past few years. The type of research methodology that is used for this specific topic is a case study methodology. Starship Technologies has been selected as a sample for the companies in the autonomous delivery robots sector. All data will be taken from the companies website and supporting articles which are all related to the study conducted.

The Information that is linked to Autonomous Delivery robots of Starship technologies has been analysed and taken from the website allowing us to come to some conclusion. Starship Technologies has made product information readily available to the public and researchers. Organizations are expected to present the links of all data on their innovative products publicized on other digital platforms on their website.

4. DATA ANALYSIS

The analysis paper chosen Spaceship Technologies. Spaceship Technologies is an innovative start off company that is entirely supported their business within the artificial intelligence trade. The corporate may be a host of digital information of the Fourth historic period.

Starships may be a artificial intelligence company, operational in Baltic Republic, Europe and also the us of America. Their head workplace is predicated in port of entry CA. the web site has allotted pages that are focused on informing the general public regarding UN agency they're and also the innovative product. the corporate has created their main objective and goal push their point as "revolution in native delivery". As mentioned on their web site they're centered on victimisation technology to enhance lives and enhance communities. Accessibility is integral to our service, as we try to create life easier for thousands of individuals with every and each delivery

Moreover, the analysis results of the Starships Technologies web site provides compelling proof that's a support of their product, like the inclusions on wherever they operate the autonomous delivery robots. As mentioned on their web site they're centered on victimisation technology to enhance lives and enhance communities. Accessibility is integral to our service, as we try to create life easier for thousands of individuals with every and each delivery. They additionally address however their robots offer a welcome facilitate to individuals with disabilities round the world. They work with leading organisations like incapacity Rights, Canine Companions for Independence and Age UK to check and explore the ways that our technology may be maximised to supply bigger independence and selection.

5. CONCLUSION

Autonomous delivery robots have been impeccably designed to provide more engagement and easy access to the community. This will bring greater interactivity, promoting sales, purchases and enhance the logistic operations of the after sales customer care. Starship used its innovative technology as a tool to help the community and business owners allowing free flow of trade even during a pandemic which has also brought some industries to a stand still.

Ecommerce should think of incorporating autonomous delivery robots as they ease the flow of trade and during the time of a pandemic they curb the spread of coronavirus. This is a win for both sides, the merchant and the buyer. The safety features and efficacy of the robots continue to make life easier. Therefore in essence with the ongoing fourth industrial revolution, corporate ecommerce firms need to implement autonomous delivery robots.

In closing ecommerce trading companies should use Autonomous delivery robots as a stepping stone to help their business and customers. This will interlock new customers and new streams of business. This will ensure happy customers and a happy merchant a win-win model, all through by providing appealing and easy access to online shopping.

REFERENCES

- [1] Domino's Serves Up Pizza Delivery Robot. *The Sydney Morning Herald*. <https://www.smh.com.au/business/companies/dominos-serves-up-pizza-delivery-robot-20160318-gnlqjc.html>.
- [2] Harris-Burland, H. Starship Technologies Launches Pilot Program with Domino's Pizza Enterprises. *Starship*. https://www.starship.xyz/press_releases/starship-technologies-launches-pilot-program-with-dominos-pizza-enterprises/.

International Journal of Novel Research in Marketing Management and Economics

 Vol. 10, Issue 1, pp: (23-31), Month: January - April 2023, Available at: www.noveltyjournals.com

- [3] Harris, M. 'Our Streets are Made for People': San Francisco Mulls Ban on Delivery Robots. *The Guardian*. <https://www.theguardian.com/sustainable-business/2017/may/31/delivery-robots-drones-san-francisco-public-safety-job-loss-fears-marble>.
- [4] Hawkins, A., J. (2018). Two ex-Google engineers built an entirely different kind of self-driving car.- *The Verge*, 30th of January. Available online: <https://www.theverge.com/2018/1/30/16936548/nuro-self-driving-delivery-last-mile-google>
- [5] Heinla, A. An Interview with Ahti Heinla of Starship Technologies. 27 July 2017. Available online: <https://www.tharsus.co.uk/an-interview-with-the-genius-behind-starship-technologies-ahiti-heinla/>
- [6] Jennings, D., and Figliozzi, M. (2019). A Study of Sidewalk Autonomous Delivery Robots and Their Potential Impacts on Freight Efficiency and Travel, Forthcoming 2019 Transportation Research Record.
- [7] Ladd, B. (2019). Robomart: The Uber of Groceries.- *Observer*, 30th of July. Available online: <https://observer.com/2019/07/robomart-grocery-retail-disruption-store-hailing-autonomous-vehicles/>
- [8] Sawers, P. Starship Technologies Launches Autonomous Robot Delivery Services for Campuses. *Venturebeat*. <https://venturebeat.com/2018/04/30/starship-technologies-launches-autonomous-robot-delivery-services-for-campuses/>.
- [9] Starship. Data Protection? We Need a Feasible Balance between Business and Privacy. Available online: <https://www.european-business.com/starship-technologies/interviews/data-protection-we-need-a-feasible-balance-between-business-and-privacy/>
- [10] Zhang, B. Personal Delivery Devices to Expand Across Bay Area. *The Campanile*. <https://thecampanile.org/2017/12/07/personal-delivery-devices-to-expand-across-bay-area/>.
- [11] Piper Thomson, What Is Robotics? (+How It Impacts Society) August 2019, <https://learn.g2.com/what-is-robotics>
- [12] <https://techcrunch.com/2018/01/05/robomart-is-the-latest-startup-to-try-and-unseat-the-local-convenience-store/>
- [13] <https://solarimpulse.com/companies/robomart#>
- [14] <https://roboticsandautomationnews.com/2016/05/10/logistics-robots-market-set-to-grow-more-than-30-per-cent-in-the-next-four-years-says-study/4443/>
- [15] <https://www.forbes.com/sites/davidsilver/2019/06/04/neolix-accelerates-the-autonomous-delivery-rush/?sh=636fe1c395a8>
- [16] <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
- [17] <https://www.sciencedirect.com/science/article/abs/pii/S1361920920307860>
- [18] Robotics for society, Esa space solutions <https://business.esa.int/funding/invitation-to-tender/robotics-for-society>.
- [19] <https://www.forbes.com/sites/bradtempleton/2021/01/27/starship-delivery-robots-complete-one-million-deliveries-to-become--2-autonomous-transport-company/?sh=4a7cc38919da>