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EFFECT OF THE SUSTAINABLE LAST MILE DELIVERY ON CUSTOMERS SATISFACTION IN CARINTHIA, AUSTRIA

PEDRO, IBUKUNOLUWA OLUWASEUN

Department of Project Management Technology, Federal University of Technology Akure (FUTA), Akure, Ondo State, Nigeria

Corresponding Author: pedroio@futa.edu.ng

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Abstract

Last Mile Delivery (LMD) means the last leg of a delivery process by which sellers sell and delivers goods to buyer without limits of geographical distance. This term came on board as a byproduct of globalization which birthe e-format of trade. LMD had evolved to take into consideration greenhouse effects and seamless delivery through various distinct modules to conform to sustainability standards. This evolution of LMD birthes the Sustainable Last Mile Delivery (S-LMD) which is based on Learnable Optimization which includes the Logistic Model (Operational Framework) and Business [redacted] model (Business Strategy). The interoperability of these models drives the significance of S-LMD in three United Nations Sustainable Development Goals (SDGs): goal eight (8), goal nine (9), and goal eleven, avail criteria

Keywords: Sustainable Last Mile delivery, Sustainable Last Mile Delivery Business Model, Sustainable Last Mile Delivery Logistics, and Customers Satisfaction.

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to conform with both logistic innovation, and technical sustainability. This research work hopes to present data driven feedback on the awareness of S-LMD strategies on Customer satisfaction in Carinthia, Austria, and lastly, measures the effect of S-LMD on customers' satisfaction in the state. The research made use of Multiple Linear Regression Analyses to test the significance of the variable and constructs through the use of descriptive and inferential quantitative informational tools. The results pointed out that with p-value of 0.005 & p-value of **< 0.001** S-LMD business model does have an effect customer satisfaction respectively in Carinthia, Austria. The study highlights that sustainable last-mile delivery is viewed positively, the recommendation deduced from the data are: **improve business models to meet customer expectations, bridge the gap between awareness and actions.**

Introduction

Sustainable Last-Mile Delivery (S-LMD) is a byproduct of sustainable delivery, which encompasses aspects of sustainability and the whole process of a city's growth and management. The idea of making the world 'global' was the foundation for the invention of telecommunication, which was made possible by the Internet, phones, and SIM cards. 'Global' refers to intelligently networked. The phenomenon of globalization has given rise to innovative methods and improved outcomes. "E-commerce," which describes how we order goods online and deliver them to our homes, is a new method. The geographical barrier between buyers and sellers is eliminated through e-commerce. Due to higher volumes of sales made through secure payment methods, the ecommerce boom resulted in traffic congestion. This was because many sellers had to place more vehicles on the road to deliver ordered items, which caused delays and negatively impacted customer satisfaction by cutting across different commercial traffic routes in urban areas (Alejandro *et.al*., 2022; Hui *et.al*. 2021). Greenhouse gases from traffic and

vehicles have an impact on the environment and the efficiency of delivery. (Tobias & Sabine, 2020; Alejandro *et.al,* 2022).

The "Learnable Optimization Method" refers to the redesign of the sustainable last mile delivery process by which items are delivered from the seller to the buyer via the electronic trading platform, while "Last Mile Delivery Logistics Model" and "Last Mile Business Model" refer to the operational framework and business strategy, respectively. "Last-mile delivery" is the process by which transactions involving products and services are transferred from the seller's virtual mode to the buyer's physical mode. 'Last Mile Logistics' and 'Last Mile Business Model' gravitated towards sustainability, which aligns with Sustainable Development Goals eleven (11) while keeping in mind goals eight (8) and goal nine (9), leading to the new term sustainable last-mile delivery. The way to prevent environmental impact via sustainability practices while promoting decent work for employees and allied participants and contributing to economic growth (Qian & Shin- Fen, 2023; Alejandro *et.al,* 2022; Hui *et.al* 2021).

Sustainable Last Mile Delivery (S-LMD) was developed to meet modern demands by evaluating Last Mile Logistics and Last Mile Business Models. It is based on going green (no environmental impact) and facilitating seamless delivery (using autonomous vehicles, autonomous robots, crowd shipping, and alternative drone landing platforms, among many other things). These new forms help to leverage and apply the green approach research studies previously undertaken so as to align with sustainability approach of Last Mile Delivery and proffer solutions to the change in approach issues its implementation may face. To dispatch orders from the delivery stations to the end user, delivery teams in S-LMD work together to coordinate multiple areas of interest (AOIs) into a delivery zone. The area of interest can be coordinated using an electronic or manual operation-based partition. It can then be optimized using appropriate optimization techniques, such as Bayesian theory or the Vehicle Routing Problem with Time Window (VRPTW), and the customer can select their preferred delivery method at that point. Cycles of repetition are observed in this technique. (Baoshen *et.al,* 2023).

While modern last-mile and sustainable last-mile delivery present different problems, they also have similarities. Traditional last-mile delivery methods face several difficulties, such as traffic jams, the environment's effect on greenhouse gas emissions, an aging workforce, high costs, antiquated delivery ideas and business models, delayed delivery, preserved product quality, return orders, and many more. These unfavorable terms were used to create Sustainable Last Mile Delivery; however, several obstacles must be overcome to achieve Sustainable Last Mile Delivery, including technological difficulties, cultural and social norms of the populace, privacy concerns during delivery, infrastructural deficits, city regulations, capital acquisition, capital and profit recovery, cyberattacks, research constraints, and technological limitations (Qian & Shin-Fen, 2023; Alejandro *et.al,* 2022; Van Dublin *et.al,* 2020; Tobias & Sabine, 2020).

Researchers emphasized the need for better business models that incorporate crowdsourcing, autonomous vehicles, allowing customers to choose the mode of delivery, time-based delivery, fleet optimization, traffic bottleneck identification systems, traffic spread models, self-organizing systems, distributed logistics routing protocols, and more to address some of these challenges. (Navid *et.al*., 2021; Andres *et.al*., 2021). As a result, this study is prepared to analyse trends, provide data-driven feedbacks for the improvement of the sustainable last-mile delivery and provide a thorough researched literature analysis of the customer satisfaction influences of sustainable logistics may have on the ecommerce industry.

Statement of the Problem

The review of the Last Mile Delivery cuts across traditional to sustainable trends, which cuts across the 'Today concept', 'Near future Concept', and farther Future concept (Nils et.al., 2020). The enhanced version of Last Mile Delivery makes it possible to strengthen urban and rural delivery networks through sustainable last-mile delivery. Many last-mile delivery logistics and business models have been developed. Still, they have yet to combine these elements to create a Frankenstein system that would comply with local regulations by gauging customer awareness of the systems' ability to meet

their high satisfaction standards. This principle of awareness is backed by perceived relative advantage (Xuping *et.al.,* 2014).

Literature Review

Concept of Sustainable Last Mile Delivery

The corporate level, tactical level, and functional level of strategies spanning the use of the tools pointer strategic initiatives; expansion, reduction, combinative, internationalisation, cooperative, and restructuring strategies after environmental scanning are the three strategic angles from which the willingness to innovate in the logistic delivery sectors can be reviewed.

Depending on internal and external research, these strategies are applied in line with regional trends while keeping their target market in mind. They alternate between retooling the business model and logistics delivery. The willingness to innovate in the logistic delivery sectors can be reviewed from three strategic angles: the corporate level, tactical level, and functional level of strategies spanning the use of the tools pointer strategic initiatives: expansion, reduction, combinative, internationalisation, cooperative, and restructuring strategies after environmental scanning.

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Awareness of Last-Mile Delivery

Last Mile Delivery is the operational level of logistics and business model aspect that connects the customers to the firm. The ability to fulfil e-awareness and E-Fulfilment of the end users will depend on their perceived related advantage, perceived compatibility, and unified theory of acceptance use of technology. These determine the behavioural strategy of targeted customers. Innovation is the sole purpose of technology, which is acted in the form of a business model, and the driving force is logistics must surpass its predecessor, consistent with existing values, needs and past experiences of precursors, and have a point of connection with the end users' beliefs and the behavioural intentions. Awareness is driven in the form of social presence with the sustainable logistics performance management of the firm, pillars of

technology of the firm, the firm's strategy, the economic lifecycle of the firm, the sustainable role of Technology adopted, and slack. This shows the amount of penetration a firm would have on its audience market share (Xuping *et.al.,* 2014; Gatot *et.al.,* 2011; Paul *et.al.,* 2005; Johannes & Ulrike, 2001)

The mental picture behind a process is termed logistics. Logistics optimises a process to create more value and stealth. Traditional business models do not consist of logistics; therefore, the efforts are unidirectional, unlike in the modern world where technology pioneered logistics. Logistics generally has two components: the logistics performance process and the logistics performance management cycle. These form the backbone in which technology can be applied as an enabler of the components. Logistics effects are generally measured based on costs, time, quality, quantity, and customer satisfaction. Logistics generally covers the main criteria: people, profit, and the planet, which determines if they are long-term healthy in these covered areas. When a logistics is healthy to the criteria, it is termed sustainable; when it is non-tenable to the environment, it is termed unsustainable. The human head of logistics is termed a logistics manager. Although, logistics managers may come under varying titles depending on the sectors in which the firms operate (Raad, 2023; Malgorzata & Jakub, 2022; Hui *et.al.,*2021; Baoshen *et.al.,* 2020; Zdravko, 2018; Mimo, 2009; Maisam & Fredrick, 2016).

Operational management is defined as the effectiveness of business models and logistics in determining enterprise strategies' efficiency, effectiveness, quality, timelines, category, and safety. The components of operation management are the performance management process and performance management cycle. An operational management centre is headed by an operation manager who oversees operations management, which covers finance, administration, marketing, and others. The approach to operational management is classified into a process approach (unidirectional approach) and a systematic approach (multi-dimensional approach). They are borne out of the evolution of evolution of technology. The powerhouse of operation management is termed logistics. The merging of logistics and operations management brings a resilient system that can handle an ever-changing environment. Although operations management covers planets, people,

processes, parts, and planning control systems, it must be healthy to the technology criteria, which are socio, political, and economic. The topic of sustainable logistics operations management is backed by the need to bring about maximum economic and social gains while reducing the adverse effects on the planet. The barriers to sustainability are customer choices, managerial strategy, supply chain, technology, and parliamentary uncertainties. The evolution of sustainability is green product and process development, lean and green operation management, remanufacturing and closed-loop supply chains, while the future of sustainability lies in innovation research, enlightenment efforts, green energy, and smart consumption. The significance of sustainability is the ability to model and predetermine action-outcome links, executing strategies, level of integration, interoperability, conceptualisation, and operations with other systems. In all, this study agrees that sustainable logistics operations management commands long-term royalties (Necatu *et.al.,* 2023; Alejandra, 2022; Ahmed *et.al.,* 2021; Dini *et.al.,* 2021; Boakoba *et.al.,* 2021; Tatiana, 2020; Paul *et.al.,* 2005).

The emerging strategic role of technology is shown in the clarity between a unilateral approach (process approach) and a multi-lateral approach (system approach) in terms of influencing outcomes. The traditional world involves one way of doing things (process approach), unlike the modern world, which uses the systematic approach (multi-dimensional approach). Technology interconnects a nation's social, political and economic cardinals. The evolution of technology brought about new ways of doing things, such as interlinked resources, mutual values, and reciprocal behaviour, which brought about the significance of its relevance. Although the role of technology can not be overemphasised, its components are less well-known. Technology creates a virtual environment or online community where no boundaries exist to associate. The socio-economic outcomes of technology can be understood through the makeup of technology, which consists of sets of agents (medium to facilitate communication) and medium-oriented communities (contribution of the users). The role of technology covers creativity in the designs of functionalities, maximisation of its socio-economical business model and business logistics models, value chain creation, and functional virtual

communities. The architecture of technology is underpinned as an enabler of, interference with, stimulator of sustainability, and steering mechanism of a society. The emerging strategic role of technology could be better discussed in sustainability. In summary, it is agreed that technology is the bedrock for creative edge (Navid *et.al.,* 2023; Junsu & Hosang,2022; Navid *et.al.,* 2021; Nils *et.al.,* 2020; Tobias & Sabine, 2020; Johannes & Ulike, 2001).

Strategy Drift occurs when a mismatch between the strategy cycle and strategy process leads to economic emergencies. Strategy Drift is caused by a leader's lack of oversight and shortsighted market analysis, such as personal gains. The solutions to strategy drifts are logical, soundproof ideas on planning and execution and normative approaches, which discuss command and control coordination of varying activities and sectors of the organisation. The theories which guide strategy Drift are path dependency theory, organisation learning theory, theory of constraints, dynamics capabilities theory, and open systems theory. The symptoms of strategy Drift are blame diversion and lack of plans for future reserve. The limitations to strategy drifts are regulatory framework, nature of production, standard and order, organisation organogram functionalities, and policies procedures. It would be agreed that strategy Drift is a lack of central control of the mission, vision, and goals of an organisation (Dragisa & Dragon, 2022)

The economic life cycle refers to the life span of ongoing concerns in actions and practices in the long and short term. The economic life cycle embodies the spirit of innovation (creation of commercial value and conversion into product, process, or service). The economic lifecycle management covers strategic leadership, directives and development, and innovative organisation, while the economic lifecycle process covers the proactive connection, generation, selection and implementation activities. This study agrees that the economic lifecycle determines a system's viability, non-viability, and process.

Slack refers to the socio-economical reserve of ongoing concerns derived from the judicious use and innovative initiatives of its management approach. An abuse of Slack could be a sign of Strategy Drift, which could affect the organisation's health. A strong slack indicates optimisation, capital restrictions, risk-taking, innovativeness, building capabilities, strategic agility, and efficiency

of the leaders. The theories that underpin Slacks are agency theory and stakeholder theory (Hariloibowo, 2019). In summary, slack is agreed to be the margin of health of an organisation.

Supply Chain Flow refers to the movement of lifelines of a going concern. Organisational lifeline flows are known as supply chains, and their Management is described as supply chain measurement. Supply chains are prone to disruption; the need to create a resilient supply chain that is business-flexible and adaptable is termed a sustainable supply chain. Supply chains generally have activities that may span the knowledge areas, which can be measured in agility, cost, asset, and management efficiency. A sustainable supply chain has multiple types of performance standards such as perfect order fulfilment (PoF), COst to the Source (CS), service cycle Time (SCT), and service orientation systems such as Service collaboration using web service technology, SCOR version 12.0 which combined processes and performance. The power of a sustainable supply chain is due to technology, and the operation capabilities are derived from logistics, which makes it modelable (Sholelo *et.al.,* 2021; Glogg *et.al.,* 2021).

The Triple Bottom line pillars of sustainability are social, environmental, and economic, and they are termed the triple bottom line or three-pillar framework. Triple Bottom Lines is inadequate as a sustainable basis without the addition of technology. The efficacy of technology is to bring about maximisation of efficiency and higher economic production, while its significance is value chain systems, innovation programs, and technological paths. The theories of sustainability (triple bottom line + technology) can be viewed from the domain theories (core policies and topics) and meta-level conceptual system or theoretical lens (Olga, 2021). Pillars of Technology The pillars of technology are the criteria for technology usage. The technology usage criteria cover appropriateness (technology and economic value), environmental appropriateness, technical appropriateness, economic appropriateness, social appropriateness (set of values, value chain, reusable materials), socio, cultural, judicial, political and others. This study agrees that the responsible use of technology is necessary to curb the people, planet and gains of its evolution (Olga, 2021; Gatot & Akbar, 2013).

In conclusion, a firm's rating would be judged by how well it articulates its business model business logistics to align with its virtual audience planet, profits in a sustainable setting to bring about a better experience, compatibility with their usage, and whether they are necessarily empathetic to their needs.

Empirical Review

This provides appreciable data on the need to embed learnable optimisation in selecting best fit interior geographical areas for siting micro-hubs for easier access to parcel-hubs, Michaela *et.al.,* 2022.

This study is carried out to give logistics managers control over the real-time traffic situation when planning the time, location and direction of travel of delivery employees. Its ideas are borne out of simulating the road paths to be taken, identifying the bottlenecks while suggesting the best route to take by the delivery employee and giving the best delivery time to the customer. The customers also have the power to monitor the trip and arrival of their products, Hui *et.al.,* 2021.

A key area of investigation for this research project is the effectiveness of application mapping optimisation for delivery network optimisation. This technique offers alternative routing options for client location data and delivery speed when determining route planning, Andres et.al, 2021.

This uses the concept of self-organising systems to demonstrate machine intelligence's potential. Allowing machine intelligence to plan delivery modes to match customer preferences using both multi-hop and intermodal logistics delivery to handle unlimited delivery loads or delivery load network bottlenecks with little to no human intervention in the planning of the travelling salesperson problem (TSP) to upgrade it to conform to government policies and real-world realities, Van-Dukun *et.al.,* 2020.

From a green environmental business model perspective, this examines the usage of affiliated carriers to carry out operational delivery as an operational strategy in line with sustainable logistics delivery, Tobias *et.al.,* 2020.

Aims and Objectives

The broad objective of the study is to assess the environmentally friendly methods pioneered by Sustainable Last Mile Delivery companies to ascertain

the logistics and e-commerce industries contribution to the UN Sustainable Development Goal of building sustainable cities and communities by 2030. The specific objectives is to

i. examines the effect of the Sustainable Last Mile Delivery on Customers Satisfaction in Carinthia, Austria.

Research Methodology

This research employs the use of descriptive and inferential quantitative informational tools, in which we can get the demographic distribution, weighted mean, sum count, ranks, frequency count, average mean, percentage, research objectives, research hypothesis , and discourse analyses of the respondents which will help focus on putting the data in context and involve analysing different levels of communication. The study population is five hundred and sixty-eight thousand, nine hundred and eighty-four thousand (568,984) inhabitants which within Carinthia State, Austria. The expected number of respondents is estimated to be three hundred and eighty-three (383) using Krecjcie-Morgan Formula.

$CS = \beta O + \beta 1\ LMD + \beta 2\ AWA + \beta 3\ ADA + e$

CS is Customer Satisfaction

LPS is Last Mile Delivery

AWA is Awareness of Last Mile Delivery

ADA is Adaptability of Last Mile Delivery

βO is intercept

$\beta 1$, $\beta 2$, $\beta 3$ are the parameter co-efficients.

e is error term

Results and Discussions

Response Rate

The total number of questionnaires administered is 500, however, 400 questionnaires were retrieved which represents 80% of the total questionnaires administered, whereas, 100 questionnaires were not retrieved or discarded due to error and non-responses which represent 20% of the total questionnaires administered.

Multiple Regression Model Summary of the Effect of Awareness on the Sustainable Last-Mile Delivery Strategies in Carinthia, Austria.

Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		
		B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	1.178	0.326		3.617	0	0.538	1.818	
	Sustainable Last Mile Delivery	-0.082	0.058	-0.05	-1.419	0.157	-0.195	0.031	
	Last Mile Delivery Logistics	0.026	0.067	0.023	0.384	0.701	-0.106	0.158	
	Last Mile Delivery Business Model	-0.233	0.082	-0.167	-2.854	0.005	-0.394	-0.073	
	Level Of Awareness Of Last Mile Delivery	-0.001	0.068	0	-0.009	0.992	-0.134	0.133	
a Dependent Variable: Customer Satisfaction									

Source: Field Survey, 2024

DISCUSSION OF FINDINGS

- **Sustainable Last Mile Delivery (p = 0.157):** The p-value of **0.157** indicates that **Sustainable Last Mile Delivery** does not have a statistically significant effect on customer satisfaction in Carinthia, Austria. Since the p-value is greater than the conventional significance threshold of 0.05, we cannot conclude that sustainable last-mile delivery alone is influencing customer satisfaction.
- **Last Mile Delivery Logistics (p = 0.701):** The p-value of **0.701** indicates that **Last Mile Delivery Logistics** does not have a statistically significant effect on sustainable last-mile delivery strategies influencing customer satisfaction in Carinthia, Austria. Since the p-value is much greater than

the significance threshold of 0.05, there is insufficient evidence to suggest that logistics plays a significant role in affecting customer satisfaction through sustainable strategies.

- **Last Mile Delivery Business Model (p = 0.005):** The p-value of **0.005** indicates that **Last Mile Delivery Business Model** has a statistically significant effect on sustainable last-mile delivery strategies influencing customer satisfaction in Carinthia, Austria. Since the p-value is less than the significance threshold of 0.05, it suggests that the business model does play an important role in influencing sustainable strategies and customer satisfaction.

Conclusion and Recommendation

The conclusion drawn from this study are;

- The high **awareness** of sustainable last-mile delivery, this factor did not significantly influence customer satisfaction, as reflected in the regression results (B = -0.001, p = 0.992). This suggests that while customers are aware of the benefits and importance of sustainable delivery practices, awareness alone does not translate into higher satisfaction levels. The gap between knowledge and actionable behavior could be due to various factors such as cost, convenience, or personal habits, which require further exploration.
- The analysis also reveals a high level of **customer satisfaction** with the overall experience, with respondents showing a strong intent to continue using the services and recommend them to others.
- The **product/service quality** was generally rated positively, particularly in terms of performance, indicating that last-mile delivery services in Carinthia are reliable. **Customer support** was also appreciated, especially for its responsiveness and helpfulness, although quicker resolution of issues could further improve satisfaction.

Therefore, this study recommends the following;

- **Improve Business Models to Meet Customer Expectations**: The negative impact of the current last-mile delivery business model on customer satisfaction suggests a need for revision. Businesses should re-evaluate key elements such as delivery speed, pricing, and convenience to better align with customer expectations. Offering flexible delivery options (e.g., same-day, scheduled, or eco-friendly options) that meet diverse needs can enhance customer satisfaction.
- **Bridge the Gap between Awareness and Action**: While awareness of sustainable delivery is high, it does not necessarily translate into improved customer satisfaction. Companies should focus on creating more compelling value propositions that motivate customers to choose sustainable delivery options. Educational campaigns should focus not just on raising awareness but also on providing practical benefits and solutions, such as cost savings, reduced environmental impact, or improved convenience.

References

Ahmed, A., Chantal, C., and Andrew, B. (2021). Crowd Module For Last-Mile Delivery In An Emerging Economy. MDPI

Alejandra, E.S, Jesus, M., Antonia, L E., and Maria-Luisa, M (2022). Improving E-commerce Distribution Through Last Mile Logistics With Multiple Possibilities of Deliveries Based on Time and Location. Theoretical Applied Electronic Commerce Resume

Andres, M-V., Elyn, L.S-G., Lorena, R-R., and Javier, F. (2022). Measuring Disruption In Last Mile Delivery Operations. MPDI

Boakoba, M.B, IpoRH, B.I, Volkova, M., and Troian, V. (2021). Operational Management In The Enterprise Management Systems. https://dx.doi:10:32702/2306-6806.2021.6.82

Baoshen, G., Shuai, W., Haitian, W., Yun, H.L., Fanshuo, K., Tian, H., and Desheng, Z. (2023). Towards Equitable Assignment: Data-Druven Delivery Zone Partition At Last-Mile Logistics. KDD

Dragisa, O & Dragon, O (2016). The Role Innovation On Strategic Orientation And Competitiveness Of Enterprises.

Gatot, Y., Akbar, A.A, Corinthians, P.M. and Sianiper, K.D (2013). Seven Pillars Of Survivability: Appropriate Technology With A Human Face

Hariwibowo, I. (2019). The Effect Of Internet Slack On Learning Performance. Indonesia Journal Of Information Systems (IJIS).

Hui, L., Zhifena, B., Gao, L., J. Shane Cul, Repper., Nguyen, L.D.K. (2021). Let Trajectories Speak Out The Traffic Bottlenecks. J.ACM

Johannes, H & Unlike, L (2001). Global Co-corporation In The New Millennium Online Community

Junsu, K., & Hosang, J. (2022). Robot Routing Problem Of Last-Mile Delivery In Indian Environment. MDPI

Krejcie, R.V., & Morgan, D.W., (1970). Determining Sample Size For Research Activities. Educational and Psychological Measurement., PP. 607-610

Malgirzata, M., & Jakub, M. (2022). Rural E-customers' Preferences For Last-Mile Delivery: Evidence From Poland. MDPI

Maisam, A. & Fredrick, N (2016). Developing Environmentally Sustainable Logistics Exploring Themes And Challenges From A Logistics Service Providers' Perspective.

Michaela, N., Labor, S., Stefan, J., and Vladimir, S. (2022). Micro-Hub Location Selection For Sustainable Last-Mile Delivery

Mimo, D. (2009). The Role Of Logistics In Performance Management. Montenegrin Journal Of Economics

Navid, M.I., Sabya, M., and Myounggyu, W. (2021). Towards Fully Autonomous Drone-Based Last-Mile Delivery. arXiv:2103.04118v2 [cs:CY]

Necatu, O.D., Ozlem, E., and Mehdi, B.(2023). Shared Last-Mile Delivery: Current Trends and Future Opportunities.

Nils, B., Stefan, F., and Stefan, S.(2020). Last-Mile Delivery Concepts: A Survey From An Operational Research Perspective. OR Spectrum

Olga, G. (2021). Sustainability And Technology: The Contribution Of "Managerial Talk" To The Three Pillars Framework. https://www.emerald.com/insights/0951.3574

Paul, R.K., Kalyan, S., and Luck, N.V.W (2005). Sustainable Operations Management.

Qian, S., & Shin-Fen, C. (2023). Preference-Aware Delivery Planning For Last-Mile Logistics. arXir:2303.04333v1

Raad, A.S (2023). Managing Logistics Activities For Improving Business Performance. Journal Of Humanities And Social Science

Sholelo, M.N., Nursiana, A., Dharmo, B., and Sri, H. (2021). Implementation Of Construction Supply Chain Flow Based On SCOR 12.0 Performance Standards. Journal Of Physics: Conference Series

Tatiana, S. (2020). Preventive Scarcity Measures For The Public Passenger Transport System Operation Based On Logistics Management Principles. Matric Web Of Conference.

Tobias, H., & Sabine, S-K. (2020). Would Customers Be Willing To Use An Alternative (Chargeable) Delivery Concept For The Last-Mile. www.econstor.eu

Qian, S., & Shin-Fen, C. (2023). Preference-Aware Delivery Planning For Last-Mile Logistics. arXir:2303.04333v1

Van-Dulin, J.H.R., Volt, T.S., Tavasszy, L.A., Duinkerken, M.B., and Van-Dijk, D. (2020). Smart Method For Self-Organization In Last-Mile Parcel Delivery. Transportation Research Record.

Zdravko, Z. (2018). Concept Of Logistics Management: A Holistic Approach To Business Performance Management. International Journal Of Business And Social Science.