

## Role Of Inland Container Depots In Enhancing Effectiveness Of Supply Chain

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### ABSTRACT

Transitional sites are areas where cargo containers may be transported from one form of transportation to another, such as from a ship to a train or from a truck to a ship. These sites act as transitional sites between the two modes of transportation. It is highly necessary to have these facilities in order to reduce the costs of transportation, improve the efficiency of supply chain activities, and reduce the amount of traffic at seaports. ICDs are essential because they provide centralized facilities that make it simpler to clear customs and manage freight. This makes them an essential component. Because of this, logistics operations as a whole are improved, and it is simpler to engage in international commerce. Findings of the research show that an evitable role is played by ICD in enhancing the effectiveness of supply chain.

**KEYWORDS:** ICDs, supply chain, transit time, decongestion at port, warehouse facilities, container maintenance.

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### INTRODUCTION

Specifically, inland container depots, often known as ICDs, are unique locations that are strategically located inland. There is a high probability that they are located in close proximity to important transportation hubs such as airports, rail stations, or ports. They are essential components of the transportation network, which facilitates the movement of cargo containers between seaports and places in the interior of the country. The provision of a variety of services that are essential for the seamless and effective movement of goods is the responsibility of ICDs. This service includes the processing of containers, the storage of those containers, the clearance of customs charges, and the assembly of all of the containers.

Transitional sites are areas where cargo containers may be transported from one form of transportation to another, such as from a ship to a train or from a truck to a ship. These sites act as transitional sites between the two modes of transportation. It is highly necessary to have these facilities in order to reduce the costs of transportation, improve the efficiency of supply chain activities, and reduce the amount of traffic at seaports. ICDs are essential because they provide centralized facilities that make it simpler to clear customs and manage freight. This makes them an essential component. Because of this, logistics operations as a whole are improved, and it is simpler to engage in international commerce.

In the field of international logistics, the function of ICDs Integrated Container Depots (ICDs) are of great significance to the global logistics network because they provide essential locations for the storage and processing of shipping containers. The movement, storage, and collection of cargo containers are all vital functions that are performed at these depots. They are located in the countryside and are a significant distance from major ports. ICDs are commonly referred to as "Dry Ports" due to the fact that they are strategically placed inland and serve the purpose of connecting seaports to locations throughout the nation. These facilities are also used by shipping corporations for the purpose of storing and managing containers prior to and after their transportation to and from seaports of choice.

Not only do ICDs provide storage, but they also offer a wide range of additional services, including the consolidation of cargo, the processing of customs products, and the management of containers. Through the provision of integrated facilities for a variety of industries, ICDs play a significant part in simplifying the process of international commerce. One of the goals is to reduce the amount of traffic that occurs at seaports and to improve the efficiency of the whole supply chain. ICDs are very important because they bring together a diverse group of experts who are able to provide assistance to importers and exporters.

The ICDs are not situated in far-off ports; rather, they are situated in close proximity to the facilities of the importers and exporters inside the country. It is quicker and faster to process things directly at their doors, which makes it easier and faster to handle shipments. This makes it easier to manage shipments too. By bringing services closer to manufacturers and warehouses, ICDs make it easier for ports that are located in remote areas to perform their duties. The amount of storage space that ports are allowed to have may be restricted by land-use regulations. It is because of this decentralization that logistical duties are completed in a more efficient and effective manner, hence reducing the amount of stress and traffic that occurs at ports. Services that are carried out by ICDs Inland container depots, also known as ICDs, are essential components of the supply chain because they facilitate the movement of cargo containers in a more expeditious manner and make it simpler for individuals to engage in commercial transactions with persons who reside in other nations. Among the most significant services that they provide, the following are included:

**Temporary Storage:** Independent Container Depots (ICDs) are locations where cargo containers may be temporarily kept. In order to facilitate the loading of larger vessels onto larger vessels, they provide the containers a place to halt before being transported to the port. Keeping track of stockpiles is made much simpler as a result of this, and it also ensures that products are delivered on time. It is possible for exporters to consolidate their cargo by placing all of their products into containers prior to packing them for shipment. With the help of ICDs, this is feasible. Through this method, it is ensured that all available area inside the containers is used, so making the most of the space that is available and reducing the expenses associated with transportation.

**Clearance of Customs:** International Customs Declarations (ICDs) facilitate the seamless movement of commodities by offering customs clearing services for both exports and imports. As part of this process, the paperwork is checked, the amount of duty that has to be paid is calculated, and the laws that govern customs are adhered to. ICDs provide these services on-site, which helps to expedite the approval process and reduce the amount of time that is wasted waiting. ICDs are not only locations where containers and other transportation equipment may be stored and processed through customs, but they are also locations where these items can be repaired and maintained. ICDs, to put it another way, are locations where things may be kept and repaired. Keeping containers in this condition ensures that they are in the greatest possible condition for shipment, which in turn reduces the likelihood that they will be damaged or delayed while moving.

**Assist in reducing the amount of time and money spent on shipping:** ICDs are positioned at key locations around the country, making it simple for businesses that are not situated in close proximity to seaports to transport their goods to such locations. Because of this proximity, transportation costs and transit times for products are reduced, which is particularly beneficial for companies that are located a significant distance from the coast. When companies that do business with foreign nations use ICDs, they may be able to save a significant amount of money. ICDs provide more than simply the ability to combine freight; in addition, they assist with the clearance of customs and ensure that containers remain in excellent condition. There is a possibility that ICDs will make the logistics process operate more effectively and reduce the overall expenses of the operation.

**Avoid congestion at seaports:** It is possible for individuals to keep and transport cargo containers inside the country, which results in a reduction in the number of individuals who go to seaports. Not only does this help things go more smoothly, but it also reduces the amount of time that shipments, trucks, and other modes of transportation have to wait, which considerably shortens the amount of time it takes to complete the turnaround process.

**Maintain a flexible approach:** By doing so it make it simpler for companies to manage their distribution networks and inventories because they provide them additional alternatives for handling and storing freight. This makes it easier for businesses to manage their inventory. Integrated Customs Departments (ICDs) provide customs clearance services that simplify the process of doing business for importers and exporters. This eliminates the need for them to go to ports that are located in remote areas in order to get permission. ICDs contribute to the development of infrastructure in inland regions, including transportation networks and other amenities that are necessary for their operation. Another one of these things is the construction of infrastructure. This might be beneficial to the growth of the economy and the creation of employment in the region, both of which would contribute to the expansion and prosperity of the region.

#### **How ICDs boosts the effectiveness of the existing supply chain:**

It is possible that ICDs will make the transportation of commodities between ports and locations inside the nation more efficient, which will ultimately result in an overall improvement in the efficiency of the supply chain. The way in which they do this is by becoming essential nodes in the network of logistics. Businesses that operate on a global scale may benefit from this in a variety of ways, including improved inventory management, reduced delivery times, and enhanced overall performance. The role of ICDs contributes to the improvement of supply chain efficiency. One of the most significant elements that plays a role in the effectiveness of supply chains is the availability of information and communication devices (ICDs). ICDs ease the pressure that is imposed on busy seaports by managing container storage, customs clearance, and cargo consolidation inland. This is accomplished via the management of these three processes.

Consequently, this leads to a reduction in the amount of congestion that occurs at seaports, which is a beneficial element of the situation. Ports are able to function more efficiently and effectively as a consequence of this for a variety of reasons, including an increase in efficiency. Two of these causes are the decrease in demurrage expenses and the reduction in the amount of time it takes for vessels to reach their destination. Seaports are now in a position to enjoy the advantages of shipping schedules that are more regularly predictable as a result of the decrease in the quantity of containers that are stacked up in their warehouses throughout the summer months.

When containers are carried over long distances to ports, the use of ICDs helps to decrease the costs of transportation that are associated with moving them. This has the effect of lowering the overall transportation prices. The reason for this is because ICDs simplify the process of transporting containers that are being transported. The possibility exists that this purpose may be realized by positioning storage and customs processing facilities in greater proximity to inland businesses, such as factories and warehouses. Access to these facilities will be much simplified as a result of this. It is because of this proximity that the amount of labor and handling expenditures that are connected with stuffing and de-stuffing cargo are decreased, which ultimately results in a reduction in all of these expenses. The enhancement of both the services and the handling of cargo container handling (loading, unloading, and stacking), customs clearance, cargo consolidation, and maintenance or repairs for containers are some of the services that are offered by International Container Docks (ICDs). These docks provide a broad variety of services. Each and every one of these services is offered by ICDs. Each and every one of these services is included into the enhanced cargo handling and services that are now being offered.

Companies are able to enhance their management of cargo flow, optimize the use of containers, and ensure that containers are prepared for shipping with the assistance of these services. As a result, the possibility of delays and damages is reduced thanks to these services. In addition, corporations are able to maximize the use of the containers they have at their disposal thanks to the services that are provided. In addition to being strategically placed, inland commercial districts (ICDs) provide enhanced accessibility and flexibility. This is due to the fact that they are situated in close proximity to industrial and inland economic zones. This is because they make it easier for countries who are landlocked or located in remote areas to have access to the infrastructure of global commerce. This is the reason why they are so important.

Through the establishment of this connectivity, it is possible to establish links between road, rail, and maritime logistics. This, in turn, makes it simpler to construct multimodal transportation that is more effective, which, in turn, enhances the total flexibility of distribution networks. For the purpose of assisting with inventory management, ICDs provide storage options that are temporary warehouses. Additionally, as a result of this, it is possible to optimize the scheduling of both the inventory and the transportation time. This becomes possible as a consequence of this.

Before a shipment is completed, it is feasible for exporters to mix various goods inside of the same container in order to make the most efficient use of the space that is available and to increase the overall efficiency of the shipping process. This also results in a reduction in the length of time that items are in transit, which therefore leads to an increase in the responsiveness of supply chains as well as an improvement in the consistency of delivery. This is a development that should be appreciated because of the reasons stated above.

The presence of ICDs is a factor that contributes to the development of regional infrastructure and regional development, both of which are factors that contribute to the development of regional infrastructure. This includes the construction of storage facilities, highways, and rail links. This, in turn, helps to the expansion of the economy and the development of work opportunities in areas that are often considered to be located in the hinterland territory. ICDs are responsible for providing key infrastructure and logistical services that allow the movement of commodities to be more efficient and less costly. This responsibility is not the least of many things they are accountable for.

The provision of these services is carried out within the framework of inland transportation. This advantage is achieved via the supply of these services, which is the focus of this discussion. When all is said and done, the end result is that the supply chain tends to become not only more durable but also more efficient. This is because ICDs reduce the amount of congestion that occurs at ports, reduce the costs of logistics, raise the speed at which customs processing is carried out, and encourage ease of access to international trade. The factors listed above without any doubt would be contributing in a big way in making the supply chain be more robust and effective in many ways.

## RESEARCH QUESTIONS

- I. What part do ICDs play in making the process of supply chain management more efficient and how have they contributed to this?
- II. What are the particular services that ICDs provide that contribute to the improvement of the efficiency of the process of supply chain management?
- III. In what ways do ICDs assist partners in the supply chain in the management of things, collaboration, and the exchange of information?
- IV. What are the difficulties that companies have when they decide to use the services of an ICD in order to improve the efficiency of their supply chains?

## OBJECTIVES OF THE RESEARCH

- i. To assess the performance of ICDs in terms of their contribution to the improvement of the effectiveness of the supply chain process.
- ii. To determine the distinctive services that ICDs provide that contribute to the enhancement of the effectiveness of the supply chain process.
- iii. To recognize the role that ICDs play in facilitating the management of products, collaboration, and information sharing among participants in the supply chain.
- iv. To determine the difficulties that a user of ICD faces when it uses the services of an ICD in order to improve the efficiency of their supply chain system.

## METHODOLOGY

The research is descriptive in nature and comprises users of ICDs who operate within the Chennai area. These users include Shippers, Charters, Exporters, and Importers. According to the findings of the research, the most significant elements that influence the effectiveness of the supply chain. 75 individuals who utilize the services of ICDs were included as respondents for the conduct of this research.

### Hypotheses:

**H01:** *There is no statistical evidence between reduction in costs and supply chain effectiveness; thus, we accept the hypothesis.*

**H02:** *There is statistical evidence between reduction in transit time and supply chain effectiveness; thus, we accept the hypothesis.*

**H03:** *There is statistical evidence between decongestion at port and supply chain effectiveness; thus, we accept the hypothesis.*

**H04:** *There is statistical evidence between warehouse facilities and supply chain effectiveness; thus, we accept the hypothesis.*

**H05:** There is statistical evidence between container management and supply chain effectiveness; thus, we accept the hypothesis.

**DATA ANALYSIS**

**Regression Analysis**

ICDs benefit the supply chain by reducing costs and transit times through inland customs clearance, decongesting ports, and offering value-added services like warehousing and container maintenance. This leads to greater efficiency, flexibility for businesses to manage inventory, and improved connectivity between inland and coastal areas.

**Table 1 Model Summary of supply chain effectiveness**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.685 <sup>a</sup>	0.469	0.448	0.01107
<i>a. Predictors: (Constant), Container maintenance, Reduction in transit time, Reduction in costs, Warehouse facilities, Decongestion at ports</i>				

**Table 2 Regression Analysis of Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.019	-0.012	-	1.905	0.524
	Reduction in costs	0.199	0.087	-0.179	2.397	0.023
	Reduction in transit time	-0.196	0.093	-0.006	-2.175	0.033
	Decongestion at ports	0.198	0.084	-0.110	2.498	0.044
	Warehouse facilities	0.538	0.073	0.591	7.882	0.025
	Container maintenance	-0.443	0.111	-0.031	-4.137	0.024
<i>a. Dependent Variable: Supply chain effectiveness</i>						

Referring to the above regression analysis, the relationship between the dependent and independent variables has been tested based on a margin error of 5%. The results show a significant relationship since all the variables showed a margin error below 5%, meaning that the null hypothesis H0 is rejected and the alternative hypothesis H1 is accepted. However, the following regression equation has been implemented to validate the regression analysis results (Tables 1 and 2 given above).

$$Y = A + BX1 + BX2 + BX3 + BX4 + BX5$$

Where Y = dependent variable, A = constant, B = Significance level and X = independent variable

Supply chain effectiveness = 0.524 + 0.023 reduction in costs + 0.033 reduction in transit time + 0.044 decongestion in ports + 0.025 warehouse facilities + 0.024 container maintenance.

**Hypotheses:**

- H01:** There is statistical evidence between reduction in costs and supply chain effectiveness; thus, the null hypothesis is rejected.
- H02:** There is statistical evidence between reduction in transit time and supply chain effectiveness; thus, the null hypothesis is rejected.
- H03:** There is statistical evidence between decongestion at port and supply chain effectiveness; thus, the null hypothesis is rejected.
- H04:** There is statistical evidence between warehouse facilities and supply chain effectiveness; thus, the null hypothesis is rejected.
- H05:** There is statistical evidence between container management and supply chain effectiveness; thus, the null hypothesis is rejected.

**Correlation Analysis**

In the context of the interplay between the independent variables (reduction in costs, self- management, relationship-management and empathy) and the dependent variables Supply chain effectiveness and organizational commitment, Pearson correlated technique is used. The Pearson correlation coefficient varies between -1 and +1, which indicates a positive, negative or no association. The Sig (P-value) indicates whether or not the relationship is meaningful. In this study, the relevant amount (α) used is 0.05. The effects of the relation between the variables are shown in Table 3 given below.

**Table 3: Correlations dependent and independent variables**

	Reduction in costs	Reduction on transit time	Decongestion at port	Warehouse facilities	Container maintenance	Supply chain effectiveness
Reduction in costs	1	0.274	0.341	0.271	0.359	0.364
Reduction on transit time		1	0.507	0.360	0.308	0.097
Decongestion at port			1	0.224	0.289	0.222
Warehouse facilities				1	0.646	0.378
Container maintenance					1	0.282
Supply chain effectiveness						1

Based on the results of the relationship that exists between the various variable of the study it can be concluded that when it comes to reduction in costs, there is highest positive correlation between reduction in costs on one hand and supply chain effectiveness on the other which is seen to be 0.364 meaning the if there is 1% reduction in costs it will bring about 36.4% change in supply chain effectiveness.

Based on the relationship that exists between the reduction in transit and the other variables of the study, it can be seen that there is highest positive correlation between reduction in transit time on one hand and decongestion at ports on the other which is seen to be 0.507 meaning the if there is 1% reduction in costs it will bring about 50.7% change in decongestion at ports.

Based on the relationship that exists between the decongestion at ports and the other variables of the study, it can be seen that there is highest positive correlation between decongestion at ports on one hand and container maintenance on the other which is seen to be 0.289 meaning the if there is 1% reduction in costs it will bring about 28.9% change in container maintenance.

Based on the relationship that exists between the warehouse facilities and the other variables of the study, it can be seen that there is highest positive correlation between warehouse facilities on one hand and container maintenance on the other which is seen to be 0.646 meaning the if there is 1% reduction in costs it will bring about 64.6% change in container maintenance.

Based on the relationship that exists between the container maintenance and the other variables of the study, it can be seen that there is highest positive correlation between container maintenance on one hand and supply chain effectiveness on the other which is seen to be 0.282 meaning the if there is 1% reduction in costs it will bring about 28.2% change in supply chain effectiveness.

**Challenges Faced by ICDs**

Despite their benefits, ICDs face challenges including infrastructure limitations, inconsistent regulatory frameworks, insufficient digitization, last-mile connectivity gaps, and security concerns. Overcoming these barriers requires coordinated government policies, investments in modern facilities, integration of digital technologies like blockchain and IoT, and partnerships between public and private sectors.

**Future Trends and Innovations**

The future of ICDs lies in embracing digital transformation and automation. Emerging technologies like Internet of Things (IoT) enabled sensors and RFID provide real-time tracking of container locations and conditions. Warehouse Management Systems (WMS) optimize storage and inventory workflows. Artificial Intelligence (AI) facilitates predictive analytics for demand forecasting and route optimization. Automation through robotic cranes, automated guided vehicles (AGVs), and drones enhances cargo handling efficiency and reduces manual labor. Additionally, innovations such as autonomous vehicles, drone delivery within premises, and ultra-fast 5G connectivity promise to revolutionize ICD operations by enabling faster, more transparent, and cost-effective logistics. The implementation of blockchain technology is also streamlining customs documentation and ensuring secure, tamper-proof transaction records, which improves trust among participants.

Governments worldwide are investing heavily in smart multimodal logistics parks and digital dry ports to harness these advancements and promote sustainable supply chains. For example, India’s initiatives like the PM Gati Shakti National Master Plan focus on developing integrated infrastructure projects that enhance ICD capabilities, reduce freight costs, and minimize carbon footprints.

## CONCLUSION

Inland Container Depots are indispensable to modern supply chains, acting as inland extensions of seaports that optimize container handling, customs clearance, and multimodal transport connectivity. By reducing port congestion, lowering logistics costs, improving cargo handling and security, and fostering inventory control, ICDs significantly enhance supply chain efficiency and resilience. Their evolving role, supported by innovative digital and automation technologies, positions ICDs for continued growth and critical importance in facilitating global trade. Strategic investments and policy support are essential to unlocking their full potential, ensuring supply chains remain competitive, agile, and sustainable in a rapidly changing world. This comprehensive research work provides an in-depth analysis of how ICDs contribute to enhanced supply chain efficiency across multiple dimensions, integrating current and future trends with practical insights and examples.

## REFERENCES

1. Agbo, A.A.; Li, W.; Atombo, C.; Lodewijks, G.; Zheng, L. Feasibility study for the introduction of synchromodal freight transportation concept. *Cogent Eng.* **2017**, *4*, 1305649. [[Google Scholar](#)] [[CrossRef](#)]
2. Braekers, K.; Janssens, G.K.; Caris, A. Challenges in Managing Empty Container Movements at Multiple Planning Levels. *Transp. Rev.* **2011**, *31*, 681–708. [[Google Scholar](#)] [[CrossRef](#)]
3. Caschili, S.; Medda, F.R. A Review of the Maritime Container Shipping Industry as a Complex Adaptive System. *Interdiscip. Descr. Complex Syst.* **2012**, *10*, 1–15. [[Google Scholar](#)] [[CrossRef](#)]
4. Giusti, R.; Manerba, D.; Bruno, G.; Tadei, R. Synchromodal logistics: An overview of critical success factors, enabling technologies, and open research issues. *Transp. Res. Part E Logist. Transp. Rev.* **2019**, *129*, 92–110. [[Google Scholar](#)] [[CrossRef](#)]
5. Halim, R.A.; Tavasszy, L.A.; Seck, M.D. Modeling the global freight transportation system: A multi-level modeling perspective. In Proceedings of the Winter Simulation Conference, Berlin, Germany, 9–12 December 2012. [[Google Scholar](#)]
6. Henesey, L.E. Improved inter terminal transportation using agent technology. In Proceedings of the 30th Annual Workshop of the Swedish Artificial Intelligence Society, Karlskrona, Sweden, 15–16 May 2017; pp. 60–67. [[Google Scholar](#)]
7. Henesey, L.E.; Davidsson, P.; Persson, J.A. Agent based simulation architecture for evaluating operational policies in transshipping containers. *Auton. Agents Multi-Agent Syst.* **2009**, *18*, 220–238. [[Google Scholar](#)] [[CrossRef](#)]
8. Huang, Y.; Rashidi, T.H.; Gardner, L. Modelling the global maritime container network. *Marit. Econ. Logist.* **2018**, *20*, 400–420. [[Google Scholar](#)] [[CrossRef](#)]
9. Kuzmich, K.A.; Pesch, E. Approaches to empty container repositioning problems in the context of Eurasian intermodal transportation. *Omega* **2019**, *85*, 194–213. [[Google Scholar](#)] [[CrossRef](#)]
10. Lee, C.-Y.; Song, D.-P. Ocean container transport in global supply chains: Overview and research opportunities. *Transp. Res. Part B Methodol.* **2017**, *95*, 442–474. [[Google Scholar](#)] [[CrossRef](#)]
11. Liu, Z.; Meng, Q.; Wang, S.; Sun, Z. Global intermodal liner shipping network design. *Transp. Res. Part E Logist. Transp. Rev.* **2014**, *61*, 28–39. [[Google Scholar](#)] [[CrossRef](#)] [[Green Version](#)]
12. MergeGlobal. Insomnia—Why challenges facing the world container shipping industry make for more nightmares than they should. *Am. Shipp.* **2008**, *7*, 68–85. [[Google Scholar](#)]
13. Pfoser, S.; Treiblmaier, H.; Schauer, O. Critical Success Factors of Synchromodality: Results from a Case Study and Literature Review. *Transp. Res. Procedia* **2016**, *14*, 1463–1471. [[Google Scholar](#)] [[CrossRef](#)] [[Green Version](#)]
14. Rizaldi, A.; Wasesa, M.; Rahman, M.N. Yard Cranes Coordination Schemes for Automated Container Terminals: An Agent-based Approach. *Procedia Manuf.* **2015**, *4*, 124–132. [[Google Scholar](#)] [[CrossRef](#)] [[Green Version](#)]
15. Shen, W.; Khoong, C. A DSS for empty container distribution planning. *Decis. Support Syst.* **1995**, *15*, 75–82. [[Google Scholar](#)] [[CrossRef](#)]
16. Shibasaki, R.; Iijima, T.; Kadono, T.; Shishido, T.; Kawakami, T. Network assignment model of integrating maritime and hinterland container shipping: Application to Central America. *Marit. Econ. Logist.* **2017**, *19*, 234–273. [[Google Scholar](#)] [[CrossRef](#)]
17. Sinha-Ray, P.; Carter, J.; Field, T.; Marshall, J.; Polak, J.; Schumacher, K.; Song, D.; Woods, J.; Zhang, J. Container World: Global agent-based modelling of the container transport business. In Proceedings of the 4th International Workshop on Agent-Based Simulation, Montpellier, France, 28–30 April 2003. [[Google Scholar](#)]
18. Song, D.P. *Container Logistics and Maritime Transport*; Routledge: London, UK, 2021. [[Google Scholar](#)]
19. Song, D.P.; Dong, J.X. Empty container repositioning. In *Handbook of Ocean Container Transport Logistics—Making Global Supply Chain Effective*; Lee, C.Y., Meng, Q., Eds.; Springer: New York, NY, USA, 2015; pp. 163–208. [[Google Scholar](#)]
20. Verweij, K. Synchronic modalities: Critical success factors. In *Logistics Handbook 2011*; Van der Sterre, P.J., Ed.; Feico Houweling: Rotterdam, The Netherlands, 2011; pp. 75–92. [[Google Scholar](#)]
21. Winikoff, M.; Wagner, H.F.; Young, T.; Cranefield, S.; Jarquin, R.; Li, G.; Martin, B. Agent-Based Container Terminal Optimisation. In *Multiagent System Technologies. MATES 2011. Lecture Notes in Computer Science*; Klugl, F., Ossowski, S., Eds.; Springer: Berlin/Heidelberg, Germany, 2011; Volume 6973, pp. 137–148. [[Google Scholar](#)]