# Internet Of Things: Benefits And Challenges Of Logistics Service Providers In India

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**Abstract:** Internet has changed our life. It has brought a new way of communication, transferring information and making businesses. The term already known as Internet of things, provides the idea of the digital connection between objects via internet, creating a network where data is shared and exchanged. Rather than being viewed as a supportive industry to other alternative purposeful areas previously, now, logistics has been regarded as a strategic industry on its own. In the Tuticorin region, the potential for growth is very capable. Despite of the significant expansion of the logistics industry; there has been very little published research in the area of logistics and supply chain resulting in a very limited dissemination of information for the purpose of coordination, wisdom, development and etc. Thus, the purpose of this paper is to examine the technology benefits and challenges faced by the practitioners as well as the relevant parties concerned within the logistics and supply chain industries. This study found key benefits and challenges, namely Freight forwarding logistics providers have been the hindrance for logistics effectiveness in Tuticorin. Thus, provided a base for future researchers to examine any aspects of logistics and supply chain management in Tuticorin.

**Index Terms:** Technology, Freight forwarding, Service provider, Third party logistics, Network.

## 1 INTRODUCTION

Internet of Things (IoT) is a new revolution of the Internet. It makes Objects themselves recognizable, obtain intelligence, communicate information about themselves and they can access information that has been aggregated by other things. Although the IoT enabling technologies have tremendously increased in the past decade, there are many issues to be open and addressed. Thus this paves the new way or dimension for researchers involved in IoT. Intelligent logistics is based on a wide use of the internet of things. It makes use of the advanced information collection, information processing, information flow and information management technologies, and completes a number of basic activities through the whole moving process including the transportation, warehousing, distribution, packaging, loading and unloading. It can provide the maximize profits for the supply and provide the best service for the demand while consuming the least natural and social resources and maximizing the protection of the whole intelligence community logistics management system. IoT has primarily to be focused on the ‘‘Things” and that the road to its full deployment has to start from the augmentation in the Things’ intelligence. This is why a concept that emerged aside IoT is the spime, defined as an object that can be tracked through space and time throughout its lifetime and that will be sustainable, enhance able, and uniquely identifiable (B. Sterling2005)

## 2 REVIEW OF LITERATURE

Internet of Things can be defined as the collection of two terms: one is Internet, which is defined as networks of networks which can connect billions of users with some standard internet protocols (Somayya Madakam, R. Ramaswamy, Siddharth Tripathi 2015) The Internet of Things (IoT) is a novel paradigm that is rapidly gaining ground in the scenario of modern wireless telecommunications. The basic idea of this concept is the pervasive presence around us of a variety of things or objects – such as Radio-Frequency Identification (RFID) tags, sensors, actuators, mobile phones, etc. – which, through unique addressing schemes, are able to interact with each other and cooperate with their neighbors to reach common goals ( D. Giusto, A. Iera, G. Morabito, L. Atzori 2010) IoT is made possible and this interweaving of the digital world with the mechanical world brings a profound transformation to many facets of life. Security is another big challenge and having a compliance body could be the solution for most of the privacy and security concerns. With all these IoT is still growing at an exponential pace and promising to deliver better results in days to come (Kavitha Desai, Mahalakshmi S 2018).IoT is expected to offer classy connectivity that goes beyond machine-to-machine (M2M) communications. Internet of Things depends on Internet, sensors technology which makes the communication possible among devices by implementing different protocols. Security of devices during communication process and security of communication channel or link is also a major issue. Lots of work is to be done for the betterment and progress of this field; still there is more work to do, more standardization of technology, protocols and hardware are required to make completely reliable and secure domain of Internet of Thing(Krishan Kumar Goyal ,Amit Garg ,Ankur Rastogi ,Saurabh Singhal 2018).IoT is an interconnection of exceptionally identifiable embedded computing devices within the existing Internet infrastructure, offering advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications and covers a variety of protocols, domains, and applications. Internet of Things (IoT) technology enables the Internet to reach out into the real world of physical objects. Technologies short-range wireless communications, real-time localization and sensor networks becoming increasingly pervasive, making the IoT a reality. We are experiencing a paradigm shift, in which everyday objects become interconnected and smart (Gershenfeld, N., Krikorian, R., & Cohen, D. 2004) All these innovative IoT development introduces new security challenges and open research areas to be addressed.


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Security of IoT needs to be addressed based on the characteristics of the IoT environment where it is applied (Peng, S., & Shen, H2012) Deploying existing security solutions to IoT is not straightforward because of device heterogeneity, highly dynamic and possibly unprotected environments, and large scale. have presented about the Internet of Things (IoT), an enabler of communication between people and things and also between things. They have discussed about the IoT and it has to overcome huge barriers to gain trust from people, it has also illustrated a specific potential to add a new dimension to the application in healthcare, logistics, transportation, disaster and environment by enabling wireless communication between smart objects. Therefore, always the IoT should be considered as a part of the future generation Internet in which anything and everything can connect in a network where all of the objects can interact with each other. The development of several issues and problems will make the IoT a complete solution for the given application. If Internet of Things has been successfully implemented, the less human efforts will benefit the quality of life as well as business (SuwimonVongsingthong and SuchaSmanchat 2014) have analyzed and proposed social features of IoT and Sociology-based relationship model between IoT devices. This model with the automatic relationship recognition can enhance the autonomy and dynamics of wireless communications in IoT. Final part of their research, the authors have presented an experiment considering real data as a simple example and have shown the reduction of the dependency of IoT on human intervention and make IoT devices more `smart'. HuijuanZhang and YujiShen (2014) have presented a new approach to provide privacy for IoT in an environment of multi trust domain. The idea behind this is to develop a new slotted channel access mechanism for privacy aware using which IoT nodes from multiple type of operators and trust domains may share given channel without exposing mutually their identities, thus new threats from cross trust domain traffic issues geared toward link layer topology estimation, node profiling and node-tracking. Debasmit Banerjee et al. (2014)

## RESEARCH OBJECTIVES

1. To identify the major challenges faced by freight forwarders in Tuticorin Port Trust.
2. To investigate the benefits of Internet of things by using freight forwarders.
3. To overcome the challenges in freight forwarders with the usage of Internet of things.

## 3 METHODOLOGY

A quantitative survey was designed in June 2019 consisting of 14 questions. It was divided into four sections: 1) Demographic profile of service providers; 2) Awareness, usage and influence by the service providers 3) Challenges faced by freight forwarders while using the technology.4) Benefits of using internet of things. The research instrument was initially piloted on a small sample of freight forwarding owners and a few minor revisions were made. Later the survey was administered using the online survey tool. A total of 157 potential participants accessed the online survey and after removal of unusable responses, a sample of 112 participants was retained.

## 4 FINDINGS AND DISCUSSION

The sample consisted of more males (77.7percent) than female participants (22.3percent) as the number of male respondents is greater than female respondents. Age of the respondents ranged from 31 to 40 is high. Designation of the respondents is Owner and Freelance freight forwarder are 77.7 Percent. Graduated working person is high in the freight forwarding companies. The results are presented in Table 1.

***Table-1**. Demographic Profile of the respondents*

| S. No | Variable | Classification of the Variables | Frequency | Percentage |
|---|---|---|---|---|
| 1 | Gender | Male | 87 | 77.7 |
| | | Female | 25 | 22.3 |
| 2 | Age | Below 30 | 36 | 32.1 |
| | | 31-40 | 56 | 50 |
| | | Above 40 | 20 | 17.9 |
| 4 | Year of Experience | Below 1 Year | 40 | 35.7 |
| | | 01-May | 34 | 30.4 |
| | | 05-Oct | 38 | 33.9 |
| 5 | Designation | Owner | 87 | 77.7 |
| | | Partner | 10 | 8.9 |
| | | Executive | 15 | 13.3 |
| | | Freelance freight forwarder. | 87 | 77.7 |
| 6 | Educational Qualification | Formal education | 75 | 67 |
| | | Graduation | 87 | 77.7 |

| | | | | |
|---|---|---|---|---|
| | | No formal education | 25 | 22.3 |
| | | Post Graduation | 36 | 32.1 |
| 7 | Employees are working | Less than 25 | 20 | 17.9 |
| | | 26-50 | 75 | 67 |
| | | 51-100 | 17 | 15.2 |
| | | Above100 | 10 | 8.9 |

***Fig 1:*** *Awareness of the internet of things*

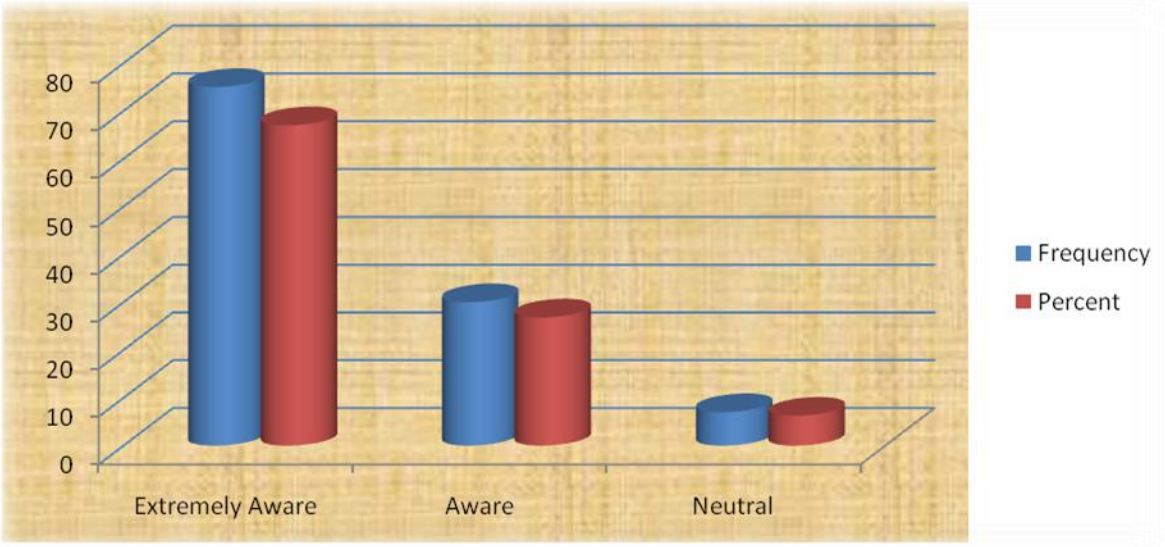


***Table-2****.Difference between Internet of Technology usage and benefits of IOT in freight forwarders*

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| Applications | | Sum of Squares | df | Mean Square | F | Sig. |
| Ingenious innovation | Between Groups | 4.93 | 3 | 1.645 | 2.539 | .060 |
| | Within Groups | 69.98 | 108 | .648 | | |
| | Total | 74.92 | 111 | | | |
| Physical devices | Between Groups | 41.64 | 3 | 13.881 | 12.622 | .000* |
| | Within Groups | 118.77 | 108 | 1.100 | | |
| | Total | 160.42 | 111 | | | |
| Greater efficiency | Between Groups | .950 | 3 | .317 | .545 | .652 |
| | Within Groups | 62.72 | 108 | .581 | | |
| | Total | 63.67 | 111 | | | |
| Higher quality | Between Groups | 51.60 | 3 | 17.201 | 23.872 | .000* |
| | Within Groups | 77.81 | 108 | .721 | | |
| | Total | 129.42 | 111 | | | |
| Unparalleled Transparency | Between Groups | 6.88 | 3 | 2.295 | 2.768 | .045 |
| | Within Groups | 89.54 | 108 | .829 | | |
| | Total | 96.42 | 111 | | | |
| Security | Between Groups | 40.617 | 3 | 13.539 | 11.259 | .000* |
| | Within Groups | 129.87 | 108 | 1.203 | | |
| | Total | 170.49 | 111 | | | |
| Efficient and save Time | Between Groups | 42.94 | 3 | 14.314 | 13.009 | .000* |
| | Within Groups | 118.8 | 108 | 1.100 | | |
| | Total | 161.7 | 111 | | | |
| Automation and control | Between Groups | 5.21 | 3 | 1.739 | 2.447 | .068 |
| | Within Groups | 76.74 | 108 | .711 | | |
| | Total | 81.96 | 111 | | | |
| Standards | Between Groups | 3.60 | 3 | 1.200 | 1.043 | .377 |
| | Within Groups | 124.25 | 108 | 1.151 | | |
| | Total | 127.85 | 111 | | | |
| Save money | Between Groups | 3.87 | 3 | 1.291 | 5.286 | .002 |
| | Within Groups | 26.37 | 108 | .244 | | |
| | Total | 30.25 | 111 | | | |

## INTERPRETATION

From the above table it is interpreted that among all the factors relating to that of internet of things, only four factor that influence the respondent in most benefits of internet of things like is Physical devices, Higher quality, Security, Efficient and save Time of all these factors of freight forwarders which has the significant value less than the "P" value, Those factors are influencing factors while comparing with the other ten factors and considered as strategically important for all freight forwarding agencies and industries.

***Table 3:*** *Difference between the challenges of using internet of things for freight forwarders*

*ANOVA*

| Challenging factor | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Privacy | Between Groups | 24.50 | 3 | 8.16 | 6.019 | .001 |
| | Within Groups | 146.59 | 108 | 1.35 | | |
| | Total | 171.10 | 111 | | | |
| Security Management | Between Groups | 1.66 | 3 | .555 | 1.525 | .212* |
| | Within Groups | 39.32 | 108 | .364 | | |
| | Total | 40.99 | 111 | | | |
| Optimal Asset Utilization | Between Groups | 31.90 | 3 | 10.63 | 8.802 | .000 |
| | Within Groups | 130.51 | 108 | 1.208 | | |
| | Total | 162.42 | 111 | | | |
| Connectivity | Between Groups | .051 | 3 | .017 | .035 | .991* |
| | Within Groups | 52.5 | 108 | .486 | | |
| | Total | 52.562 | 111 | | | |
| Insufficient updating | Between Groups | 48.55 | 3 | 16.184 | 29.851 | .000 |
| | Within Groups | 58.55 | 108 | .542 | | |
| | Total | 107.10 | 111 | | | |
| Identification and Authentication of Technologies | Between Groups | 9.755 | 3 | 3.252 | 3.307 | .023 |
| | Within Groups | 106.20 | 108 | .983 | | |
| | Total | 115.96 | 111 | | | |
| Handling Unstructured Data | Between Groups | 48.60 | 3 | 16.203 | 17.265 | .000 |
| | Within Groups | 101.35 | 108 | .938 | | |
| | Total | 149.96 | 111 | | | |
| Data Security and Privacy Issues | Between Groups | 17.071 | 3 | 5.690 | 5.389 | .002 |
| | Within Groups | 114.036 | 108 | 1.056 | | |
| | Total | 131.107 | 111 | | | |

Hypothesis: There is significant difference between challenges of using internet of things for freight forwarders. Various factors are discussed among the respondents for Challenges of freight forwarders using internet of things, Privacy, Security Management, Optimal Asset Utilization, Connectivity, Insufficient updating, Identification and Authentication of Technologies, Handling Unstructured Data, Data Security and Privacy Issues, on functions of using challenges are different factors discussed.

## CONCLUSION

Internet of Things is making our life simpler, more comfortable and thereby giving a better standard of life. Although there are many challenges and benefits in adopting this technology, implementing universally accepted standards, a compliance regulatory body, emphasizing on standard Internet protocols and opting for vendor specific technologist can be made more realistic. Security and connectivity is another big challenge and having a compliance body could be the solution for most of the privacy and security concerns. The challenge consists in designing privacy-aware solutions for the internet of Things that allow balancing business interests and customers privacy requirements. This study is consider privacy-violations in the interaction and presentation phase an important future threat, because of the corresponding interaction mechanisms with smart things and systems that are just evolving and are rather unique to the Internet of things. With all these IoT is still growing at an exponential pace and promising to deliver better results in days to come. Finally stress two core thoughts that our work suggests for an Internet of Things: the Internet of Things is evolving challenge and benefits of must be faced with the necessary foresight. Fruitful outcome requires coordinated action to provide technical solutions supported by the corresponding legal framework.

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