

3PL and Warehouse Management at Uniworld Logistics India Pvt Ltd

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Abstract— The study has been undertaken with a view to study the operations effectiveness of Uniworld Logistics India Pvt Ltd which is one of the leading third party logistics & warehouse service provider to its clients. This logistics in analyzing the operational efficiency which might help in increasing the performance of the organization. The research is conducted using several customers of Danfoss department of Uniworld Logistics. Thus it can give a better output. This study focuses on analyzing the importance and efficiency of Logistics with special reference to Third party logistics. In the process of analyzing the operations of third party logistics in Uniworld logistics with Danfoss, tools like Vendor rating, Process chart, Exponential smoothing and Work measurement are used. By using vendor rating the efficient and economical transporter can be identified. Process chart helps to understand the overall activities carried out in a particular process so as to reduce the unnecessary activities. Exponential smoothing is used to forecast the work load for every month and finally Work measurement is used to calculate the standard time in packaging the compressors.

Keywords: logistics, operational, efficiency, packaging

I. INTRODUCTION

A. Operations Management

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. Operations management is concerned with converting materials and labour into goods and services as efficiently as possible to maximize the profit of an organization. Operation management is an area of business concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient in terms of using as little resource as needed, and effective in terms of meeting customer requirements. Operation management is widely classified into Service operations, Production management and Supply chain management.

APICS Dictionary defines Supply chain management as the “Design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally”. SCM draws heavily from the areas of operations management, logistics, procurement, information technology and strives for an integrated approach. Among all these areas Logistics plays a major role in fulfilling the ambition of supply chain management.

B. Production Management v/s Operations Management

A high level comparison which distinct production and operations management can be done on following characteristics:

- Output: Production management deals with manufacturing of products like (computer, car, etc.) while operations management cover both products and services.
- Usage of Output: Products like computer/car are utilized over a period of time whereas services need to be consumed immediately
- Classification of work: To produce products like computer/car more of capital equipment and less labour are required while services require more labour and lesser capital equipment.
- Customer Contact: There is no participation of customer during production whereas for services a constant contact with customer is required.

C. Scope of Operations management

The scope of operations management ranges across the organization. Operations management people are involved in product and service design, process selection, selection and management of technology, design of work systems, location planning, facilities planning, and quality improvement of the organization’s products or services. The operations function includes many interrelated activities, such as forecasting, capacity planning, scheduling, managing inventories, assuring quality, motivating employees, deciding where to locate facilities, and more. We can use an airline company to illustrate a service organization’s operations system. The system consists of the airplanes, airport facilities, and maintenance facilities, sometimes spread out over a wide territory. Most of the activities performed by management and employees fall into the realm of operations management:

- Forecasting such things as weather and landing conditions, seat demand for flights, and the growth in air travel.
- Capacity planning, essential for the airline to maintain cash flow and make a reasonable profit. (Too few or too many planes, or even the right number of planes but in the wrong places, will hurt profits.)
- Scheduling of planes for flights and for routine maintenance; scheduling of pilots and flight attendants; and scheduling of ground crews, counter staff, and baggage handlers.
- Managing inventories of such items as foods and beverages, first-aid equipment, in-flight magazines, pillows and blankets, and life preservers.
- Assuring quality, essential in flying and maintenance operations, where the emphasis is on safety, and important in dealing with customers at ticket counters,

check-in, telephone and electronic reservations, and curb service, where the emphasis is on efficiency and courtesy.

- Motivating and training employees in all phases of operations.
- Locating facilities according to managers' decisions on which cities to provide service for, where to locate maintenance facilities, and where to locate major and minor hubs.

II. SUPPLY CHAIN MANAGEMENT

Supply chain management is the streamlining of a business' supply-side activities to maximize customer value and to gain a competitive advantage in the marketplace. Supply chain management (SCM) represents an effort by suppliers to develop and implement supply chains that are as efficient and economical as possible. Supply chains cover everything from production, to product development, to the information systems needed to direct these undertakings.

Successful SCM requires a change from managing individual functions to integrating activities into key supply chain processes. An example scenario: the purchasing department places orders as requirements become known. The marketing department, responding to customer demand, communicates with several distributors and retailers as it attempts to determine ways to satisfy this demand. Information shared between supply chain partners can only be fully leveraged through process integration. Supply chain business process integration involves collaborative work between buyers and suppliers, joint product development, common systems and shared information. According to Lambert and Cooper (2000), operating an integrated supply chain requires a continuous information flow. However, in many companies, management has reached the conclusion that optimizing the product flows cannot be accomplished without implementing a process approach to the business. The key supply chain processes stated by Lambert are:

- Customer relationship management, Customer service management, Demand management style, Order fulfilment, Manufacturing flow management, Supplier relationship management, Product development and commercialization, Returns management

Much has been written about demand management. Best-in-Class companies have similar characteristics, which include the following: a) Internal and external collaboration b) Lead time reduction initiatives c) Tighter feedback from customer and market demand d) Customer level forecasting Other key critical supply business processes which combine these processes stated by Lambert such as:

- Procurement, Physical distribution, Outsourcing/partnerships, Performance measurement
- Warehousing management

III. LOGISTICS

Logistics is the management of the flow of resources between the point of origin and the point of consumption in order to meet some requirements, for example, of customers or corporations. The resources managed in logistics can include physical items, such as food, materials, equipment, liquids, and staff, as well as abstract items, such as time, information,

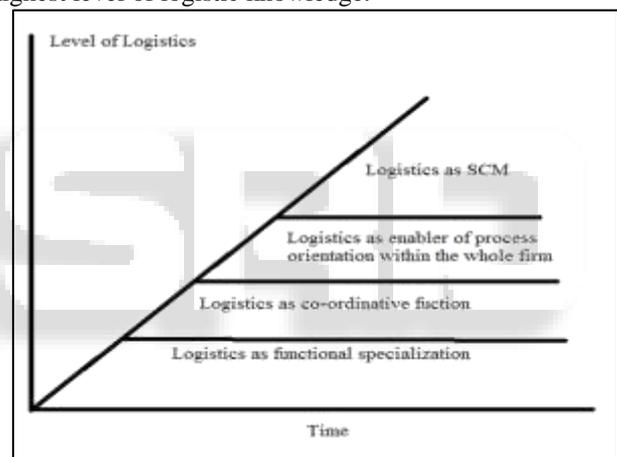
particles, and energy. The logistics of physical items usually involves the integration of information flow, material handling, production, packaging, inventory, transportation, warehousing, and often security. The complexity of logistics can be modelled, analysed, visualized, and optimized by dedicated simulation software. The minimization of the use of resources is a common motivation.

A. Recent trends in logistics

Globalization, Supply Chain Integration, Flexibility and Speed, Track and Trace Capabilities, Collaborative Logistics and Reverse Logistics, Transportation marketplaces, Optimization Technologies, Growth and expansion of 3PL and 4PL services

B. Phases of logistics

Most of the concepts indicate that the development of logistics flows three or four distinct phases, where sometimes the most advanced two phase are viewed as a single phase only. These phases, as indicated in advanced two phases are viewed as a single phase only. These phase, are determined by the level of logistics knowledge present in a firm and required path dependent development from the lowest to the highest level of logistic knowledge.



During the first two phases, efficiency gains of the logistical processes are emphasized both through specialization and the cross functional coordination of material flows, after the transition to the third and fourth phases the scope of logistics changes distinctly. It becomes a management function, whose objectives is the implementation of a flow and process orientation throughout the firm, thereby fostering logistical thinking and acting beyond the sole logistics department. However even when a firm has reached those higher phases of logistical development, it is important that the functions typical for the lower phases are not neglected. The different phases of logistical development reflect an underlying shift of importance. From an emphasis on classical logistical activities such as transportation, handling and warehousing, the flow information in logistics processes is of increasing concern.

IV. 3PL LOGISTICS

A third-party logistics provider is a firm that provides service to its customers of outsourced logistics services for part, or all of their supply chain management functions. 3PL

providers specialize in integrated operation, warehousing and transportation services that can be scaled and customized to customers' needs based on market conditions and the demands and delivery service requirements for their products and materials. Often, these services go beyond logistics and included value-added services related to the production or procurement of goods, i.e., services that integrate parts of the supply chain. Then the provider is called third-party supply chain management provider (3PSCM) or supply chain management service provider (SCMSP). 3PL System is a process which targets a particular Function in the management. It may be like warehousing, transportation, raw material provider.

A. Types of 3PL provider

Third-party logistics providers include freight forwarders, courier companies, as well as other companies integrating & offering subcontracted logistics and transportation services.

- Standard 3PL Provider: This is the most basic form of a 3PL provider. They would perform activities such as, pick and pack, warehousing, and distribution (business) – the most basic functions of logistics. For a majority of these firms, the 3PL function is not their main activity.
- Service Developer: This type of 3PL provider will offer their customers advanced value-added services such as: tracking and tracing, cross-docking, specific packaging, or providing a unique security system. A solid IT foundation and a focus on economies of scale and scope will enable this type of 3PL provider to perform these types of tasks.
- The Customer Adapter: This type of 3PL provider comes in at the request of the customer and essentially takes over complete control of the company's logistics activities. The 3PL provider improves the logistics dramatically, but do not develop a new service. The customer base for this type of 3PL provider is typically quite small.
- The Customer Developer: This is the highest level that a 3PL provider can attain with respect to its processes and activities. This occurs when the 3PL provider integrates itself with the customer and takes over their entire logistics function. These providers will have few customers, but will perform extensive and detailed tasks for them.

Some of the economic advantages of using 3PL are:

- The elimination of infrastructure capital and investment.
- Access to expertise in the logistics field to allow users to achieve supply chain solutions with their customers that minimise total delivered costs.
- Reduced inventory costs through improved management.
- Increased access to world-class resources, processes, services, and technologies.
- Economies of scale through sharing resources, volume shipping discounts, and increased shipment visibility.
- A strategic partnership with a company, whose core activity is specialising in logistics, allowing you to increase focus on your core competencies.
- The flexibility to respond quickly to changing market trends, changing business environments, and peak

periods without major disruptions to distribution operations.

- Operational Key Performance Indicators (KPIs) can be easily captured and reported.
- Real-time integration of distribution system into 'host' system leading to accurate and timely data reporting – adding value to the manufacturing and marketing operations.
- Improved customer service through shorter shipment times.
- More scalable logistics operations and total logistics costs are clearly identified.
- Productivity gains through logistics being managed more effectively through the application of technology.

B. Overview of Indian Logistics

- The Indian Logistics Industry is estimated at US\$ 125 billion in 2010
- Generated employment for 45 million people
- The industry is expected to grow annually at the rate of 15- 20 per cent, reaching revenues of approximately \$ 385bn by 2015.
- Highly Unorganized with organized sector responsible only for 6%
- Market share of organised logistics players is also expected to double to approximately 12 per cent by 2015
- The size of the 3PL industry is estimated to be ~US\$1.5 bn in FY11 (1% of logistics cost).
- The share of 3PL services is expected to increase from 6% in FY06 to 13% in FY11, at a CAGR of 25%
- Logistics costs are 10-20% of GDP
- Indian Infrastructure is rated 54th among the 59 countries
-- Road : 56/59, Rail: 25/59, Seaport: 51/59, Airport: 40/59

Several factors helped the growth of logistics industry in India over the decade that includes changing tax system, rapid growth in industries such as automobile, pharmaceuticals, FMCG and retail. However, major sectors that are investing huge amounts in logistics industry are aviation, metal & mining and consumer durables. With increasing competition and cost, focus on outsourcing, entry of foreign players is having positive impact on the industry. Three major contributors for the growth of the logistic industry are: emergence of organized retail, increase in foreign trade and India becoming soon the manufacturing hub.

As per the World Bank's Logistics Performance Index 2010, India is placed at 47th position out of 155 countries.

To improve infrastructure facilities and in turn the logistics industry government implemented several projects such as golden quadrilateral project, east-west and north-south corridors (connecting four major metros), Free Trade and Warehousing Zones (FTWZ) and private participation in the sector.

The logistics cost in India – which includes inventory holding, transportation, warehousing, packaging, losses and related administration costs – is estimated at approximately 13 per cent of GDP and is high when compared to the corresponding figures for major economies. India's multi-layered tax regime, infrastructure bottlenecks

and other inefficiencies have been the primary reasons in keeping logistics costs high in India.

C. Share of logistics cost in total sale for Various Industries

Name of industry	Percentage share of logistic cost in total sales
Cement	15%
Steel	6%
F&B	5%
FMCG	4%
Durables	4%
Apparel	3%
Auto	3%

V. INDUSTRY TRENDS

Transportation: Container cargo represents only about 30% (by value) of India's external trade-much lower when compared with the global containerized cargo average of 70-75%. At a growth rate of 12%, India's container cargo traffic is estimated to reach 15 million TEUs by FY16E from about 7.5 million TEUs now (at 12 major ports). In comparison, China has created capacity at its ports to handle more than 100 million TEUs a year. Out of the 15 mn TEUs of total container traffic, we estimate Exim rail container traffic to be 5 mn TEUs by FY16E. This would be a huge opportunity and will significantly benefit container rail operators.

Rising investment in the rail and port spaces also fuels growth in allied industries like wagon manufacturing, port handling equipment, railway electrification systems and construction companies.

To reduce the transportation cost and for quicker movement of cargo Multimodal transport operation is introduced (MTO). MTO helps exporters with less documentation for instance single document for all modes of transport.

(mn) tonnes	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11
Rail freight	667	728	794	850	910	1025
Sea freight	424	464	519	530	561	570
Road freight	1353	1478	1612	1726	1875	2046
Air freight	1.4	1.55	1.71	1.7	1.9	2.1

A. Third Party Logistics (3PL)

Outsourcing is everywhere. Logistics industry is no exception. Logistics services like transportation, warehousing, cross docking, Inventory management, packaging and freight forwarding all are part of third party logistic services. Companies in India currently outsource an estimated of 52% of logistics. And 3PL industry is estimated to be US\$ 1.5bn in FY11. 3PL represents only 1% of logistics cost emphasis its significance in the industry. Future is no doubt lying in outsourcing. As the growth in the 3PL market is expected to be in the range of 25-30% CAGR over FY11-13E. As of now, the 3PL activity is limited to only few industries like automotive, IT hardware, and telecom and infrastructure equipment.

The organised 3PL market in India can be categorised into three major segments – public sector, private sector and foreign entrants. Some of the major players in each category are: TVS logistics, DIESL (TATA), Panalpina, TCI, Gati, Allcargo, V Trans, Total, VRL and Reliance etc.

B. Private Participation

The industry is becoming more competent with the entry of global giants like Gazeley Broekmen (Wal-Mart's logistics partner), CH Robinson and Kerry logistics and large Indian corporate houses like Tata, Reliance and Bharti group. A series of mergers and acquisition like DHL acquired Blue Dart, TNT acquired Speedage Express Cargo Service and Fedex bought over Pafex, are also leading to consolidation industry at various levels and segments. Many of these companies are planning to broaden their areas of operation and are also planning to develop their own logistic parks across the country. If the trend continues as per the estimates, the market share of the organized logistics players is expected to double from 6% in 2007 to approx. 12% by 2015.

C. Express logistics

Organised players have monopoly over the express logistics industry. 65% of express business is in the hands of organized players, while semi-organised and unorganised players accounts for 25% and the remaining 10% of the market by EMS Speed Post. But altogether different picture can be witnessed in the domestic segment. In domestic front, unorganised players hold 41% of the market share based on price advantage. While organised players accounts for 45% and EMS Speed Post the remaining 14%. Key players in express cargo are: DHL, FedEx, TNT, UPS, AFL, DTDC, First Flight Couriers, TCI Express, Gati and VRL etc.

D. Warehouses

Recently, warehouses have become key growth drivers in the logistics industry. Apart from conventional storing services, warehouses now providing value-added services like consolidation and breaking up of cargo, packaging, labelling, bar coding and reverse logistics etc. warehousing and related activities account for approx. 20% of the total logistics industry.

Most of the warehousing space in India lies with unorganised players in domestic front, which is causing wide supply and demand gap in storage space. According to KPMG, an additional 120million square feet of warehousing space is needed by 2012 to bridge this gap.

Currently, the organised warehousing industry in India has a capacity of approx. 80million metric tonnes and is growing at 35 to 40 per cent per annum. An investment of approximately US\$ 500million is being planned by various logistics companies for the development of about 45million square feet of warehouse space by 2012. Many players in this segment such as Multi Modal Logistics Park, Mega Food Parks and Free Trade Warehousing Zones have planned next generation storage models.

E. Logistic parks

About 110 logistics parks spread over approximately 3,500 acres at an estimated cost of \$1 bn are expected to be operational and an estimated 45 mn ft2 of warehousing space

with an investment of \$ 500 mn is expected to be developed by various logistics companies by 2012.

Majority of these logistics parks are planned in close proximity to state capitals. However, availability of large land parcels at relatively low cost, connectivity to multiple markets across states and industrial clusters has led to the emergence of some tier-2 and tier-3 cities as favoured destinations for the development of logistics parks and warehouses.

VI. GOVERNMENT INITIATIVES AND REGULATIONS

A. Initiatives

To emphasize the significance of transportation in logistics industry and to increase the competence in the sector government introduced private participation, especially in port sector. The major initiative in transport infrastructure is introduction of National Maritime Development Program (NMDP) with an investment of Rs 568bn. NMDP would be addressing the challenges of the growing international traffic demand of the country along with developing the port facilities at par with world standards. While liberalizing the railway services, government opened the doors of container business to the private parties. A total of 15 players immediately entered the market.

Cargo traffic is always given second priority over passenger traffic in transportation industry. Due to which though railway transportation is cheaper in Inland transportation, it is not getting substantial share. To address this problem the Indian Railway has proposed the creation of a dedicated freight corridor connecting four metros covering 2800 route km, at a cost of about Rs 670bn to carry freight trains including containers. The dedicated freight corridor is proposed to come up by FY17E.

To remove the differential state-level taxes that are causing higher unit and inventory carrying costs, government introduced uniform Goods and Services Tax (GST). As a result, there is expected to be significant reorganisation in warehousing system in the country.

B. FDI regulations

- In general 100% FDI under the automatic route is permitted for all logistic services
- FDI up to 100% subject to FIPB approval is permitted for courier services.
- FDI up to 49% under the automatic route is permitted for air transport services, including air cargo services.
- 100% FDI is permitted in Ports and Harbours under automatic route
- 100% FDI is permitted under the automatic route for storage and warehousing including warehousing of agricultural products with cold storage.
- 100% FDI is permitted in transport and support services through automatic route.

VII. COMPANY PROFILE

Uniworld Logistics, A Total Logistics Company, is emerging as the most versatile logistics service providers in the industry. From its Inception, Uniworld Logistics has dealt with market changes and new knowledge-based economy

with a steady focus on customer flexibility. This focus includes strengthening the financial structure, fortifying strategic alliances, acquiring new businesses and adapting diversified management services. Their global network, of strategic alliances and world class partners backed with innovative use of information technology makes us a leader in the field of logistics. Highly trained and professional staffs are well versed in both domestic and international trade, are committed to the customer as they understand the complexities involved in handling shipments around the world. They tailor individual jobs to meet customers' specific needs and respond with cost effective solutions, all under one roof which, is the very backbone of this company.

Uniworld with its presence in more than 10 Countries, along with exclusive partners and alliances worldwide, is well equipped to serve 400+ business locations globally. The turn of the new century has created the necessity to develop world class Logistics Infrastructure in developing countries. Uniworld has invested immensely in developing Logistics Infrastructure in India and has evolved Unique Concept, Uniworld Integrated Logistics Park, which provides facilities like Internal Container Depot, Bonded Warehouse, General Warehouse, and Temperature controlled Warehouse all at One Location.

A. Services offered

The different types of service offered by Uniworld logistics to its customers are:

B. Origin Services/Export Management

- Consolidation, P.O. management, Vendor management, Quality assurance, Packaging/Labeling, VMI/Kitting, Carrier arrangements, Documentation

C. Ground Operations

- Pre & Post Shipment Documentation, Custom Brokerage, Air freight stations, Container Freight Station, Inland Transportation

D. Warehouse/ D C Management

- Facility design, Store/Pick/Pack/Ship, Inspection/Configuration, Cross docking, Sequencing, Packaging/Labeling, VMI/Kitting, Light sub-assembly, JIT pickup/delivery, Returns management, E-Fulfilment
- 52'nd AGM of Indo German Chamber of Commerce held at Hotel Trident, Mumbai on 25th Sept-08.
- Award for outstanding contribution towards economic cooperation presented by Indian Ambassador Mrs Meera Shankar to EMO TRANS and Uniworld-Logistics.

VIII. REVIEW OF LITERATURE

Rajesh Gupta, Anish Sachdeva, Arvind Bhardwaj (2015), Says Shippers are concentrating on the core competency to stay competitive and outsourcing the logistic activities to the third party who is expert in this field. This third party logistics is drawing the due attention at government, industrial, academicians and practitioner's levels. If the logistics cost in Indian can be brought down from the current level of 13% of GDP to 9% (Level in the U. S), the savings would be around Rs 3 lakh crore approximately per annum. But the problem with the shippers is to select the suitable 3PL provider.

Various criteria for selection of 3PL have been listed in the literature which is discussed in the present literature review. Every shipper will select the criteria suitable to its own requirement which have to be dynamically reviewed time to time so as to fit in the ever changing environment.

Greene, Alan Material Handling & Logistics (2016) the article focuses on the important factors used in the calculation of the warehouse space in the U.S. It suggests the use of the cubic feet per square feet in determining the current density of storage per square foot of storage space for mixed goods. It highlights the importance of matching the storage design characteristics with the inventory characteristics specifically the volume of items or goods.

Ramaa.A, K.N.Subramanya, T.M.Rangaswamy (2017) says that in a supply chain, warehousing function is very critical as it acts as a node in linking the material flows between the supplier and customer. In today's competitive market environment companies are continuously forced to improve their warehousing operations. Many companies have also customized their value proposition to increase their customer service levels, which has led to changes in the role of warehouses. This paper the Impact of Warehouse Management System in a Supply Chain highlights the findings of the study carried out to evaluate performance levels and enhance productivity of the manual warehouses by developing a WMS framework and cost benefit analysis.

N. Faber, M.B.M. de Koster, A. Smidts, (2018) "Organizing warehouse management", International Journal of Operations & Production Management, Vol. 33 Iss: 9, pp.1230 – 1256. The purpose of this paper is to investigate how warehouse management, understood as a cluster of planning and control decisions and procedures, is organized and driven by task complexity (TC) and market dynamics (MD). A multi-variable conceptual model is developed based on the literature and tested among 215 warehouses using a survey. The results suggest that TC and MD are the main drivers of warehouse management, measured by planning extensiveness (PE), decision rules complexity, and control sophistication. Differences between production and distribution warehouses are found with respect to the relationship between assortment changes and PE. Furthermore, TC appears to be a main driver of the specificity of the warehouse management (information) system (WMS). The paper defines the core dimensions of warehouse management, makes them measurable, tests them and assesses how these drivers impact specificity of WMS. The paper shows that PE in production warehouses is driven by different variables than in distribution centers.

IX. NEED FOR THE STUDY

Logistics industry is a versatile service providing organisation. Logistics management is an integral factor in the success of any manufacturing companies operations and has direct impact on their bottom line. Since logistics has got vital importance in the organisation it has to be done effectively and efficiently which is possible through proper analysis of all the operations involved in it. Therefore, there is a need in finding the operational efficiency of the various processes that they provide to their customers. Hence the study is about analysing the operation of the logistics industry

and its clients using the tools like Time study, Vendor rating, Exponential smoothing and Moving average method.

A. Objectives of the study

- To study the operation of Uniworld logistics with respect to the Danfoss Account.
- To find out the unnecessary activities and delay in the process through process chart.
- To identify best transport service provider through vendor rating method.
- To forecast the workload of Danfoss using Exponential smoothing and Simple Moving average method.
- To calculate the standard time of packing compressors using Time study methods.

B. Scope of the Study

This study is conducted in order to analyse and understand the operation of Third party Logistics and Warehouse management at Uniworld Logistics with respect to Danfoss department. This study also helps in analysing the operational efficiency which might help in increasing the performance of the organisation. This analysis has been done on 10 customers of Danfoss. This study might help in efficiently handling the contract labours in packaging. It is hoped that this study will help the organisation in providing better service to their customers.

X. RESEARCH METHODOLOGY

A. Introduction

Research methodology is considered as the nerve of the project. Without proper well-organized research plan, it is impossible to complete the project and reach to any conclusion. The main objective was to analyse appropriate data, which work as a base for drawing conclusion and getting result.

Therefore, research methodology is the way to systematically solve the research problem. Research methodology not only talks of the methods but also logic behind the methods used in the context of a research study and it explains why a particular method has been used in the preference of the methods.

B. Research design

A research design is considered as the framework or plan for a study that guides as well as helps the data collection and analysis of data. The research design may be exploratory, descriptive and experimental for the present study. Descriptive research design is adopted for this project.

C. Sample Design

For the analysis, some of the customer of Danfoss are taken, which includes: Elgi Equipment's, Hindustan refrigeration, Carrier Refrigeration, Alpine refrigeration, Sharvan Equipment's, Ishwar trading, Advance Electricals, Prasad Equipments, Gem Equipments

D. Period of the Study

The data used to conduct the study was of (2018-19)1years period

E. Data collection method

The Study is done with both primary and secondary data sources. Thus, both the primary observed data and secondary data are used in this research.

F. Primary data

Primary research (also called field research) involves the collection of data that does not already exist. In this study direct observation is used to calculate the time taken to complete a particular job.

G. Secondary data

On the other hand, the secondary data are those which have already been collected someone else passed through the statistical process. Secondary data were collected from Books, journals, magazines, newspaper, internet and other available information obtained through the company pamphlets.

H. Research Tools

Standard time calculation, Exponential Smoothing, Moving average method, Vendor Rating, Process chart

I. Standard Time Calculation

In industrial engineering, the standard time is the time required by an average skilled operator, working at a normal pace, to perform a specified task using a prescribed method. It includes appropriate allowances to allow the person to recover from fatigue and, where necessary, an additional allowance to cover contingent elements which may occur but have not been observed.

J. Method of calculation

The Standard Time is the product of three factors:

- Observed time: The time measured to complete the task.
- Performance rating factor: The pace the person is working at. 90% is working slower than normal, 110% is working faster than normal, 100% is normal. This factor is calculated by an experienced worker who is trained to observe and determine the rating.
- Allowance time: Personal, fatigue, and delay (PFD) allowance.

$$\text{Standard Time} = \text{Normal Time} + \text{Allowance}$$

$$\text{Normal Time} = \text{Observed Time} * (\text{Rating}/100)$$

K. Exponential smoothing

Exponential smoothing is a technique that can be applied to time series data, either to produce smoothed data for presentation, or to make forecasts. The time series data themselves are a sequence of observations. The observed phenomenon may be an essentially random process, or it may be an orderly, but noisy, process. Whereas in the simple moving average the past observations are weighted equally, exponential smoothing assigns exponentially decreasing weights over time.

L. Simple Moving Average

A moving average is commonly used with time series data to smooth out short-term fluctuations and highlight longer-term trends or cycles. The threshold between short-term and long-term depends on the application, and the parameters of the moving average will be set accordingly. Mathematically, a moving average is a type of convolution and so it can be viewed as an example of a low-pass filter used in signal processing. When used with non-time series data, a moving average filters higher frequency components without any specific connection to time, although typically some kind of ordering is implied. Viewed simplistically it can be regarded as smoothing the data.

M. Vendor rating

Vendor rating is a term used in business and refers to the process of evaluating and approving potential suppliers by quantitative assessment. The purpose of supplier evaluation is to ensure a portfolio of best in class suppliers is available for use. Supplier evaluation is also a process applied to current suppliers in order to measure and monitor their performance for the purposes of reducing costs, mitigating risk and driving continuous improvement.

N. Operation flow Process chart

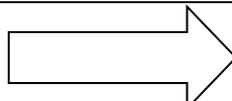
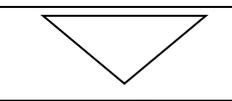
The charting of work flows, working processes, systems and procedures is a useful way of recording the essential features of a work situation for subsequent analysis.

Process Charts are one of the simpler forms of workflow charting and are still in regular usage but are less common than they once were. It was the ubiquitous nature of the process chart that made it a common "language" between different groups of people and across different industries.

A variety of process charts has been designed to meet the needs of a particular level or stage of analysis; they can be used at a detailed level (recording activity at a specific work station or workplace), but also at the wider system, process or procedure level. The different kinds of process chart share a common core set of symbols, though some have additional symbols for specific and specialised process steps. The common symbols were first promulgated by the American Society of Mechanical Engineers and have become known as the ASME symbols.

The symbols are simply linked together in a vertical chart representing the key stages in a process; it is usual to place a commentary in adjoining column recording contextual/environmental information. E.g. against a Transport symbol would be recorded, start of journey, end of journey, distance and mode of transport. The simplest form of process chart is known as an outline process chart and records an overview or outline of a process. Only those steps of a process that can be represented by the ASME symbols of operation and inspection are recorded. An outline process chart is often a useful first step to identify key areas of concern before recording (part of) the process in more detail.

Symbol	Operation
	<p style="text-align: center;">Operation: A main step, where the part, material or product is usually modified or changed</p>

	Inspection: Indicates a check for quality or quantity
	Transportation: The movement of workers materials or equipment.
	Storage: Controlled storage in which material is received into or issued from a store, or an item is retained for reference purpose.
	Delay or Temporary Storage: Indicates a delay in the process, or an object laid aside until required

O. Limitations of the Study

- This study is conducted only for a period of three months.
- This study is only for academic purpose.
- The forecast of work load is calculated with one year data so variations may occur.
- The time constrain and data constrain make it prone to errors.

XI. HINDUSTAN REFRIGERATION

Month (t)	Goods Supplied d_{t-1}	f_{t-1}	$d_{t-1}-f_{t-1}$	$\alpha(d_{t-1} - f_{t-1})$	$f(t)$
April	20.393				
May	24.929	20.393	4.536	0.9072	21.300
June	17.232	24.929	-7.697	-1.5394	23.389
July	24.278	17.232	7.046	1.4092	18.641
August	23.876	24.278	-0.402	-0.0804	24.197
September	18.059	23.876	-5.817	-1.1634	22.712
October	23.792	18.059	5.733	1.1466	19.205
November	21.417	23.792	-2.375	-0.475	23.317
December	23.02	21.417	1.603	0.3206	21.737
January	13.715	23.02	-9.305	-1.861	21.159
February	9.534	13.715	-4.181	-0.8362	12.878
March	32.569	9.534	23.035	4.607	14.141

Table 2.4.7: Forecasted workload for the month April

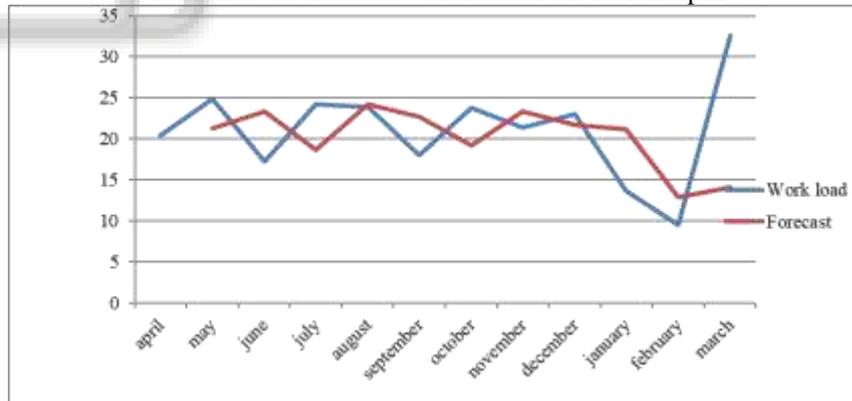


Fig. 2.4.7: Present and forecasted workload

A. Interpretation

From the above table and graph it is found that the forecasted workload for the month of April for Hindustan Refrigeration is 14.14 ton.

XII. PRASAD GWK COOL TECH PVT LTD

Month (t)	Goods Supplied d_{t-1}	f_{t-1}	$d_{t-1}-f_{t-1}$	$\alpha(d_{t-1} - f_{t-1})$	$f(t)$
April	5.068				
May	13.889	5.068	8.821	1.7642	6.832
June	3.107	13.889	-10.782	-2.1564	11.732
July	4.628	3.107	1.521	0.3042	3.411

August	6.678	4.628	2.05	0.41	5.038
September	3.926	6.678	-2.752	-0.5504	6.127
October	2.546	3.926	-1.38	-0.276	3.650
November	2.546	2.546	0	0	2.546
December	9.673	2.546	7.127	1.4254	3.971
January	8.114	9.673	-1.559	-0.3118	9.361
February	6.226	8.114	-1.888	-0.3776	7.736
March	7.445	6.226	1.219	0.2438	6.469

Table No: 2.4.8 Forecasted workload for the month April

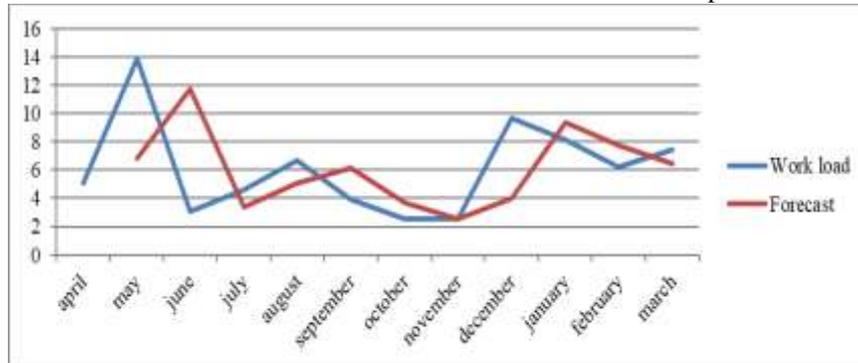


Fig. 2.4.8: Present and forecasted workload

A. Interpretation

From the above table and graph it is found that the forecasted workload for the month of April for Prasad Equipments is 6.469 ton.

XIII. GEM EQUIPMENTS

Month (t)	Goods Supplied d_{t-1}	f_{t-1}	$d_{t-1}-f_{t-1}$	$\alpha(d_{t-1} - f_{t-1})$	$f(t)$
April	3.165				
May	2.392	3.165	-0.773	-0.154	3.0104
June	4.405	2.392	2.013	0.402	2.7946
July	5.048	4.405	0.643	0.128	4.5336
August	3.943	5.048	-1.105	-0.22	4.8270
September	2.422	3.943	-1.521	-0.304	3.6388
October	1.646	2.422	-0.776	-0.155	2.2668
November	0.883	1.646	-0.763	-0.152	1.4934
December	1.817	0.883	0.934	0.186	1.0698
January	3.335	1.817	1.518	0.303	2.1206
February	2.947	3.335	-0.388	-0.076	3.2574
March	4.059	2.947	1.112	0.222	3.1694

Table 2.4.9: Forecasted workload for the month April

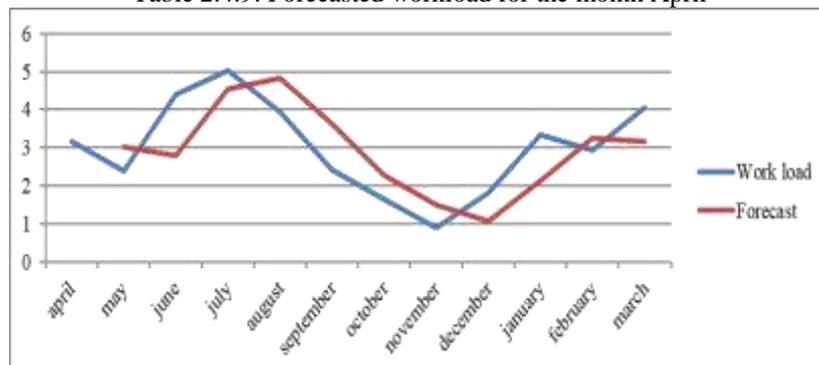


Fig. 2.4.9: Present and forecasted workload

A. Interpretation

From the above table and graph it is found that the forecasted workload for the month of April for Prasad Equipment's is 3.169 ton.

Over all workload of Uniworld Logistics with Danfoss

Month (t)	Goods Supplied d_{t-1}	f_{t-1}	$d_{t-1}-f_{t-1}$	$\alpha(d_{t-1} - f_{t-1})$	$f(t)$
April	214				
May	294.501	214	80.501	16.100	230.100
June	176.301	294.501	-118.200	-23.640	270.861
July	115.810	176.301	-60.491	-12.098	164.202
August	140.860	115.810	25.050	5.010	120.820
September	170.870	140.860	30.010	6.002	146.862
October	190.614	170.870	19.744	3.948	174.818
November	161.614	190.614	-29.000	-5.800	184.814
December	218.418	161.614	56.804	11.360	172.974
January	121.714	218.418	-96.704	-19.340	199.077
February	126.580	121.714	4.866	0.973	122.687
March	166.784	126.580	40.204	8.040	134.620

Table 2.4.10: Forecasted workload for the month April

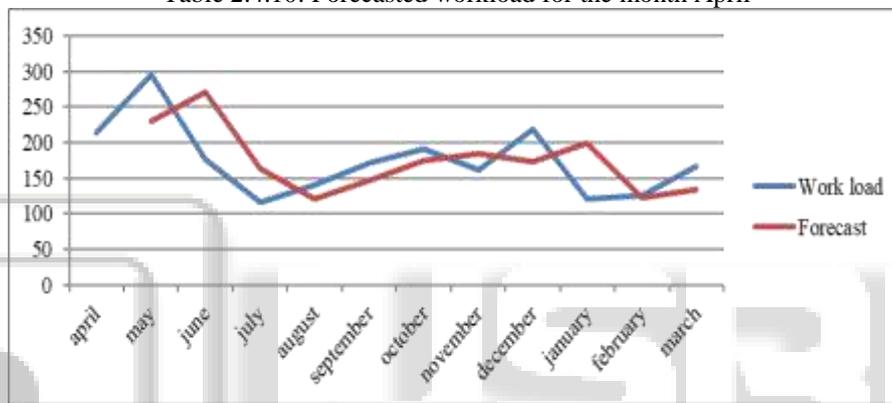


Fig. 2.4.10: Present and forecasted workload

B. Interpretation

From the above table and graph it is found that the forecasted workload for the month of April for Uniworld Logistics is 134.620 ton.

XIV. FINDINGS

- It is found that the delay process should be reduced to increase the operation efficiency.
- It is found, from the vendor rating that goods for Karnataka should be sent through Gati.
- It is found that goods to Haryana should be sent through Gati.
- It is found from the vendor rating that goods for Tamilnadu should be sent through Gati.
- It is found to be profitable to send goods through Gati to Gujarat.
- It is found Gati has more points than Safe express to deliver goods to Maharashtra.
- It is found from vendor rating that goods for Uttaranchal should be sent through Gati.
- It is found that the standard packaging time for packaging MTB-4M Compressor is 11.46 min.
- It is found that the standard packaging time for packaging EM 1864 (with bolt) Compressor is 44.18 min.

- It is found that the standard packaging time for packaging 121L1748Compressor is 15.39 min.
- It is found that the standard packaging time for packaging EM 1864 (Thermocol) Compressor is 40.09 min.
- It is found that the forecasted workload for Alpine Refrigeration for the month of April is 2.779 ton.
- It is found that the forecasted workload for the month of April for Ishwar trading is 12.789 ton.
- It is found that the forecasted workload for the month of April for Advance Refrigeration is 1.668 ton.
- It is found that the forecasted workload for the month of April for Sharvan electrical is 1.143 ton.
- It is found that the forecasted workload for the month of April for Elgi Equipment's is 8.240 ton.
- It is found that the forecasted workload for the month of April for carrier refrigeration is 11.08 ton.
- It is found that the forecasted workload for the month of April Hindustan refrigeration is 14.14 ton.
- It is found that the forecasted workload for the month or April for Prasad GWK Cool Tech is 6.469 ton.
- It is found that the forecasted workload for the month of April for Gem Equipments is 3.16 ton.
- It is found that the forecasted workload for the month of April for overall workload of Uniworld Logistics is 134.620.

XV. SUGGESTIONS

[16] www.logisticsit.com

- Introducing standard time in packaging will improve the efficiency of operation thereby reducing the operation time.
- To improve the operation time skilled Contract labours should be employed in packaging compressors.
- Forecasting will help in better planning of taking contract labours in to operation process.
- Transporters should be selected in accordance to their performance which will increase the efficiency and the reliability in delivering goods.
- By increasing the process area problems like mismatching, wrong packaging can be avoided.

XVI. CONCLUSION

This report began with an explanation of what is logistics and it's different forms. Followed a discussion on importance of third party logistics is briefed. By going for third party logistics organizations can focus on their core process which will increase their research and development and sales. The study determines standard time for packaging materials, selecting appropriate transporters for delivering goods, forecasting the work load and the operation process flow chart to improve the operation efficiency of Uniworld logistics. By introducing these suggestions in day to day operation will eventually increases the operation efficiency and can provide better customer responsiveness.

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