

## **Final Project**

**“JUST IN TIME IN AUTOMOBILE INDUSTRY”**

**DMSR- G. S. College of Commerce & Economics, Nagpur**

**Affiliated to**

**Rashtrasant Tukadoji Maharaj Nagpur University**

**Nagpur**

In partial fulfilment for the award of the degree of

**Master of Business Administration**

**Submitted by**

**Mr. Mithil Bisen**

**Under the Guidance of**

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**NAAC Re-Accredited “A” Grade Autonomous Institution**



**Academic Year 2021-22**

# **CERTIFICATE**

This is to certify that “**Mithil Bisen**” has submitted the project report titled “**JUST IN TIME IN AUTOMOBILE INDUSTRY**”, towards partial fulfillment of **MASTER OF BUSINESS ADMINISTRATION** degree examination. This has not been submitted for any other examination and does not form part of any other course undergone by the candidate.

It is further certified that he has ingeniously completed his project as prescribed by DMSR - G.

S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR

(NAAC Reaccredited “A” Grade Autonomous Institution) affiliated to RashtrasantTukadoji Maharaj Nagpur University, Nagpur.

**Prof. Aniruddha Akarte**  
(Project Guide)

**Dr. Sonali Gadekar**  
(Co-ordinator)

**Place: Nagpur**

**Date: 05/07/2022**

## **DECLARATION**

I here-by declare that the project with title “**JUST IN TIME IN AUTOMOBILE INDUSTRY**” has been completed by me in partial fulfillment of MASTER OF BUSINESS ADMINISTRATION degree examination as prescribed by DMSR - G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR (NAAC Reaccredited “A” Grade Autonomous Institution) affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur and this has not been submitted for any other examination and does not form the part of any other course undertaken by me.

**Mithil Bisen**

**Place: Nagpur**

**Date: 25/07/2022**

## **ACKNOWLEDGEMENT**

With immense pride and sense of gratitude, I take this golden opportunity to express my sincere regards to Dr. N.Y. Khandait, Principal, G.S. College of Commerce & Economics, Nagpur.

I am extremely thankful to my Project Guide Dr. Aniruddha Akarte for his guideline throughout the project. I tender my sincere regards to Co-ordinator, Dr. Sonali Gadekar for giving me guidance, suggestions and invaluable encouragement which helped me in the completion of the project.

I will fail in my duty if I do not thank the Non-Teaching staff of the college for their Co-operation.

I would like to thank all those who helped me in making this project complete and successful.

**Mithil Bisen**

**Place: Nagpur**

**Date: 25/07/2022**

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## **SUMMARY**

This paper studied about the impact of implementation of Just-In-Time (JIT) on Inventory Management system in the automobile sector in India. There are various factors which have varying correlation which affects the inventory management when implementing Just-In-Time which we have considered in this study. These factors include supplier appraisal, supplier performance, Re-order point, Lead time for deliveries, JIT knowledge.

For the study we followed a qualitative research method to gain deeper insights from the management and employees of the firm regarding implementation and impact of JIT in inventory management for the respective organizations. After conducting in- depth interviews with the senior management as well as the employees of the organization we were able to generate findings which direct that implementation of JIT is done in silos and deeper integration needs to be in place.

Also proper implementation of JIT governed by enterprise resource planning or database management systems links suppliers as well as customers to the organization's planning and management leads to reduced costs while managing inventory, efficient workflow and production cycles. Also, the study will depict both the pros and cons of JIT

# CHAPTER 01

## Introduction

Just in Time manufacturing is a philosophy of manufacturing based on planned elimination of waste and continuous improvement of productivity. It encompasses the successful execution of all manufacturing activities required to produce a final product, from design engineering to delivery and including all states of conversion from raw material onward. The primary elements of Just-in-Time are to have only the required inventory when needed; to improve quality to zero defects; to reduce lead times by reducing setup times, queue lengths, and lot sizes; and to accomplish these things at a minimum cost. It is a manufacturing system whose goal is to optimize processes and procedure by continuously pursuing waste reduction.

Today, JIT is commonly viewed as a Japanese innovation, because it popularized this approach two decades ago. The Japanese automobile factory, where the notion of JIT may have started, is the best example of the use of JIT in repetitive manufacturing. In these factories, the continuous flow of products makes planning and control rather simple. The basic idea of JIT is to drastically reduce work in progress inventories throughout the production system. In this way, products flow from suppliers to production to customers with little or no delays or interruptions beyond the amount of time they spend being produced at work centres in manufacturing. JIT does not come free; certain changes to the factory and the way it is managed must occur before the benefits can be realized. These changes are: The automotive industry in India is the third largest in the world, with an annual production of over 18.3 million units by 2017. In 2015, India emerged as Asia's fourth largest exporter of automobiles, behind Japan, South Korea and Thailand.

Following the economic liberalization in India, the Indian automotive industry has demonstrated sustained growth as a result of increased competitiveness and relaxed restrictions.



Several Indian automobile manufacturers such as Tata Motors, Maruti Suzuki and Mahindra & Mahindra, expanded their domestic and international operations. India's robust economic growth led to the further expansion of its domestic automobile market which attracted significant India-specific investment by multinational automobile manufacturers.

The strong global competition left the Indian automotive industry with no option but to focus on adopting new technologies, which enabled manufacturers to improve their processes and products. Major initiatives in the automotive industry include just-in-time (JIT) manufacturing, mass customization, "zero error production", and reduced cycle time. To accomplish these, automotive manufacturers increasingly rely on information technology to help manage processes. Although the Indian Automotive Industry has made great strides in various aspects, supply chain management is one area where there is tremendous scope for improvement.

Just-in-time (JIT) as a philosophy is good in most environments, including India. Its core philosophy is identifying and eliminating waste and continuous improvement. This is important in a country like ours where resources are scarce. There are auto component companies in India that have excelled in implementing the JIT concept. Inventory management using JIT has been used by many companies in the inbound (supply side) part of the supply chain. Through the use of JIT inventory management, the automobile industry has been able to achieve significant gains in productivity.

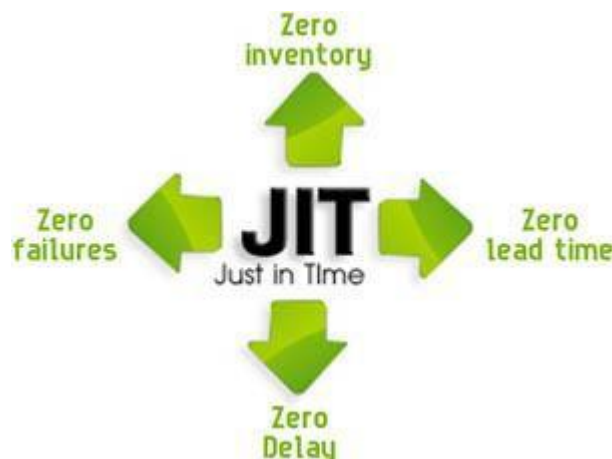
## OBJECTIVES

Firms adopt JIT practices because it is known to be a successful concept in managing non-value adding activities thus reducing waste and formulating a cost effective logistics operations. But there are various underlying factors which tend to go unnoticed but have the butterfly effect of deviation of the practices from the results.

For example, working in silos can lessen the success of JIT practices.

Also every organization has a different goal while catering to the market, so JIT practice may not prove beneficial to organizations focusing on responsiveness majorly or are in the early phase of product life cycle. So, study in this direction to understand both positives and negatives of various factors of JIT in inventory management as well as which organization will benefit using these is needed.

- To determine organizational intrinsic and extrinsic factors affecting JIT practices
- To examine the relationship between these factors and JIT success
- To identify how these factors can be beneficial in terms of goals of the organization



## **SCOPE OF STUDY**

- Special purpose machine is designed and developed for specific jobs, reducing manpower and increasing productivity. Various concepts like lean manufacturing and just in time (JIT) are used to improve productivity
  
- The worker feeds the nut into the die to attain the necessary tightening torque; further stud will be put in the die over the turning nut for automatic assembly. Various techniques like JIT and Lean Manufacturing are used to improve the productivity. The productivity can be improved for instance by reducing the labor content of the process; this would help to reduce the manufacturing cost of their products
  
- And new furnace may reduce the set up time and operation time for the operation. It is the means of minimization of waste during production. "Waste" is taken in its most general sense and includes time, materials and resources.
  
- Special purpose machine is designed and developed for specific jobs, reducing manpower and increasing productivity. Various concepts like lean manufacturing and just in time (JIT) are used to improve productivity. A special purpose machine is proposed for manufacturing unit.

## **LIMITATIONS OF STUDY**

Several Indian firms have either initiated steps towards JIT implementation or claim to have already implemented many aspects of JIT. However, the Indian Automotive Industry faced a few problems in implementing the JIT manufacturing systems, they are:

- The Size of the Industry in India is either medium or small compared to multi-national corporations. Hence the type of concerns and nature of efforts could be different.
- The Indian economy is characterized by Government controls and intervention, and there is a lack of long term stability in Government policies.
- Conceptual details of JIT and other such approaches to manufacturing are well known to Indian firms. However, there is a lack of internalization of these concepts, leading to lack of clarity at the time of implementation.
- To evolve to a pull inventory system, manufacturing needs to be organized through cells. The introduction of such systems would involve substantial rearrangement of facilities and demand greater managerial effort.
- Indian Automotive Manufacturers have not made significant progress towards supplier development.
- The quality circles concept was introduced in India during the early 80's. Though it started with much fanfare, it did not produce the expected results as reported in Japan. Hence, the Indian automobile manufacturers were sceptical of adopting them.
- The Indian automotive companies have overlooked the importance of viewing the supply chain as a whole. They need to have their supply chains streamlined for effective implementation of JIT.

- It is not easy to implement JIT in a situation where there is a need to manage inventory in a short duration with a lot of uncertainty in the system.
- The supply unreliability and the uncooperative attitude of transporters have affected the successful implementation of JIT.
- Indian automotive manufacturers tend to have a management style that is highly centralized. Decentralized and professionally managed companies would stand a better chance of implementing JIT.
- There is lack of efficient transport services, unavailability of suppliers, severe bottlenecks in transport and communication infrastructure.



## **CHAPTER 02**

## **REVIEW OF LITERATURE**

S. L. Adeyemi Here we will summarize the earlier done researches on JIT implementation practices and underlying factors affecting the results of inventory management. Researchers in the past have conducted many studies which show that holding or carrying large levels of inventories led to poor organization and increase in cost which further directed towards a poor management of the organization, thus a strategic approach towards decreasing the holding of inventory levels and supplying materials only at operational points in the value chain when needed.

V.D. Wakchaure; M.A. Venkatesh; S.P. Kallurkar has also done research regarding implementation issues of JIT practices in the Indian context was done wherein comparison with Japanese manufacturing ideologies was done to identify elements relating to poor implementation of JIT in India.

Ritesh Kumar Shrivastava and Dr. Sridhar also carried on similar study regarding factors causing barriers to implementation as well as success of JIT practices in Indian organizations was done by to observe various cultural, behavioural, inter and intra departmental organizational factors by sending out questionnaires to various industries.

Emde and Boysen also done research in the field of JIT with respect to both short and long-term strategic operations planning regarding underlying factors such as location planning, supplier performance, travel distances were done to confront basic decision making problems while implementing JIT.

Gurinder Singh and Inderpreet Singh Ahuja also put an effort to derive performance measures regarding contributions by the adoption of JIT practices in the Indian manufacturing industry

Qualitative research of underlying key elements of JIT with regards to the Indian service industries was conducted by Kumar and Grewal (2007) to gain deeper insights importance of JIT as well as what all are the key elements of JIT when it comes to organizations catering services to Indian market. Another such research was carried out by Sandeep Malik, Nishant Pahwa and Dr. Dinesh Khanduja (2011) using

scale based survey questionnaires to identify performance of JIT implementation practices in the Indian industries regardless of the size of the company, type of product or process in use. Similar qualitative study regarding key intrinsic elements on the readiness of Indian industries while implementing JIT was conducted by Mahadevan by sending out survey questionnaires to identify various key underlying aspects that the organizations considered critical while adopting JIT which majorly included the commitment of the management as well as the employees.

High inventory holdings are commonly identified as poor management (Boute et al.,2004). JIT has been depicted as an inventory control technique and the Japanese Auto Industry is recognised as the developer of JIT inventory and management philosophy (Aghazadeh, 2003). It is a systematic approach which minimises inventory by having supplies arrive at production and distribution points only when needed (Lee and Wellan,1993). Hunglin and Wang (1991) claim that JIT production is a philosophy for reducing work-in-progress (WIP) inventory, it aids process improvement and reduce process variability.



It can be seen as a new way of thinking, planning, and performing with respect to manufacturing (Canel et al., 2000). Whereas Gyampah and Gargeya (2001) consider JIT manufacturing both as a philosophy and disciplined method of production.

Stevenson (1996) defines the term JIT manufacturing as ‘a repetitive production system in which processing and movement of material and goods occurs just as they are needed, usually in small batches.

JIT implementing firms have to produce and deliver finished goods JIT to be sold, sub-assemblies JIT to be assembled into finished goods, fabricated parts JIT to go into the subassemblies and purchased materials JIT to be transformed into fabricated parts Schonberger,

JIT philosophy is based on the concept of delivering raw materials when needed; producing products when there is a need, improve quality of product.

Chakravorty and Atwater, mentioned that the fundamental objective of JIT is to eliminate all waste from the entire supply chain and to improve product continuously. The core of the JIT philosophy is CI through the elimination of waste defines JIT as “to produce instantaneously with perfect quality and minimum waste”.

JIT in its broader sense is an approach of achieving.

Schlesinger and Hackett Perfection in a manufacturing company based on the continuously elimination of waste.

In the narrow sense, JIT refers to the movement of material at the necessary place at the necessary time. It is a disciplined programme for improving overall productivity and reducing waste. In a JIT environment quality parts in the right quantity and at the right time are produced, while using a minimum amount of facilities, machinery and equipment, raw and in-process materials and human resources.

The main focuses on product quality, product delivery time and cost of product. The objective of this paper is to increase the productivity and quality of work by implementing the JIT. This author take the semi structured interviews were organized and thus relevant data can be collected. The conclusion of this research indicates that

JIT system can lead to many advantages to the company. The fundamental focus of JIT is the systematic elimination of non-value added activity and waste for the production process. The flux used in submerged arc welding after use generates wastages of flux i.e. slag. It is generally thrown away as waste after use.

So this slag collected and mixed with some additives and reused. This author focus on Buffer stock removal, cellular manufacturing, group technology, layout improvement, set up time reduction, worker motivation, W.I.P. reduction.

The main focuses on producer consumer relationship separated by a Buffer, to a simultaneity constraint. JIT system focuses on waste reduction and continuous improvement to achieve operational excellence

This is based on the application of activity based management. To check each activity and reduces the non value adding activity. There is reasonable consensus among researchers that Just in Time (JIT) is a philosophy of continuous improvement in which non-value-adding activities are identified and removed in order to reduce cost, improve product quality, improve performance, improve delivery, add manufacturing flexibility and stimulate innovation in workplace. When the JIT principles are implemented successfully across many parts of an organization, a significant competitive advantage can be enjoyed.

Enhanced efficiency from waste reduction in order taking, purchasing, operation, distribution, sales and accounting . Operationally, JIT production requires that waste be identified and eliminated in the following areas: waste from overproduction, waste created by waiting or idle time, waste of motion, transportation waste, processing waste and waste from product defects.

## **CHAPTER 03**

## RESEARCH METHODOLOGY

### **HYPOTHESIS**

- **H0:** Supplier performance in terms of delivery cycle or delivery lead time, distance to dealers, supplier location and material supplied has no significant impact on JIT results in inventory management.
- **H1:** Supplier performance in terms of delivery cycle or delivery lead time, distance to dealers, supplier location and material supplied has a significant impact on JIT results in inventory management.
- **H0:** Intrinsic factor like JIT knowledge or inventory management practices doesn't affect perception of company performance from both employees and management.
- **H1:** Intrinsic factors like JIT knowledge or inventory management practices affect perception of company performance from both employees and management.

Reasons: - The survey which we have carried out with questionnaire mainly generated the positive response by the respondents and on that basis we found that both companies are applying the code of conduct properly

## **RESEARCH DESIGN**

The research objectives emphasize on determining key factors fundamental to the JIT practices as well as the relationship between these factors and JIT success for the organization. Also through this research we need to gain deeper insights on which organizations can pursue these JIT practices and benefit from it.

The research was conducted at two major automakers catering to the Indian automobile sector, henceforth referred to as Company A and Company B, as the firms required anonymity, for this reason the identities of the firms cannot be revealed. These two companies have automobile production plants in India as well as dealerships across the length and breadth of the nation. The dealerships in study considered are situated in the city Nagpur of the state of Maharashtra.

The approach used here is a mixed approach of both quantitative and qualitative research methodology. Several researches have been conducted on key factors of JIT practices in the Indian automobile sector showing reasons behind inferior results in some organizations and success in some others. But these factors have not been considered on gaining deeper understanding of JIT implementation in an organization and how these factors positively or negatively affect changes within the organization as well as success of JIT practices.

Also, these factors consider both intrinsic and extrinsic factors to the organization implementing JIT practices, so changes in any of these factors directly affect the results expected from JIT system on the inventory management system, hence periodic research and analysis becomes vital. The need of quantitative research was there to determine key factors which were vital to the implementation as well as the organizational feasibility of JIT practices, for which we formed a structured questionnaire

asking relevant questions to both the employees and management of the two organizations considered in this study. The questions involved knowledge of participants regarding current inventory management practices and translating it into a number value based on the scale provided. For the qualitative research part to gain deeper understanding on issues as well as benefits of JIT, individual interviews with both the management and employees of the organization was carried out.

## QUESTIONNAIRES

This is a widely used and prominent technique for information accumulation. This is embraced by people, associations and Government. In this strategy a poll is arranged and sent to respondents. The poll when sent to the respondents, a demand is made that the inquiries ought to be addressed and returned. The achievement of this technique to a great extent relies upon the correct drafting of inquiries. Drafting survey required a lot of aptitude and experience.

## Statistical Analysis

### 1. Pie Diagrams

A pie table is a circle diagram is a round layout parceled into territories, depicting degree. In a pie chart, the roundabout fragment length of each division (and hence its point of convergence and district), is comparing to the sum it addresses. At the point when edges are estimated with I turn as unit then various percent is related to a similar number.

## METHOD AND SOURCE OF COLLECTION OF DATA

In the preparation of this report, the data is gather which are as follows.

1. Primary data: - This data is gathered from firsthand information source by the researcher.

This data is collected mainly from employees of the two comanies

2. Secondary data: - This will give theoretical basis required for the report presentation which can be available from various sources such as websites, research paper etc.



## **SOURCES**

### **PRIMARY DATA: -**

- This data is gathered from first-hand information source by the researcher. This data is collected mainly employees of the two companies. Primary data is specific to the needs of the researcher at the moment of data collection. The researcher is able to control the kind of data that is being collected
  
- The researcher exhibit ownership of the data collected through primary research. He or she may choose to make it available publicly, patent it, or even sell it. Primary data is usually up to date because it collects data in real-time and does not collect data from old sources. The researcher has full control over the data collected through primary research. He can decide which design, method, and data analysis techniques to be used.
  
- As our project report is on just in time in automobile sector and for that we have in operation management. While collecting primary data first we have made the questionnaire with the help of google form and on basis of that questionnaire we are able to find how these respondents are experiencing in there organization
  
- The data we have collected is up to date and it is not taken from any third party or copied from any old source it is a real time data we have gathered. The researcher has full control over the data collected through primary research. He can decide which design, method, and data analysis techniques to be used.



## SECONDARY DATA: -

- Secondary data is the data that has been collected in the past by someone else but made available for others to use. They are usually once primary data but become secondary when used by a third party. Secondary data are usually easily accessible to researchers and individuals because they are mostly shared publicly. This, however, means that the data are usually general and not tailored specifically to meet the researcher's needs as primary data does.

For example, when conducting a research thesis, researchers need to consult past works done in this field and add findings to the literature review. Some other things like definitions and theorems are secondary data that are added to the thesis to be properly referenced and cited accordingly. Some common sources of secondary data include trade publications, government statistics, journals, etc. In most cases, these sources cannot be trusted as authentic.

- While collecting secondary data we have gone through various websites and various other platform that are being assessed by research where the researchers has carried out their phenomenal work about operation management.
- Collecting secondary data is very affordable because most of information is available on internet is free there is some data which required sing-up and sometimes they require membership for free access of their content at cheaper rates. and time spent on collecting secondary data is very less as compared to primary data

## **CHAPTER 04**

## **DATA COLLECTION**

Data collection is a systematic process of gathering observations or measurements. Whether you are performing research for business, governmental or academic purposes, data collection allows you to gain first-hand knowledge and original insights into your research problem. While methods and aims may differ between fields, the overall process of data collection remains largely the same.

- Quantitative data is expressed in numbers and graphs and is analyzed through statistical methods.
- Qualitative data is expressed in words and analyzed through interpretations and categorizations.  
So we have decided to use Quantitative data because we are going to interpret our data with the help of bar-graph and pie charts etc.

## **CHAPTER 05**

## ANALYSIS & INTERPRETATION OF DATA

Firstly, we gathered data relating to the number of suppliers, supplier sourcing of automobile parts, supplier location as well as distance between the supplier and the respective firms via which we can gain an approximate understanding of the cost associated to the transportation of the material.

Table 1 For Company A:

Name of the supplier	Location of the supplier	Parts Sourced	Distance between company A and the supplier
1. Supplier 1 (One central hub for all the dealers)	Delhi	All the parts of the automobile	1,082.5 Kilometres

Table 2 For Company B:

Name of the supplier	Location of the supplier	Parts Sourced	Distance between company A and the supplier
1. Supplier 1 (Primary Supplier)	Chennai	All the parts including body and mechanical components	1,124.2 Kilometres
2. Supplier 2 (Third party Supplier)	Mumbai	All the spare parts	834.5 Kilometres

We can see here that both the companies have varying distances between the suppliers thus the cost of transportation will vary for these firms. Here company A is using the JIT practices to acquire parts from the supplier. While the company B focuses on higher responsiveness so blends both JIT and calculated forecasted supply models and thus periodic deliveries by the suppliers is carried out. During the study, we got to know costs are associated to the distance travelled by the parts carrier such as tempos and trucks. These varying distances between the supplier and the firms also lead to varying delivery cycles. These are presented in the tables below:

Name of the supplier	Delivery Cycle Range
1. Supplier 1 (One central hub for all the dealers)	7 - 10 days

Name of the supplier	Delivery Cycle Range
1. Supplier 1 (Primary Supplier)	7 - 10 days
2. Supplier 2 (Third party Supplier)	2 - 4 days

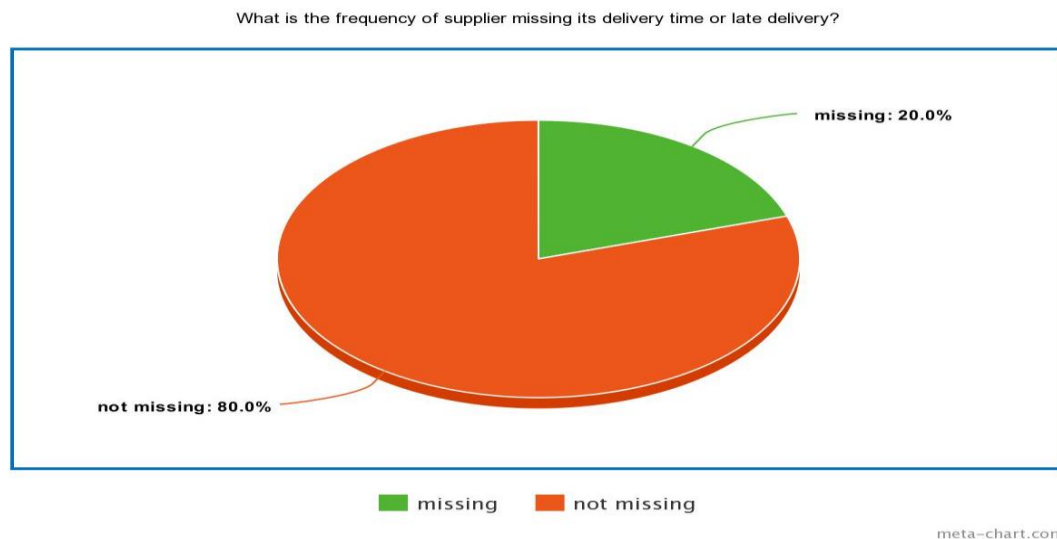
For company A, the supplier via the use of inventory management system generates orders from all the suppliers and then transports the composite orders to the respective dealers. For Company B, the primary supplier has a centralized hub in Chennai and generates orders from various dealers using a DMS (Database Management System) and then transports the orders in a similar operating manner as Company A. While Company B has one centralized supplier, it also has a third party spare parts supplier which is closer to dealerships in Maharashtra, thus leading to smaller delivery cycle range of 2 – 4 days, thus making the firm more responsive.

## Results of Survey at Both the Firms

By providing structured questionnaires to the employees and management in the inventory management department, we were able to record details regarding performance of the suppliers to emphasize on various significant indicators. The questions were answered on the frequency scale of 1-5, where 1 = very low frequency, 2 = low, 3 =medium, 4=high and 5= very high frequency. Tables below show the result as follows:

### COMPANY A

1. What is the frequency of supplier missing its delivery time or late delivery?
  - A. Frequency 1
  - B. Percentage (%) or Probability of Cases 2 out of 10 cases or 20%.



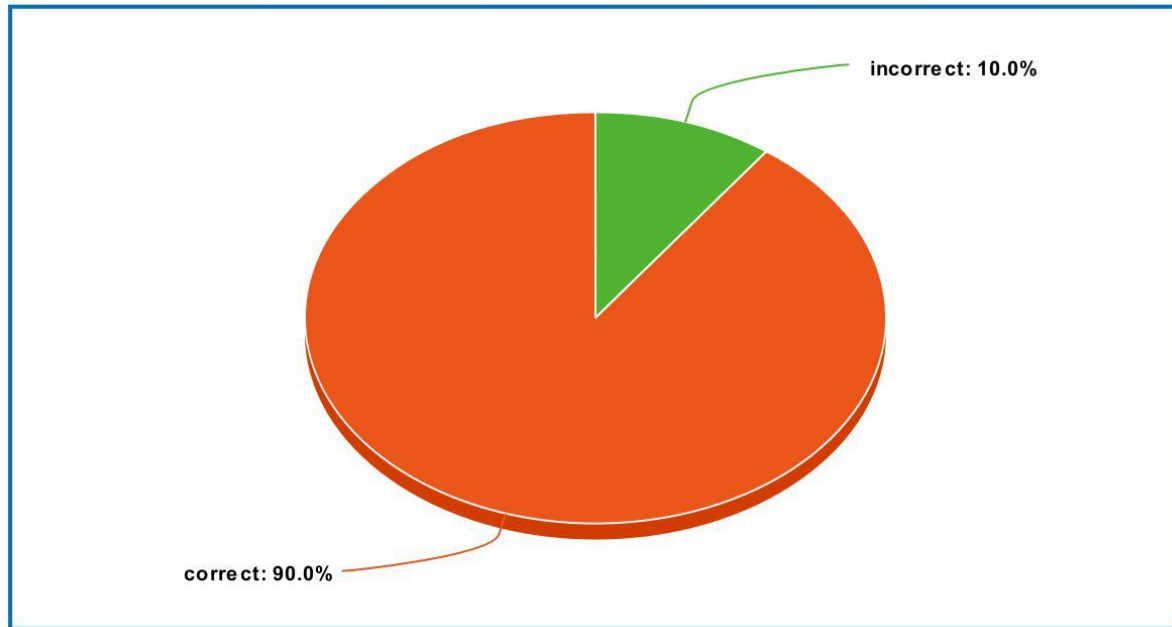
### INTERPRETATION -

While interpreting this data we found that missing delivery time or late delivery is 20% missing and 80% not missing in company A.

2. What is the frequency of incorrect delivery?

- A. Frequency 1
- B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

What is the frequency of incorrect delivery?



■ incorrect ■ correct

meta-chart.com

### INTERPRETATION-

While interpreting this data we found that frequency of incorrect delivery is 10% incorrect and 90% correct in company A.



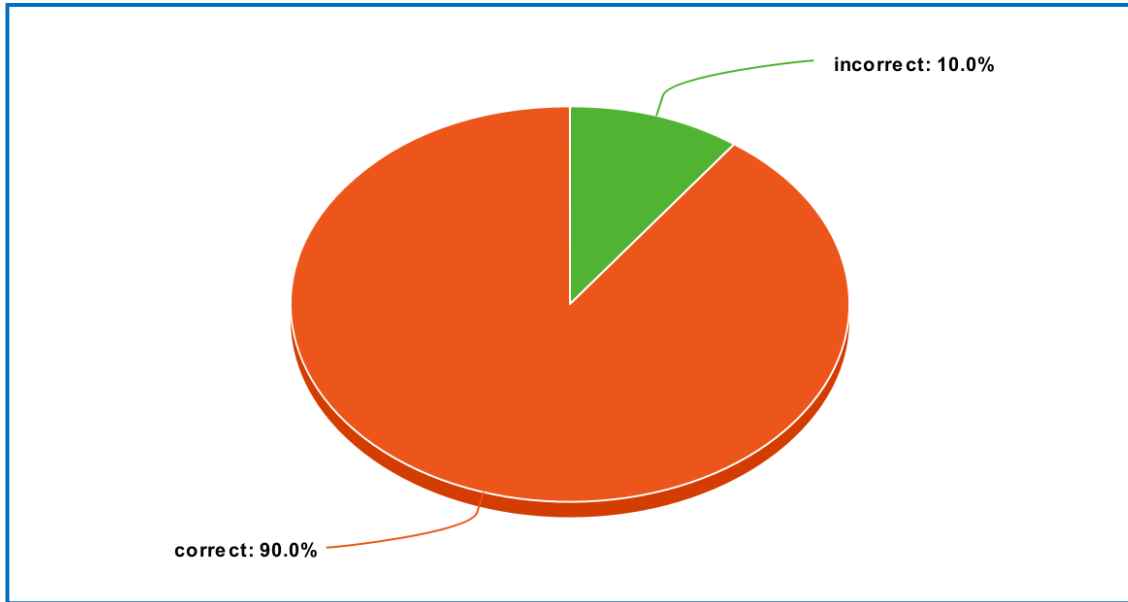
**3. What is the frequency of delivery before time?**

A. Frequency

1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

What is the frequency of delivery before time



■ incorrect ■ correct

meta-chart.com

**INTERPRETATION**

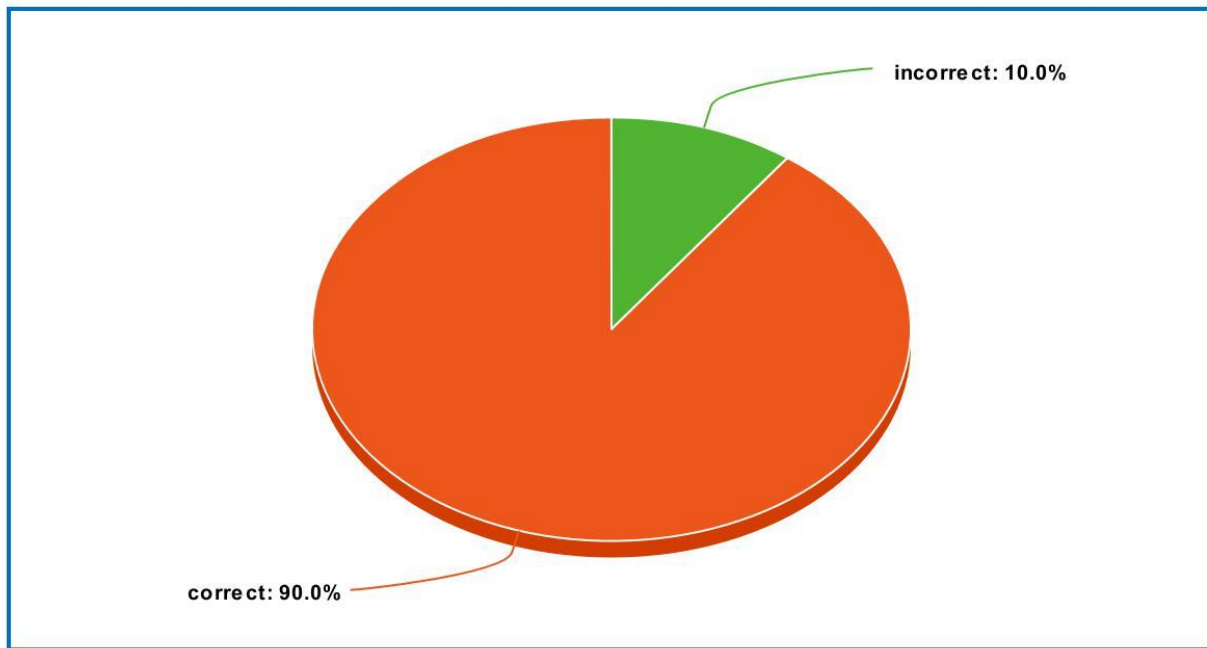
While interpreting this data we found that frequency of delivery before time is 10% incorrect and 90% correct in company A.

4. What is the frequency of supplier charging incorrectly?

A. Frequency 1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

What is the frequency of supplier charging incorrectly?



incorrect correct

meta-chart.com

### INTERPRETATION

While interpreting this data we found that frequency of supplier charging incorrectly is 10% incorrect and 90% correct in company A.

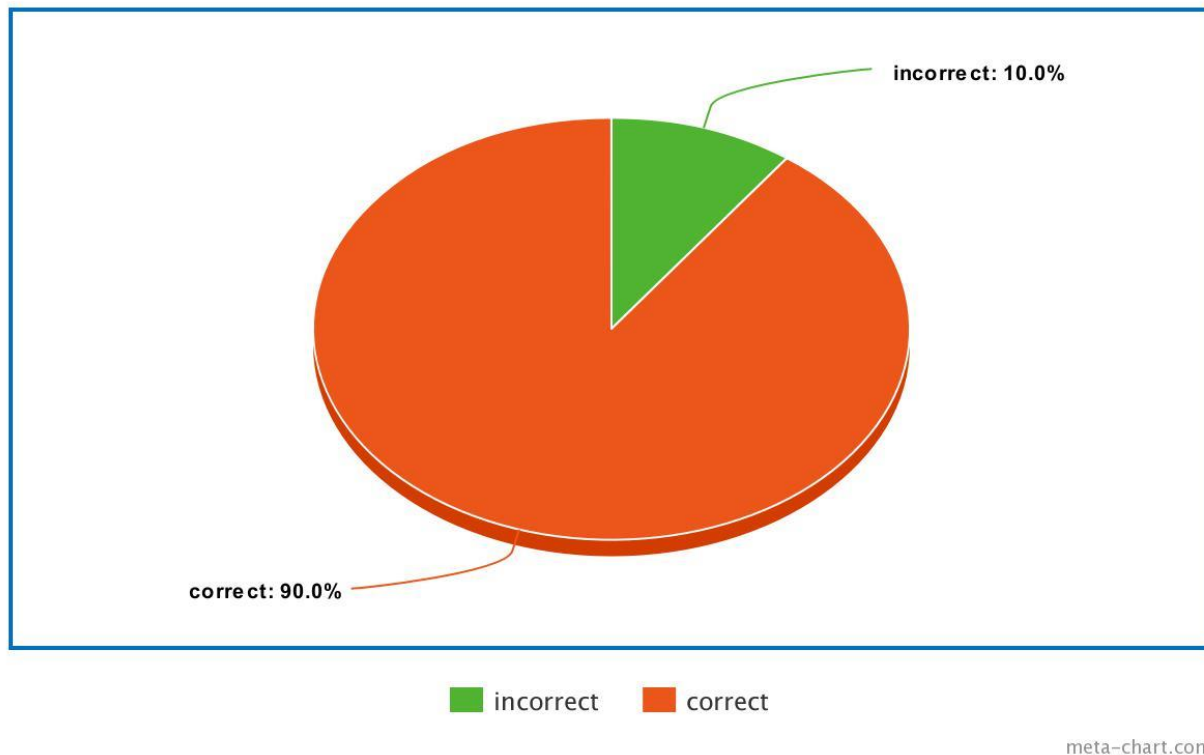
## COMPANY B

1. What is the frequency of supplier missing its delivery time or late delivery?

A. Frequency 1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

What is the frequency of supplier missing its delivery time or late delivery for company B



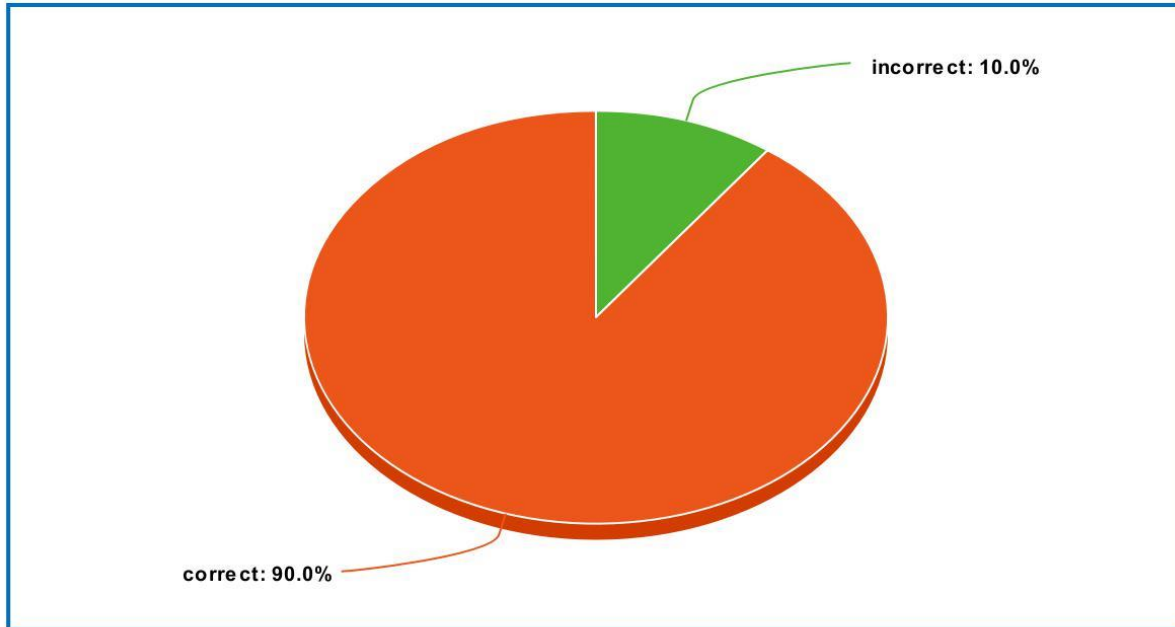
### INTERPRETATION -

While interpreting this data we found that missing delivery time or late delivery is 10% missing and 90% not missing in company B.

2. What is the frequency of incorrect delivery?

- A. Frequency 1
- B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

What is the frequency of incorrect delivery for company B



■ incorrect ■ correct

meta-chart.com

### INTERPRETATION-

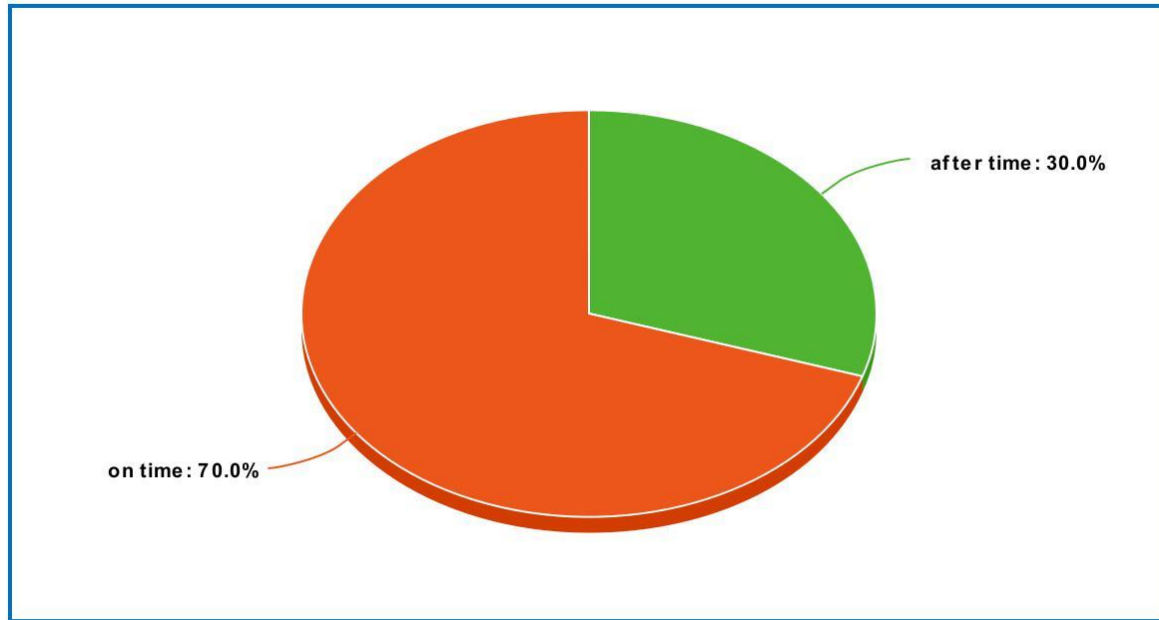
While interpreting this data we found that frequency of incorrect delivery is 10% incorrect and 90% correct in company B

3. What is the frequency of delivery before time?

A. Frequency 1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

3. What is the frequency of delivery before time for company B



■ after time ■ on time

meta-chart.com

### INTERPRETATION

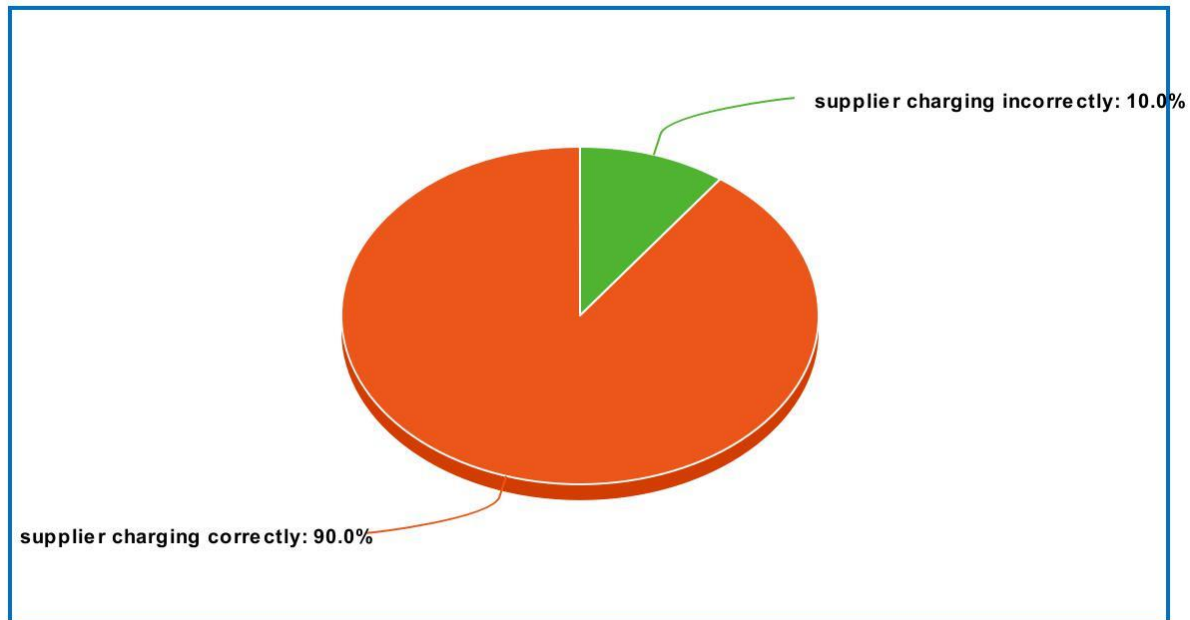
While interpreting this data we found that frequency of delivery before time is 30% incorrect and 70% correct in company B.

4. What is the frequency of supplier charging incorrectly?

A. Frequency 1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%.

4. What is the frequency of supplier charging incorrectly for company B



■ supplier charging incorrectly ■ supplier charging correctly

meta-chart.com

## INTERPRETATION

While interpreting this data we found that frequency of supplier charging incorrectly is 10% incorrect and 90% correct in company B.

Another part of the questionnaire was designed to study the effect of JIT practices on the company performance as perceived by both the employees and the organization management. This can be seen in the following tables. The frequency scale is 1-5 with 1= Very low, 2= low, 3= somewhat, 4= high, 5= very high.

Company performance as perceived by the management of the two firms:

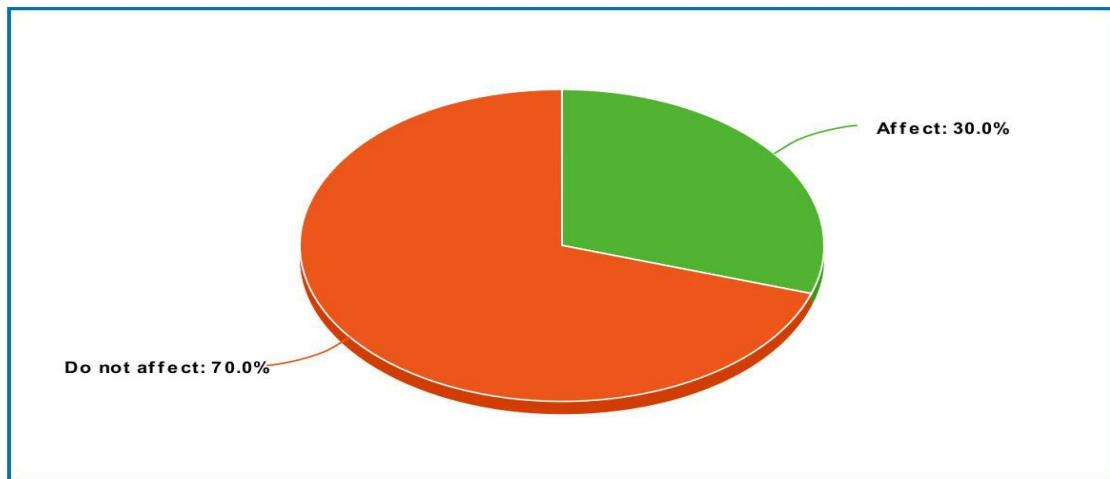
### Company A

1. Does the distance between the organization and the supplier negatively affect the service provided to customer.

A. Frequency 2

B. Percentage (%) or Probability of Cases 3 out of 10 cases or 30%

Does the distance between the organization and the supplier negatively affect the service provided to customer company A



■ Affect ■ Do not affect

meta-chart.com

### INTERPRETATION

While interpreting this data we found that distance between organization and supplier affects

Only 30% and 70% it does not affect.

2. Does higher inventory level stored hamper or complicate the workflow at the firm?

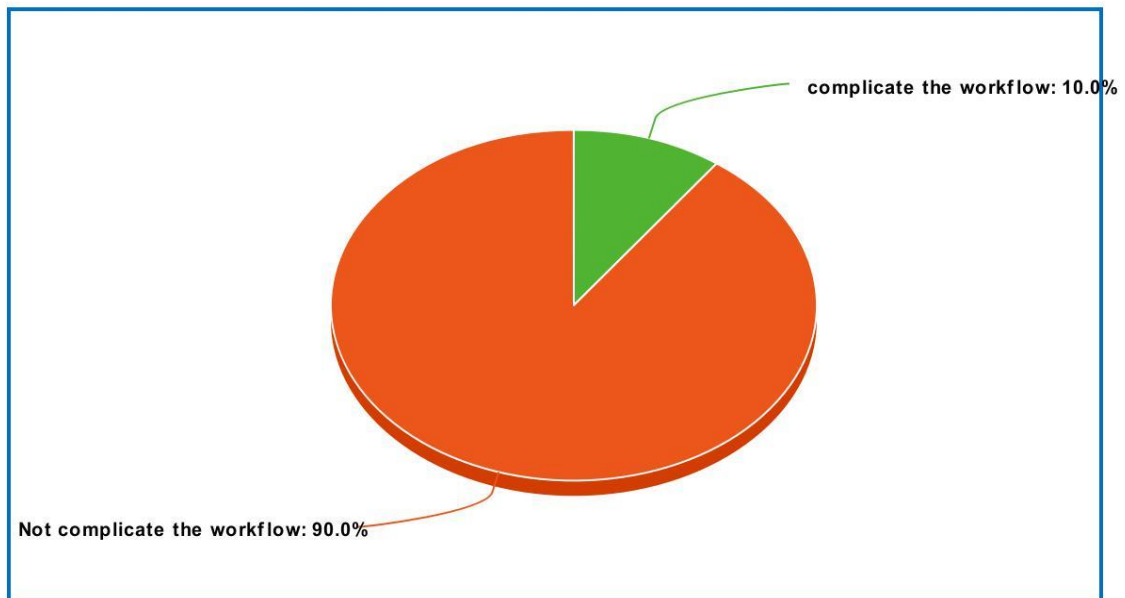
A. Frequency

1

B. Percentage (%) or Probability of Cases

1 out of 10 cases or 10%.

2. Does higher inventory level stored hamper or complicate the workflow at the firm?



■ complicate the workflow ■ Not complicate the workflow

meta-chart.com

## INTERPRETATION

While interpreting this data we found that it inventories level complicate workflow by 10% and by 90% it does not affect the work flow of firm.



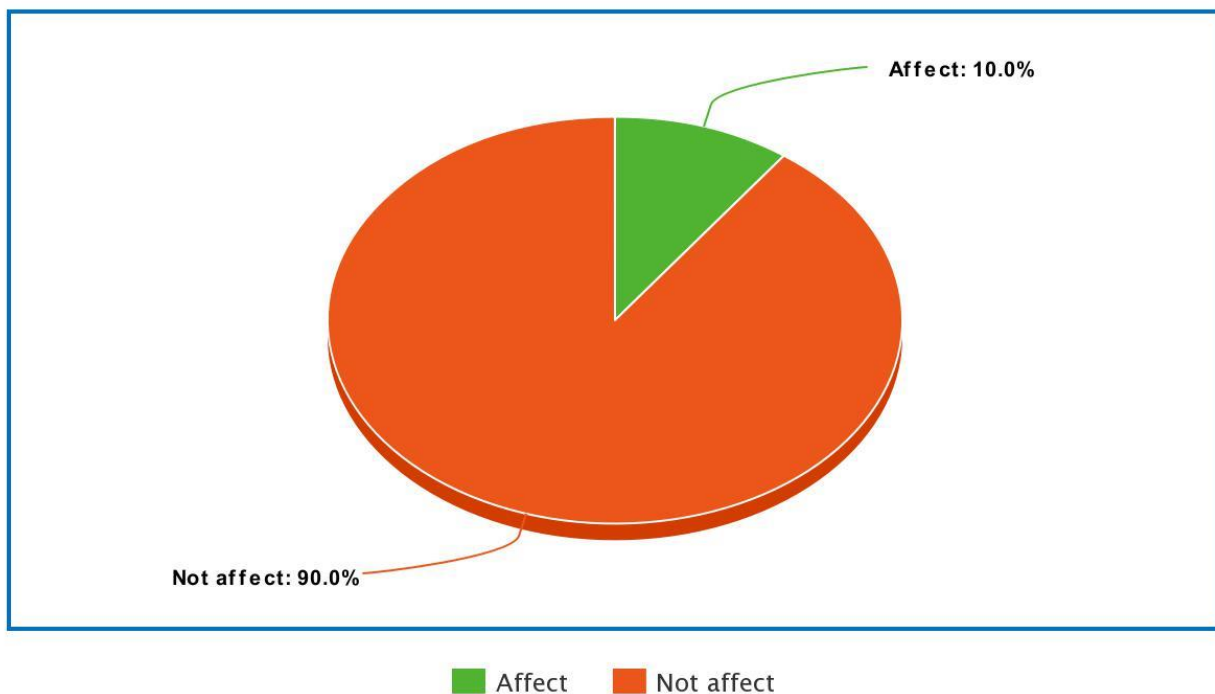
## COMPANY B

1. Does the distance between the organization and the supplier negatively affect the service provided to customer.

A. Frequency 1

B. Percentage (%) or Probability of Cases 1 out of 10 cases or 10%

1. Does the distance between the organization and the supplier negatively affect the service provided to customer. for company B



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### INTERPRETATION

While interpreting this data for company B we found that distance between organization and supplier affects Only 10% and 90% it does not affect.

2. Does higher inventory level stored hamper or complicate the workflow at the firm?

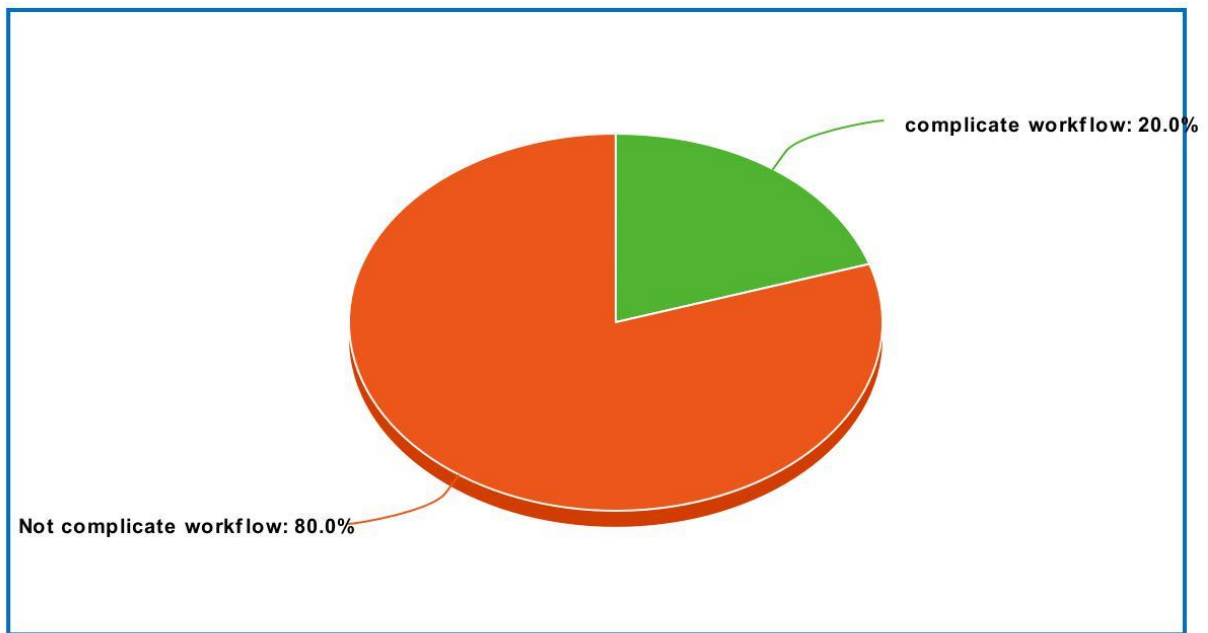
A. Frequency

2

B. Percentage (%) or Probability of Cases

2 out of 10 cases or 20%.  
(Fast moving stock transition to  
Slow moving or dead stock)

2. Does higher inventory level stored hamper or complicate the workflow at the firm for company B



■ complicate workflow ■ Not complicate workflow

meta-chart.com

### INTERPRETATION

While interpreting this data we found that it inventories level complicate workflow by 20% and by 80% it does not affect the work flow of company B.

## **CHAPTER 06**

## **FINDINGS, CONCLUSION AND SUGGESTION**

### **FINDINGS**

From the research we were able to see that automobile companies in India were able to implement JIT practices better using various database management software, nonetheless these companies implemented JIT as per the level of their organization's requirement and as per the level of feasibility of operations desired by the organization. We were able to find that both intrinsic and extrinsic factors such as delivery cycle or delivery lead time, distance to dealers, supplier location and material supplied had significant impact on JIT results in inventory management affecting both the management and the employees of the organization.

Thus we reject the null hypothesis and accept the alternate hypothesis that supplier performance in terms of delivery cycle or delivery lead time, distance to dealers, supplier location and material supplied has a significant impact on JIT results in inventory management.

Also we were able to find out that organizations employ auditors and parts manager to keep a check on inventory as well as manage related practices. However, both organizations had barrier to the flow of information regarding inventory management practices at place, wherein database management system had hierarchy of employees who could access data on need to know basis set up by the organization.

This led to certain level of employees and management knowing more about the organization's inventory management practices than the others, which further affected their notion of the known inventory management practices in place and their benefits to the organization.

Thus we can reject the null hypothesis and accept the alternate hypothesis that Intrinsic factors like JIT knowledge or inventory management practices affect perception of company performance from both employees and management.

With structured questionnaires sent out to both the companies, we saw that organizations although producing similar products have different offerings to their target market and depending on these factors they incorporate the level of JIT practices in their logistics and inventory operation. This can be seen with Company A focusing on cost effective and efficient operations, thus having a single supplier relatively closer to dealers as compared to Company B, a smaller warehouse of 2500 square feet and acquiring materials using JIT practices, while Company B amalgamated JIT practice along with calculated forecasts (basically push system) to procure materials and store inventory earlier than required which increased their inventory ordering and holding costs.

Company B then used FIFO (First in, First Out) system to push inventory in the system with a bigger warehouse of 5000 square feet spread across a 5 story warehouse. Also they used to suppliers – A centralized supplier hub and one third party supplier closer to market. This showed Company B was focusing on higher responsiveness to customer.

We were also able to record that Company A had a slightly higher chance of stock out as compared to Company B, while Company B had a higher chance of stored inventory converting from fast-moving or medium-moving stock to slow-moving stock or deadstock. With both companies using database management systems storing and fetching inventory was not a major issue to deal with. But dealing with larger inventory storage and management led to slight issues to Company B than to Company A.

Overall we were able to see that JIT practices benefited both the organizations but on different levels, wherein Company A benefitted more while implementing JIT practices as their focus was tighter inventory control and efficient logistics operations. While Company B had a goal of higher level of responsiveness to its customers thus a full-fledged JIT practice would not have been beneficial to this organization, thus they adopted a mix and balance of push system and JIT practice which was feasible to the organization's goals.

Thus we can reject the null hypothesis and accept the alternate hypothesis that Implementation of JIT practices is beneficial to organizations.

## **CONCLUSION AND SUGGESTION**

From the research we can conclude that organizations can have lower performance or efficiency in managing or controlling inventory, when not implementing JIT or Just-In-Time practices. Also we were able to see how JIT was affecting inventory management practices in the organizations in a positive way.

This further led to a positive perception of business performance from both the employees and the management of the organization. Results for Company A indicated better performance with cost effective performance via implementation of the JIT system, with employees being more aware of the inventory management practices in place and the respective changes and benefits it transmits to the system.

After examining the relationship between factors the JIT practices in alliance with database management systems made it efficient and transparent for the organization's management as well as employees and suppliers to collaborate and develop the symbiotic relationship and prosper.

Thus recommendation would be to emphasize on implementation of JIT practices with a transparent system of information flow within the organization which doesn't lead to superficial implementation or departments working in silos to achieve JIT success.

Also JIT practices depends highly on good supplier relations so develop good working relationships with both short term and long term suppliers. Periodic appraisal of supplier performance and managed reports of reliable suppliers closer to market support successful operations of JIT practices.

Also proper training must be provided to both the management and employees of the organization before implementing JIT method in the inventory management system, as these practices lead to changes in inventory stored and at hand, which may hamper their movements as well as workflow.

Finally training and knowledge training and knowledge imparted leads to a transparent workplace leading to positive perception from both the management and the employees of the organization which further impacts the implementation and success of the JIT (Just-In-Time) method in a positive way.



## **CHAPTER 07**

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## **CHAPTER 08**

## **ANNEXURE**

1. What is the frequency of supplier missing its delivery time or late delivery?

A. Agree

B. Disagree

2. What is the frequency of incorrect delivery?

A. Correct

B. Incorrect

3. What is the frequency of delivery before time?

A. Agree

B. Disagree

4. What is the frequency of supplier charging incorrectly?

A. Agree

B. Disagree

5. Does the distance between the organization and the supplier negatively affect the service provided to customer.

A. Agree

B. Disagree

